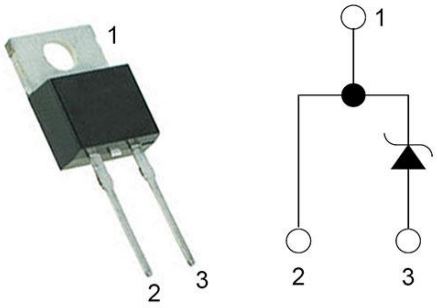
LGE3D08065A

Silicon Carbide Schottky Diode

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 V
I_F = 8A (T_C=150ºC)
Qc = 23nC (V_R=400V)



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

Part Number	Package	Marking
LGE3D08065A	TO-220AC	LGE3D08065A

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=150°C	22 10 8	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	65 55 520	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	55 45	A
Total power dissipation	P_D	T_C=25°C	94	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		1.6		^{0}C/W

Figure 1. Forward Characteristics

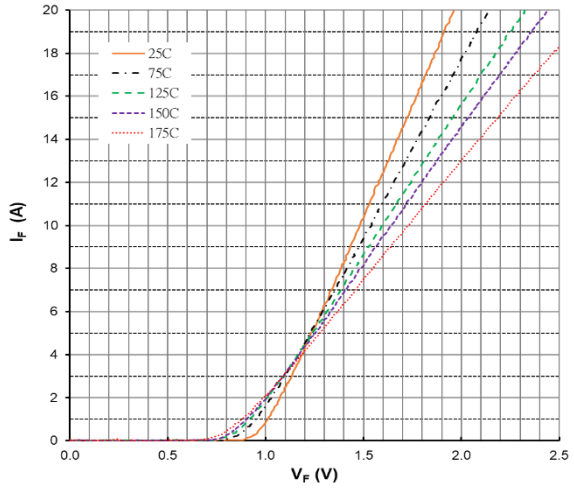


Figure 2. Forward Characteristics

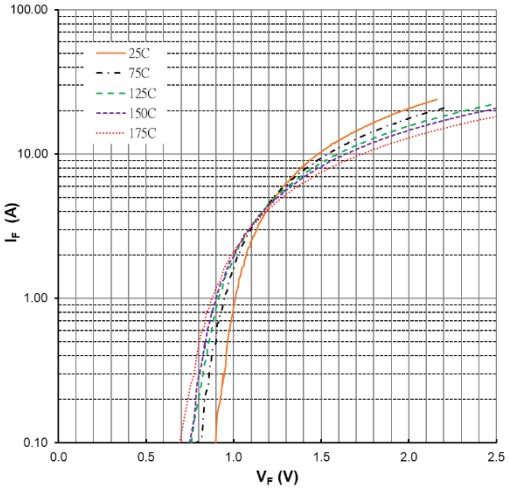


Figure 3. Reverse Characteristics

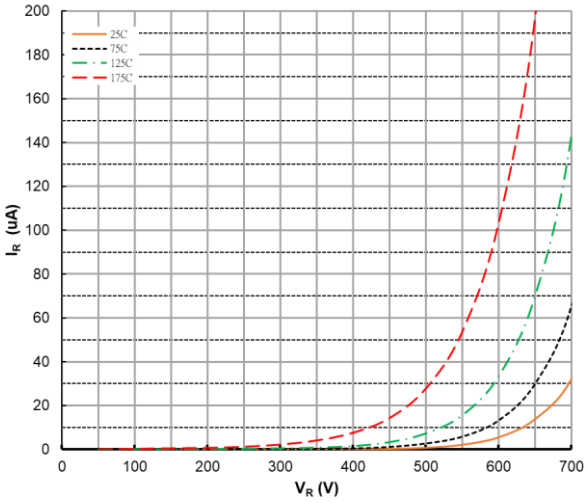


Figure 4. Power Derating

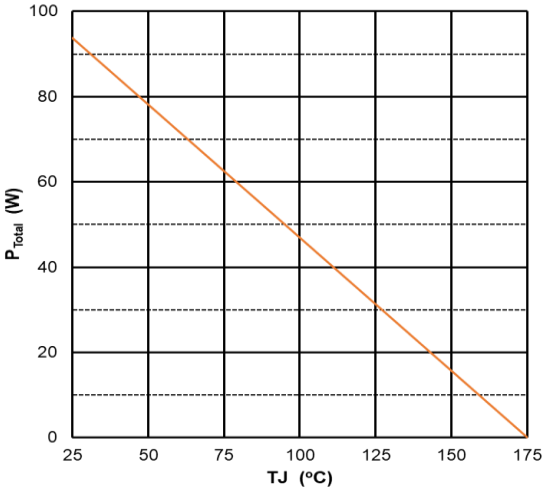


Figure 5. Capacitance vs Reverse Voltage

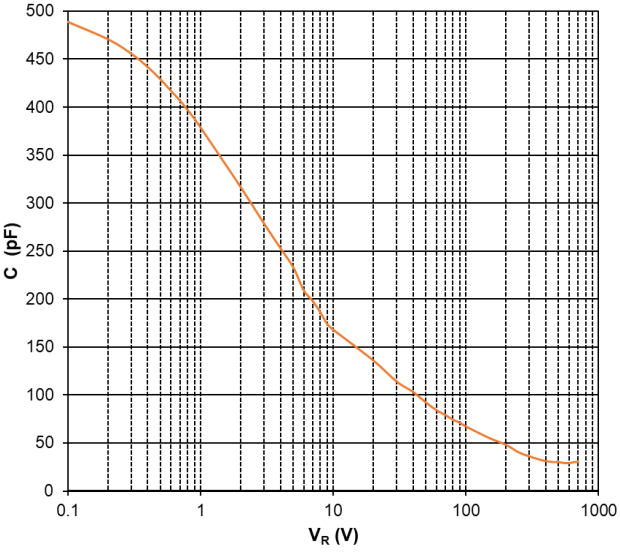
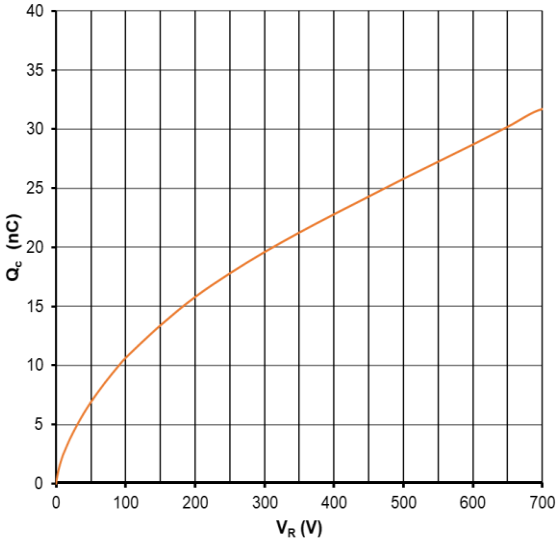
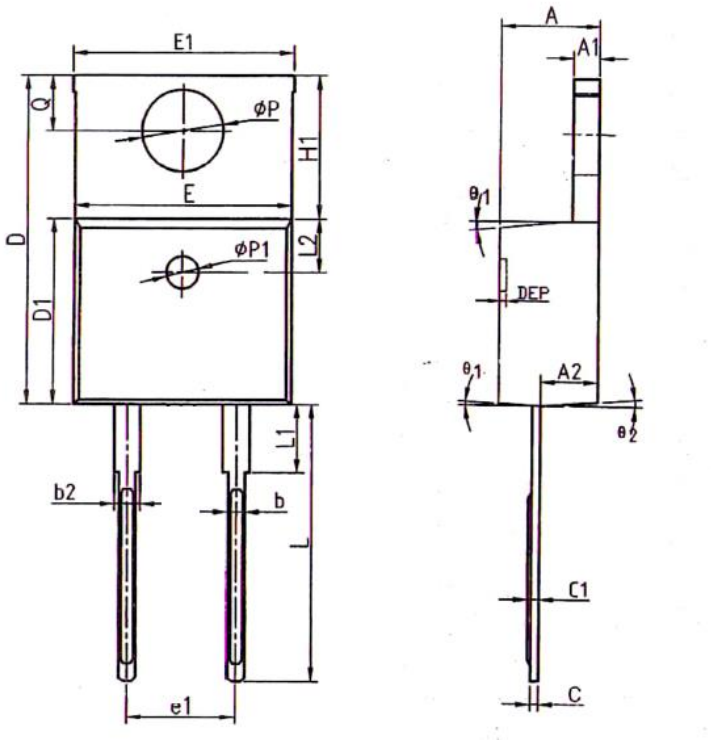


Figure 6. Recovery Charge vs Reverse Voltage



Package Dimensions

(TO-220AC Package)



COMMON DIMENSIONS

SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	4.40	4.57	4.70	0.173	0.180	0.185
A1	1.22	1.27	1.32	0.048	0.050	0.052
A2	2.59	2.69	2.79	0.102	0.106	0.110
b	0.77	0.813	0.90	0.030	0.032	0.035
b2	1.20	1.27	1.36	0.047	0.050	0.054
c	0.34	0.381	0.47	0.013	0.015	0.019
c1	0.40	0.559	0.60	0.016	0.022	0.024
D	14.70	15.00	15.30	0.579	0.591	0.602
D1	8.60	8.70	8.80	0.339	0.343	0.346
E	10.06	10.16	10.26	0.396	0.400	0.404
E1	10.10	10.25	10.35	0.398	0.404	0.407
E2	10.00	10.10	10.20	0.394	0.398	0.402
e		2.54 BSC			0.100 BSC	
e1		5.08 BSC			0.200 BSC	
H1	6.10	6.30	6.50	0.240	0.248	0.256
L	13.20	13.40	13.50	0.520	0.528	0.531
L1	-	3.75	4.00	-	0.148	0.157
L2		2.50 REF			0.098 REF	
ΦP	3.76	3.84	3.88	0.148	0.151	0.153
Q	2.60	2.743	2.90	0.102	0.108	0.114
θ1	5°	7°	9°	5°	7°	9°
θ2	1°	3°	5°	1°	3°	5°
ΦP1	1.40	1.50	1.60	0.055	0.059	0.063
DEP	0.05	0.10	0.20	0.002	0.004	0.008

Packge	Packing	Box Size L×W×H(mm)	Quatity(pcs/box)	Carton Size L×W×H(mm)	Quatity(pcs/carton)
TO-220AC	50pcs/Tube	558×148×38	1000	565×225×175	5000