

Features

- Zero reverse recovery current
- Zero forward recovery voltage
- Temperature independent switching behavior
- High temperature operation
- High frequency operation

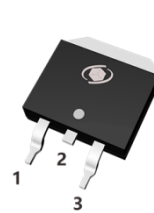
V_{RRM}	1200V
$I_F (T_C = 148^\circ\text{C})$	20A
Q_c	103nC

Benefits

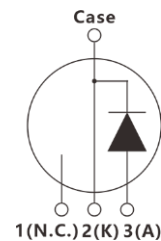
- Unipolar rectifier
- Substantially reduced switching losses
- No thermal run-away with parallel devices
- Reduced heat sink requirements

Applications

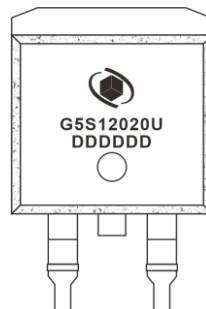
- SMPS, PFC
- Solar application, UPS, EV/HEV
- Motor drives, Wind turbine, Rail traction



TO-263



Inner Circuit



G = GPT
5 = Gen5
S = SiC Schottky Diode
120 = Voltage Rating 1200V
20 = Current Rating 20A
U = TO-263
DDDDDD = Traceable Code



Maximum Ratings (at $T_J = 25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	1200	V
Surge Peak Reverse Voltage	V_{RSM}	1200	V
Continuous Forward Current $T_c = 25^\circ\text{C}$ $T_c = 135^\circ\text{C}$ $T_c = 148^\circ\text{C}$	I_F	53.6 25.3 20	A
Repetitive Peak Forward Surge Current $T_c = 25^\circ\text{C}$, $t_p = 10\text{ms}$, Half Sine Pulse	I_{FRM}	100	A
Non-Repetitive Forward Surge Current $T_c = 25^\circ\text{C}$, $t_p = 10\text{ms}$, Half Sine Pulse	I_{FSM}	230	A
i^2t Value $T_c = 25^\circ\text{C}$, $t_p = 10\text{ms}$, Half Sine Pulse	$\int i^2 dt$	264.5	A^2s
Power Dissipation $T_c = 25^\circ\text{C}$ $T_c = 110^\circ\text{C}$	P_{tot}	221 96	W
Operating Junction Range	T_J	-55 to +175	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to +175	$^\circ\text{C}$

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

Parameter	Symbol	Test Condition	Value			Unit
			min.	typ.	max.	
DC Blocking Voltage	V_{DC}		1200	-	-	V
Forward Voltage	V_F	$I_F = 20\text{A}$				V
		$T_J = 25^\circ\text{C}$	-	1.45	1.7	
		$T_J = 175^\circ\text{C}$	-	1.98	2.5	
Reverse Current	I_R	$V_R = 1200\text{V}$				μA
		$T_J = 25^\circ\text{C}$	-	7.5	50	
		$T_J = 175^\circ\text{C}$	-	41	100	
Total Capacitance	C	$f = 1\text{MHz}$				pF
		$V_R = 0\text{V}$	-	1594	-	
		$V_R = 400\text{V}$	-	100	-	
		$V_R = 800\text{V}$	-	81	-	
Total Capacitive Charge	Q_C	$V_R = 800\text{V}$ $T_J = 25^\circ\text{C}$	-	103	-	nC
Capacitance Stored Energy	E_C	$V_R = 800\text{V}$	-	51	-	μJ

Thermal Characteristics

Parameter	Symbol	Test Condition	Value			Unit
			min.	typ.	max.	
Thermal Resistance, junction-case	$R_{th(j-c)}$		-	0.68	-	$^\circ\text{C/W}$

Typical Characteristics Curves

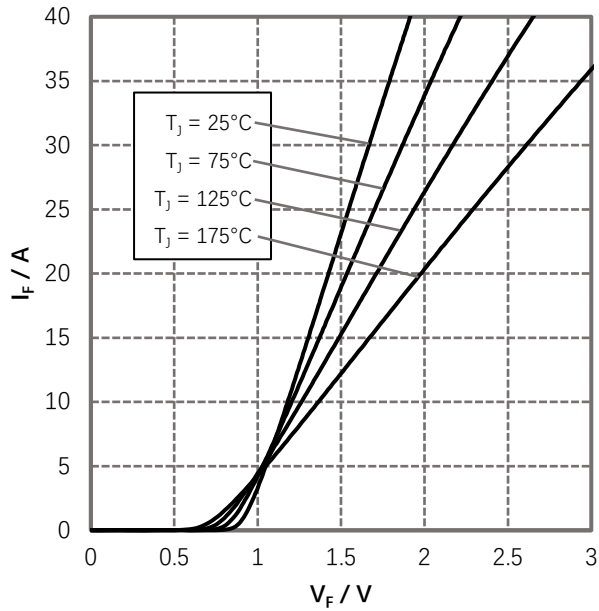


Figure 1. Forward Characteristics

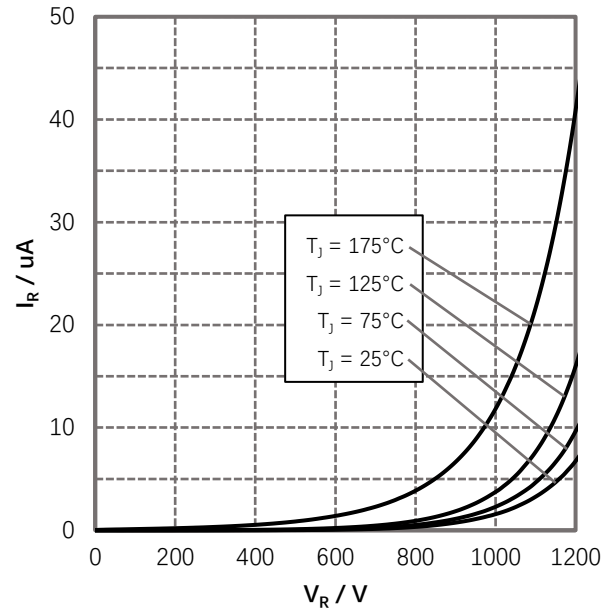


Figure 2. Reverse Characteristics

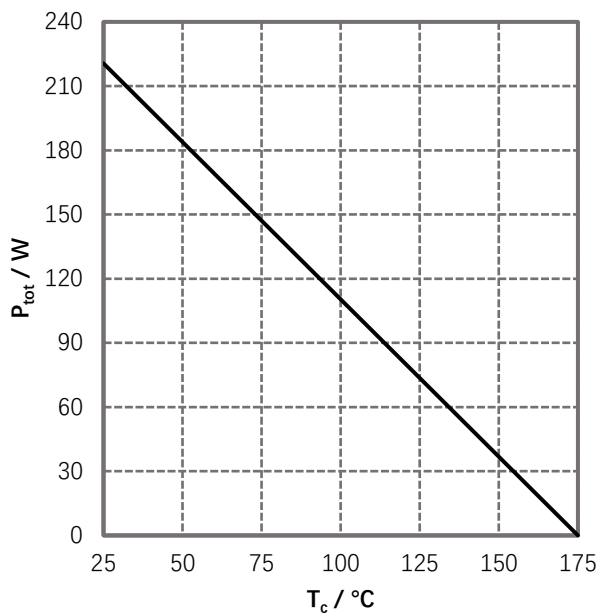


Figure 3. Power Derating

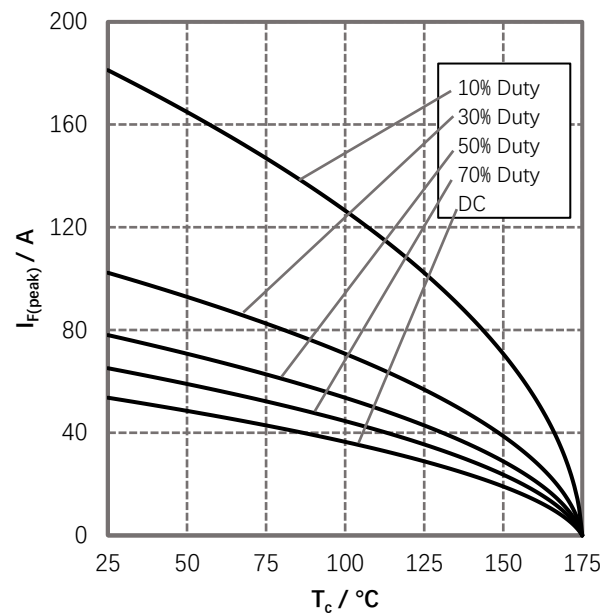


Figure 4. Current Derating

Typical Characteristics Curves

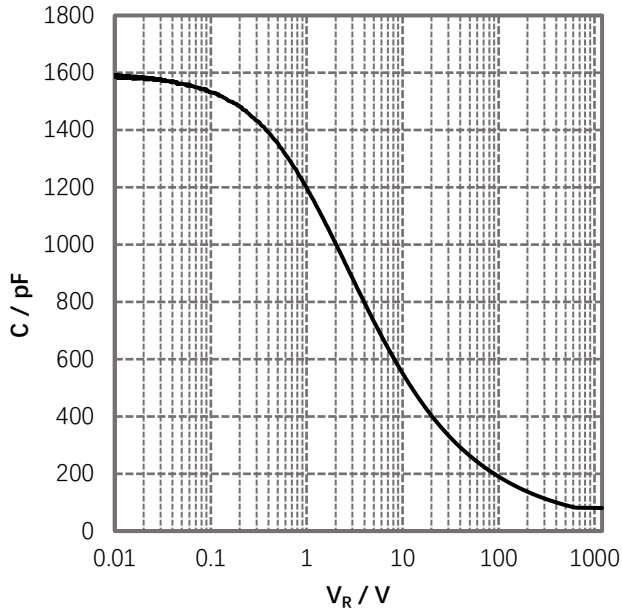


Figure 5. Capacitance vs. Reverse Voltage

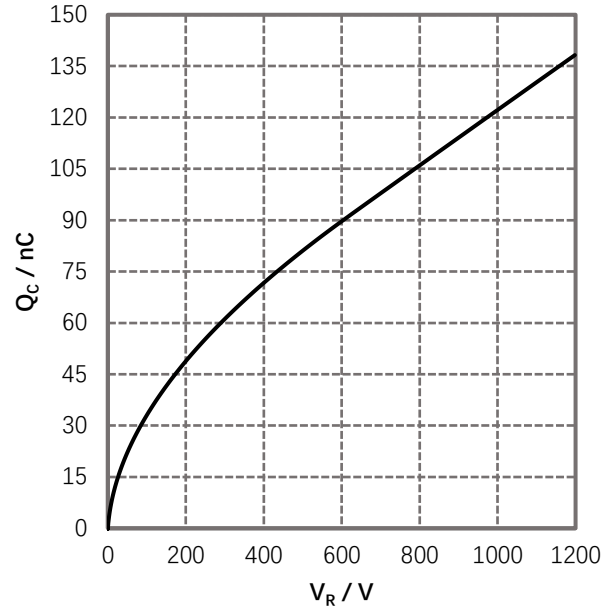


Figure 6. Reverse Charge vs. Reverse Voltage

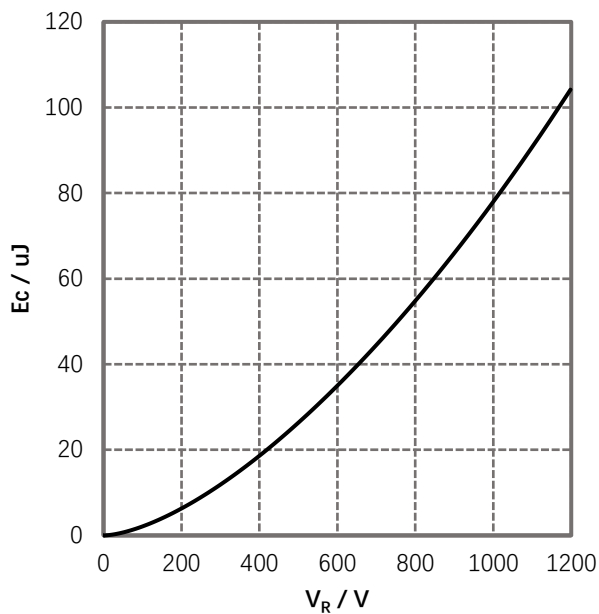


Figure 7. Capacitance Stored Energy

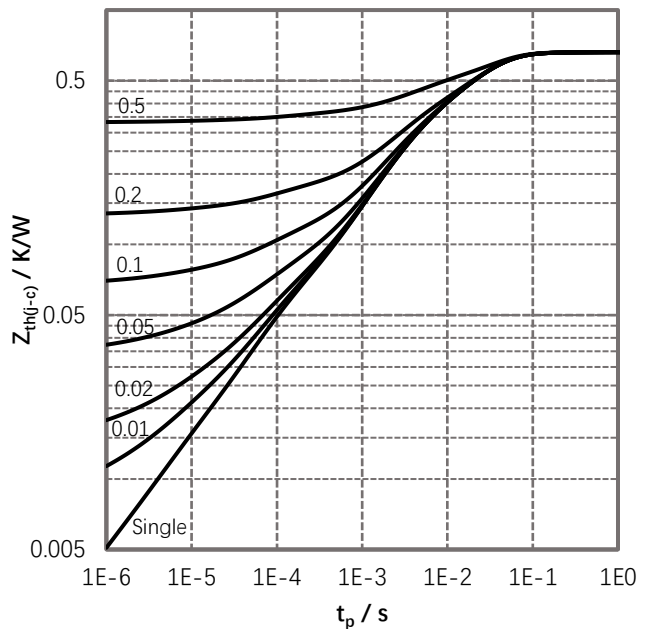
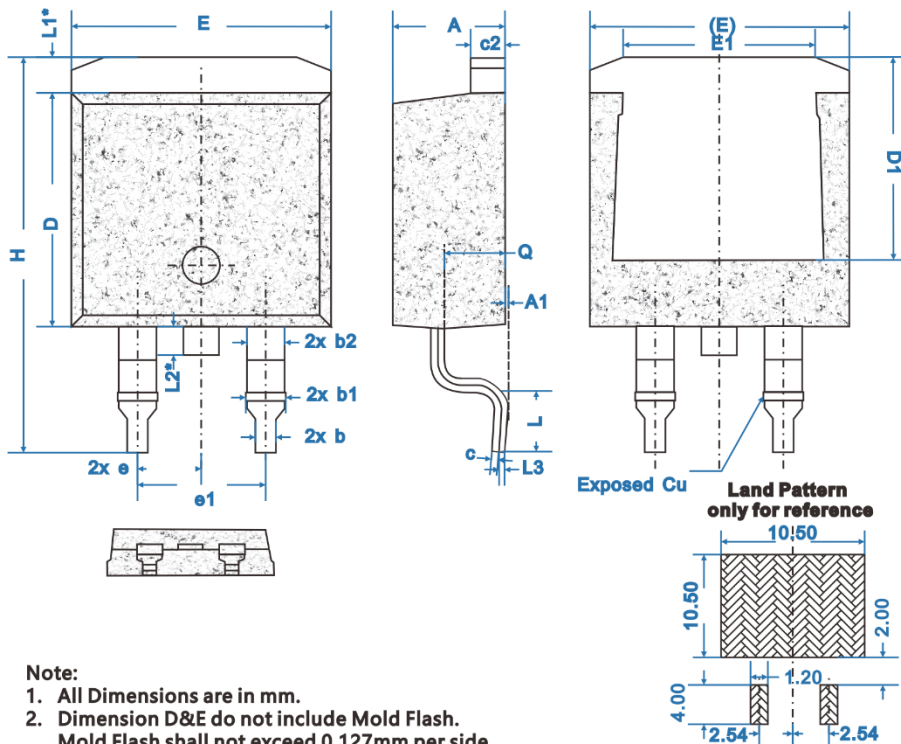


Figure 8. Transient Thermal Impedance

Package Dimensions



Note:

1. All Dimensions are in mm.
2. Dimension D&E do not include Mold Flash.
Mold Flash shall not exceed 0.127mm per side.
These dimensions are measured at the outermost extreme of the Plastic Body.
3. Thermal Pad contour optional within dimension E, L1, D1 & E1.
4. Dimension D1 & E1 establish A minimum mounting surface for the Thermal Pad.
5. "*" is reference.

Unit: mm

Symbol	Dimensions		
	Min.	NOM.	Max.
A	4.24	4.44	4.64
A1	0.00	0.10	0.25
b	0.70	0.80	0.90
b1	1.20	1.55	1.75
b2	1.20	1.45	1.70
c	0.40	0.50	0.60
c2	1.15	1.27	1.40
D	8.82	8.92	9.02
D1	6.86	7.65	—
E	9.96	10.16	10.36
E1	6.89	7.77	7.89
e	2.54 BSC		
H	14.61	15.00	15.88
L	1.78	2.32	2.79
L1	1.36 Ref.		
L2	1.50 Ref.		
L3	0.25 BSC		
Q	2.30	2.48	2.70

Ordering Information

Part Number	Marking	Package	Packaging Mode
G5S12020U	G5S12020U	TO-263	800/Reel

Notes

- Global Power Technology reserves the right to change or modify any of the products and their inherent physical and technical specifications without prior notice.
- The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics.

Related Links

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