XS2123

IEEE 802.3af Standard PD and Integrated DC/DC Controller Integrated Power MOSFET V1.0

Overview

XS2123 is a controller that integrates both Power Device (PD) and DC/DC functionalities based on the IEEE 802.3af standard.

The PD controller provides a complete power interface for PD in PoE systems. It offers detection signals, classification signals, and an integrated isolated power MOSFET with surge current control. The integrated power MOSFET has a voltage rating of 100 V, an on-resistance of 0.4 Ω, and supports working current up to 880 mA. It also features undervoltage protection and over-temperature protection, along with wide hysteresis and long-duration pulse shielding to compensate for the resistive attenuation of twisted-pair cables, ensuring interference-free transmission during power-on and power-off.

The DC/DC controller portion includes an integrated 200V power MOSFET and adopts a primary-side regulation (PSR) method, suitable for Flyback topology. It supports CCM and DCM, providing precise constant voltage control. The multi-stage curve control using PWM + PFM modes optimizes efficiency across different load conditions while effectively reducing noise.

Typical Application

- IP camera
- VoIP
- Wireless AP

Ordering Information

PART	TEMP RANGE	PIN-PACKAGE
XS2123	-40 ~ +105 ℃	SOP16L

Features

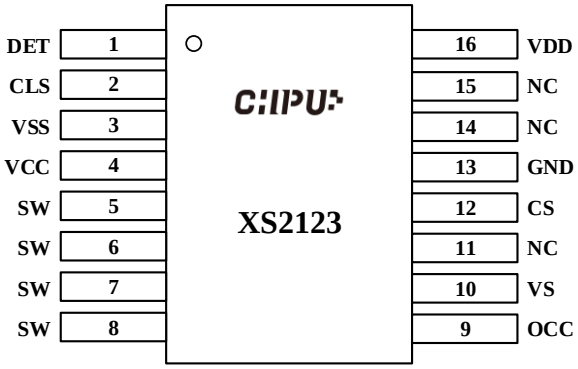
PD Controller

- Compatible with IEEE 802.3af PD power interface
- Integrated with 100V, 0.4 Ω isolated power MOSFET
- Undervoltage protection
- Over temperature protection
- MOSFET supports current of 880 mA
- Maximum surge current limit of 180 mA
- Current limiting and fold-back protection
- Normal operating current limit between 760 mA and 1100 mA

DC/DC Controller

- Supports primary-side control mode for both CCM and DCM
- Integrated with high-voltage MOSFET switch of 200 V
- Maximum output power of 12 W
- Low start-up current (typical 7 uA)
- Frequency reduction at light loads to reduce energy consumption
- Output short-circuit protection and overcurrent protection
- Output overvoltage protection and VCC overvoltage protection
- Soft start feature
- Peak current control mode
- Integrated leading-edge blanking (LEB)

Pin Description



Pin No.	Pin Name	Function
1	DET	PoE detection pin, connect an external 24.9 kΩ resistor to establish a valid signature.
2	CLS	PoE classification pin, external resistor can set PoE power level.
3	VSS	Negative PoE supply input.
4	VCC	Power supply for the DC/DC controller.
5/6/7/8	SW	Drain of the 200 V power MOS.
9	OCC	Loop compensation pin, connects an RC network to ground to stabilize the control loop.
10	VS	Feedback voltage pin, monitors changes in output voltage.
11/14/15	NC	Not connected.
12	CS	Switching current detection signal input pin, connects to the current sensing resistor.
13	GND	Ground for the DC/DC controller.
16	VDD	Positive PoE power input.