

VISHAY INTERTECHNOLOGY, INC.

VISHAY[®]

S12

SUPER 12

FEATURED PRODUCTS



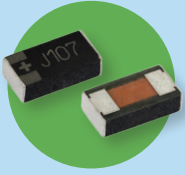
2016



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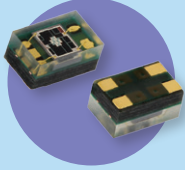


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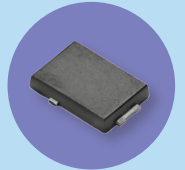
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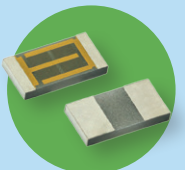
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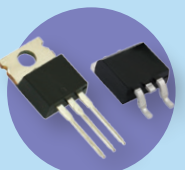
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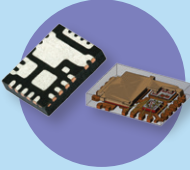
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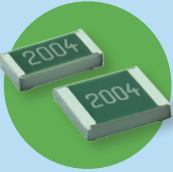
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SiC530 VRPower® Integrated Power Stage

08



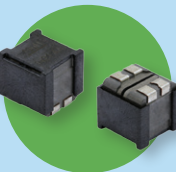
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SiHH26N60E / E Series Power MOSFETs

10



IHLD Low-Profile, High-Current Dual Inductors

11

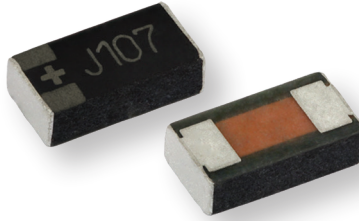


V35PWxxx / V40PWxxx: TMBS® Rectifiers (SlimDPAK Package)

12



01



T58 Series

Pack More Cap into Your Design –
T58 Polymer MICROTAN®
Capacitors Have the Industry's
Highest Capacitance Density

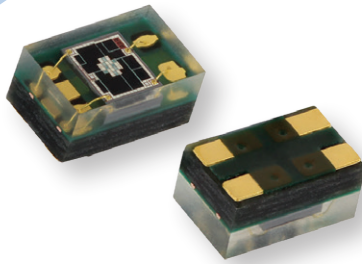
FEATURES

- Industry-highest capacitance density: up to 47 μF , 6.3 V for 0603 case size
- 10 % increase in volumetric efficiency over facedown or undertab packages allows for higher capacitance density
- Smallest and lowest profile polymer tantalum capacitor in the industry; 0.9 mm height (max) (0805 case size)
- Best-in-class ESR with 200 m Ω (0603 case size)

APPLICATIONS / MARKET SEGMENTS

- Power conversion and distribution, decoupling, and filtering in space-constrained applications including smartphones, tablets, eReaders, ultra-thin laptops, wearable technology including smartwatches, POS systems, personal GPS
- Audio and instrumentation amplifiers
- Industrial PCs and controls
- Home automation
- RF amplifiers

02



VEML6075

Industry's First UVA and UVB Light Sensor with Individual Channel Output Provides True UV Index Measurements

INDUSTRY
FIRST

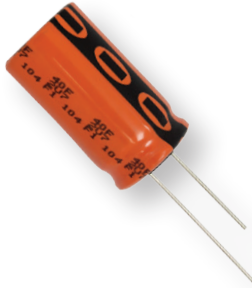
FEATURES

- Compact package: 2.0 mm x 1.25 mm x 1.0 mm
- UVA and UVB individual channel solutions
- 16-bit resolution per channel
- Operating voltage range: 1.8 V to 3.6 V

APPLICATIONS / MARKET SEGMENTS

- UV index sensors
- Wearables (wrist sport bands, smartwatches, shirts, hats)
- Smartphones
- Material presence and particle detection
- Environmental and pollution detection, and weather stations

03



220 EDLC ENYCAP™

Electrical Double-Layer
Capacitors Provide High Power
in Small Volume

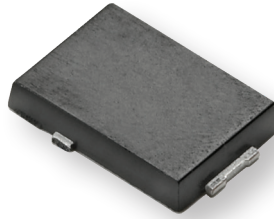
FEATURES

- High power (4.1 Wh/kg) in small volume with low component height
- Polarized energy storage capacitor with high capacity and energy density: 0.041 Wh in 18 mm x 31 mm package
- Very low internal resistance
- High capacitance / voltage values (15 F to 40 F at 2.7 V) in small case size

APPLICATIONS / MARKET SEGMENTS

- Power backup for cache-to-flash applications
- Energy storage for energy recuperation
- Burst power support
- UPS power source
- Backup power for surveillance and safety-critical systems

04



TPC11CA to TPC36CA

Industry-First 1500 W
Bidirectional PAR® TVS in Low-Profile
SMPC (TO-277A) Package



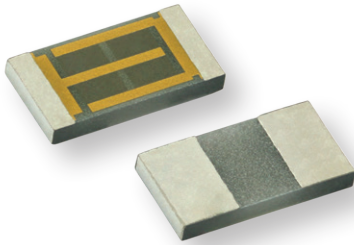
INDUSTRY
FIRST

FEATURES

- Smallest 1500 W (10/1000 μ s) TVS (transient voltage suppressor)
- Low-profile 1.1 mm height (typical) with small footprint compared to traditional SMC package (2.3 mm height)
- T_j max: 175 °C
- AEC-Q101 qualified

APPLICATIONS / MARKET SEGMENTS

- Telecommunications base stations / LNB
- Automotive
- Industrial (sensitive equipment protection)
- General purpose protection from ESD, lightning, and fast-transient voltage surge

05

PCAN Series

High-Power (up to 6 W) Aluminum Nitride, Wraparound Surface-Mount, Precision Thin Film Chip Resistors

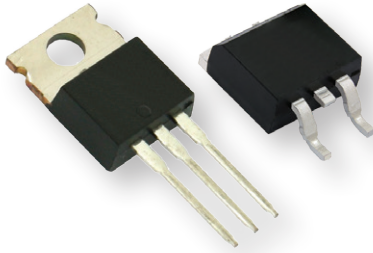
FEATURES

- Power rating to 6 W (2 W in 1206 case size, 6 W in 2512 case size)
- High-thermal conductivity aluminum nitride substrate
- Case sizes: 0603 to 2512
- Resistance range: 2 Ω to 30 k Ω
- Resistance tolerance: to ± 0.1 %
- TCR: to ± 25 ppm/ $^{\circ}\text{C}$

APPLICATIONS / MARKET SEGMENTS

- Industrial equipment
- Military
- Medical imaging
- Telecommunications
- Amplifier termination resistors
- Gate load resistors
- Burden resistor for current transformers
- Snubber circuits

06



SUM / SUP 70040E 100 V N-Channel MOSFETs

Max $R_{DS(on)}$ of 4 m Ω Provides
Higher Efficiency

FEATURES

- 100 V rated V_{DS} for input voltages ≤ 72 V
- Reduce power loss and improve efficiency
 - 60 % lower $R_{DS(on)}$ per mm² than previous-generation device
 - Conduction loss is significantly reduced with a max $R_{DS(on)}$ of 4 m Ω (especially for equipment running 24/7)
- Higher efficiency enables increased power density (watt-per-in²)
- Q_{GD} / Q_{GS} ratio < 1 improves immunity to C^*dV/dt gate coupling and shoot-through
- 7.5 V and standard 10 V gate drive capabilities
- Industrial grade and rugged devices
- Maximum junction temperature rated up to 175 °C

APPLICATIONS / MARKET SEGMENTS

- Industrial applications: motor drive controls, solar micro inverters, and battery-management systems
- AC/DC conversion and synchronous rectification in portables, cloud computers, and data centers
- DC/DC converters: POL and telecom power
- Charging stations for e-vehicles
- OR-ing in server power supplies with redundant power architecture

07



PLA51

Medium-Power Planar Transformers
(1 kW to 3 kW) Provide Improved
Efficiency in Compact Size

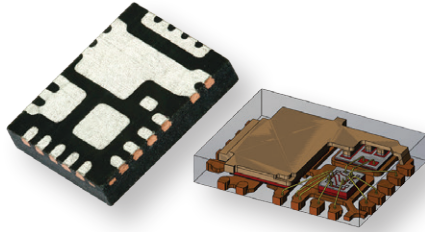
FEATURES

- Very low profile (22 mm max)
- Compact design promotes heat transfer via heatsink
- Internal threaded output terminals
- High efficiency: > 99 % (typical)
- Material temperature grade: 180 °C

APPLICATIONS / MARKET SEGMENTS

- DC/DC power converters
- Electric vehicles (EV) and hybrid-electric vehicles (HEV)
- On-board chargers for forklifts and electric-powered vehicles
- Power-control cooling units
- Solar inverters
- UPS and power supplies

08



SiC530 30 A VRPower®

Integrated Power Stage Shrinks
Size by 45 % Over
Discrete Solutions

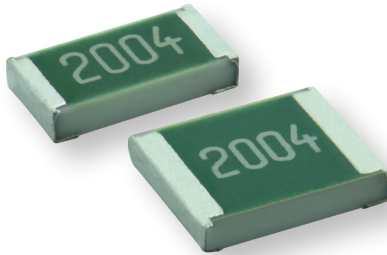
FEATURES

- Compact design with driver, high- and low-side MOSFETs in 3.5 mm x 4.5 mm PowerPAK® package
- 30 A continuous and 40 A peak current capability in < 16 mm² footprint
- Supports Intel® IMVP8 platform power-save modes for improved efficiency
 - Diode emulation mode using inductor zero-crossing detection (ZCD)
 - Stand-by / sleep mode consumption of 5 µA typical in PS4 mode
- Innovative package design with low package parasitics enables designs with > 1 MHz operation
- Flipped low-side MOSFET with drain on bottom allows for large PGND pad and improved thermals
- Most power dense and efficient solution on the market for 25 A to 30 A / phase designs

APPLICATIONS / MARKET SEGMENTS

- Notebooks, ultrabooks, desktops, workstations
- Cloud computing
- Telecommunications / network infrastructure
- Industrial PCs
- Power delivery for high-performance ASICs, memory, and FPGAs in embedded systems

09



TNPV Series

Industry-First High-Voltage
(700 V and 1000 V) Thin Film Flat
Chip Resistors Enable Precise
Voltage Measurements



INDUSTRY
FIRST

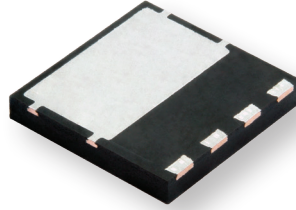
FEATURES

- Precise voltage measurements reduce component count and save board space
- High operating voltages to 1000 V
- Low voltage coefficient: < 1 ppm/V
- Unrivalled accuracy at high voltages
- Excellent stability over lifetime
- AEC-Q200 qualification pending

APPLICATIONS / MARKET SEGMENTS

- Industrial inverters for photovoltaics and wind energy
- Automotive inverters for electric vehicles (EV) and hybrid-electric vehicles (HEV)
- Battery management systems for EV and HEV
- Test and measurement equipment
- High-voltage monitoring
- High-voltage generators and power supplies
- Metering

10



SiHH26N60E / E Series

Power MOSFETs in PowerPAK®
8 x 8 Package with Kelvin Source
Connection for Increased
Performance

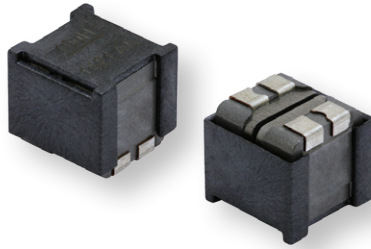
FEATURES

- Based on E Series superjunction technology for hard-switched topologies
- 600 V, 26 A maximum, $R_{DS(on)}$ max of 135 m Ω
- Kelvin source connection for reduced gate ground loop resulting in increased performance
- PowerPAK® 8 x 8 footprint is 57 % smaller and profile is $\frac{1}{5}$ the height of the TO-263 (D²PAK) package
- Meets the 1.5 mm minimum creepage and clearance specifications for 600 V and 650 V devices
- Fully RoHS-compliant with halogen-free mold compound

APPLICATIONS / MARKET SEGMENTS

- Hard-switching (focus) topologies (PFC, two-switch forward, flyback)
- Consumer electronics
- Telecommunications (servers)
- Computers (ATX / silver box SMPS)
- Industrial
- Lighting

11



IHLD Low-Profile, High-Current Dual Inductors

Save Board Space and Provide Better Performance for Class D Amplifier-Filter Inductors

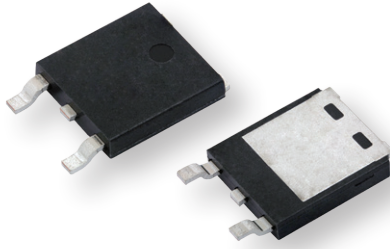
FEATURES

- Two IHLP®-style inductors placed vertically in one board-space saving package
- AEC-Q200 qualified
- Two sizes available: 3232 and 4032
- Soft saturation provides more stable inductance across varying volume levels for lower THD (total harmonic distortion)
- Excellent L (inductance) vs. temperature stability (~ 100 ppm/°C) for lower THD across a wide range of operating temperatures
- Low coupling (average < 5 %) between adjacent inductors reduces crosstalk and noise
- Optimal design enables high-quality audio with low distortion

APPLICATIONS / MARKET SEGMENTS

- Automotive and commercial class D amplifier circuits
 - Differential
 - Single-ended
- DC/DC converter applications where two inductors are needed and board space is at a premium

12



V35PWxxx / V40PWxxx

High Current Density (up to 40 A)
 TMBS® Rectifiers in Low-Profile
 SlimDPAK Package

FEATURES

- Very low profile, surface-mount SlimDPAK package with typical height of 1.3 mm (57 % of DPAK package height)
- Better thermal performance ($R_{\theta JM} = 1.5 \text{ }^{\circ}\text{C/W}$) than DPAK (TO-252) due to 14 % larger heatsink area
- Trench MOS Schottky technology provides low forward voltage drop
- High current density up to 35 A (single chip) and 40 A (dual chip center-tap common cathode)
- PCB footprint compatible with DPAK (TO-252)
- AEC-Q101 qualified

APPLICATIONS / MARKET SEGMENTS

- SMPS
- DC/DC converters
- Battery-charger units
- Frequency inverters

Semiconductors

- MOSFETs
- ICs
- Rectifiers
- Small-Signal Diodes
- Protection Diodes
- Thyristors / SCRs
- IGBTs
- Power Modules
- Optoelectronics

Passive Components

- Resistors
- Magnetics
- Capacitors

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