

PM8803: Integrated PoE+ PD interface and PWM controller



STMicroelectronics

The solution for high-efficiency PoE+ powered devices

The PM8803 combines a standard IEEE 802.3at interface, a current-mode PWM controller and a best-in-class hot-swap MOSFET in a single package.

Designed in a 100 V capable technology, the PM8803 supports forward active clamp as well as synchronous flyback topologies for high efficiency under any load condition.

In addition, the PM8803 indicates successful connection with a PSE implementing 2-event classification.

Housed in an HTSSOP20 package for better thermal performance, the PM8803 allows simple and robust design of PDs that may also be powered from auxiliary sources.

The PM8803 extends ST's PoE/PoE+ portfolio.

Key features

- IEEE 802.3at compliant powered device interface
- Works with power supplied from Ethernet LAN cables or from local auxiliary sources
- Integrated 100 V, 0.45 Ω , 1 A hot-swap MOSFET
- Successful IEEE 802.3at layer1 classification indicator
- Accurate 140 mA typ. inrush current level
- Programmable DC current limit up to 1 A
- High-voltage start-up bias regulator
- Thermal shutdown protection
- Current-mode pulse width modulator
- Programmable oscillator frequency
- 80% maximum duty cycle with internal slope compensation
- Support for flyback, forward, forward active clamp, flyback with synchronous rectification
- Supports both isolated and non-isolated applications

Main applications

- VoIP phones
- VideoIP phones
- WLAN access points
- Security cameras
- WiMax CPEs
- RFID readers
- Pico/femto cells
- PoE/ PoE+ powered device appliances

The PM8803 integrates a standard-compliant power over Ethernet (PoE) interface and a current-mode PWM controller to simplify the design of the power supply sections of all powered devices.

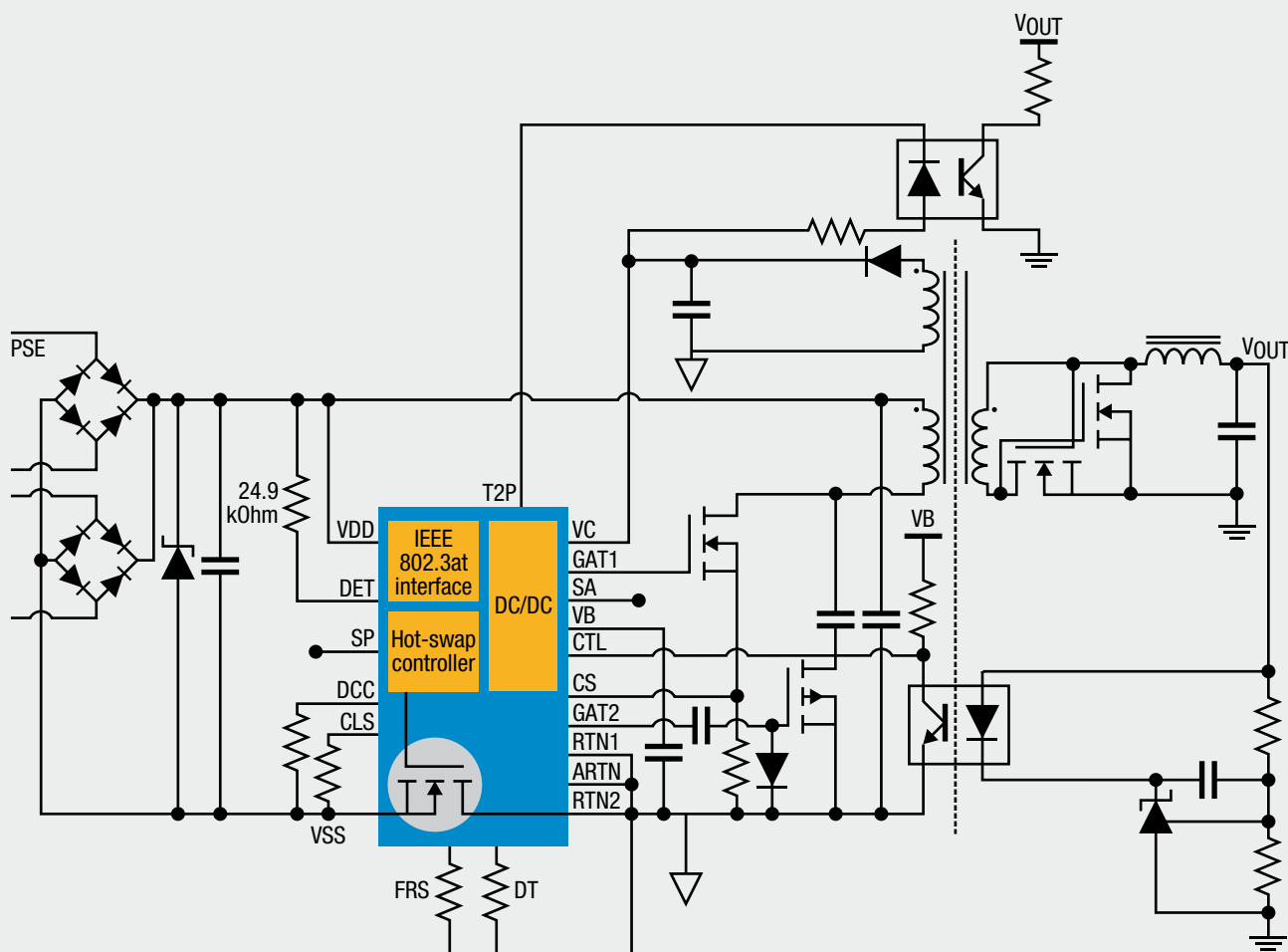
The PoE/PoE+ interface incorporates all the functions required by the IEEE 802.3at including detection, classification, undervoltage lockout (UVLO) and in-rush current limitation.

The PM8803 specifically performs IEEE 802.3at layer1 hardware classification scheme providing an indication of Type 2 PSE successful detection to the rest of the system.

The integrated switching regulator of the PM8803 has been designed to work with power either from the Ethernet cable connection or from an external power source such as an AC adapter.

The DC-DC section of the PM8803 features a programmable oscillator frequency, adjustable slope compensation, dual complementary low-side drivers, programmable dead time and internal temperature sensor.

The PM8803 targets high-efficiency conversion under all load conditions supporting flyback, forward, forward active clamp and synchronous rectification.



PoE+ section with PM8803 in forward AC topology

PoE selection table

Part number	Supported standard	Signature resistor	Integrated DC-DC regulator	$R_{DS(on)}$ internal HS MOSFET	Type 2 PSE indicator	Inrush current	Max DC current	Support for forward AC	Auxiliary source range
PM8800A	IEEE 802.3at, Type 1	Yes	Yes	0.5	No	Programmable	800 mA	No	12 to 57 V
PM8803	IEEE 802.3at, Type 1-2	No	Yes	0.45	Yes	140 mA	1000 mA	Yes	12 to 57 V

