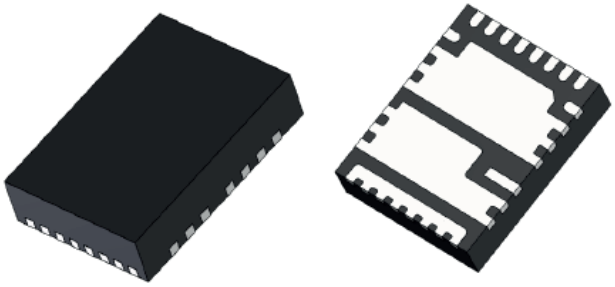
60 A VRPower®, Smart Power Stage With Current Sensing and Temperature Monitor

(Datasheet in Brief)



DESCRIPTION

The SiC570A is an integrated power stage solution optimized for synchronous buck applications to offer high current, high efficiency, and high power density. SiC570A integrates the gate driver, high-side MOSFET, and low-side MOSFET together to provide high performance in a small package. It enables simple voltage regulator design to deliver up to 60 A of peak current.

The internal power MOSFETs utilize Vishay's state-of-the-art TrenchFET® Gen V technology that delivers industry bench mark performance to significantly reduce switching and conduction losses.

The SiC570A incorporates an advanced MOSFET gate driver IC that features high current driving capability, adaptive dead-time control, integrated bootstrap switch, and a thermal monitor that alerts the system of excessive junction temperature. The driver is compatible with a wide range of PWM controllers, supporting 3.3 V PWM logic with tr-state. The device also integrates a current monitor to provide a real-time representation of the inductor current (I_{MON}). An on-board temperature monitor (T_{MON}) provides the system an indication of the power stage internal temperature which can be used to throttle the system operation down to a safer level if needed. The device also integrates fault protections and reporting such as over-current, over-temperature, and undervoltage.

FEATURES

- Gen V TrenchFET technology optimized for 12 V input bus
- Integrated Schottky diode in low-side MOSFET
- 60 A peak current capability
- High frequency operation up to 1.5 MHz
- Current monitor with 5 µA/A gain
- Temperature monitor output with 8 mV/°C gain
- 3.3 V PWM with tri-state support
- Accurate positive and negative over-current protections
- Over-temperature protection
- V_{CC} / V_{DRV} / BOOT under voltage lockout
- Fault reporting and identification through T_{MON} and I_{MON}
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

APPLICATIONS

- Datacenter and server multiphase controller voltage regulators
- High-power SoC and FPGA
- DC/DC VR modules

EFFICIENCY

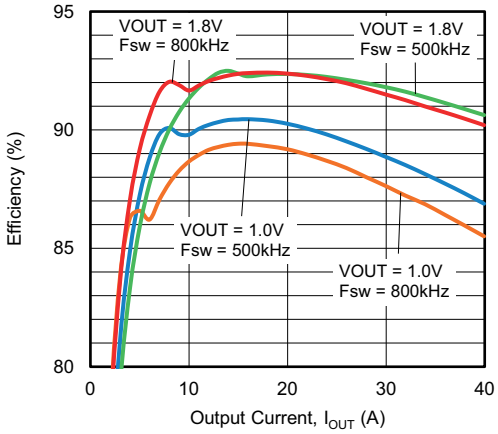


Fig. 1 - Efficiency vs. Output Current (V_{IN} = 12 V, L = 100 nH, V_{CC} = V_{DRV} = 5 V, driver and inductor loss included)

PRODUCT SUMMARY	
Part number	SiC570A
Description	60 A smart power stage with current sensing and temperature monitor, 3.3 V PWM
Input voltage min. (V)	4.5
Input voltage max. (V)	16
Current rating (A)	60
Switch frequency max. (kHz)	1500
Enable (yes / no)	Yes
Monitoring features	I_{MON}, T_{MON}
Protection	UVLO, OTP, OCP
Light load mode	None
Pulse-width modulation (V)	3.3
Package type	MLP30-45
Package size (W, L, H) (mm)	4 x 5 x 1.0
Status code	1
Product type	VRPower
Applications	Multphase voltage regulators

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

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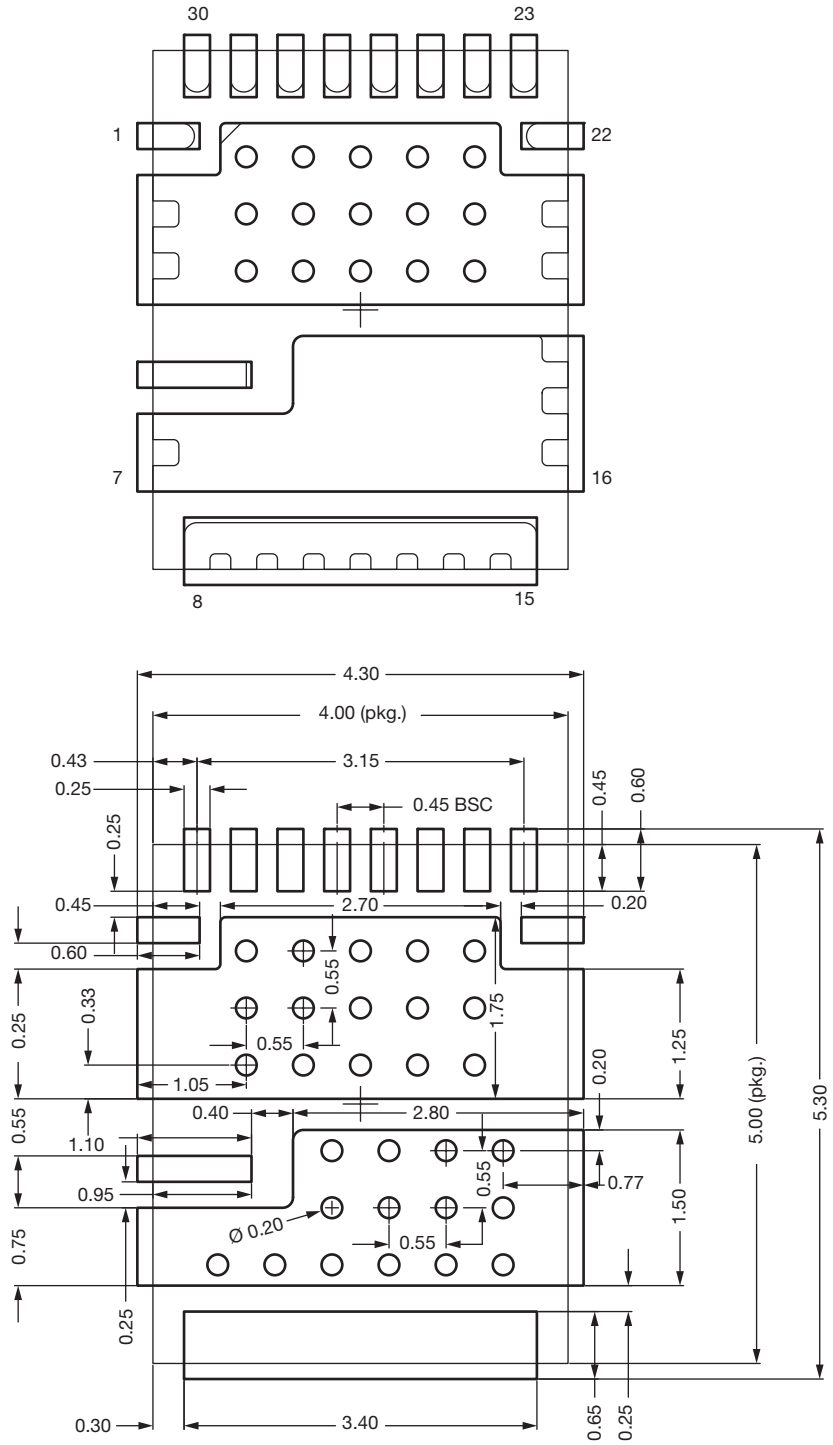
Recommended Land Pattern MLP30S-45



Note

- Dimensions in mm (inches)

ECN: E23-0150-Rev. A, 08-May-2022
DWG: 3018

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