LGE3D40120H

Silicon Carbide Schottky Diode

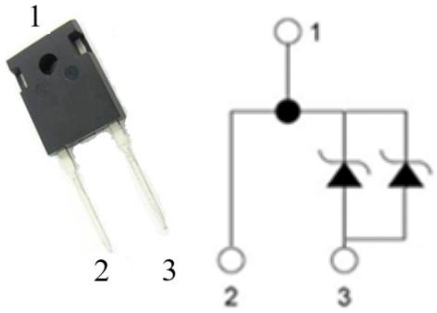
V_R = 1200 V
I_F = 40A (T_C=147°C)
Qc = 205nC (V_R=800V)

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

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°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°C T_C=135°C T_C=147°C	104 50 40	A
Non repetitive Forward Surge Current	I_{FSM}	T_C = 25°C, t_p=10 ms, Half Sine Pulse T_C = 110°C, t_p=10 ms, Half Sine Pulse	300 260	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 = 110°C, t_p=10 ms, Freq = 0.1Hz, 100 cycles, Half Sine Pulse	250 230	A
Total power dissipation	P_D	T_C=25°C T_C=110°C	536 232	W
Diode dv/dt ruggedness	dv/dt	V_R = 0-1200V	80	V/ns
Operating Junction Temperature	T_J		-55 to 175	°C
Storage Temperature	T_{STG}		-55 to 175	°C

Electrical Characteristics

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
DC Blocking Voltage	V_{DC}	T_J = 25°C	1200			V
Forward Voltage	V_F	I_F = 40A, T_J = 25°C		1.45	1.75	V
		I_F = 40A, T_J = 125°C		1.78		
		I_F = 40A, T_J = 175°C		2.0		
Reverse Current	I_R	V_R = 1200V, T_J = 25°C		3	150	μA
		V_R = 1200V, T_J = 125°C		12		
		V_R = 1200V, T_J = 175°C		46		
Total Capacitive Charge	Q_C	V_R = 800V, T_J = 25°C		205		nC
Total Capacitance	C	V_R = 1V, T_J = 25°C, Freq = 1MHz		2420		pF
		V_R = 400V, T_J = 25°C, Freq = 1MHz		194		
		V_R = 800V, T_J = 25°C, Freq = 1MHz		135		

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		0.23	0.28	^{0}C/W

Typical Electrical Curves

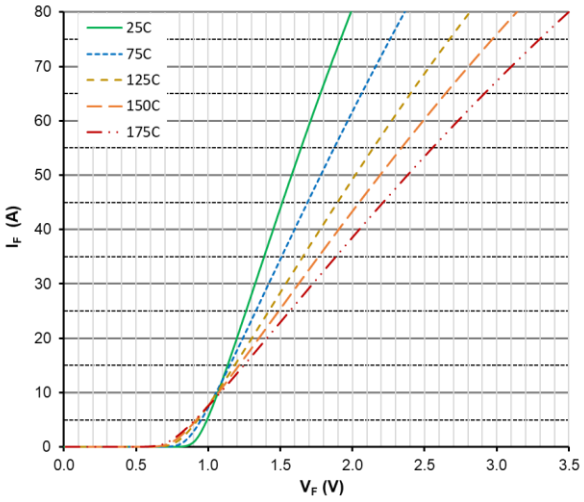


Figure 1. Forward Characteristics

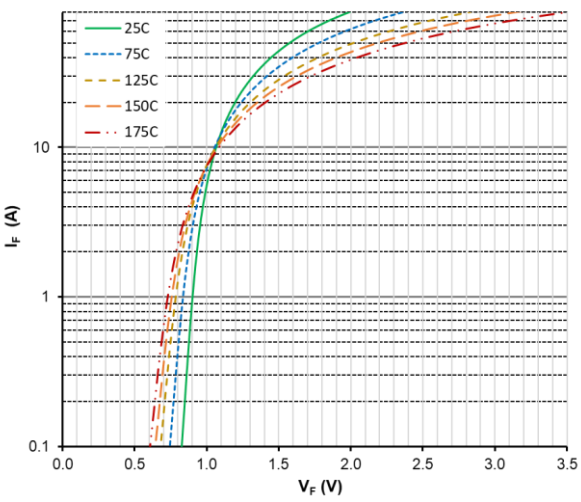


Figure 2. Forward Characteristics

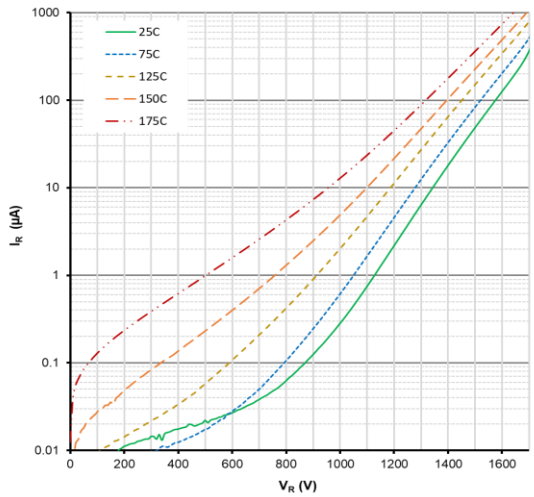


Figure 3. Reverse Characteristics

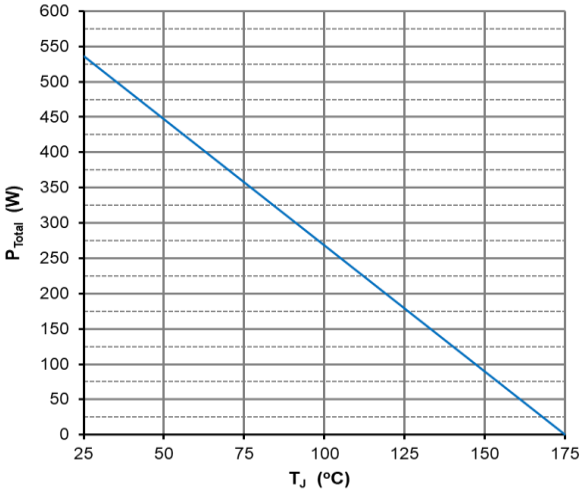


Figure 4. Max Power Derating

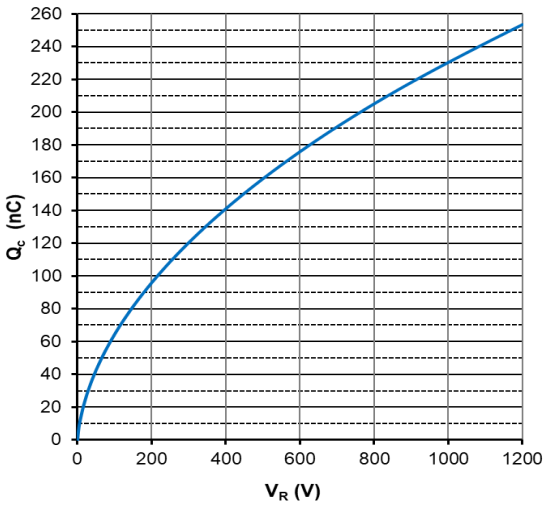


Figure 5. Reverse charge vs. Reverse Voltage

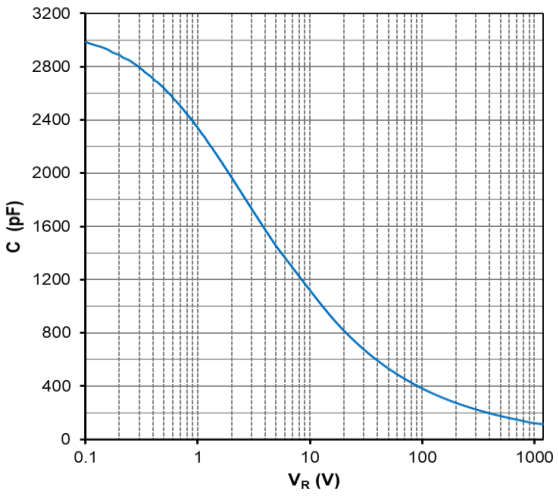


Figure 6. Capacitance vs. Reverse Voltage

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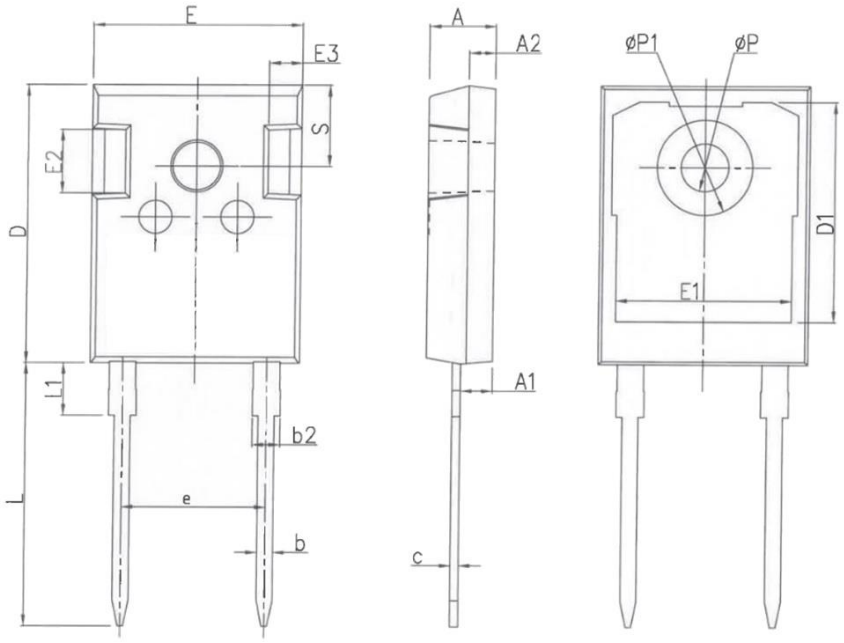
Package Dimensions

(TO-247-2 Package)



SYMBOL	mm	
	MIN.	MAX
A	4.8	5.20
A1	2.21	2.59
A2	1.85	2.15
b	1.11	1.36
b2	1.91	2.21
c	0.51	0.75
D	20.70	21.30
D1	16.25	16.85
E	15.50	16.10
E1	13.00	13.60
E2	4.80	5.20
E3	2.30	2.70
e	10.88BSC	
L	19.62	20.22
L1	-	4.30
ϕP	3.4	3.80
ϕP1	-	7.30
S	6.15BSC	

Part Number	Package	Packing	Marking
LGE3D40120H	TO-247-2	30pcs / Tube	LGE3D40120H