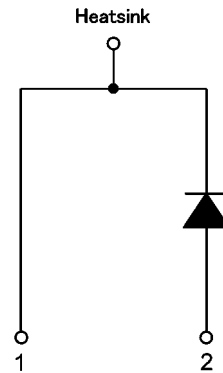


Features

- 1) Shorter recovery time
- 2) Reduced temperature dependence
- 3) High-speed switching possible
- 4) Temperature independent switching behavior

Applications

- PFC Boost Topology
- Secondary Side Rectification
- Data Center
- PV Power Conditioners
- DC/DC Converter
- EV Charger



Package

TO-220-2

1: Cathode
2: Anode

Part Number	Marking	Package	V_{RRM}	$I_F, T_C < 135^\circ C$	Q_c
GC3D03060A	GC3D03060	TO220-2	600 V	5 A	7.6 nC

Maximum Ratings ($T_C = 25^\circ C$ unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions
V_{RRM}	Repetitive Peak Reverse Voltage	600	V	
V_{RSM}	Surge Peak Reverse Voltage	600	V	
V_{DC}	DC Blocking Voltage	600	V	
I_F	Continuous Forward Current	11 5 3	A	$T_C = 25^\circ C$ $T_C = 135^\circ C$ $T_C = 158^\circ C$
I_{FRM}	Repetitive Peak Forward Surge Current	18 13.5	A	$T_C = 25^\circ C, t_p = 10 \text{ mS}, \text{Half Sine Wave } D = 0.3$ $T_C = 110^\circ C, t_p = 10 \text{ mS}, \text{Half Sine Wave } D = 0.3$
I_{FSM}	Non-Repetitive Peak Forward Surge Current	26 23	A	$T_C = 25^\circ C, t_p = 10 \text{ mS}, \text{Half Sine Wave } D = 0.3$ $T_C = 110^\circ C, t_p = 10 \text{ mS}, \text{Half Sine Wave } D = 0.3$
I_{FSM}	Non-Repetitive Peak Forward Surge Current	100	A	$T_C = 25^\circ C, t_p = 10 \mu S, \text{Pulse}$
P_{tot}	Power Dissipation	47 20	W	$T_C = 25^\circ C$ $T_C = 110^\circ C$
dV/dt	Diode dV/dt ruggedness	200	V/ns	$V_R = 0-600V$
T_J, T_{stg}	Operating Junction and Storage Temperature	-55 to +175	$^\circ C$	
	TO-220 Mounting Torque	1 8.8	Nm lbf-in	M3 Screw 6-32 Screw

Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions
V_F	Forward Voltage	1.5 1.8	1.7 2.4	V	$I_F = 3\text{ A } T_J = 25^\circ\text{C}$ $I_F = 3\text{ A } T_J = 175^\circ\text{C}$
I_R	Reverse Current	4 8	20 80	μA	$V_R = 600\text{ V } T_J = 25^\circ\text{C}$ $V_R = 600\text{ V } T_J = 175^\circ\text{C}$
Q_C	Total Capacitive Charge	7.6		nC	$V_R = 400\text{ V}, I_F = 3\text{ A}$ $di/dt = 500\text{ A}/\mu\text{S}$ $T_J = 25^\circ\text{C}$
C	Total Capacitance	166 14 11		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	1.1		μJ	$V_R = 400\text{ V}$

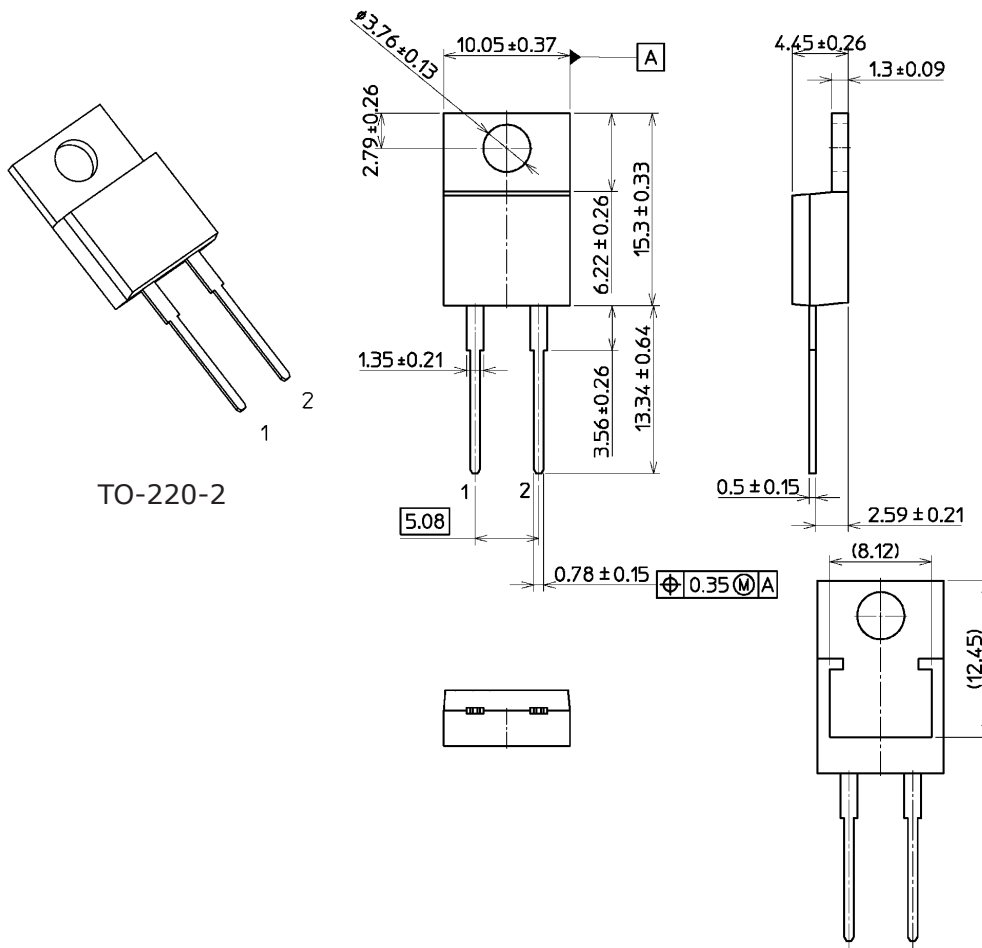
Note: This is a majority carrier diode, so there is no reverse recovery charge.

Thermal Characteristics

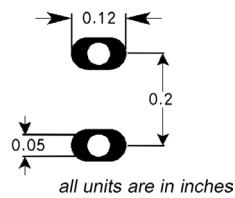
Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	3.2	$^\circ\text{C}/\text{W}$	Fig. 8

Package Dimensions

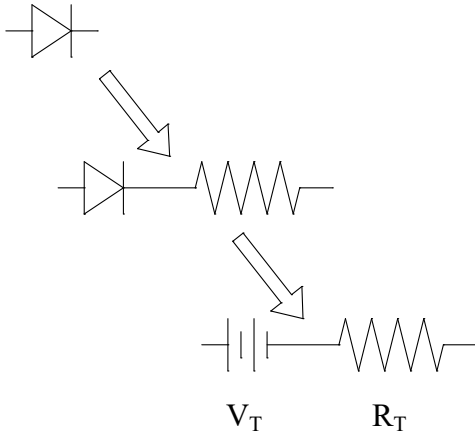
Unit: mm



Recommended Solder Pad Layout



Diode Model



$$V_{f_T} = V_T + I_f * R_T$$

$$V_T = 0.96 + (T_J * -1.1 * 10^{-3})$$

$$R_T = 0.145 + (T_J * 9.5 * 10^{-4})$$

Note: T_J = Diode Junction Temperature In Degrees Celsius,
valid from 25°C to 175°C