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Vishay Intertechnology, Inc.

Automotive *(Full Hybrid Vehicles (HEVs))*



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





Automotive

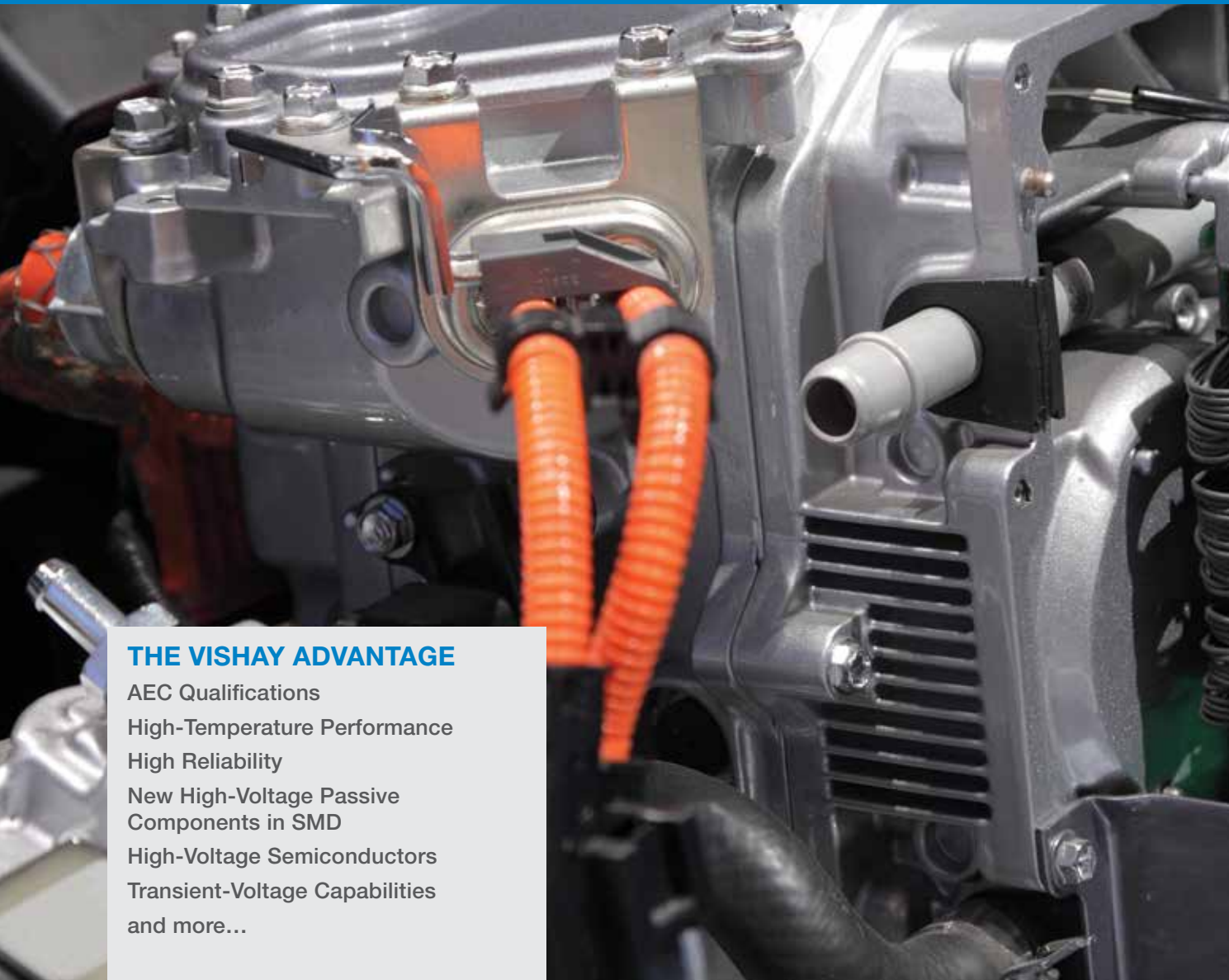
Full Hybrid Vehicles (HEVs)

Electrical Motor Drives (DC/AC)	2
DC/DC Bidirectional and Chargers	3
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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 FULL HYBRID VEHICLES (HEVs)



**Electrical Motor
Drives (DC/AC)**



**DC/DC
Bidirectional
and Chargers**



**Energy
Control Modules**



THE VISHAY ADVANTAGE

- AEC Qualifications
- High-Temperature Performance
- High Reliability
- New High-Voltage Passive Components in SMD
- High-Voltage Semiconductors
- Transient-Voltage Capabilities and more...

Electrical Motor Drives (DC/AC)



CERAMIC CAPACITORS

Radial Leaded Multilayer Ceramic Capacitors for Automotive Applications



[K...V](#)

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

NON-LINEAR RESISTORS

NTC Thermistors, Low Thermal Gradient Lug Sensors



[NTCALUG02A](#)

- Low thermal gradient surface temperature sensor
- High insulation voltage

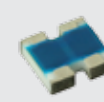
INDUCTORS

Custom Filter

- Many options available for low-loss, high-efficiency filtering

RESISTORS

Precision Thin Film Chip Resistor Array, Superior Moisture Resistivity



[ACAS0612 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

CERAMIC CAPACITORS

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

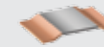


[VJ...31/VJ...34 Automotive MLCC](#)

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

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 from 0.0002 Ω to 0.004 Ω , with tolerance of 1 %

FILM CAPACITORS

Customized High-Voltage DC-Link Capacitor



[MKP1849](#)

- High capacitance up to 6 mF
- Operating voltage up to 1200 V_{DC}, operating temperature up to 105 °C

FILM CAPACITORS

Metallized Polypropylene Film Capacitors, DC-Link Capacitor



[MKP1848](#)

- High-performance DC-link capacitor with high RMS current capabilities
- Automotive Grade, AEC-Q200 compliant

RESISTORS

Surface-Mount Molded Divider, High Voltage

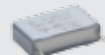


[CDMH4527](#)

- High voltages up to 3000 V, sulfur resistant
- Automotive-compliant terminations with wide range of resistance values and ratios

FILM CAPACITORS

Interference Suppression Film Capacitor – Class Y2, Radial MKP 300 V_{AC}



[MKP338 6](#)

- RFI Y2 capacitor for bypass applications
- Automotive Grade with AEC-Q200 compliance

FILM CAPACITORS

DC Film Capacitors, MKT Radial Potted Type



[MKT1820S](#)

- Automotive general purpose MKT capacitor with high-temperature capabilities
- Featuring capacitance up to 560 μ F

View datasheets for these products
www.vishay.com/ref/et3au9a




DC/DC Bidirectional and Chargers




MOSFETs
Automotive N-Channel 100 V (D-S) 175 °C MOSFET
[SQJ402EP](#)
 • Medium-voltage ThunderFET® technology, AEC-Q101 qualified, maximum $R_{DS(on)}$ 11 mΩ
 • Thermally enhanced PowerPAK® SO-8L packaging



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



NON-LINEAR RESISTORS
NTC Thermistors, Radial Leaded, Accuracy Line
[NTCLE203E3](#)
 • Accuracy line
 • Low-heat conductive wiring




CERAMIC CAPACITORS
Radial Leaded Multilayer Ceramic Capacitors for Automotive Applications
[K...V](#)
 • High-reliability MLCC insert with wet build process
 • High operating temp. up to 160 °C, rated voltages: 50 V, 100 V, and 200 V




RESISTORS
Professional Thin Film Chip Resistors
[MC...AT](#)
 • Power rating improved by 60 %
 • 175 °C maximum operating temperature



FILM CAPACITORS
Interference Suppression Film Capacitors, MKP Radial Potted Type
[MKP339](#)
 • RFI X2 capacitor for standard across-the-line applications
 • Automotive Grade with AEC-Q200 compliance



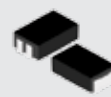
RESISTORS
Wirebondable Gate Resistor for IGBT Applications
[IGBR](#)
 • Back contact resistor for single wirebond assembly with power rating up to 4 W
 • Available case sizes from 0202 to 2010



INDUCTORS
2 kW to 5 kW Standard Power Planar Transformer and Custom Power Planar Inductor
[PLA](#)
 • Planar and flat wire designs available for improved efficiency
 • Power supply topology: full-bridge; push-pull; half-bridge; forward



RESISTORS
Surface-Mount Molded Divider, High Precision
[CDMP4527](#)
 • High precision to ± 0.25 % with low TCR to 50 ppm/°C, sulfur resistant
 • Automotive-compliant terminations with wide range of resistance values and ratios




FILM CAPACITORS
Metallized Polypropylene Film Capacitors, DC-Link Capacitor
[MKP1848](#)
 • High-performance DC-link capacitor with high RMS current capabilities
 • Automotive Grade, AEC-Q200 compliant



RESISTORS
Professional Thin Film MELF Resistors
[MMB0207](#)
 • Unrivaled surge handling capability, ultimate stability over lifetime
 • AEC-Q200 qualified, approved acc. EN 140401-803, sulfur resistant, GREEN product



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



View datasheets for these products www.vishay.com/ref/et3au9b

Energy Control Modules



RESISTORS

High-Power Resistor for Mounting onto a Heatsink, Thick Film Technology



[LPS 300](#)

- High power 57 mm x 57 mm size up to 300 W at 25 °C on heatsink
- Non-inductive down to 1 μH, high pulse capability up to 1000 J for short pulse

NON-LINEAR RESISTORS

SMD Glass Protected NTC Thermistors

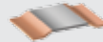


[NTCS...e3](#)

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

RESISTORS

Power Metal Strip® SMD Resistors, 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 from 0.0002 Ω to 0.004 Ω, with tolerance of 1 %

FILM CAPACITORS

Metallized Polypropylene Film Capacitors, DC-Link Capacitor



[MKP1848S](#)

- Slim high-performance DC-Link for low building height applications

INDUCTORS

Low-Profile, High-Current IHLP® Inductors



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

- High-current, high-temperature designs for boardnet and DC/DC conversion

RESISTORS

Surface-Mount Power Resistor, Thick Film Technology

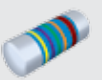


[D2TO](#)

- AEC-Q200-qualified D²PAK TO-263 standard package, 20 W and 35 W at 25 °C case temperature
- High-pulse capability up to 10 J for short pulse, high-temp. soldering, RoHS comp.

RESISTORS

Professional Thin Film MELF Resistors



[MMB0207](#)

- Unrivaled surge handling capability, ultimate stability over lifetime
- AEC-Q200 qualified, approved acc. EN 140401-803, sulfur resistant, GREEN product

RESISTORS

Matched Pair, Molded, Automotive, Thin Film, SOT-23, Resistor, Surface-Mount Network



[MPMA](#)

- Multiple standard divider ratios available with TCR tracking down to 2 ppm/°C
- Excellent long-term ratio stability ± 0.03 % over 1000 h at 125 °C





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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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