



LGE3D40065H

Silicon Carbide Schottky Diode



General Description

This product family offers state of the art performance. It is designed for high frequency applications here high efficiency and high reliability are required.

V_{RRM}	=	650	V
$I_F (T_C \leq 130^\circ C)$	=	40	A
Q_C	=	83	nC

Features

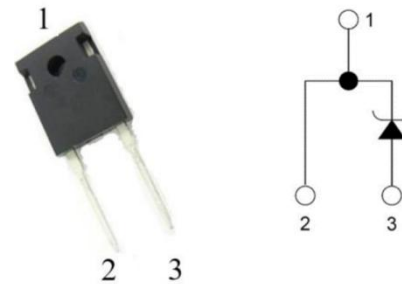
- Zero Forward/Reverse Recovery Current
- High Blocking Voltage
- High Frequency Operation
- Positive Temperature Coefficient on V_F
- Temperature Independent Switching Behavior

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/Wind Inverters
- AC/DC converters
- DC/DC converters
- Uninterruptable power supplies



TO-247-2

Key performance parameters

Type	V_R	I_F $T_C=130^\circ C$	Q_C
LGE3D40065H	650V	40A	83nC

Caution: This device is sensitive to electrostatic discharge .Users should follow ESD handing procedures.



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Maximum Ratings

$T_C=25^{\circ}\text{C}$, unless otherwise specified

Parameter	Symbol	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

Maximum Ratings

$T_C=25^{\circ}\text{C}$, unless otherwise specified

Parameter	Symbol	Value	Unit
Continuous Forward Current $T_C = 25^{\circ}\text{C}$ $T_C = 120^{\circ}\text{C}$ $T_C = 130^{\circ}\text{C}$	I_F	80 45 40	A
Non Repetitive Forward Surge Current $T_C = 25^{\circ}\text{C}$, $t_p=10\text{ms}$, Half Sine Pulse $T_C = 150^{\circ}\text{C}$, $t_p=10\text{ms}$, Half Sine Pulse	I_{FSM}	180 170	A
Repetitive peak Forward Surge Current Freq = 0.1Hz, 100 cycles $T_C = 25^{\circ}\text{C}$, $t_p=10\text{ms}$, Half Sine Pulse $T_C = 150^{\circ}\text{C}$, $t_p=10\text{ms}$, Half Sine Pulse	I_{FRM}	165 155	A
Total power dissipation (per leg / per device) $T_C = 25^{\circ}\text{C}$ $T_C = 110^{\circ}\text{C}$	P_D	250 108	W
Diode dv/dt ruggedness: $V_R=0-650\text{v}$	dv/dt	60	V/ns
Operating Junction Temperature:	T_J	-55 to 175	$^{\circ}\text{C}$
Storage Temperature :	T_{STG}	-55 to 175	$^{\circ}\text{C}$

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Thermal Resistance

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance, junction-case	$R_{th(j-c)}$	0.6		$^{\circ}C/W$

Electrical Characteristic

$T_C = 25^{\circ}C$, unless otherwise specified

Parameter	Symbol	Value			Unit	Test Condition
		Min.	Typ.	Max.		
DC Blocking Voltage	V_{DC}	650			V	$T_J = 25^{\circ}C$
Forward Voltage	V_F		1.55 1.65 1.80	1.80	V	$I_F = 40A$ $T_J = 25^{\circ}C$ $T_J = 125^{\circ}C$ $T_J = 175^{\circ}C$
Reverse Current	I_R		10 100 150	200	μA	$V_R = 650V$ $T_J = 25^{\circ}C$ $T_J = 125^{\circ}C$ $T_J = 175^{\circ}C$
Total Capacitance Charge	Q_C		83		nC	$V_R = 400V, T_J = 25^{\circ}C$
Total Capacitance	C		1440 156 117		pF	$T_J = 25^{\circ}C, F_{req} = 1MHz$ $V_R = 1V$ $V_R = 200V$ $V_R = 400V$
Note: This is a majority carrier diode, so there is no reverse recovery charge						

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Characteristics Curves

Figure 1. Forward Characteristics

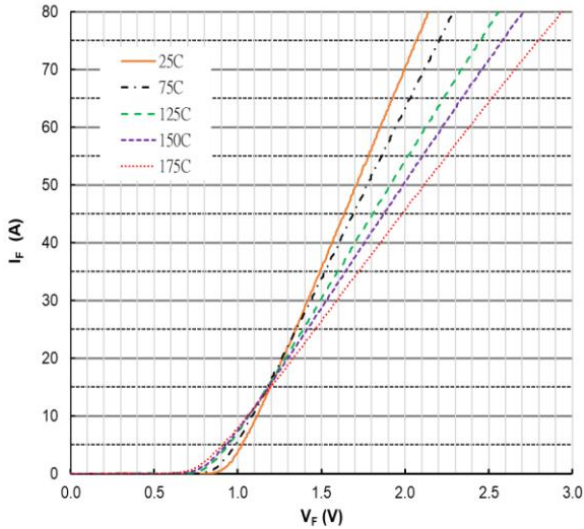


Figure 2. Forward Characteristics

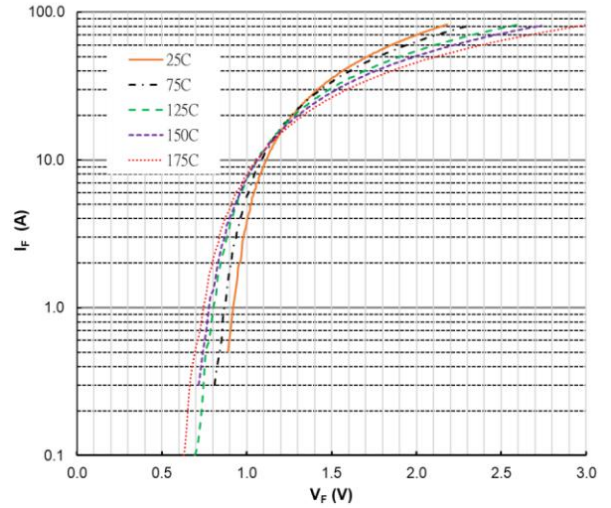


Figure 3. Reverse Characteristics

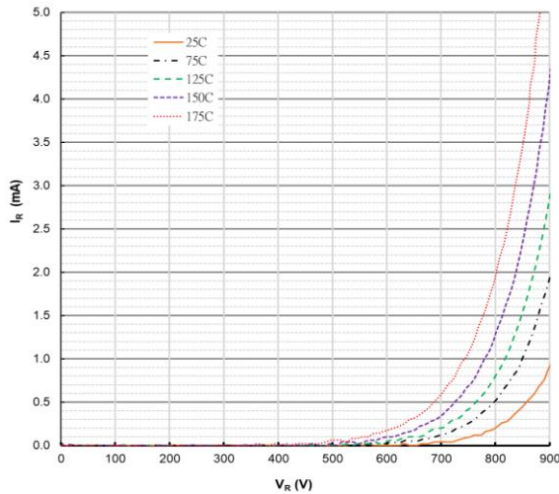


Figure 4. Power Derating

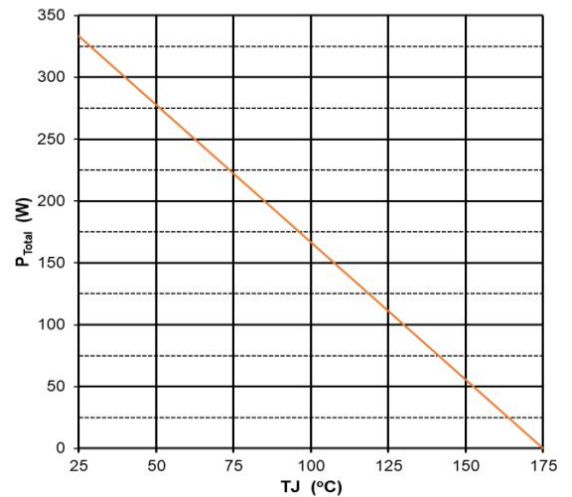


Figure 5. Capacitance vs Reverse Voltage

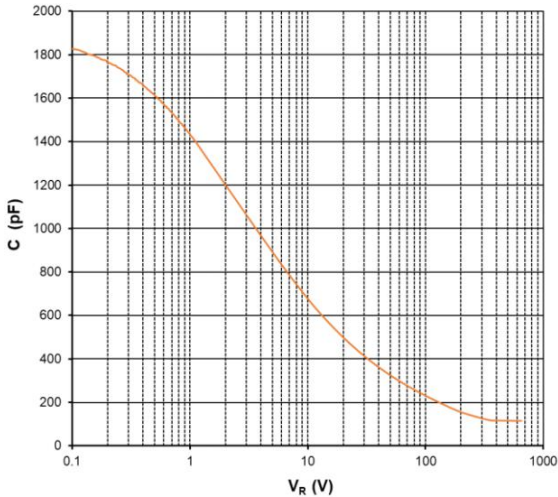
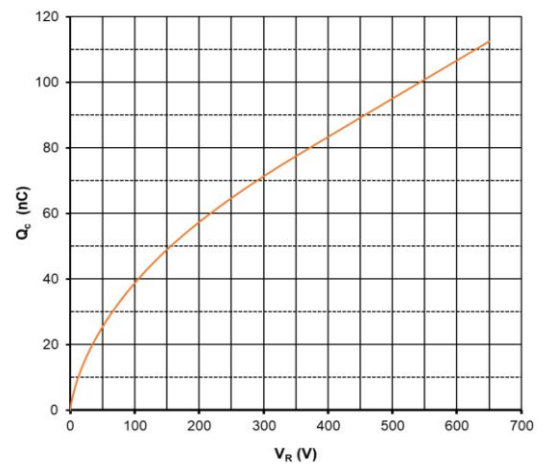


Figure 6. Recovery Charge vs Reverse Voltage



Caution: This device is sensitive to electrostatic discharge .Users should follow ESD handling procedures.

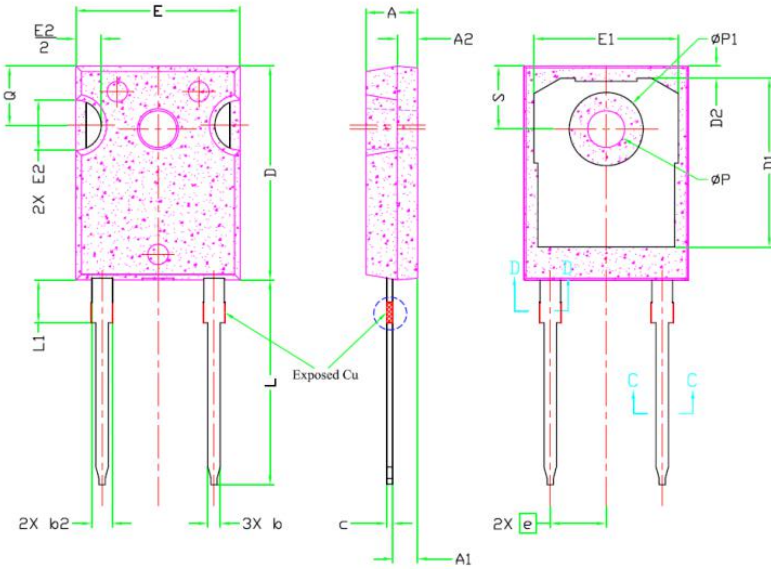


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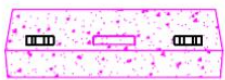
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Package Dimensions: (TO-247-2 Package)

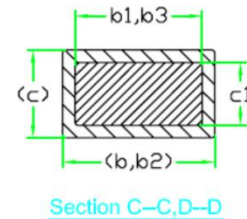


SYMBOL	DIMENSIONS			NOTES
	MIN.	NOM.	MAX.	
A	4.83	5.02	5.21	
A1	2.29	2.41	2.55	
A2	1.50	2.00	2.49	
b	1.12	1.20	1.33	
b1	1.12	1.20	1.28	
b2	1.91	2.00	2.39	6
b3	1.91	2.00	2.34	
c	0.55	0.60	0.69	6
c1	0.55	0.60	0.65	
D	20.80	20.95	21.10	4
D1	16.25	16.55	17.65	5
D2	0.51	1.19	1.35	
E	15.75	15.94	16.13	4
E1	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.



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

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