



Features

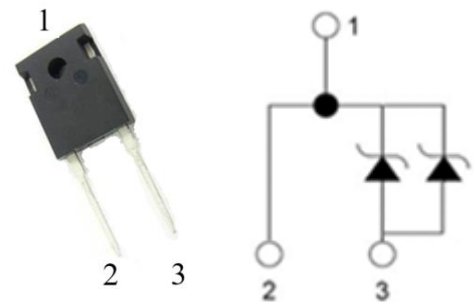
- Zero Forward/Reverse Recovery Current
- High Blocking Voltage
- High Frequency Operation
- Positive Temperature Coefficient on V_F
- Temperature Independent Switching Behavior
- High surge current capability
- 100% avalanche tested

$V_R = 1200\text{ V}$
$I_F = 50\text{ A } (T_C=150^\circ\text{C})$
$Q_c = 310\text{ nC } (V_R=800\text{ V})$

Benefits

- Higher System Efficiency
- Parallel Device Convenience without thermal runaway
- Higher Temperature Application
- No Switching loss
- Hard Switching & Higher Reliability
- Environmental Protection

TO-247-2



Applications

- Motor Drives
- Solar / Wind Inverters
- AC/DC converters
- DC/DC converters
- Uninterruptable power supplies

Maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	Value	Unit
Peak Repetitive Reverse Voltage	V_{RRM}		1200	V
Continuous Forward Current	I_F	$T_C=25^\circ\text{C}$	155	A
		$T_C=135^\circ\text{C}$	75	
		$T_C=150^\circ\text{C}$	50	
Non repetitive Forward Surge Current	I_{FSM}	$T_C = 25^\circ\text{C}, t_p=10\text{ ms},$ Half Sine Pulse	350	A
		$T_C = 110^\circ\text{C}, t_p=10\text{ ms},$ Half Sine Pulse	330	
Repetitive peak Forward Surge Current	I_{FRM}	$T_C = 25^\circ\text{C}, t_p=10\text{ ms},$ Freq = 0.1Hz, 100 cycles, Half Sine Pulse	320	A
		$T_C = 110^\circ\text{C}, t_p=10\text{ ms},$ Freq = 0.1Hz, 100 cycles, Half Sine Pulse	300	
Total power dissipation	P_D	$T_C=25^\circ\text{C}$	625	W
		$T_C=110^\circ\text{C}$	271	
Single Pulse Avalanche Energy	E_{AS}	$L=2\text{mH}, I_{AS}= 22\text{A}$	484	mJ
Diode dv/dt ruggedness	dv/dt	$V_R = 0\text{-}1200\text{V}$	80	V/ns
Operating Junction Temperature	T_J		-55 to 175	$^\circ\text{C}$
Storage Temperature	T_{STG}		-55 to 175	$^\circ\text{C}$

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



LGE3D50120H

Silicon Carbide SchottkyDiode



Electrical Characteristics

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
DC Blocking Voltage	V_{DC}	$T_J = 25^{\circ}C$	1200			V
Forward Voltage	V_F	$I_F = 50A, T_J = 25^{\circ}C$		1.40	1.7	V
		$I_F = 50A, T_J = 125^{\circ}C$		1.65		V
		$I_F = 50A, T_J = 175^{\circ}C$		1.85		V
Reverse Current	I_R	$V_R = 1200V, T_J = 25^{\circ}C$		30	200	μA
		$V_R = 1200V, T_J = 125^{\circ}C$		180		μA
		$V_R = 1200V, T_J = 175^{\circ}C$		540		μA
Total Capacitive Charge	Q_C	$V_R = 800V, T_J = 25^{\circ}C$		310		nC
Total Capacitance	C	$V_R = 1V, T_J = 25^{\circ}C,$ Freq = 1MHz		3620		pF
		$V_R = 400V, T_J = 25^{\circ}C,$ Freq = 1MHz		293		
		$V_R = 800V, T_J = 25^{\circ}C,$ Freq = 1MHz		207		

Note: This is a majority carrier diode, so there is no reverse recovery charge

Thermal Characteristics

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Thermal Resistance	$R_{th(j-c)}$	junction-case		0.24		$^{\circ}C/W$



Typical Electrical Curves

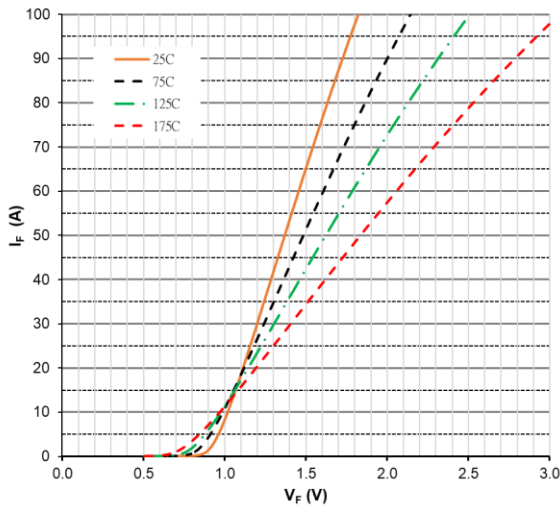


Figure 1. Forward Characteristics

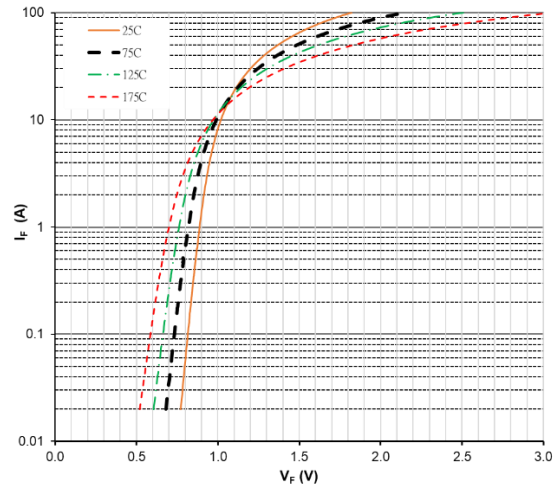


Figure 2. Forward Characteristics

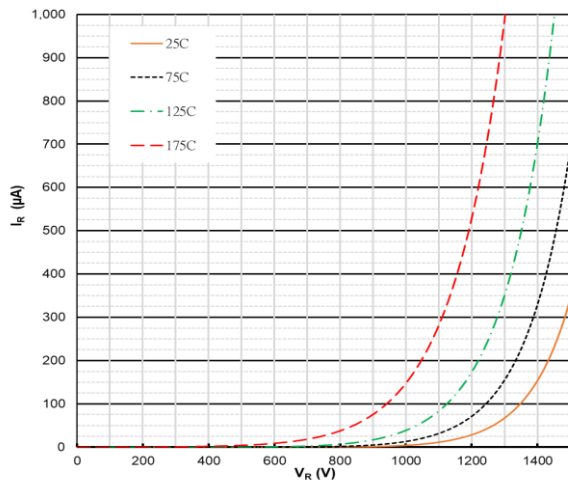


Figure 3. Reverse Characteristics

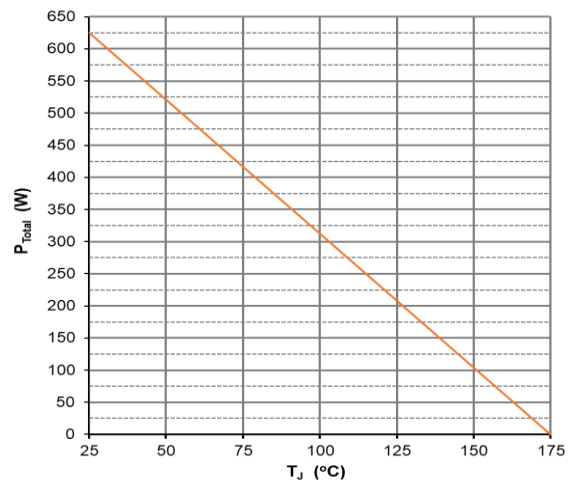


Figure 4. Power Derating

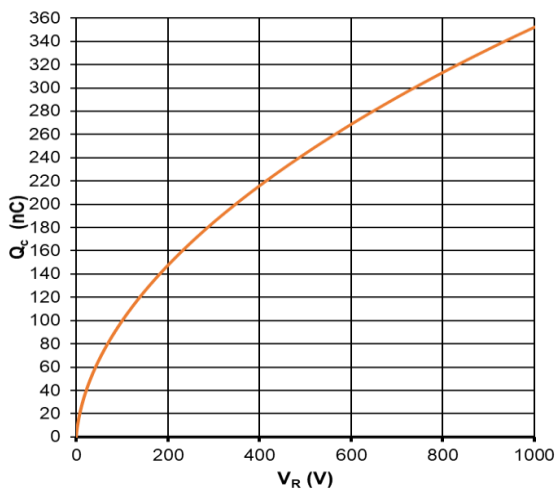


Figure 5. Reverse charge vs. Reverse Voltage

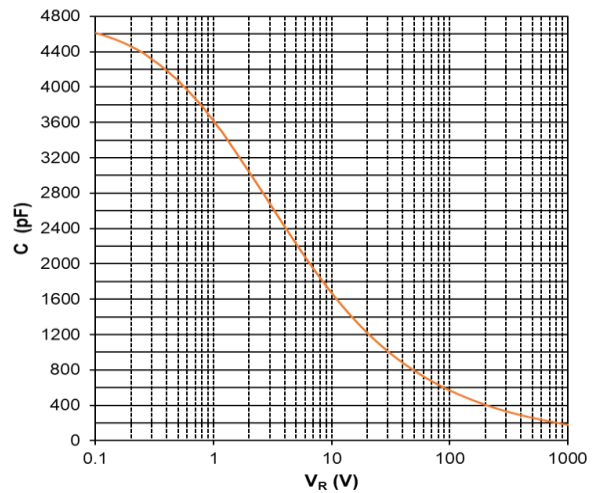


Figure 6. Capacitance vs. Reverse Voltage



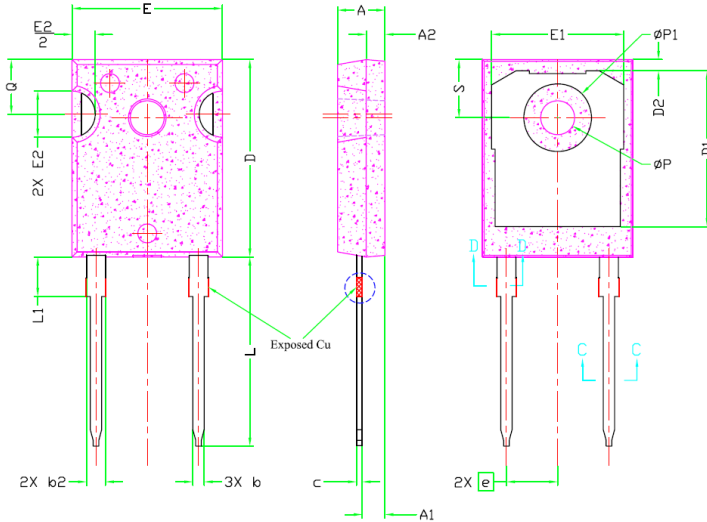
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Silicon Carbide SchottkyDiode



Package Dimensions

(TO-247-2 Package)

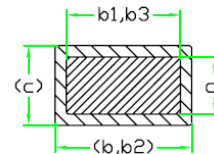


SYMBOL	DIMENSIONS			NOTES
	MIN.	NOM.	MAX.	
A	4.83	5.02	5.21	
A1	2.29	2.41	2.55	
A2	1.50	2.00	2.49	
b	1.12	1.20	1.33	
b1	1.12	1.20	1.28	
b2	1.91	2.00	2.39	6
b3	1.91	2.00	2.34	
c	0.55	0.60	0.69	6
c1	0.55	0.60	0.65	
D	20.80	20.95	21.10	4
D1	16.25	16.55	17.65	5
D2	0.51	1.19	1.35	
E	15.75	15.94	16.13	4
E1	13.46	14.02	14.16	5
E2	4.32	4.91	5.49	3
e	5.44BSC			
L	19.81	20.07	20.32	
L1	4.10	4.19	4.40	6
ØP	3.56	3.61	3.65	7
ØP1	7.19REF.			
Q	5.39	5.79	6.20	
S	6.04	6.17	6.30	



Note:

1. Package Reference: JEDEC TO247, Variation AD.
2. All Dimensions Are In mm.
3. Slot Required, Notch May Be Rounded
4. Dimension D & E Do Not Include Mold Flash. Mold Flash Shall Not Exceed 0.127mm Pre Side. These Dimensions Are Measured At The Outermost Extreme Of The Plastic Body.
5. Thermal Pad Contour Optional Within Dimension D1 & E1.
6. Lead Finish Uncontrolled In L1.
7. ØP To Have A Maximum Draft Angle Of 1.5° To The Top Of The Part With A Maximum Hole Diameter Of 3.91mm.
8. Dimension "b2" And "b4" Does Not Include Dambar Protrusion. Allowable Dambar Protrusion Shall Be 0.10mm Total In Excess Of "b2" And "b4" Dimension At Maximum Material Condition.



Section C-C, D-D

Package	Packing	Box Size LxWxH(mm)	Quatity(pcs/box)	Carton Size LxWxH(mm)	Quatity(pcs/carton)
TO-247	30pcs/Tube	570x155x50	450	580x340x125	1800