

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

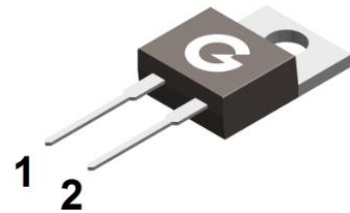
Mechanical Data

- 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	GSC2D1665
V_{DC}	650V
I_F @ 156°C	16A
$Q_C@400V$	52nC
T_J	175°C

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TO-220AC

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
GSC2D1665	TO-220AC	50 pcs / Tube	GSC2D1665

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	47	A
Continuous Forward Current ($T_C = 135^\circ\text{C}$)	I_F	24	A
Continuous Forward Current ($T_C = 156^\circ\text{C}$)	I_F	16	A
Non-Repetitive Forward Surge Current (10ms single half sine-wave, $T_C = 25^\circ\text{C}$)	I_{FSM}	128	A
Non-Repetitive Forward Surge Current (10ms single half sine-wave, $T_C = 110^\circ\text{C}$)		98	A
Repetitive Peak Forward Surge Current (10ms half sine-wave, $T_C = 25^\circ\text{C}$)	I_{FRM}	70	A
Repetitive Peak Forward Surge Current (10ms half sine-wave, $T_C = 110^\circ\text{C}$)		56	A
i^2dt value (10ms single half sine-wave, $T_C = 25^\circ\text{C}$)	$\int i^2 dt$	81	A ² s
i^2dt value (10ms single half sine-wave, $T_C = 110^\circ\text{C}$)		48	A ² s

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation ($T_C = 25^\circ\text{C}$)	P_D	115	W
Power Dissipation ($T_C = 110^\circ\text{C}$)		50	
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	1.30	$^\circ\text{C/W}$
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	$I_F = 16\text{A}, T_J = 25^\circ\text{C}$	-	1.3	1.5	V
		$I_F = 16\text{A}, T_J = 175^\circ\text{C}$	-	1.5	-	V
Maximum Peak Reverse Current	I_R	$V_R = 650\text{V}, T_J = 25^\circ\text{C}$	-	-	100	μA
		$V_R = 650\text{V}, T_J = 175^\circ\text{C}$	-	-	200	μA
Total Capacitive Charge	Q_C	$V_R = 400\text{V}, di/dt = 100\text{A}/\mu\text{s}$	-	52	-	nC
Total Capacitance	C_J	$V_R = 0\text{V}, f = 1\text{MHz}$	-	993	-	pF
		$V_R = 200\text{V}, f = 1\text{MHz}$	-	101	-	
		$V_R = 400\text{V}, f = 1\text{MHz}$	-	83	-	

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

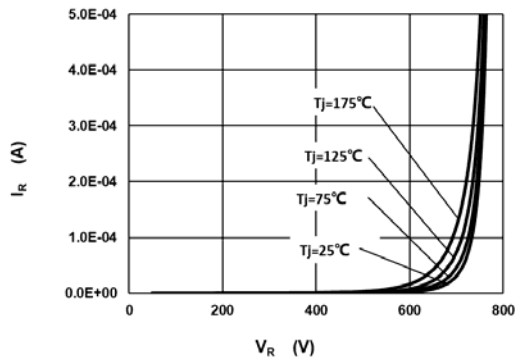


Fig 1 Typical Reverse Characteristic

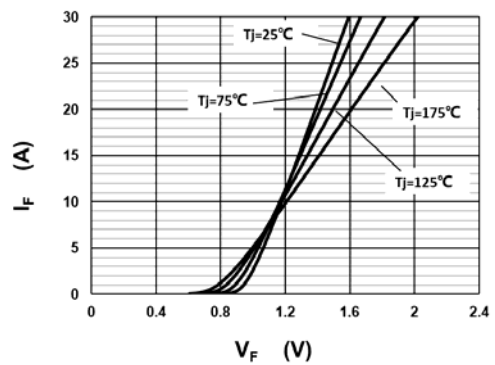


Fig 2 Typical Forward Characteristics

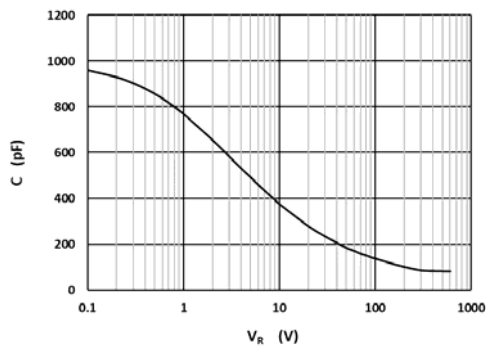


Fig 3 Capacitance vs. Reverse Voltage

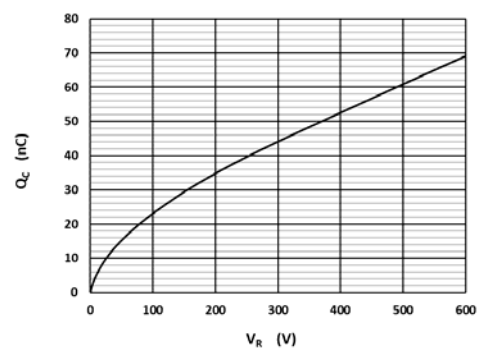


Fig 4 Reverse Charge vs. Reverse Voltage

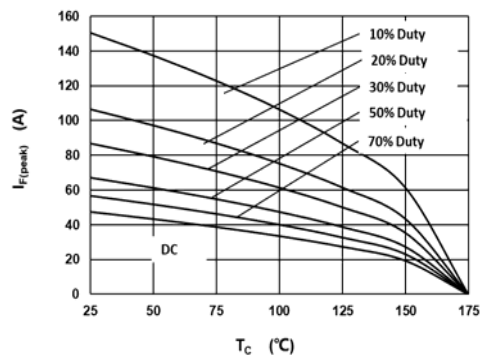


Fig 5 Current Derating

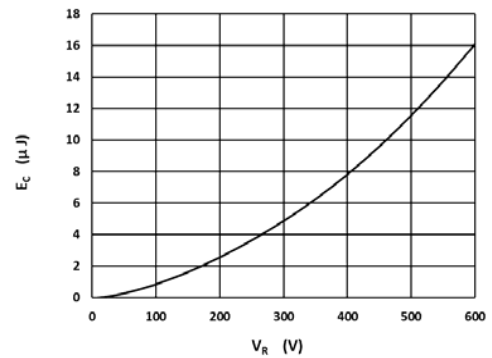


Fig 6 Typical Capacitance Stored Energy

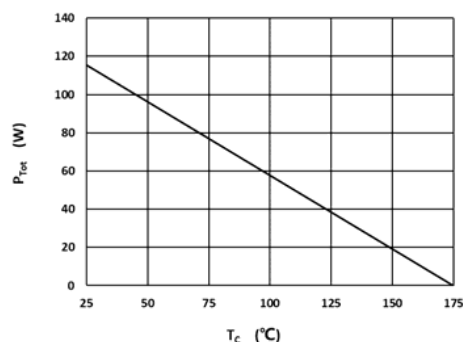


Fig 7 Power Derating

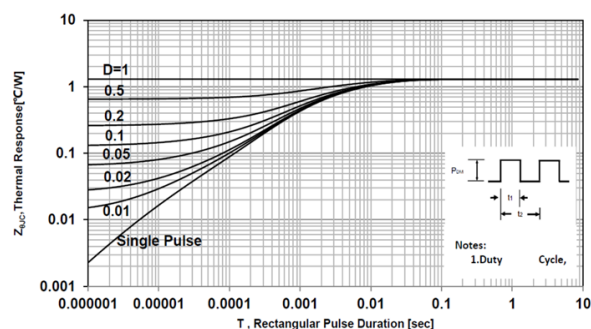
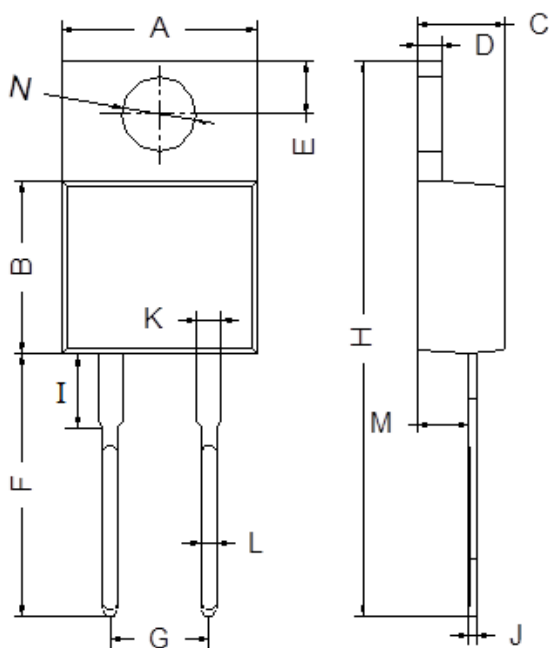


Fig 8 Transient Thermal Impandance

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