



VISHAY®

Vishay Intertechnology, Inc.

SUPER 12

Featured Products

version 3.0

S12





Super 12 Featured Products



146 CTI SMD Chip Polarized Aluminum Capacitor

*High temperature (up to + 125 °C), low impedance
(down to 35 mΩ), AEC-Q200 qualified*

SiR662DP 60 V Power MOSFET

*Industry lowest on-resistance and FOM for 60 V
in PowerPAK® SO-8 type package*



IHLP®-6767GZ-51 Power Inductor

*Highest combination of temperature range
and current rating of any surface-mount power
inductor on the market*

45 V Trench MOS Barrier Schottky Rectifier

*45 V TMBS® in low-profile SMPC, P600 axial,
and power packages*



ACAS AT Thin Film Chip Resistor Array

*Precision matched resistors in one package for
voltage dividers and feedback circuits*

VCNL4000 Proximity/Ambient Light Sensor

*Fully integrated sensor including infrared emitter,
ambient light sensor, proximity photo-diode and
signal processing*





NTC Mini Lug Sensor

Accurate surface temperature sensing in the smallest lug type available

DG9454 Triple SPDT (2:1 Multiplexer)

12 V V+, 1.8 V logic, ultra-low current consumption, fast switching speed, in mQFN-16



TP3 Molded Case SMD Capacitor

Automotive grade TANTAMOUNT® high performance solid tantalum capacitor

600 V FRED Pt® Ultrafast Diode

Optimized for low conduction losses, low switching losses, or both



Power Metal Strip® Resistors – WSLP, WSLT, WSLS, WSH

Enhanced power-handling and environmental performance

PowerPAIR® 6 x 3.7 SiZ730DT Asymmetric Dual Power MOSFETs

Saves space while increasing performance





146 CTI SMD Chip Polarized Aluminum Capacitor

High temperature (up to + 125 °C), low impedance (down to 35 mΩ), AEC-Q200 qualified



Features:

- ▶ Very long useful life: 1500 h to 6000 h at + 125 °C
- ▶ Charge- and discharge-proof
- ▶ Very low ESR: 0.035 Ω
- ▶ Vibration-proof, 4 pin and 6 pin versions
- ▶ 10 mm x 10 mm up to 18 mm x 21 mm case sizes available
- ▶ Leadfree solderable per JEDEC J-STD-020

Applications:

- ▶ Machinery/automation and motion control
- ▶ Energy-saving applications
- ▶ Equipment for renewable energy
- ▶ Power train
- ▶ Chassis electronics
- ▶ Vehicle dynamics

S12

PASSIVES

SiR662DP 60 V Power MOSFET

*Industry lowest on-resistance
and FOM for 60 V in PowerPAK®
SO-8 type package*



Features:

- ▶ On-resistance up to 27 % better than next best device
 - Lowers conduction losses
- ▶ Figure of merit (FOM) up to 57 % better than next best device
 - Lowers switching losses, especially at higher frequency
- ▶ On-resistance ratings down to $V_{GS} = 4.5 V$

S12

Applications:

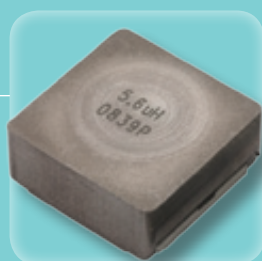
- ▶ Isolated DC/DC converters: primary side switch and secondary side synchronous rectification for IBC and POL
- ▶ AC/DC adaptors and industrial electronic systems
- ▶ Boost converters and load switches for LED backlighting

SEMIS



IHLP[®]-6767GZ-51 Power Inductor

Highest combination of temperature range and current rating of any surface-mount power inductor on the market



Features:

S12

- ▶ High temperature rating, up to 155 °C
- ▶ Shielded construction
- ▶ DC/DC converter frequency range up to 750 kHz
- ▶ Lowest DCR/ μ H in this package size
- ▶ Handles high transient current spikes without saturation
- ▶ Ultra low buzz noise, due to composite construction
- ▶ High-temperature automotive*

Applications:

- ▶ Industrial DC/DC converters
- ▶ High-current POL converters
- ▶ Low-profile, high-current power supplies
- ▶ High-current noise filters
- ▶ DC/DC converters in distributed power systems
- ▶ Automotive applications*

*IHLP-6767GZ-5A Series

45 V Trench MOS Barrier Schottky Rectifier

45 V TMBS[®] in low-profile SMPC, P600 axial, and Power packages



Features:

- ▶ Trench MOS Schottky technology
- ▶ Very low-profile SMPC package with typical height of 1.1 mm; also available in P600 axial and power packages (TO-220AB, ITO-220AB, TO-262AA, TO263AB)
- ▶ Low forward voltage drop: down to 0.39 V at 15 A, + 125 °C
- ▶ Low power losses
- ▶ 150 °C maximum operating junction temperature
- ▶ RoHS-compliant in accordance with 2002/95/EC and WEEE 2002/96/EC

Applications:

- ▶ Low-voltage, high-frequency DC/DC converters
- ▶ Switchmode power supplies
- ▶ Freewheeling diodes
- ▶ OR-ing diodes and reverse battery protection
- ▶ Solar cell junction box as a bypass diode for protection

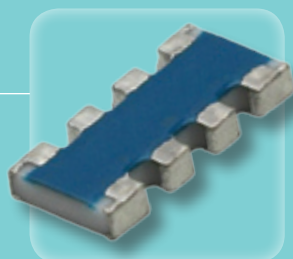
S12

SEMIS



ACAS AT Thin Film Chip Resistor Array

Precision matched resistors in one package for voltage dividers and feedback circuits



Features:

- ▶ Two or four resistor values on one substrate
- ▶ Superior moisture resistivity: < 0.5 % (85 °C; 85 % RH; 56 days)
- ▶ High power rating: $P_{70} = 125$ mW per resistor
- ▶ ESD capability: 1000 V, human body model
- ▶ AEC-Q200 qualified
- ▶ TCR tracking down to 10 ppm/K (± 5 ppm/K) and tolerance matching down to 0.1 % (± 0.05 %)
- ▶ RoHS-compliant components, compatible with lead (Pb)-free and lead-bearing soldering processes

Applications:

- ▶ Precision analog circuits
- ▶ Voltage dividers
- ▶ Feedback circuits
- ▶ DC/DC converters
- ▶ Signal conditioning

S12

PASSIVES

VCNL4000 Proximity/Ambient Light Sensor

Fully integrated sensor including infrared emitter, ambient light sensor, proximity photodiode and signal processing



Features:

- ▶ No mechanical barriers required; no crosstalk concerns
- ▶ Proximity range up to 20 cm (7.9 in)
- ▶ Programmable LED drive current: 10 mA to 200 mA in 10 mA steps
- ▶ Programmable measurement rate from 1 Hz to 250 Hz
- ▶ 16 bit resolution with I²C interface
- ▶ Ambient light sensing from 0 klx to 13 klx with 0.33 lx resolution

S12

Applications:

- ▶ Determine presence of an object to turn on/off display
- ▶ Measure ambient light to optimize display brightness
- ▶ Smart phones, digital cameras, tablet PCs, LCD displays, event-driven industrial controls

SEMIS



NTC Mini Lug Sensor

Accurate surface temperature sensing in the smallest lug type available



Features:

- ▶ Smallest mounting space of 65 mm² / 0.1 in² only
- ▶ Reduced thermal gradient less than 5 % of ΔT , due to small size and nickel conductor, enable accurate surface temperature measurement
- ▶ Short response time, less than 4 s
- ▶ Extended temperature range from - 40 °C to + 125 °C
- ▶ Electrically insulated to minimum 1 kV_{AC}
- ▶ Optional ZHR-2 connector and customized lead lengths

Applications:

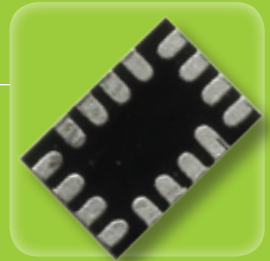
- ▶ Heatsink thermal management
- ▶ Power electronics thermal management
- ▶ Housing surface temperature measurement
- ▶ Pipe and power conductor temperature control
- ▶ Test and measurement equipment
- ▶ Power inverters
- ▶ Power supplies
- ▶ Battery pole temperature monitoring

S12

PASSIVES

DG9454 Triple SPDT (2:1 Multiplexer)

12 V V+, 1.8 V logic, ultra-low current consumption, fast switching speed, in mQFN-16



Features:

- ▶ Operates with
 - V_+ : 2.7 V to 13.2 V
 - V_L : 2.5 V to 5.5 V
- ▶ High bandwidth: 270 MHz
- ▶ Low charge injection over the full signal range (less than 1.2 pQ)
- ▶ Low switch capacitance ($C_{s(off)}$ 2 pF typ.)
- ▶ Good isolation and crosstalk performance (typ. - 44 dB at 10 MHz)

Applications:

- ▶ 3DTV active shutter glasses
- ▶ Data acquisition
- ▶ Medical and healthcare devices
- ▶ Control and automation equipment
- ▶ Test instruments
- ▶ Touch panels

S12

SEMIS



TP3 Molded Case SMD Capacitor

**Automotive grade
TANTAMOUNT® high-
performance solid tantalum
capacitor**



Features:

- ▶ AEC-Q200 qualified
- ▶ Robust construction
- ▶ High reliability
- ▶ Low ESR
- ▶ 100 % surge current tested (B, C, D and E case sizes)
- ▶ Compliant to RoHS directive 2002/95/EC
- ▶ Industry-standard case sizes A to E (EIA 535BAAC dimensions)

Applications:

- ▶ Automotive
- ▶ Engine controls
- ▶ Safety systems
- ▶ High end automation
- ▶ High end industrial
- ▶ Robotics

S12

PASSIVES

600 V FRED Pt® Ultrafast Diode

Optimized for low conduction losses, low switching losses, or both



Features:

- ▶ FRED Pt® technology
- ▶ Rated T_j max + 175 °C
- ▶ Extremely low leakage current: e.g. 20 μ A typical at 600 V, + 150 °C
- ▶ Low forward voltage drop: e.g. 0.85 V typical at 8 A, + 150 °C
- ▶ Extremely low Q_{rr} and T_{rr} : e.g. 22 nC and 17 ns typical at 8 A, 200 A/ μ s, 390 V switching, + 25 °C
- ▶ New “U” series for optimized soft switching
- ▶ RoHS compliant, halogen free. Totally lead (Pb)-free (TO247 only)
- ▶ Most devices qualified to AEC-Q101 level
- ▶ Also available in bare die or bare wafers

S12

Applications:

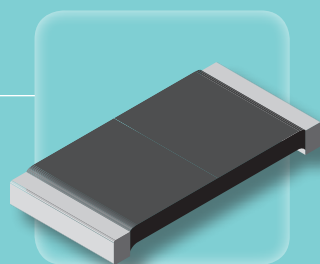
- ▶ DCM, CRM, and CCM PFC stage output rectification and anti-parallel diodes for:
 - Adapters and slim adapters
 - Desktop PCs, servers, and telecom power supplies
 - UPS and air conditioning
 - Automotive

SEMIS



Power Metal Strip[®] Resistors – WSLP, WSLT, WSLS, WSH

*Enhanced power handling and
environmental performance*



Features:

- ▶ WSLT: high temperature (to + 275 °C)
- ▶ WSLP: very high power (to 1 W in 1206)
- ▶ WSLS: improved stability (0.25 % and 0.5 %)
- ▶ WSH: high power (to 5 W in 2818)

Applications:

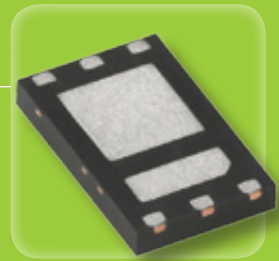
- ▶ Current sensing and pulse applications
 - Switching and linear power supplies
 - Instruments
 - Power amplifiers and shunts
- ▶ DC/DC converters
- ▶ Li-ion batteries

S12

PASSIVES

PowerPAIR® 6 x 3.7 SiZ730DT Asymmetric Dual Power MOSFETs

Saves space while increasing performance



Features:

- ▶ High- and low-side MOSFETs are combined in one compact 6 mm x 3.7 mm package
- ▶ One package is 1/3 smaller than two discrete PowerPAK® 1212-8 packages, or 2/3 smaller than two discrete SO-8 packages
- ▶ Optimized asymmetric design provides on-resistance over 30 % lower than using a PowerPAK 1212-8 for the low side
- ▶ Reduces package count, pinning arrangement simplifies layout and saves PCB space
 - Reduced parasitic inductance increases efficiency and reduces ringing

S12

Applications:

- ▶ System power, POL low-current DC/DC and synchronous buck applications in
 - Notebooks
 - VRMs
 - Power modules
 - Graphics cards
 - Servers
 - Gaming consoles

SEMIS



WORLDWIDE SALES CONTACTS

THE AMERICAS

UNITED STATES

VISHAY AMERICAS
ONE GREENWICH PLACE
SHELTON, CT 06484
UNITED STATES
PH: +1-402-563-6866
FAX: +1-402-563-6296

ASIA

SINGAPORE

VISHAY INTERTECHNOLOGY ASIA PTE LTD.
37A TAMPINES STREET 92 #07-00
SINGAPORE 528886
PH: +65-6788-6668
FAX: +65-6788-0988

P.R. CHINA

VISHAY CHINA CO., LTD.
15D, SUN TONG INFOPORT PLAZA
55 HUAI HAI WEST ROAD
SHANGHAI 200030
P.R. CHINA
PH: +86-21-5258 5000
FAX: +86-21-5258 7979

JAPAN

VISHAY JAPAN CO., LTD.
SHIBUYA PRESTIGE BLDG. 4F
3-12-22, SHIBUYA
SHIBUYA-KU
TOKYO 150-0002
JAPAN
PH: +81-3-5466-7150
FAX: +81-3-5466-7160

EUROPE

GERMANY

VISHAY ELECTRONIC GMBH
GEHEIMRAT-ROSENTHAL-STR. 100
95100 SELB
GERMANY
PH: +49-9287-71-0
FAX: +49-9287-70435

FRANCE

VISHAY S.A.
199, BLVD DE LA MADELEINE
06003 NICE, CEDEX 1
FRANCE
PH: +33-4-9337-2727
FAX: +33-4-9337-2726

UNITED KINGDOM

VISHAY LTD.
SUITE 6C, TOWER HOUSE
ST. CATHERINE'S COURT
SUNDERLAND ENTERPRISE PARK
SUNDERLAND SR5 3XJ
UNITED KINGDOM
PH: +44-191-516-8584
FAX: +44-191-549-9556

DISCLAIMER All product specifications and data are subject to change without notice. Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product. Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications. Product names and markings noted herein may be trademarks of their respective owners.

Build Vishay into your Design

www.vishay.com/landingpage/super12/ver3