

XS2105M

Power Device Interface Controller Compatible with IEEE 802.3af Integrated Power MOSFET V1.1

Overview

XS2105M provides a complete interface for Power Devices (PD) in Ethernet Power over Ethernet (PoE) systems to comply with the IEEE 802.3 af standard. It offers detection signals, classification signals, and an integrated isolated power switch with surge current control. During surge events, XS2105M limits the current to 180 mA until the isolated power MOSFET is fully turned on, at which point it switches to a higher current limit (Typ.: 480 mA). The device features input undervoltage lockout (UVLO) with a wide hysteresis and long-duration pulse shielding to compensate for resistive losses in twisted-pair cables, ensuring interference-free transmission during power-on and power-off. XS2105M can withstand input voltages up to 100V.

It supports maintain power signature (MPS). Additionally, XS2105M provides a power good (PG) signal, two-step current limit, fold-back and thermal protection, and di/dt limiting. XS2105M is housed in a SOP package and operates over an extended temperature range from -40 °C to +85 °C.

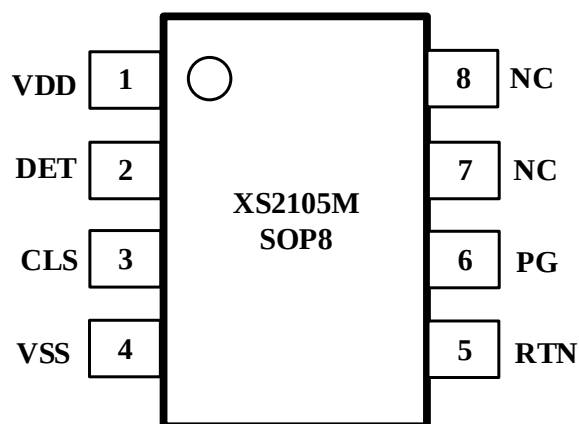
Typical Application

- ♦ IP camera
- ♦ VoIP
- ♦ Wireless AP

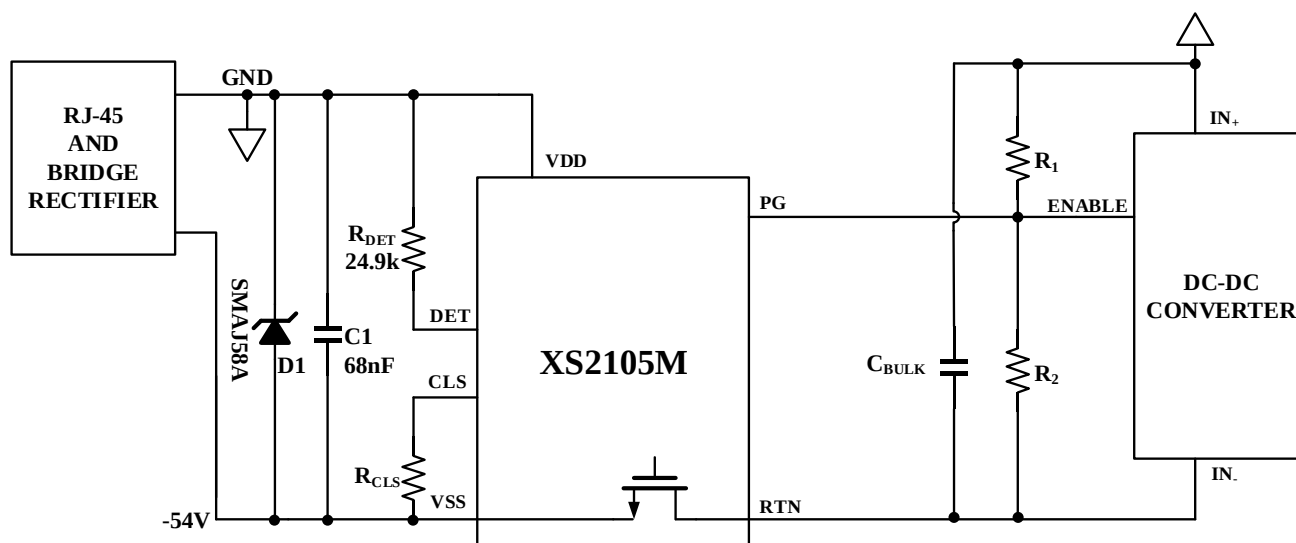
Features

- ♦ Compatible with IEEE 802.3 af
- ♦ Maintain power signature (MPS)
- ♦ Classification 0 to 3
- ♦ Absolute maximum input rating of 100 V
- ♦ Maximum surge current limit of 180 mA
- ♦ Normal operating current limit between 400 mA and 560 mA
- ♦ Current limiting and fold-back protection
- ♦ 40V UVLO
- ♦ Over temperature protection
- ♦ SOP-8 packaging

Pin Configuration



Typical Application Diagram



Pin Description

Pin	Name	Features
1	VDD	Positive power input. Connect a bypass capacitor of 68 nF (minimum) between VDD and VSS.
2	DET	Detection resistor input. Connect a characteristic resistor ($R_{DET} = 24.9 \text{ k}\Omega$) between DET and VDD.
3	CLS	Classification resistor input. Connect a resistor (R_{CLS}) between CLS and VSS to set the required classification current. For specific PD classification corresponding resistor values, refer to the classification current indicators in Table 1.
4	VSS	Negative supply input. VSS is connected to the source of the integrated isolated N-channel power MOSFET.
5	RTN	Drain of the isolated MOSFET. Connect RTN to the downstream DC/DC converter ground as shown in the typical application circuit.
6	PG	Power-good open-drain output. When the hot-swap MOSFET is turning on, PG sinks current of 230 μA to keep the downstream DC/DC converter off until the hot-swap switch is fully on. In detect, classify, and regulated supply modes, prevent PG from drawing current.
7.8	NC	NC pin.