

## Features

- Low Forward Voltage Drop ( $V_F$ )
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Low Leakage Current ( $I_r$ )
- Temperature-Independent Switching Behavior
- Positive Temperature Coefficient on  $V_F$

## Benefits

- Higher System Level Efficiency
- Increase System Power Density
- Reduction of Heat Sink Requirements
- Parallel Devices Without Thermal Runaway

## Applications

- Switch Mode Power Supplies (SMPS)
- Server/Telecom Power Supplies
- Industrial Power Supplies
- Solar
- UPS

Part Number	Package	Marking
GC6D08065A	TO-220-2	GC6D08065

## Maximum Ratings ( $T_c = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
$V_{RRM}$	Repetitive Peak Reverse Voltage	650	V		
$V_{DC}$	DC Blocking Voltage	650	V		
$I_F$	Continuous Forward Current	30 16 8	A	$T_c=25^\circ\text{C}$ $T_c=125^\circ\text{C}$ $T_c=155^\circ\text{C}$	
$I_{FRM}$	Repetitive Peak Forward Surge Current	37 22	A	$T_c=25^\circ\text{C}$ , $t_p = 10$ ms, Half Sine Wave $T_c=110^\circ\text{C}$ , $t_p = 10$ ms, Half Sine Wave	
$I_{FSM}$	Non-Repetitive Peak Forward Surge Current	69 63	A	$T_c=25^\circ\text{C}$ , $t_p = 10$ ms, Half Sine Wave $T_c=110^\circ\text{C}$ , $t_p = 10$ ms, Half Sine Wave	
$I_{FMax}$	Non-Repetitive Peak Forward Surge Current	860 790	A	$T_c=25^\circ\text{C}$ , $t_p = 10$ $\mu\text{s}$ , Pulse $T_c=110^\circ\text{C}$ , $t_p = 10$ $\mu\text{s}$ , Pulse	
$P_{tot}$	Power Dissipation	92.4 40.0	W	$T_c=25^\circ\text{C}$ $T_c=110^\circ\text{C}$	
$T_J, T_{stg}$	Operating Junction and Storage Temperature	-55 to +175	$^\circ\text{C}$		
	TO-220 Mounting Torque	1 8.8	Nm lbf-in	M3 Screw 6-32 Screw	

$$V_{RRM} = 650 \text{ V}$$

$$I_F(T_c=155^\circ\text{C}) = 8 \text{ A}$$

$$Q_c = 29 \text{ nC}$$



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Package



### Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
$V_F$	Forward Voltage	1.27 1.37	1.50 1.60	V	$I_F = 8\text{ A}$ $T_J = 25^\circ\text{C}$ $I_F = 8\text{ A}$ $T_J = 175^\circ\text{C}$	
$I_R$	Reverse Current	2 15	40 160	$\mu\text{A}$	$V_R = 650\text{ V}$ $T_J = 25^\circ\text{C}$ $V_R = 650\text{ V}$ $T_J = 175^\circ\text{C}$	
$Q_C$	Total Capacitive Charge	30		nC	$V_R = 400\text{ V}$ , $I_F = 8\text{ A}$ $T_J = 25^\circ\text{C}$	
C	Total Capacitance	518 57 45		pF	$V_R = 0\text{ V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{ MHz}$ $V_R = 200\text{ V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{ MHz}$ $V_R = 400\text{ V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{ MHz}$	
$E_C$	Capacitance Stored Energy	4.4		$\mu\text{J}$	$V_R = 400\text{ V}$	

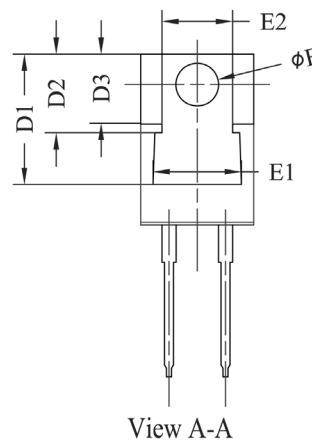
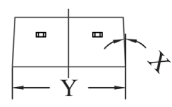
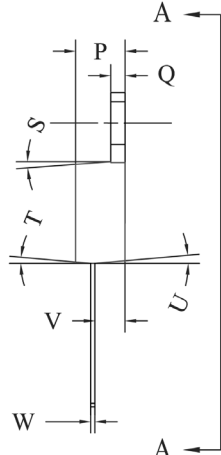
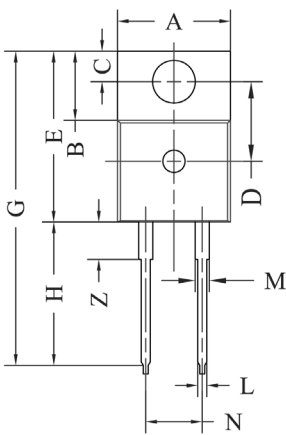
Note: This is a majority carrier diode, so there is no reverse recovery charge.

### Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	1.62	$^\circ\text{C/W}$	

**Package Dimensions**

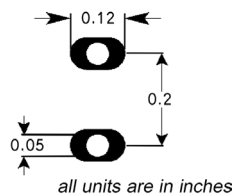
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POS	Inches		Millimeters	
	Min	Max	Min	Max
A	.381	.410	9.677	10.414
B	.235	.255	5.969	6.477
C	.100	.120	2.540	3.048
D	.223	.337	5.664	8.560
D1	.457-.490		11.60-12.45 typ	
D2	.277-.303 typ		7.04-7.70 typ	
D3	.244-.252 typ		6.22-6.4 typ	
E	.590	.615	14.986	15.621
E1	.302	.326	7.68	8.28
E2	.227	.251	5.77	6.37
F	.143	.153	3.632	3.886
G	1.105	1.147	28.067	29.134
H	.500	.550	12.700	13.970
L	.025	.036	.635	.914
M	.045	.055	1.143	1.550
N	.195	.205	4.953	5.207
P	.165	.185	4.191	4.699
Q	.048	.054	1.219	1.372
S	3°	6°	3°	6°
T	3°	6°	3°	6°
U	3°	6°	3°	6°
V	.094	.110	2.388	2.794
W	.014	.025	.356	.635
X	3°	5.5°	3°	5.5°
Y	.385	.410	9.779	10.414
Z	.130	.150	3.302	3.810

NOTE:  
1. Dimension L, M, W apply for Solder Dip Finish

**Recommended Solder Pad Layout**



TO-220-2

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GC6D08065A	TO-220-2