

Vishay Intertechnology, Inc.



SUPER 12

Featured Products

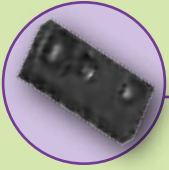
S12



2013



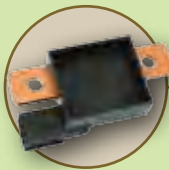
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VCNL3020

Proximity Sensor with I²C Interface

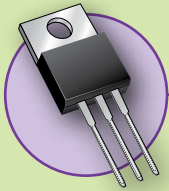
1



WSBM8518

Power Metal Strip[®] Battery Shunt Resistor with Molded Enclosure

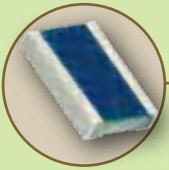
2



170 V TMBS[®] Rectifiers

170 V Trench MOS Barrier Schottky Rectifiers for Telecom Power Supplies

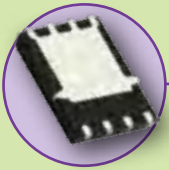
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MCW 0406 AT

Professional and Precision Wide-Terminal Thin Film Chip Resistors

4



TrenchFET[®] Gen IV MOSFETs

Next-Generation Technology Lowers On-Resistance

5



IHLP-6767GZ-5A

High-Temperature IHLP[®] Inductor with 155 °C Continuous Operation

6



eSMP® Series

SlimSMA™ and SMPD Packages for Rectifiers and Transient Voltage Suppressors

7



LPS 1100

Industry-First High-Power 1100 W Thick Film Resistor

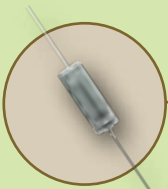
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E Series High-Voltage MOSFETs

Next-Generation 600 V and 650 V Super Junction MOSFETs

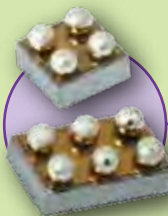
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T16

High-Performance, Axial-Leaded Wet Tantalum Capacitor

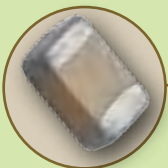
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SiP32458/SiP32459

20 mΩ Slew Rate Controlled Load Switches in WCSP6

11



VJ HIFREQ Series (MLCC RF Capacitors)

Surface-Mount Multilayer Ceramic Chip Capacitors for High-Frequency Applications

12

VCNL3020

Integrated Proximity Sensor with I²C Interface



Features:

- ▶ Integrated infrared emitter, proximity detector, and signal processing IC
- ▶ Proximity distance up to 200 mm (8 inches)
- ▶ No mechanical barrier required to isolate the emitter from the detector
- ▶ 16-bit effective resolution for proximity detection range
- ▶ Programmable LED drive current from 10 mA to 200 mA in 10 mA steps
- ▶ Industry's lowest profile with height of 0.83 mm

Applications:

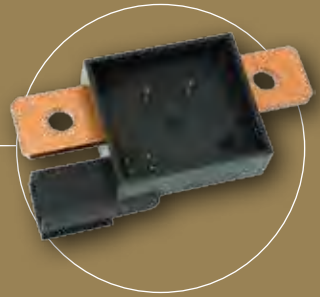
- ▶ Object detection and relative proximity
- ▶ Smartphones, digital cameras, tablets
 - LCD display backlight control
- ▶ Soap and towel dispensers, automatic faucets
- ▶ Wake-up function

S12



WSBM8518

Power Metal Strip[®] Battery Shunt Resistor with Molded Enclosure



Features:

- ▶ Molded enclosure allows for easy PCB connection from shunt to customer output
- ▶ Very low resistance value: 100 $\mu\Omega$
- ▶ Manganese-copper alloy resistive element with low TCR: < 20 ppm/ $^{\circ}\text{C}$
- ▶ Includes 4-pin female connector (Molex #: MX150334820401)

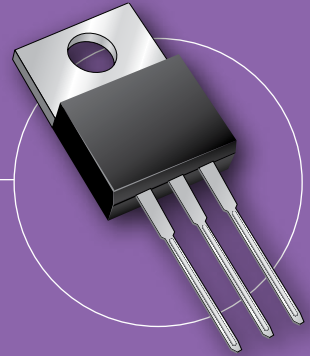
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Applications:

- ▶ Automotive
 - Battery management of gas/diesel, hybrid, and all-electric systems
- ▶ Industrial
 - Battery management of forklift, utility trucks, and other heavy industrial applications that use large batteries

170 V TMBS[®] Rectifiers

*Wide Range of Current Ratings
for Telecom Power Supplies*



Features:

- ▶ Current ratings from 10 A to 80 A
- ▶ Low forward voltage drop down to 0.65 V (typical) at 30 A
- ▶ Maximum operating junction temperature of 175 °C
- ▶ Available in TO-220AB, TO-263AB and TO-3PW packages

Applications:

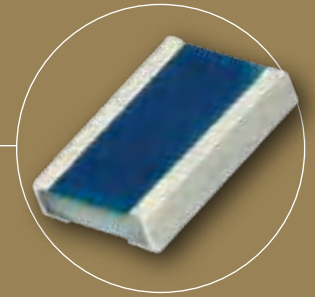
- ▶ Telecom power supplies
- ▶ Industrial

S12



MCW 0406 AT Professional and Precision

Wide-Terminal Thin Film Chip Resistor



Features:

- ▶ Rated dissipation: up to 300 mW
- ▶ Superior temperature cycling robustness
- ▶ AEC-Q200 qualified
- ▶ Precision ($\pm 0.1\%$ and TCR ± 25 ppm/K):
down to $1\ \Omega$

Applications:

- ▶ Automotive
 - Xenon and LED lighting systems
 - ECUs and gear-box controls
- ▶ Industrial
 - Energy measurement
 - Power supplies

S12

TrenchFET® Gen IV MOSFETs



**Next-Generation Technology
Lowers On-Resistance Down
to 0.00135Ω at $V_{GS} = 4.5 V$**

Features:

- ▶ Next-generation technology optimizes several key specifications:
 - Down to ultra-low 0.00135Ω at $V_{GS} = 4.5 V$ and 0.001Ω at $V_{GS} = 10 V$
 - Very low Q_{gd} and exceptionally low Q_{gd}/Q_{gs} ratio: < 0.5
 - Improved immunity to CdV/dt gate coupling
- ▶ 30 V to 60 V options
- ▶ Thermally enhanced PowerPAK® packaging increases system power density
 - Larger current handling capability with PowerPAK® SO-8
 - Achieve equal or less power loss in 1/3 the footprint area with PowerPAK® 1212-8
 - PowerPAIR® reduces space and increases performance over two discretes

Applications:

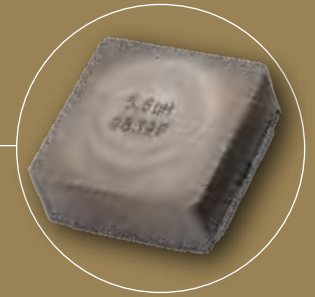
- ▶ Personal computers and peripherals
- ▶ Servers, synchronous rectification, VRMs
- ▶ Telecom equipment, POL
- ▶ DC/DC modules
- ▶ ORing, power redundancy
- ▶ Game consoles
- ▶ DC/AC inverters, industrial

S12



IHLP-6767GZ-5A

**High-Temperature IHLP®
Inductor with 155 °C
Continuous Operation**



Features:

- ▶ Largest, highest-current IHLP® power inductor available
- ▶ 155 °C continuous operation, excursions up to 170 °C
- ▶ Automotive grade, built to AEC-Q200 specifications
- ▶ Inductance available up to 22 μ H
- ▶ High current: up to 53 A at 1.0 μ H

Applications:

- ▶ Automotive
 - High-current noise filters for motor control applications
 - Start/Stop circuits or voltage stabilization circuits
 - High-current DC/DC converters
 - LED driver circuits
- ▶ High-current DC/DC converters up to 1.0 MHz
- ▶ High-current filter inductor applications

S12

eSMP[®] Series

SlimSMA[™] and SMPD for Rectifiers and Transient Voltage Suppressors



Features:

- ▶ Very low profile surface-mount package DO-221AC (SlimSMA) with typical height of 0.95 mm
 - Footprint is compatible with SMA
- ▶ Very low profile SMPD surface-mount package with typical height of 1.7 mm
- ▶ P_{PPM} : 600 W at 10/1000 μ s for SMA6F TVS in SlimSMA
- ▶ Provides stand-off voltage $V_{WM} = 5$ V to 20 V option for SMA6F TVS in SlimSMA
- ▶ T_J max of 175 °C for SMA6F TVS and SE2(3)0AFJ standard rectifiers in SlimSMA
- ▶ Low forward voltage drop down to 0.42 V (typical) at 15 A, 125 °C for V30DL50C, 50 V TMBS[®] in SMPD
- ▶ Low forward voltage drop down to 0.37 V (typical) at 3 A for VSSAF3L45 and VSSAF5L45, 45 V TMBS[®] in SlimSMA
- ▶ ESD capability for SE20AFJ and SE30AFJ, 600 V standard rectifiers in SlimSMA

Applications:

- ▶ Consumer, computer, industrial, telecommunications, and automotive applications

S12



LPS 1100

Industry-First High-Power 1100 W Thick Film Resistor



Features

- ▶ Very high power dissipation for small size (60 mm x 57 mm) and weight (79 g)
- ▶ 1100 W at 25 °C heatsink temperature
- ▶ Non-inductive below 0.1 μ H
- ▶ High pulse up to 1K1 joules
- ▶ High dielectric strength up to 12 KV_{RMS}

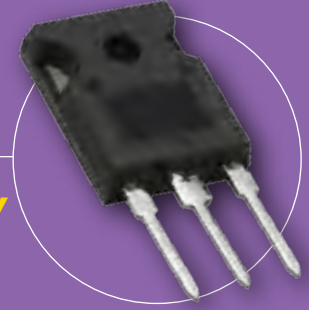
Applications:

- ▶ Chopper resistor for wind applications
- ▶ Precharge and discharge for EV/HEV
- ▶ Snubber resistors
- ▶ Braking systems

S12

E Series High-Voltage MOSFETs

*Next-Generation 600 V and 650 V
Super Junction MOSFETs*



Features:

- ▶ Increased current density over S Series with a 30 % reduction in specific on-resistance for reduced conduction losses
- ▶ Improved gate charge and low figure of merit (FOM) lower switching losses
- ▶ High E_{AS} capability and 100 % avalanche tested
- ▶ Variety of packaging options including TO-220, TO-220 FullPAK, TO-247AC/AD, D²PAK, DPAK, IPAK, and PowerPAK[®] 8x8

Applications:

- ▶ Telecommunications
 - Server power supplies
- ▶ Computer and consumer
 - ATX, adaptors
- ▶ Lighting
 - HID, LED, and fluorescent
- ▶ Industrial
 - Welding, battery chargers, UPS, induction heating
- ▶ Renewable energy
 - Central/micro inverters for solar (PV inverters)

S12

T16

High-Performance, Axial Leaded, Wet Tantalum Capacitor



Features

- ▶ High capacitance, hermetic tantalum case
- ▶ 6 V to 125 V ratings, operating temperature:
- 55 °C to + 125 °C
- ▶ 1.5 V reverse capable
- ▶ 50 g sine, 27.7 g random vibration
- ▶ 300 thermal shocks

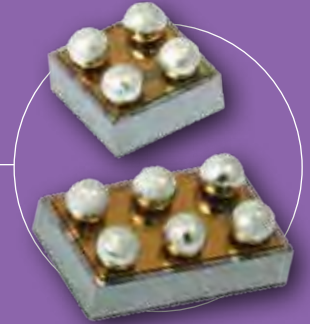
Applications:

- ▶ Avionics, military, and space
 - Decoupling
 - Filtering
 - Energy hold-up

S12

SiP32458/SiP32459

20 mΩ Slew Rate Controlled Load Switches in WCSP6



Features:

- ▶ Wide operation voltage range: 1.5 V to 5.5 V
- ▶ Low, flat, 20 mΩ $R_{DS(on)}$ in the 3 V to 5.5 V range
- ▶ Low quiescent current of 8 μ A
- ▶ Low logic control enabled with integrated pull-down resistor
- ▶ Reverse current blocking when disabled (SiP32458)
- ▶ Integrated output discharge switch (SiP32459)
- ▶ Enable with integrated pull-down resistor
- ▶ Tiny 1 mm x 1.5 mm 6-bump WCSP with top lamination for enhanced ruggedness

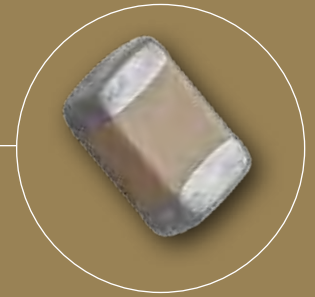
Applications:

- ▶ Battery-operated devices
- ▶ Smartphones, mobile phones, and portable media players
- ▶ Notebooks, ultrabooks, and tablets
- ▶ GPS, PMP, and game consoles
- ▶ Medical and healthcare equipment
- ▶ Industrial and instrumentation



VJ HIFREQ Series (MLCC RF Capacitors)

*Surface-Mount Multilayer
Ceramic Chip Capacitors for
High-Frequency Applications*



Features

- ▶ Case sizes: 0402, 0603, and 0805
- ▶ Low dissipation factor: $< 0.05\%$
- ▶ High Q: > 2000
- ▶ Ultra-stable dielectric material
- ▶ Various termination finishes to serve different applications: lead (Pb)-free, lead-bearing, silver-palladium, and non-magnetic
- ▶ Wet build process with reliable Noble Metal Electrode (NME) system

S12

Applications:

- ▶ Broadband wireless communications
- ▶ Satellite communications
- ▶ VoIP networks and cellular base stations
- ▶ Subscriber-based wireless devices



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