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Vishay Intertechnology, Inc.

Automotive

(Powertrain - 12 V / 24 V)



One of the World's Largest Manufacturers of
Discrete Semiconductors and Passive Components





Automotive

Powertrain – 12 V / 24 V

Engine Cooling	2
Exhaust Emission Control Systems	3
Heating, Ventilation, Air Conditioning (HVAC)	4

More information on the Engineer's Toolbox, including product datasheet links, can be found at www.vishay.com/ref/et3.

For inquiries, please contact your local sales representative.

Key components for POWERTRAIN – 12 V / 24 V



**Engine
Cooling**



**Exhaust Emission
Control System**



**Heating,
Ventilation, Air
Conditioning
(HVAC)**



THE VISHAY ADVANTAGE


- AEC Qualifications
- High-Temperature Performance
- High Reliability
- Low Profile
- Long Life
- High Vibration

Engine Cooling



ALUMINUM CAPACITORS

Advanced Temperature Range Up to 150 °C




[160 CLA](#)

- High ripple current: up to 1.4 A at 150 °C / 100 kHz
- Useful life up to 2000 h at 150 °C

CERAMIC CAPACITORS

Radial Leaded Multilayer Ceramic Capacitors for Automotive Applications




[K...V](#)

- High-reliability MLCC insert with wet build process
- High operating temperature up to 160 °C, rated voltages: 50 V, 100 V, and 200 V

NON-LINEAR RESISTORS

SMD, Glass Protected NTC Thermistors




[NTCS...e3](#)

- Standard series, AEC-Q200 compliant
- Glass protected with soft terminations

RESISTORS

Power Metal Strip® SMD Resistors, High Power (7 W) Low Value (Down to 0.001 Ω)




[WSHM2818](#)

- Very high power rating of 7 W in small 2818 package
- Very low resistance values, 0.001 Ω to 0.10 Ω, with tolerance of 1 %

RECTIFIERS

High Barrier Technology for Improved High-Temperature Performance




[MBRB25H45CT](#)

- Halogen-free according to IEC 61249-2-21 definition and AEC-Q101 qualified
- Low leakage current

CERAMIC CAPACITORS

AEC-Q200 Qualified, Broad Range of Sizes and Working Voltages C0G (NP0), X7R, and X8R




[VJ...31/VJ...34 Automotive MLCC](#)

- RoHS and GREEN compliant parts available
- AgPd termination available for epoxy bonding

INDUCTORS

Low-Profile, High-Current IHLP® Inductors

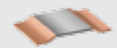


[IHLP-6767GZ-5A](#)

- Lowest DCR/μH in this package size
- High temperature, up to 155 °C shielded construction

RESISTORS

Power Metal Strip® SMD Resistors, Very High Power (to 9 W), Low Value (Down to 0.0002 Ω)




[WSLP3921](#)

- High power rating of 5 W to 9 W in WSLP3921 package
- Very low resistance values, 0.0002 Ω to 0.004 Ω, with tolerance of 1 %

NON-LINEAR RESISTORS

NTC Thermistors, Radial Leaded, Accuracy Line



[NTCLE203...](#)

- Accurate over a wide temperature range (tolerance on B-value down to 0.5 %)
- Low heat conductive wiring



Exhaust Emission Control System



MOSFETs

Automotive N-Channel 60 V (D-S) 175 °C MOSFET



[SQJ858AEP](#)

- TrenchFET® Gen III technology, AEC-Q101 qualified, maximum $R_{DS(on)}$ 6.3 m Ω
- Thermally enhanced PowerPAK® SO-8L packaging

RESISTORS

Power Metal Strip® SMD Resistors, High Temperature (275 °C), High Power (1 W)



[WSLT2010...18](#)

- High temp. for harsh environments; resistance values down to 0.01 Ω
- Power Metal Strip construction offers high reliability in critical applications

RECTIFIERS

High Current Density Surface-Mount Schottky Rectifier



[SS3P4](#)

- AEC-Q101 qualified
- Very low profile – typical height of 1.1 mm

RESISTORS

Precision Automotive High Temperature (155 °C at Full Rated Power) Thin Film Chip Resistor



[PATT](#)

- Wide resis. range of 1 Ω to 1 M Ω ; tol. as low as \pm 0.1% and 25 ppm/ $^{\circ}$ C TCR
- Load-life stability of < 0.2 % at 155 $^{\circ}$ C and full rated power for 1000 hours

DIODES

Surface-Mount PAR® Transient Voltage Suppressors for Automotive Load Dump Application



[SM8S10](#)

- AEC-Q101 qualified
- Meets ISO7637-2 surge specification (varied by test condition)

NON-LINEAR RESISTORS

NTC Thermistor for High-Temperature Applications



[NTCV101...](#)

- Wide temperature range from -40 $^{\circ}$ C to +900 $^{\circ}$ C
- Small body diameter of maximum 2 mm

CERAMIC CAPACITORS

AEC-Q200 Qualified Broad Range of Sizes and Working Voltages, C0G (NP0), X7R, and X8R



[VJ...31/VJ...34 Automotive MLCC](#)

- RoHS and GREEN compliant parts available
- AgPd termination available for epoxy bonding

NON-LINEAR RESISTORS

Platinum SMD Flat Chip Temperature Sensor



[PTS...AT](#)

- Standardized characteristics according to IEC 60751
- Short reaction times down to 2 s (in air)

View datasheets for these products
www.vishay.com/ref/et3au1b

Heating, Ventilation, Air Conditioning (HVAC)



RESISTORS

Precision Thin Film Chip Resistor Array, Superior Moisture Resistivity




[ACAS0606 AT](#)

- Arbitrary resistance ratio up to 1:20, superior tracking stability over lifetime
- Relative TCR down to ± 5 ppm/K (tracking), AEC-Q200 qualified, sulfur resistant

MOSFETs

Automotive N-Channel 40 V (D-S) 175 °C MOSFET

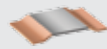


[SQJ422EP](#)

- TrenchFET® Gen III technology, AEC-Q101 qualified, maximum $R_{DS(on)}$ 3.4 m Ω
- Thermally enhanced PowerPAK® SO-8L packaging

RESISTORS

Power Metal Strip® SMD Resistors, Very High Power (to 9 W), Low Value (Down to 0.0002 Ω)

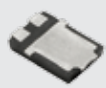


[WSLP3921](#)

- High power rating of 5 W to 9 W in WSLP3921 package
- Very low resistance values, 0.0002 Ω to 0.004 Ω , with tolerance of 1 %

RECTIFIERS

High Current Density Surface-Mount Trench MOS Barrier Schottky Rectifier



[V15P45HM3](#)

- Very low profile – typical height of 1.1 mm
- Trench MOS Schottky technology

FILM CAPACITORS

DC Film Capacitors MKT Radial Potted Type




[MKT370](#)

- General purpose MKT pitch 5 mm / 7.5 mm and 10 mm

OPTOELECTRONICS

Transmissive Sensor as Optical Potentiometer (Climate Control) with Phototransistor Output

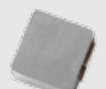


[TCUT1350X01](#)

- Resolve direction and speed with dual channel transmissive (interrupter) sensor
- Wide operating temperature range from -40 °C to +125 °C

INDUCTORS

Low-Profile, High-Current IHLP® Inductors



[IHLP-5050FD-5A](#)

- High current, low DCR, low saturation for excellent noise suppression

DIODES

Surface-Mount PAR® Transient Voltage Suppressors for Automotive Load Dump Application




[SMxS24A](#)

- AEC-Q101 qualified
- Meets ISO7637-2 surge specification (varied by test condition)

CERAMIC CAPACITORS

AEC-Q200 Qualified Broad Range of Sizes and Working Voltages, C0G (NP0), X7R, and X8R




[VJ...31/VJ...34 Automotive MLCC](#)

- RoHS and GREEN compliant parts available
- AgPd termination available for epoxy bonding

FUSES

High Current Thermal Fuse




[HCTF235](#)

- Functioning temperature: $\vartheta_F = (235 \pm 15) \text{ }^\circ\text{C}$
- Current: $\leq 55 \text{ A}$

NON-LINEAR RESISTORS

SMD, Glass Protected NTC Thermistors




[NTCS...e3](#)

- Standard series, AEC-Q200 compliant
- Glass protected with soft terminations

ALUMINUM CAPACITORS

Aluminum Capacitors SMD (Chip), High Temperature, Low Impedance



[146 CTI](#)

- High temperature up to 125 °C, long life, low impedance, high ripple current
- Soldering according JEDEC-J-STD-020

View datasheets for these products www.vishay.com/ref/et3au1c



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ABOUT TTI, INC.

TTI Inc., a subsidiary of Berkshire Hathaway, is a world leading specialist distributor of connectors and passive, electromechanical and discrete components. TTI's philosophy is "Lead by Design", and the company differentiates itself by focusing on people, parts and processes. The company's aim is to become the distributor of choice for customers and suppliers in Europe alike by introducing new product technologies and by stocking broad and deep across its franchise base. TTI employs sophisticated inventory management processes which ensure that the company can react immediately to changes in component demand due to fluctuating markets and supply chains. For further information about TTI, please refer to: www.ttieurope.com.



A **WORLD OF**
SOLUTIONS

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