MSA303

600V, 40A Silicon Carbide 3-Phase Integrated Power Module

22-PIN PACKAGE WITH VERTICAL MOUNTING PINS & ELECTRICALLY ISOLATED SUBSTRATE

Body 30 mm x 40 mm

Features

» High cont. output current – 40 A
» High supply voltage– 600 V
» Up to 1 MHz switching frequency
» Internal bootstrap operation
» Under-voltage lock-out
» Active Miller clamping

Applications

A wide range of target applications include, but are not limited to:

» Motor Control
» Variable Frequency Drives
» DC/AC Converters
» Power Inverters
» Test Equipment

Scan the QR code to learn more about MSA303

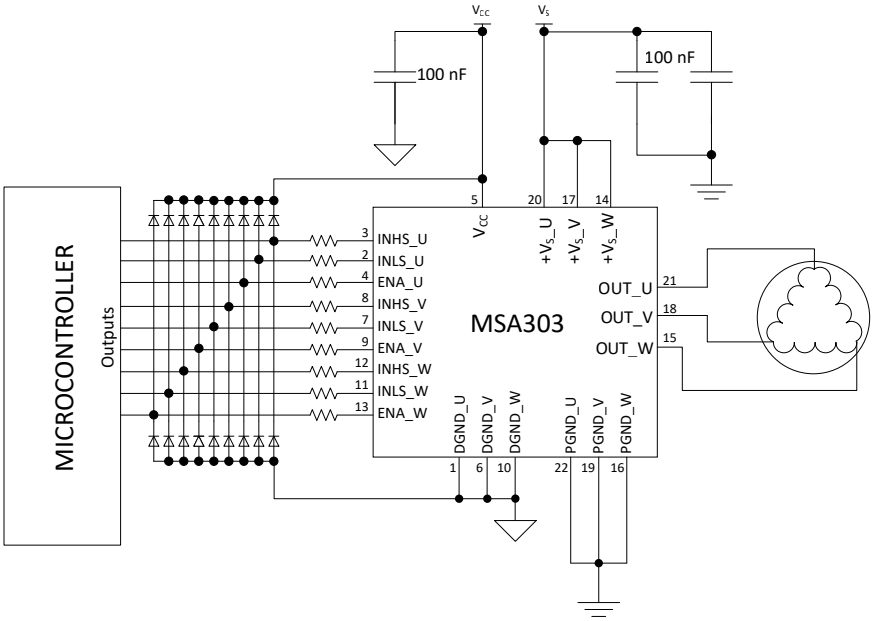
Product Overview

MSA303 is a fully integrated three-phase driver designed primarily to drive Brush-Less DC (BLDC), Permanent Magnet Synchronous (PMSM) motors or DC/AC converters. The module uses Silicon Carbide MOSFET technology to improve efficiency over other devices in its class. Three fully independent half-bridges provide 40 A of continuous current. MSA303 is built on a thermally conductive, but electrically isolated substrate to provide the most versatility and ease in heatsinking.

Protection features include under-voltage lockout (UVLO) function and active Miller clamping to improve reliability. Also included in the module are Silicon Carbide Schottky Barrier free-wheeling diodes in parallel to the body diode of each MOSFET. No external output protection diodes are required.

MSA303's integrated gate drivers provide isolation between the inputs and high-voltage outputs. By integrating the gate drive with the output MOSFETs, parasitics that impact the switching behavior are kept at a minimum, improving the switching characteristics while reducing potential oscillations.

Typical Connection



ISO9001

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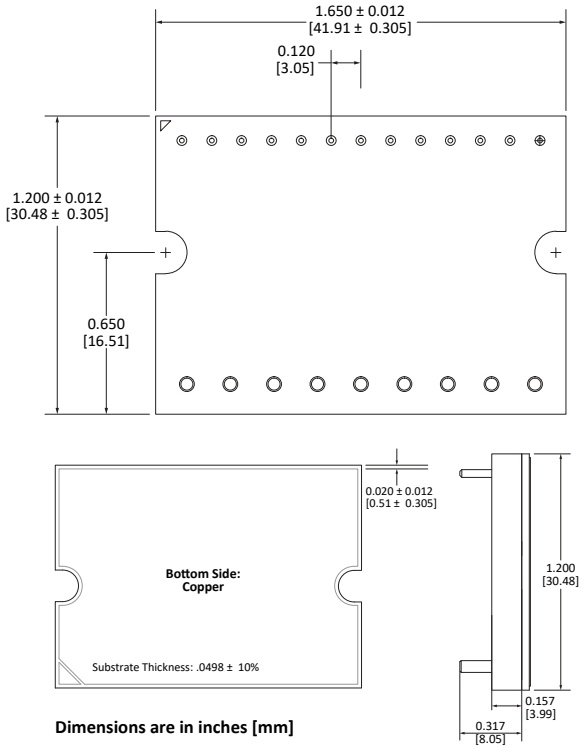
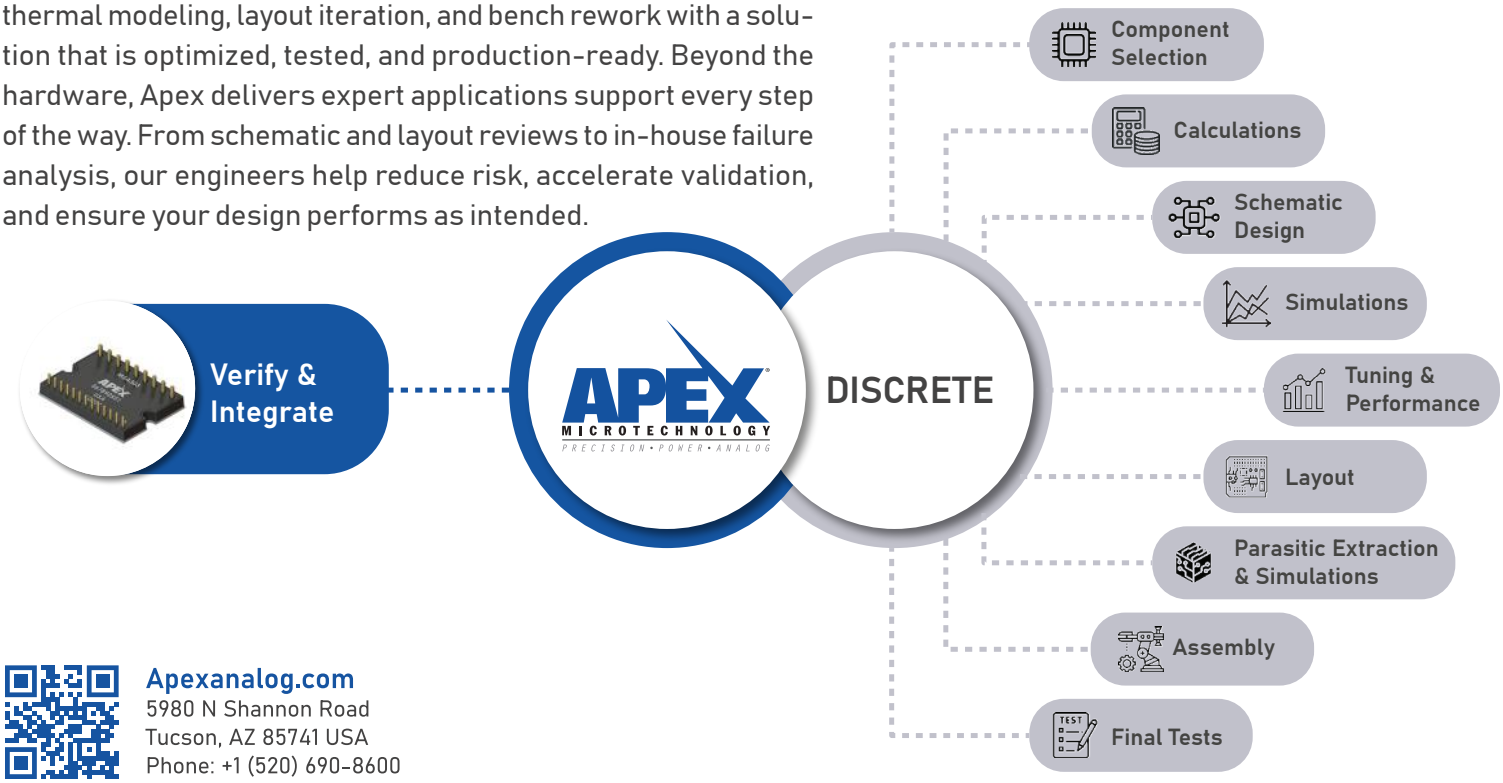


Product Absolute Maximum Specifications

SPECIFICATION PARAMETER	MAX
Total Supply Voltage	650 V
Logic Supply Voltage	22 V
Current, peak, SiC MOSFET 1,2	170 A
Current, peak, up to 1 second, within SOA	40 A
Output Current, continuous, within SOA	30 A
Switching frequency, soft switching	1 MHz
Switching frequency	500 kHz
Temperature, pin solder, 10s	260 °C
Temperature, junction	175 °C
Temperature, storage	-55 to 150 °C
Operating Temperature Range, case	-55 to 125 °C
RoHS Compliant	Yes
Package Style	22-Pin Vertical Mounting
Package Body Measurement	30 mm x 40 mm

Apex Modules vs. Discrete Design Engineering Resources

Apex power modules replace weeks of component selection, thermal modeling, layout iteration, and bench rework with a solution that is optimized, tested, and production-ready. Beyond the hardware, Apex delivers expert applications support every step of the way. From schematic and layout reviews to in-house failure analysis, our engineers help reduce risk, accelerate validation, and ensure your design performs as intended.



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