

As modern devices become smarter and more customizable, consumers are also demanding that they be smaller and more powerful. This has driven demand for technology that can manage thermals with ever-higher power densities as processing power increases. [MPS](#) is innovating and creating highly integrated [converters and controllers](#) with cutting-edge efficiency and power density. By integrating the entire solution onto a single, monolithic silicon die, engineers can simplify system design, reduce time-to-market, lower BOM cost, and save board space.

By taking complex individual components and grouping them together, integrated solutions provide higher reliability. They also reduce some of the failure modes from PCB assembly due to fewer physical parts and the absence of soldered connections. With fewer traces to manage and regulate, devices are less likely to have sharp thermal rises and consume less power than bulky, traditional solutions. In the unlikely situation that a chip fails, integrated solutions can be easily replaced and tested, rather than requiring troubleshooting of each component on the board.

Integration and intelligence are key aspects of an innovative power management solution. One example is the [MPX2002](#), an all-in-one flyback controller that does not require a feedback circuit or auxiliary winding to drive the low-side SR MOSFET (see Figure 1). It integrates the primary driving circuit, secondary controller, synchronous rectification, and internal linear regulator. The [MPX2002](#) is available in a thin SOICW-16-T package with a switching frequency up to 70kHz, making it ideal for high-performance USB PD adapters, power supplies, and offline battery chargers.

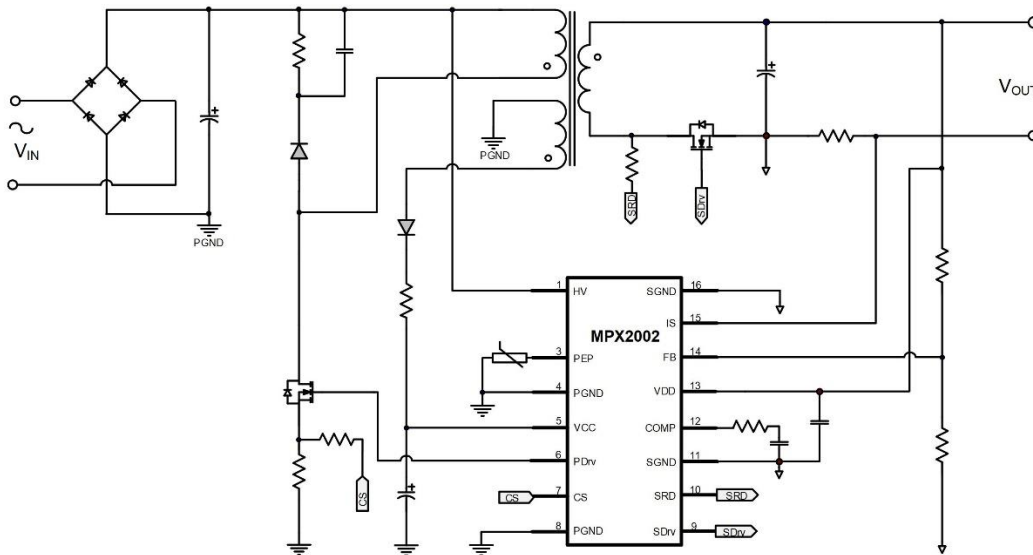


Figure 1: The MPX2002

Another solution that offers PCB flexibility is the [MP18871](#), an isolated half-bridge gate driver with three available packages, the largest being SOIC-16. The MP18871 is driven by a single PWM input and offers a configurable dead time with over 100kV/μs CMTI to maintain isolation under stringent conditions (see Figure 2). This allows the [MP18871](#) to be used in a wide variety of configurations, including half- and full-bridge converters, isolated converters, and inverters. It's ideal for applications such as solar inverters, on-board chargers, DC fast chargers, and UPS backup power supplies.

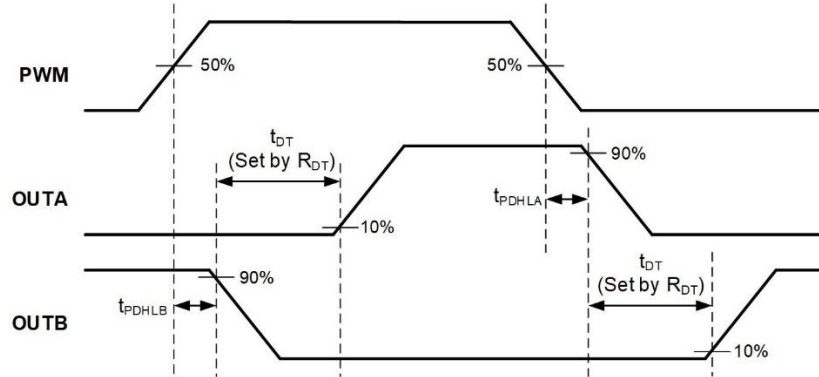


Figure 2: Adjustable Dead Time

In addition to the benefits of a space-saving IC, advanced configurability allows designers to further fine-tune their solutions. The [MP28167-A](#) is a configurable buck-boost converter with integrated output voltage scaling and adjustable output current limit functionality for USB PD applications. It provides more advanced configuration options via an I<sup>2</sup>C interface, and protections include over-voltage protection, configurable soft start, and thermal shutdown (see Figure 3).

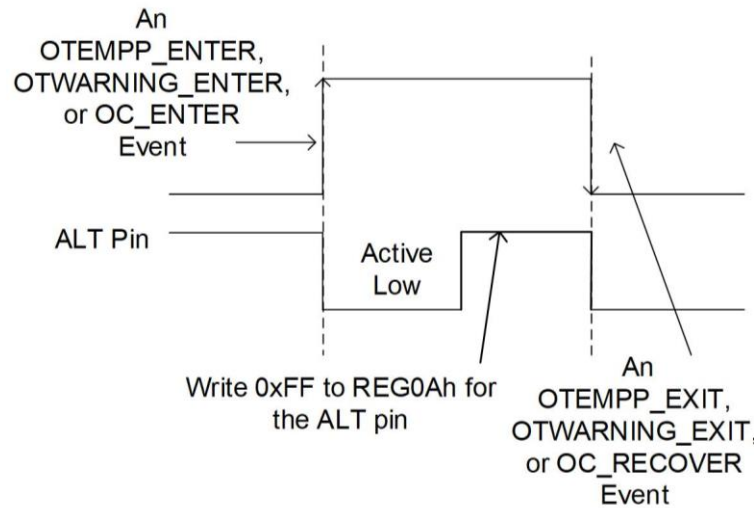


Figure 3: Configurable Protections for the MP28167-A

These devices provide configurable parameters, uniquely small package sizes, and innovative features for a flexible design. Regardless of what design parameter needs to be optimized, MPS has a wide variety of solutions that can be optimized for thermals or smaller solution size. The adaptability of these [MPS solutions](#) ensure that there will always be integrated, high power density products ready to meet the ever-increasing specifications and needs of the quickly growing power management industry.