

### Features

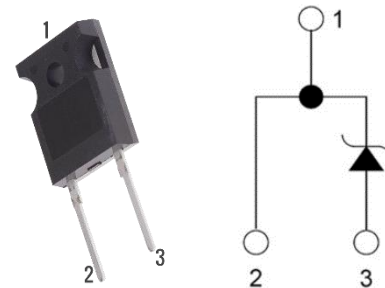
- Zero Forward/Reverse Recovery Current
- High Blocking Voltage
- High Frequency Operation
- Positive Temperature Coefficient on  $V_F$
- Temperature Independent Switching Behavior

$V_R = 650\text{ V}$   
 $I_F = 15\text{ A (}T_C=154^\circ\text{C)}$   
 $Q_c = 34\text{ nC (}V_R=400\text{ V)}$

### 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
- AC/DC Converters
- DC/DC Converters
- Uninterruptable Power Supplies

#### 1 Absolute Maximum Ratings ( $T_j = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Value	Unit
$V_{RRM}$	Repetitive Peak Reverse Voltage	$T_c=25^\circ\text{C}$	650	V
$I_F$	Continuous Forward Current	$T_c=25^\circ\text{C}$	40	A
		$T_c=125^\circ\text{C}$	23	
		$T_c=154^\circ\text{C}$	15	
$I_{FSM}$	Non-repetitive Peak Forward Surge Current	$T_c=25^\circ\text{C}$ , $t_p=10\text{ms}$ , Half Sine Wave (After test: $V_F \geq 0.5\text{V}@I_F=1\text{mA}$ ; $V_R \geq 500\text{V}@I_R=1\text{mA}$ ; $I_R \leq 5\text{mA}@V_R=650\text{V}$ )	95	A
		$T_c=125^\circ\text{C}$ , $t_p=10\text{ms}$ , Half Sine Wave (After test: $V_F \geq 0.5\text{V}@I_F=1\text{mA}$ ; $V_R \geq 500\text{V}@I_R=1\text{mA}$ ; $I_R \leq 5\text{mA}@V_R=650\text{V}$ )	90	
$T_{stg}$	Storage Temperature		-55 to 175	$^\circ\text{C}$
$T_j$	Operating Junction Temperature Range		-55 to 175	$^\circ\text{C}$



### 2 Electrical Characteristics (T<sub>j</sub>=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Value			Unit	Note
			Min	Typ	Max		
V <sub>F</sub>	Forward Voltage	I <sub>F</sub> =15A, T <sub>j</sub> =25°C	-	1.43	1.6	V	Fig.1
		I <sub>F</sub> =15A, T <sub>j</sub> =125°C	-	1.74	-	V	
		I <sub>F</sub> =15A, T <sub>j</sub> =175°C	-	1.96	-	V	
I <sub>R</sub>	Reverse Current	V <sub>R</sub> =650V, T <sub>j</sub> =25°C	-	0.05	5	μA	Fig.2
		V <sub>R</sub> =650V, T <sub>j</sub> =125°C	-	0.28	-	μA	
		V <sub>R</sub> =650V, T <sub>j</sub> =175°C	-	1.45	-	μA	
Q <sub>c</sub>	Total Capacitive Charge	V <sub>R</sub> =400V, T <sub>j</sub> =25°C	-	34	-	nC	Fig.3
C	Total Capacitance	f=1 MHz, V <sub>R</sub> =0V, T <sub>j</sub> =25°C	-	622	-	pF	Fig.4
		f=1 MHz, V <sub>R</sub> =200V, T <sub>j</sub> =25°C	-	66	-	pF	
		f=1 MHz, V <sub>R</sub> =400V, T <sub>j</sub> =25°C	-	63	-	pF	
E <sub>c</sub>	Capacitance Stored Energy	V <sub>R</sub> =400V, T <sub>j</sub> =25°C	-	5.5	-	μJ	

### 3 Thermal Characteristics

Symbol	Parameter	Conditions	Value	Unit
R <sub>th(j-c)</sub>	Thermal Resistance from Junction to Case		0.47	°C/W

## 4 Electrical Characteristic Curves

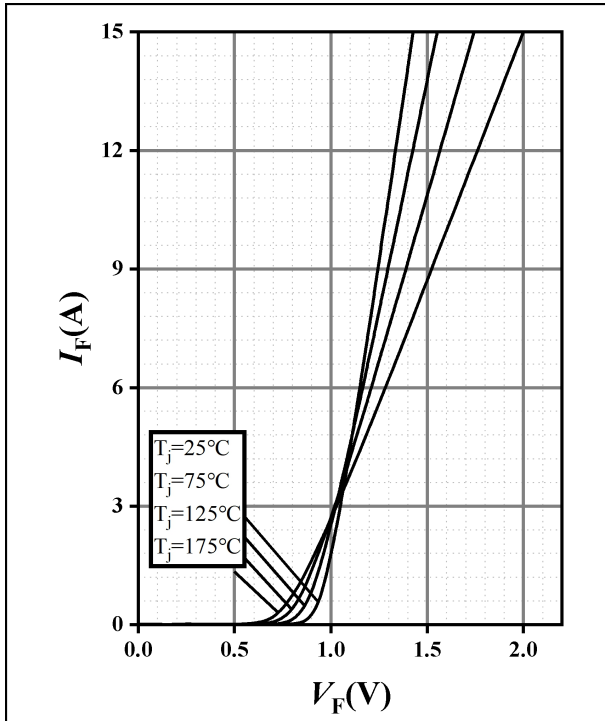


Fig.1 Forward Characteristics

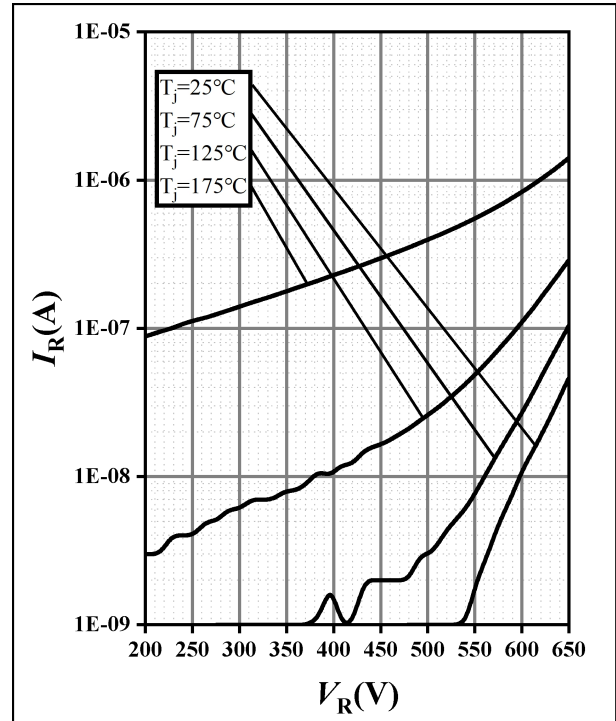


Fig.2 Reverse Characteristics

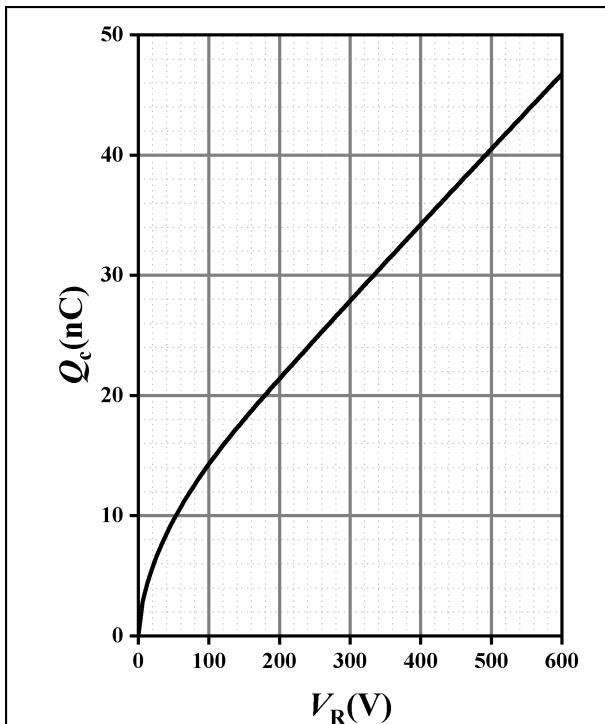


Fig.3 Capacitance Charge vs. Reverse Voltage

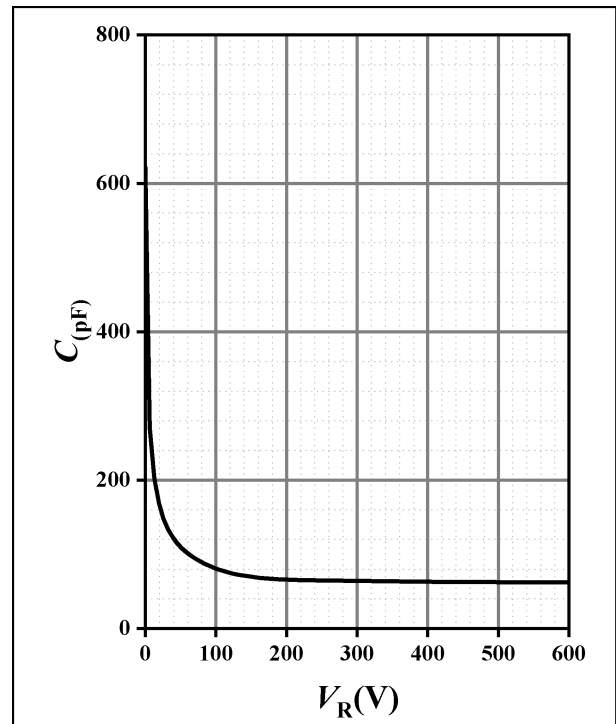
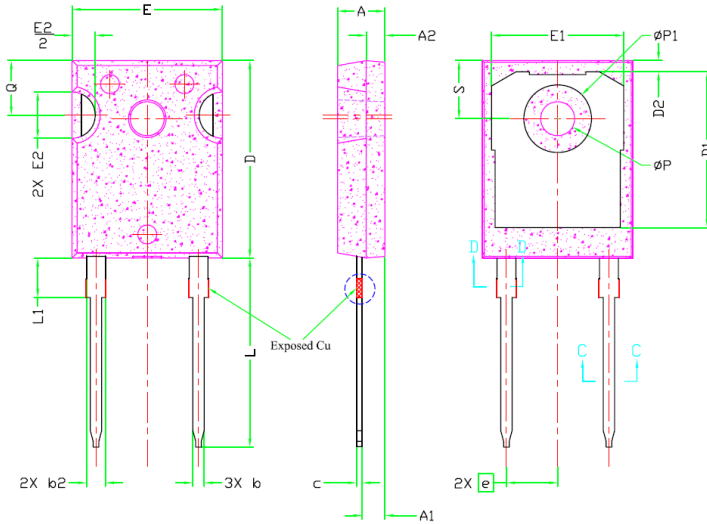


Fig.4 Capacitance vs. Reverse Voltage

### Package Dimensions

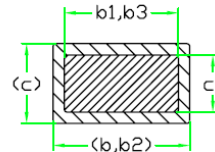
(TO-247-2 Package)



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

Part Number	Package	Packing	Marking
LGE3D15065H	TO-247-2	30pcs / Tube	LGE3D15065H