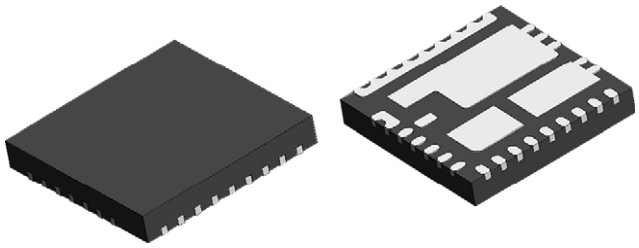
60 A VRPower® Smart Power Stage (SPS) Module With Integrated High Accuracy Current and Temperature Monitors

(Datasheet in Brief)



DESCRIPTION

The SiC675 is a smart VRPower® device that integrates a high side and low side MOSFET, a high performance driver with integrated bootstrap FET. The SiC675 offers high accuracy current and temperature monitors that can be fed back to the controller and doubler to complete a multiphase DC/DC system. They simplify design and increase performance by eliminating the DCR sensing network and associated thermal compensation. Light-load efficiency is supported via a dedicated left control pin. An industry leading thermally enhanced, 5 mm x 5 mm PowerPAK® MLP package allows minimal overall PCB real estate and low profile construction.

The devices feature a 3.3 V (SiC675A) compatible tri-state PWM input that, working together with multiphase PWM controllers, will provide a robust solution in the event of abnormal operating conditions. The SiC675 also improves system performance and reliability with integrated fault protection of UVLO, over-temperature and over-current. An open-drain fault reporting pin simplifies the handshake between the smart VRPower device and multiphase controllers and can be used to disable the controller during start-up and fault conditions.

FEATURES

- Highly efficient
  - Thermally enhanced PowerPAK® MLP55-30L
    - Vishay latest TrenchFET technology
    - Low side MOSFET with integreated Schottky diodevM
    - Low impedance bootstrap switch
    - Low shutdown supply current (10 µA)
- Highly versatile
  - Wide input range support: 4.5 V to 25 V
  - Compatible with 3.3 V PWM logic tri-state / middle voltage
  - Up to 2 MHz switching frequency
- Robust and reliable
  - Delivers in excess of 60 A continuous current
  - 90 A at 10 ms, peak current
  - Down slope current sensing
  - Fault protection
    - Over-temperature protection
    - V_{CC} (3.3 V) / PV_{CC} (5 V) undervoltage lockout (UVLO)
- Effective monitoring / reporting
  - ± 3 % accuracy current monitor (I_{MON})
  - 8 mV/°C temperature monitor with OT flag
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT
HALOGEN FREE

APPLICATIONS

- High frequency and high efficiency VRM and VRD
- Core, graphic, and memory regulators for microprocessors
- High density VR for server, networking, and cloud computing
- POL DC/DC converters and video gaming consoles

TYPICAL APPLICATION DIAGRAM

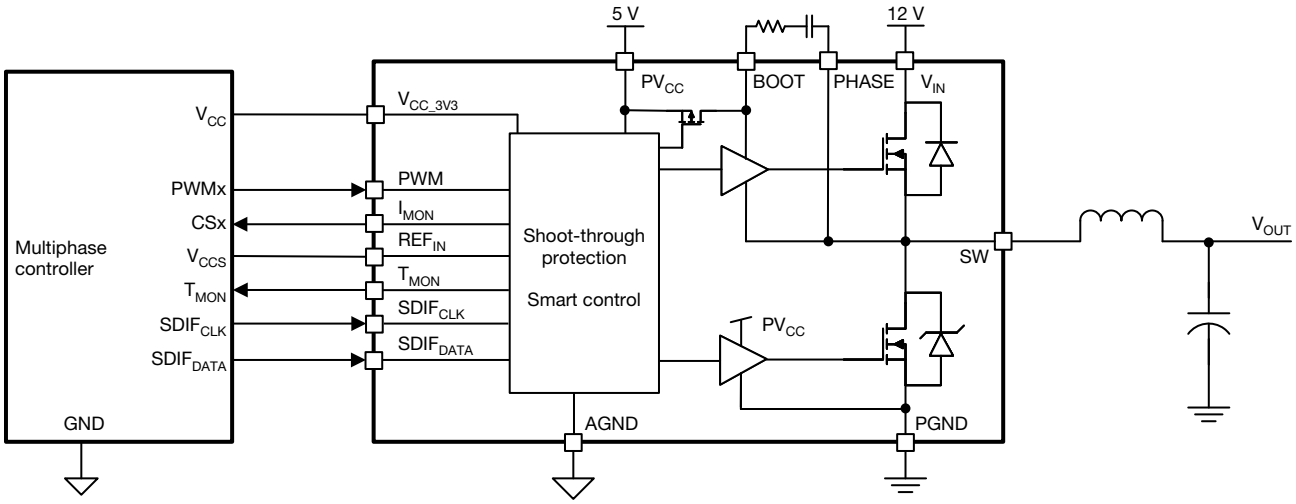


Fig. 1 - Typical Application Block Diagram

PRODUCT SUMMARY	
Part number	SiC675A
Description	60 A smart power stage, 4.5 V_{IN} to 18 V_{IN}, 3.3 V PWM with diode emulation mode
Input voltage min. (V)	4.5
Input voltage max. (V)	18
Continuous current rating max. (A)	60
Switch frequency max. (kHz)	2000
Enable (yes / no)	No
Monitoring features	I_{MON}, T_{MON}
Protection	UVLO, OCP, OTP, HS-short
Light load mode	Diode emulation
Pulse-width modulation (V)	3.3
Package type	PowerPAK MLP55-30L
Package size (W, L, H) (mm)	5.0 x 5.0 x 0.60
Status code	2
Product type	VRPower (DrMOS)
Applications	Computer, industrial, networking

To request the full version of the datasheet, please contact: ICmarketing@vishay.com

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