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AEC-QUALIFIED PRODUCTS OVERVIEW



DISCRETE SEMICONDUCTORS

Diodes / Rectifiers

- ESD Protection Diodes
- Rectifiers (Schottky, Standard / Fast Recovery, and Ultrafast Recovery)
- Sinterglass Diodes
- Small Signal Diodes (Schottky, Switching, Zener)
- Transient Voltage Suppressors (TVS)

MOSFETs

- N-Channel and P-Channel TrenchFET®

Optoelectronics

- LEDs
- Analog IR Components (Emitter / Detector)
- Analog and Digital Sensors
- Transistor Optocouplers

PASSIVE COMPONENTS

Capacitors

- Aluminum Electrolytic
- Energy Storage
- Ceramic
- Film
- Tantalum

Inductors

- IHLP®
- IHTH

Non-Linear Resistors

- NTC Thermistors
- Pt Thin Film Sensor

Resistors

- Film
- Power Metal Strip®
- Thick Film Power
- Wirewound

**AEC-QUALIFIED PRODUCTS**

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AEC-Q100 Products Table

Integrated Circuit Semiconductors, AEC-Q100 Qualified	Description / Families	Packages	RoHS-Compliant?
Analog Switches	<ul style="list-style-type: none"> 1.8 V to 5.5 V single supply operation and power down protection Dual DPDT / quad SPDT switch fits both analog and digital signals Very low on-resistance 	miniQFN16	Yes

AEC-Q101 Products Table

Discrete Semiconductors, AEC-Q101 Qualified	Description / Families	Packages	RoHS-Compliant?
ESD Protection Diodes	<ul style="list-style-type: none"> ± 30 kV contact or air discharge ESD protection Single line and dual line (bidirectional) 	SOT-23, SOT-323, SMF (DO-219AB), SOD-323, SOD-523, die products	Yes
Rectifiers	<ul style="list-style-type: none"> Avalanche (GPP) Schottky (planar / TMBS®) Standard and fast recovery (GPP / planar) Ultrafast recovery (GPP / planar / FRED Pt® / HEXFRED®) 	eSMP® Series MicroSMP (DO-219AD), SMP (DO-220AA), SMF (DO-219AB), SMPC (TO-277A), SMPA (DO-221BC), SlimSMA (DO-221AC), SlimSMAW (DO-221AD), SlimDPAK (TO-252AE), SMPD (TO-263AC), SMA (DO-214AC), SMB (DO-214AA), SMC (DO-214AB), FlatPAK 5 x 6, D²PAK (TO-263AB), DPAK (TO-252AA), ITO-220AB, ITO-220AC, TO-220AB, TO-220AC, TO-220AC 2L, TO-247 AC, TO-247AD 2L, TO-247AD 3L, TO-262AA	Yes
Sinterglass Diodes	<ul style="list-style-type: none"> Fast rectification, high switching avalanche-rated energy, glass passivated junction, hermetically sealed 	SOD-57, SOD-64 (depending on part numbers)	Yes
Small Signal Diodes (Schottky, Switching, Zener)	<ul style="list-style-type: none"> Industry-standard part numbers Planar technology T_j max = 150 °C to 175 °C (125 °C for some Schottky diodes) Very low leakage current 2 % / 5 % Zener voltage tolerance Low profile / flat lead and gullwing lead surface-mount packages 	SOT-23, SOD-123, SOD-323, SOD-523, DO-214AC (BZG03/04/05), SMF (DO-219AB), MicroSMF (DO-219AC)	Yes
TVS	<ul style="list-style-type: none"> PAR® TVS (for automotive applications) TRANSZORB® TVS 	eSMP® Series MicroSMP (DO-219AD), SMP (DO-220AA), SMPC (TO-277A), SlimSMA (DO-221AC), SlimSMAW (DO-221AD), SMA (DO-214AC), SMB (DO-214AA), SMC (DO-214AB), DO-218AB, DO-218AC, axial	Yes



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AEC-Q101 Products Table

Discrete Semiconductors, AEC-Q101 Qualified	Description / Families	Packages	RoHS-Compliant?
MOSFETs	<p>N-Channel and P-Channel TrenchFET® Power MOSFETs</p> <ul style="list-style-type: none"> Voltages from 300 V (n-channel) to -200 V (p-channel) Low on-resistance $R_{DS(on)}$ Efficient switching / PWM Robust in avalanche and 100 % tested Standard and logic level gate families ESD protected gate option Temperature rating of 175 °C 	<p>Through-Hole</p> <ul style="list-style-type: none"> TO-220, TO-262, TO-247 <p>Surface-Mount PowerPAK®</p> <ul style="list-style-type: none"> PowerPAK® 8x8L (8 mm x 8 mm) PowerPAK® SO-8L (5 mm x 6 mm) PowerPAK® 1212-8 (3 mm x 3 mm) PowerPAK® SC-70 (2 mm x 2 mm) <p>Surface-Mount Conventional</p> <ul style="list-style-type: none"> SOIC-8, TSOP-6, SOT-23, SC-70, TO-252, TO-252 reverse lead, TO-263, TO-263-7L 	Yes
Optoelectronics	<ul style="list-style-type: none"> LEDs: full color palette including white Infrared emitters: 850 nm, 870 nm, 890 nm, and 940 nm Photodiodes, phototransistors - peak sensitivity matches emitters: 400 nm to 1100 nm, 790 nm to 970 nm Ambient light sensors: peak sensitivity of 540 nm Optical sensors: reflective sensors, transmissive sensors Digital sensors: ambient light, proximity sensors, gesture sensors Optocouplers: phototransistor couplers, 5 mA, 1 mA 	<p>PLCC-2, PLCC-2 Plus, PLCC-4, PLCC-4 multicolor, PLCC-6, Little Star®, TELUX, 1206, 0805, 0603, 1.8 mm gullwing, reverse gullwing, QFN, MiniLED, SMD, custom packages, SOP-4</p>	Yes
Thyristors, MOAT Diodes	<ul style="list-style-type: none"> Range: 1200 V to 1600 V T_j max = 125 °C to 150 °C 	<p>Through-Hole</p> <ul style="list-style-type: none"> TO-220, TO-262, TO-247 <p>Surface-Mount PowerPAK®</p> <ul style="list-style-type: none"> D2PAK (TO-263AB), D²PAK (TO-252AA) 	Yes



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AEC-Q200 Products Table

Passive Components, AEC-Q200 Qualified	Description / Families	Packages	RoHS-Compliant?
CAPACITORS			
Aluminum Electrolytic	Axial		
	<ul style="list-style-type: none"> Very long lifetime, high temperature and ripple current 	120 ATC	Yes
	Radial		
	<ul style="list-style-type: none"> High vibration capability, temperature up to 150 °C 	246 RTI-V, 250 RMI-V, 260 RLA-V	Yes
	<ul style="list-style-type: none"> Very long lifetime, high ripple current, high temperature up to 150 °C, low ESR 	160 RLA, 146 RTI, 140 RTM, 150 RMI, 152 RMH	Yes
	SMD		
<ul style="list-style-type: none"> Very long lifetime, high ripple current, high temperature up to 150 °C, low ESR 	160 CLA, 146 CTI, 140 CRH, 150 CRZ	Yes	
<ul style="list-style-type: none"> High vibration capability, temperature up to 150 °C 	260 CLA-V, 246 CTI-V, 250 CRZ-V	Yes	
Energy Storage	Radial		
	<ul style="list-style-type: none"> Energy and power version with high stability, long lifetime Ruggedized for high humidity operation, long lifetime 	220 EDLC, 230 EDLC-HV 225 EDLC-R, 235 EDLC-HVR	Yes
Ceramic	Ceramic Single Layer		
	AY2 Series, X1 / Y2 Safety Capacitors <ul style="list-style-type: none"> Radial leaded, straight leads Tin-plated, copper-clad steel wire, 0.6 mm Temperature cycle: 3000 cycles (-55 °C to +125 °C) 	<ul style="list-style-type: none"> Safety Class X1, 440 V_{AC} (IEC 60384-14.4) Safety Class Y2, 300 V_{AC} (IEC 60384-14.4) Lead spacing of 5 mm, 7.5 mm, and 10.0 mm 	Yes
	Leaded MLCCs		
	A..R Series, K...R Series <ul style="list-style-type: none"> Axial, radial crimped, or straight leads Tin-plated, copper-clad steel wire, 0.5 mm 	<ul style="list-style-type: none"> 50 V_{DC}, 100 V_{DC}, 200 V_{DC} Class 1 and Class 2 ceramic Lead spacing of 2.5 mm and 5.0 mm 	Yes
	HOTCap® (K...H Series) <ul style="list-style-type: none"> Radial crimped or straight leads Tin-plated copper Maximum operating temperature: 200 °C 	<ul style="list-style-type: none"> 50 V_{DC}, 100 V_{DC}, 200 V_{DC} Class 1 and Class 2 ceramic Lead spacing of 2.5 mm and 5.0 mm 	Yes
	Surface-Mount MLCCs		
	<ul style="list-style-type: none"> Matte tin terminations, including polymer layer (soft- / flex-) option AgPd terminations for conductive epoxy assembly C0G (NP0), X7R, and X8R Size 0402 up to 1812 with ranges from 16 V to 3000 V Excellent ESD performance: <ul style="list-style-type: none"> 0603 in X7R (10 nF / 100 V) 25 kV ESD AD 0805 and 1206 in X7R up to 25 kV ESD AD Vishay GREEN series: no use of RoHS and ELV exemptions 	<ul style="list-style-type: none"> SMD (GA...31G Automotive Series GREEN for soldering) SMD (GA...34G Automotive Series GREEN for silver epoxy bonding) SMD (VJ...31X RoHS Automotive Series) SMD (VJ...31 and VJ...34 Automotive Series) 	Yes Yes with exemptions Available
X1 / Y2 and X2 Safety Capacitors <ul style="list-style-type: none"> C0G (NP0) and X7R Case sizes: 2008 and 2220 250 V_{AC} rated voltage 	<ul style="list-style-type: none"> SMD (VJ Safety Certified Capacitors (C0G) (NP0)) SMD (VJ Safety Certified Capacitors X7R) 	Yes	



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AEC-Q200 Products Table

Passive Components, AEC-Q200 Qualified	Description / Families	Packages	RoHS-Compliant?
CAPACITORS			
Film	DC-Link		
	MKP1848H • THB 85 °C / 85 % RH / 1000 h at U _{NDC} MKP1848 • Standard	Polypropylene film, radial 27.5 mm to 52.5 mm pitch	Yes
	Safety Capacitors / EMI Suppression		
	THB • F339X2 305 V _{AC} , X2 Class, THB Grade IIB • F340Y2 305 V _{AC} , Y2 Class, THB Grade IIIB Other • MKP339X2 310 V _{AC} , X2 Class • MKP3386Y2 300 V _{AC} , Y2 Class	Polypropylene film, radial 7.5 mm to 37.5 mm pitch	
	• F1772X2 310 V _{AC} , X2 Class (AEC-Q200 for C ≤ 470 nF)	Polyester film, radial 10 mm to 27.5 mm pitch	
	AC and Pulse / Resonance		
	MKP385e • THB 60 °C / 93 % RH / 56 days at U _{NDC} and T _J max = 125 °C	Polypropylene film, radial 15 mm to 52.5 mm pitch	
	General Purpose for 48 V Boardnet Applications		
MKT1820 • Low voltage DC-Link, up to 27.5 mm pitch MKT3770 • DC-filter, 5 mm pitch	Polyester film, radial 5 mm to 27.5 mm pitch		
Tantalum	TP3 • High performance, low ESR	Cases A, B, C, D, and E	Yes
	TP8 • Small case sizes, maximum capacitance	Cases: 0603, 0805, low profile A and B	Yes
	TH3 • High temperature: 150 °C	Cases A, B, C, D, and E	Yes
	TH4 • High temperature: 175 °C	Cases B, C, and D	Yes



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Passive Components, AEC-Q200 Qualified	Description / Families	Packages	RoHS-Compliant?
INDUCTORS			
Power Inductors	IHLP® <ul style="list-style-type: none"> Low profile, high current, surface-mount Shielded construction Handles high transient current spikes without hard saturation Ultra low buzz noise due to composite construction 	<ul style="list-style-type: none"> 1212 to 6767 (-A1 and -1A suffix) <ul style="list-style-type: none"> Frequency range to 5 MHz 1212 to 8787 (-5A suffix) <ul style="list-style-type: none"> High operating temperature up to +155 °C 1212 to 6767 (-8A suffix) <ul style="list-style-type: none"> High operating temperature up to +180 °C 	Yes
	IHTH <ul style="list-style-type: none"> High current, through-hole High operating temperature range: -55 °C to +155 °C Shielded construction Handles high transient current spikes without hard saturation Ultra low buzz noise due to composite construction 	0750, 1125	Yes
	IHLM <ul style="list-style-type: none"> Low profile, high current, surface-mount Encapsulated body offers improved environmental protection Shielded construction Handles high transient current spikes without hard saturation Ultra low buzz noise due to composite construction 	2525	Yes
	IHLE® <ul style="list-style-type: none"> Low profile, high current, surface-mount Integrated E-shield for maximum EMI reduction High operating temperature range: -55 °C to +155 °C Shielded construction Handles high transient current spikes without hard saturation Ultra low buzz noise due to composite construction 	2525, 3232, 4040, 5050	Yes
	IHCL <ul style="list-style-type: none"> Low profile, high current, surface-mount coupled inductor High operating temperature range: -55 °C to +155 °C Shielded construction Handles high transient current spikes without hard saturation Ultra low buzz noise due to composite construction 	2525, 3232, 4040	Yes
	IHLD <ul style="list-style-type: none"> Low profile, high current, dual inductor Two inductors in one package High operating temperature range: -55 °C to +155 °C Shielded construction Handles high transient current spikes without hard saturation Ultra low buzz noise due to composite construction 	3232, 4032	Yes



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Passive Components, AEC-Q200 Qualified	Description / Families	Packages	RoHS-Compliant?
NON-LINEAR RESISTORS*			
NTC Thermistors	NTCS <ul style="list-style-type: none"> Tolerance on R₂₅ down to 1 % Suitable for wave or reflow soldering NiSn terminations Fully glass-coated and protected 	SMD sizes: 0402, 0603, 0805	Yes
	NTCAFLEX05 Series <ul style="list-style-type: none"> Flex foil sensors Suitable for narrow-space applications Insulated and humidity-resistant 	25 mm x 6 mm	Yes
	NTCALUG		
	NTCALUG01A Series <ul style="list-style-type: none"> Standard lug sensors Insulated PTFE cable 	Stud screw M3, Ø7.1 mm	Yes
	NTCALUG02A Series <ul style="list-style-type: none"> Low gradient lug sensors 	Stud screw M3, Ø8.5 mm	Yes
	NTCALUG03A Series <ul style="list-style-type: none"> Small size connector and small lug ring tongue terminal 	Stud screw M2, M3, Ø5.5 mm	Yes
	NTCLE203E3...SB0 <ul style="list-style-type: none"> 2-point radial-leaded sensor 0.5 °C basic accuracy 	Radial-leaded, 4.2 mm	Yes
	NTCLE300E3...SB <ul style="list-style-type: none"> 2-point mini-chip sensor Insulated flexible leads 	Radial-leaded, 2.4 mm	Yes
	NTCLE301E4 <ul style="list-style-type: none"> Mini-chip sensor Insulated flexible SP leads 	Radial-leaded, 2.4 mm	Yes
	NTCLE305E4...SB <ul style="list-style-type: none"> 2-point micro-chip sensor Insulated leads Fast response time: 0.7 s 	Radial-leaded, 1.6 mm	Yes
Thin Film RTD	PTS-AT <ul style="list-style-type: none"> Platinum sensors Class F0.3, F0.6 in 100 Ω, 500 Ω, or 1000 Ω High temperature: 175 °C 	SMD 0603, 0805, 1206	Yes
TFPT	<ul style="list-style-type: none"> Nickel sensor in 100 Ω to 10 kΩ range 0.5 %, 1.0 %, and 5 % tolerance 	SMD 0603, 0805, 1206	Yes

*Flame retardance test may not be applicable to some resistor technologies. Contact Vishay Sales or Product Marketing for additional information



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Passive Components, AEC-Q200 Qualified	Description / Families	Packages	RoHS-Compliant?
RESISTORS*			
Film	Leaded Packages		
	MBA / SMA0204 (10 Ω to 301 kΩ)	Leaded	Yes
	MBB / SMA0207 (10 Ω to 7.5 MΩ)		Yes
	MBE / SMA0414 (10 Ω to 22 MΩ)		Yes
	PR01, PR02, WK2, WR4		Yes
	VR25, VR37		Yes
	Surface-Mount Packages		
	Carbon film MELF (CMA, CMB)	Most SMD packages available	Yes
	MELF (SMM, MMA, MMB, MMU)		Yes
	Thin film (ACAS AT, MC AT, MC HP, MCW, NCW, TNPW e3, TNPU e3, TNPV e3)		Yes
	WSF (10 Ω to 100 kΩ)		Available
	D / CRCW e3		Yes
	CRCW-HP e3		Yes
	CRCW-HR e3		Yes
	CRCW-IF e3		Yes
	D/CRCW-P e3		Yes
	PAT, PATT, MPMA, NOMCA		Yes
	RCA e3		Yes
	RCA-HP e3		Yes
	RCA-IF e3		Yes
	RCA-LS e3		Yes
	RCC e3		Yes
	RCL e3		Yes
	RCS e3		Yes
	RCV e3		Yes
	RCWE, RCWL		Available

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Passive Components, AEC-Q200 Qualified	Description / Families	Packages	RoHS-Compliant?
RESISTORS*			
Power Metal Strip®	WSBS	8518, 5216	Yes
	WSBM	8518	Yes
	WSHM / WSHP	2818	Yes
	WSK	0612, 2512	Available
	WSK	1216	Yes
	WSL	0603, 0805, 1020, 1206, 2010, 2512, 2816, 3637	Available
	WSL	2726, 3921, 4026, 5931	Yes
	WSLF	2512	Yes
	WSL High Power	WSLxxx...18	Available
	WSLP	0603, 0805, 1206, 2010, 2512	Available
	WSLP	2726, 3921, 4026, 5931	Yes
	WSLS	2512	
	WSLT	2010...18, 2512	Available
	WSLT	2726, 3921, 4026, 5931	Yes
	WSMS	2908	Yes
	WSR	4527 (2, 3, and 5 {high power})	Available

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Passive Components, AEC-Q200 Qualified		Packages	RoHS-Compliant?
RESISTORS*			
Thick Film Power	D2TO20 and D2TO35 <ul style="list-style-type: none"> SMD power resistor, 20 W and 35 W at 25 °C Wide resistance range: 0.01 Ω to 550 kΩ Non-inductive 	D ² PAK (TO-263)	Yes
	LPSA300, LPSA600, and LPSA800 <ul style="list-style-type: none"> Power resistors, 300 W to 800 W at 85 °C, heatsink-mounted Up to 1500 J for 0.5 s pulse and 12 kV_{RMS} dielectric strength Broad resistance range: 0.3 Ω to 900 kΩ Non-inductive 	51 mm x 60 mm	Yes
	LTO100 <ul style="list-style-type: none"> Power resistor, 100 W at 25 °C Wide resistance range: 0.015 Ω to 1 MΩ Non-inductive 	TO-247	Yes
	LTO 150 <ul style="list-style-type: none"> Power resistors, 150 W at 45 °C Broad resistance range: 0.03 Ω to 1.3 MΩ Non-inductive 	TO-247	Yes
	DTO25 and DTO35 <ul style="list-style-type: none"> SMD power resistor, 25 W and 35 W at 25 °C, up to 4.5 W on PCB Wide resistance range: 0.016 Ω to 700 kΩ Non-inductive 	DPAK (TO-252)	Yes
Wirewound	AC-AT	Leaded	Yes
	WSC, WSN	2515 to 7532 packaging (inch)	Available

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