

HVAC Climate Control

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HVAC Climate Control

VISHAY Components used for HVAC include:

- Power MOSFETS
 - Diodes and Rectifiers
 - Capacitors
 - Resistors
 - Visible LED'S
 - Optical Encoders
 - Customized Comfort Sensors
 - Inductors/EMI Filters
 - Transient/Overvoltage Protection Devices
 - ESD Protection Devices
 - Reverse Polarity Protection Devices
 - LDOs
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Application Overview

Automobile manufacturers have offered air conditioning in luxury cars for over 40 years. Today, virtually all cars are available with air conditioning. Basic air conditioning has evolved over the years into a complex climate control system with many advanced features such as multi-zone air distribution and sensing, and intelligent interior sunlight sensing to optimize interior air temperature. Vishay components for climate control cover a broad range of functions, including power supply (linear regulation, SMPS), backlighting, switching, optical sensing, and user interface.

HVAC Climate Control : Air Flow Control, Blower Control

Alu Elcaps

Product Name	Status	Description	Features	Package	Q-Level
140RTM		Aluminum capacitors, radial; high temperature, miniature;	22 μ F - 4700 μ F; Life@125°C = 4000h	TH / Radial max.18x31mm	AEC Q200
150CRZ		Aluminum capacitors, SMD (chip); low Z, Pb-free;	4,7...10000 μ F, Life@105°C 10000h	SMD max 18x18x21	AEC Q200
150RMI		Aluminum capacitors, radial miniature; low impedance;	100 μ F - 6800 μ F; Life@105°C = 10000h	TH / Radial max.18mm x 31mm	AEC Q200
153CRV		Aluminum capacitors, SMD (chip); long life, vertical, Pb-free;	0.47 μ F - 1000 μ F; Life@105°C 3000h	SMD max.10x10x14	

Inductors

Product Name	Status	Description	Features	Package	Q-Level
IHLP5050FD-A1		Low profile, high current, shielded; low DCR, high saturation;	0.1 μ H - 10 μ H; IDC = 120A - 15.5A	SMD 5050	
IHTH0750IZ-5A	NEW	Very high current, ultra-low DCR; fully shielded inductor;	0.47 μ H - 10 μ H; IDC = 80A - 20A	TH / Radial 0750	

MOSFETs

Product Name	Status	Description	Features	Package	Q-Level
SUM110N05-06L		N-Channel, low gate charge; low thermal resistance;	N-Channel; 55V; rDS(on) = 0.060Ohms;	SMD TO-252	
SUV90N06-05		N-Channel, low gate charge; low thermal resistance;	N-Channel; 60V; rDS(on) = 0.0052Ohms;	TH / Radial TO-262	

Schottky Rectifier

Product Name	Status	Description	Features	Package	Q-Level
MBR(F)2545CT		very high forward surge current;	VRRM = 35V - 60V; IF=15A/per Diode; IFSM = 150A	TH / Radial TO-220AB; ITO-220AB	
MBR(F)2550CT		Very low VF, dual, AEC Q-101 qualified; very high forward surge current;	VRRM = 35V - 60V; IF=15A/per Diode; IFSM = 150A	TH / Radial TO-220AB; ITO-220AB	
MBRB2545CT		Very low VF, dual, AEC Q-101 qualified; very high forward surge current;	VRRM = 35V - 60V; IF=15A/per Diode; IFSM = 150A	SMD TO-263	
MBRB2550CT		Very low VF, dual, AEC Q-101 qualified; very high forward surge current;	VRRM = 35V - 60V; IF=15A/per Diode; IFSM = 150A	SMD TO-263	

Shunt Resistors

Product Name	Status	Description	Features	Package	Q-Level
WSHM2818		Power Metal Strip Shunts Very High Power- Small Size Low Thermal EMF	R001...R1, 1% TCR <= 75ppm; P70 = 7W	SMD 2818	AEC Q200
WSL2726	NEW	Power Metal Strip Shunt 4-Term- Design For Accurate Sensing Very Low R Value; Very Low TCR;	R0003...R005; 1% TCR <= 75ppm; P70 = 3W	SMD 2726	AEC Q200
WSL2816		Power Metal Strip Shunts Very Low R-Value; Very Low TCR; Low Thermal EMF;	R01...R1, 1%, TCR <= 75ppm; P70 = 2 ... 3W	SMD 2816	AEC Q200
WSL3921		Power Metal Strip Shunts; very low R-value, very low TCR; low thermal EMF	R0002 - R04; 1 %; TCR <= +-75ppm; P70 = 3W	SMD 3921	AEC Q200

Product Name	Status	Description	Features	Package	Q-Level
WSLT2512		Power Metal Strip Shunts; High Temp. (275°C); Low TCR; low thermal EMF	R01 - R50; 1%; TCR +- 75ppm; P70 = 1W	SMD 2512	AEC Q200

Thick Film Resistors

Product Name	Status	Description	Features	Package	Q-Level
CRCW0603		Bulk Resistors, pulse resistant; good long term stability;	1R - 10MΩ; 1%; TCR = 100	SMD 0603	
CRWC0805		Bulk Resistors, pulse resistant; good long term stability;	1R - 10MΩ; 1%; TCR = 100	SMD 0603	

HVAC Climate Control : Air Flow Control, Vent Control

Alu Elcaps

Product Name	Status	Description	Features	Package	Q-Level
146CTI		Aluminum Capacitors; SMD (Chip); low impedance, high temperature	22...4700 μ F, Life@125°C = 6000h	SMD max 18x18x21	AEC Q200
146RTI		Aluminum Capacitors; Radial; low impedance, high temperature	68...6800 μ F, Life@125°C = 6000h	TH / Radial max18x35mm	AEC Q200
150CRZ		Aluminum capacitors, SMD (chip); low Z, Pb-free;	4,7...10000 μ F, Life@105°C 10000h	SMD max 18x18x21	AEC Q200
153CRV		Aluminum capacitors, SMD (chip); long life, vertical, Pb-free;	0.47 μ F - 1000 μ F; Life@105°C 3000h	SMD max.10x10x14	

Ceramic Capacitors

Product Name	Status	Description	Features	Package	Q-Level
VJ...31/VJ...34 Automotive MLCC		SMD Ceramic Capacitor Solutions High Voltage Applications Boardflex-Sensitive Applications	1.0pF...1 μ F 10Vdc ... 3000Vdc;	SMD 0402...1812	

MOSFETs

Product Name	Status	Description	Features	Package	Q-Level
SQ7415EN	NEW	Fully AEC Q-101 qualified; low thermal resistance, fast switching;	P-Channel; rDS(on) = 0.065Ohms;	SMD PowerPAK1212-8	AEC Q101
SQ9945AEY	NEW	Fully AEC Q-101 qualified, Tj = 175 °C; dual n-channel, 60 V; for H-bridge motor application	Dual N-Channel; 60V; rDS(on) = 0.08Ohms	SMD SO-8	AEC Q101

Shunt Resistors

Product Name	Status	Description	Features	Package	Q-Level
WSL0603		Power Metal Strip Shunts; Very Low R Value; Very Low TCR; Low Thermal EMF;	R01 - R1; 1 % TCR \pm 75ppm P70 = 0.1W	SMD 0603	AEC Q200
WSL0805		Power Metal Strip Shunts; Very Low R Value; Very Low TCR; Low Thermal EMF;	R005 - R2; 1 %; TCR \pm 75ppm P70 = 0.125W	SMD 0805	AEC Q200

HVAC Climate Control : Power Supply, EMI Filtering

Inductors

Product Name	Status	Description	Features	Package	Q-Level
IHLP2525EZ-01		Low profile, high current; high transient current spike capable; shielded, Low DCR	0.56 - 10 μ H; IDC=12A-4.5A	SMD 2525	
IHLP4040DZ-A1		Low profile, high current; high transient current spike capable; shielded, Low DCR	0.19 - 10 μ H; IDC=90A-12A	SMD 4040	
IHLP5050FD-A1		Low profile, high current; high transient current spike capable; shielded, Low DCR	0.1 μ H - 10 μ H; IDC = 120A - 15.5A	SMD 5050	

HVAC Climate Control : Power Supply, ESD Protection

Ceramic Capacitors

Product Name	Status	Description	Features	Package	Q-Level
VJ...31/VJ...34 Automotive MLCC		SMD Ceramic Capacitor Solutions High Voltage Applications Boardflex-Sensitive Applications	1.0pF...1µF 10Vdc ... 3000Vdc	SMD 0402...1812	

Small-Signal Diodes

Product Name	Status	Description	Features	Package	Q-Level
GL05T		Low-capacitance ESD protection; data line protection;	Ppk = 300W; VRRM = 70V; Ippm = 17A	SMD SOT-23	
GL24T		Low-capacitance ESD protection; data line protection;	Ppk = 300W; VRRM = 70V; Ippm = 5A	SMD SOT-23	

HVAC Climate Control : Power Supply, Quiescent Current Switchoff

MOSFETs

Product Name	Status	Description	Features	Package	Q-Level
SUD50P04-09L		P-Channel, Tj = 175 °C power MOSFET; low leakage current;	P-Channel; 40V; rDS(on) = 0.0094Ohms;	SMD TO-252	
SUD50P06-15L		P-Channel, Tj = 175 °C power MOSFET; low leakage current;	P-Channel; 60V; rDS(on) = 0.150Ohms;	SMD TO-252	
SUM110P04-05		P-Ch MOSFET, 12-V/24-V Boardnet (KL15); high-side power switch, stand-by mode;	P-Channel; 40V; rDS(on) = 0.005Ohms;	SMD TO-263	
SUM110P06-07L		P-Ch MOSFET, 12-V/24-V Boardnet (KL15); high-side power switch, stand-by mode;	P-Channel; 60V; rDS(on) = 0.0069Ohms;	SMD TO-263	

HVAC Climate Control : Power Supply, Reverse Polarity Protection

MOSFETs

Product Name	Status	Description	Features	Package	Q-Level
SQ2309ES	NEW	P-Channel; MOSFET for general applications; IC Protection	N-Channel; 60V; rDS(on) = 0.335Ω@-10V	SMD TO-236(SOT-23)	AEC-Q
SQ7415EN	NEW	Fully AEC Q-101 qualified; low thermal resistance, fast switching;	P-Channel; rDS(on) = 0.0650hms;	SMD PowerPAK1212-8	AEC Q101
SUD19P06-60L		P-Channel, Tj = 175 °C power MOSFET; low leakage current;	P-Channel; rDS(on) = 0.0600hms;	SMD TO-252	

Schottky Diodes

Product Name	Status	Description	Features	Package	Q-Level
SS3P6L	NEW	Low profile, low VF; high current density;	VF = 0.478 V	SMD TO-277A(SMPC)	
SS5P5	NEW	Low profile, low VF; high current density;	VF = 0.560 V	SMD TO-277A(SMPC)	

TVS Diodes

Product Name	Status	Description	Features	Package	Q-Level
SM5 A27		High surge, low VF, low leakage; high reliability; broad range of breakdown voltages	VBR = 27V; IFSM = 500A;	SMD DO-218 AB	
SM8 A27		High surge, low VF, low leakage; high reliability; broad range of breakdown voltages	VBR = 27V; IFSM = 700A;	SMD DO-218 AB	
SM8S24 A		High surge, low VF, low leakage; high reliability; broad range of breakdown voltages	Ippm = 38.9A; IFSM = 700A	SMD DO-218 AB	

HVAC Climate Control : Power Supply, Switch Mode Power Supply

Alu Elcaps

Product Name	Status	Description	Features	Package	Q-Level
146CTI		Aluminum Capacitors; SMD (Chip); low impedance, high temperature	22...4700 μ F, Life@125°C = 6000h	SMD max 18x18x21	AEC Q200
146RTI		Aluminum Capacitors; Radial; low impedance, high temperature	68...6800 μ F, Life@125°C = 6000h	TH / Radial max18x35mm	AEC Q200
150CRZ		Aluminum capacitors, SMD (chip); low Z, Pb-free;	4,7...10000 μ F, Life@105°C 10000h	SMD max 18x18x21	AEC Q200
153CRV		Aluminum capacitors, SMD (chip); long life, vertical, Pb-free;	0.47 μ F - 1000 μ F; Life@105°C 3000h	SMD max.10x10x14	

Ceramic Capacitors

Product Name	Status	Description	Features	Package	Q-Level
VJ...31/VJ...34 Automotive MLCC		SMD Ceramic Capacitor Solutions High Voltage Applications Boardflex-Sensitive Applications	1.0pF...1 μ F 10Vdc ... 3000Vdc	SMD 0402...1812	

Current Sense Shunt Resistors

Product Name	Status	Description	Features	Package	Q-Level
WSF2012		Power metal film, high resistance; molded construction;	5R-1.43K Ω ; 1%; TCR100	SMD 2012	
WSF2515		Power metal film, high resistance; molded construction;	10R - 10K Ω ; 1%; TCR = 10	SMD 2515	AEC Q200
WSL0603		Power Metal Strip Shunts; Very Low R Value; Very Low TCR; Low Thermal EMF;	R01 - R1; 1 %; TCR +- 75ppm; P70 = 0.1W	SMD 0603	AEC Q200
WSL0805		Power Metal Strip Shunts;; Very Low R Value; Very Low TCR; Low Thermal EMF;	R005 - R2; 1 %; TCR \pm 75ppm P70 = 0.125W	SMD 0805	AEC Q200
WSL1206		Power Metal Strip Shunts; Very Low R Value; Very Low TCR; Low Thermal EMF;	R001 - R2; 1 %; TCR \pm 75ppm P70 = 0.25W	SMD 1206	AEC Q200
WSL2010		Power Metal Strip Shunts; Very Low R Value; Very Low TCR; low thermal EMF;	R001 - R5; 1 %; TCR \pm 75ppm P70 = 0.5W	SMD 2010	AEC Q200
WSL2512		Power Metal Strip Shunts; Very Low R Value; Very Low TCR; low thermal EMF;	R0005 - R5; 1 %; TCR \pm 75ppm P70 = 1W	SMD 2512	AEC Q200

Inductors

Product Name	Status	Description	Features	Package	Q-Level
IHLP1616BZ-A1		Low profile, high current, shielded; low DCR, high saturation;	0.1 - 2.2 μ H; IDC=35A - 6A	SMD 1616	
IHLP2525AH-A1		Low profile, high current, shielded; low DCR, high saturation;	0.1 - 4.7 μ H; IDC=40A - 8A	SMD 2525	
IHLP2525CZ-A1		Low profile, high current, shielded; low DCR, high saturation;	0.1 - 10 μ H; IDC=60A - 7A	SMD 2525	

MOSFETs

Product Name	Status	Description	Features	Package	Q-Level
Si2308DS		N-Channel MOSFET for 12-V Boardnet SMPS; buck configuration;	N-Channel; 60V; rDS(on) = 0.16Ohms	SMD TO-236(SOT-23)	
Si2318CDS	NEW	N-Channel 40V (D-S) MOSFET	rDS(on) = 0.042Ohms	SMD	

Product Name	Status	Description	Features	Package	Q-Level
			ID=5.6	TO-236(SOT-23)	
SQ2328ES		N-Channel MOSFET for 12-V Boardnet SMPS; buck configuration;	N-Channel; 100V; rDS(on) = 0.3Ohms	SMD TO-236(SOT-23)	

Schottky Diodes

Product Name	Status	Description	Features	Package	Q-Level
SS3P4L	NEW	Low VF, high current density;	VF = 0.335 V	SMD TO-277A(SMPC)	
SS3P6L	NEW	Low VF, high current density;	VF = 0.478 V	SMD TO-277A(SMPC)	

HVAC Climate Control : Sensors, Ambient Light Sensors

Optical

Product Name	Status	Description	Features	Package	Q-Level
TEMD5510FX01		Ambient Light Sensor Top View SMD analog photodiode output	540nm 1.0uA at 100 Lux CIE	Top View	AECQ
TEMD6010FSX1		Ambient Light sensor SMD 0805 analog photodiode output	540nm 0.04uA at 100 Lux CIE	SMD 1206	AECQ
TEMD6200FX01		Ambient Light sensor SMD 0805 analog photodiode output	540nm 0.04uA at 100 Lux CIE	SMD 0805	AECQ
TEMT6000FX01		Ambient Light sensor SMD 1206 analog photodiode output	570nm 50uA at 100 Lux CIE	SMD 1206	AECQ
TEMT6200FX01		Ambient Light sensor SMD 0805 analog photodiode output	550nm 50uA at 110 Lux CIE	SMD 0805	AECQ

HVAC Climate Control : Sensors, Compartment Temperature

Thermistor

Product Name	Status	Description	Features	Package	Q-Level
1T1002-1		Small dimension, conformal coated;	1K Ω - 100K Ω ; 1%; Beta = 3000 - 5000; 1%	TH / Radial	

HVAC Climate Control : Sensors, Humidity Sensor

Humidity Sensor

Product Name	Status	Description	Features	Package	Q-Level
2381 691 90001				SMD	

HVAC Climate Control : Sensors, Outside Temperature

Thermistor

Product Name	Status	Description	Features	Package	Q-Level
1T1002-1		Small dimension, conformal coated;	1K Ω - 100K Ω ; 1%; Beta = 3000 - 5000; 1%	TH / Radial	

HVAC Climate Control : Thermal Management, Analog Filtering

Ceramic Capacitors

Product Name	Status	Description	Features	Package	Q-Level
VJ...31/VJ...34 Automotive MLCC		SMD Ceramic Capacitor Solutions High-Reliable NME Process Boardflex-Sensitive Applications	1.0pF...1μF 10Vdc ... 3000Vdc	SMD 0402...1812	

Resistor Arrays

Product Name	Status	Description	Features	Package	Q-Level
ACAS0612		Thin film precision resistor array; pulse resistant, high stability;	100R - 221KΩ, 0.25%; ratio = 0.1%	SMD 1206	
CRA04S08		Thick film resistor array;	10R - 1MΩ; 1%;	SMD 0805	
CRA06S08		Thick film resistor array;	10R - 1MΩ; 1 %;	SMD 1206	

Thin Film Resistors

Product Name	Status	Description	Features	Package	Q-Level
TNPW0402		Ultra-stable thin film technology; Pulse resistant;	10R - 100KΩ; 0.1% - 1%;	0402 0402	
TNPW0603		Ultra-stable thin film technology; Pulse resistant;	10R - 332KΩ; 0.1% - 1%;	0603 0603	
TNPW0805		Ultra-stable thin film technology; Pulse resistant;	10R - 1M0Ω; 0.1% - 1%;	0805 0805	
TNPW1206		Ultra-stable thin film technology; Pulse resistant;	10R - 2MΩ; 0.1% - 1%;	1206 1206	

HVAC Climate Control : Thermal Management, PTC Heating Control

MOSFETs

Product Name	Status	Description	Features	Package	Q-Level
SUM110N04-2m3L		N-Channel, 40 V, very low rDS(on); very low switching loss, logic level;	N-Channel; 40V; rDS(on) = 0.0023Ohms;	SMD TO-252	

Shunt Resistors

Product Name	Status	Description	Features	Package	Q-Level
WSHM2818		Power Metal Strip Shunts; Very High Power- Small Size; Low Thermal EMF;	R001...R1, 1% TCR \pm 75ppm P70 = 7W	SMD 2818	AEC Q200
WSL3921		Power Metal Strip Shunts; very low R-Value, very low TCR; low thermal EMF	R0002 - R04; 1 %; TCR \pm 75ppm P70 = 3W	SMD 3921	AEC Q200
WSLT2512		Power Metal Strip Shunt; High Temp. (275°C); Low TCR; low thermal EMF	R01 - R50; 1%; TCR \pm 75ppm P70 = 1W	SMD 2512	AEC Q200

HVAC Climate Control : Thermal Management, Seat Heating Control

MOSFETs

Product Name	Status	Description	Features	Package	Q-Level
SUM110N04-2m3L		N-Channel, 40 V, very low rDS(on); very low switching loss, logic level;	N-Channel; 40V; rDS(on) = 0.0023Ohms;	SMD TO-252	
SUM110N06-05L		N-Channel MOSFET low-side switch for 24-V Boardnet;	N-Channel; 60V, rDS(on) = 0.0052Ohms;	SMD TO-252	
SUM110P04-05		P-Channel MOSFET high-side power switch; low rDS(on);	P-Channel; 40V; rDS(on) = 0.005Ohms;	SMD TO-263	

Shunt Resistors

Product Name	Status	Description	Features	Package	Q-Level
WSL3921		Power Metal Strip Shunts; very low R-Value, very low TCR; low thermal EMF;	R0002 - R04; 1 %; TCR \pm 75ppm P70 = 3W	SMD 3921	AEC Q200
WSLT2512		Power Metal Strip Shunt; High Temp. (275°C); Low TCR; low thermal EMF	R01 - R50; 1%; TCR \pm 75ppm P70 = 1W	SMD 2512	AEC Q200
WSR-3		Current Sense Power Metal Strip; High Power; Molded; low thermal EMF;	R001 - R2; 1 %; TCR \pm 75ppm P70 = 3W	SMD 4527	AEC Q200

HVAC Climate Control : User Interface, Backlight Control

ESD Diodes

Product Name	Status	Description	Features	Package	Q-Level
GL05T		Low-capacitance ESD protection; data line protection;	Ppk = 300W; VRRM = 70V; Ippm = 17A	SMD SOT-23	
GL24T		Low-capacitance ESD protection; data line protection;	Ppk = 300W; VRRM = 70V; Ippm = 5A	SMD SOT-23	

MOSFETs

Product Name	Status	Description	Features	Package	Q-Level
SQ7415EN	NEW	Fully AEC Q-101 qualified; low thermal resistance, fast switching;	P-Channel; rDS(on) = 0.065Ohms;	SMD PowerPAK1212-8	AEC Q101
SUD50P10-43L		P-Channel, high voltage, low rDS(on); logic level, booster switch;	P-Channel; 100V; rDS(on) = 0.043Ohms;	SMD TO-252	

Resistor Networks / Arrays

Product Name	Status	Description	Features	Package	Q-Level
ACAS0612		Thin film precision resistor array; pulse resistant, high stability;	100R - 221K Ω , 0.25%; ratio = 0.1%	SMD 1206	
CRA04S08		Thick film resistor array;	10R - 1M Ω ; 1%;	SMD 0805	
CRA06E&S		Thick film resistor array;	10R - 1M Ω ; 1 %;	SMD 1206	
CRA12E&S		Thick film resistor array;	10R - 1M Ω ; 1%;	SMD 1206	
CSC01		Single-in-line (SIP) resistor networks; Thick-Film Technology, Coated;	10R - 2M2; 1%	TH / SIP Network	
CSC03		Single-in-line (SIP) resistor networks; Thick-Film Technology, Coated;	10R - 2M2; 1%	TH / SIP Network	
CSC05		Single-in-line (SIP) resistor networks; Thick-Film Technology, Coated;	10R - 2M2; 1%	TH / SIP Network	
PR100.135,182		High-precision resistor arrays; voltage divider amplifying;	TCR = 10 ppm; R ratio <= 0.02 %	SMD / Array	

Shunt Resistors

Product Name	Status	Description	Features	Package	Q-Level
SR5		Open-air sense resistor	5 W, R004 - R05; 1%;	TH / Radial	
WSR-2		Current Sense Power Metal Strip; High Power; Molded;	R001 - 1R; 1 %; TCR \pm 75ppm P70 = 2W	SMD 4527	AEC Q200
WSR-3		Current Sense Power Metal Strip; High Power; Molded;	R001 - R2; 1 %; TCR \pm 75ppm P70 = 3W	SMD 4527	AEC Q200
WSR-5		Current Sense Power Metal Strip; High Power; Molded;	R001 - R03; 1 %; TCR \pm 75ppm P70 = 5W	SMD 4527	AEC Q200
WSZ6720	NEW	Low-cost wire-wound, cement coating;	R10 - 15K Ω ; 1 %; TCR <= 50ppm;	SMD 6720	
WSZ7532	NEW	Low-cost wire-wound, silicone coating High surge current	P = 3.75 W; 1R - 15K Ω ; Tol. = 1%, 3%, 5%, 10 %;	SMD 7532	

Thick Film Resistors

Product Name	Status	Description	Features	Package	Q-Level
CRCW0402		Bulk resistors, pulse resistant; good long term stability;	1R - 10M Ω ; 1%;	SMD 0402	

Product Name	Status	Description	Features	Package	Q-Level
			TCR = 100		
CRCW0603		Bulk resistors, pulse resistant; good long term stability;	1R - 10M Ω ; 1%; TCR = 100	SMD 0603	
CRCW0805		Bulk resistors, pulse resistant; good long term stability;	1R - 10M Ω ; 1%; TCR = 100	SMD 0805	
CRCW1206		Bulk resistors, pulse resistant; good long term stability;	1R - 10M Ω ; 1%; TCR = 100	SMD 1206	
CRCW1210		Bulk resistors, pulse resistant; good long term stability;	1R - 10M Ω ; 1%; TCR = 100	SMD 1210	
CRCW2010		Bulk resistors, pulse resistant; good long term stability;	1R - 10M Ω ; 1%; TCR = 100	SMD 2010	
CRCW2512		Bulk resistors, pulse resistant; good long term stability;	1R - 10M Ω ; 1%; TCR = 100	SMD 2512	
RCA2010	NEW	Automotive grade; sulfur resistant Termination Thick-Film Technology	1R - 10M Ω ; 1 %; TCR < = 100ppm	SMD 2010	
RCA2512	NEW	Automotive grade; sulfur resistant Termination Thick-Film Technology	1R - 10M Ω ; 1 %; TCR < = 100ppm	SMD 2512	

Zener Diodes

Product Name	Status	Description	Features	Package	Q-Level
BZG04-xx		Reference voltage or overvoltage protection; surge current specified	VF = 1V or 2V; VR = 8.2V - 220V	SMD DO-214 AC	
BZX85-Series		Reference voltage or overvoltage protection; surge current specified	Tj = 175 °C; Vz = 2.5V - 98V	TH / Axial DO41	
SMZGnnB		Power voltage-regulating diode; glass passivated chip, low impedance;	Vz = 9.1V - 68V; IR =5 μ A; PD = 1.5W	SMD DO-215AA (SMBG)	

HVAC Climate Control : User Interface, Display Driver

ESD Diodes

Product Name	Status	Description	Features	Package	Q-Level
GL05T		Low-capacitance ESD protection; data line protection;	Ppk = 300W; VRRM = 70V; Ippm = 17A	SMD SOT-23	
GL24T		Low-capacitance ESD protection; data line protection;	Ppk = 300W; VRRM = 70V; Ippm = 5A	SMD SOT-23	

Thick Film Resistors

Product Name	Status	Description	Features	Package	Q-Level
CRCW0402		Bulk resistors, pulse resistant; good long term stability;	1R - 10M Ω ; 1%; TCR = 100	SMD 0402	
CRCW0603		Bulk resistors, pulse resistant; good long term stability;	1R - 10M Ω ; 1%; TCR = 100	SMD 0603	
CRCW0805		Bulk resistors, pulse resistant; good long term stability;	1R - 10M Ω ; 1%; TCR = 100	SMD 0805	
CRCW1206		Bulk resistors, pulse resistant; good long term stability;	1R - 10M Ω ; 1%; TCR = 100	SMD 1206	
CRCW1210		Bulk resistors, pulse resistant; good long term stability;	1R - 10M Ω ; 1%; TCR = 100	SMD 1210	
CRCW2010		Bulk resistors, pulse resistant; good long term stability;	1R - 10M Ω ; 1%; TCR = 100	SMD 2010	
CRCW2512		Bulk resistors, pulse resistant; good long term stability;	1R - 10M Ω ; 1%; TCR = 100	SMD 2512	

TVS Diodes

Product Name	Status	Description	Features	Package	Q-Level
SM5 A27		High surge, low VF, low leakage; high reliability;	VBR = 27V; IFSM = 500A;	SMD DO-218 AB	
SM8 A27		High surge, low VF, low leakage; high reliability;	VBR = 27V; IFSM = 700A;	SMD DO-218 AB	

HVAC Climate Control : User Interface, LED Driver

MOSFETs

Product Name	Status	Description	Features	Package	Q-Level
Si2318CDS	NEW	N-Channel 40V (D-S) MOSFET	rDS(on) = 0.042Ohms ID=5.6A	SMD TO-236 (SOT-23)	
SQ2309ES	NEW	P-Channel; MOSFET for general applications Automotive AEC-Q101 qualified	N-Channel; 60V;Id=-1.7A rDS(on) = 0.335Ω@-10V	SMD TO-236 (SOT-23)	AEC-Q
SQ7415EN	NEW	Fully AEC Q-101 qualified; low thermal resistance; fast Switching	P-Channel; rDS(on) = 0.060Ohms;	SMD PowerPAK1212-8	AEC Q101

Shunt Resistors

Product Name	Status	Description	Features	Package	Q-Level
WSL0603		Power Metal Strip Shunts; Very Low R Value; Very Low TCR; low thermal EMF;	R01 - R1; 1 %; TCR ± 75ppm P70 = 0.1W	SMD 0603	AEC Q200
WSL0805		Power Metal Strip Shunts; Very Low R Value; Very Low TCR; low thermal EMF;	R005 - R2; 1 %; TCR ± 75ppm P70 = 0.125W	SMD 0805	AEC Q200

Thick Film Resistors

Product Name	Status	Description	Features	Package	Q-Level
CRCW0402		Bulk resistors, pulse resistant; good long term stability;	1R - 10MΩ; 1%; TCR = 100	SMD 0402	
CRWC0603		Bulk resistors, pulse resistant; good long term stability;	1R - 10MΩ; 1%; TCR = 100	SMD 0603	
CRWC0805		Bulk resistors, pulse resistant; good long term stability;	1R - 10MΩ; 1%; TCR = 100	SMD 0603	

Zener Diodes

Product Name	Status	Description	Features	Package	Q-Level
BZG04-xx		Reference voltage or overvoltage protection; surge current specified	VF = 1V or 2V; VR = 8.2V - 220V	SMD DO-214 AC	
BZX85-Series		Reference voltage or overvoltage protection; surge current specified	Tj = 175 °C; Vz = 2.5V - 98V	TH / Axial DO41	
SMZGnnB		Power voltage-regulating diode; glass passivated chip, low impedance;	Vz = 9.1V - 68V; IR =5μA; PD = 1.5W	SMD DO-215AA (SMBG)	

HVAC Climate Control : User Interface, LEDs

LEDs

Product Name	Status	Description	Features	Package	Q-Level
VLME2300 -GS08		AllnGaP on GaAs; luminous intensity categorized; yellow, 60°	56 mcd - 112 mcd; (typical 10 mA), 590 nm;	SMD MiniLED 2.3x1.3x1.4mm	AECQ
VLME310x -GS08		AllnGaP on GaAs; luminous intensity categorized; yellow , 60°	28 mcd - 140 mcd; (typical 10mA); 581 nm - 594 nm	SMD PLCC-2	AECQ
VLMF2300 -GS08		AllnGaP on GaAs; luminous intensity categorized; orange, 60°	56 mcd - 112 mcd; (typical 10mA); 610 nm;	SMD MiniLED 2.3x1.3x1.4mm	AECQ
VLMF310x -GS08		AllnGaP on GaAs; luminous intensity categorized; soft orange, 60°	28 mcd - 112 mcd; (typical 10mA); 598 nm - 611 nm	SMD PLCC-2	AECQ
VLMK2300 -GS08		AllnGaP on GaAs; luminous intensity categorized; red , 60°	35.5 mcd - 90 mcd; (typical 10mA); 643 nm;	SMD MiniLED 2.3x1.3x1.4mm	AECQ
VLMK310x -GS08		AllnGaP on GaAs; luminous intensity categorized; red , 60°	11.2 mcd - 90 mcd; (typical 10mA); 543 nm - 630 nm	SMD PLCC-2	AECQ
VLMO31xx-GS08		GaAsP on GaP; luminous intensity categorized; soft orange, 60°	4.5 mcd - 18 mcd; (typical 10mA); 598 nm - 611 nm	SMD PLCC-2	AECQ
VLMW41		White LED with typical color temperature of 500°K, cool white	Luminous intensity from 180 to 450 mcd 11 binning options	SMD PLCC-2	AECQ

HVAC Climate Control : User Interface, Rotary Encoder

Transmissive Sensors

Product Name	Status	Description	Features	Package	Q-Level
TCUT1300X01	NEW	Subminiature, dual-channel, transmissive optical sensor w. phototransistor output RoHS compliant solder profile	VR = 5 V; IF = 25mA; Pv = 75mW;	SMD	