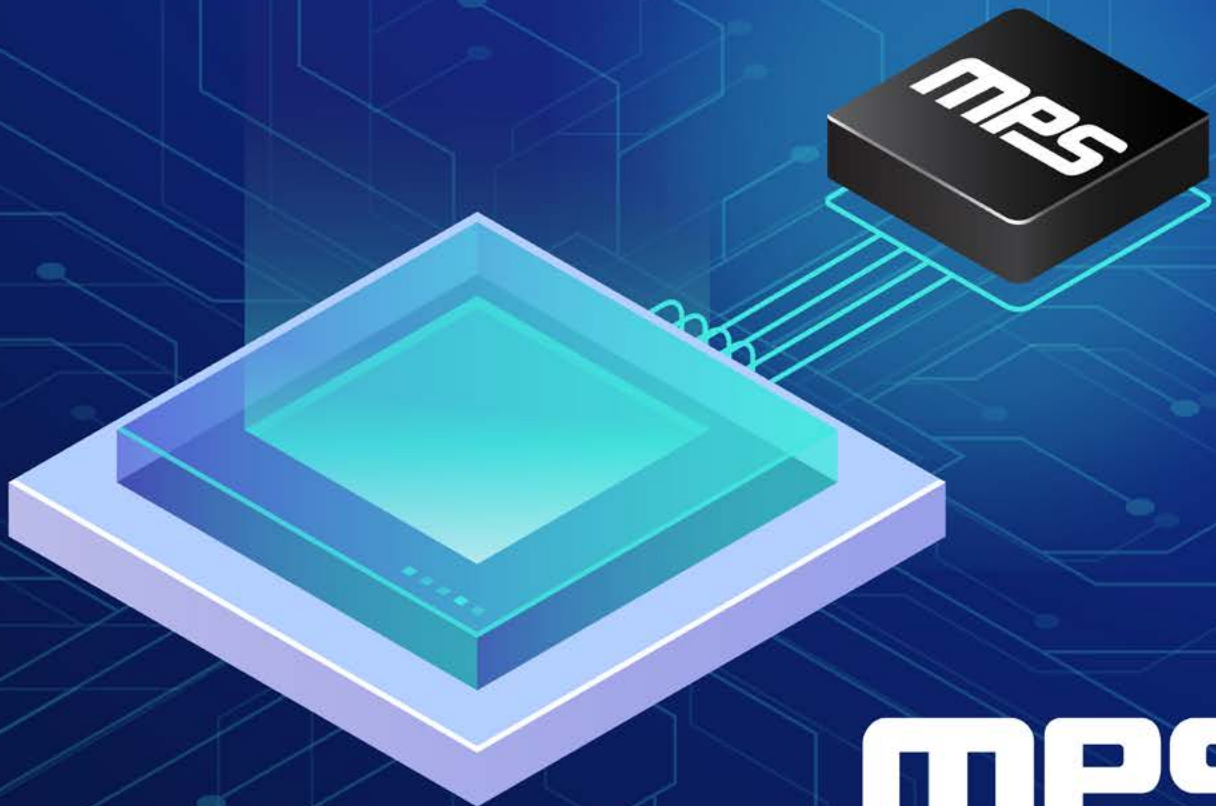


# MPS Reference Designs for Intel FPGAs

Intel Enpirion Power Cross-Reference Guide

- ✓ High Efficiency
- ✓ Ultra-Fast Transient Response
- ✓ Small Footprint
- ✓ Full Reference Designs



**MPS**  
MonolithicPower.com

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### About MPS

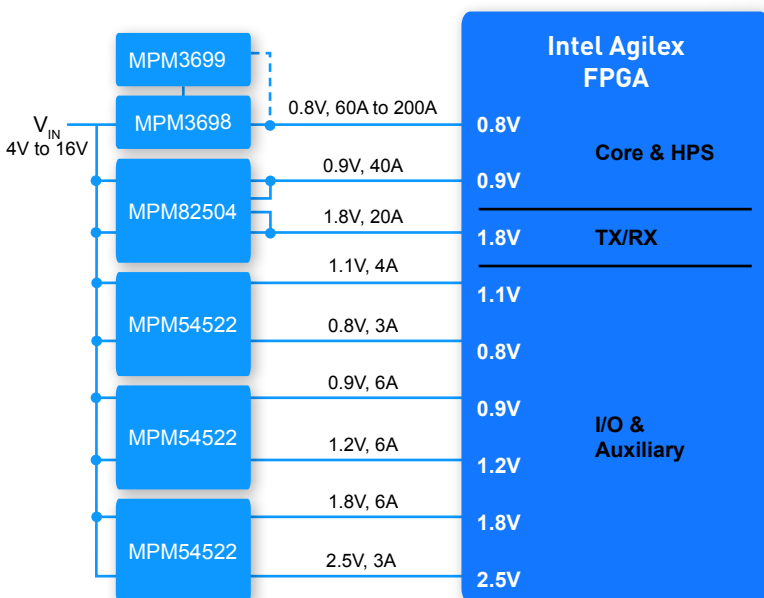
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# Introduction

MPS offers an extensive portfolio of monolithic power solutions for Intel FPGAs, ranging from highly flexible and simple-to-use PWM regulators to fully integrated power modules. MPS has developed an innovative, proprietary process technology that delivers high efficiency, ultra-fast transient response, small size, and low solution cost. MPS technology and technical support makes powering FPGAs easier than ever.

## MPS Power for Intel Agilex FPGAs

### Intel Agilex Power Tree Example



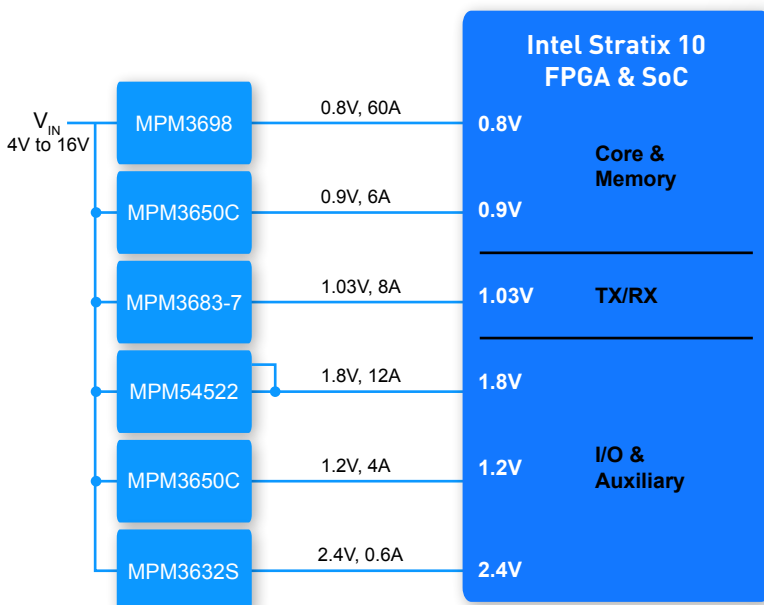
#### MPS PRODUCTS

$V_{IN}$ (V)	$I_{OUT}$ Max (A)	Recommended MPS Part
4 to 16	160A	<a href="#">MPM3699</a>
4 to 16	120A	<a href="#">MPM3698</a>
4 to 16	4 x 25A	<a href="#">MPM82504</a>
4 to 16	2 x 6A	<a href="#">MPM54522</a>

For Intel Enpirion part numbers, see the cross-reference guide on page 6.

## MPS Power for Intel Stratix 10 FPGAs

### Intel Stratix 10 FPGAs Power Tree Example



#### MPS PRODUCTS

$V_{IN}$ (V)	$I_{OUT}$ Max (A)	Recommended MPS Part
4 to 16	120A	<a href="#">MPM3698</a>
4 to 16	6A	<a href="#">MPM3650C</a>
4 to 16	8A	<a href="#">MPM3683-7</a>
4 to 16	2 x 6A	<a href="#">MPM54522</a>
4 to 16	3A	<a href="#">MPM3632S</a>

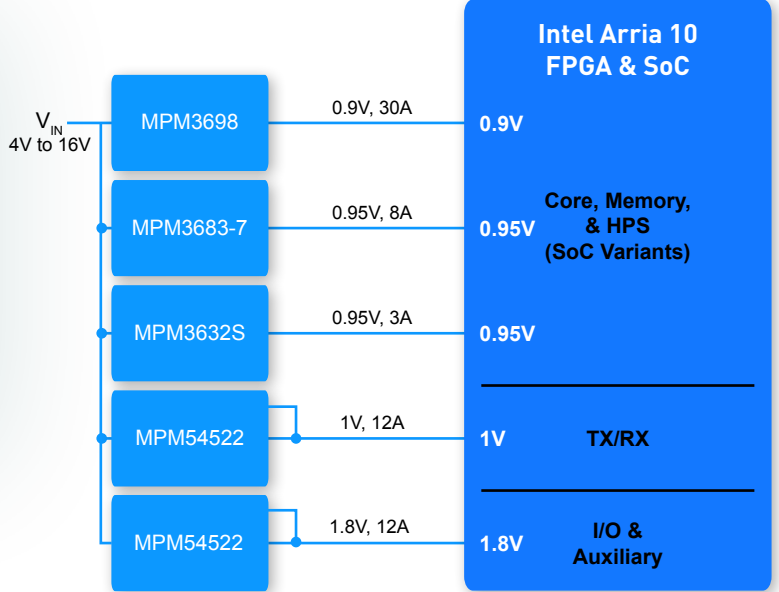
For Intel Enpirion part numbers, see the cross-reference guide on page 6.

# MPS Power for Intel Arria 10 FPGAs

Intel Arria 10 Device Power Tree Example

MPS PRODUCTS		
$V_{IN}$ (V)	$I_{OUT}$ Max (A)	Recommended MPS Part
4 to 16	120A	MPM3698
4 to 16	8A	MPM3683-7
4 to 16	2 x 6A	MPM54522
4 to 16	3A	MPM3632S

For Intel Enpirion part numbers, see the cross-reference guide on page 6.

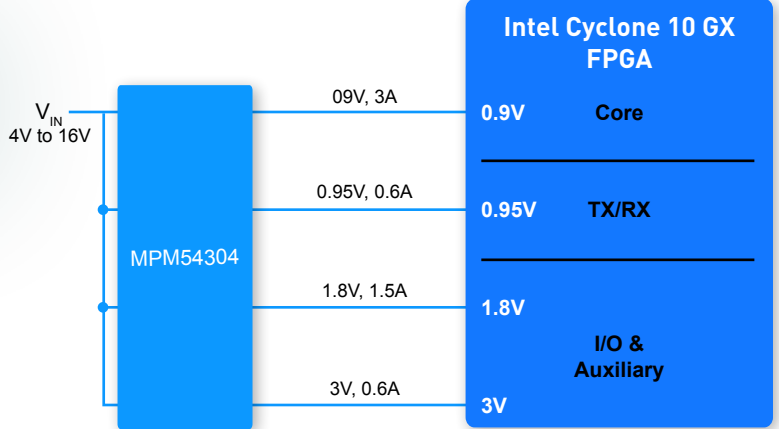


# MPS Power for Intel Cyclone 10 FPGAs

Intel Cyclone 10 Power Tree Example

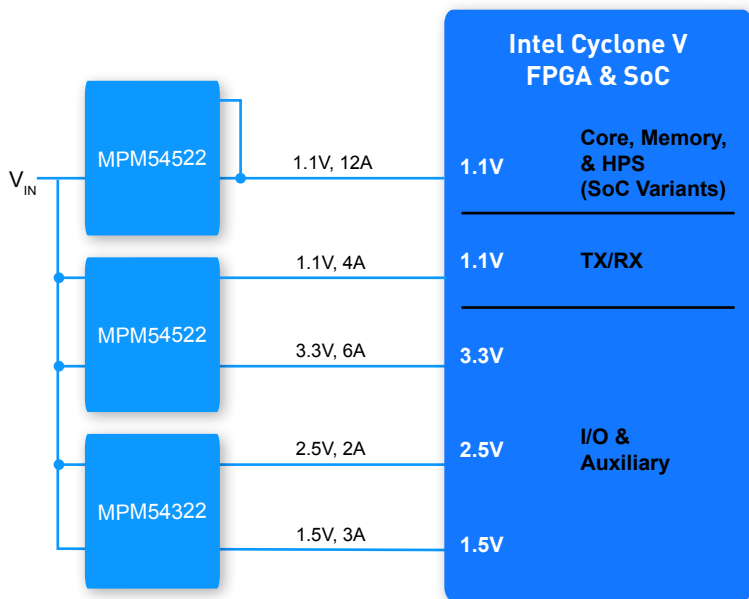
MPS PRODUCTS		
$V_{IN}$ (V)	$I_{OUT}$ Max (A)	Recommended MPS Part
4 to 16	2 x 2A plus 2 x 3A	MPM54304

For Intel Enpirion part numbers, see the cross-reference guide on page 6.



# MPS Power for Intel Cyclone V Power

## Intel Cyclone V Power Tree Example



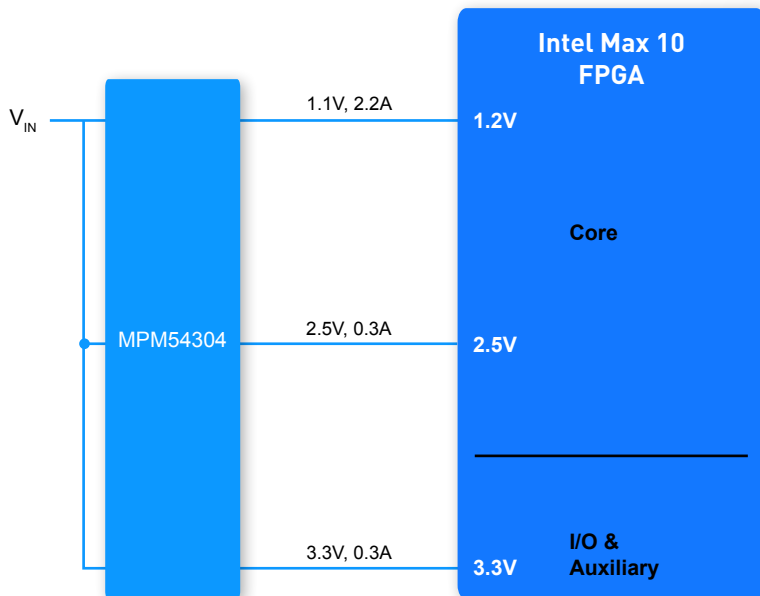
### MPS PRODUCTS

$V_{IN}$ (V)	$I_{OUT}$ Max (A)	Recommended MPS Part
4 to 16	2 x 6A	<a href="#">MPM54522</a>
4 to 16	2 x 3A	<a href="#">MPM54322</a>

For Intel Enpirion part numbers, see the cross-reference guide on page 6.

# MPS Power for Intel Max 10 Devices

## Intel Max 10 Device Power Tree Example



### MPS PRODUCTS

$V_{IN}$ (V)	$I_{OUT}$ Max (A)	Recommended MPS Part
4 to 16	2 x 2A plus 2 x 3A	<a href="#">MPM54304</a>

For Intel Enpirion part numbers, see the cross-reference guide on page 6.

# MPS Cross-Reference Guide

## MPS AND INTEL ENPIRION PRODUCTS

Max I <sub>OUT</sub> (A)	V <sub>IN</sub> Range (V)	Intel Enpirion Part Number	MPS Part Number	MPS Advantages
0.4	2.5 to 5.5	EP5348UI	MPM3804	7% higher efficiency
0.5	2.4 to 5.5	EP5352QI	MPM3805	60% smaller, PG
0.6	2.4 to 5.5	EP5357HUI	MPM3804	30% smaller
0.6	2.4 to 5.5	EP5357LUI	MPM3804	30% smaller
0.6	2.4 to 5.5	EP5358HUA	MPM3805-AEC1	3% higher efficiency, PG
0.6	2.4 to 5.5	EP5358HUI	MPM3804	30% smaller
0.6	2.4 to 5.5	EP5358LUA	MPM3805-AEC1	2% higher efficiency, PG
0.6	2.4 to 5.5	EP5358LUI	MPM3804	30% smaller
0.6	2.4 to 5.5	EP5362QI	MPM3805	60% smaller, 3% higher efficiency, PG
0.6	2.4 to 5.5	EP5368QI	MPM3805	60% smaller, 8% higher efficiency, PG
0.8	2.4 to 5.5	EP5382QI	MPM3811	80% smaller, 2% higher efficiency
0.8	2.4 to 5.5	EP5388QI	MPM3811	60% smaller, 5% higher efficiency,
1	2.4 to 5.5	EN5312QI	MPM3811	80% smaller, 6% higher efficiency
1	2.7 to 5.5	EN6310QA	MPM3810-AEC1	60% smaller, 3% higher efficiency
1	2.7 to 5.5	EN6310QI	MPM3810	60% smaller, 3% higher efficiency
1	2.4 to 5.5	EP53A7HQI	MPM3811	60% smaller
1	2.4 to 5.5	EP53A7LQI	MPM3811	60% smaller
1	2.4 to 5.5	EP53A8HQA	MPM3811	60% smaller, 4% higher efficiency
1	2.4 to 5.5	EP53A8HQI	MPM3811	60% smaller, 4% higher efficiency
1	2.4 to 5.5	EP53A8LQA	MPM3810-AEC1	20% smaller, 4% higher efficiency
1	2.4 to 5.5	EP53A8LQI	MPM3811	60% smaller, 4% higher efficiency
1	2.4 to 6.6	EN5311QI	MPM3811	80% smaller, 6% higher efficiency
1.5	2.4 to 5.5	EN5319QI	MPM3822C	60% smaller, 2% higher efficiency
1.5	2.4 to 5.5	EP53F8QI	MPM3822C	3% smaller, 2% higher efficiency
2	2.4 to 5.5	EN5322QI	MPM3822C	60% smaller, 1% higher efficiency
2	2.4 to 5.5	EN5329QI	MPM3822C	60% smaller
3	2.4 to 5.5	EN5337QI	MPM3833C	70% smaller
3	2.4 to 5.5	EN5339QI	MPM3833C	60% smaller
3	2.4 to 6.6	EN5335QI	MPM3833C	90% smaller, 2% higher efficiency
3	2.4 to 6.6	EN5336QI	MPM3833C	90% smaller, 2% higher efficiency
3	2.5 to 6.6	EN6337QA	MPM3833C	70% smaller
3	2.5 to 6.6	EN6337QI	MPM3833C	70% smaller
3	2.7 to 6.6	EN6338QI	MPM3833C	40% smaller
4	2.7 to 6.6	EN6340QI	MPM3860	1% higher efficiency

# MPS Cross-Reference Guide

## MPS AND INTEL ENPIRION PRODUCTS

Max I <sub>OUT</sub> (A)	V <sub>IN</sub> Range (V)	Intel Enpirion Part Number	MPS Part Number	MPS Advantages
4	2.5 to 6.6	EN6347QA	MPM3840	50% smaller
4	2.5 to 6.6	EN6347QI	MPM3840	50% smaller
4	4.5 to 14	EN2340QI	MPM350C	70% smaller
4	4.5 to 14	EN2342QI	MPM3650C	70% smaller
4.5	10 to 13.2	EC2630QI	MPM3650C	20% smaller
6	2.4 to 5.5	EN5365QI	MPM3860	80% smaller, 9% higher efficiency
6	2.4 to 5.5	EN5366QI	MPM3860	80% smaller, 9% higher efficiency
6	2.5 to 5.5	EN5367QI	MPM3860	60% smaller, 7% higher efficiency
6	2.4 to 6.6	EN5364QI	MPM3860	70% smaller, 4% higher efficiency
6	3 to 6.5	EN6362QI	MPM3860	60% smaller
6	2.7 to 6.6	EN6363QI	MPM3860	3% higher efficiency
8	2.5 to 6.6	EN6360QA	MPM3683-7	40% smaller, 2% higher efficiency
8	2.5 to 6.6	EN6360QI	MPM3683-7	40% smaller, 2% higher efficiency
8	3 to 6.5	EN6382QI	MPM3683-7	20% smaller, 2% higher efficiency
9	2.4 to 5.5	EN5395QI	MPM3683-10	60% smaller
9	2.4 to 5.5	EN5396QI	MPM3683-10	60% smaller
9	2.4 to 6.6	EN5394QI	MPM3683-10	40% smaller
12	2.5 to 6.6	EN63A0QI	MPM3683-20	55% smaller
12	2.5 to 6.6	EN63A0QA	MPM3683-20	55% smaller
20	4.5 to 16	EM2120HxQI	MPM3695-25	40% smaller
20	4.5 to 16	EM2120LxQI	MPM3695-25	40% smaller
30	4.5 to 16	EM2030xQI	MPM3690-50D	5% higher peak efficiency
30	4.5 to 16	EM2130HxQI	MPM3690-50D	5% higher peak efficiency
30	4.5 to 16	EM2130LxQI	MPM3690-50D	5% higher peak efficiency
40	4.5 to 16	EM2040xQI	MPM3690-50D	5% higher peak efficiency
40	4.5 to 16	EM2140PxQI	MPM3690-50D	5% higher peak efficiency
60	4.5 to 16	EM2260xQI	MPM3695-100	5% higher peak efficiency
80	4.5 to 16	EM2280xQI	MPM3695-100	5% higher peak efficiency
10	9 to 16	EN29A0QI	MPM3683-10	70% smaller, PG

## ABOUT MONOLITHIC POWER SYSTEMS

### Who we are

We are creative thinkers. We break boundaries. We take technology to new levels. As a leading international semiconductor company, Monolithic Power Systems (MPS) creates cutting-edge solutions to improve the quality of life with green, easy-to-use products.

### What we do

We make power design fun! With our innovative proprietary technology processes, we thrive on re-imagining and redefining the possibilities of high-performance power solutions in industrial applications, telecom infrastructures, cloud computing, automotive, and consumer applications.

### Where we come from

It started with a vision. Michael Hsing, pioneering engineer and CEO, founded Monolithic Power Systems, Inc. in 1997 with the belief that an entire power system could be integrated onto a single chip. Under his leadership, MPS has succeeded not only in developing a monolithic power module that truly integrates an entire power system in a single package, but also it continues to defy industry expectations with its patented groundbreaking technologies.

### Our values

We cultivate creativity.

As a company, we believe in creating an environment that encourages and challenges our employees to collaborate and think outside the box to excel beyond their preconceived capabilities.

We do not accept the status quo.

We do not believe in limitations. It is not about what is, but what can be. Possibilities are endless at MPS.

We are passionate about sustainability.

It's about the future. From materials to finances, we are committed to conservation. We will not tolerate waste in an effort to improve and preserve the quality of life.

We are committed to providing innovative products to our customers.

Let us do the heavy lifting. We relentlessly strive to make system design versatile and effortless to meet our customers' specific needs. We'll do the work, so our customers can have the fun!



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