



Vishay Intertechnology, Inc.



汽车行业解决方案



为汽车应用而设计





发动机控制单元 – 12 V / 24 V	发动机冷却	2
	尾气排放控制系统	3
动力总成 – 燃油控制和油泵	燃油直喷 (线圈)	6
	压电喷射控制	7
	油泵控制	8
底盘控制	电动助力转向 (无刷直流电机驱动)	10
	变速箱 ECU、双离合器无刷直流	11
车身电子	舒适、车门、车窗控制	14
	信息娱乐、导航、音响	15
	车内 LED 照明	16
主动安全	增强型电子制动 (EEB)	18
	电子稳定控制系统 (ESP)	19
	车身稳定控制系统 (VSC)	
	电子驻车制动 (EPB)	20
	集成式驻车制动 (IPB)	
	高级驾驶辅助系统 (ADAS)	21
被动安全	安全气囊控制系统	24
	约束系统电源	25
	行人保护系统	26
车外照明	LED 前大灯单元	28
	日间行车灯	29
	LED 雾灯	30
	LED 尾灯及信号灯	31
48 V _{DC} 系统	集成式启动发电机 (48 V _{DC})	34
	DC/DC 转换器, 双向 (48 V _{DC})	35
	HVAC (用于 48 V _{DC} 系统的电动压缩机)	36
混合动力汽车 (HEV)	电机驱动 (DC/AC)	38
纯电动汽车 (FEV)	电机驱动 (DC/AC)	40
	电池管理和 DC/DC	41
	车载充电器	42

主要元件

发动机控制单元 - 12 V / 24 V



发动机冷却
(BLDC)



尾气排放
控制系统



VISHAY 优势

通过 AEC 认证

耐高温

高可靠性

小尺寸

长寿命

高抗振性

发动机冷却 (BLDC)



ALUMINUM CAPACITORS

SMD Aluminum Capacitors, High Temperature Up to 150 °C, Low ESR



[260 CLA-V](#)

- High ripple current up to 1400 mA at 150 °C, capacitance up to 3300 μ F
- Useful life up to 2000 h at 150 °C, high vibration capability

NON-LINEAR RESISTORS

SMD Glass-Protected NTC Thermistors



[NTCS...e3](#)

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

MOSFETs

N-Channel MOSFETs in 8 mm x 8 mm PowerPAK®, 40 V, 200 A, 1.7 m Ω

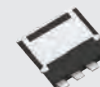


[SQJQ402E](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Low $R_{DS(on)}$, logic level MOSFET, PowerPAK® 8x8L replaces D²PAK in less than half of the area

MOSFETs

N-Channel MOSFETs in 8 mm x 8 mm PowerPAK®, 40 V, 160 A, 1.2 m Ω



[SQJQ100EL](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Ultra-low $R_{DS(on)}$, thermally enhanced PowerPAK® 8x8L replaces D²PAK in less than half of the area

INDUCTORS

Low-Profile, High-Current IHL® Inductors



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

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

CERAMIC CAPACITORS

High Operating Temperature, Automotive Grade Leaded MLCC Capacitors



[HOTcap® K...H, A...R, K...R](#)

- High-reliability MLCC insert with wet build process
- High operating temperature (up to 175 °C for K...H and up to 160 °C for A...R and K...R), rated voltages: 50 V, 100 V, 200 V

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 %

CERAMIC CAPACITORS

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



[VJ...31X RoHS Automotive MLCCs](#)

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

尾气排放控制系统

MOSFETs

N-Channel MOSFETs as Known Good Die (KGD) Rated at 60 V, 71 mΩ



[SQC462BKGD](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Efficient KGD packaging allows high power density and reduced parasitics

MOSFETs

P-Channel MOSFETs as Known Good Die (KGD) Rated at -60 V, 14 mΩ



[SQC461KGD](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Efficient KGD packaging allows high power density and reduced parasitics

RECTIFIERS

Schottky Diode Chips, 15 V to 150 V, Up to 3 A



[SC036H100S6B](#)

- Wafers in box, sawn on film, Al or Ag top metal

DIODES

Surface Mount PAR® TVS, 11 V to 48 V Breakdown Voltage



[SM8S10](#)

- AEC-Q101 qualified and high power up to 6600 W (10 x 1000 μs)
- Meet ISO7637-2 surge specification (varied by test conditions)

RESISTORS

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

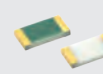


[WSLT2010...18](#)

- High temperature for harsh environments, resistance values down to 0.01 Ω
- Power Metal Strip® construction offers high reliability in critical applications

RESISTORS

Precision High-Temperature (215 °C) Thin Film Resistors, Low TCR with ± 5 ppm/°C

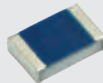


[PLTT0603](#)

- Gold terminations, Special Passivation Method (SPM)

NON-LINEAR RESISTORS

Platinum SMD Flat Chip Temperature Sensors



[PTS AT Series](#)

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

NON-LINEAR RESISTORS

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



[VJ...31X RoHS Automotive MLCCs](#)

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

CERAMIC CAPACITORS

High Operating Temperature, Automotive Grade Leaded MLCC Capacitors



[HOTcap® K...H, A...R, K...R](#)

- High-reliability MLCC insert with wet build process
- High operating temperature (up to 175 °C for K...H and up to 160 °C for A...R and K...R), rated voltages: 50 V, 100 V, 200 V

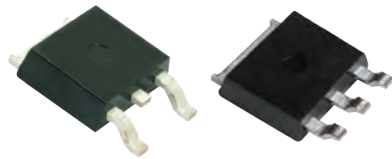
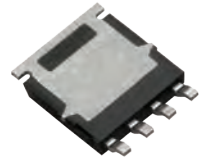
聚焦 SQ Rugged 系列汽车级 MOSFET

专用汽车级工艺流程，减少缺陷

Vishay Siliconix SQ 系列 AEC-Q101 认证功率 MOSFET 采用专为汽车应用而优化的特殊工艺制造。这些汽车级功率 MOSFET 采用低导通电阻 N 沟道和 P 沟道 TrenchFET® 技术，额定最大结温 175 °C。

封装类型包括传统 D²PAK (TO-263)、DPAK (TO-252)、SO-8、TSOP-6、SOT-23、SC-70 和节省空间的创新型 PowerPAK® 封装，尺寸范围为 2 mm x 2 mm (小) 至 8 mm x 8 mm (大)。8 mm x 8 mm PowerPAK® 8x8L 封装提供低至 1.2mΩ 的导通电阻和大电流耐受能力，尺寸不到 D²PAK 封装的一半，可显著节省电路板空间。5 mm x 6 mm PowerPAK® SO-8L 封装提供低至 3 mΩ 的导通电阻和低至 1.5 °C/W 的热阻，尺寸不到 DPAK 封装的一半。另外该封装还提供双对称和不对称配置，允许按照具体应用对高边和低边 MOSFET 进行优化。3 mm x 3 mm PowerPAK® 1212-8 封装的导通电阻与电流耐受能力与 SO-8 封装相似，但尺寸仅为后者的三分之一。另外该封装还提供双配置，并具有适合自动光学检查 (AOI) 的可润湿侧翼。尺寸更小的 2 mm x 2 mm PowerPAK® SC-70 封装提供类似于大尺寸 TSOP-6 和 SOT-23 封装的低导通电阻和电流耐受能力。此外，Vishay 还提供已知良品裸片 (KGD) 的包装，裸片经单一化 (singulated) 和测试后进行编带卷盘封装，以保证高质量和可靠的性能。

欲知有关这些和其他汽车级 MOSFET 的更多详细信息，敬请访问 <http://www.vishay.com/mosfets/automotive-mosfets/>

D ² PAK	DPAK / 反向 DPAK	PowerPAK® 8x8L	PowerPAK® SO-8L	SO-8
				
15.88 x 10.41 x 4.83	10.41 x 6.73 x 2.38	8.0 x 8.0 x 1.9	6.15 x 5.13 x 1.14	5.0 x 6.2 x 1.75

PowerPAK® 1212	TSOP-6	SOT-23	SC-70	PowerPAK® SC-70
				
3.3 x 3.3 x 1.2	3.1 x 2.98 x 1.1	3.04 x 2.64 x 1.12	2.2 x 2.4 x 1.1	2.15 x 2.15 x 0.8

长 x 宽 x 高 (mm)

主要元件 动力总成系统 – 喷油控制和油泵

燃油直喷



压电喷射控制



油泵控制
(无刷直流)



VISHAY 优势

- 通过 AEC 认证
- 耐高温
- 高可靠性
- 小尺寸
- 长寿命
- 高压 SMD 元件

燃油直喷



ALUMINUM CAPACITORS

**SMD Aluminum Capacitors,
High Temperature Up to
150 °C, Low ESR**

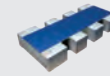


[260 CLA-V](#)

- High ripple current up to 1400 mA at 150 °C, capacitance up to 3300 μ F
- Useful life up to 2000 h at 150 °C, high vibration capability

RESISTORS

**Precision Thin Film Chip
Resistor Arrays, Superior
Moisture Resistivity**



[ACAS0612 AT Precision](#)

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

MOSFETs

**Dual N-Channel MOSFETs
in 5 mm x 6 mm PowerPAK®
SO-8L Rated at 60 V, 12 m Ω**



[SQJB60EP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Dual configuration in thermally enhanced PowerPAK® SO-8L saves board space

RECTIFIERS

**200 V, 2 x 3 A Fred Pt®
Hyperfast Rectifiers**



[VS-6CSH02HM3](#)

- Hyperfast recovery time, $t_{rr} = 27$ ns, reduced Q_{rr} , and soft recovery
- Low forward voltage drop and low leakage current

RECTIFIERS

**200 V, 2 x 3 A Fred Pt®
Hyperfast Rectifiers**



[VS-8DKH02](#)

- Dual 5x6 (FlatPAK™) package
- $T_J = 175$ °C

DIODES

**Surface-Mount PAR® TVS,
600 W, 6.8 V to 51 V**



[TA6Fxx](#)

- Very low-profile DO-221AC (SlimSMA™) package - typical height of 0.95 mm
- $T_J = 185$ °C

RESISTORS

**Power Metal Strip® SMD
Resistors, Wide Terminal,
1 m Ω to 3 m Ω , 1 W**



[WSL0612](#)

- Low EMF, high temperature up to 170 °C

INDUCTORS

**Low-Profile, High-Current
IHLP® Inductors**



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

- Excellent high-temperature performance and noise filtering

CERAMIC CAPACITORS

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



[VJ...31X RoHS Automotive MLCCs](#)

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

MOSFETs

**N-Channel MOSFETs in
5 mm x 6 mm PowerPAK®
SO-8L Rated at 80 V, 7 m Ω**



[SQJA80EP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Ultra-low $R_{DS(on)}$, thermally enhanced PowerPAK® 8x8L replaces D²PAK in less than half of the area

NON-LINEAR RESISTORS

**SMD Glass-Protected NTC
Thermistors**



[NTCS...e3](#)

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

MOSFETs

**Dual N-Channel MOSFETs
in 5 mm x 6 mm PowerPAK®
SO-8L Rated at 40 V, 9.66 m Ω**



[SQJB42EP](#)

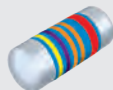
- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Dual configuration in thermally enhanced PowerPAK® SO-8L saves board space

压电喷射控制



RESISTORS

Professional High-Temperature Mini-MELF Resistors

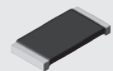


[MMA 0204 HT](#)

- Operating temperature up to 175°C, power handling of 500 mW
- AEC-Q200 qualified, high overall stability $|\Delta R/R| \leq 0.1\%$, intrinsically sulfur-resistant

RESISTORS

Power Metal Strip® SMD Resistors, 0.5 mΩ to 500 mΩ, 1 W



[WSL2512](#)

- 2512 package size, also available in 2816 with 2 W

NON-LINEAR RESISTORS

SMD Glass-Protected NTC Thermistors



[NTCS...e3](#)

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

DIODES

Unidirectional and Bidirectional Power SMD TVS Diodes, SMA Package, Up to 400 W



[SMAJxx](#)

- DO-214AC (SMA) package, high-voltage clamping
- 6.4 V to 231 V

MOSFETs

N-Channel MOSFETs in DPAK Package Rated at 300 V, 10 A, 330 mΩ



[SQD10N30-330H](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Up to 300 V operation in DPAK package

INDUCTORS

High-Isolation Flyback Transformers in Press-Fit and SMD Versions



[Customized Transformers](#)

- Customized solutions up to kW ranges

INDUCTORS

Low-Profile, High-Current IHL® Inductors



[IHL-2525CZ-5A](#)

- Excellent high-temperature performance for DC/DC converter input and output filters

ALUMINUM CAPACITORS

Radial Miniature, High-Voltage, Up to 450 V with CR Up to 220 μF



[152RMH](#)

- High voltage applications, 105 °C long life
- Miniaturized, ultra-high CV product per unit volume

RECTIFIERS

600 V, 2 A FRED Pt® Ultrafast Rectifiers



[VS-2EFU06HM3](#)

- SMF (DO-219AB) package, operating temperature up to 175 °C
- Pulse current up to 30 A (6 ms)

INDUCTORS

Low-Profile, High-Current IHL® Inductors



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

- Excellent high-temperature performance and noise filtering

CERAMIC CAPACITORS

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



[VJ...31X RoHS Automotive MLCCs](#)

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

MOSFETs

N-Channel MOSFETs in 5 mm x 6 mm PowerPAK®, 100 V, 32 A, 11 mΩ



[SQJ402EP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- 100 V MOSFETs for use in low-side flyback converters

油泵控制 (无刷直流)

ALUMINUM CAPACITORS

SMD Aluminum Capacitors, High Temperature Up to 150 °C, Low ESR



[260 CLA-V](#)

- High ripple current up to 1400 mA at 150 °C, capacitance up to 3300 μ F
- Useful life up to 2000 h at 150 °C, high vibration capability

MOSFETs

N-Channel MOSFETs in 5 mm x 6 mm PowerPAK® SO-8L Rated at 40 V, 3.2 m Ω



[SQJ444EP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Logic level V_{th} , low $R_{DS(on)}$, thermally enhanced PowerPAK® SO-8L replaces DPAK in less than half of the area

MOSFETs

N-Channel MOSFETs in 5 mm x 6 mm PowerPAK® SO-8L Rated at 40 V, 3.0 m Ω

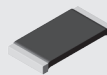


[SQJA46EP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Thermally enhanced PowerPAK® SO-8L replaces DPAK in less than half of the area

RESISTORS

Power Metal Strip® SMD Resistors, Very High Power (3 W), Low Value (to 0.0005 Ω)



[WSLP2512](#)

- Very high power rating of 3 W in 2512 package
- Extremely low resistance values from 0.0005 Ω to 0.01 Ω and tolerance of 1 %

RECTIFIERS

1 A, 200 V FRED Pt® Hyperfast Rectifiers



[VS-1EFH02HM3](#)

- Hyperfast recovery time, $t_r = 25$ ns, reduced Q_{rr} , and soft recovery
- DO-219AB (SMF) package, high T_j of 175 °C

RESISTORS

Power Metal Strip® SMD Resistors, Wide Terminal, 1 m Ω to 6 m Ω , 6 W



[WSL1020](#)

- TCR < 20 ppm/K, high-temperature performance up to 170 °C

MOSFETs

Dual N-Channel MOSFETs in 8 mm x 8 mm PowerPAK®, 40 V, 100 A, 3.4 m Ω



[SQJQ904E](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- High power density dual PowerPAK® 8x8L offers significant reduction in PCB area

NON-LINEAR RESISTORS

SMD Glass-Protected NTC Thermistors



[NTCS...e3](#)

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

INDUCTORS

Power SMD IHLP® Storage Inductors, E-Field Shielded, Inductance of 0.22 μ H to 22 μ H



[IHLE-4040DD-5A](#)

- Shielded housing provides excellent protection against EMI (B and E fields)
- Optimized for high frequency

CERAMIC CAPACITORS

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



[VJ...31X RoHS Automotive MLCCs](#)

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

CERAMIC CAPACITORS

High Operating Temperature, Automotive Grade Leaded MLCC Capacitors



[HOTcap® K...H, A...R, K...R](#)

- High-reliability MLCC insert with wet build process
- High operating temperature (up to 175 °C for K...H and up to 160 °C for A...R and K...R), rated voltages: 50 V, 100 V, 200 V

主要元件 底盘控制



VISHAY 优势

- 通过 AEC 认证
- 高功率密度
- 高脉冲电流耐受力
- 小尺寸
- 长寿命
- 超薄

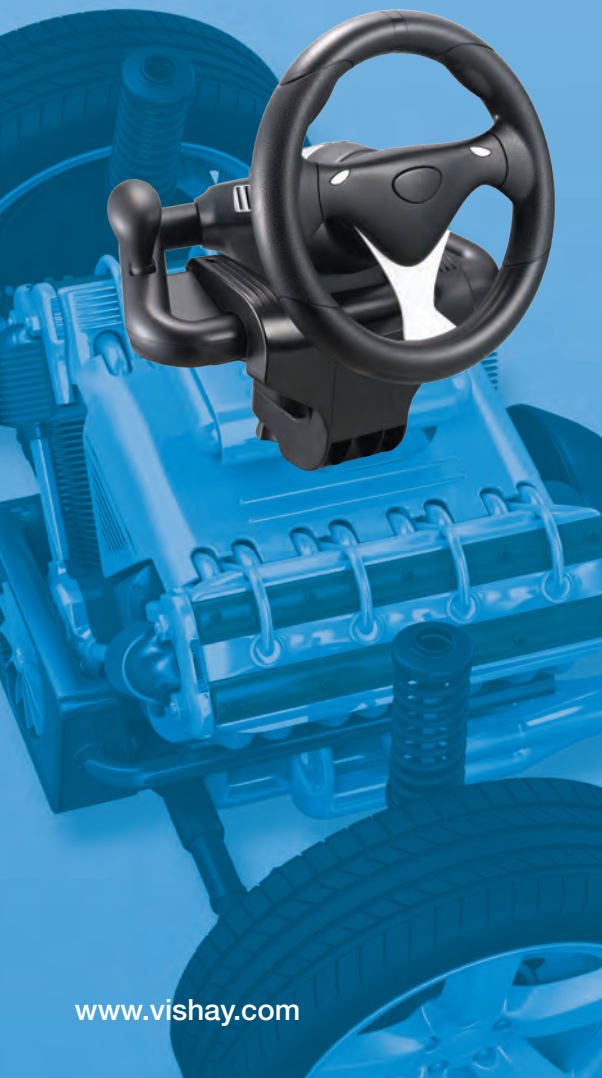
电动助力转向
(无刷直流电机驱动)



变速箱 ECU、
双离合无刷直流



电动助力转向 (无刷直流电机驱动)



ALUMINUM CAPACITORS

SMD Aluminum Capacitors, High Temperature Up to 150 °C, Low ESR



[260 CLA-V](#)

- High ripple current up to 1400 mA at 150 °C, capacitance up to 3300 μ F
- Useful life up to 2000 h at 150 °C, high vibration capability

MOSFETs

N-Channel MOSFETs as Known Good Die (KGD) Rated at 40 V, 0.72 m Ω



[SQC200N04-0m72KGD](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Efficient KGD packaging allows high power density and reduced parasitics

OPTOELECTRONICS

3-Channel SMD Transmissive Sensors for "Turn and Push" Optical Encoding



[TCUT1630X01](#)

- Wide operating temperature range of -40 °C to +110 °C, 3 output channels
- Sensing of motion, speed, and direction; third channel for trigger signal

RESISTORS

Power Metal Strip® SMD Resistors



[WSLP2726](#)

- Very high power (7 W)
- Resistance = 0.3 m Ω to 4 m Ω

RESISTORS

Thin Film Resistors, 4.7 Ω to 3.01 M Ω , 0402 to 1210 Case Sizes, 50 V to 200 V

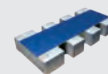


[TNPW e3](#)

- Excellent stability $|\Delta R/R| \leq 0.05$ % after 1000 h at 70 °C, 0402 to 1210 case sizes

RESISTORS

Precision Thin Film Chip Resistor Arrays, Superior Moisture Resistivity



[ACAS0612 AT Precision](#)

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

NON-LINEAR RESISTORS

SMD Glass-Protected NTC Thermistors

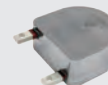


[NTCS...e3](#)

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

INDUCTORS

Shielded EMI Filters Up to 190 A I_{DCR} , 2.2 μ H, Ultra-Low DCR (0.22 m Ω)

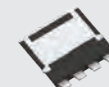


[IHXL-2000VZ-5A](#)

- Very high-current and high-temperature operation for filters and energy storage

MOSFETs

N-Channel MOSFETs in 8 mm x 8 mm PowerPAK®, 40 V, 160 A, 1.2 m Ω

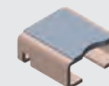


[SQJQ100EL](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Ultra-low $R_{DS(on)}$, thermally enhanced PowerPAK® 8x8L replaces D²PAK in less than half of the area

RESISTORS

Power Metal Strip® SMD Resistors, 4-Terminal, Low Value (Down to 0.0001 Ω)



[WSK1216](#)

- High power rating of 3 W to 5 W with TCR = 20 ppm/K
- Very low resistance values, 0.0001 Ω to 0.004 Ω , with tolerance of 1%

INDUCTORS

Shielded SMD Low-Profile, High-Current IHLP® Inductors, EMI Filters, 155 °C, Low DCR



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

- Very high-current and high-temperature operation for filters

CERAMIC CAPACITORS

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

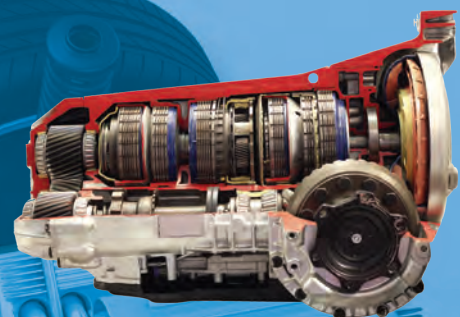


[VJ...31X RoHS Automotive MLCCs](#)

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



变速箱 ECU, 双离合无刷直流



MOSFETs

N-Channel MOSFETs as Known Good Die (KGD) Rated at 40 V, 0.72 mΩ



[SQC200N04-0m72KGD](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Efficient KGD packaging allows high power density and reduced parasitics

MOSFETs

N-Channel MOSFETs in 5 mm x 6 mm PowerPAK® SO-8L Rated at 40 V, 3.0 mΩ



[SQJA46EP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Thermally enhanced PowerPAK® SO-8L replaces DPAK in less than half of the area

MOSFETs

Dual N-Channel MOSFETs in 8 mm x 8 mm PowerPAK®, 40 V, 100 A, 3.4 mΩ



[SQJQ904E](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- High power density dual PowerPAK® 8x8L offers significant reduction in PCB area

CERAMIC CAPACITORS

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



[VJ...31X RoHS Automotive MLCCs](#)

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

RECTIFIERS

High Current Density Surface-Mount Schottky Barrier Rectifiers



[SS3P4L](#)

- AEC-Q101 qualified
- Very low profile - typical height of 1.0 mm

INDUCTORS

Coupled Inductors for SEPIC Converter



[IHCL-3232DZ-5A](#)

- High-temperature operation up to 155 °C
- Frequency range up to 5.0 MHz

DIODES

600 W, 6.8 V to 51 V SMD PAR® TVS Diodes



[TA6Fxx](#)

- $T_j = 185\text{ °C}$
- Very low profile - typical height of 0.95 mm

RESISTORS

Power Metal Strip® SMD Resistors, Wide Terminal, 1 mΩ to 30 mΩ, 2 W



[WSLP2010](#)

- Very high power to footprint size ratio (2 W in 2010)
- Construction is impervious to high-sulfur environments

RESISTORS

SMD Thick Film Resistors, High Stability



[RCA0603](#)

- TCR = 50 to 200 ppm/K
- Sulfur-resistant

NON-LINEAR RESISTORS

SMD Glass-Protected NTC Thermistors



[NTCS...e3](#)

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

INDUCTORS

Low-Profile, High-Current IHLP® Inductors

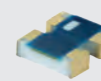


[IHLP-2525CZ-5A](#)

- Excellent high-temperature performance for DC/DC converter input and output filters

RESISTORS

Precision Gold Terminated Thin Film Chip Resistor Arrays for Conductive Gluing



[ACAS 0606 ATAU Precision](#)

- Glueable gold terminations, resistance ratio up to 1:20, tolerance $\pm 0.05\%$
- AEC-Q200 qualified, extreme sulfur resistance, superior tracking stability

聚焦 Power Metal Strip® 电阻器

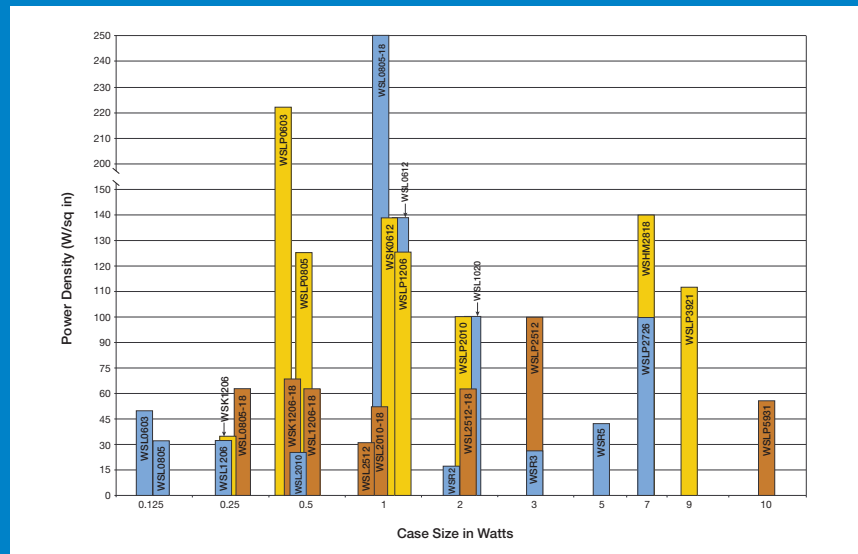
结合低 TCR (< 30 ppm/°C)、低阻值 (低至 0.2 mΩ)、紧公差和耐高温性能

Vishay 的 Power Metal Strip® 电流采样电阻器在高温应用中表现优异，并提供广泛的封装尺寸和 0.0002 Ω - 1 Ω 可选阻值。这些具有专利的最先进产品提供与绕线电阻器相同的过载能力和低至 30 ppm/°C 的温度系数。

Power Metal Strip 电流采样电阻器用于通过将电流转变为容易监测的电压来监测电路电流。这些器件可使电路中的电流达到校准电平，从而使控制电路能够检测和监控电压降。Power Metal Strip 电阻器的低阻值允许以卓越效率执行此功能。

高功率密度 (可达 222 W/in², 34.4 W/cm²)

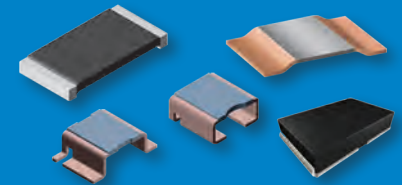
Vishay 的 Power Metal Strip 电阻器已发展到“高功率”WSL...-18、WSLP、WSR3、WSR5 和 WSHM2818 电阻器。精心挑选的材料和工艺使这些元件的额定功率可达 10 W。WSL...-18、WSLP、WSR3、WSR5 和 WSHM2818 电阻器提供高功率/封装尺寸比，同时实现优异的电特性。高额定功率使设计工程师能够使用更小的 PCB，进而加快制造速度和降低原材料成本。



Vishay 高功率表面贴装 Power Metal Strip 电流采样电阻器

特性

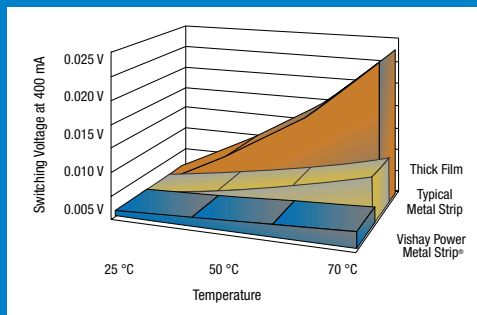
- 小外壳尺寸，高功率：可达 10 W
- 非常低的阻值：0.0002 Ω - 1.0 Ω
- 阻值容差小：低至 ± 0.1 %



低电阻温度系数 (TCR) (低至 30 ppm/°C)

小阻值 Vishay Power Metal Strip 的低 TCR 变化归因于自热和高温环境。

此图比较了 30 ppm/°C Vishay Power Metal Strip 电阻器与典型 100 ppm/°C metal strip 及 700 ppm/°C 厚膜片式电阻器的电压。



主要元件 车身电子



舒适、车门、
车窗控制



信息娱乐、
导航、音响



车内
LED 照明



VISHAY 优势

- 通过 AEC 认证
- 高功率密度
- 小尺寸
- 耐用
- 可定制

舒适、车门、车窗控制

MOSFETs

N-Channel MOSFETs in 5 mm x 6 mm PowerPAK®, 40 V, 58 A, 6.3m Ω



[SQJ868EP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Thermally enhanced PowerPAK SO-8L replaces DPAK in less than half of the area

RESISTORS

Thick Film Surface-Mount Chip Resistors, Wraparound, Extremely Low Value



[RCWE](#)

- Low resistance values from 0.01 Ω to 0.99 Ω and tolerance of 1 %
- Thick film construction with 2x power capacity

INDUCTORS

Low-Profile, High-Current IHLP® Inductors



[IHLP-4040DZ-5A](#)

- Excellent high-current performance for noise filters
- High-temperature operation up to 155 °C

OPTOELECTRONICS

SMD Silicon PIN Photodiodes with Large Active Area for High Photo Currents



[VEMD5110X01](#)

- QFN package with wettable flanks, reduced noise sensitivity
- Wide operating temperature range of -40 ° to +110 °C, wide viewing angle of $\pm 65^\circ$

RECTIFIERS

Surface-Mount Schottky Barrier Rectifiers



[MSS1P4](#)

- Very low profile - typical height of 0.65 mm
- AEC-Q101 qualified

OPTOELECTRONICS

Ambient Light PIN Photodiode Sensors



[TAMD6200FX01](#)

- SMD 0805 package, low profile of 0.85 mm, wide viewing angle of $\pm 60^\circ$
- Spectral sensitivity close to human eye, high signal output linearity

TANTALUM CAPACITORS

Solid Tantalum Chip Capacitors, High CV Leadframeless Molded, Automotive Grade



[TP3 / TP8](#)

- TP3 - AEC-Q200 qualified; low ESR; A, B, C, D and E cases
- TP8 - AEC-Q200 qualified

OPTOELECTRONICS

850 nm SMD Infrared Emitters



[VSMY1850ITX01](#)

- SMD 0805 package, low profile of 0.85 mm, high radiant intensity of 10 mW/sr
- Wide operating temperature range of -40 ° to +105 °C, wide viewing angle of $\pm 60^\circ$

DIODES

SMD Power ESD Diodes, Up to ± 30 kV, $I_{FSM} = 50$ A

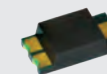


[SMFxx](#)

- SMF package: 3.5 mm x 1.9 mm
- Breakdown voltage = 6.4 V to 64.4 V

OPTOELECTRONICS

Silicon PIN Photodiode with Excellent Output Linearity Characteristics



[VEMD6160X01](#)

- SMD 1206 package, daylight blocking filter, wide viewing angle of $\pm 70^\circ$
- Low capacitance of 4.6pF, ideal for noisy environments and small signal detection

ALUMINUM CAPACITORS

Aluminum Capacitors, Increased Vibration Resistance



[246 CTI-V](#)

- High temperature, low impedance, high vibration capability
- High ripple current, long useful life

CERAMIC CAPACITORS

High Operating Temperature, Automotive Grade Leaded MLCC Capacitors



[HOTcap® K...H, A...R, K...R](#)

- High-reliability MLCC insert with wet build process
- High operating temperature (up to 175 °C for K...H and up to 160 °C for A...R and K...R), rated voltages: 50 V, 100 V, 200 V

信息娱乐、导航、音响

MOSFETs

Dual N-Channel MOSFETs in 5 mm x 6 mm PowerPAK®, 40 V, 11 mΩ / 22 mΩ



[SQJ942EP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Optimized for high-frequency DC/DC applications, lower switching losses

RESISTORS

Thick Film Surface-Mount Chip Resistors, Wraparound, Extremely Low Value



[RCWE0603](#)

- Low resistance values from 0.01 Ω to 0.99 Ω and tolerance of 1 %
- Thick film construction with 2x power capacity

RECTIFIERS

Surface-Mount Schottky Barrier Rectifiers



[MSS1P4](#)

- Very low profile - typical height of 0.65 mm
- AEC-Q101 qualified

TANTALUM CAPACITORS

Solid Tantalum Chip Capacitors, High CV Leadframeless Molded, Automotive Grade



[TP8](#)

- Smallest AEC-Q200 qualified tantalum capacitors with case sizes as small as 0603

OPTOELECTRONICS

890 nm SMD Infrared Emitters



[VSMF970011X01](#)

- Low-profile PLCC² package, wavelength matched to sensitivity of proximity sensor
- External emitter to enable gesture function of proximity sensor

OPTOELECTRONICS

Integrated Proximity and Ambient Light Sensors with I²C Interface



[VCNL4020X01](#)

- Low-profile QFN SMD package, 16 bit resolution, proximity distance up to 200 mm
- Suitable for extended detection range, gesture function with external emitters

INDUCTORS

Low-Profile, High-Current IHLP® Inductors



[IHLP-2525CZ-5A](#)

- Excellent high-temperature performance for DC/DC converter input and output filters

CERAMIC CAPACITORS

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



[VJ...31X RoHS Automotive MLCCs](#)

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

INDUCTORS

IHLP® High-Temperature (155 °C) Parts in Double Inductor Package



[IHLD-4032KB-5A](#)

- Optimal design provides high quality sound and low distortion
- Low coupling for minimal cross-talk between inductors

MOSFETs

Dual N-Channel MOSFETs in 5 mm x 6 mm PowerPAK®, 12 V, 2.7 mΩ / 7.4 mΩ

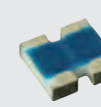


[SQJ202EP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Low-voltage, high-frequency synchronous buck applications, lower switching losses

RESISTORS

Precision Thin Film Resistor Arrays, Superior Moisture Resistivity, TCR ± 0.05



[ACAS 0606 AT](#)

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

INDUCTORS

High-Current SMD Inductors with E-Field Shielding and 155 °C Operating Temperature



[IHLE-3232DD-5A](#)

- Excellent EMI protection, double-shielded

车内 LED 照明

RESISTORS

Pulse-Proof, High-Power Thick Film Chip Resistors



[CRCW-HP e3](#)

- Excellent pulse load capability
- Enhanced power rating

MOSFETs

P-Channel MOSFETs in 3 mm x 3 mm PowerPAK® 1212, -60 V, -16 A, 65 mΩ



[SQ7415AENW](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- High power density PowerPAK® 1212 with wettable flanks for AOI

RECTIFIERS

Surface-Mount Schottky Barrier Rectifiers



[MSS1P6](#)

- Low-profile MicroSMP package for low-voltage, high-frequency inverters; DC/DC converters; and polarity protection applications

MOSFETs

N-Channel MOSFETs in 3 mm x 3 mm PowerPAK® 1212, 60 V, 18 A, 23 mΩ



[SQ7414AENW](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- High power density PowerPAK® 1212 with wettable flanks for AOI

RECTIFIERS

100 V, 2 A High-Voltage Schottky Diodes, $T_j = 175$ °C



[SS2PH10](#)

- SMP(DO-220AA) package, 3.7 mm x 2.18 mm

RESISTORS

Power Metal Strip® SMD Resistors, Wide Terminal, 1 mΩ to 3 mΩ, 1 W



[WSL0612](#)

- Low EMF, high temperature up to 170 °C

RESISTORS

Thick Film Surface-Mount Chip Resistors, Wraparound, Extremely Low Values



[RCWE0603](#)

- Low resistance values from 0.01 Ω to 0.99 Ω and tolerance of 1 %
- Thick film construction with 2x power capacity

NON-LINEAR RESISTORS

SMD Glass-Protected NTC Thermistors



[NTCS...e3](#)

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

INDUCTORS

Low-Profile, High-Current IHLP® Inductors



[IHLP-1616BZ-A1](#)

- Shielded construction, lowest DCR/μH in this package size
- Excellent DC/DC energy storage up to 5 MHz

TANTALUM CAPACITORS

Solid Tantalum Molded Chip Capacitors, Automotive Grade

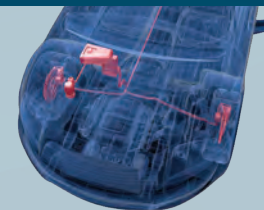


[TP3](#)

- AEC-Q200 qualified, low ESR
- A, B, C, D, and E cases

主要元件 主动安全

增强型
电子制动
(EEB)



电子稳定控制系统
(ESP)
车身稳定控制系统
(VSC)



电子驻车制动
(EPB)
集成式驻车制动
(IPB)



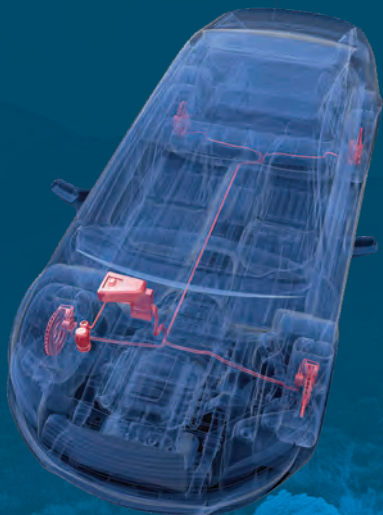
高级驾驶
辅助系统
(ADAS)



VISHAY 优势

通过 AEC 认证
耐高温
小尺寸
高可靠性
长寿命

增强型电子制动 (EEB)



RESISTORS

Thin Film Resistors, 4.7 Ω to 3.01 M Ω , 0402 to 1210 Case Sizes, 50 V to 200 V

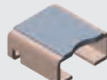


[TNPW e3](#)

- Excellent stability $|\Delta R/R| \leq 0.05\%$ after 1000 h at 70 °C, 0402 to 1210 case sizes

RESISTORS

Power Metal Strip® SMD Resistors, 4-Terminal, Low Value (Down to 0.0001 Ω)

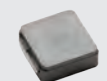


[WSK1216](#)

- High power rating of 3 W to 5 W with TCR of 20 ppm/K
- Very low resistance values, 0.0001 Ω to 0.004 Ω , with tolerance of 1 %

INDUCTORS

Low-Profile, High-Current IHLP® Inductors



[IHLP-4040DZ-5A](#)

- Excellent high-current performance for noise filters
- High-temperature operation up to 155 °C

MOSFETs

N-channel MOSFET in Reverse DPAK Rated at 40 V, 3.8 m Ω

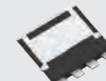


[SQR50N04-3m8 GE3](#)

- AEC-Q101 Qualified, 100 % UIS & RG tested with up to 175 °C operation
- Reverse DPAK package allows excellent heat transfer and is good for high current application such as park brake

MOSFETs

N-Channel MOSFETs in 8 mm x 8 mm PowerPAK®, 40 V, 160 A, 1.2 m Ω



[SQJQ100EL](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Ultra-low $R_{DS(on)}$, thermally enhanced PowerPAK® 8x8L replaces D²PAK in less than half of the area

NON-LINEAR RESISTORS

SMD Glass-Protected NTC Thermistors



[NTCS...e3](#)

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

CERAMIC CAPACITORS

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



[VJ...31X RoHS Automotive MLCCs](#)

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

INDUCTORS

Power SMD IHLP® Storage Inductors, 0.22 μ H to 22 μ H



[IHLP5050FD-5A](#)

- Soft saturation, high rated current, temperature up to 155 °C

INDUCTORS

SMD Low-Profile, High-Current IHLP® Inductors, 0.22 μ H to 33 μ H



[IHLP-3232DZ-5A](#)

- High-temperature (up to +155 °C), high-current shielded inductors

ALUMINUM CAPACITORS

SMD Aluminum Capacitors, High Temperature Up to 150 °C, Low ESR



[260 CLA-V](#)

- High ripple current up to 1400 mA at 150 °C, capacitance up to 3300 μ F
- Useful life up to 2000 h at 150 °C, high vibration capability

电子稳定控制系统 (ESP) 车身稳定控制系统 (VSC)

ALUMINUM CAPACITORS

SMD Aluminum Capacitors, High Temperature Up to 150 °C, Low ESR



[260 CLA-V](#)

- High ripple current up to 1400 mA at 150 °C, capacitance up to 3300 μ F
- Useful life up to 2000 h at 150 °C, high vibration capability

RESISTORS

SMD Thick Film Resistors, High Stability, Sulfur-Resistant

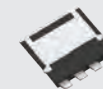


[RCA0603](#)

- TCR = 50 ppm/K to 200 ppm/K

MOSFETS

N-Channel MOSFETs in 8 mm x 8 mm PowerPAK®, 40 V, 160 A, 1.2 m Ω



[SQJQ100EL](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Ultra-low $R_{DS(on)}$, thermally enhanced PowerPAK® 8x8L replaces D²PAK in less than half of the area

MOSFETS

Dual N-Channel MOSFETs in 8 mm x 8 mm PowerPAK®, 40 V, 100 A, 3.9 m Ω



[SQJQ900E](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- High power density dual PowerPAK® 8x8L offers significant reduction in PCB area

MOSFETS

N-Channel MOSFETs in 5 mm x 6 mm PowerPAK® SO-8L Rated at 40 V, 3.0 m Ω



[SQJA46EP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Thermally enhanced PowerPAK® SO-8L replaces DPAK in less than half of the area

INDUCTORS

Low-Profile, High-Current IHLP® Inductors



[IHLP-2525CZ-5A](#)

- Excellent high-temperature performance for DC/DC converter input and output filters

RESISTORS

Power Metal Strip® SMD Resistors, Wide Terminal, 1 m Ω to 3 m Ω , 1 W



[WSL0612](#)

- Low EMF, high temperature up to 170 °C

RECTIFIERS

1A, 200 V FRED Pt® Hyperfast Rectifiers



[VS-1EFH02HM3](#)

- Hyperfast recovery time, t_{rr} = 25 ns, reduced Q_{rr} , and soft recovery
- DO-219AB (SMF) package, high T_j of 175 °C

INDUCTORS

Low-Profile, High-Current IHLP® Inductors



[IHLP-4040DZ-5A](#)

- Excellent high-current performance for noise filters
- High-temperature operation up to 155 °C

CERAMIC CAPACITORS

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



[VJ...31X RoHS Automotive MLCCs](#)

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

TANTALUM CAPACITORS

Solid Tantalum Surface-Mount Chip Capacitors, Molded Case, Automotive Grade



[TH3 / TH4](#)

- High-temperature molded tantalum capacitors, HI-TMP®, TH4 = up to 175 °C, TH3 = up to 150 °C

电子驻车制动 (EPB) 集成式驻车制动 (IPB)



ALUMINUM CAPACITORS

SMD Aluminum Capacitors, High Temperature Up to 150 °C, Low ESR



[260 CLA-V](#)

- High ripple current up to 1400 mA at 150 °C, capacitance up to 3300 μ F
- Useful life up to 2000 h at 150 °C, high vibration capability

MOSFETs

Dual N-Channel MOSFETs in 8 mm x 8 mm PowerPAK®, 40 V, 100 A, 3.9 m Ω

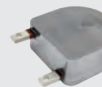


[SQJQ900E](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- High power density dual PowerPAK® 8x8L offers significant reduction in PCB area

INDUCTORS

Shielded EMI Filter Up to 190 A I_{DCR}, 2.2 μ H, Ultra-Low DCR (0.22 m Ω)

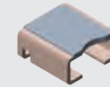


[IHXL-2000VZ-5A](#)

- Very high-current and high-temperature operation for filters and energy storage

RESISTORS

Power Metal Strip® SMD Resistors, 4-Terminal, Low Value (Down to 0.0001 Ω)

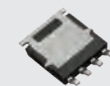


[WSK1216](#)

- High power rating of 3 W to 5 W with TCR of 20 ppm/K
- Very low resistance values, 0.0001 Ω to 0.004 Ω , with tolerance of 1 %

MOSFETs

N-Channel MOSFETs in 5 mm x 6 mm PowerPAK® SO-8L Rated at 40 V, 3.0 m Ω



[SQJA46EP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Thermally enhanced PowerPAK® SO-8L replaces DPAK in less than half of the area

CERAMIC CAPACITORS

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

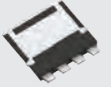


[VJ...31X RoHS Automotive MLCCs](#)

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

MOSFETs

N-Channel MOSFETs in 8 mm x 8 mm PowerPAK®, 40 V, 160 A, 1.2 m Ω



[SQJQ100EL](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Ultra-low R_{DS(on)}, thermally enhanced PowerPAK® 8x8L replaces D²PAK in less than half of the area

INDUCTORS

Low-Profile, High-Current IHLP® Inductors



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

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

TANTALUM CAPACITORS

Solid Tantalum Surface-Mount Chip Capacitors, Molded Case, Automotive Grade



[TH3 / TH4](#)

- High-temperature molded tantalum capacitors, HI-TMP®, TH4 = up to 175 °C, TH3 = up to 150 °C

高级驾驶辅助系统 (ADAS)

MOSFETs

Dual N-Channel MOSFETs in 5 mm x 6 mm PowerPAK®, 40 V, 11 mΩ / 22 mΩ



[SQJ942EP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Optimized for high-frequency DC/DC applications, lower switching losses

INDUCTORS

Low-Profile, High-Current IHL® Inductors



[IHL-1616BZ-A1](#)

- Shielded construction, lowest DCR/μH in this package size
- Excellent DC/DC energy storage up to 5 MHz

DIODES

SMD Power ESD Diodes, Up to ± 30 kV, I_{FSM} = 50 A



[SMFxx](#)

- SMF package: 3.5 mm x 1.9 mm
- Breakdown voltage = 6.4 V to 64.4 V

OPTOELECTRONICS

Integrated Proximity and Ambient Light Sensors with I²C Interface



[VCNL4020X01](#)

- Low-profile QFN SMD package, 16 bit resolution, proximity distance up to 200 mm
- Suitable for extended detection range, gesture function with external emitters

MOSFETs

Dual N-Channel MOSFETs in 5 mm x 6 mm PowerPAK®, 12 V, 2.7 mΩ / 7.4 mΩ



[SQJ202EP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Low-voltage, high-frequency synchronous buck applications, lower switching losses

RECTIFIERS

Surface-Mount Schottky Barrier Rectifiers



[MSS1P4](#)

- Very low profile - typical height of 0.65 mm
- AEC-Q101 qualified

INDUCTORS

Low-Profile, High-Current IHL® Inductors

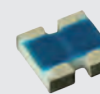


[IHL-2525CZ-5A](#)

- Excellent high-temperature performance for DC/DC converter input and output filters

RESISTORS

Precision Thin Film Resistor Arrays, Superior Moisture Resistivity, TCR ± 0.05



[ACAS 0606 AT](#)

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

TANTALUM CAPACITORS

Solid Tantalum Chip Capacitors, High CV Leadframeless Molded, Automotive Grade



[TP8](#)

- Smallest AEC-Q200 qualified tantalum capacitors with case sizes as small as 0603

CERAMIC CAPACITORS

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



[VJ...31X RoHS Automotive MLCCs](#)

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

INDUCTORS

High-Current SMD Inductors with E-Field Shielding and 155 °C Operating Temperature



[IHL-3232DD-5A](#)

- Excellent EMI protection, double-shielded

MOSFETs

Dual N-channel MOSFET in Small 2 mm x 2 mm SC-70 Package Rated at 20 V, 28 mΩ



[SQ1912AEEH-T1 GE3](#)

- AEC-Q101 Qualified, 100 % UIS & RG tested with up to 175 °C operation
- Compact part for use in sync buck power supply for camera system



Vishay 的新 IHLP 损耗计算器是一种免费工具，可帮助设计工程师根据电路工作条件选择合适的 IHLP 电感器。该工具可模拟电感器的损耗，包括芯损以及交流和直流铜损。同时还可根据损耗估计来预测温度升幅和最终元件温度。该工具允许设计工程师对比多种不同电感器，包括尺寸和电感值，以帮助选型过程。该计算器可用于降压、升压和降压/升压型转换器。

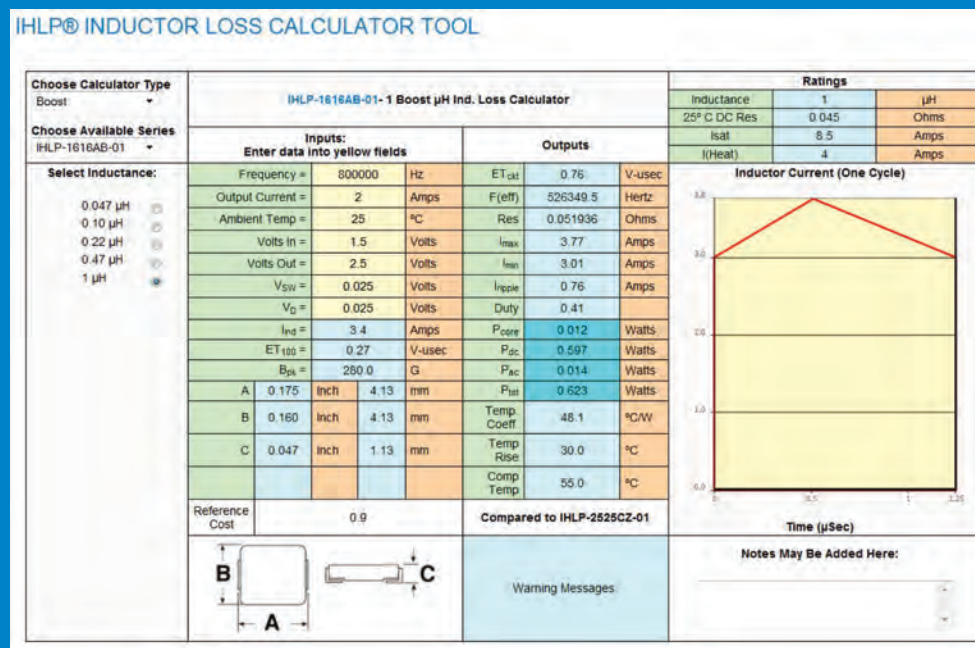
计算器有十个输入参数：输入电压、输出电压、开关 (FET) 压降、二极管 (或同步 FET) 压降、输出电流、频率、环境温度和电感值。计算器会根据这些参数完成余下的工作。通过左侧的“radio”按钮可选择电感值。

请注意，因为该工具仅用于仿真，所以全部设计均应在电路中进行验证。

损耗计算器: www.vishay.com/inductors/calculator-home-list/

使用指南: www.vishay.com/doc?49421

IHLP 电感器的建议最高元件温度为 125 °C，从中减去环境温度可得到元件的最大允许温度升幅。如果该数字超过 40 °C，则建议对允许温度升幅使用该值。建立纹波电流范围为电感器电流的 30 % - 50 %。该建议基于对电感器尺寸和成本与输出电容器尺寸与成本的权衡考虑。最大峰值电流应低于所选电感器的最终值，不过，考虑到粉末铁芯材料的软化和特性，经慎重判断后可略微超出该值。计算器功能仅基于连续导电工作模式，在断续导电模式下的计算结果需用户自行验证。



主要元件 被动安全



安全气囊
控制系统



约束系统电源



行人保护系统



VISHAY 优势

通过 AEC 认证
高可靠性
经过验证的性能
经过验证的寿命

安全气囊控制系统

RESISTORS

Thin Film Resistors, 4.7 Ω to 3.01 M Ω , 0402 to 1210 Case Sizes, 50 V to 200 V



[TNPW e3](#)

- Excellent stability $|\Delta R/R| \leq 0.05\%$ after 1000 h at 70 °C, 0402 to 1210 case sizes

RESISTORS

Massive Electro-Pyrotechnic Initiator Chip Resistors



[MEPIC](#)

- Low firing energy down to 1.5 mJ, fast firing time down to 250 μ s
- Standard 0805 SMD case, alternative to bridge wire technology

MOSFETs

Dual N- and P-Channel MOSFETs in 5 mm x 6 mm PowerPAK[®] SO-8L, 40/-40 V, 11/30 m Ω

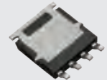


[SQJ500AEP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Package saves board space

MOSFETs

N-Channel MOSFETs in 5 mm x 6 mm PowerPAK[®], 40 V, 58 A, 6.3m Ω



[SQJ868EP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Thermally enhanced PowerPAK SO-8L replaces DPAK in less than half of the area

RECTIFIERS

High Current Density Surface-Mount Schottky Barrier Rectifiers



[SS3P4L](#)

- AEC-Q101 qualified
- Very low profile - typical height of 1.0 mm

INDUCTORS

Low-Profile, High-Current IHLP[®] Inductors

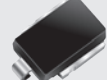


[IHLP-4040DZ-5A](#)

- Excellent high-current performance for noise filters
- High-temperature operation up to 155 °C

DIODES

High-Power TVS, Up to 6.6 kW, Standoff with 24 V, 700 A Peak Current



[SM8S24AT](#)

- PAR[®] TVS in DO-218AC package for automotive load dump protection applications

TANTALUM CAPACITORS

Solid Tantalum Chip Capacitors, High CV Leadframeless Molded, Automotive Grade



[TP8](#)

- Smallest AEC-Q200 qualified tantalum capacitors with case sizes as small as 0603

ALUMINUM CAPACITORS

Aluminum Capacitors, Increased Vibration Resistance



[246CTI-V](#)

- High temperature, low impedance, high vibration capability
- High ripple current, long useful life

CERAMIC CAPACITORS

High Operating Temperature, Automotive Grade Leaded MLCC Capacitors



[HOTcap[®] K...H, A...R, K...R](#)

- High-reliability MLCC insert with wet build process
- High operating temperature (up to 175 °C for K...H and up to 160 °C for A...R and K...R), rated voltages: 50 V, 100 V, 200 V

TANTALUM CAPACITORS

Solid Tantalum Surface-Mount Chip Capacitors, Tantamount[®] Molded Case, Automotive Grade



[TH3](#)

- High-temperature molded tantalum capacitors, HI-TMP[®], up to 150 °C

约束系统电源

RESISTORS

Thick Film Resistors, Pulse-Proof, Excellent Stability



[CRCW-IF e3](#)

- High pulse performance up to 10 kW
- Stability $|\Delta R/R| \leq 1\%$ after 1000 h at 70 °C

ALUMINUM CAPACITORS

Aluminum Capacitors, Increased Vibration Resistance



[246CTI-V](#)

- High temperature, low impedance, high vibration capability
- High ripple current, long useful life

MOSFETs

P-Channel MOSFETs in 5 mm x 6 mm PowerPAK® SO-8L, -60 V, 52 A, 18 mΩ



[SQJ459EP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Thermally enhanced package replaces DPAK in less than half the area

RECTIFIERS

Ultrafast Rectifiers, 200 V, 1.2 A

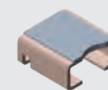


[ES07D](#)

- AEC-Q101 qualified low-profile DO-219AB (SMF) package for surface-mount applications

RESISTORS

Power Metal Strip® SMD Resistors, 4-Terminal, Low Values (Down to 0.0001 Ω)



[WSK1216](#)

- High power rating of 3 W to 5 W with TCR = 20 ppm/K
- Very low resistance values, 0.0001 Ω to 0.004 Ω, with tolerance of 1 %

INDUCTORS

Low-Profile, High-Current IHLP® Inductors

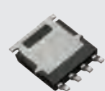


[IHLP-5050FD-5A](#)

- Excellent high-temperature performance and noise filtering

MOSFETs

N-Channel MOSFETs in 5 mm x 6 mm PowerPAK® SO-8L Rated at 40 V, 3.0 mΩ



[SQJA46EP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Thermally enhanced PowerPAK® SO-8L replaces DPAK in less than half of the area

CERAMIC CAPACITORS

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



[VJ...31X RoHS Automotive MLCCs](#)

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

DIODES

Surface-Mount PAR® TVS



[TPSMA](#)

- AEC-Q101 qualified, $T_j = 185\text{ °C}$ capability, suitable for automotive applications
- 400 W peak pulse power capability with 10/1000 μs waveform

CERAMIC CAPACITORS

High Operating Temperature, Automotive Grade Leaded MLCC Capacitors



[HOTcap® K...H, A...R, K...R](#)

- High-reliability MLCC insert with wet build process
- High operating temperature (up to 175 °C for K...H and up to 160 °C for A...R and K...R), rated voltages: 50 V, 100 V, 200 V



行人保护系统

RESISTORS

Thin Film Resistors, 4.7 Ω to 3.01 M Ω , 0402 to 1210 Case Sizes, 50 V to 200 V

[TNPW e3](#)

- Excellent stability $|\Delta R/R| \leq 0.05\%$ after 1000 h at 70 °C, 0402 to 1210 case sizes

MOSFETs

Dual N-Channel MOSFETs in 5 mm x 6 mm PowerPAK®, 12 V, 2.7 m Ω / 7.4 m Ω

[SQJ202EP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Low-voltage, high-frequency synchronous buck applications, lower switching losses

INDUCTORS

Low-Profile, High-Current IHLP® Inductors

[IHLP-2525CZ-5A](#)

- Excellent high-temperature performance for DC/DC converter input and output filters

INDUCTORS

Low-Profile, High-Current Inductors with E-Field Shield

[IHLE-2525CD-5A](#)

- High temperature operation up to 155 °C
- Integrated e-field shield eliminates need for separate shielding

MOSFETs

Dual N-Channel MOSFETs in 5 mm x 6 mm PowerPAK®, 40 V, 11 m Ω / 22 m Ω

[SQJ942EP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Optimized for high-frequency DC/DC applications, lower switching losses

RECTIFIERS

Surface-Mount Schottky Barrier Rectifiers

[MSS1P4](#)

- Very low profile - typical height of 0.65 mm
- AEC-Q101 qualified

RECTIFIERS

Schottky Diodes, 30 V, 8 A, $I_{FSM} = 150$ A

[SS8P3LHM3](#)

- Low-profile TO-277A (SMPC) package for use in low-voltage, high-frequency inverters; DC/DC converters; and polarity protection applications

MOSFETs

Dual N-Channel MOSFETs in 5 mm x 6 mm PowerPAK®, 12 V, 2.7 m Ω / 7.4 m Ω

[SQJ202EP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Low-voltage, high-frequency synchronous buck applications, lower switching losses

INDUCTORS

Low-Profile, High-Current IHLP® Inductors

[IHLP-4040DZ-5A](#)

- Excellent high-current performance for noise filters
- High-temperature operation up to 155 °C

INDUCTORS

Low-Profile, High-Current IHLP® Inductors

[IHLP-1616BZ-A1](#)

- Shielded construction, lowest DCR/ μ H in this package size
- Excellent DC/DC energy storage up to 5 MHz

CERAMIC CAPACITORS

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

[VJ...31X RoHS Automotive MLCCs](#)

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

DIODES

Trench Schottky Rectifiers in SMPC (TO-277A), High Pulse Current up to 220 A, 150 V

[V15P15HM3](#)

- Low-profile TO-277A (SMPC) package for use in low-voltage, high-frequency inverters; DC/DC converters; and polarity protection applications

主要元件 车外照明



VISHAY 优势

达到车规要求

高 SFR 元件

改进的 EMI 元件

通过认证的耐高温被动元件 ($\geq 155\text{ }^{\circ}\text{C}$)

LED 前大灯
单元



日间行车灯



LED 雾灯



LED 尾灯
及信号灯



LED 前大灯单元

MOSFETs

Dual N-Channel MOSFETs in 5 mm x 6 mm PowerPAK® SO-8L, 60 V, 12 mΩ



[SQJB60EP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Dual configuration in thermally enhanced PowerPAK® SO-8L saves board space

INDUCTORS

Low Profile, High Current Inductors with E-Field Shield



[IHLE-3232DD-5A](#)

- High temperature operation up to 155 °C
- Integrated e-field shield eliminates need for separate shielding

DIODES

Surface-Mount TRANSZORB® TVS



[P6SMB36CA](#)

- AEC-Q101 qualified
- 600 W peak pulse power capability with 10/1000 μs waveform

RESISTORS

Professional Thin Film MELF Resistors

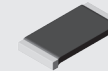


[MMB 0207](#)

- Unrivalled surge handling capability, ultimate stability over lifetime
- AEC-Q200 qualified, approved according to EN 140401-803, intrinsically sulfur-resistant, Green product

RESISTORS

Power Metal Strip® SMD Resistors, Very High Power (to 3 W), Extremely Low Resistance (to 0.0005 Ω)



[WSLP](#)

- Very high power rating, to 3 W
- Extremely low resistance values from 0.0005 Ω to 0.1 Ω and tolerance of 1 %

NON-LINEAR RESISTORS

SMD Glass-Protected NTC Thermistors



[NTCS...e3](#)

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

RECTIFIERS

High Current Density, Surface-Mount Trench MOS Barrier Schottky Rectifiers



[V8P10HM3](#)

- Ultra-low $V_F = 0.466$ V at $I_F = 4$ A
- Very low profile - typical height of 1.1 mm

INDUCTORS

Low-Profile, High-Current Coupled Inductor



[IHCL-4040DZ-5A](#)

- High-temperature operation up to 155 °C
- Shielded construction

INDUCTORS

Low-Profile, High-Current IHLP® Inductors



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

- High saturation current
- High-temperature operation up to 155 °C

INDUCTORS

Low-Profile, High-Current IHLP® Inductors



[IHLP-4040DZ-5A](#)

- Excellent high-current performance for noise filters
- High-temperature operation up to 155 °C

CERAMIC CAPACITORS

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



[VJ...31X RoHS Automotive MLCCs](#)

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

TANTALUM CAPACITORS

Solid Tantalum Surface-Mount Chip Capacitors, Tantamount® Molded Case, Automotive Grade



[TH3](#)

- High-temperature molded tantalum capacitors, HI-TMP®, up to 150 °C

日间行车灯



www.vishay.com

RESISTORS

Pulse-Proof, High-Power Thick Film Chip Resistors



[CRCW-HP e3](#)

- Excellent pulse load capability
- Enhanced power rating

MOSFETs

N-Channel MOSFETs in Small 3 mm x 3 mm SOT-23, 100 V, 1.6 A, 300 mΩ



[SQ2398ES](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- 100 V MOSFETs for switching low currents in small packages

DIODES

High Power Density Surface-Mount PAR® TVS



[TPSMP](#)

- AEC-Q101 qualified, $T_j = 185$ °C capability, suitable for automotive applications
- Very low profile - typical height of 1.0 mm

OPTOELECTRONICS

SMD PLCC-2 Plus 0.5 W White LEDs



[VLMW51Q2R3](#)

- Luminous intensity up to 51 lm in compact 3.5 x 3.5 x 1.2 mm surface-mount package
- White color coordinates of 0.33 (X) and 0.33 (Y) with 120° viewing angle

MOSFETs

Dual N-Channel MOSFETs in 5 mm x 6 mm PowerPAK SO-8L, 40 V, 33 mΩ



[SQJ946EP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Optimized for high-frequency DC/DC applications, lower switching losses

RECTIFIERS

High Current Density, Surface-Mount Trench MOS Barrier Schottky Rectifier



[V8P10HM3](#)

- Ultra-low $V_F = 0.466$ V at $I_F = 4$ A
- Very low profile - typical height of 1.1 mm

RESISTORS

Thick Film Surface-Mount Chip Resistors, Wraparound, Extremely Low Value



[RCWE](#)

- Low resistance values from 0.01 Ω to 0.976 Ω and tolerance of 1 %
- Thick film construction with 2x power capacity

NON-LINEAR RESISTORS

SMD Glass-Protected NTC Thermistors



[NTCS...e3](#)

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

MOSFETs

N-Channel MOSFETs in 3 mm x 3 mm PowerPAK® 1212 with Wettable Flanks, 80 V, 25 mΩ



[SQSA80ENW](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- For higher currents

RECTIFIERS

High-Voltage Schottky Diode, 100 V, 2 A, $T_j = 175$ °C



[SS2PH10](#)

- Very low profile - typical height of 1.0 mm
- Low forward voltage drop, low power losses

RESISTORS

Professional Thin Film MELF Resistors



[MMB 0207](#)

- Unrivaled surge handling capability, ultimate stability over lifetime
- AEC-Q200 qualified, approved according to EN 140401-803, intrinsically sulfur-resistant, Green product

CERAMIC CAPACITORS

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



[VJ...31X RoHS Automotive MLCCs](#)

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

LED 雾灯

RESISTORS

Pulse-Proof, High-Power Thick Film Chip Resistors



[CRCW-HP e3](#)

- Excellent pulse load capability
- Enhanced power rating

MOSFETs

Dual N-Channel MOSFETs in 5 mm x 6 mm PowerPAK®, 40 V, 11 mΩ / 22 mΩ



[SQJ942EP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Optimized for high-frequency DC/DC applications, lower switching losses

RECTIFIERS

2 A, 40 V Schottky Diodes



[SS2P4](#)

- Low-profile DO-220AA (SMP) package for low-voltage, high-frequency DC/DC converters; switching power supplies; free-wheeling diodes; and polarity protection

RECTIFIERS

45 V, 3 A Trench Schottky Diodes, Ultra-Low V_F



[V3PAL45](#)

- Low-profile DO-221BC (SMPA) package for low-voltage, high-frequency DC/DC converters; switching power supplies; freewheeling diodes; and polarity protection

RESISTORS

Professional Thin Film MELF Resistors



[MMB 0207](#)

- Unrivalled surge handling capability, ultimate stability over lifetime
- AEC-Q200 qualified, approved according to EN 140401-803, intrinsically sulfur-resistant, Green product

RESISTORS

Thick Film Surface Mount Chip Resistors, Wraparound, Extremely Low Values



[RCWE](#)

- Low resistance values from 0.01 Ω to 0.976 Ω and tolerance of 1 %
- Thick film construction with 2x power capacity

DIODES

Surface-Mount PAR® TVS



[TPSMA](#)

- 400 W peak pulse power capability with a 10/1000 μ s waveform

NON-LINEAR RESISTORS

SMD Glass-Protected NTC Thermistors



[NTCS...e3](#)

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

INDUCTORS

Low-Profile, High-Current IHLP® Inductors



[IHLP-2525CZ-5A](#)

- Excellent high-temperature performance for DC/DC converter input and output filters

CERAMIC CAPACITORS

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



[VJ...31X RoHS Automotive MLCCs](#)

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

INDUCTORS

Low-Profile, High-Current IHLP® Inductors



[IHLP-2020CZ-5A](#)

- Compact size and high current, low saturation for noise filtering
- Up to 155 °C continuous operation

LED 尾灯及信号灯

RESISTORS Pulse-Proof, High-Power Thick Film Chip Resistors  CRCW-HP e3 • Excellent pulse load capability • Enhanced power rating	RESISTORS Professional Thin Film MELF Resistors  MMB 0207 • Unrivaled surge handling capability, ultimate stability over lifetime • AEC-Q200 qualified, approved according to EN 140401-803, intrinsically sulfur-resistant, Green product	MOSFETs N-Channel MOSFETs in 3 mm x 3 mm PowerPAK® 1212 with Wettable Flanks  Rated at 40 V, 9 mΩ SQS484ENW • AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
RECTIFIERS Surface-Mount Schottky Barrier Rectifiers  MSS1P6HM3 • Low-profile MicroSMP package for low-voltage, high-frequency inverters; DC/DC converters; and polarity protection applications • AEC-Q101 qualified	INDUCTORS Low-Profile, High-Current IHL® Inductors  IHL-1616BZ-A1 • Shielded construction, lowest DCR/μH in this package size • Excellent DC/DC energy storage up to 5 MHz	RESISTORS Thick Film Surface Mount Chip Resistors, Wraparound, Extremely Low Value  RCWE • Low resistance values from 0.01 Ω to 0.976 Ω and tolerance of 1 % • Thick film construction with 2x power capacity
RESISTORS Power Metal Strip® SMD Resistors, Wide Terminal, 1 mΩ to 3 mΩ, 1 W  WSL0612 • Low EMF, high temperature up to 170 °C	OPTOELECTRONICS SMD High-Power, 1 W Visible LEDs (Red, Amber, and Yellow)  VLMR71AAAC • Compact, high-power SMD package: 6 x 6 x 1.5 mm • Wide viewing angle of 120°	NON-LINEAR RESISTORS SMD Glass-Protected NTC Thermistors  NTCS...e3 • Standard series, AEC-Q200 compliant • Glass-protected with soft terminations
CERAMIC CAPACITORS AEC-Q200 Qualified, Broad Range of Sizes and Working Voltages, C0G (NPO), X7R, and X8R  VJ...31X RoHS Automotive MLCCs • RoHS and Green compliant parts available • AgPd termination available for epoxy bonding	INDUCTORS Low-Profile, High-Current IHL® Inductors  IHL-2020CZ-5A • Compact size and high current, low saturation for noise filtering • Up to 155 °C continuous operation	

聚焦汽车级应用的钽电容器



TP8 MICROTAN® 小尺寸、高 CV 无引线框架电容器



TH4 耐高温模压片式电容器

对于空间紧张型应用，TP8 系列提供可达 100 μF 的容值和低至 0805 和 0603 的外壳尺寸。下表总结了 MICROTAN 系列相对于传统模压钽器件的优势。

TP8 下一代钽片式电容器

优势

业内最佳容积效率	→	更小尺寸、更高额定值
无引线框架	→	可靠性提升、ESR 下降、成本下降
L 形终端设计	→	优异的机械和电接触，焊点的肉眼检查
钽技术	→	与 MLCC 不同，无压电噪声
符合 RoHS 指令，无卤素	→	环保

为钽电容器选择应用范例

电源管理和转换

钽电容器产品提供广泛的可选外壳尺寸和符合汽车应用要求的耐高温额定值。它们可在开关模式电源中提供有效滤波，在高温 (引擎罩下) 环境中提供优异的长期稳定性和高容值性能。

能量储存

如今的汽车电路要求元件在各种负载和峰值功率下保证稳定的性能。Vishay 钽电容器为电源总线保持应用提供了低成本的能量储存解决方案。

耦合

汽车模拟电路 (包括音响、传感器和车载通讯系统应用) 需要耦合电容器来连接两个电路，使得仅有一个 AC 信号从第一个电路传到另一个电路。这里的电容器 (通常称为隔直流电容器) 可阻断直流信号，隔离两个耦合电路的直流偏压。Vishay 钽电容器可满足汽车模拟耦合应用对容值、DC 漏电流和稳定性 (相对于温度和时间变化) 的要求。

性能概述

系列	TP3	TP8	TH3	TH4
类型	低 ESR 模压 SMD	MICROTAN® 无引线框架 SMD	耐高温 (+150 °C) SMD	耐高温 (+175 °C) SMD
容值范围	0.1 μF 至 470 μF	1 μF 至 100 μF	0.33 μF 至 220 μF	10 μF 至 47 μF
电压范围	4 V 至 50 V	6.3 V 至 40 V	6.3 V 至 50 V	6.3 V 至 35 V
容值容差	$\pm 10\%$, $\pm 20\%$	$\pm 20\%$, $\pm 10\%$	$\pm 10\%$, $\pm 20\%$	$\pm 10\%$, $\pm 20\%$
外壳代码	A, B, C, D, E	M, W, R, P, A, N, T, B	A, B, C, D, E	B, C, D

主要元件

48 V_{DC} 系统

集成式
起动发电机
(48 V_{DC})



DC/DC 转换器,
双向 (48 V_{DC})



HVAC
(用于 48 V_{DC} 系统的
电动压缩机)



VISHAY 优势

80 V - 150 V 新半导体高压技术
改进的 EMI 半导体
具有最低振铃电压的二极管
耐高温 (175 °C)
最新 Power SO-8 封装,
电流可达 240 A

集成式启动发电机 (48 V_{DC})



MOSFETs

N-Channel MOSFETs in 5 mm x 6 mm PowerPAK® SO-8L Rated at 80 V, 7 mΩ

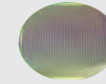


[SQJA80EP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Ultra-low R_{DS(on)}, thermally enhanced PowerPAK® 8x8L replaces D²PAK in less than half of the area

MOSFETs

N-Channel MOSFETs as Known Good Die, 100 V, 3.6 mΩ



[SQC260N10_3m6KDG](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Efficient KGD packaging allows high power density and reduced parasitics

RESISTORS

Power Metal Strip® Meter Shunt Resistor, Very Low Value (Down to 100 μΩ)



[WSMS2908](#)

- Extremely low resistance values: 100 μΩ to 1000 μΩ
- 3 W power capability with sensing terminals to mount on PCB

NON-LINEAR RESISTORS

SMD Glass-Protected NTC Thermistors



[NTCS...e3](#)

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

INDUCTORS

EMI Filters with Flat Copper Wire, SMD or Leaded Up to 260 A



[Customized EMI Filters](#)

- Customized solutions for 48 V applications, low DCR, high current

CERAMIC CAPACITORS

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



[VJ...31X RoHS Automotive MLCCs](#)

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

MODULES

MOSFET H Bridges or B6 Bridges Based on Customer Specifications



[EMIPAK 1B/2B Customized](#)

- 80 V to 100 V MOSFET power modules

FILM CAPACITORS

DC-Link Polyester Film Capacitors, Operating Temperature Up to 150 °C, High Ripple Current

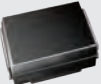


[MKT1820S](#)

- Low voltage DC-link capacitors with high-temperature capabilities
- Customized solutions for 48 V applications

RECTIFIERS

TVS Clamping Diodes, Up to 1.5 kW



[1.5 SMC Series](#)

- DO-214AB (SMCJ) package to protect ICs, MOSFETs, and signal lines of sensor units against voltage transients induced by inductive load switching and lightning

CERAMIC CAPACITORS

High Operating Temperature, Automotive Grade Leaded MLCC Capacitors



[HOTcap® K...H, A...R, K...R](#)

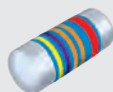
- High-reliability MLCC insert with wet build process
- High operating temperature (up to 175 °C for K...H and up to 160 °C for A...R and K...R), rated voltages: 50 V, 100 V, 200 V

DC/DC 转换器, 双向 (48 V_{DC})



RESISTORS

Professional High-Temperature Mini-MELF Resistors



[MMA 0204 HT](#)

- Operating temperature up to 175 °C, power handling of 500 mW, high surge capability
- AEC-Q200 qualified, high overall stability $|\Delta R/R| \leq 0.1 \%$, intrinsically sulfur-resistant

RESISTORS

Thin Film Resistors, 4.7 Ω to 3.01 M Ω , 0402 to 1210 Case Sizes, 50 V to 200 V



[TNPW e3](#)

- Excellent stability $|\Delta R/R| \leq 0.05 \%$ after 1000 h at 70 °C, 0402 to 1210 case sizes

INDUCTORS

Low-Profile, High-Current IHLP® Inductors

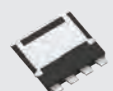


[IHLP-8787MZ-5A](#)

- Highest current composite inductor available
- High temperature operation up to 155 °C, shielded construction

MOSFETs

N-Channel MOSFETs in 8 mm x 8 mm PowerPAK® 8x8L, 80 V, 150 A, 2.7 m Ω

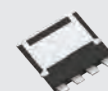


[SQJQ480E](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Ultra-low $R_{DS(on)}$, thermally enhanced package reduces board area

MOSFETs

N-Channel MOSFETs in 8 mm x 8 mm PowerPAK®, 40 V, 160 A, 1.2 m Ω

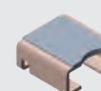


[SQJQ100EL](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Ultra-low $R_{DS(on)}$, thermally enhanced PowerPAK® 8x8L replaces D²PAK in less than half of the area

RESISTORS

Power Metal Strip® SMD Resistors, 4-Terminal, Low Values (Down to 0.0001 Ω)



[WSK1216](#)

- High power rating of 3 W to 5 W with TCR = 20 ppm/K
- Very low resistance values, 0.0001 Ω to 0.004 Ω , with tolerance of 1 %

INDUCTORS

Shielded SMD Low-Profile, High-Current IHLP® Inductors, EMI Filter, 155 °C, Low DCR



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

- Very high-current and high-temperature operation for filters

INDUCTORS

Coupled Inductors for SEPIC Converter



[IHCL-3232DZ-5A](#)

- High-temperature operation up to 155 °C
- Frequency range up to 5.0 MHz

INDUCTORS

EMI Filters with Flat Copper Wire as SMD or Leaded, Up to 260 A



[Customized EMI Filters](#)

- Customized solutions for 48 V applications, low DCR, high current

FILM CAPACITORS

DC-Link Polyester Film Capacitors, Operating Temperature Up to 150 °C, High Ripple Current



[MKT1820S](#)

- Low voltage DC-link capacitors with high-temperature capabilities
- Customized solutions for 48 V applications

FILM CAPACITORS

SMD Aluminum Capacitors, High Temperature Up to 150 °C, Low ESR



[260 CLA-V](#)

- High ripple current up to 1400 mA at 150 °C, capacitance up to 3300 μ F
- Useful life up to 2000 h at 150 °C, high vibration capability

CERAMIC CAPACITORS

X1/Y2 AC Line Rated Ceramic Disc Capacitors for Automotive Applications



[AY2](#)

- AEC-Q200 qualified, X1/Y2 safety rating according to IEC 60384-14, 3rd edition
- Proven to withstand 3000 temperature cycles from -55 °C to +125 °C

HVAC

(用于 48 V_{DC} 系统的 电动压缩机)



CERAMIC CAPACITORS

**High Operating Temperature,
Automotive Grade Leaded
MLCC Capacitors**



[HOTcap® K...H, A...R, K...R](#)

- High-reliability MLCC insert with wet build process
- High operating temperature (up to 175 °C for K...H and up to 160 °C for A...R and K...R), rated voltages: 50 V, 100 V, 200 V

NON-LINEAR RESISTORS

**SMD Glass-Protected NTC
Thermistors**



[NTCS...e3](#)

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

CAPACITORS MLCC

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



[VJ...31X RoHS Automotive MLCCs](#)

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

CERAMIC CAPACITORS

**High Operating Temperature,
Automotive Grade Leaded
MLCC Capacitors**

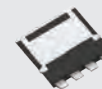


[HOTcap® K...H, A...R, K...R](#)

- High-reliability MLCC insert with wet build process
- High operating temperature (up to 175 °C for K...H and up to 160 °C for A...R and K...R), rated voltages: 50 V, 100 V, 200 V

MOSFETs

**N-Channel MOSFETs in
8 mm x 8 mm PowerPAK®
8x8L, 80 V, 150 A, 2.7 mΩ**



[SQJQ480E](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Ultra-low R_{DS(on)}, thermally enhanced package reduces board area

INDUCTORS

**Low Profile, High Current
IHL® Inductors**



[IHL-8787MZ-5A](#)

- Highest current composite inductor available
- High temperature operation up to 155 °C, shielded construction

FILM CAPACITORS

**DC-Link Polyester Film
Capacitors, Operating
Temperature Up to 150 °C,
High Ripple Current**

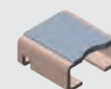


[MKT1820](#)

- Automotive general purpose capacitors with high temperature capabilities
- Capacitance up to 560 µF

RESISTORS

**Power Metal Strip® SMD
Resistors, 4-Terminal; Low
Value (Down to 0.0001 Ω)**

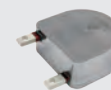


[WSK1216](#)

- High power rating of 3 W to 5 W with TCR = 20 ppm/K
- Very low resistance values, 0.0001 Ω to 0.004 Ω, with tolerance of 1 %

INDUCTORS

**Shielded EMI Filters Up to
190 A I_{DCR}, 2.2µH, Ultra-Low
DCR (0.22 mΩ)**



[IHL-2000VZ-5A](#)

- Very high-current and high-temperature operation for filters and energy storage

ALUMINUM CAPACITORS

**SMD Aluminum Capacitors,
High Temperature Up to
150 °C, Low ESR**



[260 CLA-V](#)

- High ripple current up to 1400 mA at 150 °C, capacitance up to 3300 µF
- Useful life up to 2000 h at 150 °C, high vibration capability

主要元件 混合动力汽车 (HEV)



电机驱动
(DC/AC)



VISHAY 优势

- 通过 AEC 认证
- 耐高温
- 高可靠性
- 采用 SMD 封装的新型高压被动元件
- 高压半导体
- 瞬态电压抑制能力



电机驱动 (DC/AC)



CERAMIC CAPACITORS

High Operating Temperature,
Automotive Grade Leaded
MLCC Capacitors

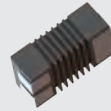


[HOTcap® K...H, A...R, K...R](#)

- High-reliability MLCC insert with wet build process
- High operating temperature (up to 175 °C for K...H and up to 160 °C for A...R and K...R), rated voltages: 50 V, 100 V, 200 V

RESISTORS

Surface-Mount Molded
Dividers, High-Voltage



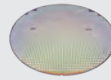
[CDMx](#)

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

*Preliminary

MODULES

Trench FS IGBT Modules

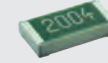


[VS-GC30C065TB](#)

- Optimized for use with FRED Pt® Gen 4 ultrafast diodes
- Low collector-to-emitter voltages, extremely low conduction losses

RESISTORS

High-Voltage Thin Film Flat
Chip Resistors, Up to 1 kV
Operating Voltage, Range =
121 kΩ to 3.01 MΩ

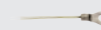


[TNPV1210 e3](#)

- 0.1 %, 0.5 %, and 1 % tolerances
- Excellent stability $|\Delta R/R| \leq 0.05$ % after 1000 h at 70 °C

NON-LINEAR RESISTORS

NTC Thermistors, Low
Thermal Gradient Lug
Sensors



[NTCALUG02A](#)

- Low thermal gradient surface temperature sensors
- High insulation voltage

RECTIFIERS

600 V, 30 A Hyperfast
Rectifiers



[VS-ETH3006SHM3](#)

- TO-263AB (D²PAK) power package optimized for fast battery charging systems and main inverter applications up to 20 kW

INDUCTORS

EMI Filters with Flat Copper
Wire as SMD or Leaded Up
to 260 A



[Customized EMI Filters](#)

- Customized solutions for 48 V applications, low DCR, high current

FILM CAPACITORS

High-Performance DC-Link
Capacitors for Automotive
Traction Applications
(EV/HEV)



[MKP1849](#)

- High voltage, high capacitance, high ripple current
- Customized upon request

FILM CAPACITORS

Metallized Polypropylene
DC-Link Film Capacitors, 450
V_{DC} to 1200 V_{DC}



[MKP1848](#)

- OBC and HEV inverter DC link
- High ripple current, capacitance up to 400 μF

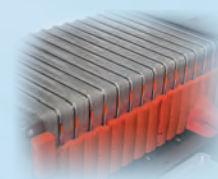
主要元件 纯电动汽车 (FEV)



电机驱动
(DC/AC)



电池管理
和 DC/DC



车载
充电器



VISHAY 优势

通过 AEC 认证

耐高温

高可靠性

采用 SMD 封装的新型高压被动元件

高压半导体

瞬态电压抑制能力

电机驱动 (DC/AC)



CERAMIC CAPACITORS

High Operating Temperature, Automotive Grade Leaded MLCC Capacitors



[HOTcap® K...H, A...R, K...R](#)

- High-reliability MLCC insert with wet build process
- High operating temperature (up to 175 °C for K...H and up to 160 °C for A...R and K...R), rated voltages: 50 V, 100 V, 200 V

NON-LINEAR RESISTORS

NTC Thermistors, Low Thermal Gradient Lug Sensors

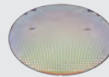


[NTCALUG02A](#)

- Low thermal gradient surface temperature sensor
- High insulation voltage

MODULES

Trench FS IGBT Modules

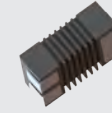


[VS-GC30C065TB](#)

- Optimized for use with FRED Pt® Gen 4 ultrafast diodes
- Low collector-to-emitter voltages, extremely low conduction losses

RESISTORS

Surface-Mount Molded Dividers, High-Voltage



[CDMx](#)

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

**Preliminary*

INDUCTORS

EMI Filters with Flat Copper Wire as SMD or Leaded Up to 260 A



[Customized EMI Filters](#)

- Customized solutions for 48 V applications, low DCR, high current

FILM CAPACITORS

High Performance DC-Link Capacitors for Automotive Traction Applications (EV/HEV)

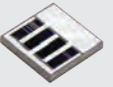


[MKP1849](#)

- High voltage, high capacitance, high ripple current

RESISTORS

Wirebondable Gate Resistors for IGBT Applications



[IGBR](#)

- Back-contact resistors for single wirebond assembly with power ratings up to 4 W
- Available case sizes from 0202 to 2010

FILM CAPACITORS

Metallized Polypropylene DC-Link Film Capacitors, 450 V_{DC} to 1000 V_{DC}



[MKP1848S](#)

- OBC and HEV inverter DC link
- High ripple current and high capacitance up to 100 µF

RECTIFIERS

600 V, 30 A Hyperfast Rectifiers



[VS-ETH3006SHM3](#)

- TO-263AB (D²PAK) power package optimized for fast battery charging systems and main inverter applications up to 20 kW

电池管理和 DC/DC

CERAMIC CAPACITORS

X1/Y2 AC Line Rated Ceramic Disc Capacitors for Automotive Applications



[AY2](#)

- AEC-Q200 qualified, X1/Y2 safety rating according to IEC 60384-14, 3rd edition
- Proven to withstand 3000 temperature cycles from -55 °C to +125 °C

RESISTORS

Long-Side Termination Thick Film Resistors, 250 mW to 2 W in 0406 to 1225 sizes, 1 Ω - 1 MΩ



[RCL e3](#)

- Operating temperature up to 155 °C, TCR = 100 ppm/K to 200 ppm/K

MOSFETs

Dual N-Channel MOSFETs in 5 mm x 6 mm PowerPAK SO-8L, 40 V, 33 mΩ



[SQJ946EP](#)

- AEC-Q101 qualified, 100 % UIS and RG tested with up to 175 °C operation
- Optimized for high-frequency DC/DC applications, lower switching losses

RESISTORS

High Pulse Load Carbon Film MELF Resistors, Pulse Handling Up to 3 kW, ESD Up to 16 kV



[CMB 0207](#)

- 1.0 W rated dissipation in MELF 0207 package
- Resistance from 2.2 Ω to 1.5 MΩ

RESISTORS

Thin Film Chip Resistors, Resistance = 1 Ω to 10 MΩ, TCR = 25 ppm/K to 50 ppm/K



[MCT 0603 AT](#)

- Tolerance = 0.5 % to 1 %
- Power rating 125 mW

RESISTORS

SMD Power Resistors, 35 W, 10 mΩ to 550 KΩ, Non-Inductive



[D2TO35](#)

- TO-263 package, TCR = 150 ppm/K
- AEC-Q200 qualified

DIODES

400 W PAR[®] TVS Diodes, Voltage = 6.8 V to 43 V, T_j = 185 °C



[TPSMA6.8](#)

- DO-214AC (SMA) package to protect ICs, MOSFETs, and signal lines of sensor units against voltage transients induced by inductive load switching and lightning

RESISTORS

Power Metal Strip[®] Battery Shunt Resistors, Very Low Values (100 μΩ, 125 μΩ, and 250 μΩ)



[WSBS8518](#)

- High power to resistor size ratio
- Low thermal EMF, < 3 μV / °C, for accurate current sensing

NON-LINEAR RESISTORS

NTC Thermistors, Mini Lug Sensors



[NTCALUG03](#)

- Robust surface temperature sensors
- AEC-Q200 compliant, UL recognized

DIODES

500 mW Zener diodes in < 0.6 mm low-profile MicroSMF package



[PLZ Series Zener Diode](#)

- Excellent stability for voltage stabilization and reference voltage generation
- AEC-Q101 qualified versions available

车载充电器



CERAMIC CAPACITORS

**X1/Y2 AC Line Rated
Ceramic Disc Capacitors for
Automotive Applications**



[AY2](#)

- AEC-Q200 qualified, X1/Y2 safety rating according to IEC 60384-14, 3rd edition
- Proven to withstand 3000 temperature cycles from -55 °C to +125 °C

RESISTORS

**High Pulse Load Carbon
Film MELF Resistors, Pulse
Handling Up to 3 kW, ESD Up
to 16 kV**



[CMB 0207](#)

- 1.0 W rated dissipation in MELF 0207 package
- Resistance from 2.2 Ω to 1.5 M Ω

RESISTORS

**SMD Power Resistors,
35 W, 10 m Ω to 550 k Ω ,
Non-Inductive**



[D2TO35](#)

- TO-263 package, TCR = 150 ppm/K
- AEC-Q200 qualified

RESISTORS

**Power Resistors, 100
W, 15 m Ω to 1 M Ω ,
Non-Inductive**



[LTO100](#)

- TO-247 package, TCR = 150 ppm/K
- AEC-Q200 qualified

RECTIFIERS

**15 A, 1200 V FRED Pt®
Hyperfast Rectifiers**



[VS-15ETU12HN3](#)

- AEC-Q101 qualified, hyperfast and soft recovery time with reduced Q_{rr} in TO-220AC package
- 175 °C maximum operating temperature

RESISTORS

**Surface-Mount Molded
Dividers, High-Voltage**



[CDMx](#)

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

**Preliminary*

RESISTORS

**Wirebondable Gate Resistor
for IGBT Applications**



[IGBR](#)

- Back-contact resistors for single wirebond assembly with power rating up to 4 W
- Available case sizes from 0202 to 2010

NON-LINEAR RESISTORS

**NTCALUG, Custom
Capabilities NTC LUG Ring
Tongue**



[NTCALUG](#)

- Minimum breakdown voltages: 500 V_{AC} Up to 3000 V_{AC}

INDUCTORS

**1 kW to 3 kW Standard Power
Planar Transformers and Custom
Power Planar Inductors**



[Planar Series](#)

- Planar and flat wire designs available for improved efficiency

INDUCTORS

**High Isolation as Press-Fit
or SMD Version Flyback
Transformers**



[Customized Transformers](#)

- Customized solutions up to kW ranges

MODULES

**Press-Fit Semiconductor
Power Modules for IGBT or
MOSFET Drives**



[EMIPAK-1B / 2B](#)

- 600 V to 650 V, or lower voltages upon customer request

FILM CAPACITORS

**Interference Suppression
Film Capacitors, MKP Radial
Potted Type**

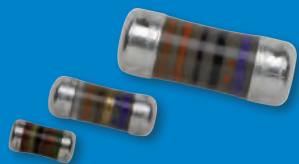


[MKP339](#)

- RFI X2 capacitor for standard across-the-line applications
- Automotive grade, AEC-Q200 compliant

聚焦 MELF 电阻器

全球最可靠及可预见的高性能薄膜电阻器



25 年来，Vishay MELF 电阻器成功满足汽车业的苛刻要求。它们提供优异的 SMD 电阻器性能，如精度、稳定性、可靠性和耐脉冲负载性能。MELF 电阻器的圆柱状结构提供相对于安装空间的最佳额定功率和耐脉冲负载性能。持续的技术进步使其长期稳定性和耐湿性不断改进，并达到 +175 °C 的高工作温度。

主要性能优势：

- 器件行为可预测
- 零缺陷理念
- 适应恶劣的工作环境
- 长期稳定性
- 耐湿性
- MM_HV 系列工作电压可达 1 kV
- 温度循环试验 (可达 2000 次循环)，无铅封装工艺
- 绝缘电压可达 500 V

认证

- EN 140401-803
- AEC-Q200

所有产品完全无铅并符合全球汽车申报物质清单 (GADSL) 规定，包括完全符合 RoHS 指令。

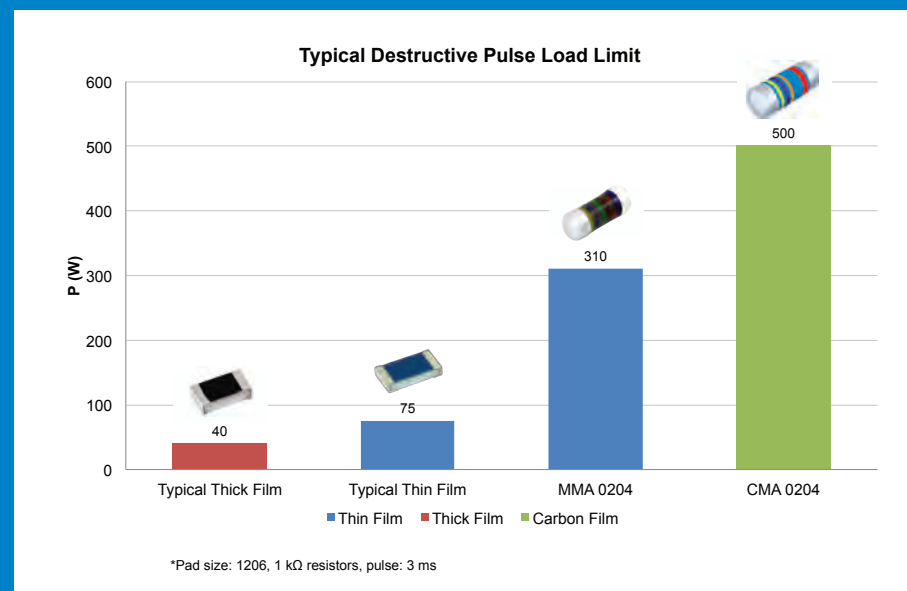
温度系数、容差及稳定性

电阻温度系数低至 ± 5 ppm/K，公差低至 $\pm 0.02\%$ 。长期稳定性使高精度 MELF 电阻器在工作 8000 小时后仍具有 $< \pm 0.05\%$ 的优异的最大阻值变化率 ($\Delta R/R$)。

耐脉冲负载性能

MELF 电阻器的另一个优点是其在各种过载条件下的可靠性。MELF 电阻器的金属膜技术和圆柱状结构使其耐脉冲负载性能优于标准厚膜和薄膜片式电阻器。另外，MELF 电阻器还可采用先进的碳膜技术，1206 焊盘尺寸的 ESD 等级可达 6 kV，2512 焊盘尺寸的防电涌等级可达 10 kV。如下图所示，厚膜扁平片式电阻器失效的脉冲负载远低于薄膜扁平片式电阻器，而薄膜和碳膜 MELF 电阻器的表现则优于这两种电阻器。

如有技术问题，请联系：melf@vishay.com





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A **WORLD OF**
SOLUTIONS

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