

### 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

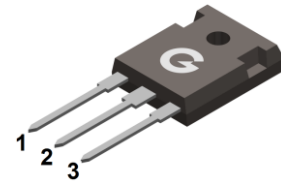
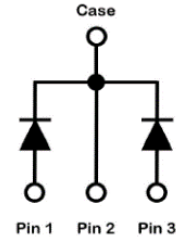
- UPS
- Power Inverter
- High performance SMPS
- Power factor correction

### Mechanical Data

- Case: TO-247
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208

### Key performance parameters

Type	GSC2D4065UC
$V_{DC}$	650V
$I_F @ 155^\circ\text{C}$	40A
$Q_C @ 400\text{V}$	62nC
$T_J$	175°C



TO-247

### Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
GSC2D4065UC	TO-247	30 pcs / Tube	GSC2D4065UC

### 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 ( $T_C = 25^\circ\text{C}$ )	$I_F$	58	A
Continuous Forward Current ( $T_C = 135^\circ\text{C}$ )	$I_F$	30	A
Continuous Forward Current ( $T_C = 155^\circ\text{C}$ )	$I_F$	40	A
Non-Repetitive Forward Surge Current (10ms single half sine-wave, $T_C = 25^\circ\text{C}$ )	$I_{FSM}$	160	A
Non-Repetitive Forward Surge Current (10ms single half sine-wave, $T_C = 110^\circ\text{C}$ )		140	A
Repetitive Peak Forward Surge Current (10ms half sine-wave, $T_C = 25^\circ\text{C}$ )	$I_{FRM}$	90	A
Repetitive Peak Forward Surge Current (10ms half sine-wave, $T_C = 110^\circ\text{C}$ )		54	A
$i^2dt$ value (10ms single half sine-wave, $T_C = 25^\circ\text{C}$ )	$\int i^2 dt$	128	$\text{A}^2\text{s}$
$i^2dt$ value (10ms single half sine-wave, $T_C = 110^\circ\text{C}$ )		98	$\text{A}^2\text{s}$

## Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation ( $T_C = 25^\circ\text{C}$ )	$P_D$	268	W
Power Dissipation ( $T_C = 110^\circ\text{C}$ )		116	
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.56	$^\circ\text{C/W}$
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	$V_F$	$I_F = 20\text{A}, T_J = 25^\circ\text{C}$	-	1.3	1.5	V
		$I_F = 20\text{A}, T_J = 175^\circ\text{C}$	-	1.5	-	V
Maximum Peak Reverse Current	$I_R$	$V_R = 650\text{V}, T_J = 25^\circ\text{C}$	-	-	80	$\mu\text{A}$
		$V_R = 650\text{V}, T_J = 175^\circ\text{C}$	-	-	200	$\mu\text{A}$
Total Capacitive Charge	$Q_C$	$V_R = 400\text{V}, di/dt = 100\text{A}/\mu\text{s}$	-	62	-	nC
Total Capacitance	$C_J$	$V_R = 0\text{V}, f = 1\text{MHz}$	-	1176	-	pF
		$V_R = 200\text{V}, f = 1\text{MHz}$	-	119	-	
		$V_R = 400\text{V}, f = 1\text{MHz}$	-	98	-	

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

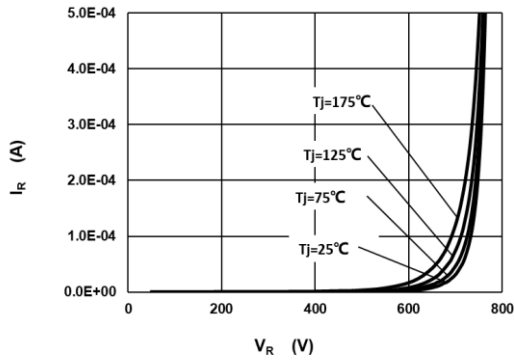


Fig 1 Typical Reverse Characteristic

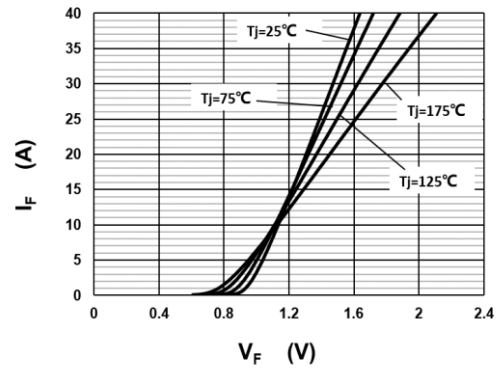


Fig 2 Typical Forward Characteristics

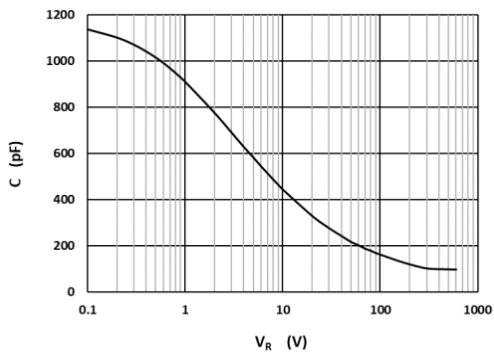


Fig 3 Capacitance vs. Reverse Voltage

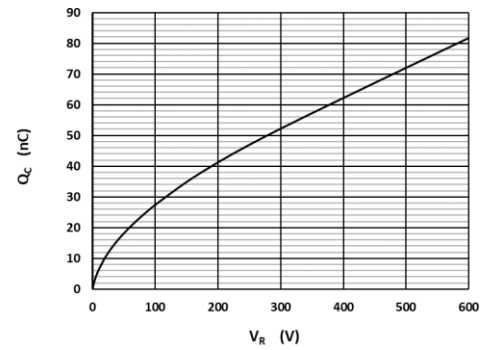


Fig 4 Reverse Charge vs. Reverse Voltage

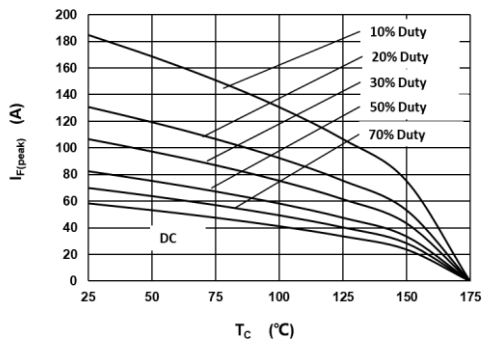


Fig 5 Current Derating

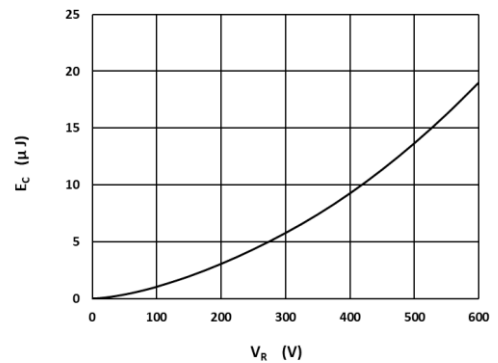


Fig 6 Typical Capacitance Stored Energy

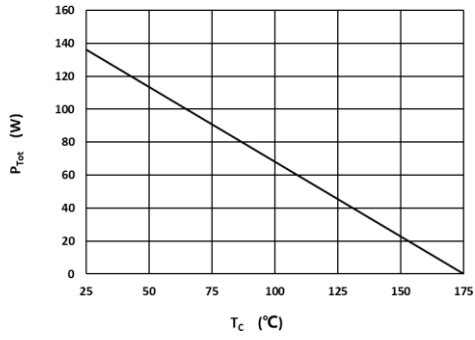
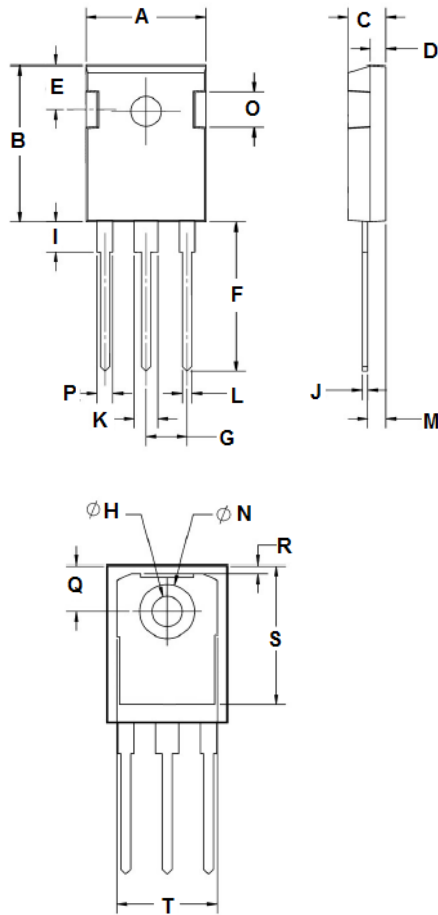


Fig 7 Power Derating

**Package Outline Dimensions** (Unit: mm)



TO-247		
Dimension	Min.	Max.
A	15.50	16.10
B	20.70	21.30
C	4.70	5.30
D	1.80	2.20
E	5.20	5.80
F	19.70	20.30
G	5.20	5.60
H	3.30	3.70
I	3.90	4.30
J	0.50	0.70
K	2.80	3.20
L	1.00	1.40
M	2.20	2.60
N	7.00	7.20
O	4.90	5.30
P	1.80	2.20
Q	5.70	5.90
R	0.80	1.20
S	17.00	17.80
T	13.60	14.20

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