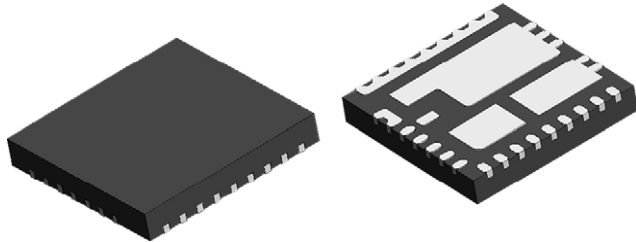


# 60 A VRPower® Smart Power Stage (SPS) Module With Integrated High Accuracy Current and Temperature Monitors

(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 integrated Schottky diodeVM
  - Low impedance bootstrap switch
  - Low shutdown supply current (10  $\mu$ A)
- 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
  - $\pm 3\%$  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](http://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

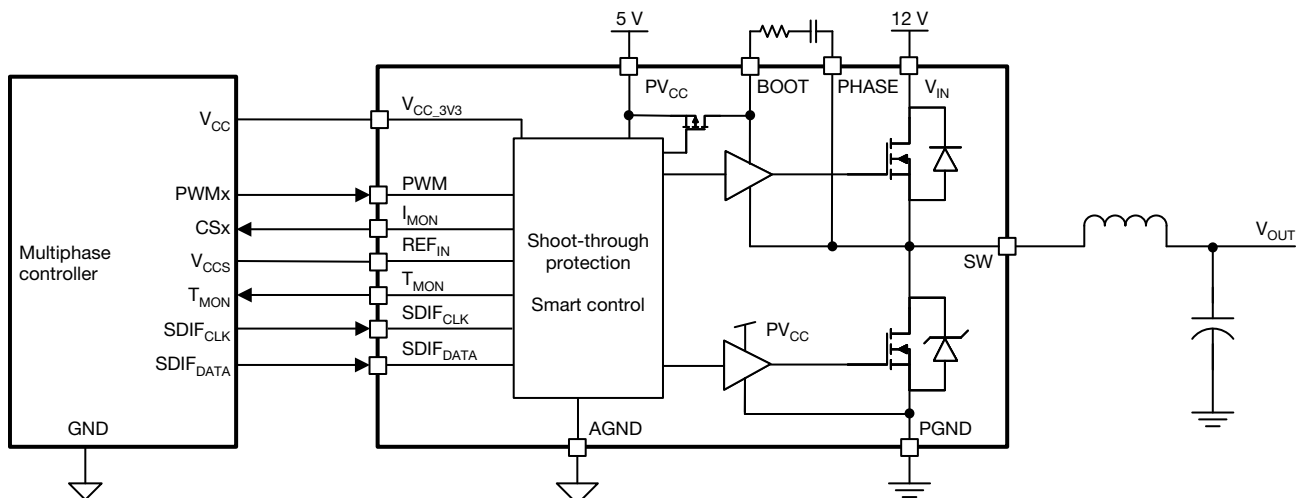


Fig. 1 - Typical Application Block Diagram



| <b>PRODUCT SUMMARY</b>             |                                                                                                         |
|------------------------------------|---------------------------------------------------------------------------------------------------------|
| Part number                        | SiC675A                                                                                                 |
| Description                        | 60 A smart power stage, 4.5 V <sub>IN</sub> to 18 V <sub>IN</sub> , 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 <sub>MON</sub> , T <sub>MON</sub>                                                                     |
| 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](mailto:ICmarketing@vishay.com)

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