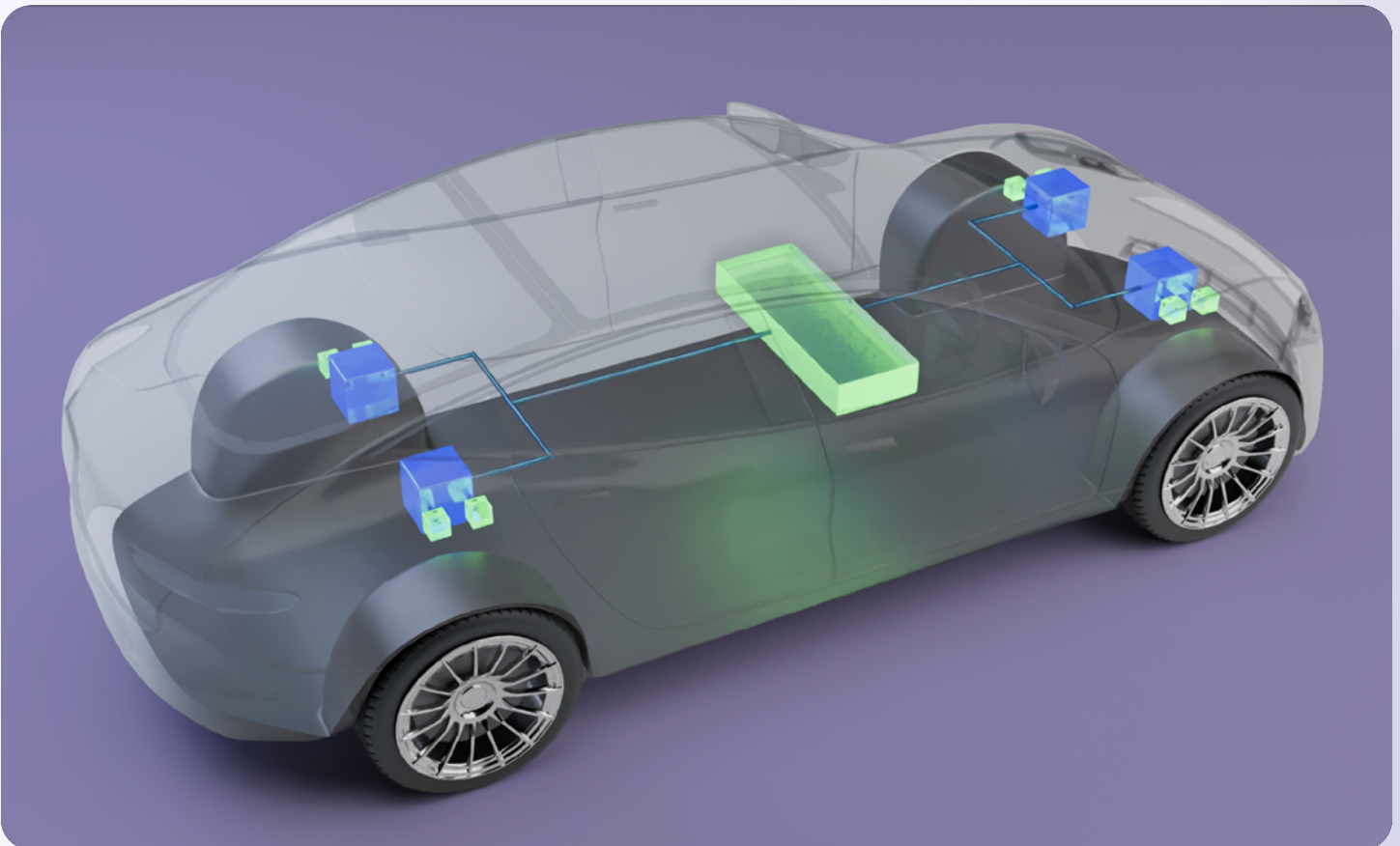




Automotive

AEC-Q100 Solutions

ADAS | Digital Cockpit | Lighting | Zonal | Electrification

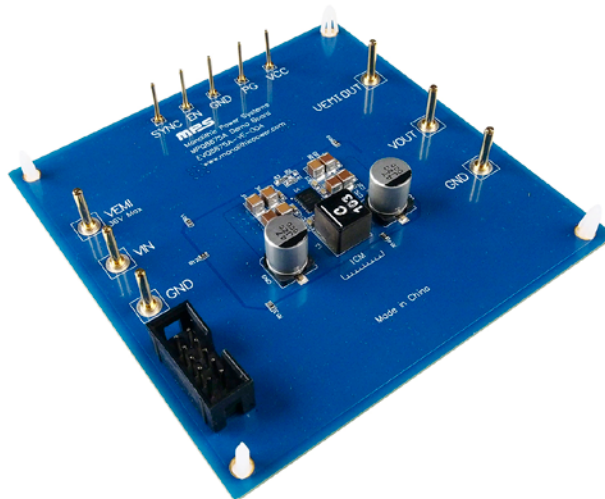


Automotive-Qualified Products

When only the best will do, MPS offers its automotive-grade AEC-Q100 products. These solutions are rigorously stress-tested to ensure optimum reliability under demanding AEC-Q100 Grade 1 temperature conditions. Additionally, each part is put through a comprehensive, industry-leading, 300-point application “road test” to ensure robustness in the face of harsh automotive conditions such as load dump and cold crank transients.

Evaluation Boards

Evaluation boards are available for all automotive-grade products. Contact MPS for details.



Quality Assurance & Reliability Commitment

Quality is the bedrock of everything that we do at MPS, and we zealously pursue continuous improvement programs to maintain a zero-defect mentality across the company. Our mission is to design, develop, manufacture, and deliver products to our customers with world-class quality and reliability that go above and beyond customer expectations.

Quality Control and Monitoring:

- On-Site Foundry and Assembly Teams
- Daily Short-Term Reliability Monitoring
- Quarterly Long-Term Reliability Monitoring
- Quarterly Reliability Monitoring Reports and Supplier Quality Review
- Annual Supplier Audits

MPS and Its Subcontractor Quality Systems and Certificates:

- ISO 9001
- EU RoHS/HF/REACH Compliant (MPS)
- Sony Green Partner
- IATF 16949 (Subcontractors)
- ISO 14001
- Member, Responsible Business Alliance (RBA)
- TISAX Level 3
- ISO 27001
- ISO 26262
- ISO 45001
- Member, Responsible Mineral Initiative



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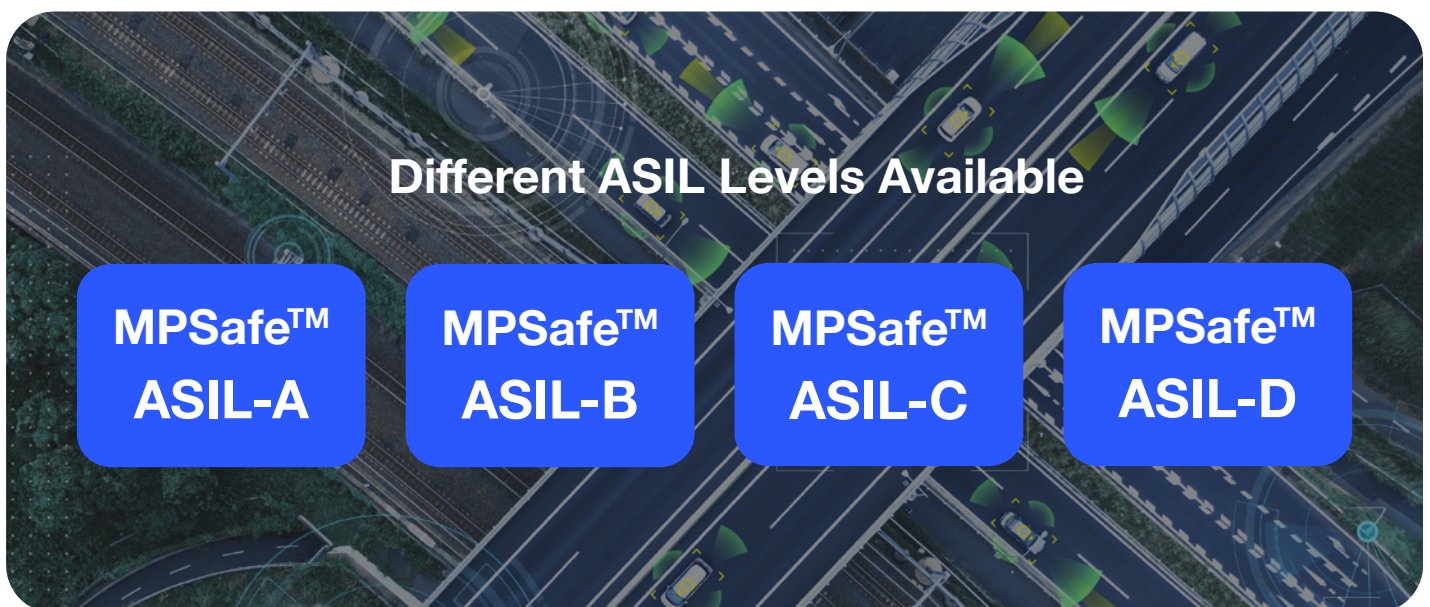
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MPSafe™ products are safety-oriented, automotive-qualified products developed through our ISO 26262 functional safety product development process.

These solutions are purpose-built for functional safety, and are engineered with a system-oriented approach. We consider not only how a device itself may handle various safety cases, but how the system can be better engineered to achieve its safety goals. The result for customers is excellent safety coverage, more thorough documentation, pre-approved third-party safety analysis, and a cost- and schedule-optimized solution.

For systems and products needing ASIL-A to ASIL-D, choose MPSafe™.



Meet ISO 26262 Goals Faster

- Safety Manuals, FMEDA, and More
- Consultation with Resident Safety Experts
- Pre-Vetted Safety-Assessed Subsystems



Featured Products



MPQ79700FS-AEC1

MPSafe™, 12-Channel ASIL-D
Power Sequencer with Watchdog



MPQ79500FS-AEC1

MPSafe™, 6-Channel ASIL-D
Voltage Monitor with
Differential Sensing



MPQ70240FS-AEC1

MPSafe™, ASIL-B PMIC
for Camera Modules



MPQ2967FS-AEC1

MPSafe™, ASIL-D Digital
Multi-Phase Controller
for Core Power



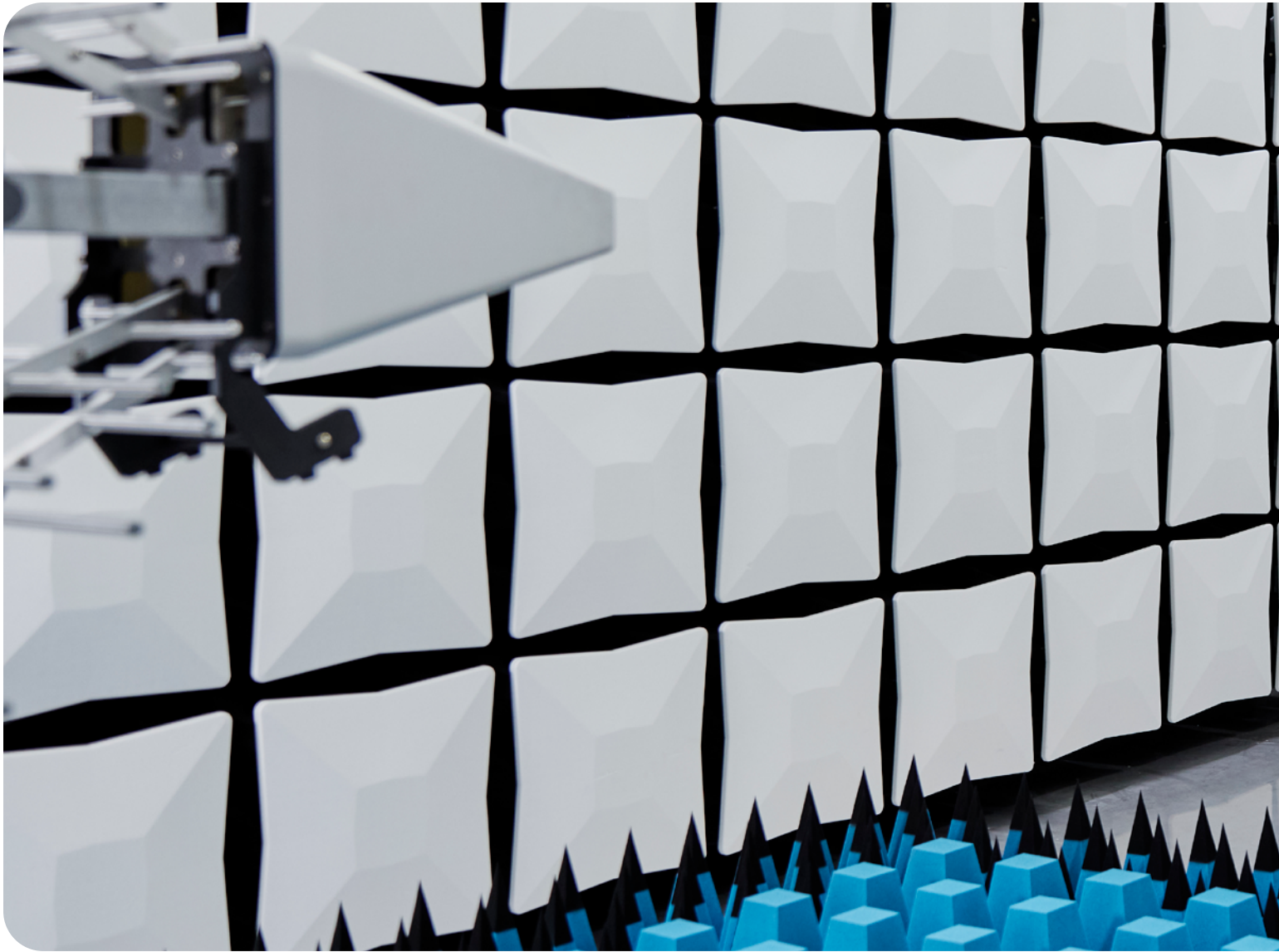
MPQ70160FS-AEC1

MPSafe™, 6-Channel ASIL-D
PMIC with 6 Bucks



MPQ70331FS-AEC1

MPSafe™, ASIL-D PMIC
for Safety Applications



EMC/EMI CISPR 25 Testing

Meeting tough OEM electromagnetic compatibility and immunity requirements is one of the biggest challenges in automotive electronics design. Minor schematic and layout choices can make a big impact on how well a design passes these tests, and early system testing can help avoid major project schedule and cost setbacks.

MPS now offers pre-compliance EMC/EMI testing for CISPR 25 and more in our purpose-built customer labs in Livonia, Michigan, USA and Ettenheim, Germany. Our team of onsite experts helps customers build experience in EMC-related topics and solve design problems during early product development stages. These state-of-the-art measurement chambers and work stations enable exact results and detailed test reports during emissions and immunity testing.

Tests Conducted

- Radiated Emissions
- Conducted Emissions
- Radiated Immunity
- Conducted Immunity
- Bulk Current Injection
- Electostatic Discharge (ESD)

Equipment

- 3.6GHz Receivers
- Rod Antenna (9kHz to 30MHz)
- Bi-Con Antenna (20MHz to 300MHz)
- Log Antenna (200MHz to 3.5GHz)
- Horn Antenna (1GHz to 18GHz)
- Horn Antenna (450MHz to 6GHz)

Services

- Design Analysis and Optimization
- Testing
- Debugging

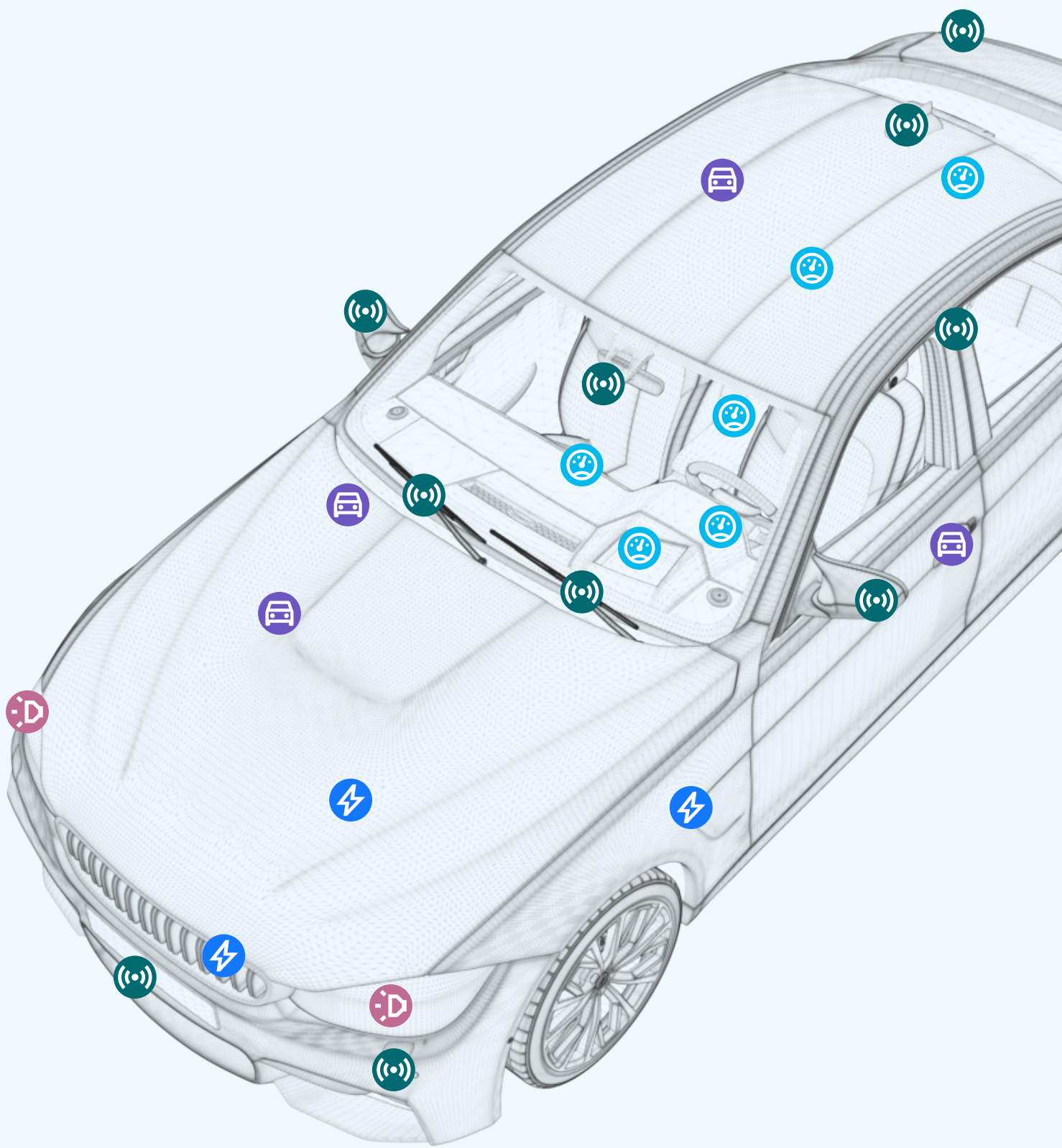
Chambers

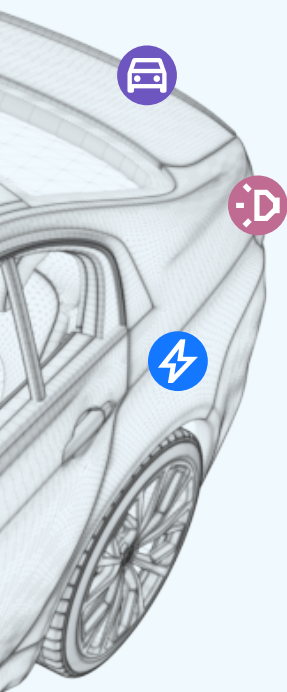
- CISPR
- 3-Meter Chamber
- BCI



EMC Lab Locations







ADAS

- ADAS Computing
- 360° Cameras
- Front Cameras
- Backup Cameras
- Thermal Cameras
- Driver Monitoring
- Occupancy Sensing
- Sensor Fusion
- Radar
- LiDAR
- Ultrasonic

Digital Cockpit

- High-Performance Computing
- Infotainment
- E-Calls
- Digital Mirrors
- USB Charging
- Wireless Charging
- Telematics/V2X
- Heads-Up Displays (HUDs)
- Clusters
- Ambient Lighting
- Display

Lighting

- Daytime Running Lights (DRLs)
- Matrix Lights
- Fog Lights
- Headlamps
- Brake Lights/CHMSL
- Turn Indicator Lights

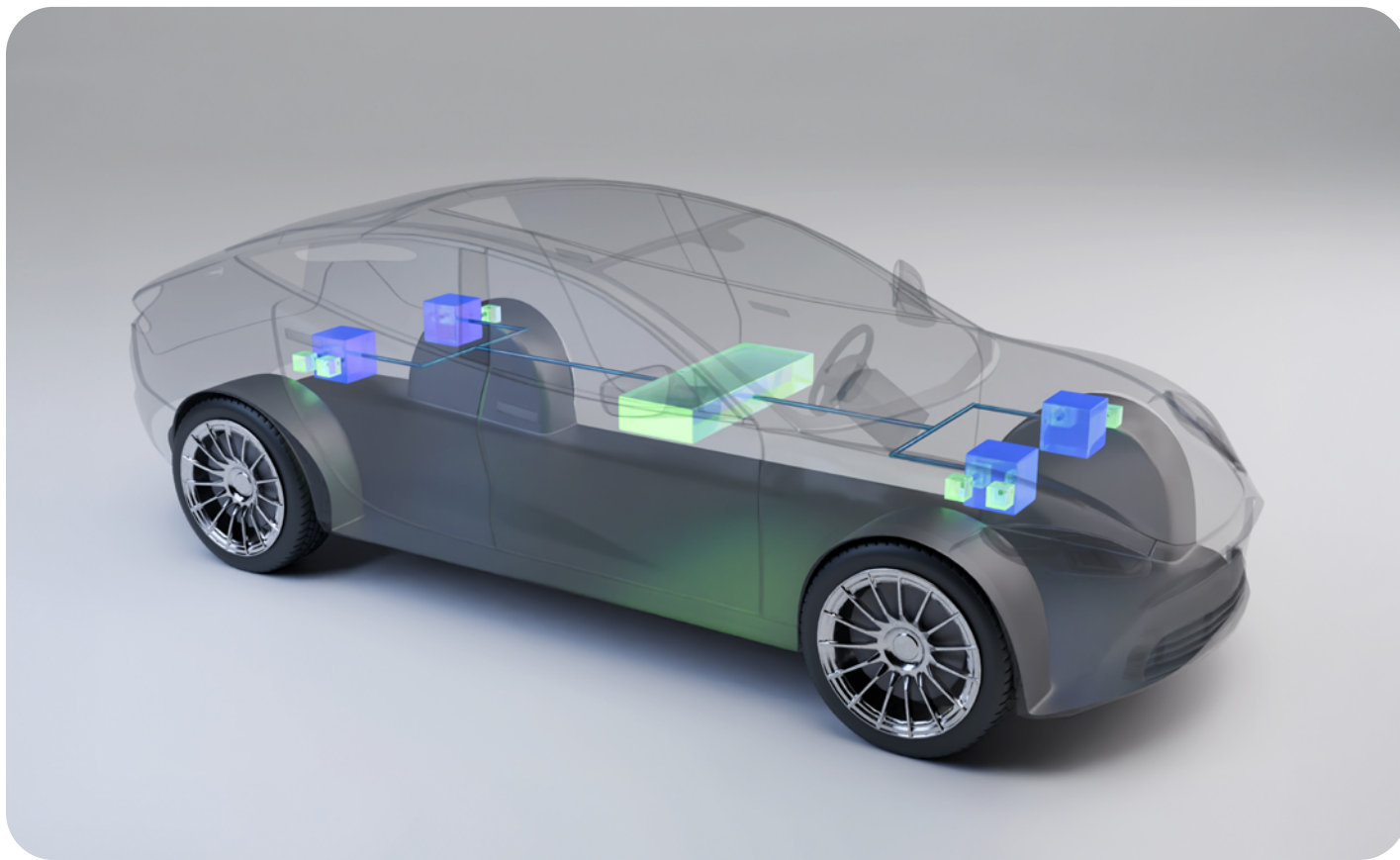
Zonal Control & Body Control

- Zonal Control Units
- Body Control Modules
- Shutters (AAF, ARS)
- Seat Cooling
- Thermal Management
- Cooling Fan Controls
- Motor Modules
- Door Latches & Locks
- Keyless Entry
- Junction Boxes
- HVAC Systems
- Gateways
- Liftgates
- Power-Assisted Steering
- Suspension Sensors
- Wiper Motors
- Electronic Braking Systems
- Fluid Pumps
- Electronic Parking Systems
- Power Seats
- eShift

Electrification

- Onboard Chargers (OBCs)
- Traction Inverters
- Onboard DC/DC
- 48V DC/DC
- Belt Start Generators
- DC Fast-Charging Stations
- Virtual Engine Noise

Enabling the 48V Revolution



48V zonal architecture is underpinning tomorrow's software-defined vehicle, and rewriting the rules of vehicle power and computing from the ground up.

MPS has reimagined our entire portfolio, from e-fuses and high-performance power converters to safety PMICs and beyond, engineered for this seismic shift.

With an industry-leading advanced process technology built for 48V, MPS delivers the power density, efficiency, and integration automakers need to outpace the competition.



**Higher
Integration**

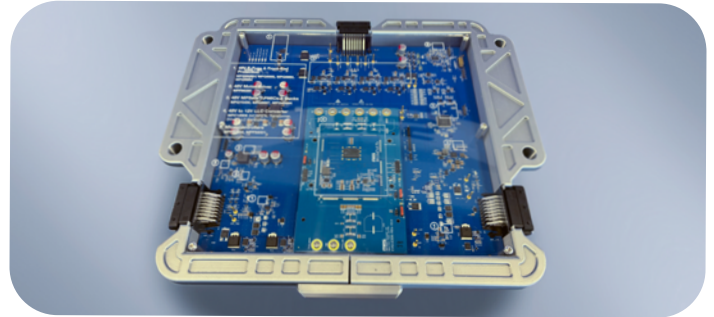
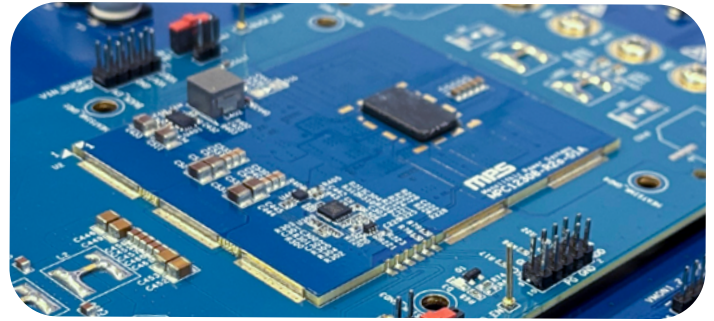
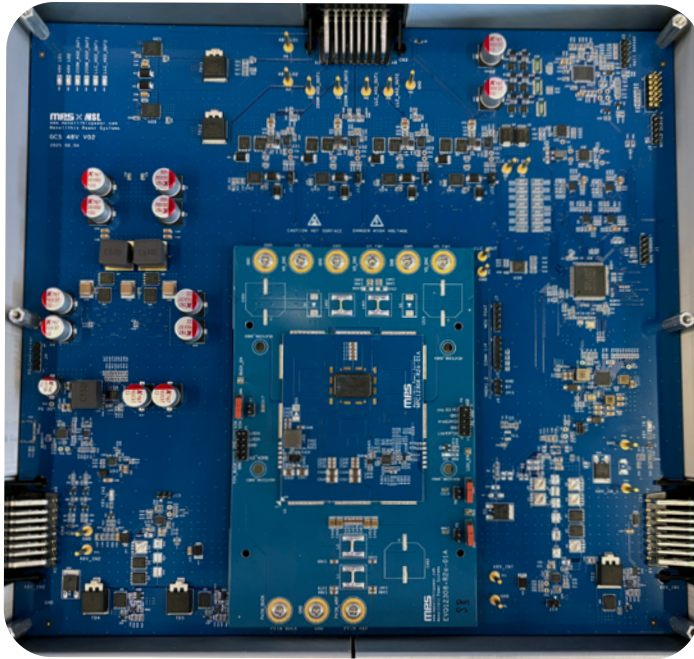


**More
Scalability**



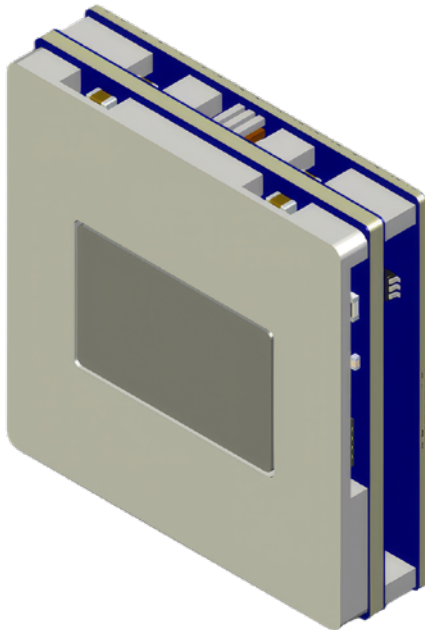
**Higher
Power Density**

48V Zonal Controller Reference Solution



MPS offers a comprehensive portfolio of solutions to address zonal power management, distribution, and monitoring. Contact MPS for details on the total system solution shown above.

400W to 2kW 48V LLC Modules



Fully integrated, compact power modules enable bidirectional, safety-ready power in 4:1 and 3:1 ratios.

Benefits:

- All-in-one integration
- Easy to use
- Ultra-high efficiency
- Engineered for safety

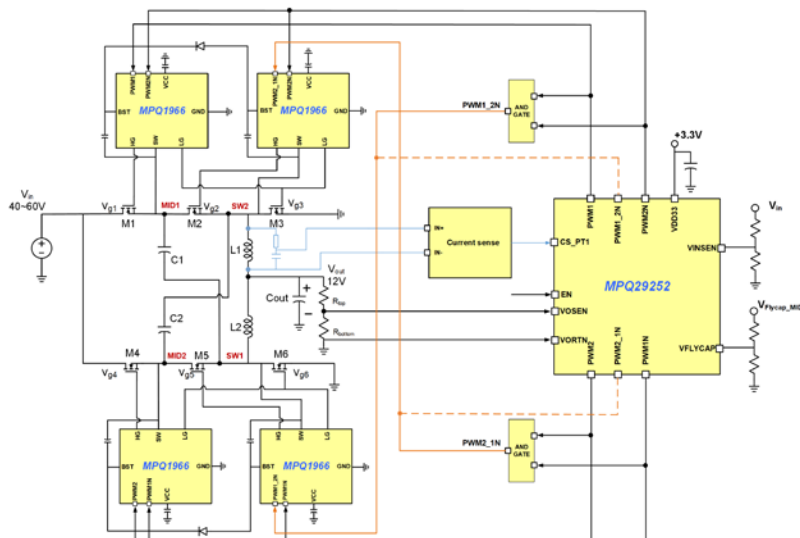
Example 48V Solutions Offered:

- E-fuses and high-side switches
- Switching regulators
- LLC converters
- Hybrid buck converters
- Compute system-on-chip (SoC) power converters
- kW power modules
- Motor drivers
- USB Type-C PD charging
- LED drivers
- Safety supervisors
- Audio amplifiers
- PMICs

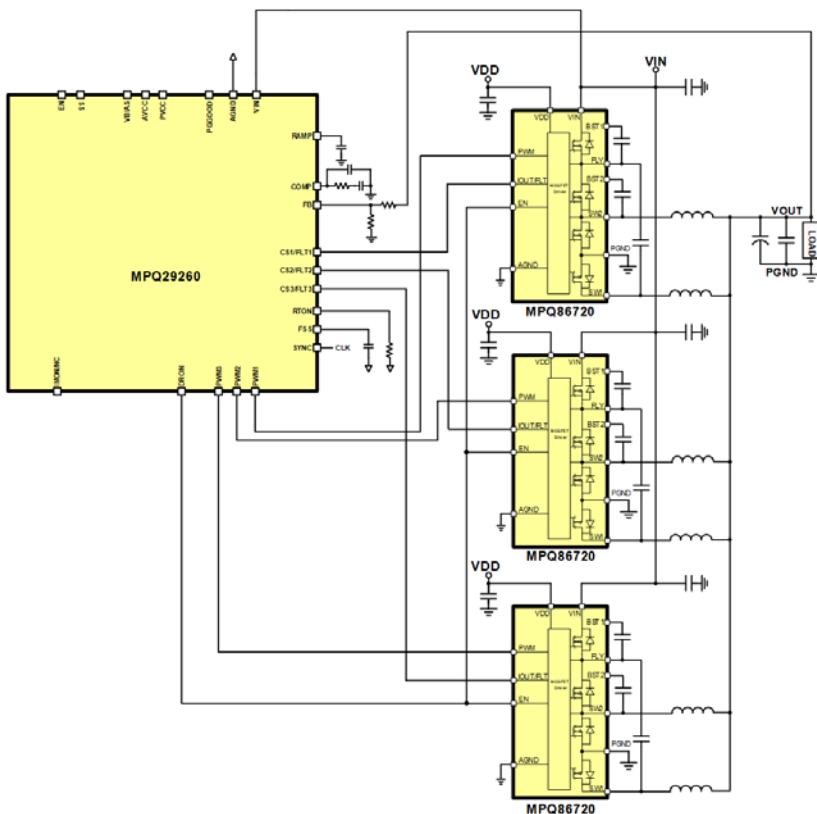
Contact MPS for more details and support.

Throughout this catalog, identify 48V-ready products with the  icon.

Additional Featured Examples

**MPQ29252-AEC1 and MPQ1966-AEC1:
Hybrid Buck Power Conversion**

- Regulated 12V or 5V output from 48V battery
- High-efficiency, hybrid buck topology
- Discrete MOSFETs for design flexibility
- Input voltage (V_{IN}), output voltage (V_{OUT}), and output current (I_{OUT}) monitoring
- Scalable power up to 4kW continuous

**MPQ29260-AEC1 and MPQ86720-AEC1:
48V Multi-Phase Controller + DrMOS**

- Regulated 5V or 3.3V output from a 48V battery
- 3-level series capacitor buck for high efficiency
- Monolithic DrMOS power stages for high density
- Built-in current, voltage, and temperature protection
- Scalable power up to 300W continuous

Buck Regulators

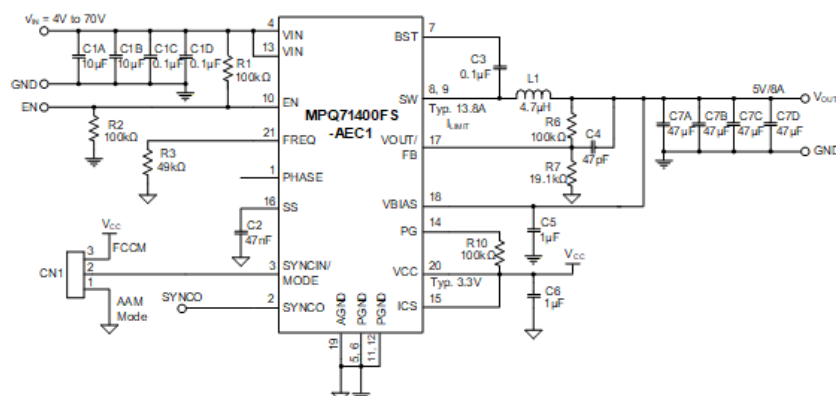
MPS offers a full variety of DC/DC step-down solutions designed to operate directly from a 12V/24V battery or at the point-of-load (PoL). Choose from power-dense integrated converters with low- $R_{DS(ON)}$ MOSFETs, or flexible controllers with external MOSFETs to easily address high current requirements. Our solutions help address common automotive design challenges such as load-dump tolerance, EMI limits, and operation above or below the AM band.



High Efficiency | EMI-Optimized | Compact Solution

MPQ71400FS-AEC1/MPQ4575-AEC1 PREVIEW

**70V, 8A, MPSafe™ ASIL-D Buck Converters
with ZDP™ Control and Quiet-FET™**



Key Specifications:

4.5V to 70V, 75V Max	200kHz to 2.1MHz	8A to 4A	1V to 90% of V_{IN}	TQFN-21 (4mmx5mm)
Input Voltage	Switching Frequency	Output Current	Output Voltage	Package

Versions:

MPQ71400FS-8000	ASIL-D 8A
MPQ71400FS-6000	ASIL-D 6A
MPQ71400FS-4000	ASIL-D 4A

MPQ4575-8000	QM 8A
MPQ4575-6000	QM 6A
MPQ4575-4000	QM 4A

Features

Built to Handle Tough Automotive Transients

- Wide input range supports load dump up to 75V and cold crank down to 4V
- Low-dropout (LDO) mode

Highly Scalable Families

- Multi-phase capability allows easy power scaling

Designed for High Performance with Integrated Features

- $\pm 1\%$ feedback (FB) tolerance
- 200kHz to 2.1MHz configurable switching frequency (f_{SW})
- Zero-Delay PWM™ (ZDP™) control for low 25ns minimum on time (t_{ON_MIN})

High Efficiency for Increased Battery Life and Improved Thermals

- 10 μ A quiescent current (I_Q), 1 μ A shutdown current (I_{SD})
- Selectable advanced asynchronous modulation (AAM) mode for light loads or forced continuous conduction mode (FCCM)
- Integrated MOSFETs
- Thermally enhanced QFN package for top-side cooling

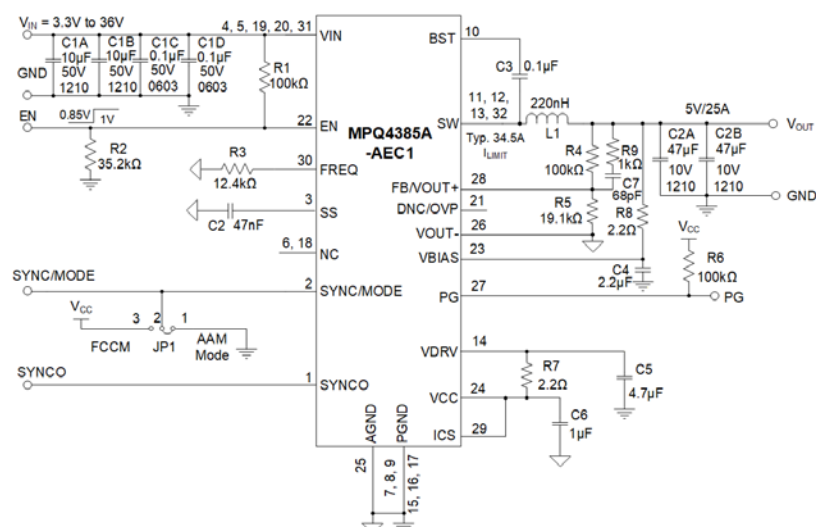
Designed for Functional Safety Requirements

- Rated for an ISO 26262 functional safety grade up to ASIL-D
- Built-in self-test (BIST)

Protections

- Precision power good (PG) indicator
- Over-current protection (OCP)
- Short-circuit protection (SCP) with hiccup mode
- Input voltage (V_{IN}) under-voltage lockout (UVLO)
- Thermal shutdown

Features



Designed for Automotive Transients

- 3.3V to 36V input voltage (V_{IN}) range
- Load dump up to 40V
- Low-dropout (LDO) mode with soft recovery

- Zero-Delay PWM™ (ZDP™) control for extremely fast transient response and minimal output capacitance (C_{OUT})
- >3X better transient performance vs. peak current mode control
- 200kHz to 2.5MHz configurable switching frequency (f_{SW})
- Differential voltage sense for high-accuracy regulation
- $\pm 1\%$ output accuracy, $\pm 1\%$ power good (PG) accuracy

- Integrated, low on resistance ($R_{DS(ON)}$) MOSFETs using MPS's BCD process
- High efficiency (>95% at 20A)
- Thermally enhanced (HTC TQFN) package to facilitate top-side cooling

- Single 25A continuous output current (I_{OUT}), supports peaks of 45A
- Up to 200A in multi-phase operation

- Symmetric VIN pinout placement
- Low noise at high frequency bands via Quiet-FET™ advanced switching technology
- Frequency spread spectrum (FSS) modulation
- Synchronizable to an external clock
- CISPR 25 Class 5 compliant
- Available in a Mesh-Connect™, TQFN-30 (5mmx6mm) package with wettable flanks

3.3V to 36V	200kHz to 2.5MHz	12A to 25A
Input Voltage	Switching Frequency	Output Current
Up to 13V	3.3V, 3.8V, 4.5V, 5V	TQFN-30 (5mmx6mm)
Adj. Output Voltage	Fixed Output Voltage	Package

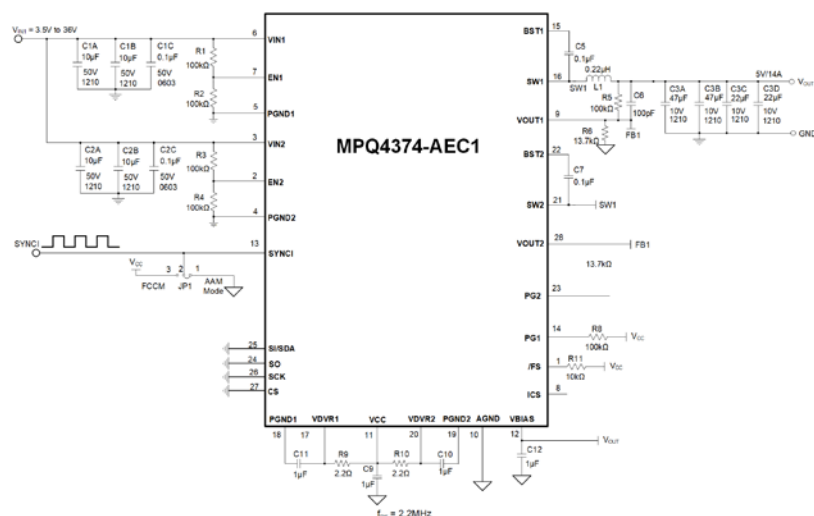
MPQ4385A-5XY0	25A
MPQ4385A-5XY1	25A Multi-Phase
MPQ4385A-2XYZ	22A
MPQ4385A-0XYZ	20A

MPQ4384-8XYZ	18A
MPQ4384-6XYZ	16A
MPQ4384-4XYZ	14A
MPQ4384-2XYZ	12A

14 Automotive Solutions

MPQ4374-AEC1 SAMPLING

42V, 12A to 16A, Multi-Phase Synchronous Buck Converter with ZDP™ Control and Quiet-FET™



Key Specifications:

	MPQ4374-6XYZ (16A)	
	MPQ4374-4XYZ (14A)	QFN-28
3.5V to 42V	MPQ4374-2XYZ (12A)	(5mmx6mm) WF
Input Voltage	Versions	Package

Applications:

Advanced Driver-Assistance Systems (ADAS)

Automotive Infotainment

Features

Built to Handle Tough Automotive Environments

- Load dump up to 42V, cold crank down to 3V
- Low quiescent current (I_Q) and shutdown current (I_{SD})

Enables High Power Density

- 16A (20A with active cooling) in single-phase operation
- Integrated ultra-low on resistance ($R_{DS(ON)}$) MOSFETs using MPS's advanced BCD process
- Zero-Delay PWM™ (ZDP™) control for extremely fast transient response and minimal output capacitance (C_{OUT})
- Mesh-Connect™ technology for improved thermals and top-side cooling

Integrated Protection Features

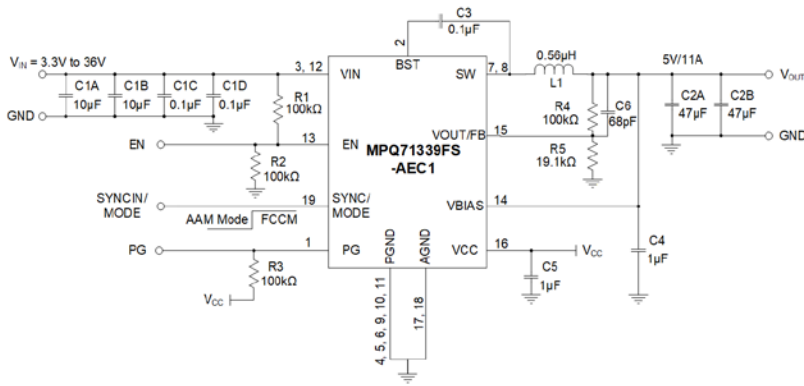
- Input voltage (V_{IN}) under-voltage protection (UVP) and over-voltage protection (OVP)
- Over-current protection (OCP) with hiccup mode
- Thermal shutdown
- 1% output accuracy
- $\pm 1\%$ power good (PG) accuracy

Optimized for EMI/EMC

- Dual frequency spread spectrum (DFSS)
- Low noise at high frequency bands via Quiet-FET™ advanced switching technology
- 250kHz to 2.5MHz switching frequency (f_{SW})
- Selectable advanced asynchronous modulation (AAM) mode or forced continuous conduction mode (FCCM)

MPQ71339FS-AEC1/MPQ4339-AEC1 PREVIEW

MPSafe™, 40V, 6A to 11A Buck Converters with ZDP™ Control and Quiet-FET™



Key Specifications:

3.3V to 40V	400kHz to 2.2MHz	6A, 8A, 10A, 11A
Input Voltage	Switching Frequency	Output Current
ASIL-D	3.3V, 3.8V, 5V	QFN-19 (4mmx4mm)
QM (MPQ4339)	Fixed Output Voltage	Package
Functional Safety		

ASIL-B Configuration

±3%	420kHz
±5%	2.2MHz
±8%	

Features

Built to Handle Tough Automotive Transients

- Load dump up to 40V, cold crank down to 3.3V
- Low-dropout (LDO) mode with soft recovery

Highly Scalable Family

- 6A to 11A output current (I_{OUT}) versions in pin-compatible family

Designed for High Performance and Reduced Component Overhead

- Zero-Delay PWM™ (ZDP™) control for extremely fast transient response and minimal output capacitance (C_{OUT})
- ±1% output accuracy and power good (PG) over-voltage (OV) and under-voltage (UV) accuracy with selectable thresholds
- 400kHz to 2.2MHz configurable switching frequency (f_{SW})
- Internal soft start (SS)
- Output discharge from the SW pin
- 25ns minimum on time (t_{ON_MIN})

High Efficiency for Increased Battery Life and Improved Thermals

- 1µA shutdown current (I_{SD}), 20µA standby current (I_{STBY})
- Advanced asynchronous modulation (AAM) mode increases efficiency under light loads
- Integrated low on resistance ($R_{DS(ON)}$) MOSFETs using MPS's BCD process

Optimized for Low EMC/EMI

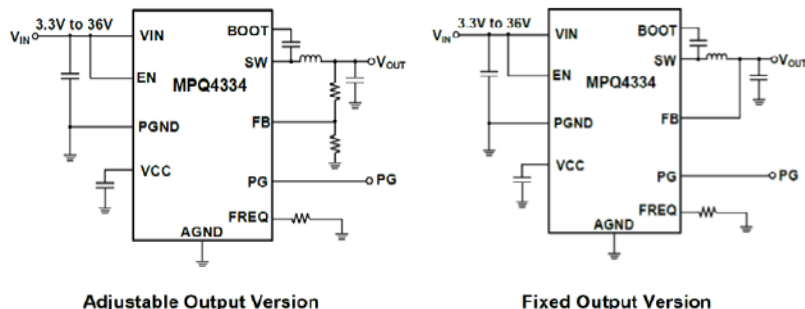
- Symmetric V_{IN} pinout placement
- Low EMI at high frequency bands via Quiet-FET™ advanced switching technology
- Frequency spread spectrum (FSS) modulation with ripple cancellation

Functional Safety System Design Capable

- MPSafe™ ASIL-D – Documentation available
- Built-in self-test (BIST)
- Dedicated bandgap (BG) to monitor OV/UV conditions

MPQ4334-AEC1

42V, 4A to 0.5A, Ultra-Compact, Low- I_Q Buck Converter



Adjustable Output Version

Fixed Output Version

Key Specifications:

3.3V to 42V	200kHz to 2.5MHz	0.5A to 4A	GDE: QFN-12 (2x3mm) GLE: QFN-12 (3x4mm) GRHE: QFN-14 (2.5x3.5mm)
Input Voltage	Switching Frequency	Output Current	Package

Available in Pin-Compatible Family:

500mA	1A	2A
MPQ4334-0xxx	MPQ4334-1xxx	MPQ4334-2xxx
3A	4A	
MPQ4334-3xxx	MPQ4334-4xxx	

Features

Built to Handle Tough Automotive Transients

- Load dump up to 42V, cold crank down to 3.3V

Designed for High Performance and Reduced Component Overhead

- 200kHz to 2.5MHz configurable switching frequency (f_{SW})
- Low-dropout (LDO) mode with soft recovery
- 50ns minimum on time and 50ns minimum off time

High Efficiency for Increased Battery Life and Improved Thermals

- Low quiescent current (I_Q , 20 μ A) and shutdown current (I_{SD} , 1 μ A)
- Integrated low- $R_{DS(ON)}$ HS-FETs and LS-FETs (55m Ω /35m Ω)
- 95%+ system efficiency at 12V V_{IN}
- Advanced asynchronous modulation (AAM) mode for higher efficiency at light loads

Built to Fit Space- and Cost-Limited Automotive Systems

- Scalable 1A to 4A output current (I_{OUT}) versions in pin-compatible family
- Compact 2mmx3mm, 3mmx4mm or 2.5mmx3.5mm package options
- P2P with the MPQ4323~MPQ4320 and MPQ4324-WXYZ series

Optimized for EMI/EMC

- Frequency spread spectrum (FSS)
- Symmetric V_{IN}
- MeshConnect™ flip-chip package technology
- Synchronizable to an external clock (orderable option)
- Configurable f_{SW} (orderable option)

2.7V to 6V	2MHz to 4MHz	FCLGA (3mmx4.5mm)
Input Voltage	Switching Frequency	Package
30A Continuous	3mΩ/2mΩ	
Output Current	HS-FET/LS-FET $R_{DS(ON)}$	

MPQ71020FS-WXYZ	40A Peak, 30A, ASIL-D/
MPQ2290-WXYZ	ASIL-B QM

- Up to 40A peak, 30A continuous high-power capability
- Fast transient performance
- 1% output accuracy

- Integrated, low-resistance high-side and low-side MOSFETs (HS-FET and LS-FET, respectively)

- Zero-Delay PWM™ (ZDP™) control for extremely fast transient response and reduced output capacitance
- Low noise at high frequency bands by Quiet-FET™ advanced switching technology
- 2MHz to 4MHz configurable switching frequency (f_{sw})
- Frequency spread spectrum (FSS)
- Synchronization input
- Differential output voltage (V_{out}) sense

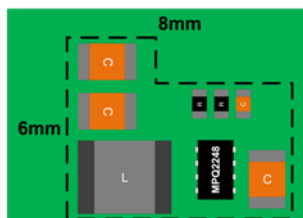
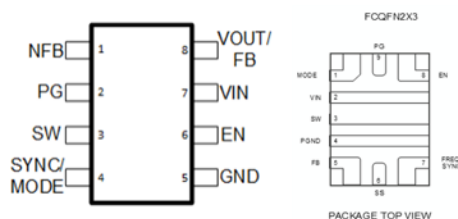
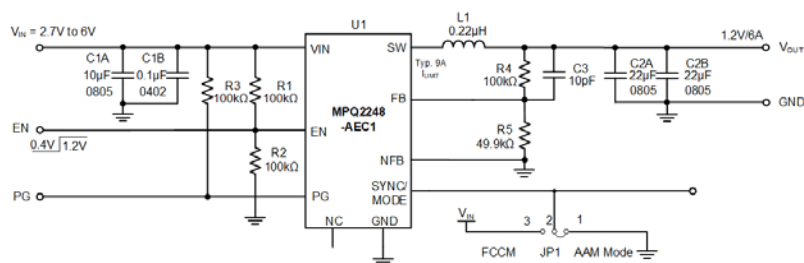
- ASIL-D/ASIL-B rated with redundant bandgap
- Digital independent safety fault indicator
- Start-up and online analog built-in self-test (ABIST) and logic built-in self-testing (LBIST)
- V_{OUT} open detection, power good (PG) readback
- Output over-voltage protection (OVP) and under-voltage protection (UVP), short-circuit protection (SCP), and over-current protection (OCP)
- Thermal warning and thermal shutdown

- Configurable I²C interface
- Dynamic voltage scaling (DVS)
- Factory-programmable multi-page one-time programmable (OTP) memory
- Write protection and cyclic redundancy check (CRC)

- MPSafe™ – Functional Safety rating of ASIL-D/ASIL-B

MPQ2248-AEC1 SAMPLING

6V, 8A to 6A, Sync Buck Converter with ZDP™, Quiet-FET™, and FSS



Key Specifications:

2.5V to 6V **2.2MHz to 4MHz** **6A, 8A (Peak)**
 Input Voltage Switching Frequency Output Current

From 0.4V to 5.5V **SOT583, TLGA-9 (2mmx3mm)**
 Output Voltage Package

Features

Built to Handle Tough Automotive Transients

- Zero-Delay PWM (ZDP™) control for excellent transient performance and minimal output capacitance (C_{OUT})
- AEC-Q100 Grade 1

Ideal for Automotive Point-of-Load (PoL) Power Supplies

- Compact SOT583 solution size in cost-optimized design
- Up to 6A (8A peak) of continuous output current (I_{OUT}) in a 40mm² solution
- Output voltage (V_{OUT}) adjustable as low as 0.4V or fixed
- Low noise at high frequency bands via Quiet-FET™ advanced switching technology

Cooler Thermals and Excellent System Performance

- Integrated low on resistance ($R_{DS(ON)}$) MOSFETs
- 1% feedback (FB) accuracy
- Differential V_{OUT} sense
- Fixed 2.2MHz and 4MHz switching frequency (f_{SW}) options to avoid AM band
- Internal soft start (SS): 0.5ms (default), 1ms, 2ms, or 4ms
- 100% duty cycle
- External synchronization and mode selection
- $\pm 5\%$ frequency spread spectrum (FSS)

System Scalability

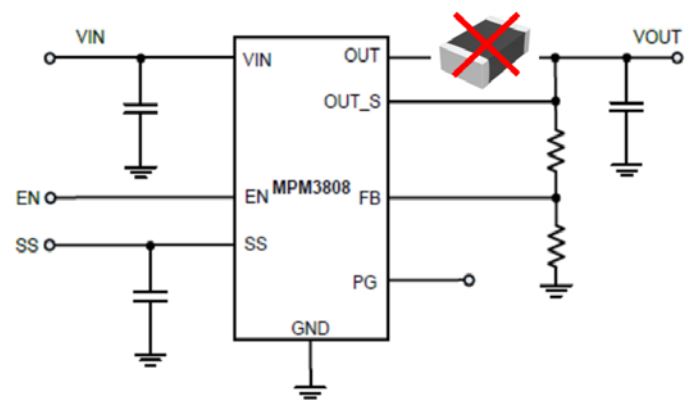
- All parts in the series are pin-to-pin and easy to platform design

Protection Capability

- Power good (PG) with over-voltage (OV) detection
- Input and output OV protection (OVP)
- Short-circuit protection (SCP) with hiccup mode
- Thermal shutdown

MPM3808-AEC1 Module Series

5.5V, 3A, Synchronous Step-Down Module Series with Integrated Inductor



Key Specifications:

2.5V to 5.5V	2.4MHz	1A to 3A	Fixed: 1V, 1.1V, 1.2V 1.5V 1.8V, 2.5V, 2.8V, 3.3V Adj: From 0.6V	QFN-15 (3mmx4mm)
Input Voltage	Switching Frequency	Output Current	Output Voltage	Package

Available in Pin-Compatible Family:

MPM3806C	1A, FCCM	MPM3806	1A, AAM Mode
MPM3807C	2A, FCCM	MPM3807	2A, AAM Mode
MPM3808C	3A, FCCM	MPM3808	3A, AAM Mode

Features

Built to Fit Space-Limited Automotive Systems

- Compact step-down converter with 470nH integrated inductor

Fast Response and Easy Loop Stabilization

- Fast transient response and simple control loop
- Constant-on-time (COT) control

Excellent System Performance

- Integrated low-ohmic FETs
- 1% feedback (FB) accuracy
- External soft-start control

Digital and Rich Protections

- Enable (EN) and power good (PG) for sequencing
- Output discharge
- Output over-voltage protection (OVP)

Buck Regulators

5V Synchronous Buck

	Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _O (Typ) (μA)	f _{SW} (kHz)	R _{DS(on)} (mΩ)	Fixed-Output Versions (V)	Soft Start	Ext Sync	FCCM	AAM Mode	COT Control	100% Duty Cycle	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
	MPM3805A-AEC1	2.6	6	0.6	1.2	485	3500	120/70	-	Int	-	✓	-	✓	✓	-	✓	QFN-12 (2.5x3x0.9)	Module with integrated inductor
N	MPM3805B-AEC1	2.5	6	0.6	2.1	485	3500	100/60	1.2, 1.8	Int	-	✓	-	✓	✓	-	✓	QFN-12 (2.5x3x0.9)	Module with integrated inductor
	MPM3808-AEC1	2.5	5.5	3	5	21	2400	65/35	1.2, 1.8	Ext	-	-	✓	✓	✓	✓	✓	QFN-15 (3x4x1.6)	Module with integrated inductor
	MPM3808C-AEC1	2.5	5.5	3	5	460	2400	65/35	1.2, 1.8	Ext	-	✓	-	✓	✓	✓	✓	QFN-15 (3x4x1.6)	Module with integrated inductor
	MPM3807-AEC1	2.5	5.5	2	3.5	21	2400	70/40	1.2, 1.8	Ext	-	-	✓	✓	✓	✓	✓	QFN-15 (3x4x1.6)	Module with integrated inductor
	MPM3807C-AEC1	2.5	5.5	2	3.5	460	2400	70/40	1.2, 1.8	Ext	-	✓	-	✓	✓	✓	✓	QFN-15 (3x4x1.6)	Module with integrated inductor
	MPM3806-AEC1	2.5	5.5	1	2.5	21	2400	75/45	1.2, 1.8	Ext	-	-	✓	✓	✓	✓	✓	QFN-15 (3x4x1.6)	Module with integrated inductor
	MPM3806C-AEC1	2.5	5.5	1	2.5	460	2400	75/45	1.2, 1.8	Ext	-	✓	-	✓	✓	✓	✓	QFN-15 (3x4x1.6)	Module with integrated inductor
	MPQ2177-AEC1	2.5	5.5	1	2.5	460	2400	90/50	1.2, 1.8	Ext	-	✓	-	✓	✓	✓	✓	QFN-8 (1.5x2)	MPQ2177 scalable series, ultra-compact
	MPQ2177A-AEC1	2.5	5.5	1	2.5	21	2400	90/50	-	Ext	-	-	✓	✓	✓	✓	✓	QFN-8 (1.5x2)	MPQ2177 scalable series, ultra-compact
	MPM3810A-AEC1	2.6	6	1.2	2.1	485	3500	110/60	-	Int	-	✓	-	✓	✓	-	✓	QFN-12 (2.5x3x0.9)	Module with integrated inductor
	MPQ2178-AEC1	2.5	5.5	2	3.5	460	2400	80/40	1.2, 1.8	Ext	-	✓	-	✓	✓	✓	✓	QFN-8 (1.5x2)	MPQ2177 scalable series, ultra-compact
	MPQ2178A-AEC1	2.5	5.5	2	3.5	21	2400	80/40	-	Ext	-	-	✓	✓	✓	✓	✓	QFN-8 (1.5x2)	MPQ2177 scalable series, ultra-compact
	MPQ2123-AEC1	2.7	6	2	6.3	42	300 to 2200	35/25	-	Ext	✓	✓	✓	-	✓	✓	✓	QFN-11 (2x3)	MPQ2167 scalable series
	MPQ2179-AEC1	2.5	5.5	3	5	460	2400	65/35	-	Ext	-	✓	-	✓	✓	✓	✓	QFN-8 (1.5x2)	MPQ2177 scalable series, ultra-compact
	MPQ2179A-AEC1	2.5	5.5	3	5	21	2400	65/35	-	Ext	-	-	✓	✓	✓	✓	✓	QFN-8 (1.5x2)	MPQ2177 scalable series, ultra-compact
N	MPQ2177F-AEC1	2.5	6.5	1	2.5	21	2500	55/31	1.2, 1.8	Ext	✓	-	✓	✓	✓	✓	✓	QFN-8 (1.5x2.5)	6V, power good

		Part Number	V _{IN} (Min) (V)		V _{IN} (Max) (V)		I _{OUT} (A)		I _{SW} Limit (Typ) (A)		I _Q (Typ) (μA)		f _{SW} (kHz)		R _{DS(ON)} (mΩ)		Fixed-Output Versions (V)		Soft Start		Ext Sync		FCCM		AAM Mode		COT Control		100% Duty Cycle		Fixed Frequency		Wettable Flank QFN Option		Package	Notes
N	MPQ2178F-AEC1	2.5	6.5	2	3.5	21	2500	55/31	1.2, 1.8	Ext	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-8 (1.5x2.5)	6V, power good			
N	MPQ2179F-AEC1	2.5	6.5	3	5	21	2500	55/31	1.2, 1.8	Ext	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-8 (1.5x2.5)	6V, power good			
N	MPQ2177H-AEC1	2.5	6.5	1	2.5	21	2500	55/31	1.2, 1.8	Ext	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-8 (1.5x2.5)	6V, power good			
N	MPQ2178H-AEC1	2.5	6.5	2	3.5	21	2500	55/31	1.2, 1.8	Ext	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-8 (1.5x2.5)	6V, power good			
N	MPQ2179H-AEC1	2.5	6.5	3	5	21	2500	55/31	1.2, 1.8	Ext	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-8 (1.5x2.5)	6V, power good			
S	MPQ2277-AEC1	2.5	6.5	1/1	2.5	930	2500	50/26	-	Ext	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-16 (2.5x3.5)	6V, power good			
S	MPQ2277A-AEC1	2.5	6.5	1/1	2.5	42	2500	50/26	-	Ext	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-16 (2.5x3.5)	6V, power good			
S	MPQ2279-AEC1	2.5	6.5	3/3	5	930	2500	50/26	-	Ext	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-16 (2.5x3.5)	6V, power good			
S	MPQ2279A-AEC1	2.5	6.5	3/3	5	42	2500	50/26	-	Ext	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-16 (2.5x3.5)	6V, power good			
N	MPQ2183-xxxx-AEC1	2.5	6.5	3	5	21	2400	50/26	-	Ext	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-8 (1.5x2.5)	6V, 1A to 3A, FSS			
N	MPQ2183A-xxxx-AEC1	2.5	6.5	3	5	21	2500	50/26	0.8, 1.1, 1.2, 1.35, 1.7, 1.8, 1.9	Ext	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-8 (1.5x2.5)	6V, 1A to 3A, 2.5MHz fixed output, FSS			
	MPQ2124-AEC1	2.7	6	3	6.3	42	300 to 2200	35/25	-	Ext	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-11 (2x3)	MPQ2167 scalable series			
	MPQ2167-AEC1	2.7	6	4	6.7	42	300 to 2200	35/25	-	Ext	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-11 (2x3)	MPQ2167 scalable series			
	MPQ2167B-AEC1	2.7	6	4	6.7	42	300 to 2200	35/25	-	Ext	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-11 (2x3)	MPQ2167 scalable series			
	MPQ2180-AEC1	2.7	6	6	12.7	285	850 to 2200	38/21	0.8, 1	Int	-	✓	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	QFN-14 (2.5x3)	-				
	MPQ8847A-AEC1	2.7	6	6	12.7	285	850 to 2200	22/40	-	Int	-	✓	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	QFN-14 (2.5x3)	-				
	MPQ2167A-AEC1	2.7	6	6	9	42	300 to 2200	35/25	-	Ext	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-14 (3x3)	MPQ2167 scalable series				
N	MPQ2176-4000-AEC1	2.4	6	4	7	15	2200	12/8	-	Int	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-7 (1.5x2.5)	-				
N	MPQ2176-4001-AEC1	2.4	6	4	7	15	2200	12/8	-	Int	-	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-7 (1.5x2.5)	-				

	Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _D (Typ) (μA)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Fixed-Output Versions (V)	Soft Start	Ext Sync	FCCM	AAM Mode	COT Control	100% Duty Cycle	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
N	MPQ2176-5000-AEC1	2.4	6	5	9	15	2200	12/8	-	Int	-	-	✓	✓	✓	✓	✓	QFN-7 (1.5x2.5)	-
N	MPQ2176-5001-AEC1	2.4	6	5	9	15	2200	12/8	-	Int	-	✓	-	✓	✓	✓	✓	QFN-7 (1.5x2.5)	-
N	MPQ2176-6000-AEC1	2.4	6	6	10.5	15	2200	12/8	-	Int	-	-	✓	✓	✓	✓	✓	QFN-7 (1.5x2.5)	-
N	MPQ2176-6001-AEC1	2.4	6	6	10.5	15	2200	12/8	-	Int	-	✓	-	✓	✓	✓	✓	QFN-7 (1.5x2.5)	-
N	MPQ2176A-600x-AEC1	2.4	5.5	6	10.5	15	2200	18/9	-	Int	-	✓	✓	✓	✓	✓	-	TLGA-13 (2x2.5)	-
S	MPQ2176B-400x-AEC1	2.4	5.5	4	7	15	2200	15/9	-	Int	-	✓	✓	✓	✓	✓	-	TLGA-9 (2x3)	P2P with the MPQ2244
S	MPQ2176B-600x-AEC1	2.4	5.5	6	10.5	15	2200	15/9	-	Int	-	✓	✓	✓	✓	✓	-	TLGA-9 (2x3)	P2P with the MPQ2246
	MPQ2169A-AEC1	2.7	6	2.8 (Dual)	4	65	350 to 3000	60/25	-	Ext	✓	✓	✓	-	✓	✓	✓	QFN-18 (2.5x3.5), QFN-18 (2x3)	Dual-output, 2.8A total with 2A single-channel max
	MPQ2169B-AEC1	2.7	6	2.8 (Dual)	4	65	350 to 3000	60/25	-	Ext	✓	✓	-	-	✓	✓	✓	QFN-18 (2.5x3.5), QFN-18 (2x3)	Dual-output, 2.8A total with 2A single-channel max, CCM only
	MPQ2166A-AEC1	2.7	6	4 (Dual)	4.5	65	350 to 3000	55/20	-	Ext	✓	✓	✓	-	✓	✓	✓	QFN-18 (2.5x3.5), QFN-18 (2x3)	Dual-output, 4A total with 3A single-channel max
	MPQ2166B-AEC1	2.7	6	4 (Dual)	4.5	65	350 to 3000	55/20	-	Ext	✓	✓	-	-	✓	✓	✓	QFN-18 (2.5x3.5), QFN-18 (2x3)	Dual-output, 4A total with 3A single-channel max, CCM only
N	MPQ2283-AEC1	2.7	6	6	7	-	Adj	6/4	-	Int	✓	✓	✓	-	-	✓	✓	QFN-18 (3x4)	Multi-page memory, selectable V _{OUT}
N	MPQ2284-AEC1	2.7	6	8	9.3	-	Adj	6/4	-	Int	✓	✓	✓	-	-	✓	✓	QFN-18 (3x4)	Multi-page memory, selectable V _{OUT}
N	MPQ2285-AEC1	2.7	6	10	12	-	Adj	6/4	-	Int	✓	✓	✓	-	-	✓	✓	QFN-18 (3x4)	Multi-page memory, selectable V _{OUT}
	MPQ2286-AEC1	2.7	6	12	15	-	Adj	6/4	-	Int	✓	✓	✓	-	-	✓	✓	QFN-18 (3x4)	Multi-page memory, selectable V _{OUT}
	MPQ2287-AEC1	2.7	6	14	17	-	Adj	6/4	-	Int	✓	✓	✓	-	-	✓	✓	QFN-18 (3x4)	Multi-page memory, selectable V _{OUT}
	MPQ2288-AEC1	2.7	6	16	19	-	Adj	6/4	-	Int	✓	✓	✓	-	-	✓	✓	QFN-18 (3x4)	Multi-page memory, selectable V _{OUT}
S	MPQ71017FS-xxxx-AEC1	2.7	6	15	45	2000	2000, 2200, 3000, 4000	3/2	-	✓	✓	✓	✓	-	-	-	-	TLGA-22 (3.5x5)	MPSafe™, ZDP™ control

	Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _D (Typ) (μA)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Fixed-Output Versions (V)	Soft Start	Ext Sync	FCCM	AAM Mode	COT Control	100% Duty Cycle	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
S	MPQ71018FS-xxxx-AEC1	2.7	6	20	45	2000	2000, 2200, 3000, 4000	3/2	-	✓	✓	✓	✓	-	-	-	-	TLGA-22 (3.5x5)	MPSafe™, ZDP™ control
S	MPQ71019FS-xxxx-AEC1	2.7	6	25	45	2000	2000, 2200, 3000, 4000	3/2	-	✓	✓	✓	✓	-	-	-	-	TLGA-22 (3.5x5)	MPSafe™, ZDP™ control
S	MPQ71020FS-xxxx-AEC1	2.7	6	30	45	2000	2000, 2200, 3000, 4000	3/2	-	✓	✓	✓	✓	-	-	-	-	TLGA-25 (3x4.5)	MPSafe™, ZDP™ control
S	MPQ2295-xxxx-AEC1	2.7	6	15 to 30	45	2000	2000, 2200, 3000, 4000	3/2	-	✓	✓	✓	✓	-	-	-	-	TLGA-22 (3.5x4.5)	ZDP™ control
S	MPQ71411FS-xxxx-AEC1	2.7	6	30	45	2000	2000, 2200, 3000, 4000	3/2	-	✓	✓	✓	✓	-	-	-	-	TLGA-22 (3.5x5)	MPSafe™, ZDP™ control
S	MPQ2294-xxxx-AEC1	2.7	6	30	45	2000	2000, 2200, 3000, 4000	3/2	-	✓	✓	✓	✓	-	-	-	-	TLGA-22 (3.5x5)	ZDP™ control
N	MPQ2211-AEC1	4	6	12	-	650	2200	13.3/3.8	-	✓	-	✓	✓	✓	-	✓	-	LGA-19 (3x3.5)	Configurable current limit
S	MPQ2247-AEC1	2.5	6	4	-	20	2200 to 4000	35/12	-	✓	✓	✓	✓	-	-	✓	-	SOT583	FSS, synchronization
S	MPQ2248-AEC1	2.5	6	8	-	20	2200 to 4000	12/8	-	✓	✓	✓	✓	-	-	✓	-	SOT583	FSS, synchronization

18V to 24V Synchronous Buck

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_{SW} Limit (Typ) (A)	I_O (Typ) (μ A)	V_{FB} (V)	f_{SW} (kHz)	$R_{DS(ON)}$ (m Ω)	Fixed-Output Versions (V)	Soft Start	Ext Sync	FCCM	AAM Mode	COT Control	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
MPQ4409-AEC1	4	24	0.9	1	600	0.807	450 to 2200	90/50	-	Int	✓	✓	-	-	✓	✓	QFN-13 (2.5x3)	-
MPQ3524-0500-AEC1	3.3	22	0.5	1	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	-	✓	-	-	✓	QFN-12 (2x3)	-
MPQ3524-0501-AEC1	3.3	22	0.5	1	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	-	-	✓	QFN-12 (2x3)	-
MPQ3524-1000-AEC1	3.3	22	1	1.5	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	-	✓	-	-	✓	QFN-12 (2x3)	-
MPQ3524-1001-AEC1	3.3	22	1	1.5	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	-	-	✓	QFN-12 (2x3)	-
MPQ3524-1500-AEC1	3.3	22	1.5	1.8	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	-	✓	-	-	✓	QFN-12 (2x3)	-
MPQ3524-1501-AEC1	3.3	22	1.5	1.8	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	-	-	✓	QFN-12 (2x3)	-
MPQ3524-2000-AEC1	3.3	22	2	2.7	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	-	✓	-	-	✓	QFN-12 (2x3)	-
MPQ3524-2001-AEC1	3.3	22	2	2.7	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	-	-	✓	QFN-12 (2x3)	-
MPQ3524-3000-AEC1	3.3	22	3	4.4	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	-	✓	-	-	✓	QFN-12 (2x3)	-
MPQ3524-3001-AEC1	3.3	22	3	4.4	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	-	-	✓	QFN-12 (2x3)	-
MPQ8861-AEC1	2.85	18	12	14	420	0.6	500 to 1250	15/4.5	-	Ext	-	-	-	✓	✓	✓	QFN-14 (3x4)	Can be used for 5V/3.3V input or regulated 12V _{IN} , integrated telemetry for voltage and current readout

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _Q (Typ) (μA)	V _{FB} (V)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Fixed-Output Versions (V)	Soft Start	Ext Sync	FCCM	AAM Mode	COT Control	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
N	MPQ4110-0XYZ-AEC1	3	22	0.5	1	20	0.8	450 to 2200	300/200	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	-	TSOT23-8	-
N	MPQ4110-1XYZ-AEC1	3	22	1	1.7	20	0.8	450 to 2200	300/200	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	-	TSOT23-8	-
N	MPQ4111-0XYZ-AEC1	3	22	0.5	1.35	20	0.8	200 to 2500	65/45	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	-
N	MPQ4111-1XYZ-AEC1	3	22	1	2	20	0.8	200 to 2500	65/45	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	-
N	MPQ4111-2XYZ-AEC1	3	22	2	3.4	20	0.8	200 to 2500	65/45	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	-
N	MPQ4111-3XYZ-AEC1	3	22	3	5.8	20	0.8	200 to 2500	65/45	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	-
N	MPQ4111-4XYZ-AEC1	3	22	4	6.5	20	0.8	200 to 2500	65/45	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	-

40V to 50V Synchronous Buck with Frequency Spread Spectrum

	Part Number	V _{IN} (Min) (V)		V _{IN} (Abs Max) (V)		I _{OUT} (A)		I _{SW} Limit (Typ) (A)		I _a (Typ) (μA)		V _{FB} (V)		f _{SW} (kHz)		R _{DS(ON)} (mΩ)		Fixed-Output Versions (V)		Soft Start		Ext Sync		Frequency Spread Spectrum		FCCM		AAM Mode		Zero-Delay PWM™		Wettable Flank QFN Option		Package	Notes
	MPQ4320-AEC1	3.3	42	0.5	1.2	20	0.8	350 to 2500	70/ 50	3.3, 5	Int	-	✓	✓	✓	✓	-	✓	QFN-12 (2x3)	MPQ4320 series, ultra-compact															
	MPQ4321-AEC1	3.3	42	1	2	20	0.8	350 to 2500	70/ 50	3.3, 5	Int	-	✓	✓	✓	✓	-	✓	QFN-12 (2x3)	MPQ4320 series, ultra-compact															
	MPQ4322-AEC1	3.3	42	2	3.4	20	0.8	350 to 2500	70/ 50	3.3, 5	Int	-	✓	✓	✓	✓	-	✓	QFN-12 (2x3)	MPQ4320 series, ultra-compact															
	MPQ4323-AEC1	3.3	42	3	5.8	20	0.8	350 to 2500	70/ 50	3.3, 5	Int	-	✓	✓	✓	✓	-	✓	QFN-12 (2x3)	MPQ4320 series, ultra-compact															
	MPQ4324E-AEC1	3.3	42	3 (4 Peak)	6.5	20	0.8	350 to 2500	70/ 50	3.3, 5	Int	-	✓	✓	✓	✓	-	✓	QFN-12 (2x3)	MPQ4320 series, ultra-compact															
	MPQ4323M-AEC1	3.3	42	3	5.8	20	0.8	350 to 2500	70/ 50	3.3, 5	Int	-	✓	✓	✓	✓	-	✓	QFN-12 (3.5x3.5)	MPQ4320 series, ultra-compact, int. input capacitors															
N	MPQ4331-0XYZ-AEC1	3	40	0.5	1	20	0.8	450 to 2200	300/ 200	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	-	-	TSOT23-8	-															
N	MPQ4331-1XYZ-AEC1	3	40	1	1.7	20	0.8	450 to 2200	300/ 200	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	-	-	TSOT23-8	-															
	MPQ4334-0XYZ-AEC1	3	40	0.5	1.35	20	0.8	200 to 2500	65/ 45	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4324 series															
	MPQ4334-1XYZ-AEC1	3	40	1	2	20	0.8	200 to 2500	65/ 45	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4324 series															

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_{SW} Limit (Typ) (A)	I_Q (Typ) (μ A)	V_{FB} (V)	f_{SW} (kHz)	$R_{DS(ON)}$ (m Ω)	Fixed-Output Versions (V)	Soft Start	Ext Sync	Frequency Spread Spectrum	FCCM	AAM Mode	Zero-Delay PWM™	Wettable Flank QFN Option	Package	Notes
MPQ4334-2XYZ-AEC1	3	40	2	3.4	20	0.8	200 to 2500	65/45	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4324 series
MPQ4334-3XYZ-AEC1	3	40	3	5.8	20	0.8	200 to 2500	65/45	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4324 series
MPQ4334-4XYZ-AEC1	3	40	4	6.5	20	0.8	200 to 2500	65/45	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4324 series
MPQ4324-0500-AEC1	3.3	40	0.5	1	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4334 series
MPQ4324-0501-AEC1	3.3	40	0.5	1	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	✓	-	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4334 series
MPQ4324-1000-AEC1	3.3	40	1	1.5	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4334 series
MPQ4324-1001-AEC1	3.3	40	1	1.5	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	✓	-	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4334 series
MPQ4324-1500-AEC1	3.3	40	1.5	1.8	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4334 series

	Part Number	V _{IN} (Min) (V)		V _{IN} (Abs Max) (V)		I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _Q (Typ) (μA)	V _{FB} (V)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Fixed-Output Versions (V)	Soft Start		Ext Sync	Frequency Spread Spectrum	FCCM	AAM Mode	Zero-Delay PWM™	Wettable Flank QFN Option	Package	Notes
	MPQ4324-1501-AEC1	3.3	40	1.5	1.8	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	✓	-	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4334 series			
	MPQ4324-2000-AEC1	3.3	40	2	2.7	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4334 series			
	MPQ4324-2001-AEC1	3.3	40	2	2.7	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	✓	-	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4334 series			
	MPQ4324-3000-AEC1	3.3	40	3	4.4	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4334 series			
	MPQ4324-3001-AEC1	3.3	40	3	4.4	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	✓	-	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4334 series			
	MPQ4324-4000-AEC1	3.3	40	4 Peak	5	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4334 series			
	MPQ4324-4001-AEC1	3.3	40	4 Peak	5	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	✓	-	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4334 series			
N	MPQ8883-AEC1	3.5	45	3	5	600	0.8	250 to 2500	95/50	-	Int	-	✓	✓	✓	-	-	QFN-16 (3x3)	Many features configurable via I²C and memory			

Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _Q (Typ) (μA)	V _{FB} (V)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Fixed-Output Versions (V)	Soft Start	Ext Sync	Frequency Spread Spectrum	FCCM	AAM Mode	Zero-Delay PWM™	Wettable Flank QFN™	Package	Notes
MPQ4340-AEC1	3.3	42	4	7.7	2.5	-	350 to 2500	60/35	3.3, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Multi-phase, ultra-low I _Q
MPQ4341-AEC1	3.3	42	5	7.7	3	-	350 to 2500	60/35	3.3, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Multi-phase, ultra-low I _Q
MPQ4345-AEC1	3.3	42	2	5.8	3	-	350 to 2500	60/35	3.3, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Single-phase, ultra-low I _Q
MPQ4346-AEC1	3.3	42	3	5.8	3	-	350 to 2500	60/35	3.3, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Single-phase, ultra-low I _Q
MPQ4347-AEC1	3.3	42	4	7.7	3	-	350 to 2500	60/35	3.3, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Single-phase, ultra-low I _Q
MPQ4348-AEC1	3.3	42	5	7.7	3	-	350 to 2500	60/35	3.3, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Single-phase, ultra-low I _Q
MPQ4340A-2XYZ-AEC1	3.3	42	2	4.4	3	0.6	350 to 2500	60/35	1, 1.1, 1.8, 2.5, 3, 3.3, 3.8, 4, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Multi-phase capable
MPQ4340A-3XYZ-AEC1	3.3	42	3	4.4	3	0.6	350 to 2500	60/35	1, 1.1, 1.8, 2.5, 3, 3.3, 3.8, 4, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Multi-phase capable
MPQ4340A-4XYZ-AEC1	3.3	42	4	5.9	3	0.6	350 to 2500	60/35	1, 1.1, 1.8, 2.5, 3, 3.3, 3.8, 4, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Multi-phase capable
MPQ4340A-5XYZ-AEC1	3.3	42	5	5.9	3	0.6	350 to 2500	60/35	1, 1.1, 1.8, 2.5, 3, 3.3, 3.8, 4, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Multi-phase capable
MPQ4340A-6XYZ-AEC1	3.3	42	6	7.2	3	0.6	350 to 2500	60/35	1, 1.1, 1.8, 2.5, 3, 3.3, 3.8, 4, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Multi-phase capable

		Part Number		V _{IN} (Min) (V)		V _{IN} (Abs Max) (V)		I _{OUT} (A)		I _{SW} Limit (Typ) (A)		I _Q (Typ) (μA)		V _{FB} (V)		f _{SW} (kHz)		R _{DS(ON)} (mΩ)		Fixed-Output Versions (V)		Soft Start		Ext Sync		Frequency Spread Spectrum		FCCM		AAM Mode		Zero-Delay PWM™		Wettable Flank QFN Option		Package		Notes	
		MPQ4312-AEC1	3.3	50	2	5.5	18	0.815	350 to 530	48/20	3.3, 5	Ext	✓	✓	✓	✓	-	✓	QFN-20 (4x4)	MPQ4312 series																			
		MPQ4313-AEC1	3.3	50	3	5.5	18	0.815	350 to 530	48/20	3.3, 5	Ext	✓	✓	✓	✓	-	✓	QFN-20 (4x4)	MPQ4312 series																			
		MPQ4314-AEC1	3.3	50	4	8	18	0.815	350 to 530	48/20	3.3, 5	Ext	✓	✓	✓	✓	-	✓	QFN-20 (4x4)	MPQ4312 series																			
		MPQ4315-AEC1	3.3	50	5	8	18	0.815	350 to 530	48/20	3.3, 5	Ext	✓	✓	✓	✓	-	✓	QFN-20 (4x4)	MPQ4312 series																			
		MPQ4316-AEC1	3.3	50	6	13	18	0.815	350 to 530	48/20	3.3, 5	Ext	✓	✓	✓	✓	-	✓	QFN-20 (4x4)	MPQ4312 series																			
		MPQ4317-AEC1	3.3	50	7	13	18	0.815	350 to 530	48/20	3.3, 5	Ext	✓	✓	✓	✓	-	✓	QFN-20 (4x4)	MPQ4312 series																			
		MPQ4436A-AEC1	3.3	50	6	13	18	0.815	420	48/20	3.3, 5	Ext	✓	✓	✓	✓	-	✓	QFN-20 (4x4)	Multi-phase, low I _Q																			
		MPQ4480-AEC1	4.2	40	6	17/22	1000	1	235 to 2200	20/15	-	Int	✓	✓	-	-	-	✓	QFN-25 (4x5)	Adjustable line drop compensation																			
N		MPQ8856-AEC1 (Hybrid)	4	40	5	11	400	0.825	450/1000	20	-	Int	-	✓	-	-	-	✓	QFN-16 (3x3)	Low-side int., supports 100% duty cycle and PMBus interface																			
N		MPQ8857-AEC1	4	40	5	11	400	0.825	450/1000	20/18	-	Int	-	✓	-	-	-	✓	QFN-16 (3x3)	Supports 100% duty cycle and PMBus interface																			
		MPM3551-AEC1	3.3	42	3	5.8	20	0.8	2200	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	✓	-	✓	QFN-20 (4x6)	Module with integrated inductor																			
		MPM3551C-AEC1	3.3	42	3	5.8	20	0.8	2200	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	✓	-	-	✓	QFN-20 (4x6)	Module with integrated inductor, CCM only																			
		MPQ4325-AEC1	3.3	36	5	8.5	20	0.8	200 to 2500	45/25	-	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	Ultra-compact, low I _Q																			
		MPQ4326-AEC1	3.3	36	6	10	20	0.8	200 to 2500	45/25	3.3	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	Ultra-compact, low I _Q																			
N		MPQ4327-AEC1	3.3	36	7	11	20	0.8	200 to 2500	45/25	-	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	Ultra-compact, low I _Q																			
		MPQ4328-AEC1	3.3	36	4	6.4	20	0.8	200 to 2500	45/25	-	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	Ultra-compact, low I _Q																			

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_{SW} Limit (Typ) (A)	I_a (Typ) (μA)	V_{FB} (V)	f_{SW} (kHz)	$R_{DS(ON)}$ (mΩ)	Fixed-Output Versions (V)	Soft Start	Ext Sync	Frequency Spread Spectrum	FCCM	AAM Mode	Zero-Delay PWM™	Wettable Flank QFN Option	Package	Notes
MPQ4326B-3000-AEC1	3.3	36	3	4.4	20	0.8	200 to 2500	45/25	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	-
MPQ4326B-4000-AEC1	3.3	36	4	5	20	0.8	200 to 2500	45/25	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	-
MPQ4326B-5000-AEC1	3.3	36	5	6	20	0.8	200 to 2500	45/25	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	-
MPQ4326B-6000-AEC1	3.3	36	6	7.5	20	0.8	200 to 2500	45/25	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	-
MPQ4326B-7000-AEC1	3.3	36	7	8	20	0.8	200 to 2500	45/25	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	-
MPQ4371-6000-AEC1	3.3	42	6	7.2	3.5	0.6	200 to 2500	21.5/10	1, 1.2, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	✓	QFN-23 (4x5)	-
MPQ4371-8000-AEC1	3.3	42	8	9.6	3.5	0.6	200 to 2500	21.5/10	1, 1.2, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	✓	QFN-23 (4x5)	-

		Part Number	V _{IN} (Min) (V)		V _{IN} (Abs Max) (V)		I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _G (Typ) (μA)	V _{FB} (V)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Fixed-Output Versions (V)		Soft Start		Ext Sync	Frequency Spread Spectrum	FCCM	AAM Mode	Zero-Delay PWM™	Wettable Flank QFN Option	Package	Notes
		MPQ4371-0000-AEC1	3.3	42	10	12	3.5	0.6	200 to 2500	21.5/10	1, 1.2, 1.8, 2.5, 3.3, 3.8, 5		Int	✓	✓	✓	✓	✓	✓	QFN-23 (4x5)	-			
		MPQ4371-1000-AEC1	3.3	42	11	13.2	3.5	0.6	200 to 2500	21.5/10	1, 1.2, 1.8, 2.5, 3.3, 3.8, 5		Int	✓	✓	✓	✓	✓	✓	QFN-23 (4x5)	-			
		MPQ4372-1001-AEC1	3.3	42	11	13.2	3.5	0.6	200 to 2500	21.5/10	1, 1.2, 1.8, 2.5, 3.3, 3.8, 5		Int	✓	✓	✓	✓	✓	✓	QFN-23 (4x5)	Multi-phase			
N		MPQ4373-1XYZ-AEC1	3.3	42	11	19	3.5	0.6	200 to 2500	22/11	1, 1.2, 1.8, 2.5, 3.3, 3.8, 5		Int	✓	✓	✓	✓	-	-	LGA-16 (3.5x4.5)	-			
S		MPQ4374-2XYZ-AEC1	3.5	40	12	20.7	42	0.6	425 to 2200	11.5/5	1, 1.2, 1.8, 2.5, 3.3, 3.8, 5		Int	✓	✓	✓	✓	✓	✓	QFN-28 (5x6)	-			
S		MPQ4374-4XYZ-AEC1	3.5	40	14	24.7	42	0.6	425 to 2200	11.5/5	1, 1.2, 1.8, 2.5, 3.3, 3.8, 5		Int	✓	✓	✓	✓	✓	✓	QFN-28 (5x6)	-			
S		MPQ4374-6XYZ-AEC1	3.5	40	16	27.6	42	0.6	425 to 2200	11.5/5	1, 1.2, 1.8, 2.5, 3.3, 3.8, 5		Int	✓	✓	✓	✓	✓	✓	QFN-28 (5x6)	-			

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _O (Typ) (μA)	V _{FB} (V)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Fixed-Output Versions (V)	Soft Start	Ext Sync	Frequency Spread Spectrum	FCCM	AAM Mode	Zero-Delay PWM™	Wettable Flank QFN Option	Package	Notes
S	MPQ4384-2XYZ-AEC1	3.3	40	12	18	10	0.8	200 to 2500	5/3	0.8, 1, 1.2, 1.8, 2.5, 3.3, 3.8, 4.5, 5	Int	✓	✓	✓	✓	✓	✓	QFN-32 (5x6)	Multi-phase
S	MPQ4384-4XYZ-AEC1	3.3	40	14	22.5	10	0.8	200 to 2500	5/3	0.8, 1, 1.2, 1.8, 2.5, 3.3, 3.8, 4.5, 5	Int	✓	✓	✓	✓	✓	✓	QFN-32 (5x6)	Multi-phase
S	MPQ4384-6XYZ-AEC1	3.3	40	16	22.5	10	0.8	200 to 2500	5/3	0.8, 1, 1.2, 1.8, 2.5, 3.3, 3.8, 4.5, 5	Int	✓	✓	✓	✓	✓	✓	QFN-32 (5x6)	Multi-phase
S	MPQ4384-8XYZ-AEC1	3.3	40	18	27	10	0.8	200 to 2500	5/3	0.8, 1, 1.2, 1.8, 2.5, 3.3, 3.8, 4.5, 5	Int	✓	✓	✓	✓	✓	✓	QFN-32 (5x6)	Multi-phase
P	MPM3553-AEC1	3.3	42	3	5.8	20	0.8	2200	65/45	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	✓	✓	-	✓	QFN-20 (4x6)	Module with integrated inductor
P	MPM3552-AEC1	3.3	42	1	5.8	20	0.8	2200	370/265	3.3, 3.8, 5	Int	-	✓	✓	✓	-	✓	QFN-20 (4x6)	Module with integrated inductor
N	MPQ4386-xxxx-AEC1	3.3	40	30	40	10	0.8	200 to 2500	5/3	0.8, 1, 1.2, 1.8, 2.5, 3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	✓	QFN-32 (5x6)	Multi-phase

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _O (Typ) (μA)	V _{FB} (V)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Fixed-Output Versions (V)	Soft Start	Ext Sync	Frequency Spread Spectrum	FCCM	AAM Mode	Zero-Delay PWM™	Wettable Flank QFN Option	Package	Notes
N	MPQ4385-xxxx-AEC1	3.3	40	20 to 25	30 to 37	10	0.8	200 to 2500	5/3	0.8, 1, 1.2, 1.8, 2.5, 3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	✓	QFN-32 (5x6)	Multi-phase
P	MPQ73351 FS-xxxx-AEC1	3	40	7 x 2	12	32	0.8	200 to 2200	23/10	-	Int	✓	✓	✓	✓	✓	✓	QFN-28 (5x6)	Multi-phase, dual-channel, I²C, functional safety, ASIL-D
P	MPQ4390-xxxx-AEC1	3	40	7 x 2	12	32	0.8	200 to 2200	23/10	-	Int	✓	✓	✓	✓	✓	✓	QFN-28 (5x6)	Multi-phase, dual-channel, I²C
P	MPQ71339 FS-xxxx-AEC1	3.3	40	6 to 11	9 to 16	20	0.8	425, 475, 2200	20/10	3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	✓	QFN-19 (4x4)	Functional safety, ASIL-D
P	MPQ4339-xxxx-AEC1	3.3	40	6 to 11	9 to 16	20	0.8	425, 475, 2200	20/10	3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	✓	QFN-19 (4x4)	-

40V to 50V Synchronous Buck without Frequency Spread Spectrum

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _O (Typ) (μA)	V _{FB} (V)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Fixed-Output Versions (V)	Soft Start	Ext Sync	Frequency Spread Spectrum	FCCM	AAM Mode	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
	MPM3509B-AEC1	4	40	0.6	5	700	0.807	400	90/50	-	Int	✓	-	✓	-	✓	✓	QFN-17 (3x5x1.6)	Ultra-compact module, int. inductor, BST/VCC capacitors
	MPQ9846-AEC1	3.3	40	0.6	1.2	14	0.8	350 to 2500	125/115	3.3, 5	Ext	✓	-	✓	✓	✓	✓	QFN-16 (3x4)	Compact, low I _O
	MPQ4418-AEC1	4	40	0.6	5.6	600	0.792	410	90/55	-	Int	✓	-	✓	-	✓	-	TSOT23-8	MPQ4420 series
	MPQ4418A-AEC1	4	40	0.6	1.7	600	0.792	410	90/55	-	Int	✓	-	✓	-	✓	-	TSOT23-8	MPQ4420 series
	MPM3509-AEC1	4	40	0.9	3	600	0.807	2200	90/50	-	Int	✓	-	✓	-	✓	✓	QFN-17 (3x5x1.6)	Ultra-compact module, int. inductor, BST/VCC capacitors
	MPQ4419-AEC1	4	40	1	5.6	600	0.792	410	90/55	-	Int	✓	-	✓	-	✓	-	TSOT23-8	MPQ4420 series

Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _Q (Typ) (μA)	V _{FB} (V)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Fixed-Output Versions (V)	Soft Start	Ext Sync	Frequency Spread Spectrum	AAM Mode	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
MPQ4431-AEC1	3.3	40	1	2.5	10	0.8	350 to 2500	90/80	3.3, 5	Ext	✓	-	✓	✓	✓	QFN-16 (3x4)	MPQ4430 series, low I _Q , low-dropout mode
MPQ9840-AEC1	3.3	40	1	5.6	14	0.8	350 to 2500	90/40	3.3, 5	Ext	✓	-	✓	✓	✓	QFN-16 (3x4)	MPQ9840 series, low I _Q , low-dropout mode
MPM3515-AEC1	4	40	1.5	4	600	0.807	2200	90/50	-	Int	✓	-	✓	-	✓	QFN-17 (3x5x1.6)	Ultra-compact module, int. inductor, BST/VCC capacitors
MPQ4415M-AEC1	4	40	1.5	4	600	0.8	450 to 2200	90/50	-	Int	✓	-	✓	-	✓	QFN-13 (2.5x3)	Integrated input capacitor
MPQ4415A-AEC1	4	40	1.5	4	600	0.8	450 to 2200	90/50	-	Int	✓	-	✓	-	✓	QFN-13 (2.5x3)	-
MPQ4420H-AEC1	4	40	2	4.2	500	0.792	410	90/55	-	Int	✓	-	-	✓	✓	TSOT23-8	MPQ4420 series
MPQ4420A-AEC1	4	40	2	5.6	600	0.792	410	90/55	-	Int	✓	-	✓	-	✓	TSOT23-8	MPQ4420 series
MPQ4432-AEC1	3.3	40	2.2	5.2	10	0.8	350 to 2500	90/40	3.8, 5	Ext	✓	-	✓	✓	✓	QFN-16 (3x4)	MPQ4430 series, low I _Q , low-dropout mode
MPQ9841-AEC1	3.3	40	2.2	2.5	14	0.8	350 to 2500	90/80	3.3, 5	Ext	✓	-	✓	✓	✓	QFN-16 (3x4)	MPQ9840 series, low I _Q , low-dropout mode
MPQ4433-AEC1	3.3	40	3	5.8	10	0.8	350 to 2500	90/40	5	Ext	✓	-	✓	✓	✓	QFN-16 (3x4)	MPQ4430 series, low I _Q , low-dropout mode
MPQ9842-AEC1	3.3	40	3	5	14	0.8	350 to 2500	90/40	3.3, 5	Ext	✓	-	✓	✓	✓	QFN-16 (3x4)	MPQ9840 series, low I _Q , low-dropout mode
MPQ4423H-AEC1	4	40	3	4.4	500	0.792	410	85/55	-	Int	✓	-	-	✓	✓	QFN-8 (3x3)	-
MPQ4423A-AEC1	4	40	3	5.7	600	0.792	410	85/55	-	Int	✓	-	✓	-	✓	QFN-8 (3x3)	-
MPQ4430-AEC1	3.3	40	3.5	5.8	10	0.8	350 to 2500	90/40	3.8, 5	Ext	✓	-	✓	✓	✓	QFN-16 (3x4)	MPQ4430 series, low I _Q , low-dropout mode
MPQ9843-AEC1	3.3	40	3.5	5.6	14	0.8	350 to 2500	125/55	3.3, 5	Ext	✓	-	✓	✓	✓	QFN-16 (3x4)	MPQ9840 series, low I _Q , low-dropout mode
MPQ4473-AEC1	4.5	40	3.5	6.6	500	0.815	200 to 1000	40/20	-	Ext	✓	-	-	-	-	QFN-20 (3x4)	Constant-on-time (COT) control

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_{SW} Limit (Typ) (A)	I_Q (Typ) (μ A)	V_{FB} (V)	f_{SW} (kHz)	$R_{DS(ON)}$ (m Ω)	Fixed-Output Versions	Soft Start	Ext Sync	Frequency Spread Spectrum	FCCM	AAM Mode	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
MPQ4470-AEC1	4.5	40	5	8	500	0.815	100 to 1000	40/20	-	Ext	✓	-	-	-	-	-	QFN-20 (3x4)	Constant-on-time (COT) control
MPQ4470A-AEC1	4.5	40	5	8	500	0.815	100 to 1000	40/20	-	Ext	✓	-	-	-	-	-	QFN-20 (3x4)	Constant-on-time (COT) control
MPQ4436-AEC1	3.3	50	6	13	18	0.815	420	48/20	3.3, 5	Ext	✓	-	✓	✓	✓	✓	QFN-20 (4x4)	Multi-phase, low I_Q
MPQ4436B-AEC1	3.3	50	6	13	18	0.815	2200	48/20	3.3, 5	Ext	✓	-	✓	✓	✓	✓	QFN-20 (4x4)	Multi-phase, low I_Q

60V to 80V Synchronous Buck

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_{SW} Limit (Typ) (A)	I_Q (Typ) (μ A)	V_{FB} (V)	f_{SW} (kHz)	$R_{DS(ON)}$ (m Ω)	Fixed-Output Versions	Soft Start	Ext Sync	FCCM	AAM Mode	Hysteretic Control	Fixed Frequency	Package	Notes
MPQ4569-AEC1	4.5	80	0.3	0.72	20	1	-	1200/450	-	Ext	-	-	✓	✓	-	QFN-10 (3x3), SOIC-8E	Prog. soft start
MPQ4569A-AEC1	4.5	80	0.3	0.72	20	1	-	1200/500	-	Ext	-	-	✓	✓	-	QFN-10 (3x3)	Prog. soft start, default enable on
MPQ2420-AEC1	4.5	80	0.3	0.72	20	1	-	1200/450	-	Ext	-	-	✓	✓	-	TSSOP-16EP	Int. separate windowed watchdog die
MPQ2420A-AEC1	4.5	80	0.3	0.72	20	1	-	1200/450	-	Ext	-	-	✓	✓	-	TSSOP-16EP	Int. separate windowed watchdog die, default enable on
MPQ4576-AEC1	4.5	65	0.6	1.95	40	0.8	200 to 2200	250/45	-	Int	-	✓	✓	-	✓	QFN-12 (2.5x3)	MPQ4572 series, low I_Q , compact

	Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_{SW} Limit (Typ) (A)	I_O (Typ) (μ A)	V_{FB} (V)	f_{SW} (kHz)	$R_{DS(ON)}$ (m Ω)	Fixed-Output Versions	Soft Start	Ext Sync	FCCM	AAM Mode	Hysteretic Control	Fixed Frequency	Package	Notes
	MPQ4571-AEC1	4.5	65	1	1.95	40	0.8	200 to 2200	250/45	-	Int	-	✓	✓	-	✓	QFN-12 (2.5x3)	MPQ4572 series, low I_O , compact
	MPQ4572-AEC1	4.5	65	2	3.5	40	0.8	200 to 2200	250/45	-	Int	-	✓	✓	-	✓	QFN-12 (2.5x3)	MPQ4572 series, low I_O , compact
	MPQ4573-AEC1	4.5	65	2.5	3.5	40	0.8	200 to 2200	250/45	-	Int	-	✓	✓	-	✓	QFN-12 (2.5x3)	MPQ4572 series, low I_O , compact
	MPQ4570-AEC1	4.5	60	3	5.7	520	1	100 to 1000	90/70	-	Ext	✓	-	✓	-	✓	TSSOP-20EP	Prog. soft-start time, external sync
	MPM3901-AEC1	4.5	65	1	1.95	40	0.8	200 to 2200	250/45	-	Int	-	✓	✓	-	✓	QFN-12 (2.5x3)	Low- I_Q , compact module with an integrated inductor
	MPQ8880A-AEC1	4	60	4.5	5.5	8	0.15/ 0.6/ 0.999/ 1.5	150 to 2200	60/43	-	Int	✓	✓	✓	✓	✓	QFN-20 (4x5)	Prog. soft-start time, PG, multi-phase
N	MPQ8887-AEC1	4.5	70	9	12	180	0.5/ 1.6/ 2	200 to 600	14/28	-	Int	✓	✓	✓	✓	✓	QFN-24 (4x5)	Supports I ² C, 100% duty cycle
S	MPQ4585-AEC1	5.5	80	4.5	6.5	400	0.8	100 to 1000	37/28	-	Int	✓	✓	✓	-	✓	QFN-37 (6x6)	Prog. soft-start time, PG, high efficiency, multi-phase
S	MPQ4586-AEC1	5.5	80	6	9	400	0.8	100 to 1000	28/21	-	Int	✓	✓	✓	-	✓	QFN-37 (6x6)	Prog. soft-start time, PG, high efficiency, multi-phase
S	MPQ4587-AEC1	5.5	80	8	11	400	0.8	100 to 1000	21/16	-	Int	✓	✓	✓	-	✓	QFN-37 (6x6)	Prog. soft-start time, PG, high efficiency, multi-phase
N	MPQ4589-AEC1	4.5	90	0.8	3.5	9	0.8	400	300/170	-	Int	✓	✓	✓	-	✓	QFN-19 (3x5)	Ultra-low I_O
	MPQ4583-AEC1	4.5	90	3.5	4	9	0.8	400	170/80	-	Int	✓	✓	✓	-	✓	QFN-19 (3x5)	Ultra-low I_O
P	MPQ71400 FS-xxxx-AEC1	4	75	4 to 8	14	5	0.8	200 to 2100	44/20	3.3, 3.8, 4.5, 5, 6, 8, 12	Int	✓	✓	✓	-	-	QFN-19 (4x5)	Functional safety, ASIL-D
P	MPQ4575-xxxx-AEC1	4	75	4 to 8	14	5	0.8	200 to 2100	44/20	3.3, 3.8, 4.5, 5, 6, 8, 12	Int	✓	✓	✓	-	-	QFN-19 (4x5)	QM version of the MPQ71400FS-AEC1

>100V Synchronous Buck

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_{SW} Limit (Typ) (A)	I_Q (Typ) (μ A)	V_{FB} (V)	f_{SW} (kHz)	$R_{DS(ON)}$ (Ω)	Soft Start	Ext Sync	FCCM	AAM Mode	Hysteretic Control	Package	Notes
MPQ4590-AEC1	7.5	700	0.4	0.66	200	2.55	-	13.5	Int	-	✓	-	✓	SOIC-8	Primary-side CV control, supports buck, buck-boost, boost, and flyback topologies

Buck Controllers

	Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_Q (Typ) (μ A)	I_{SD} (Typ) (μ A)	V_{FB} (V)	f_{SW} (kHz)	Fixed-Output Versions	Soft Start	Ext Sync	FCCM	AAM Mode	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
	MPQ2908A-AEC1	4	60	750	0.5	0.8	100 to 1000	-	Ext	✓	✓	✓	✓	✓	TSSOP-20EP, QFN-20 (3x4)	High max duty cycle (99.5%)
	MPQ2918-AEC1	4	40	750	0.5	0.8	100 to 1000	-	Ext	✓	✓	✓	✓	✓	TSSOP-20EP, QFN-20 (3x4)	High max duty cycle (99.5%)
S	MPQ2923-AEC1	3.6	42	20	2.2	1.2	200 to 2200	1.2, 1.8, 2.5, 3.3, 3.8, 5, 12, 15, 18	Ext	✓	✓	✓	✓	✓	QFN-24 (4x4)	Frequency spread spectrum, multi-phase
N	MPQ9934-AEC1	5.5	85	400	8 (Max)	0.17/0.5/0.667/1.2/1.6	100 to 1000	-	Ext	-	✓	✓	Prog.	✓	QFN-23 (4x4)	Multi-phase, GaN driver capability
S	MPQ2933-AEC1	3.6	42	20	2.2	1.2	200 to 2200	1.2, 1.8, 2.5, 3.3, 3.8, 5, 12, 15, 18	Ext	✓	✓	✓	✓	✓	QFN-38 (5x8)	Frequency spread spectrum, multi-phase

Non-Synchronous Buck

Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _O (Typ) (μA)	V _{FB} (V)	f _{SW} (kHz)	R _{DS(on)} (mΩ)	Fixed-Output Versions	Soft Start	Ext Sync	FCCM	Fixed Frequency	Package	Notes
MPQ2459-AEC1	4.5	60	0.5	1.25	730	0.812	480	1000	-	Int	-	✓	✓	TSOT23-6	Superior light-load efficiency
MPQ2451-AEC1	3.3	40	0.6	1	130	0.794	2000	500	3.3, 5	Int	-	-	✓	TSOT23-6L, QFN-6L	Internal comp. and soft start
MPQ2454-AEC1	3.3	40	0.6	1.8	60	0.8	350 to 2300	200	-	Ext	✓	-	✓	QFN-10 (3x3), MSOP-10EP	Superior light-load efficiency
MPQ4558-AEC1	3.8	60	1	1.9	140	0.8	200 to 2000	250	-	Int	-	-	✓	QFN-10 (3x3), SOIC-8E	Superior light-load efficiency
MPQ4559-AEC1	3.8	60	1.5	2.3	140	0.8	200 to 2000	250	-	Int	-	-	✓	QFN-10 (3x3), SOIC-8E	Superior light-load efficiency
MPQ4561-AEC1	3.8	60	1.5	2.5	140	0.795	250 to 2000	300	-	Ext	-	-	✓	QFN-10 (3x3)	Superior light-load efficiency
MPQ4560-AEC1	3.8	60	2	3.2	140	0.797	250 to 2000	250	-	Int	-	-	✓	QFN-10 (3x3), SOIC-8E	Superior light-load efficiency
MPQ4462-AEC1	3.8	40	3.5	5.5	120	0.792	250 to 4000	150	-	Int	-	-	✓	QFN-10 (3x3), SOIC-8E	Superior light-load efficiency
MPQ4467-AEC1	3.3	40	2.5	5.8	10	0.8	350 to 2500	90	-	Ext	✓	-	✓	QFN-16 (3x4)	Low-dropout, selectable in-phase or 180° out-of-phase
MPQ4468-AEC1	3.3	40	3.5	5.8	10	0.8	350 to 2500	90	-	Ext	✓	-	✓	QFN-16 (3x4)	Low-dropout, selectable in-phase or 180° out-of-phase
MPQ4469-AEC1	3.3	40	5	7.7	10	0.8	350 to 2500	110	-	Ext	✓	-	✓	QFN-20 (4x5)	Low-dropout, selectable in-phase or 180° out-of-phase
MPQ2362-AEC1	4.75	25	Dual 2	3.4	2000	1.22	380	180	-	Int	✓	✓	✓	TSSOP-20	Dual output

Boost & Buck-Boost Regulators

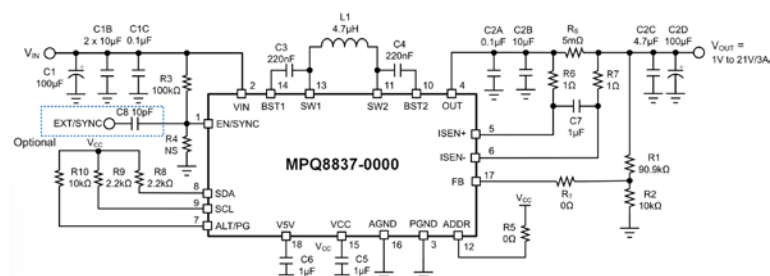
MPS offers a variety of DC/DC step-up solutions designed to operate directly from a 12V/24V battery or at the point-of-load (PoL). Choose from power-dense integrated converters with low- $R_{DS(ON)}$ MOSFETs, or flexible controllers with external MOSFETs to easily address high current requirements. Our solutions help address common automotive design challenges such as cold crank, EMI limits, and operation above or below the AM band.



High Efficiency | EMI-Optimized | Compact Solution

MPQ8837-AEC1 SAMPLING

40V, 3A Buck-Boost Converter with 4 MOSFETs



Key Specifications:

2.8V to 36V	3A	280kHz to 2.1MHz
Input Voltage	Output Current	Switching Frequency

FCTQFN-18 HTC (3mmx4mm)

Package

Features

Built to Handle Tough Automotive Transients and Applications

- Load dump up to 40V, cold crank down to 2.8V
- 1V to 26V output voltage (V_{OUT}) range

High-Power Capability and Efficiency

- 3A average inductor current (I_L) with four integrated low on resistance ($R_{DS(ON)}$) MOSFETs

Cooler Thermals

- Thin QFN with HTC molding facilitates top-side cooling

Optimized for EMI/EMC Performance

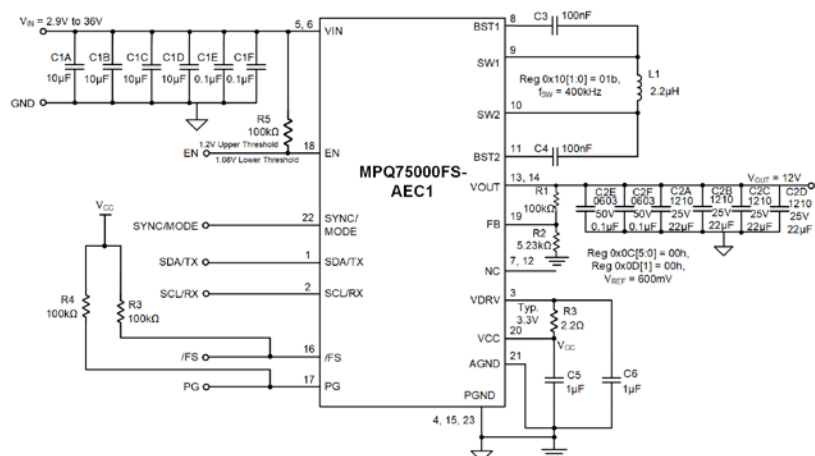
- Frequency spread spectrum (FSS)
- Selectable switching frequency (f_{SW}): 280kHz, 420kHz, 600kHz, 1.2MHz, or 2.1MHz
- External clock synchronization

Vast Flexibility through Digital Configurability and Protection

- Selectable automatic pulse-frequency modulation (PFM), pulse-width modulation (PWM), or forced PWM (FPWM) mode
- Integrated 5V/60mA low-dropout (LDO) regulator
- Configurable one-time programmable (OTP) memory for maximum flexibility
- Standard, configurable I²C interface
- Line drop compensation
- Power good (PG) indication
- Enable (EN) shutdown passive discharge
- Over-current protection (OCP), output and input over-voltage protection (OVP), and short-circuit protection (SCP), configurable input under-voltage lockout (UVLO), over-temperature protection (OTP)

MPQ75000FS-AEC1/MPQ8878-AEC1 SAMPLING

MPSafe™, 40V, 60W at 5V_{IN}, 10A Buck-Boost Converters with 4 MOSFETs



Key Specifications:

2.8V to 3.6V	5V	0.25 to 0.5A	2.2MHz	TSOT23-8
Input Voltage	Output Voltage	Output Current	Switching Frequency	Package

Available in Pin-Compatible Family:

MPQ3413	250mA
MPQ3414B	500mA

Features

Built to Handle Tough Automotive Transients and Applications

- Load dump up to 40V, cold crank down to 2.9V
- 60W of output power (P_{OUT}) during warm crank
- 1V to 24V output voltage (V_{OUT}) range

Cooler Thermals

- 4 integrated low on resistance ($R_{DS(ON)}$) MOSFETs
- Thin QFN package with HTC molding facilitates top-side cooling

Designed for Functional Safety Requirements

- Device is rated for an ISO 26262 functional safety grade of ASIL-B
- Built-in self-test (BIST)
- Real-time cyclic redundancy check (CRC) on registers
- Multi-page one-time programmable (OTP) memory with error correction checking (ECC)
- Fault pin for open/short protection, under-voltage protection (UVP), over-voltage protection (OVP), over-current protection (OCP) with latch-off, TD, and thermal shutdown
- Limp home logic during a fault

Optimized for EMI/EMC Performance

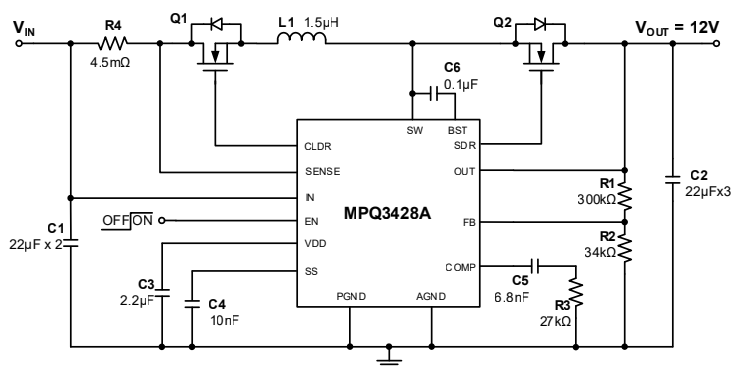
- Frequency spread spectrum (FSS)
- Configurable, synchronizable 200kHz to 2.2MHz switching frequency (f_{SW})

Vast Flexibility through Digital Configurability and Protections

- I²C interface for online and OTP programming
- SPI/UART interface
- Cycle-by-cycle current limit
- OCP, output and input OVP, and short-circuit protection (SCP)
- Configurable input under-voltage lockout (UVLO)
- Over-temperature protection

MPQ3428A-AEC1

20V, 19A, Synchronous Boost Converter with Input Disconnect Function



Key Specifications:

3V to 20V	<1μA	18mΩ	QFN-22 (3mmx4mm)
Input Voltage	Shutdown Current	Built-In FETs	Package

Features

Cooler Thermals

- 94% efficiency (4.2V to 12V, 2A)
- Low-ohmic MPS BCD FET technology

Low-Noise EMI/EMC

- MeshConnect™ flip-chip packaging
- Operates outside of AM radio band

Reduces Board Size and BOM

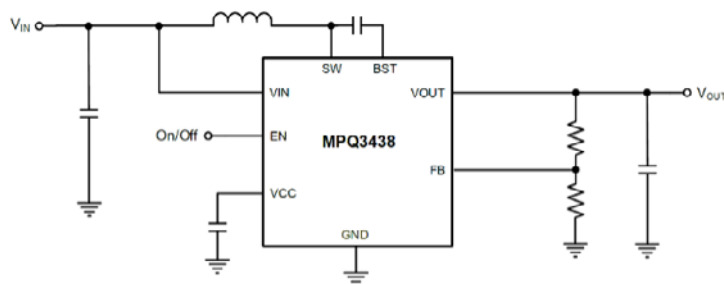
- Integrated compensation network
- Fixed output voltage (V_{OUT}) options

Additional Features

- 19A internal switch current limit or externally configurable input current (I_{IN}) limit
- Supports external disconnect FET
- Cycle-by-cycle current limiting
- Configurable input under-voltage lockout (UVLO)
- Output over-voltage protection (OVP)

MPQ3438-AEC1

10V_{IN}, 16V_{OUT}, 2A Compact Boost Converter



Key Specifications:

2.7V to 10V	Up to 16V	2A	2.6MHz	QFN-8 (1.5mmx2mm)
Input Voltage	Output Voltage	Output Current	Switching Frequency	Package

Features

Flexible Input and Output Operating Range

- 2.7V to 10V start-up input voltage (V_{IN}), 0.8V to 10V operating V_{IN}
- 2A, 16V output voltage (V_{OUT}) range

Designed for High Power Efficiency and Performance

- Adaptive constant-on-time (COT) for fast transient response
- Power-save mode (PSM) at light loads
- >88% efficiency
- Automatic pass-through mode when $V_{IN} > V_{OUT}$
- Internal soft start (SS) and compensation

Cost-Effective, Compact System

- 2.6MHz fixed high switching frequency (f_{SW})
- Integrated low- $R_{DS(ON)}$ low-side MOSFET (LS-FET) and high-side MOSFET (HS-FET): 55mΩ and 100mΩ, respectively
- Available in a small QFN-8 (1.5mmx2mm) package

Protections

- Configurable under-voltage lockout (UVLO) and hysteresis
- Over-temperature protection (OTP), input and output over-voltage protection (OVP), and over-current protection (OCP)
- Thermal shutdown

PSM or FCCM Available in Pin-Compatible Family:

Power-Save Mode (PSM)
under Light Loads
MPQ3438-0000

Forced Continuous
Conduction Mode (FCCM)
MPQ3438-0001

Buck-Boost Regulators

Buck-Boost Converters

	Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	V _{OUT} (Max) (V)	I _{OUT} (Typ) (A)	I _Q (Typ) (μA)	f _{SW} (kHz)	R _{DS(on)} (mΩ)	Interface	Frequency Spread Spectrum	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
	MPQ8873-xxxx-AEC1	2.2	36	0.5 to 30	3	180	200 to 1000	2x 10/25	I ² C	✓	✓	✓	QFN-34 (4x5)	30W, prog. 4-switch converter with advanced protections
	MPQ8875A-xxxx-AEC1	2.2	36	0.5 to 30	5	180	200 to 1000	2x 10/25	I ² C	✓	✓	✓	QFN-34 (4x5)	60W, prog. 4-switch converter with advanced protections
S	MPQ8874-xxxx-AEC1	4	36	1 to 30	4	20	200 to 2200	Buck 20/40, Boost 40/20	I ² C	✓	✓	✓	QFN-22 (4x5)	-
S	MPQ8872-xxxx-AEC1	4	36	1 to 30	2	20	200 to 2200	Buck 20/40, Boost 40/20	I ² C	✓	✓	✓	QFN-22 (4x5)	-
N	MPQ8835A-xxxx-AEC1	3	36	1 to 24	6	130	280, 420, 600, 1000	Buck 12/16, Boost 7/7	I ² C	✓	✓	✓	QFN-19 (4x5)	-
S	MPQ8837-xxxx-AEC1	2.8	40	1 to 26	3	350	280, 420, 600, 1200, 2100	12, 24, 12, 12	I ² C	✓	✓	✓	QFN-18 (3x4)	-
	MPQ4262-AEC1 (Hybrid)	3.6	40	1 to 36	5	130	280, 420, 600	20/14	I ² C	✓	✓	✓	QFN-20 (3x5)	USB, 100W, two int. FETs, 98% peak efficiency
	MPQ4263-AEC1	3.6	40	1 to 36	5	135	280, 420, 600	20/14	I ² C	✓	✓	✓	QFN-20 (3x5)	USB, 100W, two int. FETs, 98% peak efficiency, high-side current sense
	MPQ4232-AEC1	4.3	40	1 to 22	5	130	280, 420, 600, 1000	10/14/6/6	I ² C	✓	✓	✓	QFN-19 (4x5)	USB, 22V/5A, 4-switch converter with advanced protection
	MPQ4232A-AEC1	3	40	1 to 24	6	130	280, 420, 600, 1000	Buck 12/16, Boost 7/7	I ² C	✓	✓	✓	QFN-19 (4x5)	USB, 36V/5A, 4-switch converter with advanced protection, P2P with the MPQ4232-AEC1
S	MPQ4236-AEC1	4	40	1 to 26	6	280	280, 420, 600, 1200, 2100	Buck 15/21, Boost 14/13	I ² C	✓	✓	✓	QFN-18 (3x4)	36V, 60W, 4-switch converter, 2.1MHz, low I _Q , external clock sync

Boost Regulators

Boost Controllers

	Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	I_O (Typ) (μA)	I_{SD} (Typ) (μA)	V_{FB} (V)	f_{SW} (kHz)	Gate Drive (A)	Soft Start	Sync	OVP	Wettable Flank QFN Option	Package	Notes
	MPQ3910A-AEC1	5	35	288	1	1.237	30 to 400	1	Ext	✓	✓	-	MSOP-10	Peak current mode, light-load operation, supports >10A, SCP, OTP
N	MPQ3445-AEC1	3	45	40	15	Adj	250 to 2500	2	Adj	✓	✓	✓	QFN-21 (5x5)	Multi-phase capable, frequency spread spectrum, digitally prog. I ² C/SPI
N	MPQ3446-AEC1	6	60	60	15	Adj	250 to 2500	2	Adj	✓	✓	✓	QFN-21 (5x5)	Multi-phase capable, frequency spread spectrum, digitally prog. I ² C/SPI
N	MPQ3447-AEC1	6	85	60	15	Adj	250 to 2500	2	Adj	✓	✓	✓	QFN-21 (5x5)	Multi-phase capable, frequency spread spectrum, digitally prog. I ² C/SPI

Synchronous Boost

	Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	V_{OUT} (Max) (V)	I_{SW} Limit (Typ) (A)	I_O (Typ) (μA)	I_{SD} (Typ) (μA)	V_{FB} (V)	f_{SW} (kHz)	Current Limit (A)	$R_{DS(ON)}$ (mΩ)	Output (V)	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
	MPQ3410-AEC1	1.8	6	6	1.3	360	0.15	1.19	550	1.3	530/300	Adj	✓	-	TSOT23-5	Output to input disconnect
	MPQ3413-AEC1	1.8	4	5	3.6	8	0.1	-	2.2	3.6	80/70	5	✓	-	TSOT23-5	-
	MPQ3414B-AEC1	2.8	4	5	3.6	8	0.1	-	2.2	3.6	80/70	5	✓	-	TSOT23-5	Mode
N	MPQ3414C-AEC1	2.8	4	5	3.6	8	0.1	-	2.2	3.6	80/70	5	✓	-	TSOT23-5	Enable external clock sync
	MPQ3428A-AEC1	3	20	22	25	110	1	1.225	600	25	18	Adj	✓	-	QFN-22 (3x4)	Input disconnect function, external high-side gate drive
	MPQ3431A-AEC1	0.8	13	16	21	450	25	1	450	25	6/9.5	Adj	✓	✓	QFN-13 (3x4)	Prog. input current limit, supports 40W peak power load from 3.3V, selectable PSM and FCCM, adaptive COT

Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	V _{OUT} (Max) (V)	I _{SW} Limit (Typ) (A)	I _Q (Typ) (μA)	I _{SD} (Typ) (μA)	V _{FB} (V)	f _{SW} (kHz)	Current Limit (A)	R _{DS(ON)} (mΩ)	Output (V)	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
MPQ3431C-AEC1	0.8	13	16	Adj	450	25	1	450	10	6/9.5	Adj	✓	✓	QFN-13 (3x4)	Prog. internal switch peak current limit, supports 40W peak power load
MPQ3432-AEC1	0.8	13	16	10	450	25	1	600	10	6/9.5	Adj	✓	✓	QFN-13 (3x4)	Prog. internal switch peak current limit, supports 40W peak power load
MPQ3438-AEC1	0.8	10	16	2	150	2	1	2600	2	6/9.5	Adj	✓	✓	QFN-8 (1.5x2)	-

Non-Synchronous Boost

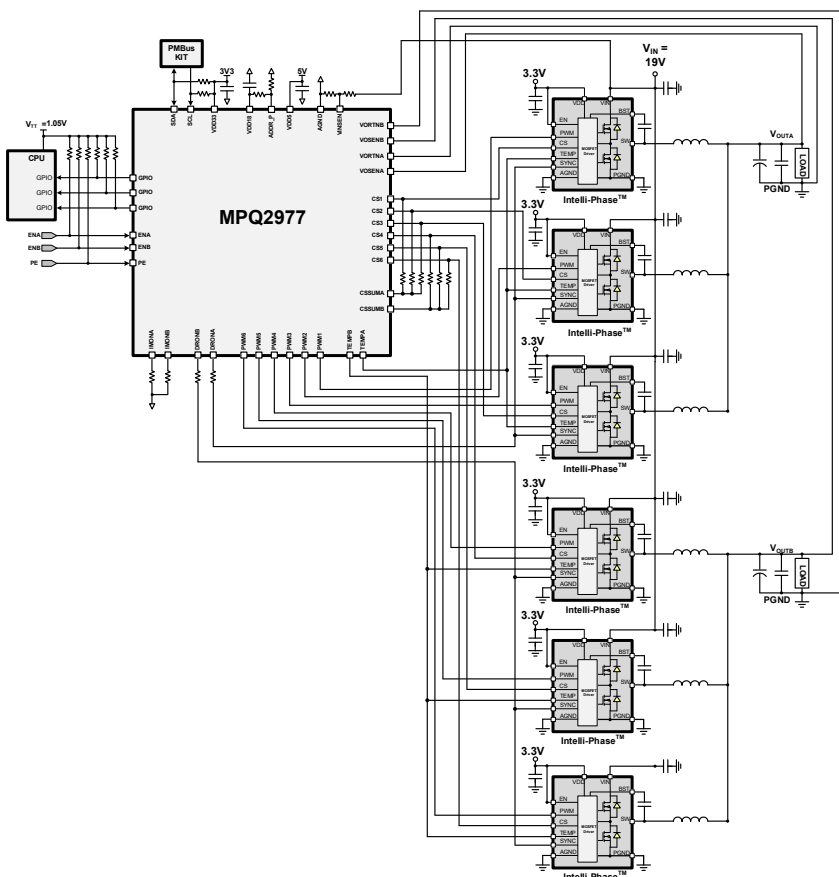
Part Number	V _{IN} (Min) (V)	V _{SW} (Max) (V)	V _{OUT} (Max) (V)	I _{SW} Limit (Typ) (A)	I _Q (Typ) (μA)	V _{FB} (V)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Soft Start	OCP	Wettable Flank QFN Option	Package	Notes
MPQ3426-AEC1	3.2	45	35	8.5	650	1.225	300 to 2000	90	Ext	✓	✓	QFN-14 (3x4)	Prog. UVLO and EN hysteresis
MPQ3425-AEC1	3.1	22	55	5	650	1.225	300 to 2000	90	Ext	✓	✓	QFN-14 (3x4)	Prog. UVLO and EN hysteresis
MPQ3452-AEC1	3.1	22	22	5	650	1.225	300 to 2000	90	Ext	✓	✓	QFN-14 (3x4)	Prog. UVLO and EN hysteresis

Automotive Compute Core Power

MPS offers best-in-class power conversion solutions for the core power rails of automotive SoCs, CPUs, and GPUs. The portfolio includes multi-phase digital controllers, Intelli-Phase™ DrMOS power stages, and high-current power converters. Our solutions offer scalability, configurability, and comprehensive monitoring and protection features to power the most advanced high-performance computing for automotive applications, such as ADAS and infotainment.



Digital Multi-Phase Controllers + Intelli-Phase™ DrMOS to Power SoC Core Rails



Features

Digital Control

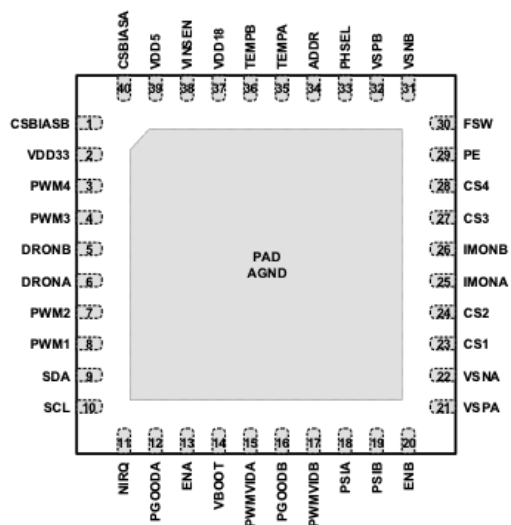
- Easy compensation
- Fast transient response
- Better current balancing
- Configurability and flexibility
- Real-time monitoring and reporting
- Comprehensive protection features

Monolithic DrMOS

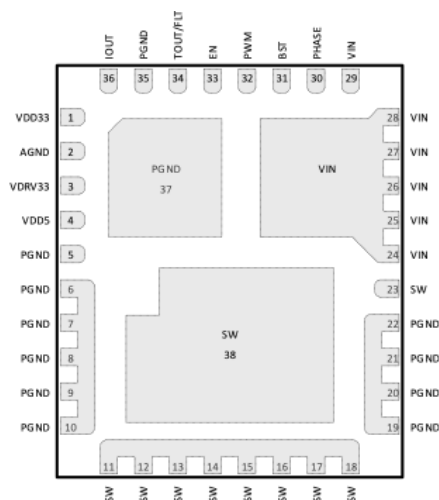
- Monolithic design means fewer components and improved robustness
- Reduced switching losses and higher efficiency
- Superior current-sense accuracy

Fewer External Components

- Lower cost
- More compact design



MPQ86750-AEC1



- Proven design for Orin/Thor and other advanced driver-assistance system (ADAS) system-on-chip (SoC) platforms
- Advanced constant-on-time (ACOT) pulse-width modulation (PWM) scheme offers fast transient response to reduce output capacitance (C_{OUT})
- Digital control for flexibility, optimized tuning, and design cycles

- Programming and monitoring
- PWM-VID interface compliant
- Built-in multiple-time programmable memory (MTP) to store custom configurations
- Automatic loop compensation, automatic phase-shedding, and phase-to-phase active current balancing
- Input voltage (V_{IN}), output voltage (V_{OUT}), output current (I_{OUT}), and regulator temperature monitoring
- Protections include under-voltage lockout (UVLO), over-voltage protection (OVP), under-voltage protection (UVP), over-current protection (OCP), and over-temperature protection (OTP)
- Runtime register cyclic redundancy check (CRC) and packet error checking (PEC) mismatch check
- Separate enable (EN) for each rail

- Low-voltage and high-current rails for ADAS and infotainment SoCs, CPUs, and GPUs

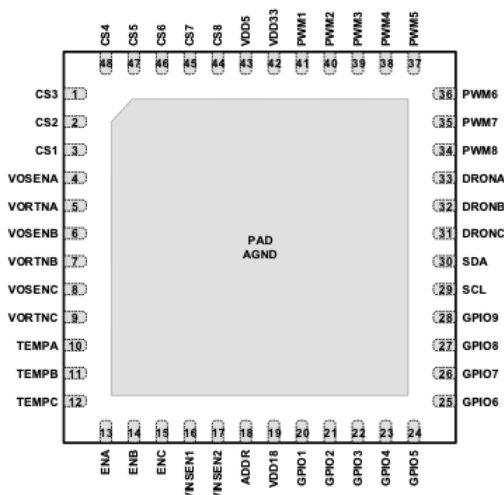
- Proven design for Thor and other advanced driver-assistance system (ADAS) system-on-chip (SoC) platforms
- Monolithic design offers higher switching frequency (f_{sw}) to reduce inductor and capacitor requirements
- Optimized process technology for best efficiency to extend EV battery range

- Wide 3V to 22V operating input voltage (V_{IN}) range
- 5V VDD input
- VDRV33 and VDD33 supported by internal low-dropout (LDO) regulator
- Accu-Sense™ current-sense
- Temperature-sensing
- Accepts tri-state pulse-width modulation (PWM) input
- Current-limit protection
- Over-temperature protection (OTP)
- Fault reporting

- Low-voltage and high-current rails for ADAS and infotainment SoCs, CPUs, and GPUs

MPQ2946

3-Rail, 8-Phase Digital Controller



QFN-48 (7mmx7mm), 0.5mm Pitch

Customer Benefits

- Advanced constant-on-time (COT) control pulse-width modulation (PWM) (ACP™) for lower output capacitance and predictable EMI
- Digital control for flexibility, optimized tuning, and fast design cycles

Features

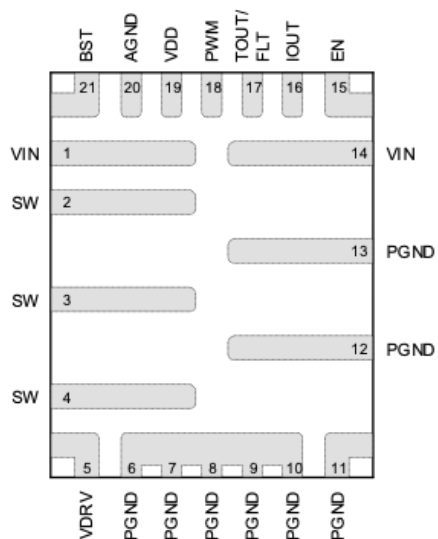
- Digital interface for programming and monitoring
- Built-in multiple-time programmable (MTP) memory to store custom configurations
- Automatic loop compensation, automatic phase-shedding, and phase-to-phase active current balancing
- Digital load-line regulation
- Input voltage (V_{IN}), output voltage (V_{OUT}), output current (I_{OUT}), and regulator temperature monitoring
- Protections include under-voltage lockout (UVLO), over-voltage protection (OVP), under-voltage protection (UVP), over-current protection (OCP), and over-temperature protection (OTP)
- Separate enable (EN) for each rail
- Separate V_{IN} sensing
- 9 configurable, general-purpose, open-drain output pins

Applications

- Low-voltage and high-current rails for ADAS and infotainment SoCs, CPUs, GPUs, and other ASICs

MPQ86760

45A Intelli-Phase™ DrMOS



LGA (4mmx5mm)

Customer Benefits

- For 3.3V/5V inputs and monolithic design enable higher switching frequency (f_{SW}) to reduce passive components
- Size and cost
- Optimized process technology for best efficiency to extend EV battery range

Features

- 3V to 6V operating input voltage (V_{IN}) range
- 3.3V VDRV/VDD input
- 45A continuous output current (I_{OUT})
- Accu-Sense™ current-sense
- Temperature-sensing
- Accepts tri-state pulse-width modulation (PWM) input
- Current-limit protection
- Over-temperature protection (OTP)
- Fault reporting
- Ultra-low quiescent current (I_Q)

Applications

- Low-voltage and high-current rails for ADAS and infotainment SoCs, CPUs, GPUs, and other ASICs

Automotive Compute SoC Core Power

Multi-Phase Digital Controllers

	Part Number	Control Method	System Interface	Memory Type	# of Rails	# of Phases	V _{CC} (Typ) (V)	I ₀ (Typ) (mA)	f _{SW} (Max) (kHz)	Wettable Flank QFN Option	Package	Notes
	MPQ2977-AEC1	Digital	Digital Interface/I ² C	MTP	2	6	5	15	1250	✓	TQFN-40 (6x6)	-
	MPQ2967-AEC1	Digital	Digital Interface/I ² C	MTP	2	4	5	20	2000	✓	TQFN-40 (6x6)	MPSafe™, ASIL-D
	MPQ2946-AEC1	Digital	Digital Interface/I ² C	MTP	3	8	5	20	2000	✓	TQFN-48 (7x7)	-
	MPQ29125-AEC1	Digital	Digital Interface/I ² C	MTP	3	8	3.3	13	2000	-	TQFN-52 (6x6)	-
	MPQ29164-AEC1	Digital	Digital Interface/I ² C	MTP	2	6	3.3	8	2000	✓	TQFN-48 (6x6)	-
N	MPQ72957-AEC1	Digital	Digital Interface/I ² C	MTP	4	8	5	20	2000	✓	TQFN-48 (7x7)	MPSafe™, ASIL-D
S	MPQ72963-AEC1	Digital	Digital Interface/I ² C	MTP	3	9	5	25	2000	✓	TQFN-48 (7x7)	MPSafe™, ASIL-D
S	MPQ29270-AEC1	Digital	Digital Interface/I ² C	MTP	3	11	5	35	2000	✓	TQFN-56 (8x8)	-
48V S	MPQ29260-AEC1	Analog	-	-	1	3	3.3	3.5	500	✓	TQFN-24 (4x4)	-
48V S	MPQ29252-AEC1	Digital	Digital Interface/I ² C	MTP	1	8	3.3	38	1500	-	TLGA-40 (5x5)	-
48V S	MPQ1966-AEC1	Analog	-	-	-	-	12	0.1	-	-	QFN-10 (4x4)	-

Intelli-Phase™ DrMOS

	Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	Load Current (A)	V _{CC} (Typ) (V)	I ₀ (Typ) (mA)	Integrated Current Sense	Integrated Temp Sense	Fault Indicator	Wettable Flank QFN Option	Package
	MPQ86940-AEC1	3	22	40	3.3	25	✓	✓	✓	✓	QFN-21 (4x5)
	MPQ86960-A-AEC1	3	22	50	5	25	✓	✓	✓	-	LGA-38 (5x6)
N	MPQ86750-AEC1	3	22	50	5	25	✓	✓	✓	-	LGA-38 (5x6)
	MPQ86760-AEC1	3	6	45	3.3	25	✓	✓	✓	✓	QFN-21 (4x5)
	MPQ86970-AEC1	3	22	50	5	25	✓	✓	✓	-	LGA-41 (5x6)
S	MPQ86761-AEC1	3	6	60	3.3	25	✓	✓	✓	✓	QFN-21 (3.5x6)
S	MPQ86725-AEC1	3	6	25	3.3	25	✓	✓	✓	✓	QFN-17 (3.5x4)

	Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	Load Current (A)	V_{CC} (Typ) (V)	I_o (Typ) (mA)	Integrated Current Sense	Integrated Temp Sense	Fault Indicator	Wettable Flank QFN Option	Package
S	MPQ86720-AEC1	24	70	20	3.3	20	✓	✓	✓	✓	TQFN-22 (5x6)
S	MPQ86770-AEC1	3	6	45	3.3	25	✓	✓	✓	-	LGA-30 (4x5)
S	MPQ87750-AEC1	3	20	90	5	25	✓	✓	✓	-	LGA-38 (5x6)

Intelli-Phase™ PoLs

	Part Number	Control Method	System Interface	Memory Type	V_{IN} (Min) (V)	V_{IN} (Max) (V)	Load Current (A)	V_{CC} (Typ) (V)	I_o (Typ) (mA)	Integrated Current Sense	Integrated Temp Sense	f_{SW} (Max) (kHz)	Wettable Flank QFN Option	Package
S	MPQ29240-AEC1	Digital	Digital Interface/I²C	MTP	4	22	40	3.3	25	✓	✓	1000	✓	QFN-27 (5x6)
S	MPQ29241-AEC1	Digital	Digital Interface/I²C	MTP	4	22	30	3.3	25	✓	✓	1000	✓	QFN-27 (5x6)
	MPQ29261-AEC1	Analog	-	-	4.5	22	18	3.3	20	✓	✓	800	✓	QFN-19 (3x4)
S	MPQ81811-AEC1	Analog	-	-	2.5	22	8	3.3	4	✓	✓	900	-	QFN-13 (2x3)
S	MPQ82B55-AEC1	Analog	-	-	3.15	22	12	3.3	4	✓	✓	900	-	QFN-23 (3x4)
S	MPQ72715-AEC1	Digital	Digital Interface/I²C	MTP	3	6	50	3.3	20	✓	✓	2500	-	TQFN-26 (3.5x6)
S	MPQ72714-AEC1	Digital	Digital Interface/I²C	MTP	3	6	40	3.3	20	✓	✓	2500	-	TQFN-26 (3.5x6)
S	MPQ72713-AEC1	Digital	Digital Interface/I²C	MTP	3	6	30	3.3	20	✓	✓	2500	-	TQFN-26 (3.5x6)

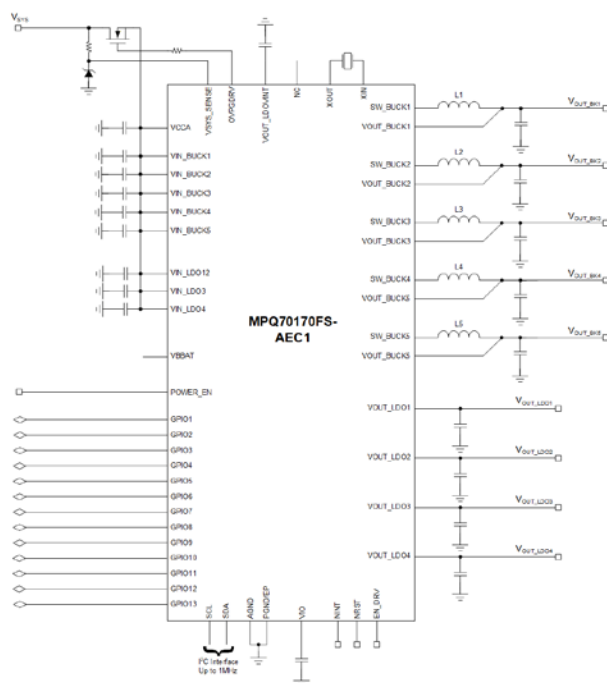
PMICs

MPS's automotive PMICs make it easy to manage multiple power rails with integrated system power sequencing and digital configuration capabilities via I²C and SPI interfaces, as well as OTP/MTP memory. During development, system requirements may change; with our starter development/evaluation kits (EVKT/PKTs), customers can easily use MPS products to evaluate, make configuration changes, and finalize specs in a timely manner. Some of our PMICs also support multi-phase (parallel) capability to allow design scalability and minimize the number of BOM components.



MPQ70170FS-AEC1 NEW

MPSafe™, ASIL-D, 5.5V, 9-Channel PMIC for ADAS SoCs



Key Specifications:

2.8V to 5.5V	0.3V to 3.6V (Bucks) 0.3 to 3.3V (LDOs)	4X 4A/1X 2A (Bucks) 4X 350mA (LDOs)
Input Voltage	Output Voltage	Output Current

QFN-56 (8mmx8mm)
Wettable Flank
Package

Versions:

MPQ70170FS	MPQ70171FS
ASIL-D	ASIL-B

Features

Built for Automotive ADAS SoCs

- 5X synchronous buck regulators (4X 4A, 1X 2A)
- 4X low-dropout (LDO) regulators (4X 350mA)
- Multi-phase operation (4X 4A bucks = up to 16A rail)
- Dynamic voltage scaling (DVS)
- Configurable power sequencing
- Zero-Delay PWM™ (ZDP™) enables fast transient response while reducing output capacitance (C_{OUT})
- Configurable soft start (SS) and soft shutdown
- Optimized for Qualcomm SA87xx SoCs

Built for Mission-Critical Safety Requirements

- MPSafe™ – ISO 26262 Functional Safety rated
- Analog and digital built-in self-testing (BIST)
- Power good, interrupt pin, and reset pin
- Integrated voltage supervisor with under-voltage (UV) and over-voltage (OV) monitoring
- Windowed or Q&A watchdog
- Cyclic redundancy check (CRC) for communication, memory, and SRAM ECC
- Over-current protection (OCP) and over-voltage protection (OVP) on VCCA supply voltage
- Input supply voltage monitor and OVP
- Thermal warning and thermal shutdown
- Redundant bandgap and clock

Configurability for Flexibility in Application

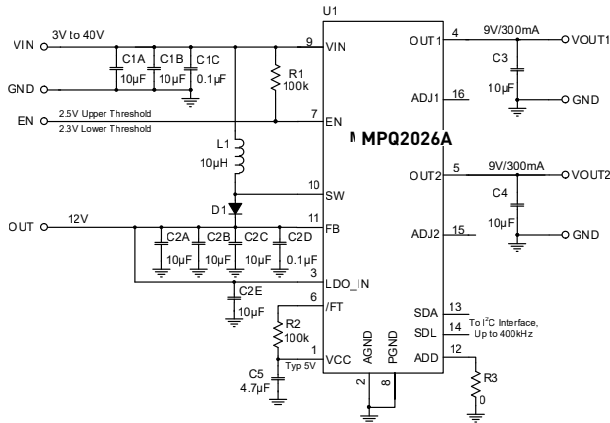
- 13 GPIOs: configurable, support 1.2V, 1.8V, and 3.3V I/O
- Multiple-time programmable (MTP) memory
- I²C Interface with packet error checking (PEC)

Optimized for EMI/EMC

- 2MHz switching frequency (f_{SW})
- Frequency spread spectrum (FSS)

MPQ2026A-AEC1

40V, Dual LDOs with Pre-Boost Stage



Key Specifications:

3V to 40V **32μA**
Input Voltage I_Q in Standby Mode

400kHz to 2.2MHz **QFN-16 (4mmx4mm)**
Switching Frequency Package

Features

Built to Handle Tough Automotive Transients

- Load dump up to 45V, cold crank down to 3V

Optimized for EMI/EMC

- Soft start (SS) for all regulator outputs
- Frequency spread spectrum (FSS)

Minimizes External Circuits

- No external resistor network required for output voltage (V_{OUT}) settings

Vast Flexibility through Digital Configurability

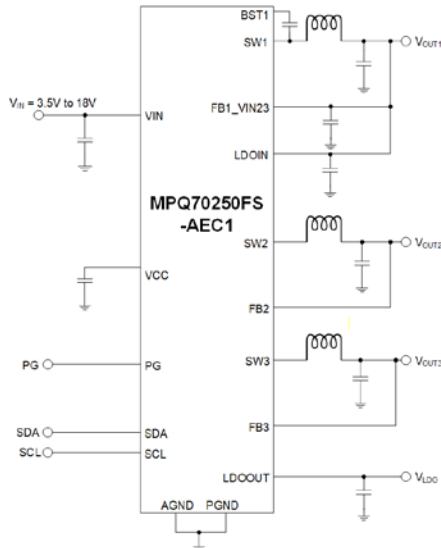
- I²C interface
- Analog-to-digital converter (ADC) for LDO output voltages and load currents
- Multi-page one-time programmable (MOTP) memory

3 Outputs:

2A	300mA	300mA
Pre-Boost	LDO 1	LDO 2

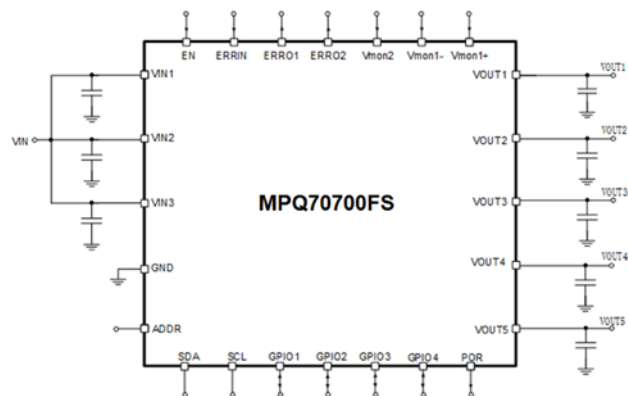
MPQ70250FS-AEC1 SAMPLING

MPSafe™, ASIL-B, 20V, PMIC with 3 Bucks and 1 Low-Voltage LDO



MPQ70700FS-AEC1

MPSafe™, ASIL-D, 5.5V, 5-Channel PMIC



Key Specifications:

2.7V to 5.5V	100mV @ 300mA Load	5X 350mA
Input Voltage	Dropout Voltage	Output Current

MPQ70700FS (ASIL-D)	
MPQ70701FS (ASIL-B)	TQFN-24 (5mmx5mm)
Versions	Package

Features

Do More with Less

- 5 low-dropout (LDO) regulators
- Configurable outputs: 0.75V, 0.9V, 1.8V, 3.3V, 5V, or more
- 3 independent input pins to increase LDO efficiency
- 4 GPIO pins: Sync with other PMICs to achieve different power sequences
- Configurable as an input for different operation modes
- Integrated power sequencing

Built for Mission-Critical Safety Applications

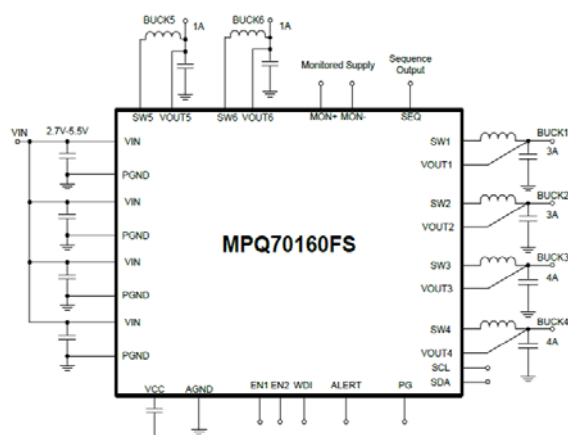
- MPSafe™: ISO 26262 Functional Safety rating of ASIL-D
- Integrated monitor with under-voltage (UV) and over-voltage (OV) monitoring on all channels
- 2 auxiliary voltage monitors, including 1 differential monitor
- Analog and digital built-in self-testing (BIST)
- Cyclic redundancy check (CRC) for communication, memory, and OTP
- Clock monitoring
- Over-current protection (OCP), thermal warning and shutdown

Configurability for Flexibility in Application

- Multi-page one-time programmable (MOTP) memory
- I²C interface with packet error checking (PEC) for sequential read and write

MPQ70160FS-AEC1

MPSafe™, ASIL-D, 5.5V, 6-Channel PMIC



Key Specifications:

2.7V to 5.5V	ASIL-D
Input Voltage	Functional Safety Rating
0.2V to 3.6V (Adj.)	QFN-32 (5mmx5mm)
Output Voltage	Package

Features

Do More with Less

- 6 integrated synchronous buck regulators
- Multi-phase capable
- Integrated power sequencing
- Soft start (SS) and soft shutdown

Built for Mission-Critical Safety

- Interrupt pin to MCU or SoC
- Integrated voltage supervisor with under-voltage (UV) and over-voltage (OV) monitoring
- Watchdog (windowed or Q&A)
- Analog and digital built-in self-testing (BIST)
- Cyclic redundancy check (CRC) for communication, memory, and one-time programmable (OTP) memory
- Auxiliary voltage monitor and clock monitoring
- Over-current protection (OCP), thermal warning and shutdown

Configurability for Flexibility in Application

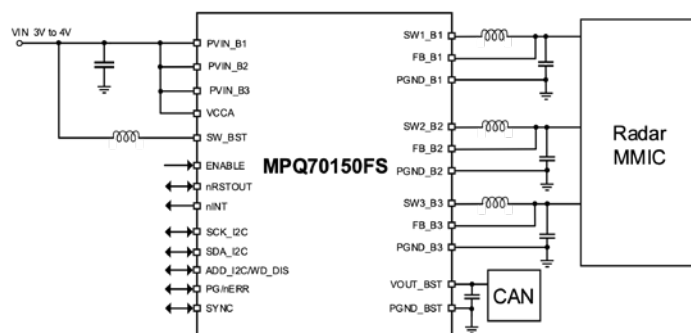
- Multi-page one-time programmable (MOTP) memory
- I²C-compliant interface

Optimized for EMI/EMC

- 2MHz switching frequency (f_{sw})
- Frequency spread spectrum (FSS)
- 180° phase-shift between bucks 1/3/6 and bucks 2/4/5

MPQ70150FS-AEC1 NEW

MPSafe™, ASIL-B, 5.5V, 18MHz Radar PMIC



Key Specifications:

3V to 5V	3X 3A + 500mA
Input Voltage	Output Current
43mΩ/25mΩ (Buck) 100mΩ (Boost)	QFN-28 (5mmx5mm) Wettable Flank
MOSFET $R_{DS(ON)}$	Package

Applications:

Long-Range Radar | Mid-Range Radar | Short-Range Radar

Features

Optimized for Radar MMIC Loads

- 3 configurable step-down DC/DC regulators
- Configurable 0.9V to 1.9V output voltage (V_{OUT})
- Output current (I_{OUT}) rated up to 3A
- 5V boost regulator up to 500mA
- Integrated low- $R_{DS(ON)}$ MOSFETs using advanced MPS's BCD process
- Minimal external BOM overhead

Focused Attention on EMI/EMC, Noise and Output Ripple Reduction

- Configurable switching frequency (f_{SW}) up to 18MHz (no need for lossy LDO-based architecture and minimizes output filters)
- Frequency spread spectrum (FSS) with optional pseudo-random pattern
- Excellent load step performance compared to current mode control

Achieve Functional Safety Goals

- MPSafe™ – ISO 26262 Functional Safety rating of ASIL-B
- Built-in self-testing (BIST)
- Configurable sequencing and monitoring
- Watchdog timer
- Protection features

Vast Flexibility through Digital Configurability

- Dynamically adjust V_{OUT} , f_{SW} , current slew rate, protection thresholds, and more
- I²C interface with optional packet error checking (PEC)

PMICs

40V PMICs

	Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	# of Channels	Configuration	Current Ratings (A)	Max f _{SW} (MHz)	ADC	Frequency Spread Spectrum	MPSafe™ (Functional Safety)	Interface	Wettable Flank QFN Option	Package	Notes
48V N	MPQ70430FS-AEC1	4.5	65	3	2 Bucks, 1 Boost	Buck: 3/2 Boost: 0.25	2.5	-	✓	✓	SPI	✓	TQFN-34 (6x6)	ASIL-D independent voltage supervisor, power FET leakage monitoring, extensive protections, battery failure pre-warning
	MPQ70331FS-AEC1	4.5	42	3	2 Bucks, 1 Boost	Buck: 3/2 Boost: 0.25	2.5	-	✓	✓	SPI	✓	TQFN-34 (6x6)	ASIL-D independent voltage supervisor, power FET leakage monitoring, extensive protections, battery failure pre-warning
N	MPQ70332FS-AEC1	4.5	42	3	2 Bucks, 1 Boost	Buck: 3/2 Boost: 0.25	2.5	-	✓	✓	SPI	✓	TQFN-34 (6x6)	ASIL-B independent voltage supervisor, power FET leakage monitoring, extensive protections, battery failure pre-warning
N	MPQ70333FS-AEC1	4.5	42	2	1 Buck, 1 Boost	Buck: 3 Boost: 0.25	2.5	-	✓	✓	SPI	✓	TQFN-34 (6x6)	ASIL-D independent voltage supervisor, power FET leakage monitoring, extensive protections, battery failure pre-warning
S	MPQ70350FS-AEC1	3.5	36	4	3 Bucks, 1 LDO	Buck: 0.9/0.6/1.5 LDO: 0.4	2.2	-	✓	✓	I ² C	✓	QFN-15 (2.5x3.5)	ASIL-B, for high-resolution camera modules powered off-battery
S	MPQ70372FS-AEC1	2.5	36	8	1 Boost, 2 Bucks, 6 LDOs	Boost Controller Buck: 3/4 LDO: 0.7/0.4/ 0.26/0.16/ 0.16/0.1	2.5	-	✓	✓	SPI	✓	TQFN-34 (6x6)	ASIL-D, for MCUs
N	MPQ7902-AEC1	4.5	42	3	2 Bucks, 1 Boost	Buck: 3/2 Boost: 0.25	2.5	-	✓	✓	SPI	✓	QFN-34 (6x6)	Independent voltage supervisor, power FET leakage monitoring, extensive protections, battery failure pre-warning
N	MPQ70336FS-AEC1	3.3	40	5	1 Buck, 4 Voltage Monitors	Buck: 4	2.5	✓	✓	✓	I ² C	✓	TQFN-25 (3x6)	ASIL-D, 4x voltage monitors with 2 single-ended and 2 differential inputs
N	MPQ70340FS-AEC1	3.5	40	4	3 Bucks, 1 LDO	Buck: 0.6/0.6/1 LDO: 0.2	2.2	✓	✓	✓	I ² C	✓	QFN-15 (2.5x3.5)	ASIL-B, for camera modules powered off-battery
N	MPQ70342FS-AEC1	3.5	40	3	3 Bucks	Buck: 0.6/0.6/1	2.2	✓	✓	✓	I ² C	✓	QFN-15 (2.5x3.5)	ASIL-B, for camera or radar modules powered off-battery
S	MPQ73350FS-AEC1	3.5	40	2	2 Bucks	Buck: 7/10 (w/ Heatsink)	2.2	✓	✓	✓	SPI/I ² C	✓	QFN-28 (5x6)	ASIL-B, digital, dual outputs, ADC for diagnostics
S	MPQ73351FS-AEC1	3.5	40	2	2 Bucks	Buck: 7/10 (w/ Heatsink)	2.2	✓	✓	✓	SPI/I ² C	✓	QFN-28 (5x6)	ASIL-D, digital, dual outputs, ADC for diagnostics
S	MPQ4390-AEC1	3.5	40	2	2 Bucks	Buck: 7/10 (w/ Heatsink)	2.2	✓	✓	✓	SPI/I ² C	✓	QFN-28 (5x6)	QM version, digital, dual outputs, ADC for diagnostics

Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	# of Channels	Configuration	Current Ratings (A)	Max f _{SW} (MHz)	ADC	Frequency Spread Spectrum	MPSafe™ (Functional Safety)	Interface	Wettable Flank QFN Option	Package	Notes
MPQ2026A-AEC1	3	40	3	2 LDOs, 1 Pre-Boost	LDO: 0.3/0.3 Pre-Boost: 2.5	2.2	✓	✓	-	I²C	✓	QFN-16 (4x4)	Powers phantom active antenna supplies and ADAS modules, pre-boost enables cold/warm crank operation, digitally prog. V _{OUT}
MPQ2024A-AEC1	3	40	2	2 LDOs	LDO: 0.3/0.3	2.2	✓	✓	-	I²C	✓	QFN-16 (4x4)	Digitally programmable V _{OUT}
MPQ2022A-AEC1	3	40	2	1 LDO, 1 Pre-Boost	LDO: 0.3 Pre-Boost: 2.5	2.2	✓	✓	-	I²C	✓	QFN-16 (4x4)	Powers phantom active antenna supplies and ADAS modules, pre-boost enables cold/warm crank operation, digitally prog. V _{OUT}

18V PMICs

Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	# of Channels	Configuration	Current Ratings (A)	Max f _{SW} (MHz)	Adj. Power Sequencing	Frequency Spread Spectrum	MPSafe™ (Functional Safety)	Interface	Wettable Flank QFN Option	Package	Notes
S MPQ70250FS-AEC1	3.5	20	4	3 Bucks, 1 LDO	Buck: 0.9/0.6/1.5 LDO: 0.4	2.2	✓	✓	✓	I²C	✓	QFN-15 (2.5x3.5)	ASIL-B, for high-resolution camera modules powered over coaxial cable
MPQ70240FS-AEC1	3.5	18	4	3 Bucks, 1 LDO	Buck: 0.6/0.6/1 LDO: 0.2	2.2	✓	✓	✓	I²C	✓	QFN-15 (2.5x3.5)	ASIL-B, for camera modules powered over coaxial cable
MPQ70241FS-AEC1	3.5	18	4	3 Bucks, 1 LDO	Buck: 1/0.6/1.5 LDO: 0.2	2.2	✓	✓	✓	I²C	✓	QFN-15 (2.5x3.5)	ASIL-B, for camera modules, uprated current, powered over coaxial cable
MPQ70244FS-AEC1	3.5	18	4	3 Bucks, 1 LDO	Buck: 0.6/0.6/1 LDO: 0.2	2.2	✓	✓	✓	I²C	✓	QFN-15 (2.5x3.5)	ASIL-B, for camera modules, powered over coaxial cable, enhanced digital interface logic
N MPQ70245FS-AEC1	3.5	18	4	3 Bucks, 1 LDO	Buck: 0.6/0.6/1.5 LDO: 0.2	2.2	✓	✓	✓	I²C	✓	QFN-15 (2.5x3.5)	ASIL-B, for camera modules, uprated current, powered over coaxial cable, enhanced digital interface logic
N MPQ7929-AEC1	3.5	18	4	3 Bucks, 1 LDO	Buck: 1/0.6/1.5 LDO: 0.2	2.2	✓	✓	✓	I²C	✓	QFN-15 (2.5x3.5)	For camera modules, uprated current, powered over coaxial cable
MPQ7928-AEC1	3.5	18	4	3 Bucks, 1 LDO	Buck: 0.6/0.6/1 LDO: 0.2	2.2	✓	✓	-	I²C	✓	QFN-15 (2.5x3.5)	For camera modules powered over coaxial cable
N MPQ7928A-AEC1	3.5	18	4	3 Bucks, 1 LDO	Buck: 0.6/0.6/1 LDO: 0.2	2.2	✓	✓	-	I²C	✓	QFN-15 (2.5x3.5)	For camera modules powered over coaxial cable, additional power sequencing options

5V PMICs

	Part Number	V _{IN} (Min) (V)		V _{IN} (Max) (V)		# of Channels	Configuration	Current Ratings (A)		Max f _{SW} (MHz)		Multi-Phase Outputs	Frequency Spread Spectrum	MPSafe™ Interface	Wettable Flank QFN Option	Package	Notes
	MPQ70160FS-AEC1	2.7	5.5	6	6	6 Bucks	Buck: 3/3/4/4/1/1	2	✓	✓	✓	I²C	✓	QFN-32 (5x5)		ASIL-D, Q&A watchdog timer, prog. sequencing, ext. voltage monitoring, hiccup UVP/OVP and OCP, thermal shutdown	
N	MPQ70161FS-AEC1	2.7	5.5	6	6	6 Bucks	Buck: 1/1/2/2/1/1	2	✓	✓	✓	I²C	✓	QFN-32 (5x5)		ASIL-D, Q&A watchdog timer, prog. sequencing, ext. voltage monitoring, hiccup UVP/OVP and OCP, thermal shutdown	
N	MPQ70165FS-AEC1	2.7	5.5	6	6	6 Bucks	Buck: 3/3/4/4/1/1	2	✓	✓	✓	I²C	✓	QFN-32 (5x5)		ASIL-B, Q&A watchdog timer, prog. sequencing, ext. voltage monitoring, hiccup UVP/OVP and OCP, thermal shutdown	
N	MPQ70166FS-AEC1	2.7	5.5	6	6	6 Bucks	Buck: 1/1/2/2/1/1	2	✓	✓	✓	I²C	✓	QFN-32 (5x5)		ASIL-B, Q&A watchdog timer, prog. sequencing, ext. voltage monitoring, hiccup UVP/OVP and OCP, thermal shutdown	
N	MPQ70170FS-AEC1	2.8	5.5	9	5	5 Bucks, 4 LDOs	Buck: 4/4/4/4/2 LDO: 0.35/0.35/0.35/0.35	4.4	✓	✓	✓	I²C	✓	QFN-56 (8x8)		ASIL-D, 13x GPIOs, user-configurable state machine system OVP, DrMOS mode, Q&A watchdog timer	
N	MPQ70171FS-AEC1	2.8	5.5	9	5	5 Bucks, 4 LDOs	Buck: 4/4/4/4/2 LDO: 0.35/0.35/0.35/0.35	4.4	✓	✓	✓	I²C	✓	QFN-56 (8x8)		ASIL-B, 13x GPIOs, user-configurable state machine system OVP, DrMOS mode, Q&A watchdog timer	
	MPQ70700FS-AEC1	2.8	5.5	5	5	5 LDOs	LDO: 0.4/0.4/0.4/0.4/0.4	-	-	-	✓	I²C	✓	TQFN-24 (5x5)		ASIL-D, Q&A watchdog timer, 2x ext. voltage monitoring, 4x GPIOs, prog. sequencing, adj. V _{OUT} , UVP/OVP and OCP, thermal shutdown	
N	MPQ70701FS-AEC1	2.8	5.5	5	5	5 LDOs	LDO: 0.4/0.4/0.4/0.4/0.4	-	-	-	✓	I²C	✓	TQFN-24 (5x5)		ASIL-B, Q&A watchdog timer, 2x ext. voltage monitoring, 4x GPIOs, prog. sequencing, adj. V _{OUT} , UVP/OVP and OCP, thermal shutdown	
N	MPQ7970-AEC1	2.8	5.5	5	5	5 LDOs	LDO: 0.4/0.4/0.4/0.4/0.4	-	-	-	✓	I²C	✓	TQFN-24 (5x5)		Q&A watchdog timer, 2x ext. voltage monitoring, 4x GPIOs, prog. sequencing, adj. V _{OUT} , UVP/OVP and OCP, thermal shutdown	
N	MPQ70150FS-AEC1	3	5	4	3	3 Bucks, 1 Boost	Buck: 3.5/3.5/3.5 Boost: 0.5	17.6	-	✓	✓	I²C	✓	QFN-28 (5x5)		ASIL-B, ultra-low noise optimized for radars, advanced spread spectrum, window or Q&A watchdog timer, mount ID, ext. voltage monitoring	
N	MPQ70150FS-M-AEC1	3	5	4	3	3 Bucks, 1 Boost	Buck: 3.5/3.5/3.5 Boost: 0.5	17.6	-	✓	✓	I²C	✓	QFN-28 (5x5)		ASIL-B, ultra-low noise optimized for radars, advanced spread spectrum, window or Q&A watchdog timer, mount ID, ext. voltage monitoring	
N	MPQ70152FS-AEC1	3	5	4	2	2 Bucks, 1 Boost	Buck: 3.5/3.5 Boost: 0.5	17.6	-	✓	✓	I²C	✓	QFN-28 (5x5)		ASIL-B, ultra-low noise optimized for radars, advanced spread spectrum, window or Q&A watchdog timer, mount ID, ext. voltage monitoring	

	Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	# of Channels	Configuration	Current Ratings (A)	Max f _{SW} (MHz)	Multi-Phase Outputs	Frequency Spread Spectrum	MPSafe™ (Functional Safety)	Interface	Wettable Flank QFN Option	Package	Notes
N	MPQ70153FS-AEC1	3	5	4	3 Bucks	Buck: 3.5/3.5/3.5 Boost: 0.5	17.6	-	✓	✓	I²C	✓	QFN-28 (5x5)	ASIL-B, ultra-low noise optimized for radars, advanced spread spectrum, window or Q&A watchdog timer, mount ID, ext. voltage monitoring
	MPQ7920-AEC1	2.7	5.5	9	4 Bucks, 5 LDOs	Buck: 4.5/4/2.5/2 LDO: 0.3/0.3/0.3/0.3/0.3/0.01	2.75	-	-	-	I²C	✓	QFN-16 (4x4)	MTP prog., selectable time slot sequencing, extensive adj. and protections for bucks, dedicated RTC for LDOs, COT
N	MPQ74201FS-AEC1	2.7	5.5	6	4 Bucks, 2 LDOs	Buck: 6/6/6/6 LDO: 0.4/0.4	3	✓	-	✓	I²C	✓	QFN-29 (5x5)	ASIL-D, watchdog, MOTP memory with 4 user-selectable OTP pages via PRESET pin
	MPQ7930-AEC1	2.7	5.5	6	6 Bucks	Buck: 3/3/4/4/1/1	2	✓	✓	-	I²C	✓	QFN-32 (5x5)	Prog. sequencing, integrated adj. compensation network, hiccup UVP/OVP and OCP, thermal shutdown
N	MPQ7931-AEC1	2.7	5.5	6	6 Bucks	Buck: 1/1/2/2/1/1	2	✓	✓	-	I²C	✓	QFN-32 (5x5)	Prog. sequencing, integrated adj. compensation network, hiccup UVP/OVP and OCP, thermal shutdown
	MPQ7932-AEC1	2.7	5.5	6	6 Bucks	Buck: 3/3/4/4/1/1	2	✓	✓	-	I²C	✓	QFN-32 (5x5)	Q&A watchdog timer, prog. sequencing, ext. voltage monitoring, hiccup UVP/OVP and OCP, thermal shutdown
N	MPQ7933-AEC1	2.7	5.5	6	6 Bucks	Buck: 1/1/2/2/1/1	2	✓	✓	-	I²C	✓	QFN-32 (5x5)	Q&A watchdog timer, prog. sequencing, ext. voltage monitoring, hiccup UVP/OVP and OCP, thermal shutdown
N	MPQ7935-AEC1	2.7	5.5	5	4 Bucks, 1 LDO	Buck: 1/1/1/1 LDO: 0.3	2.2	✓	✓	-	I²C	✓	TLGA-29 (4.5x4.5)	MOTP
S	MPQ7936-AEC1	2.7	5.5	5	4 Bucks, 4 LDOs	Buck: 4.5/4.5/2.5/2 LDO: 0.55/0.55/0.3/0.3	2.2	✓	✓	-	I²C	✓	TLGA-29 (4.5x4.5)	Flexible system settings via I²C and MOTP

Linear Regulators & DDR Memory

MPS low-dropout (LDO) regulators are a great fit for lower-current automotive subsystems that need to minimize battery drain. Our LDOs are designed to run directly off of 12V batteries or 5V power rails, and offer excellent power supply rejection in a compact size.



Linear Regulators

5V LDO

	Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	I_{OUT} (mA)	Load Reg (%/mA)	PSRR @ 1kHz (dB)	V_{FB} (V)	I_q (Typ) (μ A)	Enable Pin	Adjustable Option (V)	Fixed-Output Versions (V)	Power Good	Package
	MPQ20056-AEC1	2.5	5.5	250	0.0003	63	0.8	150	✓	0.8 to 5	1.8, 2.5, 3.3	-	QFN-8 (2x2), TSOT23-5
N	MPQ20033-AEC1	1.6	5.5	300	0.002	70	0.5	26	✓	0.5 to 5	0.75, 0.8, 0.85, 1, 1.2, 1.8, 2.5, 2.8, 3.3	✓	QFN-8 (3x3), QFN-8 (2x2), QFN-6 (2x2), TSOT23-5, SOT563
	MPQ8904-AEC1	2.5	6.5	500	0.005	26	0.5	140	✓	0.5 to 5	-	✓	QFN-8 (2x3)
N	MPQ20032-AEC1	1.6	5.5	500	0.002	70	0.5	26	✓	0.5 to 5	0.75, 0.8, 0.85, 1, 1.2, 1.8, 2.5, 2.8, 3.3	✓	QFN-8 (3x3), QFN-8 (2x2), QFN-6 (2x2), TSOT23-5, SOT563
N	MPQ20031-AEC1	1.6	5.5	1000	0.002	70	0.5	26	✓	0.5 to 5	0.75, 0.8, 0.85, 1, 1.2, 1.8, 2.5, 2.8, 3.3	✓	QFN-8 (3x3), QFN-8 (2x2), QFN-6 (2x2)
	MPQ20051-AEC1	2.5	5.5	1000	0.0003	63	0.8	130	✓	0.8 to 5	-	-	QFN-8 (3x3)
P	MPQ20054-AEC1	1	6	4000	0.0875	57	0.8	25	✓	0.8 to 4.5	-	✓	QFN-12 (2.2x2.5), QFN-20 (3.5x3.5)

40V LDO

	Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	I_{OUT} (mA)	Load Reg (%/mA)	PSRR @ 1kHz (dB)	V_{FB} (V)	I_o (Typ) (uA)	Enable Pin	Adjustable Option (V)	Fixed-Output Versions (V)	Power Good	Package
	MPQ2016-AEC1	4	40	30	0.003	65	1.23	12	✓	1.2 to 24	-	-	QFN-8 (2x3)
	MPQ2013D-AEC1	2.5	40	100	0.01	41	1.22	3.2	✓	1.215 to 15	2.5, 3.3, 5	-	TSOT23-4
	MPQ2013A-AEC1	2.5	40	150	0.01	41	1.22	3.2	✓	1.215 to 15	QFN-8: 3.3, 2.5, 5, 1.8 QFN-6: 3.3, 5	-	QFN-6 (2x2), QFN-8 (3x3)
P	MPQ20081-AEC1	3	40	150	0.005	60	-	2.5	-	-	3.3, 5	-	SOT89
S	MPQ20083-AEC1	3	40	150	0.105	77	0.65	1.4	-	-	3.3, 4, 5, 8	-	QFN-10 (3x3)
S	MPQ20084-AEC1	3	40	150	0.105	77	0.65	1.4	✓	1.5 to 18	3.3, 4, 5, 8	✓	QFN-10 (3x3), SOT-223
S	MPQ20085-AEC1	3	40	150	0.105	77	0.65	1.4	✓	-	3.3, 5	✓	SOT-223
	MPQ2019-AEC1	3	40	300	0.04	45	1.25	10	✓	1.2 to 15	3.3, 5	✓	SOIC-8EP
	MPQ2019A-AEC1	3	40	300	0.04	45	1.25	10	✓	1.2 to 36	-	✓	SOIC-8EP
	MPQ2022A-AEC1	3	40	300	0.3	53	1	35	✓	1 to 13.6	-	✓	QFN-16 (4x4)
N	MPQ2023-AEC1	4.5	40	300	0.3	80	1	20	✓	1 to 13.6	-	✓	QFN-16 (4x4), QFN-14 (3x3)
	MPQ2024A-AEC1	3	40	300	0.3	53	1	35	✓	1 to 13.6	-	✓	QFN-16 (4x4)
	MPQ2026A-AEC1	3	40	300	0.3	53	1	35	✓	1 to 13.6	-	✓	QFN-16 (4x4)
P	MPQ2027-AEC1	4.5	40	300	0.3	80	1	20	✓	1 to 13.6	-	✓	QFN-16 (4x4)
N	MPQ71000FS-AEC1	4.5	40	300	0.3	80	1	20	✓	1 to 13.6	-	✓	QFN-16 (4x4), QFN-14 (3x3)
P	MPQ71001FS-AEC1	4.5	40	300	0.3	80	1	20	✓	1 to 13.6	-	✓	QFN-16 (4x4)
N	MPQ20082-AEC1	3	40	300	0.04	45	1.25	10	✓	1.25 to 36	3.3, 5	✓	MSOP-8EP
	MPQ2029-AEC1	3	40	450	0.04	45	1.25	10	✓	1.2 to 15	3.3, 5	✓	SOIC-8EP
N	MPQ20086-AEC1	3	40	500	0.003	60	0.65	2.5	✓	1.2 to 18	3.3, 5	✓	SOIC-8EP
N	MPQ20087-AEC1	3	40	500	0.005	60	-	2.5	-	-	3.3, 5	✓	SOIC-8EP
S	MPQ20088-AEC1	3	40	500	0.005	60	-	2.5	-	-	3.3, 5	-	SOT89, T0252-3

DDR Memory Power

Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	I_{OUT} (A)	Accuracy for VTT, VTT _{REF} (mV)	V Driver (V)	Package	Notes
MPQ20073-AEC1	1.3	6	2	30	3.3	MSOP-8E	DDR2/3 termination regulator



New Product



Sampling Product



Preview Product



48V-Ready Product

monolithicpower.com

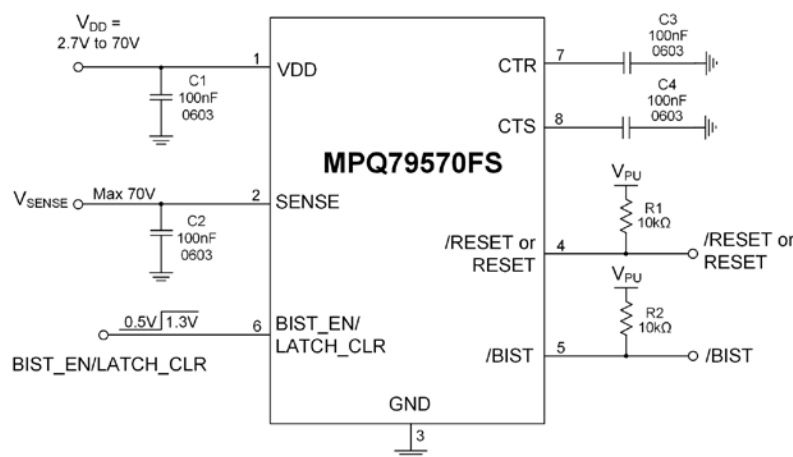
Monitoring & Supervision

MPS automotive monitoring and supervision ICs offer an easy way to enhance system oversight using minimal board space. Our power good (PG) supervisors accurately monitor for correct supply voltage conditions, and our watchdog timers help ensure that system microcontrollers (MCUs) are operating correctly. Power sequencers are used for complex systems that require precision enabling and disabling of multiple voltage rails.



MPQ79570FS-AEC1 SAMPLING

MPSafe™, ASIL-D, 70V, Window Voltage Supervisor (Reset IC)



Features

Precisely and Accurately Monitor Voltage Rails

- Monitoring type: over-voltage (OV) and under-voltage (UV), OV only, or UV only
- 2.7V to 65V voltage monitoring range
- OV/UV threshold steps:
 - 2.7V to 5V input voltage (V_{IN}) range: 100mV
 - 5.5V to 10V V_{IN} range: 500mV
 - 11V to 18V, or 47V to 65V V_{IN} range: 1V
 - 20V to 42V V_{IN} range: 2V
- $\pm 0.9\%$ Threshold Accuracy (-40 to $+125^\circ\text{C}$)
- Hysteresis Options: $\pm 2\%$, $\pm 5\%$, $\pm 10\%$

Application Flexibility

- 48V system compatible with a 2.7V to 70V supply voltage (V_{DD}) range
- Low 4 μA quiescent current (I_Q)
- Separate supply and sensing pins
- Built-in self-testing (BIST) enable and completion pins
- Output reset latching and clearing
- Open-drain and push-pull RESET topology options
- Active low and active high RESET logic options
- Configurable reset time delay
- Configurable deglitch time

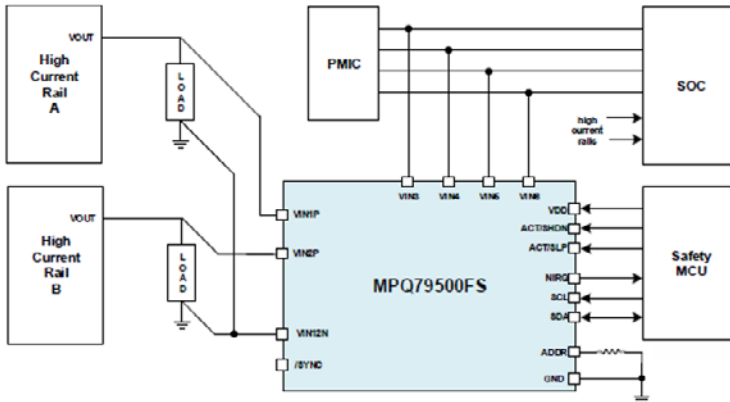
Functional Safety Compliant

- ASIL-D
- BIST
- Reset output detection

Key Specifications:

2.7 to 70V	1
Supply Voltage	Channels
2.7 to 65V	TSOT-23-8
Monitored Voltage	Package

MPSafe™, ASIL-D, 6-Channel Voltage Monitor

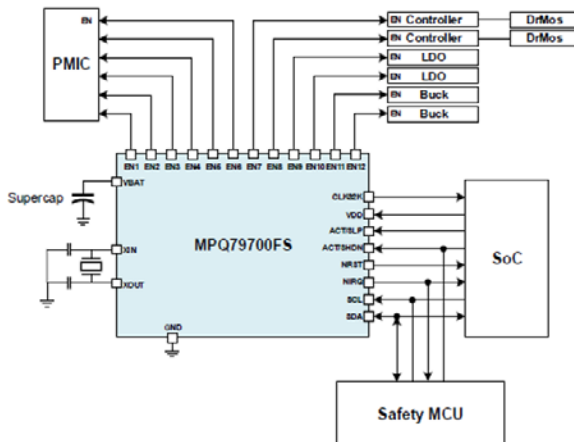


Key Specifications:

2.7V to 5.5V	6
Input Voltage	Channels
ASIL-D	QFN-16 (3mmx3mm)
Functional Safety Rating	Bandwidth

MPQ79700FS-AEC1

MPSafe™, ASIL-D, 12-Channel Power Sequencer



Key Specifications:

2.7V to 5.5V	12	ASIL-D
Input Voltage	Channels	Functional Safety Rating
QFN-24 (3mmx3mm)		
Package		

Features

Built for Mission-Critical Safety

- Built-in self-test (BIST)
- SPFM: 99% coverage, LFM: 90% coverage
- Cyclic redundancy check (CRC) protection on registers
- Write protection on critical safety registers
- I²C interface includes packet error checking (PEC)
- Multi-page one-time programmable (MOTP) memory with error correction checking (ECC)
- Power sequence recording
- Thermal warning and thermal shutdown
- Interrupt output pin

Class-Leading Accuracy and Resolution

- >1V: voltage threshold accuracy of $\pm 0.5\%$ max
- <1V: voltage threshold accuracy of $\pm 5\text{mV}$ max
- 5mV steps (0.2V to 1.475V) or 20mV steps (0.8V to 5.5V)

Monitors SoC Power Rails with a Wide Range of Requirements

- 2 differential inputs for monitoring high-current rails
- 4 single-ended inputs for monitoring low-current rails
- Over-voltage (OV) and under-voltage (UV) monitoring

Scalability

- SYNC output to enable multiple devices to synchronize

Features

Built for Mission-Critical Safety

- Built-in self-test (BIST)
- SPFM: 99% coverage, LFM: 90% coverage
- Cyclic redundancy check (CRC) protection on registers
- Window watchdog
- Write protection on critical safety registers
- I²C interface includes packet error checking (PEC)
- Multi-page one-time programmable (MOTP) memory with error correction checking (ECC)
- Power sequence recording
- Thermal warning and thermal shutdown
- System reset signal

Ensure High Accuracy when Sequencing System Power Rails

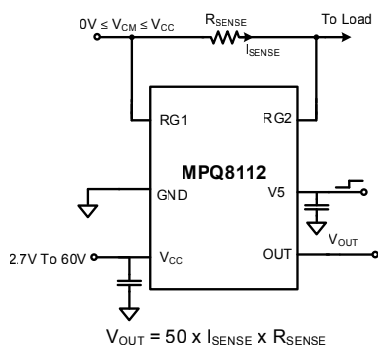
- 32kHz crystal oscillator driver
- Real-time clock (RTC)
- Time-slot based sequencing

Application Flexibility and Survivability

- Configurable sequencer order, I²C address, and watchdog timing
- Backup battery input

MPQ8112-AEC1

60V, High-Side Current-Sense Amplifier



Key Specifications:

2.7V to 60V	0V to 60V	±1%
Input Voltage	Common Mode Input Range	Current-Sense Gain Accuracy
700kHz	TSOT23-6	
Bandwidth	Package	

Features

Built to Handle Tough Automotive Transients

- Load dump up to 60V
- Cold crank down to 2.7V

Great Current-Sense Performance

- ±1% current-sense gain accuracy
- High current-sensing capabilities
- 700kHz bandwidth

Extends Battery Life

- 0.2μA typical shutdown current (I_{SD})
- 300μA typical supply current

Reduces Board Size

- Small footprint

Monitoring & Supervision

Voltage Supervisors & Monitors (Reset ICs)

	Part Number	# of Channels	V_{IN} (Min) (V)	V_{IN} (Max) (V)	Reset Threshold (V)	Threshold Accuracy (%)	I_o (Typ) (μA)	Reset Delay	Package	Notes
	MPQ6400-33-AEC1	1	1.8	5.5	2.93	±1.0	1.6	2ms to 10s	QFN-6 (2x2)	Capacitor-set delay, reset output to MCU
	MPQ6400-01-AEC1	1	1.8	5.5	Adj	±1.0	1.6	2ms to 10s	QFN-6 (2x2)	Capacitor-set delay, reset output to MCU
	MPQ79500FS-AEC1	6	2.7	5.5	Adj	±0.5	560	Adj	QFN-16 (3x3)	MPSafe™, ASIL-D voltage monitor with prog. features via I²C
N	MPQ79501FS-AEC1	6	2.7	5.5	Adj	±0.5	560	Adj	QFN-16 (3x3)	MPSafe™, ASIL-B voltage monitor with prog. features via I²C
S	MPQ79504FS-AEC1	6	2.7	5.5	Adj	±0.5	560	Adj	QFN-16 (3x3)	MPSafe™, ASIL-B voltage monitor with prog. features via I²C, watchdog timer
N	MPQ79505FS-AEC1	6	2.7	5.5	Adj	±0.5	560	Adj	QFN-16 (3x3)	MPSafe™, ASIL-D voltage monitor with prog. features via I²C, watchdog timer
S	MPQ79520FS-AEC1	5	2.7	5.5	Adj	±0.5	560	Adj	QFN-16 (3x3)	MPSafe™, ASIL-D voltage monitor with prog. features via I²C

	Part Number	# of Channels	V_{IN} (Min) (V)	V_{IN} (Max) (V)	Reset Threshold (V)	Threshold Accuracy (%)	I_a (Typ) (μ A)	Reset Delay	Package	Notes
S	MPQ79521FS-AEC1	5	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	MPSafe™, ASIL-B voltage monitor with prog. features via I²C
S	MPQ79524FS-AEC1	5	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	MPSafe™, ASIL-B voltage monitor with prog. features via I²C, watchdog timer
S	MPQ79525FS-AEC1	5	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	MPSafe™, ASIL-D voltage monitor with prog. features via I²C, watchdog timer
S	MPQ79530FS-AEC1	3	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	MPSafe™ ASIL-D voltage monitor with prog. features via I²C
S	MPQ79531FS-AEC1	3	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	MPSafe™ ASIL-B voltage monitor with prog. features via I²C
S	MPQ79534FS-AEC1	3	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	MPSafe™ ASIL-B voltage monitor with prog. features via I²C, watchdog timer
S	MPQ79535FS-AEC1	3	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	MPSafe™ ASIL-D voltage monitor with prog. features via I²C, watchdog timer
S	MPQ79540FS-AEC1	1	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	MPSafe™ ASIL-D voltage monitor with prog. features via I²C
S	MPQ79541FS-AEC1	1	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	MPSafe™ ASIL-B voltage monitor with prog. features via I²C
S	MPQ79544FS-AEC1	1	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	MPSafe™ ASIL-B voltage monitor with prog. features via I²C, watchdog timer
S	MPQ79545FS-AEC1	1	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	MPSafe™ ASIL-D voltage monitor with prog. features via I²C, watchdog timer
48V S	MPQ79570FS-AEC1	1	2.7	70	Adj	± 0.9	4	Adj	TSOT-23-8 (2.9x1.6)	MPSafe™ ASIL-D, wide V_{IN} window voltage monitor, directly monitor 48V battery
48V S	MPQ79571FS-AEC1	1	2.7	40	Adj	± 0.9	4	Adj	TSOT-23-8 (2.9x1.6)	MPSafe™ ASIL-D, off-battery (12V) window voltage monitor
S	MPQ79572FS-AEC1	1	2.7	70	Adj	± 0.9	4	Adj	TSOT-23-8 (2.9x1.6)	MPSafe™ ASIL-B, wide V_{IN} window voltage monitor, directly monitor 48V battery
S	MPQ79573FS-AEC1	1	2.7	40	Adj	± 0.9	4	Adj	TSOT-23-8 (2.9x1.6)	MPSafe™ ASIL-B, off-battery (12V) window voltage monitor
S	MPQ79575FS-AEC1	1	2.7	6.5	Adj	± 0.9	4	Adj	TSOT-23-8 (2.9x1.6)	MPSafe™ ASIL-D, low V_{IN} window voltage monitor
S	MPQ79576FS-AEC1	1	2.7	6.5	Adj	± 0.9	4	Adj	TSOT-23-8 (2.9x1.6)	MPSafe™ ASIL-B, low V_{IN} window voltage monitor
S	MPQ7940-AEC1	6	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	QM voltage monitor with prog. features via I²C
S	MPQ7940W-AEC1	6	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	QM voltage monitor with prog. features via I²C, watchdog timer
S	MPQ7942-AEC1	5	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	QM voltage monitor with prog. features via I²C

	Part Number	# of Channels	V _{IN} (Min) (V)	V _{IN} (Max) (V)	Reset Threshold (V)	Threshold Accuracy (%)	I _O (Typ) (µA)	Reset Delay	Package	Notes
S	MPQ7942W-AEC1	5	2.7	5.5	Adj	±0.5	560	Adj	QFN-16 (3x3)	QM voltage monitor with prog. features via I ² C, watchdog timer
S	MPQ7943-AEC1	3	2.7	5.5	Adj	±0.5	560	Adj	QFN-16 (3x3)	QM voltage monitor with prog. features via I ² C
S	MPQ7943W-AEC1	3	2.7	5.5	Adj	±0.5	560	Adj	QFN-16 (3x3)	QM voltage monitor with prog. features via I ² C, watchdog timer
N	MPQ7944-AEC1	1	2.7	5.5	Adj	±0.5	560	Adj	QFN-16 (3x3)	QM voltage monitor with prog. features via I ² C
S	MPQ7944W-AEC1	1	2.7	5.5	Adj	±0.5	560	Adj	QFN-16 (3x3)	QM voltage monitor with prog. features via I ² C, watchdog timer

Watchdog Timers

Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	Reset Threshold (V)	Short Window Mode	Long Window Mode	Disable Input	I _O (Typ) (µA)	Package
MPQ6411-AEC1	4.5	5.5	4.5	✓	✓	✓	16	SOIC-8
MPQ6411-33-AEC1	3	3.6	2.9	✓	✓	✓	10	SOIC-8

Power Sequencers

Part Number	# of Channels	V _{IN} (Min) (V)	V _{IN} (Max) (V)	32kHz Crystal Oscillator Driver	RTC	System Reset Signal	Watchdog Timer	Package	Notes
MPQ79700FS-AEC1	12	2.7	5.5	✓	✓	✓	✓	QFN-24 (4x4)	MPSafe™, ASIL-D, prog. features via I ² C
N MPQ79701FS-AEC1	12	2.7	5.5	✓	✓	✓	✓	QFN-24 (4x4)	MPSafe™, ASIL-B, prog. features via I ² C
S MPQ79710FS-AEC1	10	2.7	5.5	✓	✓	✓	✓	QFN-24 (4x4)	MPSafe™, ASIL-D, prog. features via I ² C
S MPQ79711FS-AEC1	10	2.7	5.5	✓	✓	✓	✓	QFN-24 (4x4)	MPSafe™, ASIL-B, prog. features via I ² C
S MPQ79720FS-AEC1	8	2.7	5.5	✓	✓	✓	✓	QFN-24 (4x4)	MPSafe™, ASIL-D, prog. features via I ² C
S MPQ79721FS-AEC1	8	2.7	5.5	✓	✓	✓	✓	QFN-24 (4x4)	MPSafe™, ASIL-B, prog. features via I ² C

	Part Number	# of Channels	V _{IN} (Min) (V)	V _{IN} (Max) (V)	32kHz Crystal	RTC	System Reset Signal	Oscillator Driver	Watchdog Timer	Package	Notes
S	MPQ79730FS-AEC1	6	2.7	5.5	✓	✓	✓	✓	✓	QFN-24 (4x4)	MPSafe™, ASIL-D, prog. features via I²C
S	MPQ79731FS-AEC1	6	2.7	5.5	✓	✓	✓	✓	✓	QFN-24 (4x4)	MPSafe™, ASIL-B, prog. features via I²C
S	MPQ7960-AEC1	12	2.7	5.5	✓	✓	✓	✓	✓	QFN-24 (4x4)	QM, prog. features via I²C
S	MPQ7961-AEC1	10	2.7	5.5	✓	✓	✓	✓	✓	QFN-24 (4x4)	QM, prog. features via I²C
S	MPQ7962-AEC1	8	2.7	5.5	✓	✓	✓	✓	✓	QFN-24 (4x4)	QM, prog. features via I²C
S	MPQ7963-AEC1	6	2.7	5.5	✓	✓	✓	✓	✓	QFN-24 (4x4)	QM, prog. features via I²C

Current-Sense Monitors

	Part Number		Common-Mode Voltage (Max) (V)	Common-Mode Voltage (Min) (V)	Supply Voltage (Max) (V)	Supply Voltage (Min) (V)	Input Offset (±) (mV)	Voltage Gain (mV)	Gain Error (Max) (%)	Common Mode Rejection (min) (dB)	Bandwidth (Typ) kHz	I _Q (Max) (µA)	Package	Notes
	MPQ8112-AEC1	60	2.7	60	2.7	1	50	2	65	300	360	TSOT-23-6	-	
	MPQ8112A-AEC1	60	2.7	60	2.7	1	Adj	2	65	300	360	TSOT-23-6	-	
	MPQ8113-AEC1	60	2.7	60	2.7	1	50	2	65	300	360	TSOT-23-6	-	Adjustable maximum output voltage
	MPQ8113A-AEC1	60	2.7	60	2.7	1	Adj	2	65	300	360	TSOT-23-6, QFN-6	-	Adjustable maximum output voltage

LED Lighting

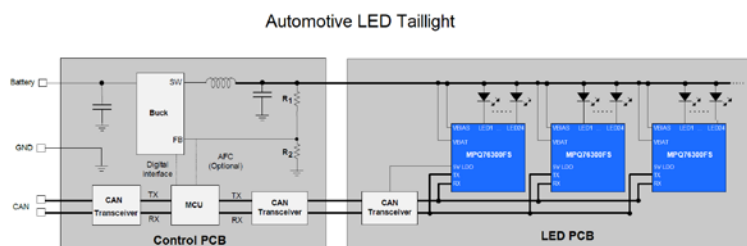
MPS offers robust, cost-effective LED drivers to address all types of automotive lighting needs, from headlamps to tail lights and everything inside. Most drivers integrate flexible dimming modes and fault detection features, and come in compact packages to help designers achieve cutting-edge lighting form factors.



Flexible Dimming Modes | Compact Package | Modular Design

MPQ76300FS-AEC1 NEW

**MPSafe™, ASIL-B, 24-Channel, 100mA,
Smart Linear/Current Sink LED Driver**



Key Specifications:

2.5V to 28V	24	100mA/Channel
Input Voltage	Channels	Current

TQFP-48 (7mmx7mm)

Package

Features

Optimized for Dynamic LED Lighting

- Capable of individually driving all 24 channels at 100mA simultaneously
- Supports channels in parallel
- Cascade up to 32 ICs to support up to 768 channels
- Supports up to 6 LEDs per channel
- Pin-configurable device address
- Supports up to 8 groups selections
- Flexible group settings:
 - Group pulse-width modulation (PWM) dimming frequency
 - Group PWM/analog dimming duty cycle %
 - Group slew rate
 - Group phase shift
 - Group fault behavior

Excellent Thermal Performance

- Digital adaptive feedback control (AFC™) optimizes pre-regulator output
- 450mV current sink headroom at 100mA

Robust Communication

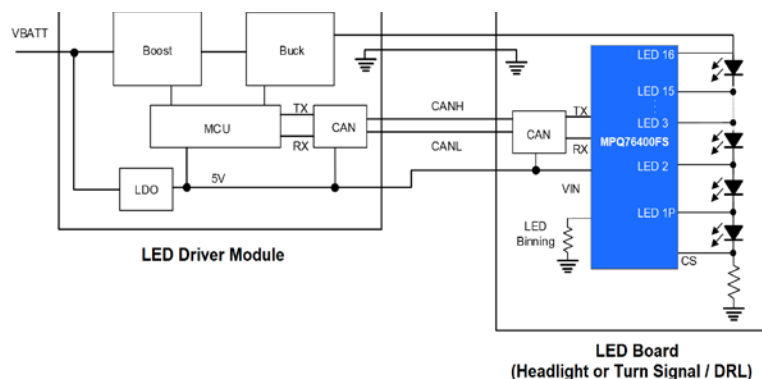
- 2Mbps UART over CAN interface

Built for Safety-Oriented Systems

- MPSafe™ – ISO 26262 Functional Safety rating of ASIL-B
- 8-bit SAR analog-to-digital converter (ADC) for telemetry and diagnostics
- One-fail-all-fail function
- Fault registers for system protection and diagnostics
- Analog and digital built-in self-test (BIST)
- Cyclic redundancy check (CRC) for communication and memory
- Supports assembly line one-time programmable (OTP) memory
- Protection suite includes thermal warning, LED open/short protection, pin open/short protection
- Enter limp home state during watchdog timeout
- External limp home pin

MPQ76400FS-AEC1 SAMPLING

MPSafe™, ASIL-B, 16-Channel, 1.6A, LED Matrix Manager



Key Specifications:

16 Channels **1.6A Continuous** Current

ASIL-B Functional Safety **TQFP-48 (7mmx7mm)** Package

Features

Optimized for Adaptive Driving Beam Headlights

- 16 Integrated LED dimming switches
- Supports up to 1.6A continuous current
- 60V max voltage drop from switch to ground
- 20V max voltage drop from switch to switch
- 4 strings of 4 switches in series
- Independent control of each switch
- 10-bit resolution for 1Hz to 8kHz pulse-width modulation (PWM) dimming frequency
- PWM dimming synchronization across multiple devices

Fast Communication Speed for Precise LED Control

- Up to 2Mbps UART communication interface
- Compatible with CAN physical layer
- LED current (I_{LED}) dimming duty settings
- Communication watchdog

Easy Diagnostics with Integrated Analog-to-Digital Converter (ADC)

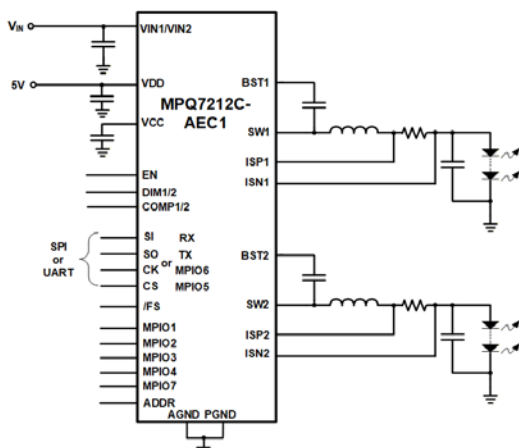
- LED voltage (V_{LED}) for each channel
- LED string current-sense
- Die temperature
- Multi-purpose ADC inputs (thermal compatible)

Optimized for EMI/EMC

- Switch slew rate control
- Phase shift control for EMI reduction
- Frequency spread spectrum (FSS) with internal clock

Additional Features

- MPSafe™ – ISO 26262 Functional Safety rating of ASIL-B
- Enter limp home state during watchdog timeout
- External limp home pin
- Advanced diagnostics with fault indicator
- LED short/open detection and protection
- Thermal warning and thermal shutdown
- Multi-page one-time programmable (MOTP) memory
- Available in AEC-Q100 Grade 1

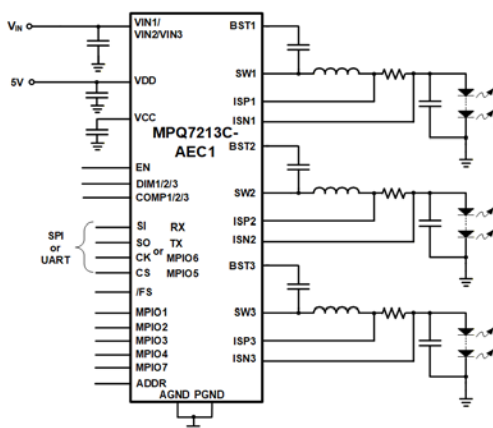
MPQ7212C-AEC1 SAMPLING**60V, 2A, Synchronous, Dual Buck LED Driver****Key Specifications:**

4.5V to 60V	2A/Channel	TQFP-48 (7mmx7mm), Top-Side Cooling/ Bottom-Side Cooling	440kHz/ 460kHz/ 2.2MHz
Input Voltage	Output Current	Package	Switching Frequency

Applications:

Automotive Headlights

Adaptive LED Modules (Optimized for External LED Matrix Managers)

MPQ7213C-AEC1 SAMPLING**60V, 2A, Synchronous, Triple Buck LED Driver****Key Specifications:**

4.5V to 60V	2A/Channel	TQFP-48 (7mmx7mm), Top-Side Cooling/ Bottom-Side Cooling	440kHz/ 460kHz/ 2.2MHz
Input Voltage	Output Current	Package	Switching Frequency

Applications:

Automotive Headlights

Adaptive LED Modules (Optimized for External LED Matrix Managers)

Features**Built to Handle Tough Automotive Transients**

- Load dump up to 65V, cold crank down to 4.5V

Built for LED Applications

- 2 channels, 2A max current per channel
- Integrated low on resistance ($R_{DS(ON)}$) MOSFETs
- $\pm 4\%$ LED current accuracy
- Thermal pad (top side or bottom side) to optimize heat dissipation
- 7x 5V multi-purpose I/Os (MPIOs)
- 8-bit analog-to-digital converter (ADC) for binning resistor or negative temperature coefficient (NTC) multiplexed with GPIOs (digital or PWM out)
- 2-step dimming up to 100% duty cycle
- 100Hz to 2kHz, 12-bit PWM dimming
- 5-bit analog dimming
- Fault protections: LED open, input voltage (V_{IN}) over-voltage protection (OVP), output voltage (V_{OUT}) under-voltage protection (UVP), over-current protection (OCP), thermal warning and shutdown
- Fault pin
- Limp home

Minimize EMI and Optimize EMC

- Fixed 400kHz, 460kHz, or 2.2MHz switching frequency (f_{SW})
- Frequency spread spectrum (FSS)
- Bucks 1 and 2 phase-shifted 120°

Vast Flexibility with Digital Interfaces

- SPI or UART (250kHz to 2MHz) interface
- Configurable current limit and interrupt mask

Features**Built to Handle Tough Automotive Transients**

- Load dump up to 65V, cold crank down to 4.5V

Built for LED Applications

- 3 channels, 2A max current per channel
- Integrated low on resistance ($R_{DS(ON)}$) MOSFETs
- $\pm 4\%$ LED current accuracy
- Thermal pad (top side or bottom side) to optimize heat dissipation
- 7x 5V multi-purpose I/Os (MPIOs)
- 8-bit analog-to-digital converter (ADC) for binning resistor or negative temperature coefficient (NTC) multiplexed with GPIOs (digital or PWM out)
- 2-step dimming up to 100% duty cycle
- 100Hz to 2kHz, 12-bit PWM dimming
- 5-bit analog dimming
- Fault protections: LED open, input voltage (V_{IN}) over-voltage protection (OVP), output voltage (V_{OUT}) under-voltage protection (UVP), over-current protection (OCP), thermal warning and shutdown
- Fault pin
- Limp home

Minimize EMI and Optimize EMC

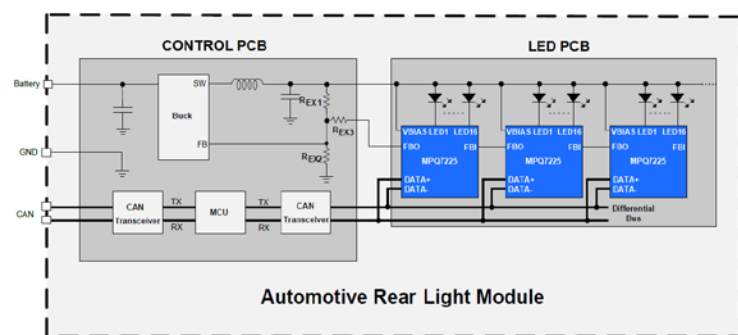
- Fixed 400kHz, 460kHz, or 2.2MHz switching frequency (f_{SW})
- Frequency spread spectrum (FSS)
- Bucks 1 and 2 phase-shifted 120°

Vast Flexibility with Digital Interfaces

- SPI or UART (250kHz to 2MHz) interface
- Configurable current limit and interrupt mask

MPQ7225-AEC1

16-Channel Current Sink LED Driver



Key Specifications:

2.5V to 18V	16	200mA per Channel	QFN-32 (5mmx6mm)
Input Voltage	Channels	Current	Package

Versions:

MPQ7224	without Interface
MPQ7225	Differential Interface
MPQ7228	UART Interface

Features

Class-Leading Brightness

- Capable of individually driving all 16 channels at 200mA simultaneously

Ease of Scalability

- Cascade up to 16 ICs to support up to 256 channels
- Capable of 6 LEDs per channel, supporting up to 1536 LEDs total
- Pin-configurable device address

Excellent Thermal Performance

- Adaptive feedback control (AFC™) dynamically optimizes pre-regulator output
- 300mV current sink headroom at 200mA

Robust Communication

- 2Mbps UART or differential interface (CAN-compatible)
- 12-bit PWM or 6-bit analog dimming

Optimized for EMI/EMC

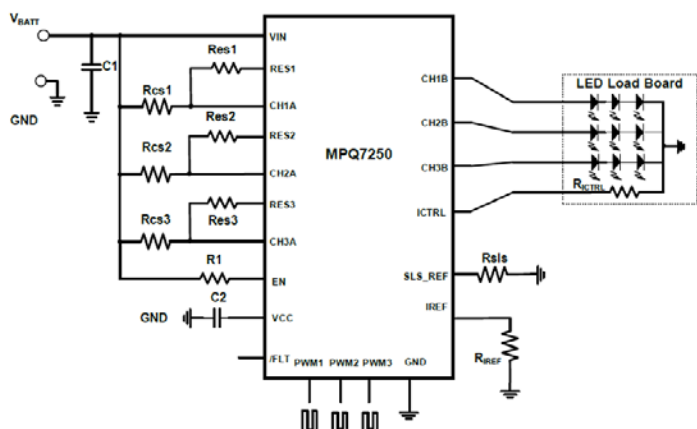
- Configurable phase shift and slew rate
- Frequency spread spectrum (FFS) via internal clock
- Selectable pulse-width modulation (PWM) dimming frequency

Safety-Oriented

- Can aid a system design to achieve functional safety
- Thermal warning, LED open/short protection, and pin open/short protection
- Failsafe pin and fault registers for system protection and diagnostics

MPQ7250-AEC1 NEW

3-Channel Current Source LED Driver



Key Specifications:

4.5V to 20V	3	200mA/Channel	QFN-20 (4mmx4mm) Wettable Flank
Input Voltage	Channels	Current	Package

Applications:

Reverse Lights | Rear Fog Lights | Side Markers | Puddle Lights

Features

Built to Handle Tough Automotive Transients

- Load dump up to 40V
- Cold crank down to 4.5V

Designed for Automotive LED applications

- Class-leading brightness with capability to drive 3 channels at 200mA simultaneously
- PWM dimming: 3x inputs from 100Hz to 1kHz
- Analog dimming
- LED binning resistor pin for manufacturing ease

Excellent Thermal Performance

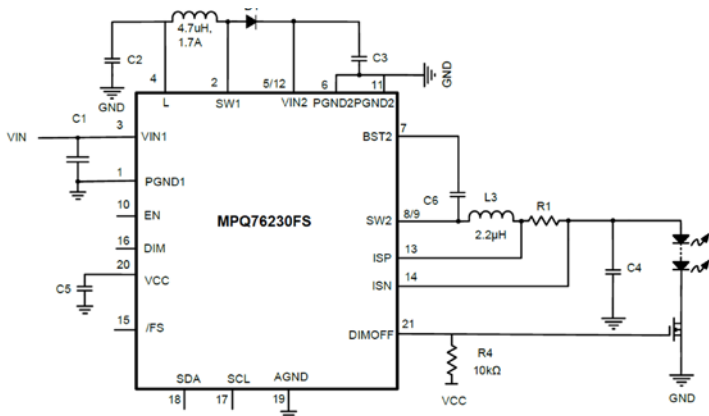
- External shunt resistors for thermal load balancing
- 300mV current sink headroom at 200mA

Built for Safety-Oriented Systems

- Single LED short (SLS) detection
- Fault pin for system protection and diagnostics
- Protection suite includes LED open protection, LED short-to-ground protection, and thermal shutdown
- Latch-off or hiccup fault modes
- Assists system design to achieve a Functional Safety rating of ASIL-B
- AEC-Q100 Qualified

MPQ76230FS-AEC1 SAMPLING

MPSafe™, ASIL-C, 36V, 10A IR LED or VCSEL Driver with Eye-Safety Features



Key Specifications:

6V to 42V	10A	ASIL-C
Input Voltage	Output Current	Functional Safety

QFN-21 (4mmx4mm)

Wettable Flank

Package

Applications:

Driver Monitoring Systems (DMS)
Occupant Monitoring Systems (OMS)

Features

Built to Handle Tough Automotive Transients

- Load dump up to 42V, cold crank down to 3V

Do More with Less

- Pre-boost and buck integrated into a single package
- Integrated low- $R_{DS(ON)}$ MOSFETs using advanced MPS BCD process
- Delivers powerful 10A output in a compact solution
- Minimal external BOM overhead

Optimized for EMI/EMC

- 2.2MHz switching frequency (f_{SW}) above AM band
- Frequency spread spectrum (FSS)
- MeshConnect™ packaging

Achieve Functional Safety Goals

- MPSafe™ – ISO 26262 ASIL-C hardware capable rated
- Eye safety features include current, dimming on-time, and dimming frame rate frequency limit
- Compatible with common 30FPS, 60FPS, 120FPS dimming requirements
- LED and VCSEL short/open protection, string protection, and thermal shutdown

Enhanced System Oversight

- 8-bit SAR analog-to-digital converter (ADC) monitors for over-current (OC), under-voltage (UV), and over-voltage (OV) conditions, as well as input voltage (V_{IN}) and temperature

Enhanced System Oversight

- Instantly adjusts output current (I_{OUT}), current slew rate, dimming frequency, pulse width, dimming frequency, and more
- I²C interface with packet error checking (PEC)

LED Drivers (Lighting)

Backlighting

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	Topology	# of Channels	I_{OUT} per Channel (mA)	f_{SW} (kHz)	Dimming Modes	LED Protection	Channel Current Matching (%)	Interface	Wettable Flank QFN Option	Package	Notes
MPQ3362-AEC1	3	42	Boost	1	-	200 to 2200	PWM, Analog	Open, Short	-	-	-	TSOT23-8	4A current limit, low $R_{DS(ON)}$
MPQ3359-AEC1	3.5	42	Boost/SEPIC	4	150	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5	PWM	✓	QFN-20 (3x4)	Separated PWM and analog dimming pin
MPQ3359A-AEC1	3.5	42	Boost/SEPIC	1/ 2/ 3/ 4	150	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5	PWM	✓	QFN-20 (3x4)	Separated PWM and analog dimming pin

	Part Number	V_{in} (Min) (V)	V_{in} (Abs Max) (V)	Topology	# of Channels	I_{out} per Channel (mA)	f_{sw} (kHz)	Dimming Modes	LED Protection	Channel Current Matching (%)	Interface	Wettable Flank QFN Option	Package	Notes
	MPQ3364-AEC1	3.5	42	Boost/SEPIC	4	150	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5	I ² C	✓	QFN-24 (4x4)	Three selectable IC addresses
S	MPQ3364H-AEC1	3.5	42	Boost/SEPIC	4	150	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5	I ² C	✓	QFN-24 (4x4)	Next version of the MPQ3364-AEC1
N	MPQ3365-AEC1	3.5	42	Boost/SEPIC	4	150	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5	I ² C	✓	QFN-24 (4x4)	Three selectable IC addresses, I ² C dimming
N	MPQ3365A-AEC1	3.5	42	Boost/SEPIC	5	150	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5	I ² C	✓	QFN-24 (4x4)	Three selectable IC addresses, I ² C dimming
	MPQ3386-AEC1	4.5	30	Boost	6	30	625 or 1250	PWM, Analog	Open, Short	3	-	✓	QFN-24 (4x4)	-
	MPQ3387L-AEC1	3	30	Boost	6	45	500 or 1250	PWM, Mixed	Open, Short	3	-	-	QFN-24 (4x4)	-
	MPQ3369-AEC1	3.5	42	Boost/SEPIC	6	100	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5	I ² C	✓	QFN-24 (4x4), TSSOP-28EP	Spread spectrum, thermal derating, fault pin, rich protection features
	MPQ3367-AEC1	3.5	42	Boost/SEPIC	6	150	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5	I ² C	✓	QFN-24 (4x4), TSSOP-28EP	Spread spectrum, thermal derating, fault pin, rich protection features
S	MPQ3367H-AEC1	3.5	42	Boost/SEPIC	6	150	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5	I ² C	✓	QFN-24 (4x4)	Next version of the MPQ3367-AEC1
	MPQ3367A-AEC1	3.5	42	Boost/SEPIC	6	150	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5	I ² C	✓	QFN-24 (4x4)	MPQ3367-AEC1 features, three prog. addresses
	MPQ3359C-AEC1	3.5	42	Boost/SEPIC	4	160	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5	PWM	✓	QFN-20 (3x4)	External FET, separated PWM and analog dimming
N	MPQ3366C-AEC1	3.8	42	Boost/SEPIC	6	200	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5	I ² C	✓	QFN-24 (4x4)	External FET, four selectable IC addresses, I ² C dimming
S	MPQ3366A-AEC1	3.8	42	Boost/SEPIC	6	200	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5	I ² C	✓	QFN-24 (4x4)	Supports 16-bit PWM dimming resolution based on the MPQ3366C (15 bits)
N	MPQ3368-AEC1	3.8	42	Boost/SEPIC	8	200	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5	I ² C	✓	QFN-24 (4x4)	External FET, four selectable IC addresses, I ² C dimming
S	MPQ3368A-AEC1	3.8	42	Boost/SEPIC	8	200	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5	I ² C	✓	QFN-24 (4x4)	Supports 16-bit PWM dimming resolutions based on the MPQ33668 (15 bits)

RBG LED Drivers

	Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	Topology	# of Channels	I_{OUT} per Channel (mA)	Dimming Modes	LED Protection	Channel Current Matching (%)	Interface	Wettable Flank QFN Option	Package	Notes
	MPQ3323B-AEC1	4.5	16	Linear	4	320	PWM, Analog	Open, Short	2	I ² C	✓	QFN-24 (4x4)	Independent channel control, daisy-chainable, digital config.
	MPQ3324-AEC1	4	16	Linear	8	100	PWM, Analog	Open, Short	2	I ² C	✓	QFN-24 (4x4)	Independent channel control, daisy-chainable, digital config.
	MPQ3326-AEC1	4	16	Linear	16	50	PWM, Analog	Open, Short	2	I ² C	✓	QFN-24 (4x4)	I ² C input logic voltage: (V_{IL_MAX} : 0.4V, V_{IH_MIN} : 1.3V)
	MPQ3326-AEC1-C03Q	4	16	Linear	16	50	PWM, Analog	Open, Short	2	I ² C	✓	QFN-24 (4x4)	I ² C input logic voltage: (V_{IL_MAX} : 0.4V, V_{IH_MIN} : 1.3V)
	MPQ3326A-AEC1	4.5	16	Linear	16	80	PWM, Analog	Open, Short	2	I ² C	✓	QFN-24 (4x4)	I ² C input logic voltage: (V_{IL_MAX} : 0.4V, V_{IH_MIN} : 1.3V)
	MPQ3326B-AEC1	4.5	16	Linear	16	80	PWM, Analog	Open, Short	2	I ² C	✓	QFN-24 (4x4)	I ² C input logic voltage: (V_{IL_MAX} : 0.8V, V_{IH_MIN} : 1.5V)
	MPQ3322-AEC1	3.5	22	Linear	24	100	PWM, Analog	Open, Short	3	CAN	✓	QFN-24 (4x4)	LED current slew rate, phase shift, adaptive voltage feedback, failsafe mode
	MPQ3621-AEC1	3	11	Linear	48	50	PWM, Analog	Open, Short	3	SPI	✓	QFN-24 (4x4)	LED current slew rate, phase shift, adaptive voltage feedback
	MPQ3321-AEC1	3	22	Linear	48	80	PWM, Analog	Open, Short	3	SPI	✓	QFN-24 (4x4)	LED current slew rate, phase shift, adaptive voltage feedback
N	MPQ3321A-AEC1	3	22	Linear	48	80	PWM, Analog	Open, Short	3	SPI	✓	QFN-24 (4x4)	Supports 10µA LED channel current option based on the MPQ3321
S	MPQ3327-AEC1	3.5	20	Switch	-	-	-	-	-	SPI, GPIO	✓	QFN-14 (3x3)	8A, 4 switching line scan driver for local dimming, combined with the MPQ3321 for scanning scheme

Exterior Lighting

	Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	Topology	Max Current (A)	Current Limit (Typ) (A)	$R_{DS(ON)}$ (mΩ)	Dimming Modes	f_{SW} (kHz)	LED Protection	Frequency Spread Spectrum	Wettable Flank QFN Option	Package	Notes
	MPQ2489-AEC1	6	55	Low-Side Buck	1.4	Adj	500	PWM, Analog	200 to 600	Open, Short	-	-	QFN-6 (3x3)	-
	MPQ2483A-AEC1	4.5	55	Buck, Buck-Boost	2.5	3	280	PWM, Analog	250 to 1350	Open, Short	-	-	QFN-10 (3x3), SOIC-14	Output SCP
	MPQ24833-B-AEC1	4.5	55	Buck, Buck-Boost, Boost	3	6	150	PWM, Analog	420	Open, Short	-	-	SOIC-8E	Output SCP

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Topology	Max Current (A)	Current Limit (Typ) (A)	R _{DS(ON)} (mΩ)	Dimming Modes	f _{SW} (kHz)	LED Protection	Frequency Spread Spectrum	Fault Pin	Wettable Flank QFN Option	Package	Notes
	MPM6010-AEC1	4	40	Buck	1.5	4	85/50	PWM	2200	Open, Short	-	✓	✓	QFN-17 (3x5x1.6)	Module with int. inductor and BST/VCC capacitors, sync operation, output OCP
	MPQ4425A-AEC1	4	40	Buck	1.5	4	85/50	PWM	2200	Open, Short	-	✓	✓	QFN-13 (2.5x3)	Synchronous operation, output OCP
	MPQ4425B-AEC1	4	40	Buck	1.5	4	85/50	PWM	410	Open, Short	-	✓	✓	QFN-13 (2.5x3)	Synchronous operation, output OCP
	MPQ4425C-AEC1	4	40	Buck	1.5	4	85/50	PWM	2200	Open, Short	-	✓	✓	QFN-13 (2.5x3)	Alternative fault indicator behavior at EN off and soft-start time
	MPQ4425M-AEC1	4	40	Buck	1.5	4	85/50	PWM	2200	Open, Short	-	✓	✓	QFN-13 (2.5x3)	-
	MPQ7200-AEC1	6	42	Buck, Buck-Boost	3 (Buck) 1.2 (Buck-Boost)	6	44/40	PWM	2300 Buck, 1500 Buck-Boost	Open, Short	✓	✓	✓	QFN-19 (3x4)	Int. current-sense resistor, band-band control loop, OCP with latch, OVP, thermal shutdown
	MPQ7200A-AEC1	6	42	Buck, Buck-Boost	3 (Buck) 1.2 (Buck-Boost)	6	44/40	PWM	410	Open, Short	✓	✓	✓	QFN-19 (3x4)	Int. current-sense resistor, band-band control loop, OCP with latch, OVP, thermal shutdown
	MPQ2484-AEC1	4.5	45	Buck, Boost, Buck-Boost	Controller	Adj	-	PWM, Analog	100 to 2200	Open, Short	✓	-	-	TSSOP-28EP	Cycle-by-cycle current limit, output OVP, fault flag output
N	MPQ7260-AEC1	3.6	36	Buck-Boost	5	-	20/14	-	280, 420, 580	-	-	-	-	QFN-20 (3mmx5mm)	2x integrated LS-FETs, CC/CV operation
	MPQ7210-AEC1	4.5	65	Dual Buck	2	3.5	235/235	PWM, Analog	220, 420, 1000	Short	✓	✓	✓	QFN-26 (5x5)	Dual outputs, UVP, OCP, failsafe (FS) pin, SPI interface
48V S	MPQ7212-AEC1	4.5	70	Dual Buck	2	3.5	200/150	PWM, Analog	400, 460, 2200	Open, Short	✓	✓	-	TQFP-48 (7x7)	Dual outputs, UVP, OCP, up to 7x MPIO pins, SPI or UART interface, top-side cooling
48V S	MPQ7213-AEC1	4.5	70	Triple Buck	3	3.5	200/150	PWM, Analog	400, 460, 2200	Open, Short	✓	✓	-	TQFP-48 (7x7)	Triple outputs, UVP, OCP, up to 7x MPIO pins, SPI or UART interface, top-side cooling

	Part Number	V _{IN} (Min) (V)		V _{IN} (Abs Max) (V)	Topology	Max Current (A)		Current Limit (Typ) (A)	R _{DS(ON)} (mΩ)	Dimming Modes	f _{SW} (kHz)	LED Protection		Frequency Spread Spectrum	Fault Pin	Wettable Flank QFN Option	Package	Notes
S	MPQ7212C-AEC1	4.5	60		Dual Buck	2	3.5	200/150	PWM, Analog	400, 460, 2200	Open, Short	✓	✓	-			TQFP-48 (7x7)	Dual outputs, UVP, OCP, up to 7x MPIO pins, SPI or UART interface, top-side cooling
S	MPQ7213C-AEC1	4.5	60		Triple Buck	3	3.5	200/150	PWM, Analog	400, 460, 2200	Open, Short	✓	✓	-			TQFP-48 (7x7)	Triple outputs, UVP, OCP, up to 6x MPIO pins, SPI or UART interface, top-side cooling
N	MPQ76350FS-AEC1	3.5	40		Dual Buck	20	13	21/9	-	410, 2200	-	✓	✓	✓			QFN-28 (5x6)	MPSafe™, ASIL-B, digital, constant-voltage dual outputs, ADC for diagnostics, UART or SPI digital interface
N	MPQ76352FS-AEC1	3.5	40		Buck	10	13	21/9	-	410, 2200	-	✓	✓	✓			QFN-28 (5x6)	MPSafe™, ASIL-B, digital, constant-voltage single output, ADC for diagnostics, UART or SPI digital interface

Animated/Dynamic Lighting (Multi-Channel and Matrix Managers)

	Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	Topology	# of Channels	I _{OUT} per Channel (mA)	f _{SW} (kHz)	Dimming Modes	LED Protection	Frequency Spread Spectrum	Channel-to-Channel Current Accuracy	Interface	Wettable Flank QFN Option	Package	Notes
	MPQ7220-AEC1	3.5	40	Boost + Linear	6	100	200, 400, 1000, 2200	PWM, Analog	Open, Short	✓	2.5	-	-	QFN-24 (4x4), TSSOP-28EP	External sync SW function disconnects V _{OUT} from V _{IN} , cycle-by-cycle current limit
	MPQ7221-AEC1	4	18	Linear	16	80	-	PWM, Analog	Open, Short	-	2	I ² C	✓	QFN-24 (4x4)	6-bit analog dimming per channel, 12-bit PWM dimming per channel, refresh signal output
N	MPQ7222-AEC1	3.5	22	Linear	24	100	-	PWM, Analog	Open, Short	✓	3	Differential Interface	✓	QFN-40 (6x6)	Current sink LED driver, adaptive feedback control (AFC), 12-bit PWM or 6-bit analog dimming, safety suite

	Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	Topology	# of Channels	I_{OUT} per Channel (mA)	f_{SW} (kHz)	Dimming Modes	LED Protection	Frequency Spread Spectrum	Channel-to-Channel Current Accuracy (%)	Interface	Wettable Flank QFN Option	Package	Notes
N	MPQ7223-AEC1	3	20	Linear	48	80	-	PWM, Analog	Open, Short	-	-	Serial Interface	✓	QFN-68 (8x8)	Current sink LED driver, adaptive feedback control (AFC), 16-bit PWM or 7-bit analog dimming, safety suite
	MPQ7225-AEC1	2.5	20	Linear	16	200	-	PWM, Analog	Open, Short	✓	5	Differential Interface	✓	QFN-32 (5x6)	Current sink LED driver, adaptive feedback control (AFC), 12-bit PWM or 6-bit analog dimming, safety suite
P	MPQ7227-AEC1	3.5	28	Linear	24	100	-	PWM, Analog	Open, Short	✓	3	UART	-	TQFP-48 (7x7)	Current sink LED driver, adaptive digital feedback control, limp home mode, ADC, enhanced UART protocol
N	MPQ7250-AEC1	4.5	40	Linear	3	200	-	PWM	Open, Short	-	5	-	✓	QFN-20 (4x4)	Current sink LED driver, 3x independent PWM pins, shunt resistors for thermal sharing, single LED short, LED binning resistor input
N	MPQ76300FS-AEC1	6	30	Linear	24	100	-	PWM, Analog	Open, Short	✓	3	UART	-	TQFP-48 (7x7)	MPSafe™, ASIL-B current sink LED driver, adaptive digital feedback control, limp home mode, ADC, enhanced UART protocol
N	MPQ76301FS-AEC1	6	30	Linear	16	100	-	PWM, Analog	Open, Short	✓	3	UART	-	TQFP-48 (7x7)	MPSafe™, ASIL-B current sink LED driver, adaptive digital feedback control, limp home mode, ADC, enhanced UART protocol
S	MPQ76400FS-AEC1	4.5	65	Matrix Manager	16	1600	-	PWM, Analog	Open, Short	-	-	UART	-	TQFP-48 (7x7)	MPSafe™, ASIL-B, 16 dimming switches, built-in charge pump, 20V switch to switch handling, 4x LED groupings, limp home mode

	Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	Topology	# of Channels	I _{OUT} per Channel (mA)	f _{SW} (kHz)	Dimming Modes	LED Protection	Frequency Spread	Channel-to-Channel Current Accuracy (%)	Interface	Wettable Flank QFN Option	Package	Notes
P	MPQ76401FS-AEC1	4.5	65	Matrix Manager	16	700	-	PWM, Analog	Open, Short	-	-	UART	-	TQFP-48 (7x7)	MPSafe™, ASIL-B, 16 dimming switches, built-in charge pump, 20V switch to switch handling, 4x LED groupings, limp home mode
P	MPQ76402FS-AEC1	4.5	65	Matrix Manager	12	1500	-	PWM, Analog	Open, Short	-	-	UART	-	TQFP-48 (7x7)	MPSafe™, ASIL-B, 12 dimming switches, built-in charge pump, 20V switch to switch handling, 4x LED groupings, limp home mode
P	MPQ76403FS-AEC1	4.5	65	Matrix Manager	12	700	-	PWM, Analog	Open, Short	-	-	UART	-	TQFP-48 (7x7)	MPSafe™, ASIL-B, 12 dimming switches, built-in charge pump, 20V switch to switch handling, 4x LED groupings, limp home mode

Infrared (IR) LED Drivers for Driver Monitoring Systems

	Part Number	V_{in} (Min) (V)	V_{in} (Abs Max) (V)	Topology	Max Current (A)	LED Current Accuracy (%)	$R_{DS(on)}$ (m Ω)	Dimming Modes	f_{sw} (kHz)	LED Protection	Frequency Spread Spectrum	Wettable Flank QFN Option	Package	Notes
	MPQ7230-AEC1	6	50	Buck, Buck-Boost	3 (Buck) 2.4 (Buck-Boost)	5	44/40	PWM	410	Open, Short	✓	✓	QFN-19 (3x4)	Integrated current-sense resistor, fast transient response
	MPQ7231-AEC1	6	50	Buck, Buck-Boost	3 (Buck) 2.4 (Buck-Boost)	5	44/40	PWM	1150, 2400	Open, Short	✓	✓	QFN-19 (3x4)	Dimming on-time limit (1ms/3ms/5ms) for eye safety, low dimming frequency to 10Hz, int. current-sense resistor
	MPQ7232-AEC1	4.5	40	Buck	6	5	45/30	PWM	2250	Open, Short	✓	✓	QFN-15 (3x4)	10Hz to 2kHz PWM dimming frequency, compatible with 30FPS/60FPS/120FPS dimming
	MPQ7235-AEC1	4	40	Buck	3	5	85/50	PWM	2200	Open, Short	-	✓	QFN-13 (2.5x3)	10Hz to 2kHz PWM dimming frequency, compatible with 30FPS/60FPS/120FPS dimming
P	MPQ76200FS-AEC1	4.5	40	Pre-Boost + Buck	6	5	38/27	PWM	2200	Open, Short	✓	✓	QFN-21 (3x4)	MPSafe™, ASIL-B, CCM boost regulator can switch simultaneously with buck delivering max power, optimized for DMS/OMS applications
P	MPQ76201FS-AEC1	4.5	40	Buck	6	5	38/27	PWM	2200	Open, Short	✓	✓	QFN-21 (3x4)	MPSafe™, ASIL-B, designed for off-battery applications, optimized for IR LEDs in DMS/OMS applications
S	MPQ76230FS-AEC1	4.5	40	Pre-Boost + Buck	10	5	25/25	PWM	420, 2200	Open, Short	✓	✓	QFN-21 (4x4)	MPSafe™, ASIL-C, ADC for diagnostics, 2-stage design enables device to be powered over coaxial, optimized for IR LEDs in DMS/OMS applications
S	MPQ76233FS-AEC1	4.5	40	Buck	10	5	25/25	PWM	420, 2200	Open, Short	✓	✓	QFN-21 (4x4)	MPSafe™, ASIL-B, ADC for diagnostics, designed for off-battery applications, optimized for IR LEDs or VCSELs in DMS/OMS applications

Display Power & Control

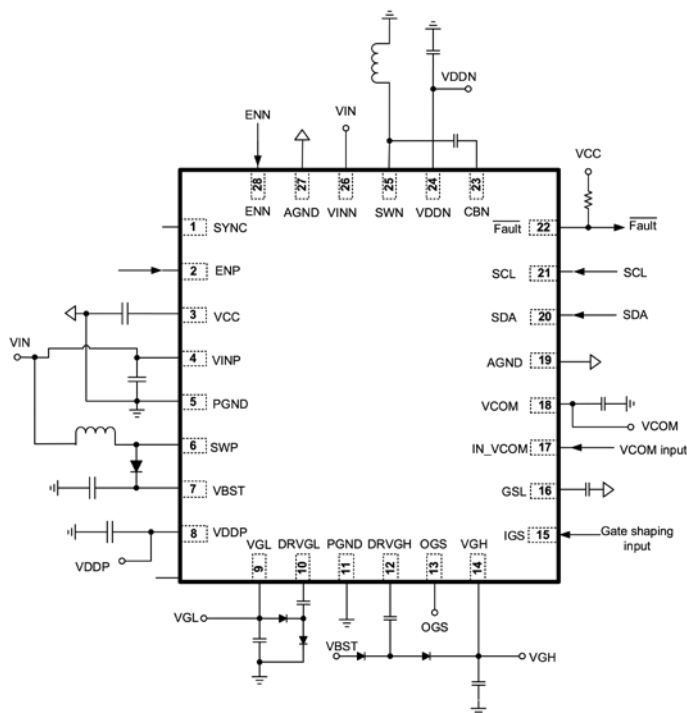
MPS display power and control backlight drivers provide a wide range of display power options of all your lighting display needs. With superior LED current regulation and highly integrated PMICs, you can be confident in high efficiency, high accuracy, deep dimming, small ripple, audible noise elimination, and increased protections.



Instrumenter | HUDs | LCD Bias | LCD Backlighting | Interior Ambient | Local Dimming

MPQ5613D-AEC1 NEW

4-Channel LCD Bias with Gate Voltage Shaping and VCOM Buffer



Applications:

Car Navigation Displays | TFT LCD Displays

Features

Key Features

- 2.7V to 12V input voltage (V_{IN}) range
- 2A current limit for boost, 2.5A current limit for buck-boost
- 250mΩ MOSFET for boost
- 200mΩ/250mΩ power MOSFET for sync buck-boost
- Available in a QFN-28 (4mmx5mm) package with wettable flanks

4 Outputs with Gate Voltage Shaping and VCOM Buffer

- Boost: 2.7 to 21.8V (VDDP)
- Buck-boost: -0.7V to -16.6V (VDDN)
- Adjustable positive charge pump, 5V to 35V, 50mA (VGH)
- Adjustable negative charge pump, 0V to -15.9V, 50mA (VGL)
- Gate voltage shaping with configurable falling time
- VCOMP buffer, -13.19V to 19.8V, 25mA
- I²C interface with one-time programmable (OTP) memory

Optimized for EMI/EMC

- Configurable switching frequency (f_{SW}), up to 3MHz
- Frequency spread spectrum (FSS)
- Frequency synchronization and interleaved (180°) buck-boost and boost control

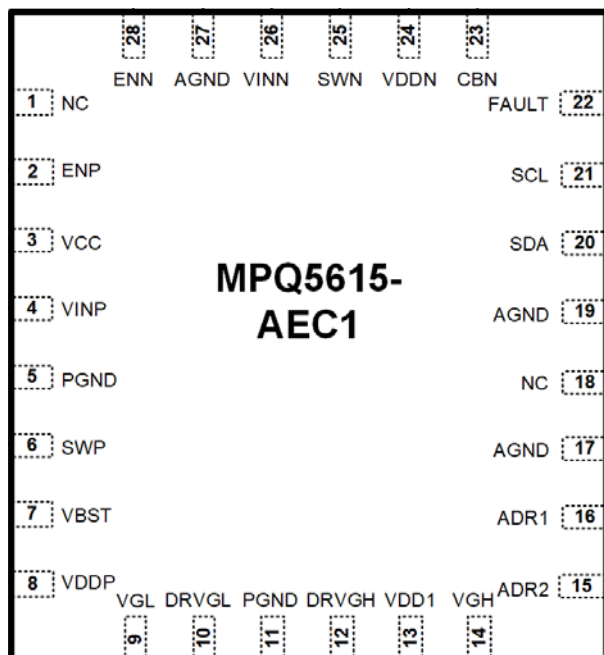
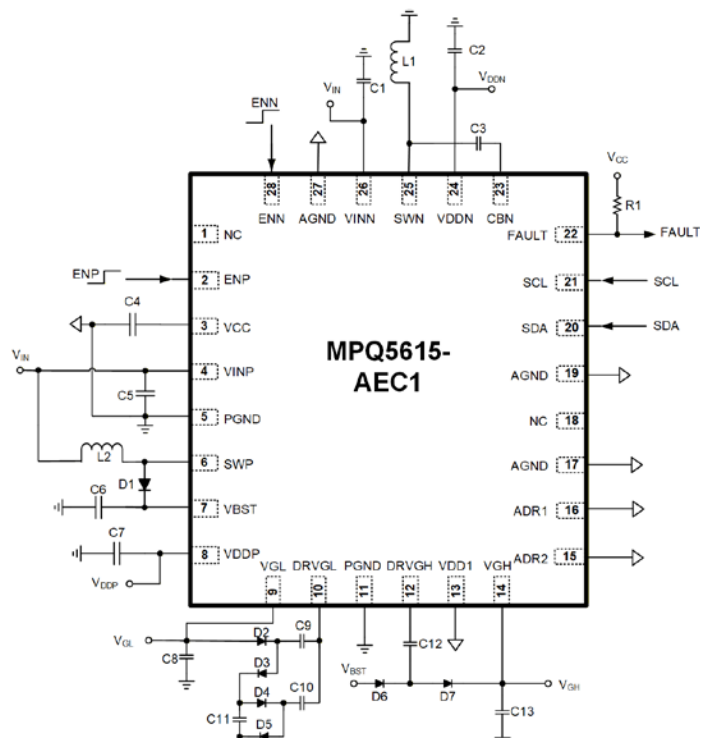
Integrated Protection Features

- Input and output disconnect
- Configurable power-on/off sequence
- Cycle-by-cycle over-current protection (OCP), under-voltage lockout (UVLO), and fault flag

MPQ5615-AEC1

SAMPLING

4-Channel Automotive TFT LCD Bias Driver



Features

Basic Features

- 2.7V to 12V input voltage (V_{IN})
- 2.5A current limit for boost/buck-boost
- I²C interface, 4 IC addresses, 3-time programmable memory for registers
- Configurable soft-start time (t_{SS})
- VDDP, VDDN, VGH, and VGL can be controlled by one EN signal

Outputs (VDDP, VDDN, VGH, VGL)

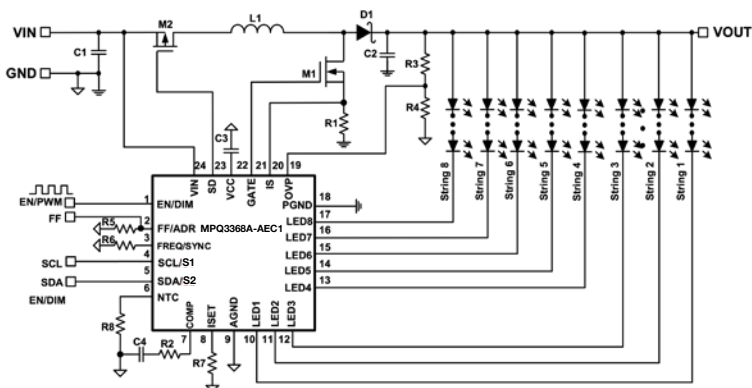
- VDDP: Boost converter, 2.7V to 21.8V, 500mA
- VDDN: Buck-boost inverter, -0.7V to -13.45V, 500mA
- VGH: Adjustable positive charge pump, 5V to 30V, 100mA
- VGL: Adjustable negative charge pump, 0V to -15.9V, 100mA

For Better EMI

- Configurable switching frequency (f_{SW}) up to 2.2MHz
- Slow rate for SWP and SWN
- Frequency spread spectrum (FSS) with SPF of 1kHz, 2kHz, 4kHz, 8kHz, 10kHz, 13kHz, or 20kHz
- 180° interleaved boost and buck-boost control

Protections

- Input and output disconnect
- Over-voltage protection (OVP), under-voltage protection (UVP), and SCP for all outputs
- Cycle-by-cycle current limit protection
- Input under-voltage lockout (UVLO) and under-voltage (UV) warning
- Over-temperature protection
- Fault flag
- 180° interleaved boost and buck-boost control

MPQ3368A-AEC1 **SAMPLING****8-Channel, 200mA LED Controller****Applications:**

>15" LCD Panel Backlighting

Features**Key Features**

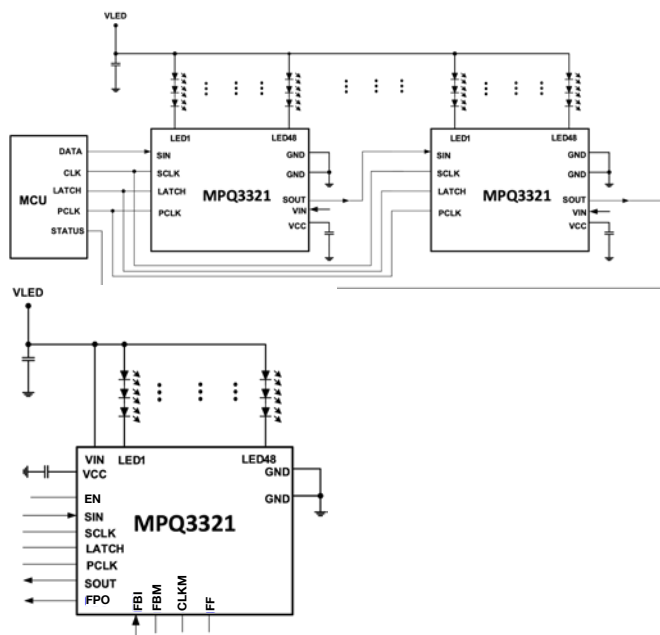
- 3.8V to 36V input voltage (V_{IN}) range
- 8 channels, max 200mA per channel
- 2.5% current matching
- Analog, pulse-width modulation (PWM), or mixed dimming via the I²C interface or PWM signal
- 10000:1 dimming ratio at dimming frequency (f_{DIM}) < 200Hz
- 10-bit analog dimming, 15-bit PWM dimming
- 4 selectable IC addresses support cascading
- Available in a QFN-24 (4mmx4mm) package with wettable flanks

Optimized for EMI/EMC

- External sync SW function
- Configurable switching frequency (f_{SW}) up to 2MHz
- Phase shift between LED channels
- Frequency spread spectrum (FSS)

Integrated Protection Features

- Disconnect V_{OUT} from V_{IN}
- Configurable LED short threshold
- Configurable over-voltage protection (OVP) threshold
- LED short/open, over-temperature protection (OTP), over-current protection (OCP), and inductor short protection
- Negative temperature coefficient (NTC) function to reflect external temperature
- Fault indicator signal output

MPQ3321A-AEC1 **NEW****48-Channel Current-Source LED Driver****Applications:**

Automotive LCD Backlighting with Local Dimming | Mini LED LCDs

Tablet/Notebook LCD Backlighting | General LCD Backlighting

Features**Key Features**

- 3V to 22V input voltage (V_{IN}) range
- 48 channels, max 80mA per channel
- <3% current accuracy
- 20V voltage rating
- Independent 16-bit PWM dimming
- Independent 7-bit analog dimming
- Adaptive voltage feedback function
- 25MHz serial interface
- Supports daisy-chaining for multiple ICs
- Available in a QFN-68 (8mmx8mm) package with wettable flanks

Optimized for EMI/EMC

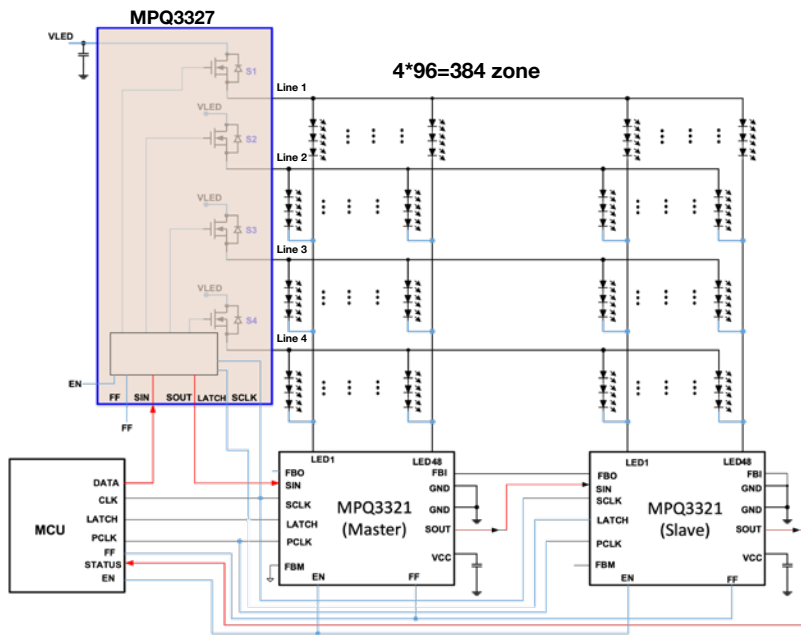
- Configurable LED current (I_{LED}) slew rate
- Phase shift

Integrated Protection Features

- LED short/open protection
- Over-temperature protection (OTP)
- Fault status indicator register

MPQ3327-AEC1

8A, 4-Line Scan Switch Solution



Features

Key Features

- 3.5V to 20V input voltage (V_{IN}) range
- Internal 4-line scan switching
- 20V SW voltage rating, $100\text{m}\Omega R_{DS(ON)}$
- 8A max current (depending on thermals)
- Fast discharge function
- Flexible extended SW line-scan
- 25MHz clock with daisy-chain
- Available in an FCQFN-16 (3mmx3mm) package with wettable flanks

Integrated Protection Features

- SW open/short protection
- Fault indicator signal output
- Free short for adjacent pins
- Over-temperature protection (OTP)

Applications:

Automotive LCD Backlighting with Local Dimming

Mini LED LCDs

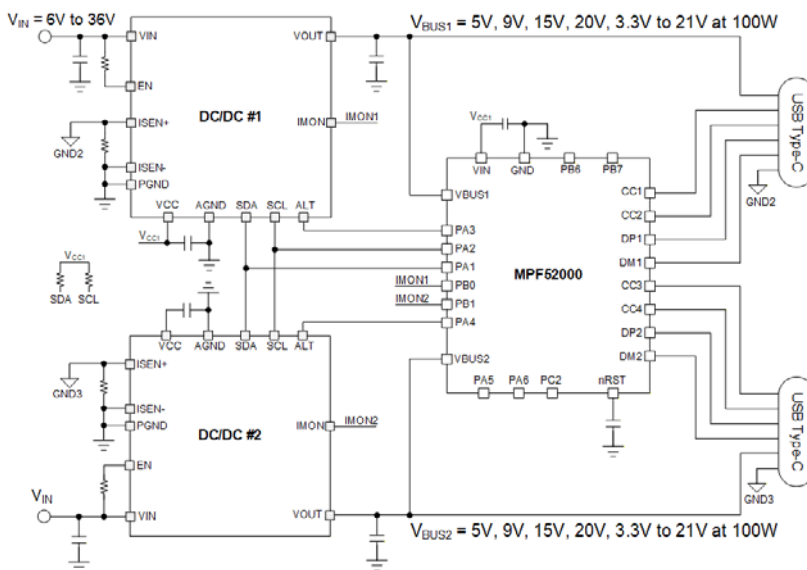
USB & Wireless Charging

MPS automotive USB chargers are fully integrated USB charging solutions combining high-efficiency DC/DC converters and current limit switches, with the option of single- or dual-output Type-A and Type-C ports. These advanced charging port products incorporate many common protocols, such as USB Type-C (15W), USB Type-C Power Delivery (PD), downstream charging port (DCP), CDP, and BC1.2. They are engineered to help automotive customers design compact and thermally optimized USB charge ports for use throughout the vehicle.



MPF52000-AEC2

Dual-Channel USB PD Controller



DC/DC Options

MPQ4236-AEC1

Up to 45W PD

MPQ4232-AEC1

Up to 60W PD

MPQ4263-AEC1

Up to 100W PD

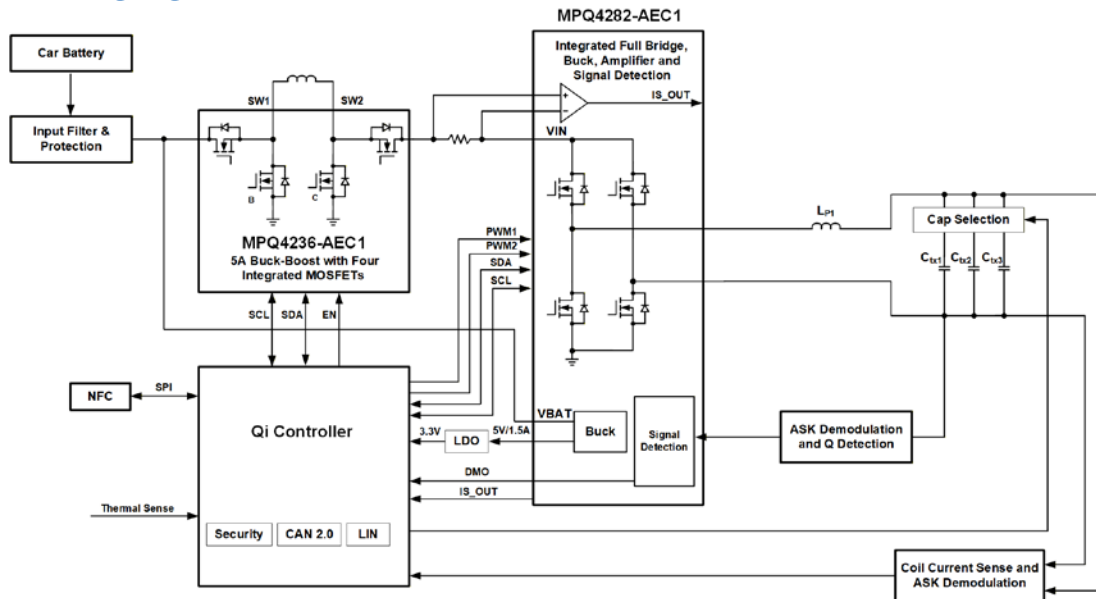
Versions:

MPF52001-AEC2	Single-Channel
MPF52000-AEC2	Dual-Channel, Charge Only
MPF52000-A-AEC2	Dual-Channel, for Hubs
MPF52000-B-AEC2	Dual-Channel, More GPIOs
MPF52000-R-AEC2	Dual-Channel, for Remote Ports
MPF52003-AEC2	Triple-Channel

Features

- Supports dual-channel USB Power Delivery (PD) source ports
- ARM Cortex-M0 CPU
- 128KB flash, 12KB SRAM memory
- Supports 3.3V to 48V PD3.2 by adding an external VBUS divider resistor
- Integrated 3.3VDD/50mA low-dropout (LDO) regulator
- 200µA low quiescent current (I_Q) mode when unattached
- Compliant with USB PD3.2, USB Type-C 2.1, and TCPC 2.0
- Integrated USB PD physical layer
- I²C target/initiator and interrupt
- Supports BC1.2 DCP, 3A Divider charging, QC3.0/4.0+, FCP/SCP, UFCS
- Supports long message Tx/Rx buffer for FW updates
- High-voltage (HV) pins for DPx/DMx/CCx
- VBUS discharge function
- VBUS under-voltage protection (UVP) and over-voltage protection (OVP)
- Load-shedding function with high temperature and over-temperature protection (OTP)
- Extra analog-to-digital converter (ADC) inputs and GPIOs for multiple functions
- Available in a QFN-24 (4mmx4mm) package
- Available in AEC-Q100 Grade 2

Wireless Charging Solution



MPQ4236-AEC1

- Fully integrated buck/boost
- Smallest solution size, excellent efficiency
- Full feature set includes 2MHz switching frequency (f_{sw}), external clock sync
- Low quiescent current (I_Q)

MPQ4282-AEC1

- Fully integrated smart power stage
- Wide input voltage (V_{IN}) range, 1V to 28V operation, 32V transient
- 12m Ω low on-resistance ($R_{DS(ON)}$) MOSFET
- Integrated gate driver
- 7.5A continuous current
- Over-current protection (OCP)
- 100kHz to 2000kHz pulse-width modulation (PWM) frequency (f_{PWM})
- Tri-level PWM input
- Integrated 36V/1.5A buck
- 3.3V, 5V, 12V/1.5A buck
- Integrated 300mA/3.3V low-dropout (LDO) regulator
- High-accuracy operational amplifier
- Input offset voltage: $\pm 60\mu V$
- Gain error: 1%
- Signal decoder

USB PD Solutions | Buck-Boost for USB PD

Part Number	V_{IN} (Min) (V)		V_{IN} (Abs Max) (V)		I_{OUT} (A)	I_Q (Typ) (mA)	f_{SW} (kHz)	USB PD	Battery Short Protection	Frequency Spread Spectrum	Int USB Switch	Line Drop Compensation	I ² C	EN Shutdown	Load-Shedding	Send Alert	Package	Notes
MPQ4214-AEC1 (Controller)	4	45	-	-		Selectable	✓	✓	✓	-	-	✓	✓	-			QFN-27 (5x5)	Sync, FCCM
MPQ4210-AEC1 (Controller)	4	45	-	-		Selectable	✓	✓	✓	-	-	✓	✓	-			QFN-27 (5x5)	Output current monitoring
MPQ4262-AEC1 (Hybrid)	3.6	40	5	0.13		Selectable	✓	✓	✓	-	✓	✓	✓	✓			QFN-20 (3x5)	36V, 100W, two int. FETs, 98% peak efficiency
MPQ4263-AEC1 (Hybrid)	3.6	40	5	0.14		Selectable	✓	✓	✓	-	✓	✓	✓	✓			QFN-20 (3x5)	36V, 100W, two int. FETs, 98% peak efficiency, high-side current sense
MPQ4232-AEC1	4.3	40	5	0.13		Selectable	✓	✓	✓	-	✓	✓	✓	✓			QFN-19 (4x5)	22V, 60W, 4-switch converter with advanced protection, 1V to 22V V_{OUT} range
MPQ4232A-AEC1	3	40	6	0.13		Selectable	✓	✓	✓	-	✓	✓	✓	✓			QFN-19 (4x5)	36V, 60W, 4-switch converter, 1V to 24V V_{OUT} range, P2P with MPQ4232-AEC1
MPQ4236-AEC1	4	40	6	0.28		Selectable	✓	✓	✓	-	✓	✓	✓	-			QFN-18 (3x4)	36V, 60W, 4-switch converter, 2.1MHz, low I_Q , external clock sync

USB PD Solutions | Buck for USB PD

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	I _{OUT} (A)	I _O (Typ) (mA)	f _{SW} (kHz)	USB PD	Battery Short Protection	Frequency Spread Spectrum	Int USB Switch	Line Drop Compensation	EN Shutdown Discharge	Load-Shedding Send Alert	Package	Notes
	MPQ4272-AEC1 (Dual)	1	40	6 2x (3A)	0.3	Selectable	✓	✓	✓	-	✓	✓	✓	QFN-21 (4x5)	Dual-channel
	MPQ8880A-AEC1	4	60	4.5	0.093/ 0.008	Adjustable	✓	-	✓	-	✓	✓	-	QFN-20 (4x5)	Supports PD3.1 EPR 240W and AVS
48V	MPQ4583-AEC1	4.5	95	0.8	0.009	400	✓	-	✓	-	-	✓	-	QFN-19 (3x5)	Ultra-low I _O
48V N	MPQ8887-AEC1	4.5	70	9	0.18	Selectable	✓	✓	✓	-	✓	✓	-	QFN-24 (4x5)	180W PD, 100% duty cycle
48V N	MPQ9934-AEC1 (Controller)	5.5	85	30	0.4	Adjustable	✓	✓	✓	-	✓	-	✓	QFN-23 (4x4)	GaN driver capability

USB PD Solutions | Controllers for USB PD

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Dual/Single Ports		I _{OUT} (A)	I _D (Typ) (mA)	BC 1.2 CDP (Data)	BC 1.2 DCP	1.2V/1.2V Mode	Divider Mode 3	QC2.0/QC3.0	Type-C DFP	Type-A Mode	Load-Shedding	Battery Short Protection	Int USB Switch	Line Drop Compensation	USB Discharge	Fault Indication	Client Mode	Wettable Flank QFN Option	Package	Notes
	MPQ5031-AEC1 (PD)	4.5	5.5	Single	5	0.1	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	-	-	✓	QFN-20 (4x4)		USB PD 3.0+ PPS controller, meets PowerShare specs
	MPQ5038-AEC1 (PD)	4.5	5.5	Single	5	0.1	✓	✓	✓	✓	✓	✓	-	✓	✓	-	✓	✓	-	-	✓	QFN-20 (4x4)		USB PD 3.0+ PPS controller, 7 LDOs, P2P with MPQ5031, meets PowerShare specs
	MPF52000-AEC2	4.6	5.5	Dual	-	0.01	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	✓	✓	-	✓	QFN-24 (4x4)		USB PD3.2, MCU-based controller
	MPF52001-AEC2	4.6	5.5	Single	-	0.01	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	✓	✓	-	✓	QFN-24 (4x4)		USB PD3.2, MCU-based controller, supports DP
N	MPF52003-AEC2	4.6	5.5	Triple	-	0.01	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	✓	✓	-	✓	QFN-40 (5x5)		USB PD3.2, MCU-based controller
N	MPF52000-R-AEC2	4.6	5.5	Dual	-	0.007	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	✓	✓	-	✓	QFN-40 (5x5)		USB PD3.2, remote port

USB PD Solutions | All-in-One USB PD Solutions

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Dual/Single Ports	I _{OUT} (A)	I _O (Typ) (mA)	f _{SW} (kHz)	BC 1.2 DCP	1.2V/1.2V Mode	Divider Mode 3	QC2.0/QC3.0	Type-C DFP (PD)	Type-A Mode	Load-Shedding	Battery Short Protection	Int USB Switch	Line Drop Compensation	USB Discharge	Package	Notes
	MPQ4242-AEC1	4	40	Single	3	0.1	Selectable	✓	✓	✓	✓	✓	-	✓	✓	-	✓	✓	QFN-22 (4x5)	Buck-boost int., supports PD3.0/QC4+ BC1.2/QC3+FCP protocols
	MPQ4242B-AEC1	4	40	Single	3	0.1	Selectable	✓	✓	✓	✓	✓	-	✓	✓	-	✓	✓	QFN-22 (4x5)	Buck-boost int., supports PD3.1/QC4+ BC1.2/QC3+FCP protocols
	MPQ4241-AEC1	4.5	24	Single	3	0.15	Selectable	✓	✓	✓	✓	✓	-	✓	✓	-	✓	✓	QFN-21 (3x4)	Buck int., supports PD3.1/QC4+ BC1.2/QC3+FCP protocols
S	MPQ4243-AEC1	4.6	36	Single	5	0.16	Selectable	✓	✓	✓	✓	✓	-	✓	✓	-	✓	✓	QFN-32 (5x5)	Buck-boost int., supports PD3.2, good cost
S	MPQ4221-AEC1	4.5	36	Single	3	0.15	Selectable	✓	✓	✓	✓	✓	-	✓	✓	-	✓	✓	QFN-21 (3x4)	Buck int., supports PD3.2, P2P with the MPQ4241 with better cost

All-In-One USB Type-C/A Charging-Only Port Solutions | Dual USB Type-C/A Charging Port Solutions (Buck with Integrated CLS, Protocol Detection)

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Dual/Single Ports	I _{OUT} (A)	I _O (Typ) (mA)	f _{SW} (kHz)	BC 1.2 DCP	1.2V/1.2V Mode	Divider Mode 3	Type-C DFP (w/o PD)	Type-A Mode	Load-Shedding	Frequency Spread Spectrum	Int USB Switch	Line Drop Compensation	Package	Notes	
	MPQ4487A-AEC1	6	40	Dual	3 (x2)	1	Selectable	-	-	-	✓	✓	✓	✓	✓	✓	QFN-26 (5x5)	Meets latest MFI3.3 specs	
	MPQ4488B-AEC1	6	40	Dual	3 (x2)	1	Adjustable	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-26 (5x5)	Meets latest MFI3.3 specs	
	MPQ4253B-AEC1	6	40	Dual	3 (x2)	0.05	Selectable	✓	✓	✓	✓	✓	✓ (Type-C)	-	✓	✓	✓	QFN-26 (5x5)	MFI OCP current > 4.8A
N	MPQ4252-AEC1	6	36	Dual	3 (x2)	0.3	420	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-19 (3x5)	Smaller size, cost-effective

All-In-One USB Type-C/A Charging-Only Port Solutions | Single USB Type-C/A Charging Port Solutions (Buck with Integrated CLS, Protocol Detection)

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Dual/Single Ports	I _{OUT} (A)	I _O (Typ) (mA)	f _{SW} (kHz)	BC 1.2 DCP	1.2V/1.2V Mode	Divider Mode 3	QC2.0	QC3.0	Type-C DFP (w/o PD)	Type-A Mode	Load-Shedding	Battery Short Protection	Low-Dropout Mode	Frequency Spread Spectrum	Int USB Switch	Line Drop Compensation	EN Shutdown Discharge	USB Discharge	Fault Indication	Wettable Flank QFN Option	Package	Notes
	MPQ4475-E-AEC1	7	40	Single	2.5	1.6	Selectable	✓	✓	✓	-	-	✓	-	-	✓	✓	✓	✓	✓	✓	✓	-	QFN-25 (4x4)	Prog. line drop compensation	
	MPQ4228-AEC1	4.2	40	Single	3	-	Selectable	✓	✓	✓	-	-	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	QFN-22 (4x4)	Type-C 5V/3A, DFP port	
	MPQ4228-Q-AEC1	4.2	40	Single	3	-	Selectable	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	QFN-22 (4x4)	-	
N	MPQ4251-AEC1	6	36	Single	3	0.3	420	✓	✓	✓	-	-	✓	✓	✓	-	✓	✓	✓	-	✓	-	✓	QFN-19 (3x5)	Smaller size, cost-effective	

All-In-One Data Port Products | Dual USB Type-C/A Charging Data Ports (Buck with Integrated CLS, USB 2.0 Data Switch, Protocol Detection)

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Dual/Single Ports	I _{OUT} (A)	I _O (Typ) (mA)	f _{SW} (kHz)	BC 1.2 DCP (Data)	BC 1.2 DCP	1.2V/1.2V Mode	Divider Mode 3	Type-C DFP (w/o PD)	Type-A Mode	Load-Shedding	Int USB Switch	Line Drop Compensation	Package	Notes
	MPQ4485-AEC1	6	40	Dual	3 (x2)	-	450	✓ (USB2)	✓	✓	✓	✓	✓	✓	✓	✓	QFN-26 (5x5)	FCCM

All-In-One Data Port Products | Single USB Type-C/A Charging Data Ports (Buck + Integrated CLS, USB 2.0 Data Switch, Protocol Detection)

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Dual/Single Ports	I _{OUT} (A)	I _O (Typ) (mA)	f _{SW} (kHz)	BC 1.2 DCP (Data)	BC 1.2 DCP	1.2V/1.2V Mode	Divider Mode 3	Type-C DFP (w/o PD)	Type-A Mode	Load-Shedding	Battery Short Protection	Low-Dropout Mode	Freq. Spread Spectrum	Int USB Switch	Line Drop Compensation	EN Shutdown Discharge	USB Discharge	Wettable Flank QFN Option	Package	Notes
	MPQ4228-C-AEC1	4.2	40	Single	3	-	Selectable	✓	-	-	✓	✓	✓	✓	-	✓	✓	(Adj)	✓	✓	✓	✓	QFN-22 (4x4)	Supports CD mode
	MPQ4483-AEC1	4.2	40	Single	3	-	Selectable	✓	✓	-	-	✓	-	✓	✓	-	✓ (Adj CC Limit)	✓ (Adj)	✓	-	✓	✓	QFN-25 (4x5)	Supports BC1.2 DCP and CDP modes, bidirectional USB 2.0 high-speed data switch, 3.55A/3.75A CC I _{OUT} limit

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Dual/Single Ports	I _{OUT} (A)	I _O (Typ) (mA)	f _{SW} (kHz)	BC 1.2 CDP (Data)	BC 1.2 DCP	1.2V/1.2V Mode	Divider Mode 3	Type-C DFP	Type-A Mode	Load-Shedding	Battery Short Protection	Low-Dropout Mode	Frequency Spread Spectrum	Int USB Switch	Line Drop Compensation	EN Shutdown Discharge	USB Discharge	Wettable Flank QFN Option	Package	Notes
	MPQ4483-FD-AEC1	4.2	40	Single	3	-	Adjustable	✓	✓	-	-	✓	-	✓	✓	✓	✓	(Adj CC Limit)	✓ (Adj)	✓	-	✓	QFN-25 (4x5)	Supports BC1.2 DCP and CDP modes, bidirectional USB 2.0 high-speed data switch, 3.55A/3.75A CC I _{OUT} limit
S	MPQ4229-C-AEC1	4.2	40	Single	3	-	Selectable	✓	-	-	✓	✓	✓	✓	-	✓	✓	✓ (Adj)	✓	✓	✓	✓	QFN-22 (4x4)	P2P with the MPQ4228-C-AEC1, up to 1.5V line drop comp.
S	MPQ4226-C-AEC1	4	40	Single	3	-	Selectable	✓	-	-	✓	✓	✓	✓	-	✓	✓	✓ (Adj)	✓	✓	✓	✓	LGA-22 (3x4)	Next gen of the MPQ4228-C-AEC1 with better cost

USB Type-C/A Port Controllers and Buck Products | Buck Only

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	I _{OUT} (A)	I _O (Typ) (mA)	f _{SW} (kHz)	Battery Short Protection	Low-Dropout Mode	Int USB Switch	Line Drop Compensation	EN Shutdown Discharge	Wettable Flank QFN Option	Package
	MPQ4480-AEC1	4.2	40	6	1	Selectable	✓	✓	✓ (Adj CC Limit)	✓	✓	✓	QFN-25 (4x5)
	MPQ4423C-AEC1	4	40	6	0.75	Selectable	-	-	-	-	✓	✓	QFN-16 (3x4)

USB Type-C/A Port Controllers and Buck Products | USB Type-C/A Charging Port Controllers

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Dual/Single Ports	I _{OUT} (A)	I _O (Typ) (mA)	BC 1.2 CDP (Data)	BC 1.2 DCP	1.2V/1.2V Mode	Divider Mode 3	QC2.0/QC3.0	Type-C DFP	Type-A Mode	Load-Shedding	Battery Short Protection	Int USB Switch	Line Drop Compensation	USB Discharge	Fault Indication	Client Mode	Wettable Flank QFN Option	Package	Notes
	MPQ5029-AEC1	2.7	24	Single	3	0.155	-	✓	✓	✓	✓	✓	✓	✓	✓ (Adj)	✓ (Adj)	✓	-	-	✓	QFN-14 (2x3)		NTC pin for thermal management, adj. OVP threshold, input OV shutdown protection
	MPQ5029-C-AEC1	3	24	Single	3	0.175	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-14 (2x3)	-	

Wireless Charging Solutions | Step-Down/Step-Up Converters

	Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_O (Typ) (mA)	f_{SW} (kHz)	Battery Short Protection	Frequency Spread Spectrum	Line Drop Compensation	P_C	EN Shutdown	Load Shedding	Package	Notes
	MPQ4262-AEC1 (Hybrid)	3.6	40	5	0.13	Selectable	✓	✓	✓	✓	✓	✓	QFN-20 (3x5)	36V, 100W, two int. FETs, 98% peak efficiency
	MPQ4263-AEC1 (Hybrid)	3.6	40	5	0.13	Selectable	✓	✓	✓	✓	✓	✓	QFN-20 (3x5)	36V, 100W, two int. FETs, 98% peak efficiency, high-side current sense
	MPQ4232-AEC1	4.3	40	5	0.13	Selectable	✓	✓	✓	✓	✓	✓	QFN-19 (4x5)	22V/5A, 60W, 4-switch converter with advanced protection
	MPQ4232A-AEC1	3	40	6	0.13	Selectable	✓	✓	✓	✓	✓	✓	QFN-19 (4x5)	36V/6A, 60W, 4-switch converter, P2P with MPQ4232-AEC1
S	MPQ4236-AEC1	4	40	6	0.28	Selectable	✓	✓	✓	✓	✓	-	QFN-18 (3x4)	36V, 60W, 4-switch converter, 2.1MHz, external clock sync

Wireless Charging Solutions | Full-Bridge Power Stages for Highly Integrated Wireless Power Transmitters

	Part Number	H-Bridge V_{IN} (Min) (V)	H-Bridge V_{IN} (Abs Max) (V)	H-Bridge I_{OUT} (A)	H-Bridge f_{SW} (kHz)	I_O (Typ) (mA)	Buck V_{IN} (Min) (V)	Buck V_{IN} (Abs Max) (V)	Buck I_{OUT} (A)	Amplifier Accuracy	Frequency Spread Spectrum	Package	Notes
N	MPQ4280-AEC1	4.7	40	15	Selectable	0.9	1	40	0.5	1%	-	QFN-22 (4x5)	Integrated 36V buck and 5V/65mA LDO
N	MPQ4282-AEC1	1	32	20	Selectable	0.08	4.5	40	1.5	1%	✓	QFN-27 (4x5)	Integrated 1.5A buck

Electrification Solutions

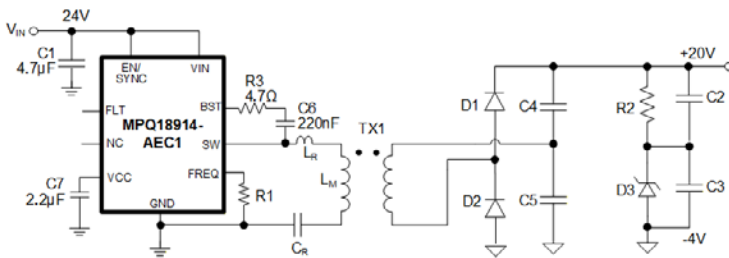
MPS offers a full family of isolated and non-isolated solutions for designing high-power electrification devices, from 11kW to 22kW onboard chargers to 300kW+ traction inverters. Choose from isolated gate driver power supplies — which can reduce solution size by over 40% — to isolated gate drivers optimized for driving higher power, or even current-sensing solutions. Our full suite of solutions for electric vehicles (EVs) that can meet reinforced isolation requirements.



ISO Gate Driver Bias Supplies | Isolated Gate Drivers | Isolated Current-Sensing | Digital Isolators
Half-Bridge Gate Drivers | Off-Battery Power | Voltage Monitors and Watchdogs

MPQ18914 NEW

6W, LLC, Transformer Driver for Isolated Bias Supplies



Features

Compact

- 3MHz switching frequency (f_{sw}) minimizes transformer and capacitor size
- 40% reduction in total solution size compared to a flyback solution
- 20% fewer components than a flyback solution

Ideal for 800V+ Systems

- Achieves 5kV reinforced isolation with low interwinding capacitance (2pF to 6pF)
- Utilizes leakage inductance as part of the resonant tank
- Small Solution Size, Optimized EMI Performance, Robust for Automotive Environments

Key Specifications:

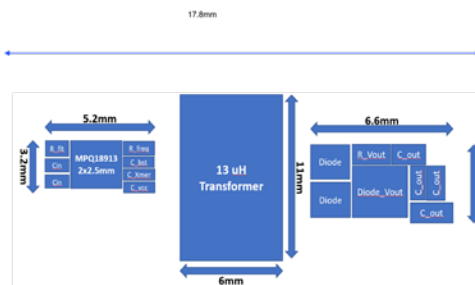
5V to 30V Up to 6W 400kHz to 3MHz QFN-10 (2mmx2.5mm)

Input Voltage Channels Current Package



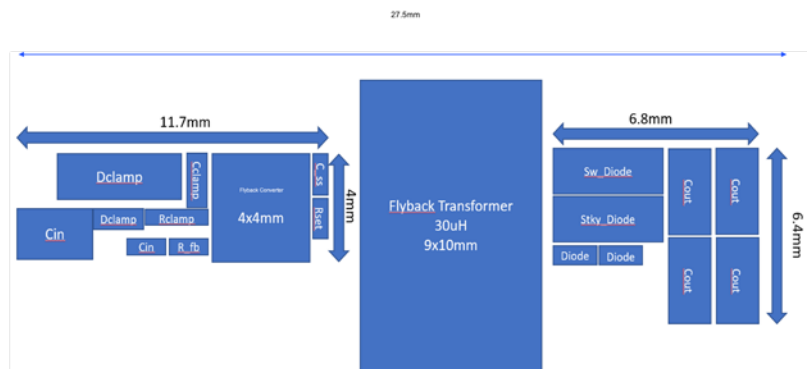
Applications

IGBT/SiC Gate Driver Bias Traction Inverters
Onboard Chargers (OBCs) DC Fast-Charging Stations



Solution Size: 109mm²
Total Area: 196mm²
Components: 21

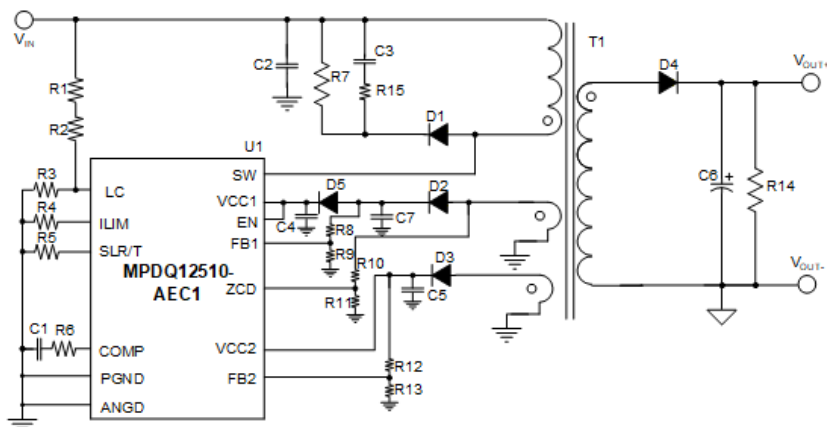
**40%
smaller
solution
size**



Solution Size: 180mm²
Total Area: 275mm²
Components: 26

MPDQ12510-AEC1 SAMPLING

1200V Flyback Converter with Integrated SiC JFET



Features

Optimized Solution Size

- Integrated 1700V SiC device (0.4Ω/1.2Ω option for <100W designs)
- 60% fewer components compared to discrete flyback converter
- 89% peak efficiency with 800V to 15V/50W

Ideal for 400V to 800V Systems

- SOIC-28 WB package with 8mm creepage

Key Specifications

20V to 1200V	Up to 100W	Up to 150kHz
Input Voltage	Power	Switching Frequency

SOIC-28 WB

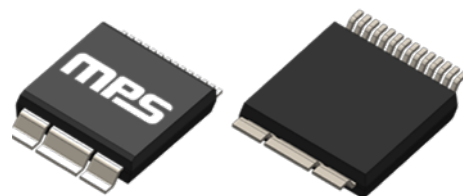
Packages

Line Compensation | Configurable Switching Speed

Features

Applications:

Traction Inverters, Auxiliary Power Supplies | Battery Management System DC/DC Converters | Energy Storage Systems (ESS)



8mm Creepage

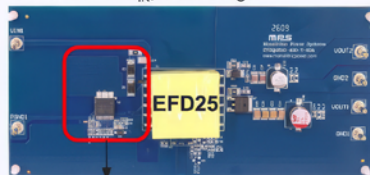
MPDQ12510 Advantages

MPDQ12510

40V to 1000V V_{IN} , 20W design



40V to 1000V V_{IN} , 30W design



All Functions in One Package,
Simple BOM, Clean Layout

IC Layout Area: ~30mmx30mm

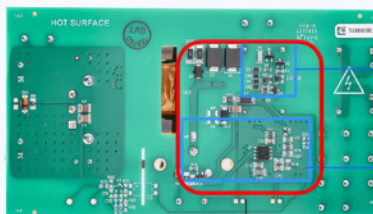
~50% Component and 40% Layout Size Saving!

Discrete

Ext. BOM



MOSFET



HV Start-Up

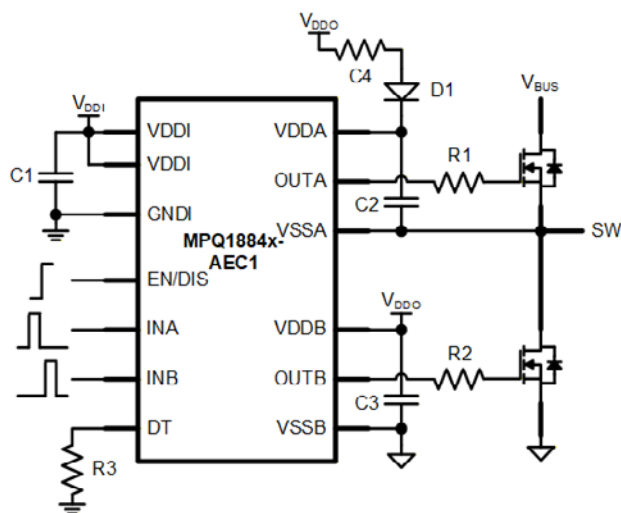
Controller +
Ext. BOM

IC Layout Area: ~40mmx40mm

MPQ18842-AEC1/MPQ18844-AEC1/ MPQ18847-AEC1

SAMPLING

New Gen, Dual-Channel Isolated Gate Driver Family



Features

Flexible Design

- Design systems for 2kV to 5kV V_{RMS} of reinforced isolation
- Wide driver bias range enables more flexibility for FET selection
- Can support SiC, GaN, or IGBT
- P2P product to enable a more robust supply chain

Ideal for 400V to 800V Systems

- Achieves up to 5kV V_{RMS} of reinforced isolation
- 4A/8A sink-source current enables usage of high-power FETs for higher efficiency

Key Specifications:

4A Source, 8A Sink

>100kV/ μ s

Up to 5kV

SOIC-14 WB, SOIC-16 NB, LGA-13
(5mmx5mm or 4mmx4mm)Small Solution Size |
Optimized EMI Performance |
Robust for Automotive EnvironmentsPeak Source/
Sink Current

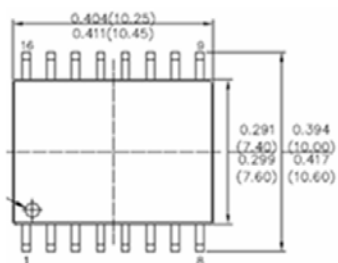
CMTI

Isolation

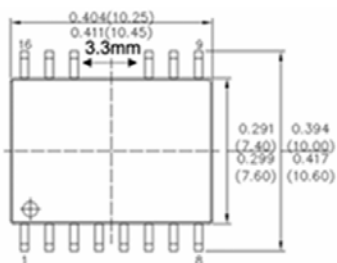
Packages

Features

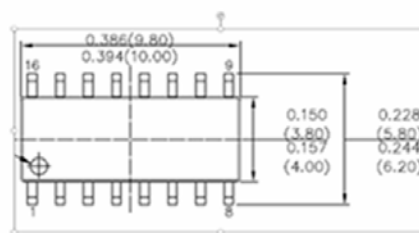
SOIC-16 WB



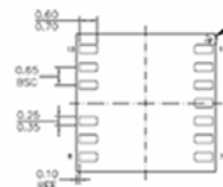
SOIC-14 WB



SOIC-16 NB



LGA-13

5kV_{RMS}

Isolation Rating

5kV_{RMS}

Isolation Rating

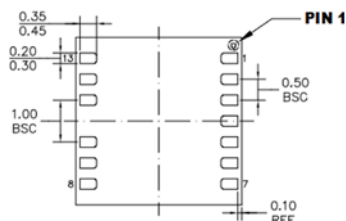
3kV_{RMS}

Isolation Rating

2.5kV_{RMS}

Isolation Rating

LGA-13



MPQ18842: SOIC-14 WB

vv4: SOIC-16 NB

MPQ18847: LGA-13 (5mmx5mm or 4mmx4mm)

2kV_{RMS}

Isolation Rating

Electrification

Isolated Gate Drivers

	Part Number	Isolation Rating (kV _{RMS})	Configuration Type	# of Channels	CMTI (Min) (kV/μs)	Power Switch Type	Peak Source Current (A)	Peak Sink Current (A)	UVLO (V)	Input V _{DD} (V)	Driver Output (Max) (V)	Package	Notes
N	MPQ18831-AEC1	2.5/3/5	Dual-Input Half-Bridge	2	150	SiC FET, IGBT, MOSFET, GaN FET	4	8	5/8/12	2.8 to 5.5	30	SOIC-16 WB, SOIC-16 NB, LGA-13 (5x5)	UL 1577, VDE 0884-17, IEC/CQC certified
N	MPQ18851-AEC1	2.5/3/5	Dual Input, Independent Dual-Channel	2	150	SiC FET, IGBT, MOSFET, GaN FET	4	8	5/8/12	2.8 to 5.5	30	SOIC-16 WB, SOIC-16 NB, LGA-13 (5x5)	UL 1577, VDE 0884-17, IEC/CQC certified
N	MPQ18871-AEC1	2.5/3/5	PWM Input Half-Bridge	2	150	SiC FET, IGBT, MOSFET, GaN FET	4	8	5/8/12	2.8 to 5.5	30	SOIC-16 WB, SOIC-16 NB, LGA-13 (5x5)	UL 1577, VDE 0884-17, IEC/CQC certified
	MPQ18811-AEC1	3/5	Single-Channel Gate Driver	1	150	SiC FET, IGBT, MOSFET, GaN FET	6	10	5/8/12/15	2.8 to 5.5	30	SOIC-8 WB, SOIC-8 NB	UL 1577, VDE 0884-17, IEC/CQC certified
S	MPQ18842-AEC1	5	Dual-Input Half-Bridge	2	200	SiC FET, IGBT, MOSFET, GaN FET	4	6	4/5/8/12/15	3 to 5.5	25	SOIC16-14 WB	UL 1577, VDE 0884-17, IEC/CQC certified
S	MPQ18844-AEC1	3	Dual-Input Half-Bridge	2	200	SiC FET, IGBT, MOSFET, GaN FET	4	8	4/5/8/12/15	3 to 5.5	25	SOIC-16 NB	UL 1577, IEC/CQC certified
S	MPQ18847-AEC1	2.5/2	Dual-Input Half-Bridge	2	200	SiC FET, IGBT, MOSFET, GaN FET	4	8	4/5/8/12	3 to 5.5	25	LGA-13 (5x5), LGA-13 (4x4)	UL 1577, IEC/CQC certified
S	MPQ18900-AEC1	5	Single-Channel Gate Driver	1	150	SiC FET, IGBT, MOSFET, GaN FET	2, 20A w/ Buffer	2, 20A w/ Buffer	12/17	3 to 5.5	30	SSOIC-28L WB	MPSafe™-compatible: functional safety supporting document available

Isolated Power Supplies

	Part Number	Topology	Device Type	Output Power (W)	V_{IN} (Min) (V)	V_{IN} (Max) (V)	V_{OUT} (Typ) (V)	Integrated Transformer	Package Type	Isolation Voltage (kV_{DC})	# of Outputs	Package Size: WxL (mm)	Notes
N	MPQ6007-AEC1	Flyback	Converter	10	4.5	42	12 to 24	-	QFN-11	5+ (Dependent on Transformer Design)	1, More Possible	3x3	Automotive active clamp primary-side regulated flyback, ultra-low EMI
S	MPDQ12510GY-17400AEC	Flyback	Converter	0 to 100	20	1200	12 to 24	-	SOIC-28 WB	5+ (Dependent on Transformer Design)	1, More Possible	7.85x 7.5	Automotive flyback converter with integrated 1700V SiC FET, 7.5mm creepage
48V N	MPQ18914GRPE-AEC1/ MPQ18914GRPE-A-AEC1	LLC Resonant	Converter	6	5	30	22	-	QFN-10	5+ (Dependent on Transformer Design)	1, More Possible	2x2.5	0.4MHz to 3MHz high-frequency SiC/IGBT bias power supply
48V N	MID1W2424AGYE-AEC1	LLC Resonant	Isolated Module	1.5	5	26.4	24	✓	SOIC-16 WB	5	1	10.3x 10.3x 2.5	24V _{IN} , 1.5W, automotive isolated power module for SiC bias supplies
48V N	MIE1W0505BGY-5R-AEC1	LLC Resonant	Isolated Module	1	2.6	5.5	5/3.3	✓	SOIC-16 WB	5	1	10.3x 10.3x 2.5	5V _{IN} , 1W, automotive isolated power module

Digital Isolators

	Part Number	Total Channel Count	# of Channels (Forward/Reverse)	Isolation Rating (kV_{RMS})	Data Rate	Propagation Delay (Typ) (ns)	Min CMTI ($kV/\mu s$)	Surge Voltage Level (V_{PK})	V_{IN} (Min) (V)	V_{IN} (Max) (V)	Package
48V N	MPQ27911-AEC1	2	1/1	3.75/5	150	13	100	5300/8000	2.5	5.5	SOIC-8 WB, SOIC-8 NB
48V N	MPQ27920-AEC1	2	2/0	3.75/5	150	13	100	5300/8000	2.5	5.5	SOIC-8 WB, SOIC-8 NB
48V N	MPQ27922-AEC1	4	2/2	3.75/5	150	13	100	5300/8000	2.5	5.5	SOIC-16 WB, SOIC-16 NB
48V N	MPQ27931-AEC1	4	3/1	3.75/5	150	13	100	5300/8000	2.5	5.5	SOIC-16 WB, SOIC-16 NB
48V N	MPQ27940-AEC1	4	4/0	3.75/5	150	13	100	5300/8000	2.5	5.5	SOIC-16 WB, SOIC-16 NB
48V N	MPQ27933-AEC1	6	3/3	3.75/5	150	13	100	5300/8000	2.5	5.5	SOIC-16 WB, SOIC-16 NB



New Product



Sampling Product



Preview Product



48V-Ready Product

monolithicpower.com

	Part Number	Total Channel Count	# of Channels	Isolation Rating (Forward/Reverse)	Isolation Rating (kV _{RMS})	Data Rate	Propagation Delay (Typ) (ns)	Min CMTI (kV/μs)	Surge Voltage Level (V _{PK})	V _{IN} (Min) (V)	V _{IN} (Max) (V)	Package
48V N	MPQ27942-AEC1	6	4/2	3.75/5	150	13	100	5300/8000	2.5	5.5		SOIC-16 WB, SOIC-16 NB
48V N	MPQ27951-AEC1	6	5/1	3.75/5	150	13	100	5300/8000	2.5	5.5		SOIC-16 WB, SOIC-16 NB
48V N	MPQ27960-AEC1	6	6/0	3.75/5	150	13	100	5300/8000	2.5	5.5		SOIC-16 WB, SOIC-16 NB

Non-Isolated Gate Drivers (Half-Bridge)

	Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	V _{SW} (Max) (V)	HS Gate Drive (Max) (V)	# of Channels	Peak Pull-Up Current (A)	Peak Pull-Down Current (A)	Rise Time (μs)	Fall Time (μs)	Turn-Off/On Delay (μs)	Wettable Flank Option	Package	Notes
48V	MPQ1918-AEC1	4.5	5.5	100	5	2	1.6	5	0.005	0.003	0.020	✓	QFN-14 (3x3)	Half-bridge GaN driver
48V S	MPQ1919-AEC1	4.5	5.5	100	5	2	2	5	0.005	0.003	0.020	✓	QFN-16 (3x3)	Smart half-bridge GaN driver with desat./Miller clamp
	MPQ1922-AEC1	4	15	100	15	1	3	4	Adj	Adj	0.3	✓	SOIC-8E, QFN-10 (4x4)	Int. current-sense amp, 9ns to 15ns rise/fall (2.2nF load)
	MPQ1923-AEC1	5	17	100	17	1	7	8	0.0072	0.0055	0.02	✓	QFN-10 (4x4), QFN-8 (4x4), SOIC-8	High-frequency
N	MPQ18024-AEC1	9	16	110	18	1	4.7	6	0.015	0.009	0.02	-	SOIC-8	-

Isolated Amplifiers

	Part Number	V _{ID1} (V)	V _{ID2} (V)	CMTI (Min) (V)	Sensing Signal	Signal Direction	Interface	Input Range (mV)	Isolation Rating (kV _{RMS})	Gain	Input Offset	Bandwidth	Package
48V S	MPQ27700-A-AEC1	3 to 5.5	3 to 5.5	100	Current	AC or DC	Differential Input, Differential Output	±50	5	41 ±0.4% (Max, T _A = 25°C), -190ppm/C to +10ppm/C	±150μV (Max, T _A = 25°C), ±0.8μV/C	280kHz (Typ)	SOIC-8 WB
48V S	MPQ27701-A-AEC1	3 to 5.5	3 to 5.5	100	Current	AC or DC	Differential Input, Digital Output (Manchester Code)	±50	5	TBD	TBD	TBD	SOIC-8 WB

Motor Drivers

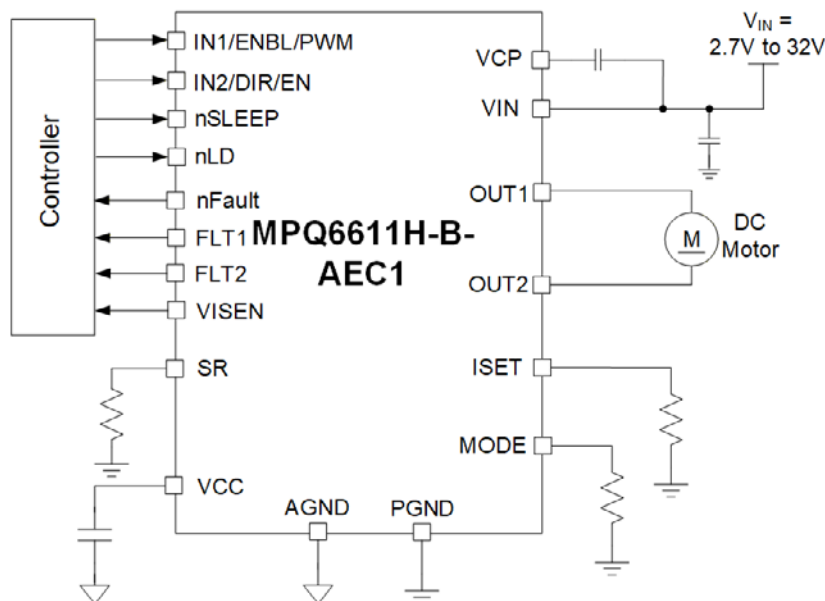
MPS offers a comprehensive portfolio of automotive motor driver solutions, including H-bridges, half-bridge drivers and pre-drivers, three-phase motor drivers, and more. Our solutions are engineered for maximum design flexibility, such as scalable product families that can drive single- to multiple-output channels.



MPQ6611B-AEC1/MPQ6611H-B-AEC1

SAMPLING

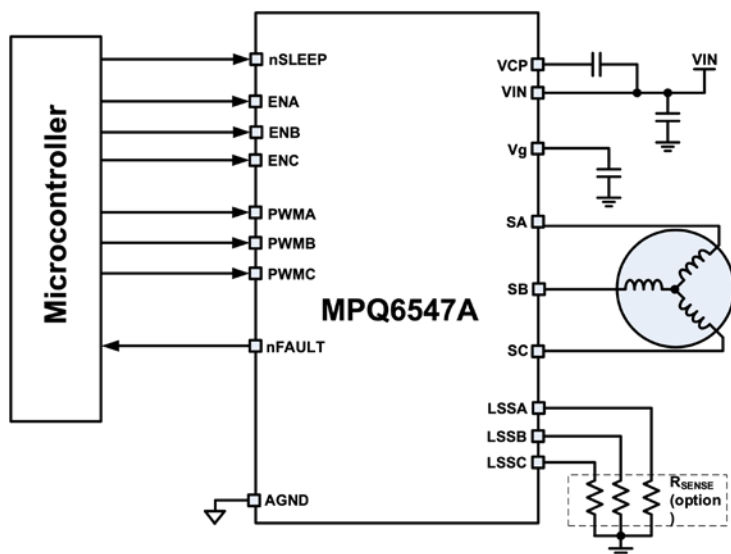
32V, 15A Peak, H-Bridge Motor Driver



Features

Built to Handle Tough Automotive Transients

- 2.7V to 32V input voltage (V_{IN})
- 15A peak output current (I_{OUT})
- Internal full H-bridge driver supports 100% duty cycle
- Low MOSFET on resistance ($R_{DS(ON)}$)
- Serial control interface: MPQ6611B
- Hardware interface: MPQ6611H-B
- MODE selection:
 - Set input PWM/DIR, IN1/IN2, independent pulse-width modulation (PWM), parallel
- 3.3V and 5V compatible logic supply
- Controlled slew rate
- Configurable charge pump frequency
- Automatic synchronous rectification (SR)
- Internal current-sensing
- Diagnostic and protection features:
 - Overload detection (OLD), over-current protection (OCP), under-voltage lockout (UVLO), over-temperature protection (OTP)
 - Fault indication output
- Available in a QFN-20 (4mmx4mm) package with wettable flanks
- Available in AEC-Q100 Grade 1

MPQ6547A-AEC1 **NEW****32V, 4A Peak, Three-Phase Power Stage****Key Specifications:**

4V to 32V	4A Peak	50mΩ/40mΩ	QFN-18 (3mmx4mm)
Input Voltage	Output Current	MOSFET $R_{DS(ON)}$	Package

Features**Built to Handle Tough Automotive Transients**

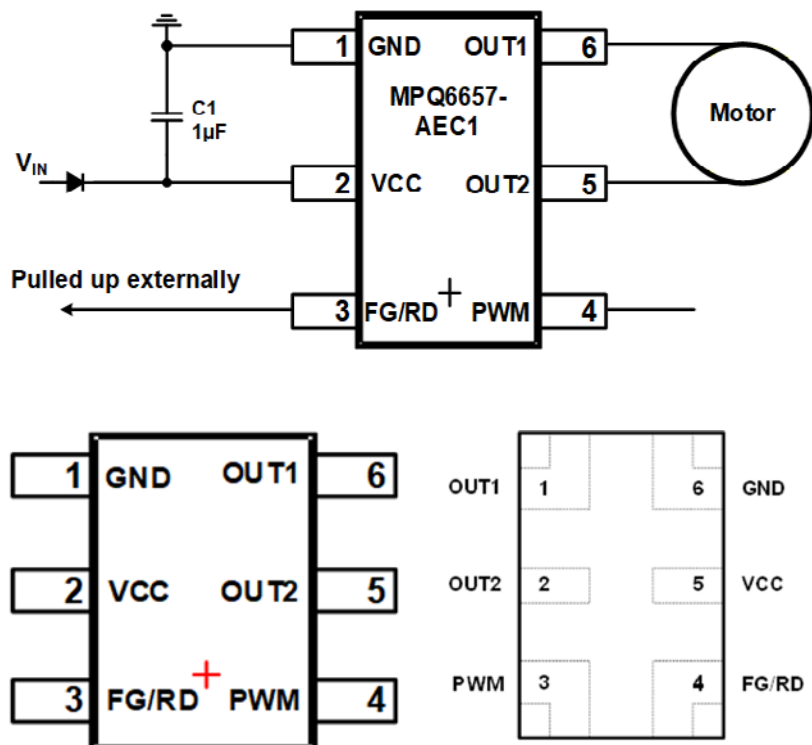
- Load dump up to 40V, cold crank down to 4V

Enables High Power Density

- 4A peak output current (I_{OUT})
- Integrated ultra-low $R_{DS(ON)}$ MOSFETs using MPS's advanced BCD process
- 3 integrated half-bridge drivers
- Automatic synchronous rectification (SR)
- Internal charge pump supports 100% duty cycle operation

Easy Control and Streamlined Protection

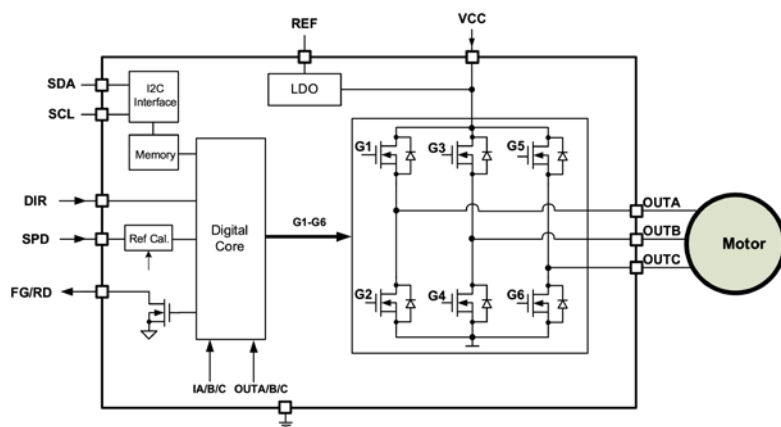
- Pulse-width modulation (PWM) and enable (EN) inputs
- Under-voltage lockout (UVLO), over-voltage protection (OVP), over-current protection (OCP), and over-temperature protection (OTP)
- Fault indication output

MPQ6657-AEC1 **SAMPLING****35V, 1.6A, 1-Phase BLDC Motor Driver with Integrated Hall Sensor****Features**

- 3.3V to 35V input voltage (V_{IN}), up to 1.6A configurable current limit
- On-chip Hall sensor
- Total 580mΩ MOSFET on resistance ($R_{DS(ON)}$)
- Configurable 5-point speed curve
- Configurable starting and stop duty cycle
- Selectable open-loop or closed-loop speed control
- Configurable soft acceleration time
- Soft commutation
- Soft start (SS) or quick start
- Selectable FG/RD output
- Configurable Hall leading/lag angle
- Supports 50Hz to 100kHz pulse-width modulation (PWM) input frequency or DC input
- Fixed 24kHz output switching frequency (f_{SW})
- One-time programmable (OTP) memory for specific settings
- Integrated protection features:
 - Rotor deadlock (RD) protection and automatic recovery
 - Short-circuit protection (SCP), over-voltage protection (OVP), under-voltage lockout (UVLO), over-current protection (OCP), over-temperature protection, and automatic recovery
- Available in TSOT23-6-L (AEC1 version is for TSOT23-6), TSOT23-6-SL, and TQFN6 (2mmx3mm) wettable-flank packages
- Available in AEC-Q100 Grade 1

MPQ6634-AEC1

35V, 1A RMS, 3-Phase, Sensorless BLDC Motor Driver



Key Specifications:

3.6V to 35V	1A RMS	500mΩ HS+LS	TQFN-12 (3mmx4mm)
Input Voltage	Output Current	MOSFET $R_{DS(ON)}$	Package

Features

Reduces Motor/Fan Design Complexity

- Sensorless field-oriented control (FOC)

Built to Handle Tough Automotive Transients

- Load dump up to 40V, cold crank down to 3.6V

Enables High Power Density

- 1A RMS output current (I_{OUT})
- 2A configurable current limit
- Integrated ultra-low $R_{DS(ON)}$ MOSFETs using MPS's advanced BCD process

Ideal for Off-Battery Applications

- <50μA power-save mode (PSM)

Robust Protection

- Short-circuit protection (SCP), over-voltage protection (OVP), over-current protection (OCP), over-temperature protection (OTP), and automatic recovery
- Phase loss protection and rotor-lock protection
- Selectable FG and RD output

Digital Monitoring and Control

- Configurable 6-point speed curve, align time, soft acceleration time
- Closed-loop or open-loop speed control
- Direction control
- Starting corner duty set with hysteresis
- I²C interface
- Digitally configurable one-time programmable (OTP) memory

Pre-Drivers

	Part Number	Supply Voltage (Min) (V)	Supply Voltage (Max) (V)	V _{SW} (Max) (V)	# of Half-Bridges	Source Current (A)	Sink Current (A)	Input Control Interface	Wettable Flank Option	Package	Notes
48V	MPQ6590A-AEC1	7.5	80	80	-	1	1	ENBL/ ON	✓	QFN-11 (3x4)	High-side MOSFET driver
48V	MPQ1922-AEC1	5	15	100	1	3	4	INH/ INL	✓	QFN-22 (4x5)	Gate driver, int. current-sense amp, interlock function
48V	MPQ1923-AEC1	5	17	100	1	7	8	INH/ INL	-	QFN-10 (4x4), QFN-8 (4x4)	High-frequency gate driver, 7.2ns/5.5ns rise/fall (1nF load)
	MPQ6528-AEC1	5	60	60	2	0.8	1	EN/ PWM	✓	QFN-28 (4x5)	H-bridge gate driver
	MPQ6641-AEC1	6	40	40	2	0.8	1	EN/IN, SPI	✓	QFN-32 (5x5)	H-bridge with SPI and internal current-sense amplifier
	MPQ6530-AEC1	5	60	60	3	0.8	1	EN/ PWM	✓	QFN-28 (4x5)	For BLDC motors
	MPQ6531-AEC1	5	60	60	3	0.8	1	HS/LS	✓	QFN-28 (4x5)	For BLDC motors
	MPQ6532-AEC1	5	60	60	3	0.8	1	PWM/ DIR, 3 Hall Inputs	✓	QFN-28 (4x5)	Hall inputs, for BLDC
	MPQ6533-AEC1	6	40	40	3	0.8	1	EN/IN, SPI	✓	QFN-32 (5x5)	Three-channel LDO regulator, current-sense amp
S	MPQ6633A-AEC1	5	50	50	3	0.7	1.1	HS/LS	✓	QFN-34 (4x5)	Integrated 50mA, 2% accurate LDO and 1-channel current-sense amp
S	MPQ6633B-AEC1	5	50	50	3	0.7	1.1	HS/LS	✓	QFN-48 (6x6)	Integrated 50mA, 2% accurate LDO and 3-channel current-sense amp
48V	MPQ6539-AEC1	8	80	80	3	0.8	1	HS/LS	-	QFN-28 (4x5)	Internal LDO for external NPN, 1-channel current-sense amp, prog. OCP
N	MPQ6632-AEC1	6	50	55	3	1	1	PWM/ DC	✓	QFN-28 (5x5)	Prog. speed curve, open-/closed-loop control, 1/3 channel Hall inputs
N	MPQ6635-AEC1	6	35	40	3	1	1	PWM/ DC	✓	QFN-28 (5x5)	Prog. speed curve, open-/closed-loop control, sensorless
N	MPQ6620A-AEC1	6	40	-	8	0.064	0.064	SPI	✓	QFN-48 (7x7)	8 channels with 2x current-sense amplifiers
N	MPQ6620B-AEC1	6	40	-	8	0.064	0.064	SPI	✓	QFN-40 (6x6)	8 channels

Single/Multi Half-Bridge Drivers (Integrated MOSFET)

		Part Number	Supply Voltage (Min) (V)		Supply Voltage (Max) (V)		# of Half-Bridges	$R_{DS(ON)}$	(HS + LS) (mΩ)	Typ Shutdown I_o (μA)	Peak Output Current (A)	Input Control Interface	Wettable Flank Option	Package	Notes
48V		MPQ6610-AEC1	4	55	1	220	1300	3	EN/IN	-	TSOT23-8, SOIC-8	Power driver			
		MPQ8039-AEC1	7.5	28	1	100	2.5	9	PWM	-	SOIC-8E	General-purpose, high frequency, for audio amps wireless charging, etc.			
	S	MPQ1931D-AEC1	5	15	1	140	0.1	5	EN/INH/INL	✓	QFN-32 (7x8)	Up to 100V V_{SW}			
	S	MPQ1934A-AEC1	5	15	1	5	0.1	10	EN/INH/INL	✓	QFN-32 (7x8)	Up to 40V V_{SW}			
		MPQ6614-AEC1	5	35	2	500	0.1	3	IN1/IN2	✓	QFN-8 (2x3)	H-bridge DC motor driver			
		MPQ6519-AEC1	3	28	2	130	2	5	PWM	-	QFN-19 (4x4)	H-bridge current regulator			
		MPQ6619-AEC1	2.7	28	2	130	1	5	IN1/IN2	✓	QFN-19 (4x4)	H-bridge DC motor driver			
		MPQ6612A-AEC1	4	40	2	103	2.8	5 (RMS)	IN1/IN2	✓	QFN-18 (3x4)	H-bridge with current sense, IN1 and IN2 inputs			
		MPQ6612A-D-AEC1	4	40	2	103	2.8	5 (RMS)	ENBL/DIR	✓	QFN-18 (3x4)	H-bridge with current sense, ENBL and DIR inputs			
	S	MPQ6611A-AEC1	2.7	32	2	40	1	7	SPI	✓	QFN-20 (4x4)	H-bridge with configurable slew rate			
	S	MPQ6611H-A-AEC1	2.7	32	2	40	1	7	Prog Control Modes	✓	QFN-20 (4x4)	H-bridge with 3 configurable input logics and slew rate			
	S	MPQ6611B-AEC1	2.7	32	2	40	1	15	SPI	✓	QFN-20 (4x4)	H-bridge with configurable slew rate			
	S	MPQ6611H-B-AEC1	2.7	32	2	40	1	15	Prog Control Modes	✓	QFN-20 (4x4)	H-bridge with 3 configurable input logics and slew rate			
	S	MPQ6611C-AEC1	2.7	32	2	40	1	15	SPI	✓	QFN-20 (4x4)	Separate power for VIN and VCC based on the MPQ6611B-AEC1			
		MPQ6615-AEC1	4.75	40	2	22	1	8 (RMS)	Prog Control Modes	✓	TQFN-26 (6x6)	H-bridge motor driver, int. current sense amp			
		MPQ6523-AEC1	7	28	3	1100	1.5	0.9	SPI	✓	QFN-24 (4x4)	Independent half-bridge control, comprehensive protections, serial data interface up to 3MHz			
		MPQ6524-AEC1	7	28	4	1100	1.5	0.9	SPI	✓	QFN-24 (4x4)	Independent half-bridge control, comprehensive protections			
		MPQ6526-AEC1	7	28	6	1100	1.8	0.9	SPI	✓	QFN-24 (4x4), QFN-24 (5x5)	Independent half-bridge control, comprehensive protections			
		MPQ6626-AEC1	5.5	40	6	1300	1	0.8	SPI	-	TSSOP-28EP	Independent half-bridge control, comprehensive protections, SPI interface up to 5MHz			
		MPQ6628-AEC1	5.5	40	8	1300	1	0.8	SPI	-	TSSOP-28EP	Independent half-bridge control, comprehensive protections, SPI interface up to 5MHz			

Part Number	Supply Voltage (Min) (V)	Supply Voltage (Max) (V)	# of Half-Bridges	R _{DS(ON)} (HS + LS) (mΩ)	Typ Shutdown I _q (μA)	Peak Output Current (A)	Input Control Interface	Wettable Flank Option	Package	Notes
MPQ6527-AEC1	5.5	40	10	1300	1	0.8	SPI	-	TSSOP-28EP	Independent half-bridge control, comprehensive protections, SPI interface up to 5MHz

Integrated BLDC Motor Drivers

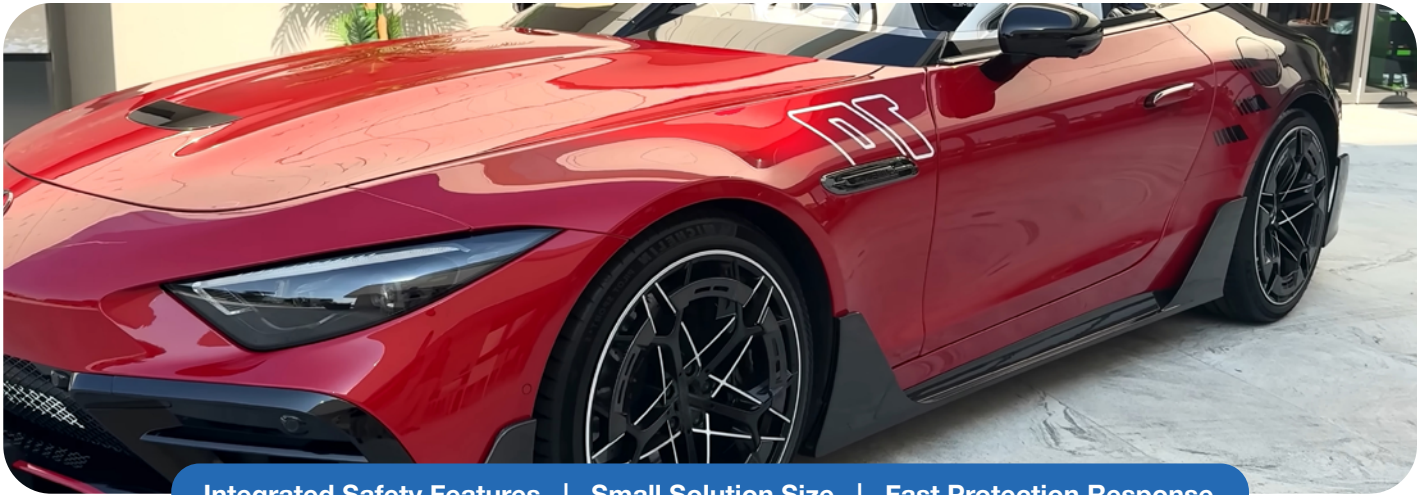
Part Number	Supply Voltage (Min) (V)	Supply Voltage (Max) (V)	# of Half-Bridges	R _{DS(ON)} (HS + LS) (mΩ)	Typ Shutdown I _q (μA)	Peak Output Current (A)	Input Control Interface	Wettable Flank Option	Package	Notes
MPQ6517B-AEC1	3.3	16	2	850	-	2	PWM	-	TSOT23-6, TSOT23-6-SL	Single-phase, integrated Hall sensor, prog. speed curve, open-loop control
MPQ6653A-AEC1	3.5	35	2	960	120 (Standby)	1.2	PWM/DC	-	TSOT23-6, TSOT23-6-SL, TQFN-6 (2x3)	Single-phase, integrated Hall sensor, prog. speed curve, open-/closed-loop control
N MPQ6653B-AEC1	3.5	35	2	960	120 (Standby)	1.2	PWM/DC	-	TSOT23-6-SL	Add 2/3 FG option for 6-poles fan application based on the MPQ6653A
N MPQ6653C-AEC1	3.5	35	2	960	120 (Standby)	1.2	PWM/DC	-	TSOT23-6-L, TSOT23-6-SL, TQFN-6 (2x3)	Add 2/3 FG option for 6-poles fan application based on the MPQ6653A
S MPQ6657-AEC1	3.5	35	2	580	100 (Standby)	1.6	PWM/DC	-	TSOT23-6-L, TSOT23-6-SL, TQFN-6 (2x3)	Next generation of the MPQ6653-AEC1
S MPQ6658A-AEC1	4.5	32	2	180	150 (Standby)	2.7	PWM/DC	✓	QFN-12 (3x3)	Single-phase, integrated and external Hall sensors with differential input
MPQ6631H-AEC1	3.6	35	3	160	130 (Standby)	3	PWM/DC	✓	TQFN-26 (3x4)	3-phase, prog. speed curve, open-/closed-loop control, 1/3 Hall inputs
MPQ6634-AEC1	4.5	35	3	500	40 (Standby)	2	PWM/DC	✓	TQFN-12 (3x4)	3-phase, sensorless, prog. speed curve, open-/closed-loop control
S MPQ6642-AEC1	4	35	3	100	5.2 (Standby)	5	PWM/DC	✓	TQFN-17 (3x4)	3-phase, sensorless, prog. speed curve, open-/closed-loop control
N MPQ6547A-AEC1	4	32	3	90	1	4	PWM/ENBL	✓	QFN-18 (3x4)	3-phase power stage
MPQ6541-AEC1	4.75	40	3	30	1	8 (RMS)	PWM/ENBL	✓	TQFN-26 (6x6)	3-phase power stage, PWM/ENBL inputs, int. current-sense amp
MPQ6541A-AEC1	4.5	40	3	30	1	8 (RMS)	HS/LS	✓	TQFN-26 (6x6)	3-phase power stage, HS/LS inputs, int. current-sense amp

Stepper Motor Drivers

	Part Number			Supply Voltage (Min) (V)	Supply Voltage (Max) (V)	# of Half-Bridges	$R_{DS(on)}$ (HS + LS) (m Ω)	Typ Shutdown I_o (μ A)	Peak Output Current (A)	Step Mode	Input Control Interface	Wettable Flank Option	Package	Notes
N	MPQ6605D-AEC1	4.5	52	-	LS: 350	2	1.5	-	Parallel	-	QFN-24 (4x4)			4-channel, low-side driver
S	MPQ6606-AEC1	4.5	52	-	LS: 700	-	0.75	-	SPI	-	TSSOP-20EP			8-channel, low-side driver
	MPQ6609-AEC1	4	32	4	580	1	1	1, 1/2, 1/4, 1/8, 1/16, 1/32	SPI	✓	QFN-18 (3x4)			Bipolar stepper, int. current sense, rotor stall detection, BEMF measurement
N	MPQ6609A-AEC1	4	32	4	580	1	1	1, 1/2, 1/4, 1/8, 1/16, 1/32	SPI	✓	QFN-18 (3x4)			Next version of the MPQ6609-AEC1
	MPQ6600L-AEC1	4.5	35	4	365	2.5	1.5	1, 1/2, 1/4, 1/8	Indexer	✓	QFN-24 (4x4)			Bipolar, microstepping, int. current sense and latch-off
S	MPQ6603-AEC1	8	55	4	115	1	5	1, 1/2, 1/4, 1/8	Parallel, Indexer	✓	QFN-25 (4.5x5)			Dual full-bridge driver, selectable input interface

E-Fuse and Load Switches

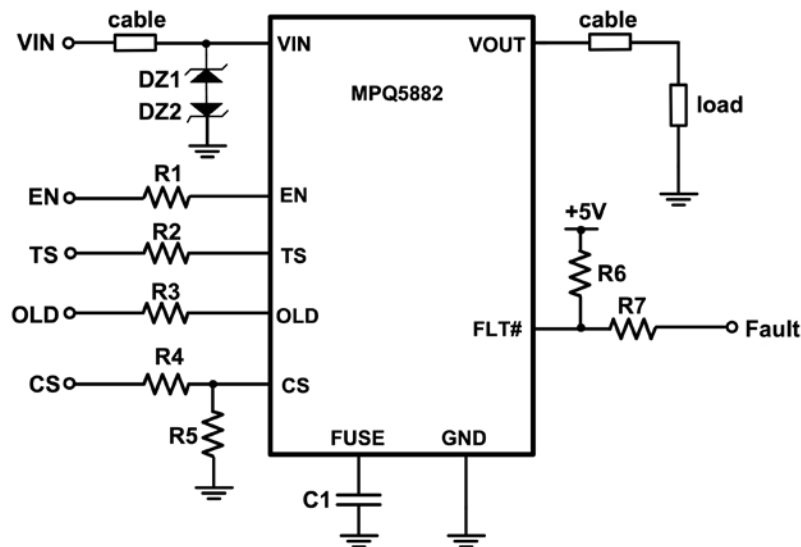
Automotive load switches enable precise power distribution control throughout the vehicle, and can protect against unwanted events, such as over-voltage and over-current faults.



Integrated Safety Features | Small Solution Size | Fast Protection Response

MPQ5882-AEC1 NEW

80V, 2.5mΩ, E-Fuse & Smart High-Side Power Switch



Features

Built to Handle Tough Automotive Transients

- Load dump up to 80V
- -60V continuous reverse voltage self-protection

Extends Vehicle Battery Life

- 20μA low quiescent current (I_Q) mode
- Extremely low shutdown I_Q

Robust Protections and Monitoring

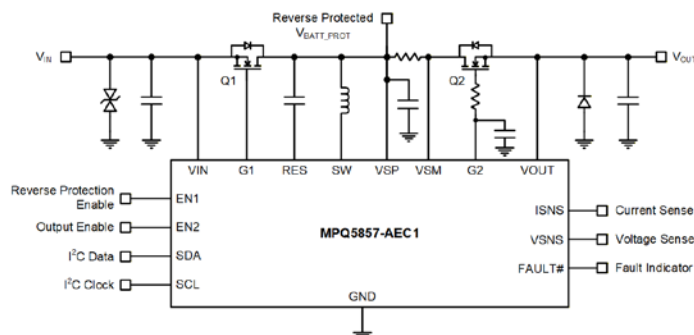
- Highly accurate current-sense and reporting
- Fuse-like over-current protection (OCP) and short circuit protection (SCP)
- Self-protection during reverse battery conditions
- Fault reporting
- Thermal monitoring
- Thermal shutdown
- Open-load detection (OLD)

Key Specifications:

6V to 80V	-60V to +80V	2.5mΩ	25A	PQFN-30 (6mmx8mm)
Recommended Operation Range	Protected Input Voltage Range	$R_{DS(ON)}$	Nominal Current	Package

Versions:

MPQ5884-AEC1	4.5mΩ	15A	QFN-30 (5mmx6mm)
MPQ5887-AEC1	7.5mΩ	10A	
MPQ5889-AEC1	15mΩ	7A	

MPQ5857-AEC1 **NEW****42V, Smart Diode Controller with Reverse Voltage Blocking and Load Dump Protection****Key Specifications:**

3.3V to 42V	800mA	1.3A
Input Voltage	Pull-Up Strength	Pull-Down Strength

Configurable	QFN-16 (3mmx4mm)
OVP	Package

Versions:

MPQ5857-AEC1	42V	Sampling
MPQ5858-AEC1	80V	Development

Features**Built to Handle Tough Automotive Transients**

- 3.3V to 42V input voltage (V_{IN}) range
- Reverse voltage blocking down to -42V
- Load dump up to 42V
- Controls back-to-back external N-channel MOSFETs
- Rectifies input AC frequencies up to 200kHz
- Strong gate driver ability: 800mA pull-up and 1.3A pull-down

Extends Vehicle Battery Life

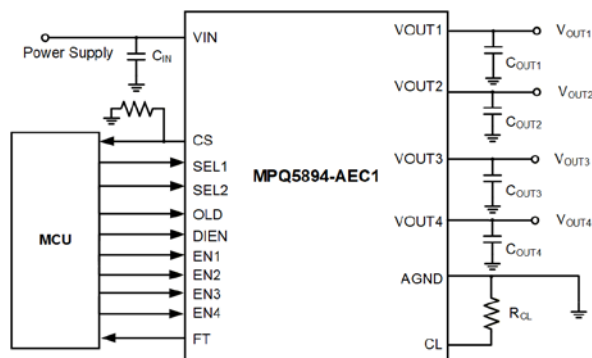
- Low 3 μ A quiescent current in standby mode

Simplifies System Complexity

- Significant BOM reduction via one-time programmable (OTP) memory
- Vastly simplifies system design

Digital Configurability with Enhanced System Protection

- I²C configurability and status
- 20mV ultra-low dropout mode
- Soft-start (SS) slew rate
- Voltage monitoring and adjustable over-voltage protection (OVP) threshold
- Current monitoring and over-current protection (OCP)
- Output discharge on/off

MPQ5894-AEC1 **NEW****40V, 65m Ω , Quad-Channel, Smart High-Side Switch****Key Specifications:**

3.5V to 60V	65mΩ	3A
Input Voltage	$R_{DS(ON)}$	Nominal Current

5A	FCQFN-23 (4mmx5mm) WF
Current Limit	Package

Versions:

MPQ5896-AEC1	60V	65m Ω	Current Sense
MPQ5896A-AEC1	60V	65m Ω	Independent Fault Report
MPQ5893-AEC1	60V	30m Ω	2-Channel, 5A/Channel
MPQ5895-AEC1	60V	65m Ω	2-Channel, 3A/Channel
MPQ5894-AEC1	40V	65m Ω	Current Sense
MPQ5894A-AEC1	40V	65m Ω	Independent Fault Report
MPQ5892-AEC1	40V	30m Ω	2-Channel, 5A/Channel

Features**Built to Handle Tough Automotive Transients**

- Load dump up to 40V
- Reverse protection to -36V
- Cold crank down to 3.5V

High Power with Dense Design

- Compact solution in a FCQFN-23 (4mmx5mm) package
- Integrated low on resistance ($R_{DS(ON)}$) MOSFETs using MPS's advanced process

Ideal for Off-Battery Applications

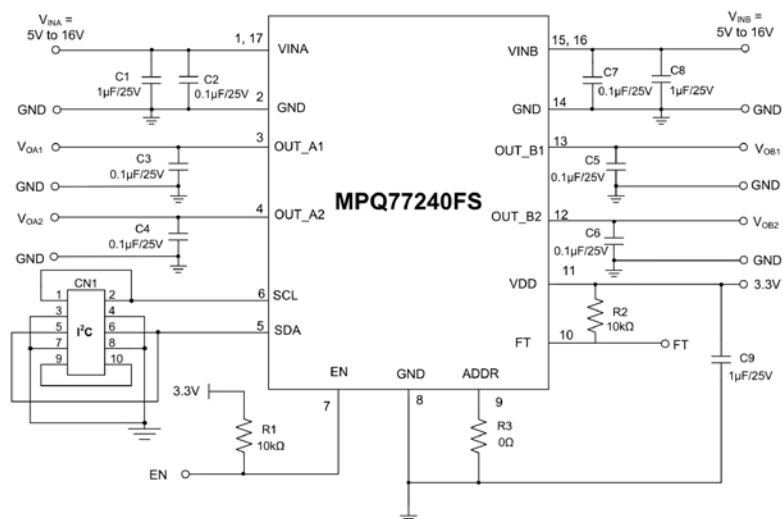
- Low quiescent current (I_Q) and shutdown current (I_{SD})
- Separate pin to enable sensing and diagnostics

Full Protection and Diagnostics

- Configurable current limit
- Current limit foldback and short-circuit protection (SCP)
- Transient thermal shutdown
- Loss-of-GND and loss-of-battery protections
- Off-state open-load detection
- Current-sensing

Other Features

- Parallel operation for higher power
- $\pm 3\%$ current-sense accuracy for >1A loads

MPQ77240FS-AEC1 **NEW****ASIL-B, 18V, 180mΩ Quad High-Side Switch with Reverse Protection****Key Specifications:**

3V to 18V	0.8A/Channel	QFN-17 (3mmx4mm)	±3% at 1A
Input Voltage	Current	Package	Current-Sense Accuracy
			±5% at 300mA

Versions:

MPQ77240FS-AEC1	4Ch, 0.8A/Ch	MPQ5864-AEC1	4-Ch, 0.8A/Ch
MPQ77220FS-AEC1	2Ch, 1.5A/Ch	MPQ5862-AEC1	2-Ch, 1.5A/Ch
Part Numbers	ASIL-B	Part Numbers	QM

Features**Built to Handle Tough Automotive Transients**

- 26V reverse protection with back-to-back architecture
- Adjustable start-up slew rate

Extends Vehicle Battery Life

- Extreme low 6μA standby current

High-Accuracy Current-Sense Capability

- ±3% at 1.5A and ±5% at 300mA

Vast Flexibility

- Separate power supply design to support two power rails
- Supports output with parallel channels
- Configurable current limit and soft start (SS)

Robust Protection and Monitoring

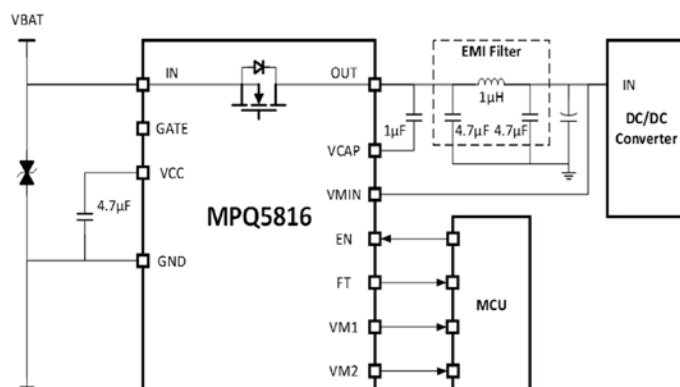
- Fault report via the FT pin and I²C interface
- I²C supports 8 addresses
- Input and output over-voltage (OV) and under-voltage (UV) detection
- Open-load and short-to-battery detection
- Peak and real-time current-sensing
- Channel short-circuit protection (SCP) and over-temperature protection (OTP)

ASIL-B Functional Safety

- Integrate an 8-bit analog-to-digital converter (ADC) to report channel voltage and current
- Multiple-pin design for VIN and GND

MPQ5816-AEC1 NEW

42V, Integrated Ideal Diode Controller with Reverse Protection and UV Indicator



Key Specifications:

0V to 42V	4µA	QFN-21 (3mmx4mm)
Input Voltage	Shutdown Current	Package

Versions:

MPQ5817-AEC1	5mΩ	15A	QFN-23 (4mmx5mm)
MPQ5816-AEC1	10mΩ	9A	QFN-21 (4mmx3mm)
MPQ5836-AEC1*	20mΩ	7A	QFN-21 (4mmx3mm)
Part Numbers	$R_{DS(ON)}$	Output Current	Package

*Up to 60V_{IN} for 24V battery systems

Features

Built to Handle Tough Automotive Transients

- Load dump up to 42V, cold crank down to 0V
- -40V reverse voltage blocking

Cooler Thermals

- 10mΩ on resistance ($R_{DS(ON)}$) for 9A applications
- Smaller switching loss with strong gate drive

Extends Vehicle Battery Life

- Low 4µA shutdown current (I_{SD})

Additional Features

- Extremely fast response rectifies AC frequency up to 100kHz
- Internal charge pump with 10mA pull-up/200mA pull-down current
- Meets stringent ISO 16750 requirements
- Fault indicator for output over-voltage (OV), over-temperature (OT), and over-current (OC) conditions
- Two under-voltage (UV) indicators for battery and load monitoring
- High-accuracy battery voltage sensing supports 1.8V/3.3V MCUs

Load Switches | 5V Load Switches

	Part Number	V _{CC} (Min) (V)	V _{CC} (Max) (V)	Load Current (A)	R _{DS(ON)} (mΩ)	I _Q (Typ) (mA)	Adj. Current Limit	Power Good	Wettable Flank QFN Option	Package
	MPQ5071-AEC1	3	5.5	0.5	50	0.18	✓	✓	-	QFN-12 (2x2)
N	MPQ5071N-AEC1	3	5.5	1	50	0.18	-	-	-	SOT563
	MPQ5072-AEC1	3	5.5	1	50	0.18	✓	✓	-	QFN-12 (2x2)
	MPQ5073-AEC1	3	5.5	2	50	0.18	✓	✓	-	QFN-12 (2x2)
N	MPQ5073N-AEC1	3	5.5	2	50	0.18	-	-	-	SOT563
	MPQ5074-AEC1	3	5.5	3	10	0.22	✓	✓	✓	QFN-13 (2.5x3)
P	MPQ5076-AEC1	-	-	3	30	0.3	✓	-	-	SOT563
	MPQ5075A-AEC1	3	5.5	5	10	0.22	✓	✓	✓	QFN-13 (2.5x3)
	MPQ5077A-AEC1	3	5.5	7	10	0.22	✓	✓	✓	QFN-13 (2.5x3)

Load Switches | POC (16V) Load Switches

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Load Current (A)	R _{DS(ON)} (mΩ)	I _Q (Typ) (mA)	Adj. Current Limit	ASIL-B	Wettable Flank QFN Option	Package	Notes
N	MPQ5864-AEC1	5	26.5	0.8	200	0.005	✓	✓	✓	QFN-17 (3x4)	4-ch, smart HSS, ±3% high-accuracy current-sensing, full diagnostics and protections
N	MPQ77240FS-AEC1	5	26.5	0.8	200	0.005	✓	✓	✓	QFN-17 (3x4)	4-ch, smart HSS, ±3% high-accuracy current-sensing, full diagnostics and protection, ASIL-B, ISO 26262 compliant
N	MPQ5862-AEC1	5	26.5	1.5	90	0.005	✓	-	✓	QFN-17 (3x4)	2-ch, smart HSS, ±3% high-accuracy current-sensing, full diagnostics and protections
N	MPQ5862C-AEC1	5	26.5	1.5	90	0.005	✓	-	✓	QFN-13 (3x4)	2-ch, smart HSS, ±3% high-accuracy current-sensing, full diagnostics and protections
N	MPQ77220FS-AEC1	5	26.5	1.5	90	0.005	✓	-	✓	QFN-17 (3x4)	2-ch, smart HSS, ±3% high-accuracy current-sensing, full diagnostics and protections, ASIL-B, ISO 26262 compliant

Load Switches | 40V Load Switches

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Load Current (A)	R _{DS(ON)} (mΩ)	I _O (Typ) (mA)	Adj. Current Limit	Fault Pin	Wettable Flank QFN Option	Package	Notes
N	MPQ5870L-AEC1	4	42	0.5	300	0.5	✓	✓	✓	QFN-8 (2x2.5)	1-ch, smart HSS, ±1% high-accuracy current-sensing
	MPQ5871-AEC1	5	42	1	60	0.5	✓	✓	✓	QFN-8 (2x2.5)	1-ch, smart HSS, ±4% high-accuracy current-sensing
	MPQ5872-AEC1	5	42	2	60	0.5	✓	✓	✓	QFN-8 (2x2.5)	1-ch, smart HSS, ±4% high-accuracy current-sensing
	MPQ5873-AEC1	5	42	3	60	0.5	✓	✓	✓	QFN-8 (2x2.5)	1-ch, smart HSS, ±4% high-accuracy current-sensing
P	MPQ5875-AEC1	3.5	40	5	30	0.5	✓	✓	✓	QFN-16 (3x3), TSSOP-14EP	1-ch, smart HSS, ±4% high-accuracy current-sensing
	MPQ5066-AEC1	6	38	6	7	1	✓	✓	-	QFN-22 (3x5)	ISO 16750-1 compliant
	MPQ5068-AEC1	6	38	8	7	1	✓	✓	-	QFN-22 (3x5)	ISO 16750-1 compliant
P	MPQ5069-AEC1	6	38	10	7	1	✓	✓	-	QFN-22 (3x5)	ISO 16750-1 compliant
P	MPQ5807-AEC1	4	40	15	4.75	1	✓	✓	✓	QFN-33 (6x6)	E-fuse and smart HSS w/ SPI interface
P	MPQ77317FS-AEC1	4	40	15	4.75	1	✓	✓	✓	QFN-33 (6x6)	E-fuse and smart HSS w/ SPI interface, ASIL-B, ISO 26262 compliant
S	MPQ5804N-AEC1	6	42	15	4.3	1.45	-	✓	✓	QFN-30 (5x6)	36V, e-fuse and smart HSS
P	MPQ5805-AEC1	4	40	20	3.6	1	✓	✓	✓	QFN-33 (6x6)	E-fuse and smart HSS w/ SPI interface
P	MPQ77315FS-AEC1	4	40	20	3.6	1	✓	✓	✓	QFN-33 (6x6)	E-fuse and smart HSS w/ SPI interface, ASIL-B, ISO 26262 compliant
S	MPQ5802N-AEC1	6	42	20	3.3	1.45	-	✓	✓	QFN-30 (5x6)	36V, e-fuse and smart HSS
P	MPQ5803-AEC1	4	40	30	1.9	1	✓	✓	✓	QFN-33 (6x6)	E-fuse and smart HSS w/ SPI interface
P	MPQ77313FS-AEC1	4	40	30	1.9	1	✓	✓	✓	QFN-33 (6x6)	E-fuse and smart HSS w/ SPI interface, ASIL-B, ISO 26262 compliant
S	MPQ5801N-AEC1	6	42	30	1.7	1.45	-	✓	✓	QFN-30 (5x6)	36V, e-fuse and smart HSS
P	MPQ5801-AEC1	6	42	40	1	1.45	-	✓	-	PQFN-28 (6x8)	36V, e-fuse and smart HSS
P	MPQ5876-AEC1	3.5	42	2.5	120	0.88	✓	✓	✓	QFN-22 (4x4), TSSOP-28EP	4-ch, 2.5A/ch smart HSS
N	MPQ5894-AEC1	4	42	3	65	0.8	✓	✓	✓	QFN-21 (4x5)	4-ch, 3A/ch smart HSS
P	MPQ5873D-AEC1	5	42	3	60	0.5	✓	✓	✓	LGA (2.5x3)	2-ch, smart HSS, ±4% high-accuracy current-sensing
P	MPQ5877-AEC1	3.5	42	4	60	0.88	✓	✓	✓	QFN-22 (4x4), TSSOP-28EP	2-ch, 5A/ch smart HSS

	Part Number	V_{IN}	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	Load Current (A)	$R_{DS(ON)}$ (m Ω)	I_o (Typ) (mA)	Adj. Current Limit	Fault Pin	Wettable Flank QFN Option	Package	Notes
N	MPQ5892-AEC1	4	42	5	30	0.8	✓	✓	✓		QFN-21 (4x5)	2-ch, 5A/ch smart HSS
P	MPQ5807D-AEC1	4	40	15	4.75	1	✓	✓	✓		QFN-33 (6x6)	2-channel e-fuse and smart HSS w/ SPI interface
P	MPQ77327 FS-AEC1	4	40	15	4.75	1	✓	✓	✓		QFN-33 (6x6)	2-channel e-fuse and smart HSS w/ SPI interface, ASIL-B, ISO 26262 compliant
P	MPQ5805D-AEC1	4	40	20	3.6	1	✓	✓	✓		QFN-33 (6x6)	2-channel e-fuse and smart HSS w/ SPI interface
P	MPQ77325 FS-AEC1	4	40	20	3.6	1	✓	✓	✓		QFN-33 (6x6)	2-channel e-fuse and smart HSS w/ SPI interface, ASIL-B, ISO 26262 compliant

Load Switches | 60V Load Switches

	Part Number	V_{IN}	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	Load Current (A)	$R_{DS(ON)}$ (m Ω)	I_o (Typ) (mA)	Adj. Current Limit	Fault Pin	Wettable Flank QFN Option	Package	Notes
S	MPQ5870-AEC1	4	65	0.5	300	0.5	✓	✓	✓		QFN-8 (2x2.5)	1-ch, smart HSS, $\pm 1\%$ high-accuracy current-sensing
S	MPQ5895-AEC1	4	65	3	65	0.8	✓	✓	✓		QFN-21 (4x5)	2-channel, 3A/ch smart HSS
S	MPQ5896-AEC1	4	65	3	65	0.8	✓	✓	✓		QFN-21 (4x5)	4-channel, 3A/ch smart HSS
S	MPQ5893-AEC1	4	65	5	30	0.8	✓	✓	✓		QFN-21 (4x5)	2-channel, 5A/ch smart HSS

Load Switches | 80V Load Switches

		Part Number	V_{IN} (Min) (V)		V_{IN} (Abs Max) (V)	Load Current (A)	$R_{DS(ON)}$ (m Ω)	I_{AQ} (Typ) (mA)	Adj. Current Limit	Fault Pin	Wettable Flank QFN Option	Package	Notes
48V	N	MPQ5882-AEC1	6	80	25	2.5	1.5	✓	✓	-		QFN-30 (6x8)	E-fuse and smart HSS
48V		MPQ5884-AEC1	6	80	15	4.5	1.5	✓	✓	✓		QFN-30 (5x6)	E-fuse and smart HSS
48V	P	MPQ5885-AEC1	3.5	80	15	4.5	1	✓	✓	✓		QFN-33 (6x6)	E-fuse and smart HSS w/ SPI interface
48V	P	MPQ77415-AEC1	3.5	80	15	4.5	1	✓	✓	✓		QFN-33 (6x6)	E-fuse and smart HSS w/ SPI interface, ASIL-B, ISO 26262 compliant
48V	N	MPQ5887-AEC1	6	80	10	7.5	1.5	✓	✓	✓		QFN-30 (5x6)	E-fuse and smart HSS
48V	P	MPQ5886-AEC1	3.5	80	10	8.5	1	✓	✓	✓		QFN-33 (6x6)	E-fuse and smart HSS w/ SPI interface
48V	P	MPQ77416-AEC1	3.5	80	10	8.5	1	✓	✓	✓		QFN-33 (6x6)	E-fuse and smart HSS w/ SPI interface, ASIL-B, ISO 26262 compliant
48V	P	MPQ5886D-AEC1	3.5	80	10	8.5	1.5	✓	✓	✓		QFN-33 (6x6)	2-channel, e-fuse and smart HSS w/ SPI interface
48V	P	MPQ77426-AEC1	3.5	80	10	8	1	✓	✓	✓		QFN-33 (6x6)	2-channel, e-fuse and smart HSS w/ SPI interface, ASIL-B, ISO 26262 compliant
48V	N	MPQ5889-AEC1	6	80	7	15	1.5	✓	✓	✓		QFN-30 (5x6)	E-fuse and smart HSS
48V	P	MPQ5888-AEC1	3.5	80	7	15	1	✓	✓	✓		QFN-33 (6x6)	E-fuse and smart HSS w/ SPI interface
48V	P	MPQ77418-AEC1	3.5	80	7	15	1	✓	✓	✓		QFN-33 (6x6)	E-fuse and smart HSS w/ SPI interface, ASIL-B, ISO 26262 compliant
48V	P	MPQ5888D-AEC1	3.5	80	7	15	1	✓	✓	✓		QFN-33 (6x6)	2-channel, e-fuse and smart HSS w/ SPI interface
48V	P	MPQ77428-AEC1	3.5	80	7	15	1	✓	✓	✓		QFN-33 (6x6)	2-channel, e-fuse and smart HSS w/ SPI interface, ASIL-B, ISO 26262 compliant
48V	P	MPQ5893H-AEC1	3.5	70	5	30	0.8	✓	✓	✓		QFN-21 (4x5)	2-channel, 5A/ch smart HSS
48V	P	MPQ5895H-AEC1	3.5	70	3	65	0.8	✓	✓	✓		QFN-21 (4x5)	2-channel, 3A/ch smart HSS
48V	P	MPQ5896H-AEC1	3.5	70	3	65	0.8	✓	✓	✓		QFN-21 (4x5)	4-channel, 3A/ch smart HSS
48V	P	MPQ5898-AEC1	3.5	80	4	80	0.1	✓	✓	✓		QFN-21 (4x5)	4-channel, 2A/ch smart HSS
48V	P	MPQ5897-AEC1	3.5	80	2	175	0.1	✓	✓	✓		QFN-21 (4x5)	4-channel, 2A/ch smart HSS

Reverse Battery Protection Controllers

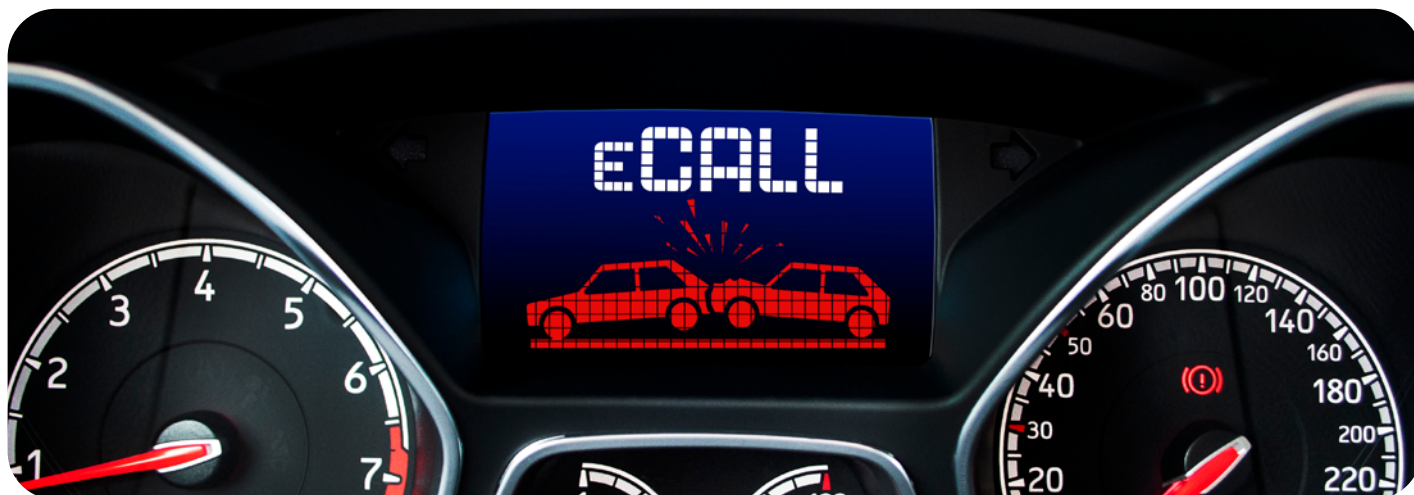
		Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Reverse Battery (V)	Min Gate Drive Current (mA)	Forward Voltage Drop (mV)	Shutdown I _o (Typ) (µA)	Power Good Int Boost Converter	Package	Notes	
N		MPQ5816-AEC1	3	42	-40	110/2000	200	4	✓	-	QFN-21 (3x4)	Integrated diode, low-voltage start-stop transient operation, AC rectification up to 100kHz, ISO 16750-2 compliant
N		MPQ5817-AEC1	3	42	-36	110/2000	200	4	✓	-	QFN-21 (4x5)	Integrated diode, low-voltage start-stop transient operation, AC rectification up to 100kHz, ISO 16750-2 compliant
N		MPQ5823-AEC1	5	40	-0.3	-	-	2.2	✓	-	QFN-24 (4x4)	HEVL
N		MPQ5836-AEC1	3	55	-36	110/2000	200	4	✓	-	QFN-21 (3x4)	Integrated diode, low-voltage start-stop transient operation, AC rectification up to 100kHz, ISO 16750-2 compliant
		MPQ5850-AEC1	3	42	-36	170/430	20	4	✓	✓	TSOT23-8	Low-voltage start-stop transient operation, AC rectification up to 100kHz, ISO 16750-2 compliant
		MPQ5852-AEC1	3	42	-36	170/430	20	4	✓	✓	QFN-13 (3x3)	Low-voltage start-stop transient operation, AC rectification up to 100kHz, ISO 16750-2 compliant, two voltage monitors
N		MPQ5852A-AEC1	3	42	-36	170/430	20	4	✓	✓	QFN-13 (3x3)	Low-voltage start-stop transient operation, AC rectification up to 100kHz, ISO 16750-2 compliant, two voltage monitors, different deglitch time of LVM and BVM available
48V	P	MPQ5853-AEC1	2.5	70	-60	10/2600	10	1	✓	-	TSOT23-8	Low-voltage start-stop transient operation, AC rectification up to 30kHz, ISO 16750-2 compliant PG + BVM available
N		MPQ5857-AEC1	4.5	42	-42	800/1300	20	8	✓	✓	QFN-16 (3x4)	Back-to-back FET control, AC rectification up to 100kHz, OCP/OVP and monitoring, ISO 7637 and ISO 16750 compliant
48V	P	MPQ5858-AEC1	4.5	80	-80	800/1300	20	8	✓	✓	QFN-16 (3x4)	Low-voltage start-stop transient operation, AC rectification up to 100kHz, ISO 16750-2 compliant, 2 voltage monitors

Analog Switches

Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	Switch Current (A)	$R_{DS(ON)}$ (Ω)	I_d (Typ) (μ A)	t_{ON}/t_{OFF} (ns)	Bandwidth (MHz)	Wettable Flank QFN Option	Package	Notes
MPQ2735-AEC1	1.65	5.5	0.1	0.25	1	29/23	50	-	QFN-10 (2x2)	Low-voltage, 0.45 Ω dual SPDT analog switches, separate control inputs

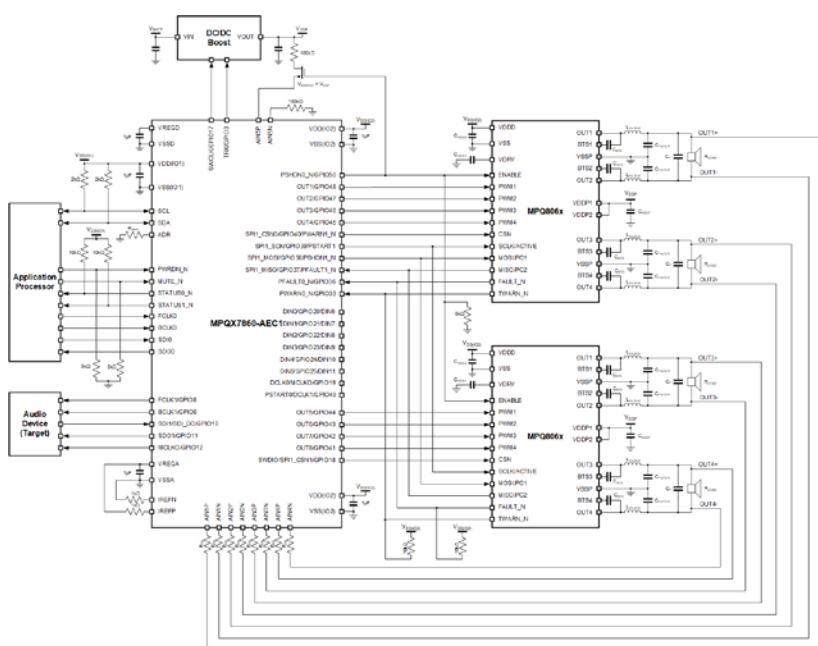
Class-D Audio

MPS's Class-D audio solutions provide highly efficient, innovative, easy-to-use amplifiers that increase performance and reliability. Find Class-D audio solutions for your e-call, cluster, virtual engine sound, and other automotive audio power projects.



MPQX7860-AEC1 PREVIEW

4-Channel, Digital, Class-D Audio Amplifier Processor



Features

- Designed to control integrated power stages and discrete GaN/MOSFET power stages with post-filter feedback (PFFB)
- Supply voltage independent control loop supports Class-H dynamic power supply applications to reduce power losses
- Controlled by a host application processor (AP)
- Up to 2 full-duplex serial audio interfaces available
- Supports 48kHz to 192kHz with 2, 4, 8, or 16 slots
- 49.152MHz primary clock output
- Optional 6 stereo PDM inputs for streaming data processing
- Operates from 1.8V or 3.3V input/output (I/O) supply
- Embedded microcontroller (MCU)
- Embedded PLL
- I²C interface to host AP
- SPI interface to power stages
- Tracking control for a DC/DC boost converter
- 100MHz DSP engine with 16 cores
- Available in a QFN (9mmx9mm) package

Class D Audio Amplifiers

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	P _{OUT} (W)	R _{DS(on)} (mΩ)	Idle Current (Typ) (mA)	f _{SW} (kHz)	Efficiency (%)	THD+N at 1kHz Input (%)	PSRR (dB)	SNR (dB)	Output Noise (μV)	Type	Load Diagnostics	Selectable Gain	Power Limiter	Digital Interface	Wettable Flank QFN Option	Package	Notes
	MPQ77 95-AEC1	3.9	42	24.5 @ 14.4V, 4Ω Load	150	6.5	330 kHz to 2.2 MHz	92 @ 470 kHz, 90 @ 2 MHz	0.09 @ 1W, 470 kHz	71 @ 100 Hz	102	115	Mono, BTL	✓	✓	✓	I²C	✓	QFN-24 (4x4)	Low EMI, mono BTL with diagnostics
	MPQ77 90-AEC1	5.5	18	9 @ 12V, 8Ω Load	300	5	300 kHz	90	0.15 @ 5W (8Ω), 300 kHz	50	102	115	Mono, BTL	-	✓	✓	-	-	TSS OP-20EP	Low EMI, analog input, for mono speaker in bridge-tied load configuration
S	MPQ77 93-AEC1	4	42	25W x 4 @ 14.4V, 4Ω Load	60	35	432 kHz to 2.2 MHz	90	0.02 @ 1W	75	104	90	BTL	✓	✓	✓	I²C	-	SSO P56-EPR	Low EMI with frequency spread spectrum
S	MPQ77 94-AEC1	4	42	25W x 4 @ 14.4V, 4Ω Load	60	35	432 kHz to 2.2 MHz	90	0.02 @ 1W	75	104	90	BTL	✓	✓	✓	I²C	-	SSO P56-EPR	Low EMI with frequency spread spectrum, real-time DIAG and current sense
S	MPQ77 94A-AEC1	4	42	25W x 4 @ 14.4V, 4Ω Load	60	35	432 kHz to 2.2 MHz	90	0.02 @ 1W	75	104	90	BTL	✓	✓	✓	I²C	-	SSO P56-EPR	Low EMI with frequency spread spectrum, real-time DIAG and current sense

Axign Digital Class-D Audio Processors

Part Number	Number of Channels	Input Format	Max Sample Rate (MHz)	Number of Bits	Number of PWM Outputs	Control Interface	Package
P MPQX7860-AEC1	4	I ² S, TDM	25	32	8	I ² C, SPI	QFN-64 (9x9)

Audio Full-Bridge Drivers

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	R_{ON} (m Ω)	I_{LIMIT} (A)	Type	P_{OUT} (W)	Package	Notes
48V P MPQ8063-AEC1	3.7	70	45	10	Stereo Full-Bridge	200 @ 48V, 4 Ω Load	LGA (6x6)	48V-ready power stage

Position & Current Sensors

MPS's position and current sensors provide highly reliable, contactless angle sensing for position or speed control in automotive systems. Compact size, multiple angle output formats, and support for end-of-shaft and side-shaft magnet topology aid the implementation of cost-effective angle-sensing solutions. Typical applications include rotary controls in cabin user interfaces and motorized electronic actuators in vehicle body applications.



Contactless Sensing | High Reliability | Flexible Magnet Positioning

Integrated Current Sensors

	Part Number	Current Range (A)	V _{CC} (V)	Over-Temperature Accuracy	Temp Range (°C)	Isolation Voltage (V _{RMS})	Working Voltage (V _{RMS})	Working Voltage for Basic Isolation (V _{RMS})	Bandwidth (kHz)	Over-Current Detection (OCD)	Primary Conductor Resistance	UL Certification	Package	Notes	
N	MCQ1805	±5, ±10, ±20, ±30, ±40, ±50	3.3, 5	2.5%	-40 to +125	3000	500	-	100	✓	-	0.9	✓ + TUV	SOIC-8	AEC-Q100, coreless, ratiometric analog output, immune to external magnetic field gradients
	MCQ1806	±5, ±10, ±20, ±30, ±40, ±50	3.3, 5	2.5%	-40 to +125	3000	500	-	100	-	-	0.9	✓	SOIC-8	AEC-Q100, coreless, ratiometric analog output
S	MCQ1810	±10, ±20, ±30, ±40, ±50, ±65, ±80, ±100	3.3, 5	2%	-40 to +150	5000	1100	560	350	✓	✓	0.3	Planned	SOIC-10W	AEC-Q100, coreless, zero current reference, 0.3mΩ low primary conductor resistance, bi- or unidirectional sensing, ratiometric or absolute analog output, OCD with 1μs response time

	Part Number	Current Range (A)	V _{CC} (V)	Over-Temperature Accuracy	Temp Range (°C)	Isolation Voltage (V _{RMS})	Working Voltage (V _{RMS})	Working Voltage for Basic Isolation (V _{RMS})	Working Voltage for Reinforced Isolation (V _{RMS})	Bandwidth (kHz)	Over-Current Detection (OCD)	Voltage Reference	Primary Conductor Resistance (mΩ)	UL Certification	Package	Notes
S	MCQ1812	±10, ±20, ±30, ±40, ±50, ±65, ±80	3.3, 5	2%	-40 to +150	5000	1100	560	350	✓	✓	0.45	Planned	SOIC-16W		AEC-Q100, coreless, zero current reference, bi- or unidirectional sensing, ratiometric or absolute analog output, prog. OCD with 1μs response time
S	MCQ1814	±5, ±10, ±20, ±30, ±40, ±50, ±65, ±80	3.3, 5	2%	-40 to +150	5000	1100	560	350	✓	✓	0.45	Planned	SOIC-16W		AEC-Q100, coreless, zero current reference, bi- or unidirectional sensing, ratiometric or absolute analog output, prog. OCD with 1μs response time
	MCQ1823	±5, ±10, ±20, ±30, ±40, ±50	3.3, 5	2.5%	-40 to +125	100	100	-	120	✓	-	0.6	✓	QFN-12 (3x3)		AEC-Q100, coreless, bi- or unidirectional sensing, ratiometric or absolute analog output, immune to external magnetic field gradients
S	MCQ1880	±50, ±100, ±150, ±200	3.3, 5	2%	-40 to +150	100	100	-	350	-	-	0.2	-	PSOF-7		AEC-Q100, bi- or unidirectional sensing, 0.2mΩ primary conductor resistance, high precision, ratiometric or absolute analog output
P	MCQ1809	±5, ±10, ±20, ±30, ±40, ±50	3.3, 5	2%	-40 to +125	3000	550	-	350	✓	-	0.5	-	SOIC-8		AEC-Q100, coreless, ratiometric analog output

MagAlpha™ Magnetic Position Sensors

	Part Number	±3σ Resolution	Interface	Supply Voltage (V)	Supply Current (mA)	Sensing Range (mT)	Cutoff Frequency (Hz)	Latency at Constant Speed (μs)	Magnetic Field Detection	Temperature Range (°C)	Package	Wettable Flanks	Notes
	MAQ430	12-Bit	SPI, UVW, ABZ	3 to 3.6	11.7	30+ (No Upper Limit)	390	8	-	-40 to +150	QFN-16 (3x3)	✓	AEC-Q100
	MAQ470	12-Bit	SPI, SSI, PWM, ABZ	3 to 3.6	11.7	30+ (No Upper Limit)	390	8	✓	-40 to +150	QFN-16 (3x3)	✓	AEC-Q100
	MAQ473	10-Bit to 14-Bit	SPI, SSI, PWM, ABZ	3 to 3.6	11.7	30+ (No Upper Limit)	23 to 6k	8	✓	-40 to +150	QFN-16 (3x3)	✓	AEC-Q100, prog. filter
	MAQ800	8-Bit	SPI, SSI	3 to 3.6	11.7	30+ (No Upper Limit)	90	4000	✓	-40 to +125	QFN-16 (3x3)	✓	Optimized for automotive HMI applications, SSI output
	MAQ820	8-Bit	SPI, ABZ	3 to 3.6	11.7	30+ (No Upper Limit)	90	4000	✓	-40 to +125	QFN-16 (3x3)	✓	Optimized for automotive HMI applications, SSI output
	MAQ850	8-Bit	SPI, PWM	3 to 3.6	11.7	30+ (No Upper Limit)	90	4000	✓	-40 to +125	QFN-16 (3x3)	✓	Optimized for automotive HMI applications, SSI output
N	MAQ600A	12-Bit to 15-Bit	SPI, ABZ, PWM, UVW, SSI	3 to 3.6	7.5	20+ (No Upper Limit)	75 to 17k	0	✓	-40 to +150	QFN-16 (3x3)	✓	AEC-Q100, TMR front-end, high accuracy and BW, 0.6° INL (<0.1° INL through user calibration w/ 32-word lookup table)

MagVector™ 3D Magnetic Position Sensors

	Part Number	Data Length	Interface	Supply Voltage (V)	Supply Current (mA)	Sensing Range (mT)	Conversion Time (μs)	Temperature Range (°C)	Package	Notes
P	MVQ310	12-Bit	I²C, SPI	3.3	25nA to 2.5	±125 or ±250	40	-40 to +150	TSOT23-6	AEC-Q100, digital component output, selectable operating power modes and sensing axis

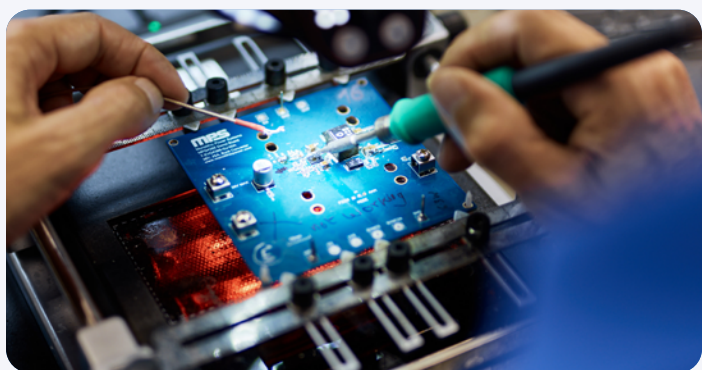
MagDiff™ Magnetic Position Sensors with Stray Field Immunity

	Part Number	±3σ Resolution	Interface	Supply Voltage (V)	Supply Current (mA)	Sensing Range (mT)	Cutoff Frequency (Hz)	Latency at Constant Speed (μs)	Magnetic Field Detection	Temperature Range (°C)	Package	Wettable Flanks	Notes
S	MAQ79010	10-Bit to 14.5-Bit	SPI, SSI, I ² C, UVW, SENT, ABZ	3.3V, 5V	12	8+ (No Upper Limit)	12 to 100k	0	✓	-40 to +150	QFN-16 (3x3)	✓	AEC-Q100, ASIL-B compliant, robust against parasitic stray fields >4kA/m DC, or 5mT
P	MAQ79016	10-Bit to 14.5-Bit	SPI, SSI, I ² C, UVW, SENT, ABZ	Up to 26V	12	8+ (No Upper Limit)	12 to 100k	0	✓	-40 to +150	QFN-16 (3x3)	✓	AEC-Q100, ASIL-B compliant, 26V with reverse polarity protection, robust against parasitic stray fields >4kA/m DC, or 5mT
S	MAQ900	10-Bit to 14.5-Bit	SPI, SSI, I ² C, UVW, SENT, ABZ	3.3V, 5V	12	8+ (No Upper Limit)	12 to 100k	0	✓	-40 to +150	QFN-16 (3x3)	✓	AEC-Q100, robust against parasitic stray fields >4kA/m DC, or 5mT
P	MAQ79020	12-Bit to 14.5-Bit	ABZ, PWM, SPI, I ² C, SSI, UVW	3.3V, 5V	12	8+ (No Upper Limit)	12 to 100k	0	✓	-40 to +150	QFN-32 (5x5)	✓	AEC-Q100, ASIL-D compliant w/ functional safety, robust against parasitic stray fields >4kA/m DC or 5mT, wettable flanks

Why Choose MPS

For almost 30 years, Monolithic Power Systems (MPS) — headquartered in Kirkland, Washington, and listed on Nasdaq — has been powering the most important technological innovations, from electric vehicles to artificial intelligence, renewable energy systems to advanced medical devices. Our fully customized service, dedicated support, and steadfast partnerships have attracted industry leaders and startups on the cusp of groundbreaking discoveries.

MPS is agile, nimble, and forward-thinking, always looking for better, faster, and more efficient ways to drive technological progress. We forge ahead to create what's next and make a sustainable impact.



We are a global leader in powering the most important technological innovations of our lives — working with our customers to create what's next. We design high-performance, super efficient power solutions for a wide range of product categories — from AI Data Centers to automation, advanced medical devices to robotics.



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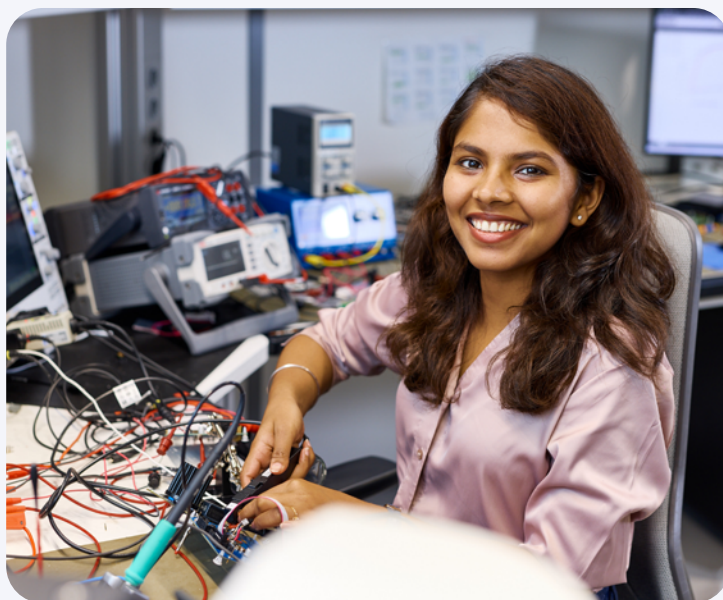
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