



### Features

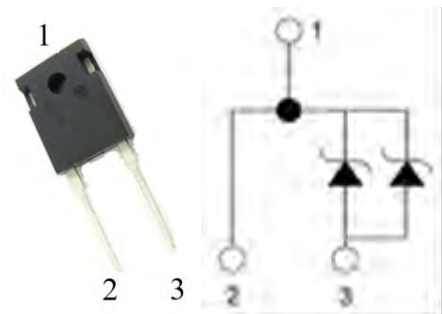
- Zero Forward/Reverse Recovery Current
- High Blocking Voltage
- High Frequency Operation
- Positive Temperature Coefficient on  $V_F$
- Temperature Independent Switching Behavior
- High surge current capability

$V_R = 1200\text{ V}$   
 $I_F = 40\text{ A (}T_C=150^\circ\text{C)}$   
 $Q_C = 205\text{ nC (}V_R=800\text{ V)}$

### Benefits

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

TO-247-2L



### 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	$I_F$	$T_C=25^\circ\text{C}$	110	A
		$T_C=135^\circ\text{C}$	52	
		$T_C=150^\circ\text{C}$	40	
Non repetitive Forward Surge Current	$I_{FSM}$	$T_C = 25^\circ\text{C}$ , $t_p=10\text{ ms}$ , Half Sine Pulse	280	A
		$T_C = 110^\circ\text{C}$ , $t_p=10\text{ ms}$ , Half Sine Pulse	260	
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	260	A
		$T_C = 110^\circ\text{C}$ , $t_p=10\text{ ms}$ , Freq = 0.1Hz, 100 cycles, Half Sine Pulse	240	
Total power dissipation	$P_D$	$T_C=25^\circ\text{C}$	577	W
		$T_C=110^\circ\text{C}$	250	
Single Pulse Avalanche Energy	$E_{AS}$	$L=2\text{mH}$ , $I_{AS}=17\text{A}$	289	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.



# LGE3D40120H

## 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	$V_F$	$I_F = 40A, T_J = 25^{\circ}C$		1.45	1.75	V
		$I_F = 40A, T_J = 125^{\circ}C$		1.78		
		$I_F = 40A, T_J = 175^{\circ}C$		2.0		
Reverse Current	$I_R$	$V_R = 1200V, T_J = 25^{\circ}C$		3	150	$\mu A$
		$V_R = 1200V, T_J = 125^{\circ}C$		12		
		$V_R = 1200V, T_J = 175^{\circ}C$		46		
Total Capacitive Charge	$Q_C$	$V_R = 800V, T_J = 25^{\circ}C$		205		nC
Total Capacitance	C	$V_R = 1V, T_J = 25^{\circ}C,$ Freq = 1MHz		2420		pF
		$V_R = 400V, T_J = 25^{\circ}C,$ Freq = 1MHz		194		
		$V_R = 800V, T_J = 25^{\circ}C,$ 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		0.26		$^{\circ}C/W$



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## Silicon Carbide Schottky Diode



### Typical Electrical Curves

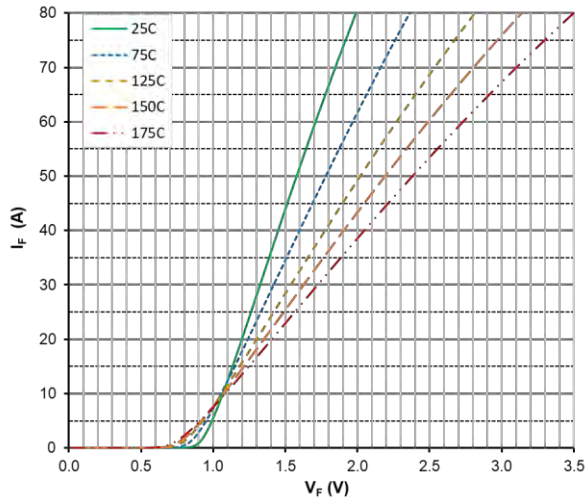


Figure 1. Forward Characteristics

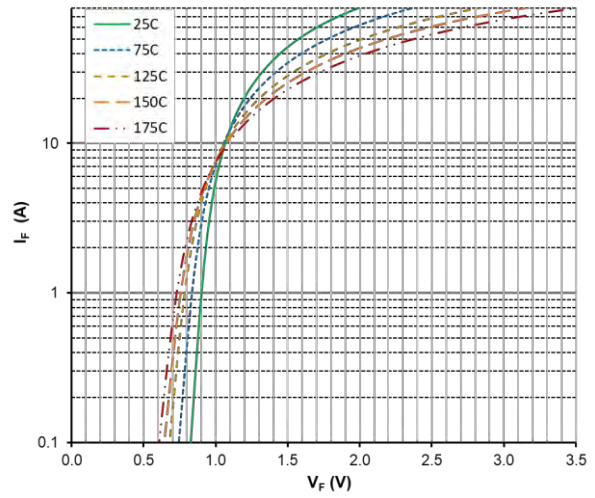


Figure 2. Forward Characteristics

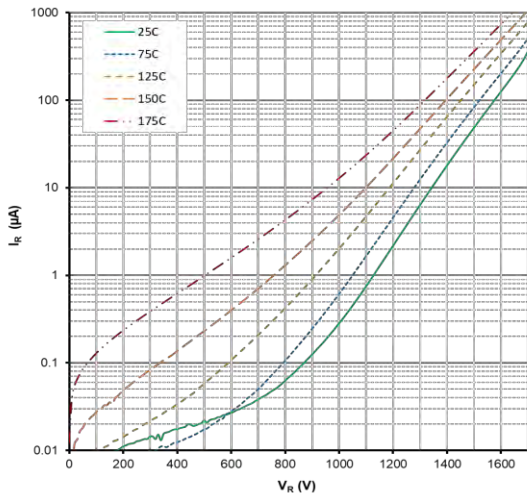


Figure 3. Reverse Characteristics

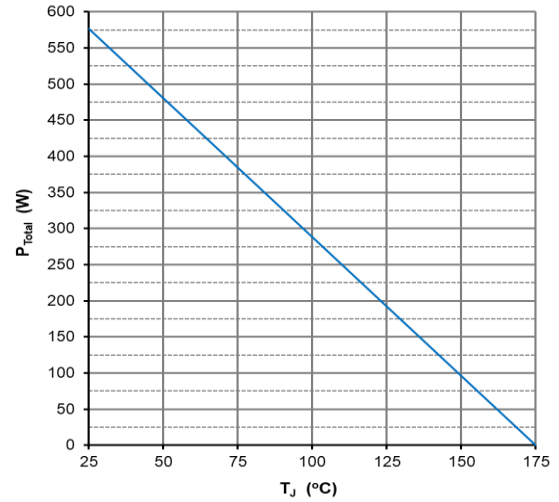


Figure 4. Power Derating

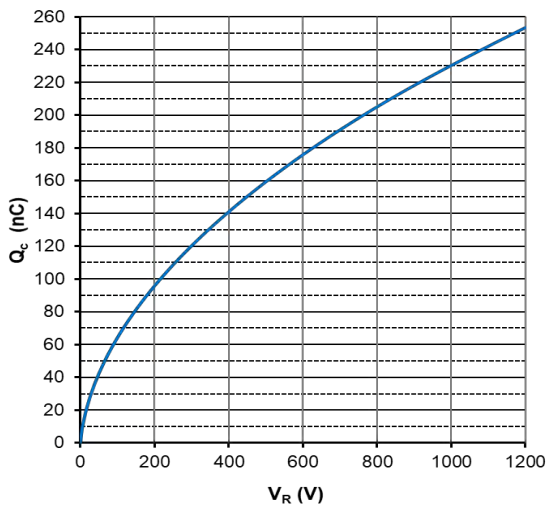


Figure 5. Reverse charge vs. Reverse Voltage

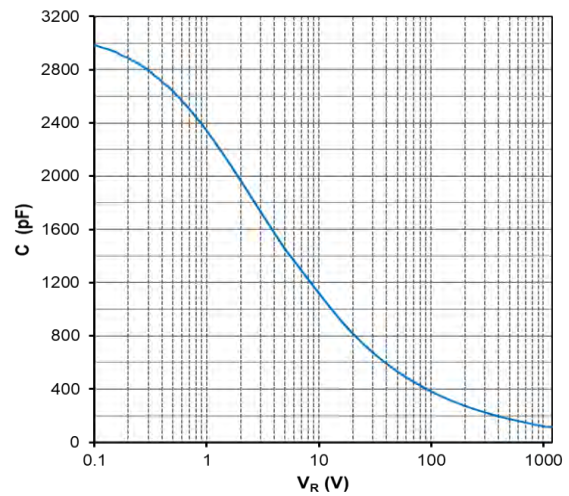
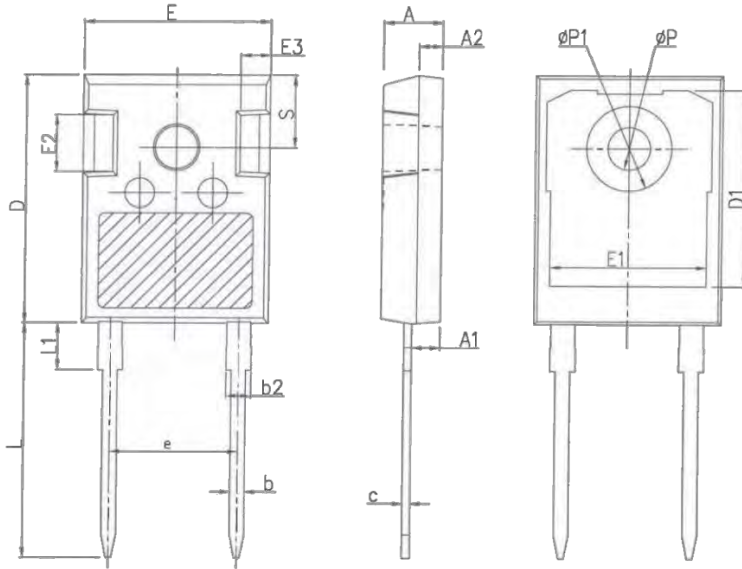


Figure 6. Capacitance vs. Reverse Voltage



## Package Dimensions

(TO-247L-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	

Package	Packing	Box Size L×W×H(mm)	Quatity(pcs/box)	Carton Size L×W×H(mm)	Quatity(pcs/carton)
TO-247-2L	30pcs/Tube	570×155×50	450	580×340×125	1800