

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
- RoHS compliant with Halogen-free

HF

Applications

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

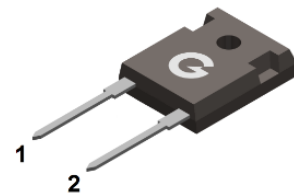
Mechanical Data

- Case: TO-247-2L
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208

Key performance parameters

Type	GSC2D40120U
V_{DC}	1200V
I_F @ 145°C	40A
Q_C @800V	204nC
T_J	175°C

1 CATHODE 2 ANODE



TO-247-2L

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
GSC2D40120U	TO-247-2L	30 pcs / Tube	GSC2D40120U

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

Parameter	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V_{RRM}	1200	V
Surge Peak Reverse Voltage	V_{RSM}	1200	V
DC Peak Reverse Voltage	V_R	1200	V
Continuous Forward Current ($T_C = 25^\circ\text{C}$)	I_F	103	A
Continuous Forward Current ($T_C = 145^\circ\text{C}$)	I_F	40	A
Non-Repetitive Forward Surge Current (10ms single half sine-wave, $T_C = 25^\circ\text{C}$)	I_{FSM}	360	A
Non-Repetitive Forward Surge Current (10ms single half sine-wave, $T_C = 110^\circ\text{C}$)		340	A
i^2dt value (10ms single half sine-wave, $T_C = 25^\circ\text{C}$)	$\int i^2 dt$	648	A^2s
i^2dt value (10ms single half sine-wave, $T_C = 110^\circ\text{C}$)		578	A^2s

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation ($T_C = 25^\circ\text{C}$)	P_D	452	W
Power Dissipation ($T_C = 110^\circ\text{C}$)		196	
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.33	$^\circ\text{C}/\text{W}$
Operating junction Temperature	T_J	-55 ~ +175	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +175	$^\circ\text{C}$

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Forward Voltage	V_F	$I_F = 40\text{A}, T_J = 25^\circ\text{C}$	-	1.4	1.7	V
		$I_F = 40\text{A}, T_J = 175^\circ\text{C}$	-	2.0	-	V
Maximum Peak Reverse Current	I_R	$V_R = 1200\text{V}, T_J = 25^\circ\text{C}$	-	0.3	5	μA
		$V_R = 1200\text{V}, T_J = 175^\circ\text{C}$	-	8	-	μA
Total Capacitive Charge	Q_C	$V_R = 800\text{V},$ $Q_C = \int_0^{V_R} C(V) dV$	-	204	-	nC
Total Capacitance	C_J	$V_R = 1\text{V}, f = 1\text{MHz}$	-	2270	-	pF
		$V_R = 400\text{V}, f = 1\text{MHz}$	-	192	-	
		$V_R = 800\text{V}, f = 1\text{MHz}$	-	144	-	

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

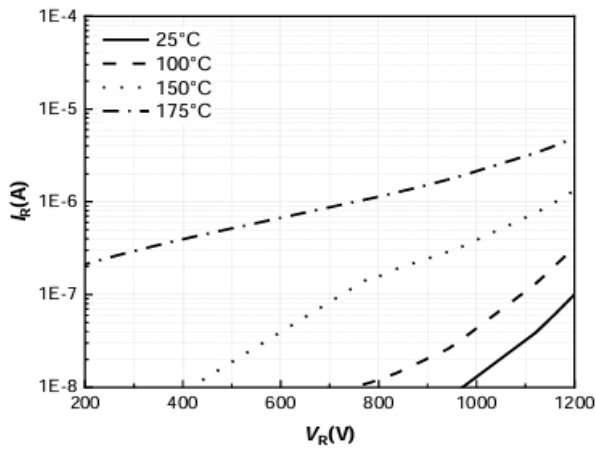


Fig 1 Typical Reverse Characteristic

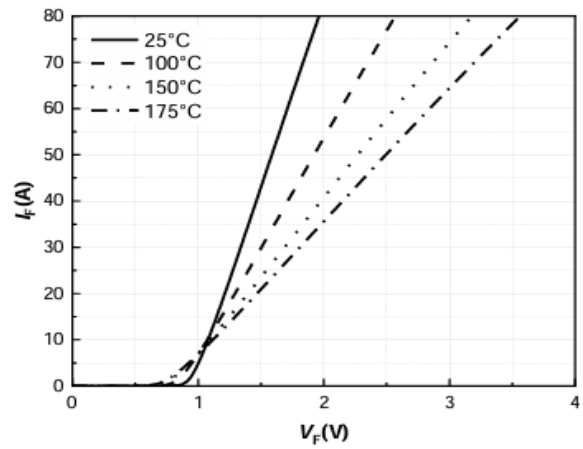


Fig 2 Typical Forward Characteristics

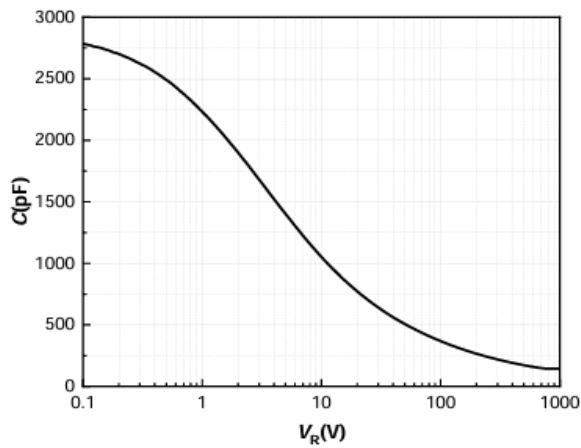


Fig 3 Capacitance vs. Reverse Voltage

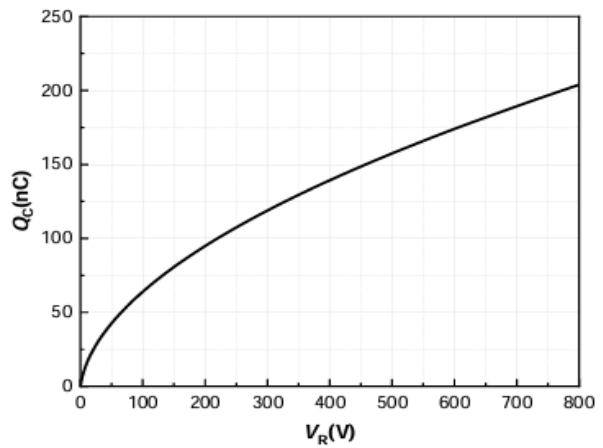


Fig 4 Reverse Charge vs. Reverse Voltage

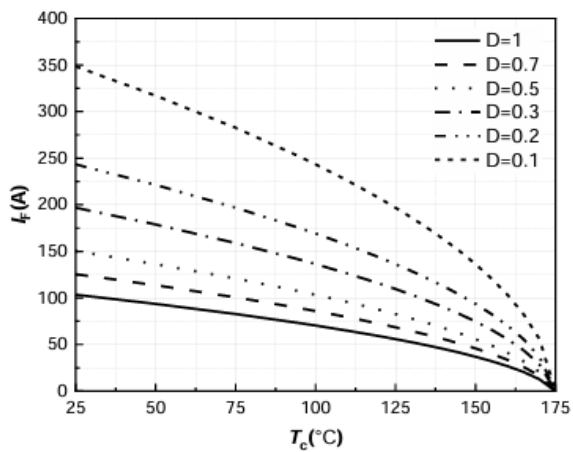


Fig 5 Current Derating

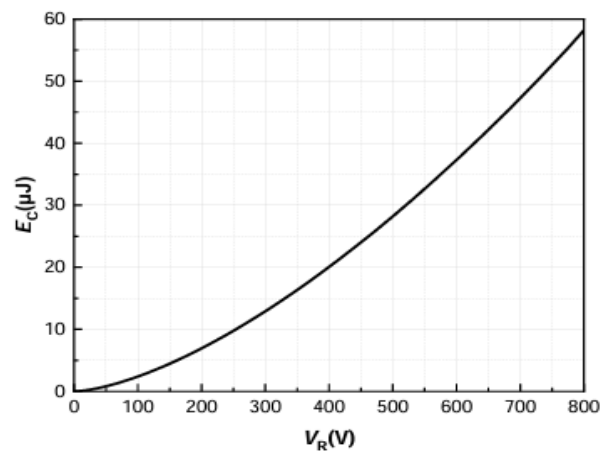


Fig 6 Typical Capacitance Stored Energy

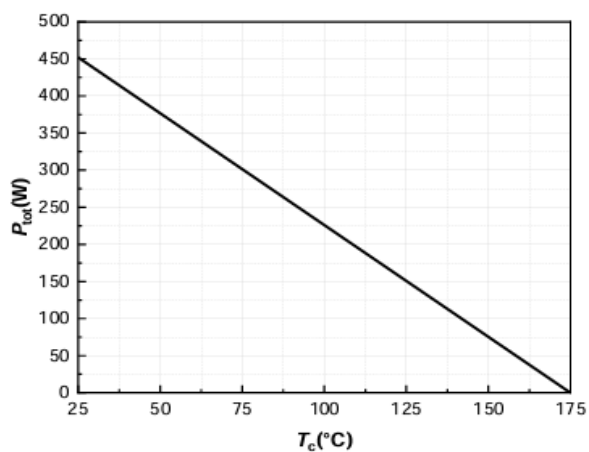


Fig 7 Power Derating

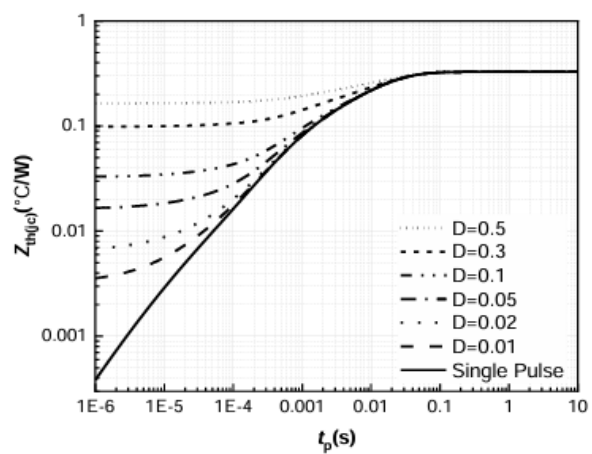
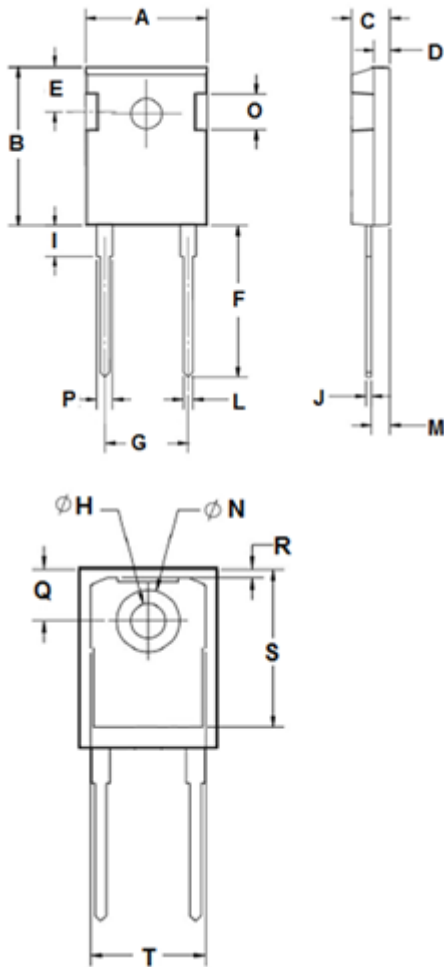


Fig 8 Transient Thermal Impandance

Package Outline Dimensions (Unit: mm)



TO-247-2L		
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	10.60	11.00
H	3.30	3.70
I	3.90	4.30
J	0.50	0.70
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