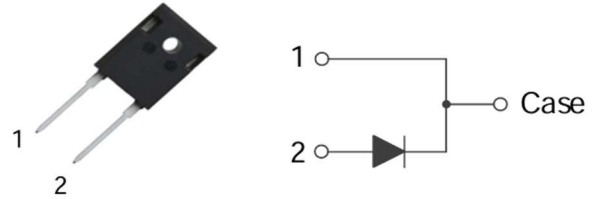


RIR120CDM040B

1200V, 40A MPS (Merged PiN Schottky) SiC Diode

Features:

- No reverse recovery current
- Low forward voltage
- 175°C Max junction temperature
- High surge current capability
- Fast switching independent of temperature
- Pb-free, halogen free, and RoHS compliant



Benefits:

- System efficiency improvement
- Higher frequency applicability
- Increased power density
- Reduced cooling effort
- Lower system cost

Applications:

- Solar inverter
- EV charging station / OBC
- Power Factor Correction
- Industrial motor drive
- Induction heating / welding

Ordering Information

Part Number	Package	Shipping Media	Qualification
RIR120CDM040B	TO-247-2L	30 Units / Tube	Industrial

Absolute Maximum Ratings: $T_C = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Conditions	Value	Unit
Repetitive peak reverse voltage	V_{RRM}		1200	V
Forward current	I_F	$T_C = 25^\circ\text{C}$	40	A
Non-repetitive forward surge current	$I_{F,SM}$	$T_C = 25^\circ\text{C}, t_p = 10 \text{ ms}$	225	
		$T_C = 150^\circ\text{C}, t_p = 10 \text{ ms}$	191	
Non-repetitive peak forward current	$I_{F,Max}$	$T_C = 25^\circ\text{C}, t_p = 10 \mu\text{s}$	1570	
		$T_C = 150^\circ\text{C}, t_p = 10 \mu\text{s}$	1335	
I^2dt value	$\int I^2 dt$	$T_C = 25^\circ\text{C}, t_p = 10 \text{ ms}$	253	A^2s
		$T_C = 150^\circ\text{C}, t_p = 10 \text{ ms}$	182	
Power dissipation	P_{tot}	$T_C = 25^\circ\text{C}$	556	W
Operating and storage temperature	T_J, T_{STG}		-55 to +175	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Conditions	Value	Unit
Thermal resistance, junction to case, max.	$R_{\theta JC}$		0.27	°C/W

Electrical Characteristics: $T_C = 25^\circ\text{C}$, unless otherwise specified

Parameter	Sym.	Conditions	Value			Unit
			Min.	Typ.	Max.	
Forward voltage	V_F	$I_F = 40\text{A}$, $T_C = 25^\circ\text{C}$		1.39	1.70	V
		$I_F = 40\text{A}$, $T_C = 175^\circ\text{C}$		1.8		
Reverse current	I_R	$V_R = 1200\text{V}$, $T_C = 25^\circ\text{C}$			100	μA
		$V_R = 1200\text{V}$, $T_C = 175^\circ\text{C}$			300	
Total capacitive charge	Q_C	$V_R = 800\text{V}$, $T_C = 25^\circ\text{C}$		241		nC
Total capacitance	C	$V_R = 1\text{V}$, $f = 100\text{ kHz}$		2638		pF
		$V_R = 800\text{V}$, $f = 100\text{ kHz}$		165		
Capacitance stored energy	E_C	$V_R = 800\text{V}$, $T_C = 25^\circ\text{C}$		69		μJ

Typical Performance Characteristics:

Figure 1. Power Derating

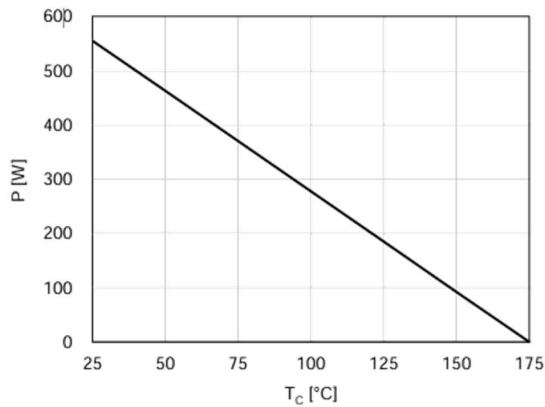


Figure 2. Current Derating

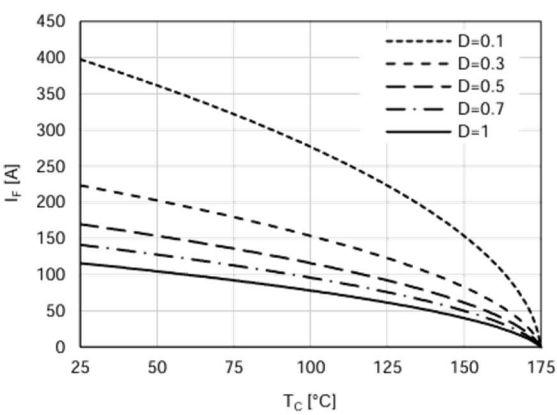


Figure 3 Forward Characteristics

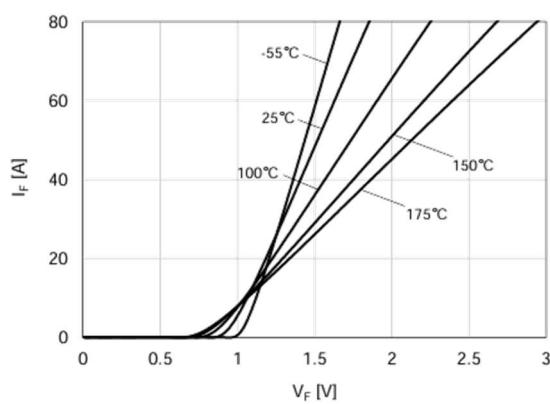


Figure 4. Reverse Characteristics

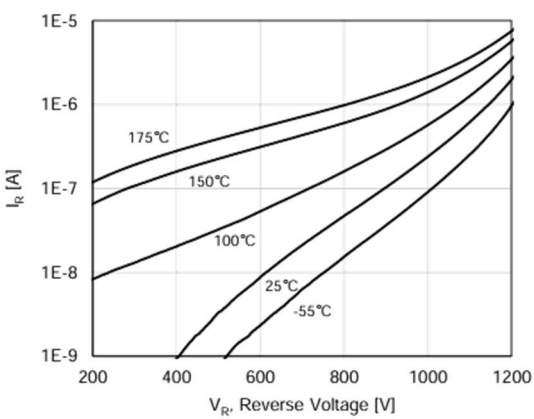


Figure 5. Capacitive Charge Characteristics

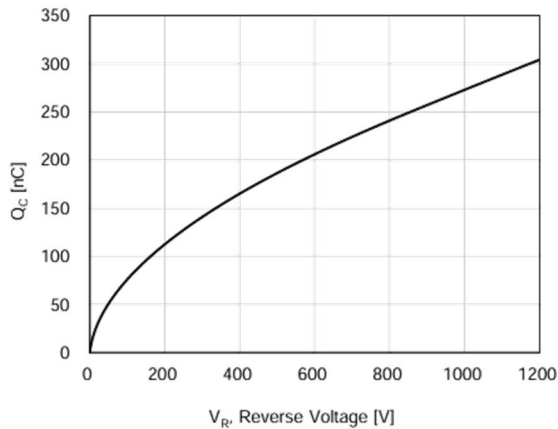


Figure 6. Capacitance Stored Energy

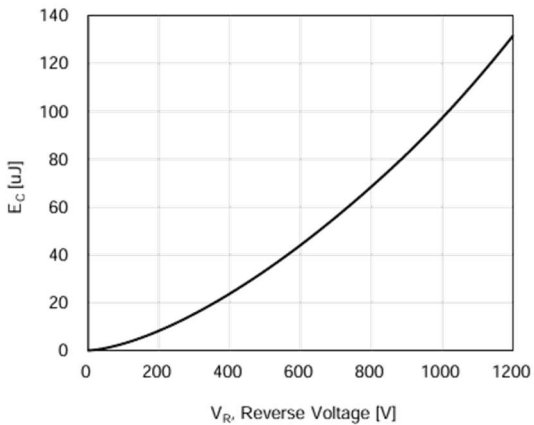


Figure 7. Capacitance Characteristics

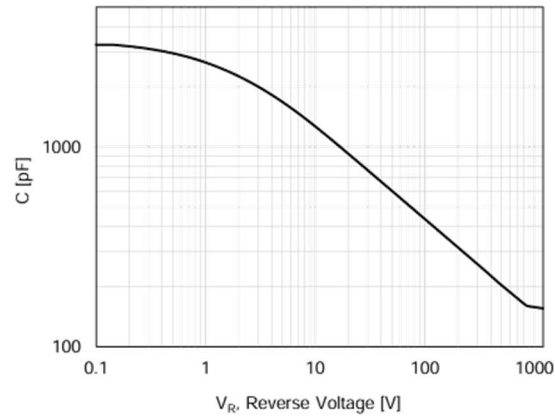
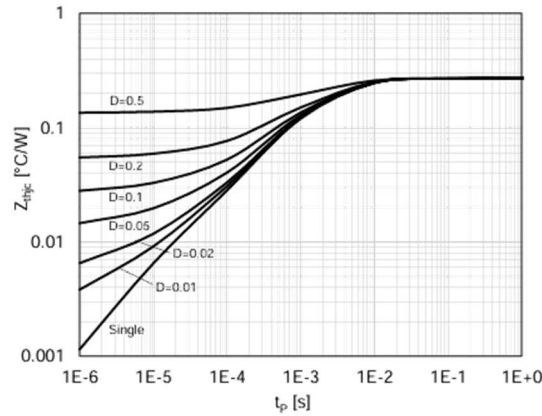
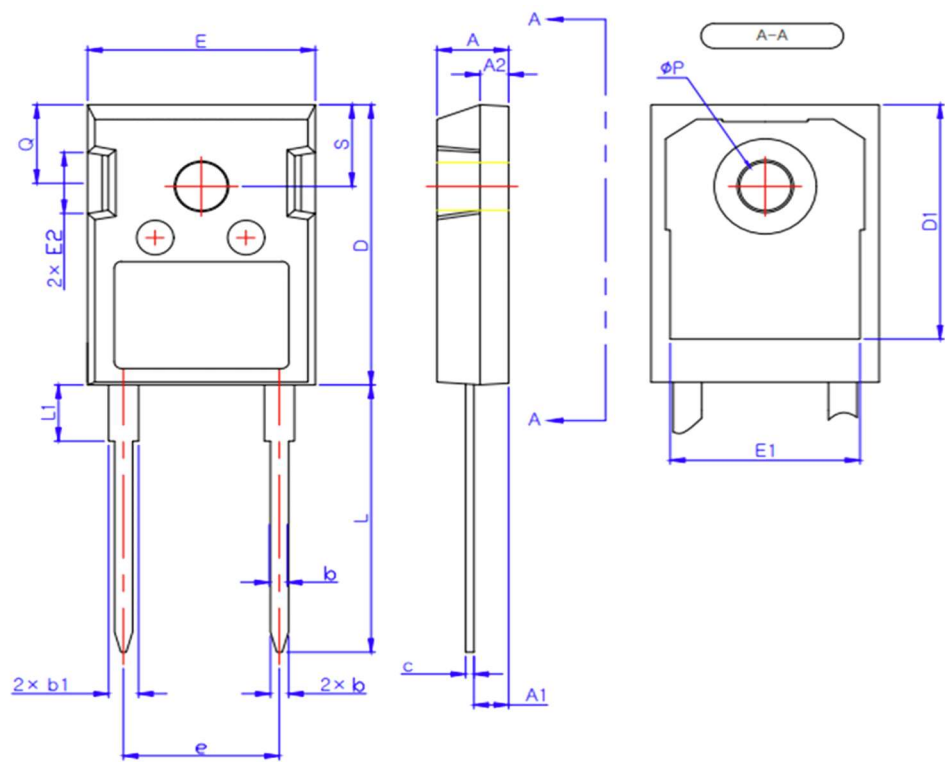


Figure 8. Transient Thermal Response Curve



Package Dimensions:

TO-247-2L



SYMBOL	MIN	MAX
A	4.80	5.20
A1	2.29	2.54
A2	1.90	2.10
b	1.10	1.30
b1	1.91	2.20
c	0.50	0.70
D	20.80	21.34
D1	17.43	17.83
E	15.75	16.13
E1	13.06	13.46
E2	4.32	4.83
e	10.90 BSC	
L	19.85	20.25
L1	—	4.49
ϕP	3.55	3.65
Q	5.59	6.19
S	6.15 BSC	

* Dimensions in millimeters