

### Features

- Low conduction loss due to low  $V_F$
- Extremely low switching loss by tiny  $Q_C$
- Highly rugged due to better surge current
- Industrial standard quality and reliability

**HF**

### Applications

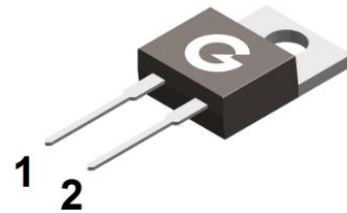
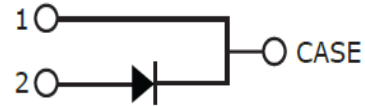
- UPS
- Power Inverter
- High performance SMPS
- Power factor correction

### Mechanical Data

- Case: TO-220AC
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208

### Key performance parameters

Type	GSC2D1065
$V_{DC}$	650V
$I_F @ 158^\circ\text{C}$	10A
$Q_C @ 400V$	27nC
$T_J$	175°C



TO-220AC

### Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
GSC2D1065	TO-220AC	50 pcs / Tube	GSC2D1065

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

Parameter	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	$V_{RRM}$	650	V
Surge Peak Reverse Voltage	$V_{RSM}$	650	V
DC Peak Reverse Voltage	$V_R$	650	V
Continuous Forward Current ( $T_C = 25^\circ\text{C}$ )	$I_F$	34	A
Continuous Forward Current ( $T_C = 135^\circ\text{C}$ )	$I_F$	17	A
Continuous Forward Current ( $T_C = 158^\circ\text{C}$ )	$I_F$	10	A
Non-Repetitive Forward Surge Current (10ms single half sine-wave, $T_C = 25^\circ\text{C}$ )	$I_{FSM}$	80	A
Non-Repetitive Forward Surge Current (10ms single half sine-wave, $T_C = 110^\circ\text{C}$ )		70	A
Repetitive Peak Forward Surge Current (10ms half sine-wave, $T_C = 25^\circ\text{C}$ )	$I_{FRM}$	45	A
Repetitive Peak Forward Surge Current (10ms half sine-wave, $T_C = 110^\circ\text{C}$ )		27	A
$i^2dt$ value (10ms single half sine-wave, $T_C = 25^\circ\text{C}$ )	$\int i^2 dt$	31.7	$A^2s$
$i^2dt$ value (10ms single half sine-wave, $T_C = 110^\circ\text{C}$ )		24.3	$A^2s$

## Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation ( $T_C = 25^\circ\text{C}$ )	$P_D$	93	W
Power Dissipation ( $T_C = 110^\circ\text{C}$ )		40	
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	1.60	$^\circ\text{C/W}$
Operating junction Temperature	$T_J$	-55 ~ +175	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 ~ +150	$^\circ\text{C}$

## Electrical Characteristics (@ $T_J = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Forward Voltage	$V_F$	$I_F = 10\text{A}, T_J = 25^\circ\text{C}$	-	1.3	1.5	V
		$I_F = 10\text{A}, T_J = 175^\circ\text{C}$	-	1.5	-	V
Maximum Peak Reverse Current	$I_R$	$V_R = 650\text{V}, T_J = 25^\circ\text{C}$	-	-	50	$\mu\text{A}$
		$V_R = 650\text{V}, T_J = 175^\circ\text{C}$	-	-	200	$\mu\text{A}$
Total Capacitive Charge	$Q_C$	$V_R = 400\text{V}, di/dt = 100\text{A}/\mu\text{s}$	-	27	-	nC
Total Capacitance	$C_J$	$V_R = 0\text{V}, f = 1\text{MHz}$	-	561	-	pF
		$V_R = 200\text{V}, f = 1\text{MHz}$	-	55	-	
		$V_R = 400\text{V}, f = 1\text{MHz}$	-	43	-	

Ratings and Characteristics Curves (@  $T_A = 25^\circ\text{C}$  unless otherwise specified)

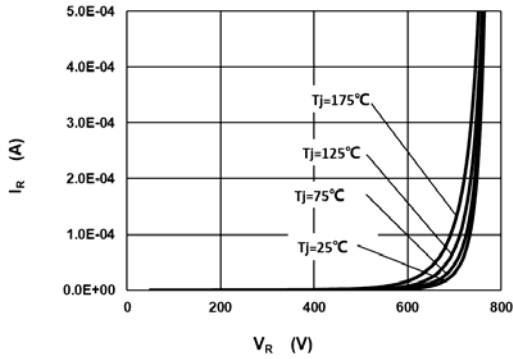


Fig 1 Typical Reverse Characteristic

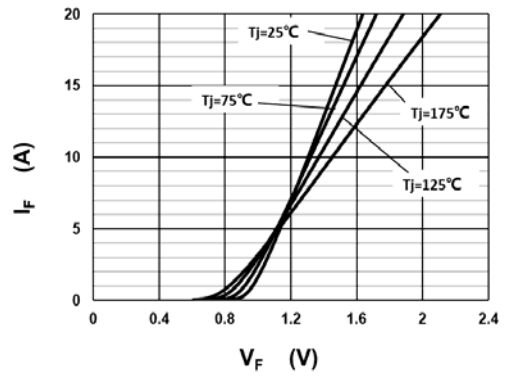


Fig 2 Typical Forward Characteristics

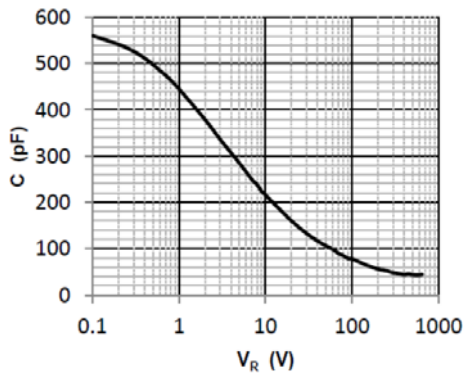


Fig 3 Capacitance vs. Reverse Voltage

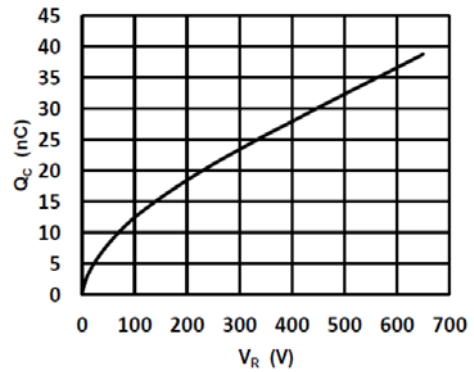


Fig 4 Reverse Charge vs. Reverse Voltage

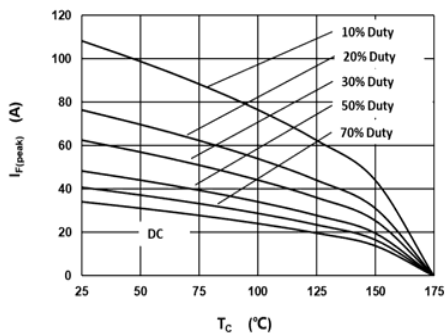


Fig 5 Current Derating

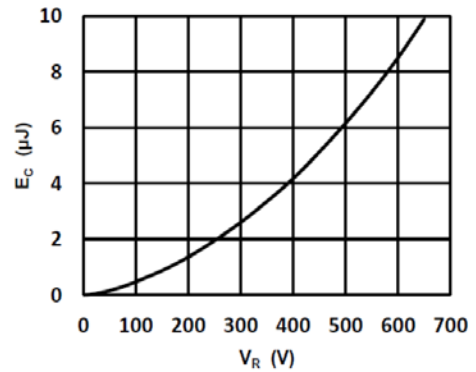


Fig 6 Typical Capacitance Stored Energy

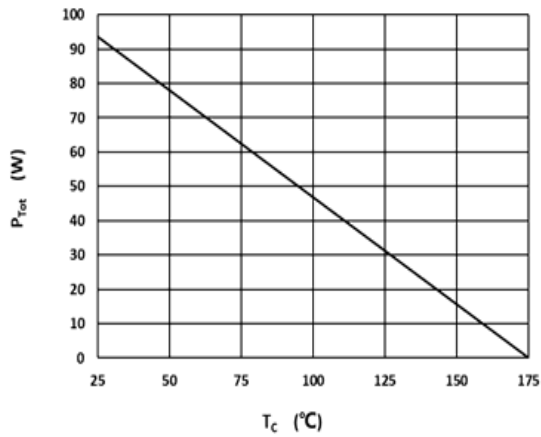


Fig 7 Power Derating

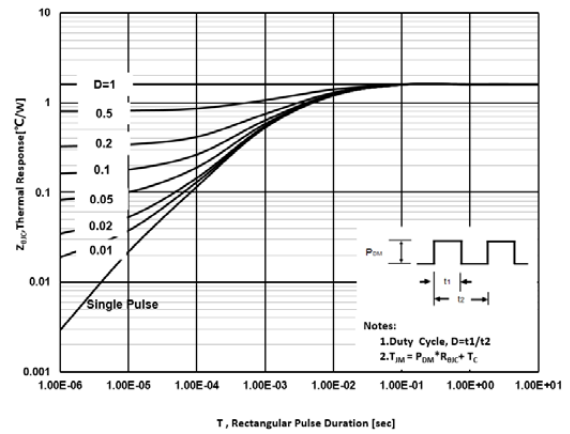
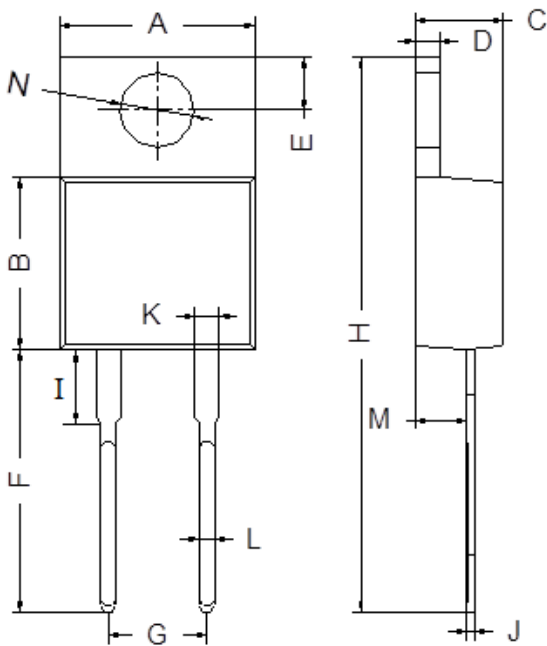


Fig 8 Transient Thermal Impandance

Package Outline Dimensions (Unit: mm)



TO-220AC		
Dimension	Min.	Max.
A	9.80	10.30
B	8.70	9.10
C	4.37	4.77
D	1.07	1.47
E	2.64	2.84
F	13.14	13.74
G	4.98	5.18
H	28.03	28.83
I	3.50	4.00
J	0.28	0.48
K	1.22	1.32
L	0.71	0.91
M	2.40	2.60
N	3.76	3.96

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