

### Features

- Extremely low reverse current
- No reverse recovery current
- Temperature independent switching
- Positive temperature coefficient on  $V_F$
- Excellent surge current capability
- Low capacitive charge
- RoHS compliant with Halogen-free

HF

### Key performance parameters

Type	GSC2D0465
$V_{DC}$	650V
$I_F @ 150^\circ C$	4A
$Q_C @ 400V$	13nC
$T_j$	175°C

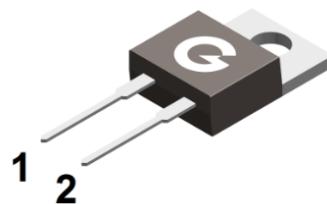
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### Applications

- Switch mode power supplies (SMPS)
- Uninterruptible power supplies
- Motor drivers
- 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



TO-220AC

### Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
GSC2D0465	TO-220AC	50 pcs / Tube	GSC2D0465

### Maximum Ratings (@ $T_J = 25^\circ C$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	$V_{RRM}$	650	V
DC Blocking Voltage	$V_{DC}$	650	V
Continuous Forward Current ( $T_c = 25^\circ C$ )	$I_F$	11	A
Continuous Forward Current ( $T_c = 150^\circ C$ )	$I_F$	4	A
Peak Forward Surge Current (10ms single half sine-wave, $T_c = 25^\circ C$ )	$I_{FSM}$	31	A
$i^2dt$ value (10ms single half sine-wave, $T_c = 25^\circ C$ )	$\int i^2dt$	4.8	A <sup>2</sup> s

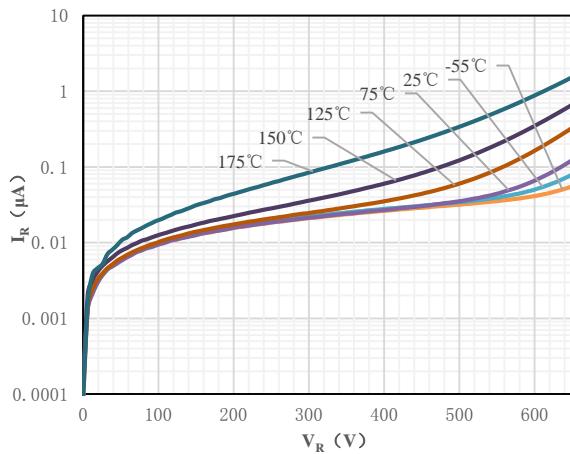
## Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation ( $T_c = 25^\circ\text{C}$ )	$P_D$	50	W
Power Dissipation ( $T_c = 110^\circ\text{C}$ )	$P_D$	21	W
Thermal Resistance Junction-to-Case	$R_{\text{JC}}$	1.9	°C/W
Operating junction Temperature	$T_J$	-55 ~ +175	°C
Storage Temperature Range	$T_{\text{STG}}$	-55 ~ +150	°C

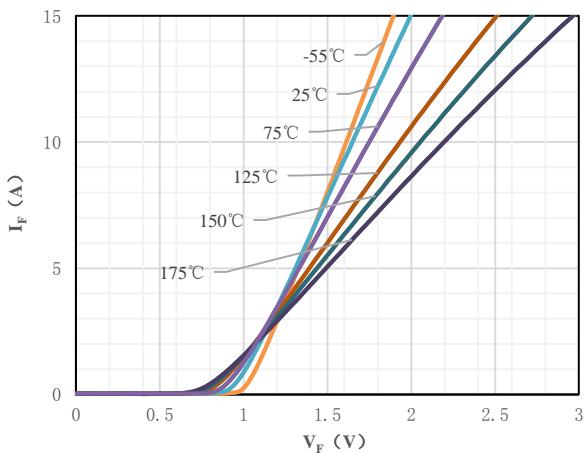
## Electrical Characteristics (@ $T_J = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Reverse Breakdown Voltage	$V_{(\text{BR})R}$	$I_R = 100\mu\text{A}$	650	-	-	V
Forward Voltage	$V_F$	$I_F = 4\text{A}, T_J = 25^\circ\text{C}$	-	1.3	1.5	V
		$I_F = 4\text{A}, T_J = 175^\circ\text{C}$	-	1.55	2.2	V
Maximum Peak Reverse Current	$I_R$	$V_R = 650\text{V}, T_J = 25^\circ\text{C}$	-	0.1	20	$\mu\text{A}$
		$V_R = 650\text{V}, T_J = 175^\circ\text{C}$	-	2.5	100	$\mu\text{A}$
Total Capacitive Charge	$Q_C$	$V_R = 400\text{V}$	-	13	-	nC
Total Capacitance	$C_J$	$V_R = 0\text{V}, f = 1 \text{ MHz}$	-	228	-	pF
		$V_R = 200\text{V}, f = 1 \text{ MHz}$	-	31	-	
		$V_R = 400\text{V}, f = 1 \text{ MHz}$	-	27	-	

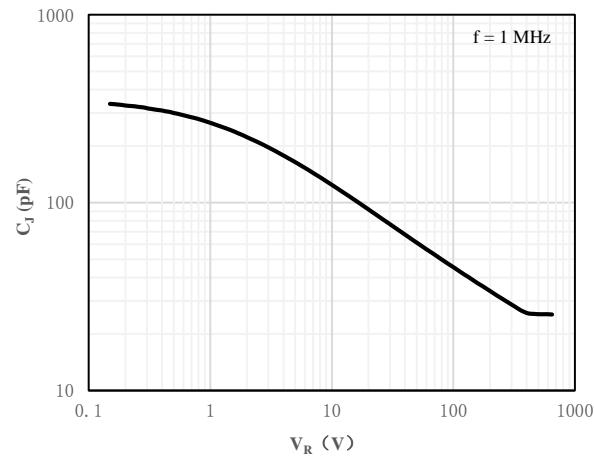
### Ratings and Characteristics Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)



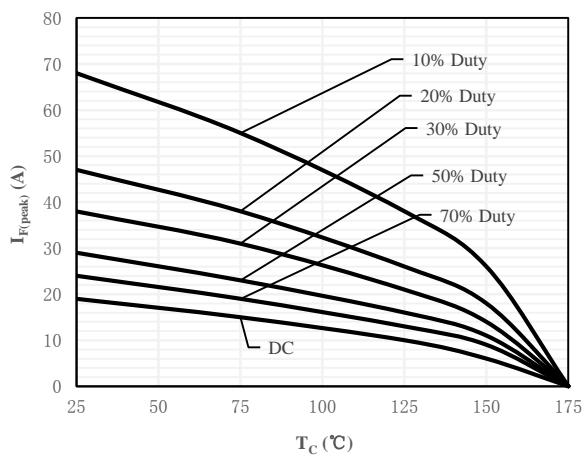
**Fig 1 Typical Reverse Characteristic**



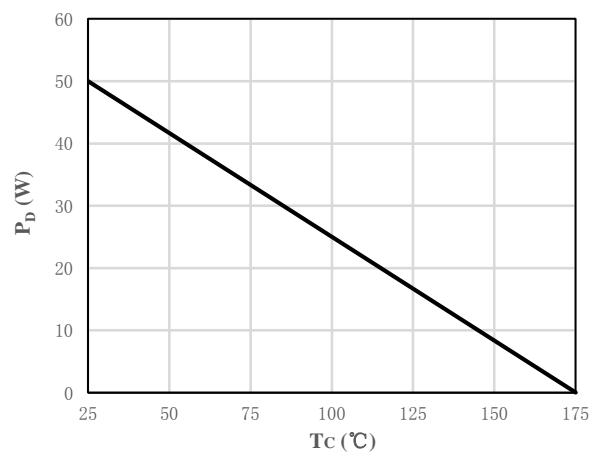
**Fig 2 Typical Forward Characteristics**



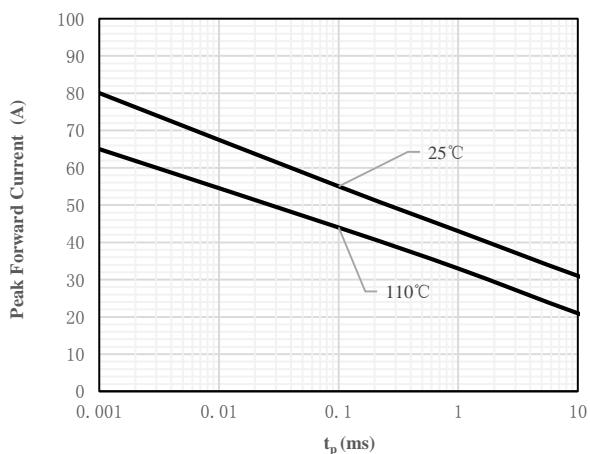
**Fig 3 Capacitance vs. Reverse Voltage**



**Fig 4 Current Derating**



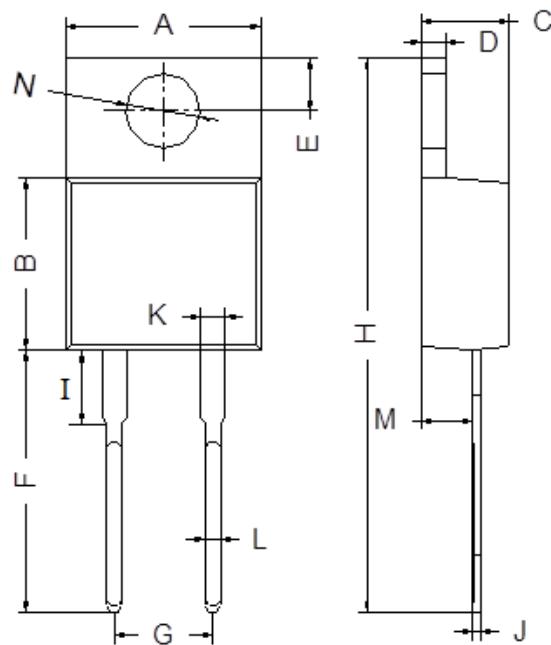
**Fig 5 Power Derating**



**Fig 6 Non-repetitive Peak Forward Surge Current vs. Pulse Duration (Sinusoidal Waveform)**



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