LGE3D10065H

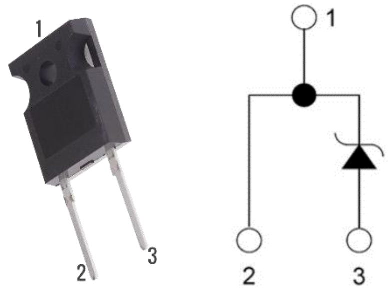
Silicon Carbide SchottkyDiode

V_R = 650 V
I_F = 10A (T_C=145°C)
Qc = 23nC (V_R=400V)

Features

- Zero Forward/Reverse Recovery Current
- High Blocking Voltage
- High Frequency Operation
- Positive Temperature Coefficient on V_F
- Temperature Independent Switching Behavior

TO-247-2



Benefits

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

Applications

- Motor Drives
- Solar
- AC/DC Converters
- DC/DC Converters
- Uninterruptable Power Supplies

Maximum Ratings

(T_C=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Value	Unit
Peak Repetitive Reverse Voltage	V_{RRM}		650	V
Peak Reverse Surge Voltage	V_{RSM}		650	V
DC Blocking Voltage	V_R		650	V
Continuous Forward Current	I_F	T_C=25°C T_C=135°C T_C=145°C	30 12 10	A
Non repetitive Forward Surge Current	I_{FSM}	T_C = 25°C, t_p=10 ms, Half Sine Pulse T_C = 150°C, t_p=10 ms, Half Sine Pulse T_C = 25°C, t_p=10 µs, Square	60 50 460	A
Repetitive peak Forward Surge Current	I_{FRM}	T_C = 25°C, t_p=10 ms, Freq = 0.1Hz, 100 cycles, Half Sine Pulse T_C = 150°C, t_p=10 ms, Freq = 0.1Hz, 100 cycles, Half Sine Pulse	50 40	A
Total power dissipation	P_D	T_C=25°C	88	W
Operating Junction Temperature	T_J		-55 to 175	°C
Storage Temperature	T_{STG}		-55 to 175	°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.

Electrical Characteristics

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
DC Blocking Voltage	V_{DC}	I_R = 250μA,T_J = 25°C	650			V
Forward Voltage	V_F	I_F = 10A, T_J = 25°C		1.45	1.8	V
		I_F = 10A, T_J = 125°C		1.6		
		I_F = 10A, T_J = 175°C		1.7		V
Reverse Current	I_R	V_R = 650V, T_J = 25°C		12	80	uA
		V_R = 650V, T_J = 125°C		68		uA
		V_R = 650V, T_J = 175°C		190		uA
Total Capacitive Charge	Q_C	V_R = 400V T_J = 25°C		23		nC
Total Capacitance	C	V_R = 1V, T_J = 25°C, Freq = 1MHz		380		pF
		V_R = 200V, T_J = 25°C, Freq = 1MHz		48		
		V_R = 400V, T_J = 25°C, Freq = 1MHz		31		

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		1.7		^{0}C/W

Typical Electrical Curves

Figure 1. Forward Characteristics

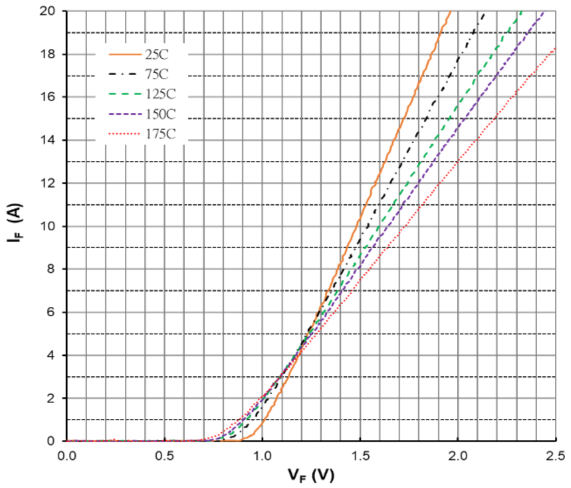


Figure 2. Forward Characteristics

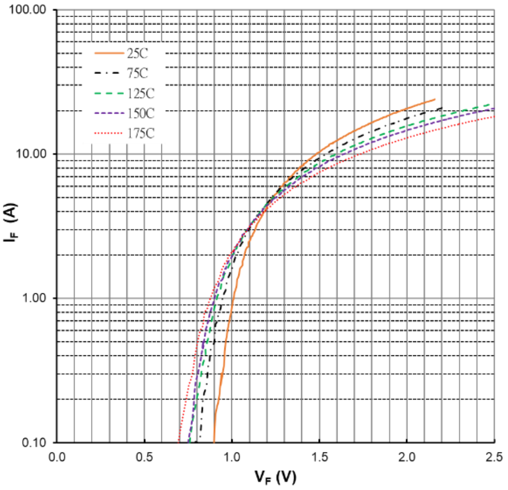


Figure 3. Reverse Characteristics

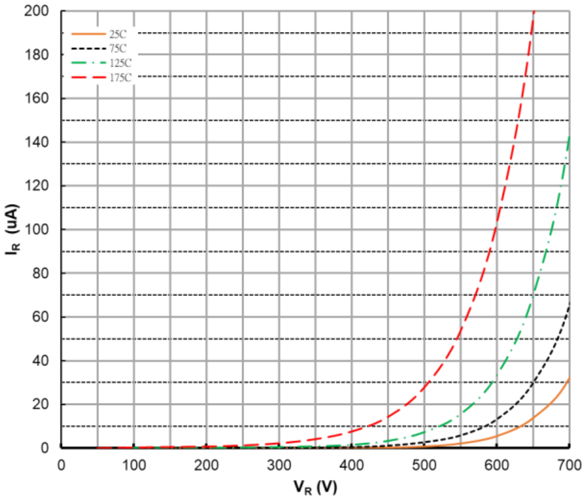


Figure 4. Power Derating

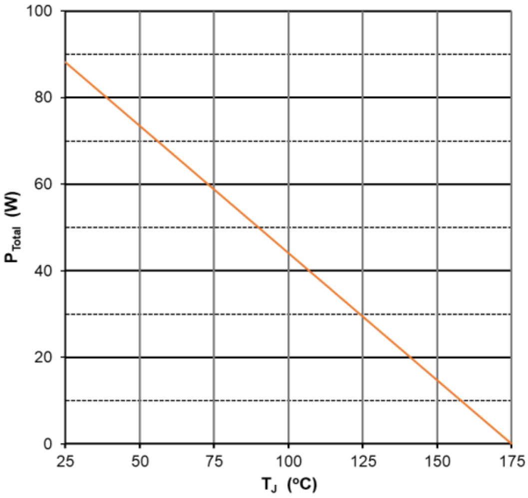


Figure 5. Capacitance vs Reverse Voltage

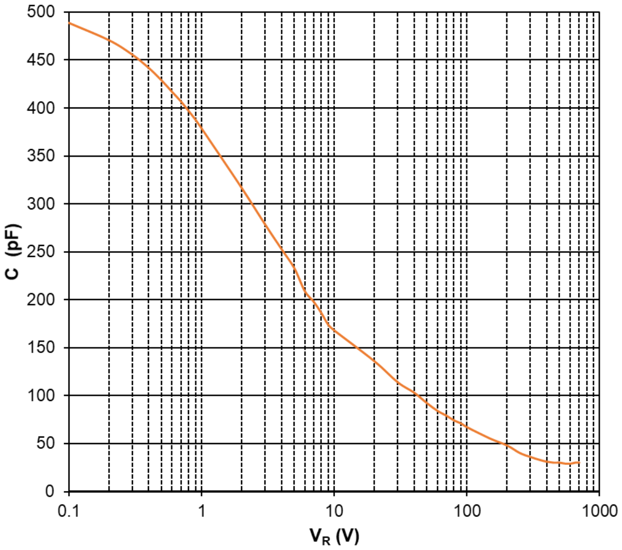
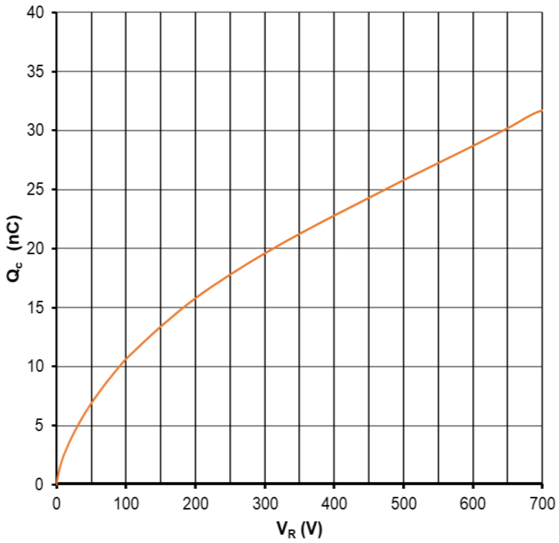


Figure 6. Recovery Charge vs Reverse Voltage



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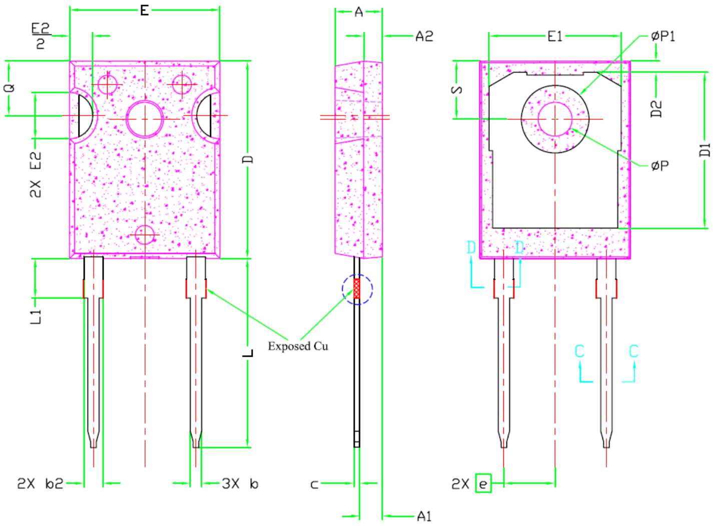
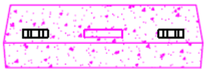
Silicon Carbide SchottkyDiode

Package Dimensions

(TO-247-2 Package)

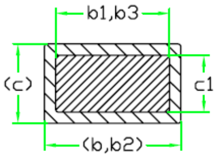


SYMBOL	DIMENSIONS			NOTES
	MIN.	NOM.	MAX.	
A	4.83	5.02	5.21	
A1	2,29	2,41	2,55	
A2	1.50	2.00	2.49	
b	1,12	1,20	1,33	
b1	1.12	1,20	1,28	
b2	1.91	2.00	2.39	6
b3	1,91	2,00	2,34	
c	0.55	0.60	0.69	6
c1	0.55	0.60	0.65	
D	20,80	20,95	21,10	4
D1	16.25	16.55	17.65	5
D2	0.51	1.19	1.35	
E	15,75	15,94	16,13	4
E1	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
∅P	3,56	3,61	3,65	7
∅P1	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

Part Number	Package	Packing	Marking
LGE3D10065H	TO-247-2	30pcs / Tube	LGE3D10065H