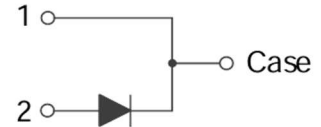
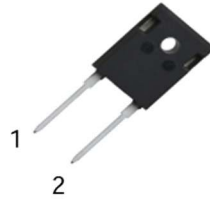


RIR120CDS040B

1200V, 40A SiC Schottky Diode (SBD)

Features:

- Zero to Negligible reverse recovery
- 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
RIR120CDS040B	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	$T_C = 25^\circ\text{C}, D = 1$	92	A
		$T_C = 100^\circ\text{C}, D = 1$	63	
		$T_C = 140^\circ\text{C}, D = 1$	40	
Non-repetitive forward surge current	I_{FSM}	$T_C = 25^\circ\text{C}, t_p = 10 \text{ ms}$	227	
		$T_C = 125^\circ\text{C}, t_p = 10 \text{ ms}$	96	
Repetitive forward surge current	I_{FRM}	$T_C = 25^\circ\text{C}, t_p = 10 \text{ ms}$	164	
		$T_C = 125^\circ\text{C}, t_p = 10 \text{ ms}$	69	
Power dissipation	P_{tot}	$T_C = 25^\circ\text{C}$	450	W
Avalanche Energy	E_{AS}	$T_C = 125^\circ\text{C}, L = 0.5 \text{ mH}, V = 50\text{V}$	430	mJ
Operating and storage temperature	T_J, T_{STG}		-55 to +175	$^\circ\text{C}$

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

Parameter	Sym.	Conditions	Value			Unit
			Min.	Typ.	Max.	
Thermal resistance, junction to case	$R_{\theta JC}$			0.33	0.38	$^\circ\text{C/W}$

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

Parameter	Sym.	Conditions	Value			Unit
			Min.	Typ.	Max.	
Forward voltage	V_F	$I_F = 40\text{A}$, $T_C = 25^\circ\text{C}$		1.5	1.7	V
		$I_F = 40\text{A}$, $T_C = 175^\circ\text{C}$		2.2	2.5	
Reverse current	I_R	$V_R = 1200\text{V}$, $T_C = 25^\circ\text{C}$		5.7	100	μA
		$V_R = 1200\text{V}$, $T_C = 175^\circ\text{C}$		53	200	
Typical junction capacitance	C_j	$V_R = 0.1\text{V}$, $f = 1\text{ MHz}$		2500		pF
		$V_R = 400\text{V}$, $f = 1\text{ MHz}$		180		
		$V_R = 800\text{V}$, $f = 1\text{ MHz}$		160		
Total capacitive charge	Q_C	$V_R = 400\text{V}$		135		nC
		$V_R = 800\text{V}$		200		
Capacitance stored energy	E_C	$V_R = 400\text{V}$		15		μJ
		$V_R = 800\text{V}$		88		

Typical Performance Characteristics:

Figure 1. Forward Characteristics

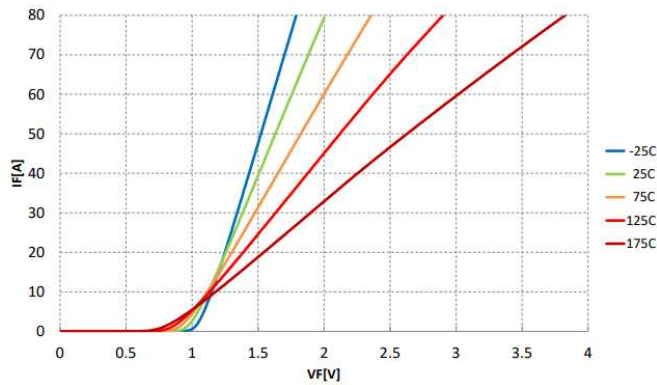


Figure 2. Reverse Characteristics

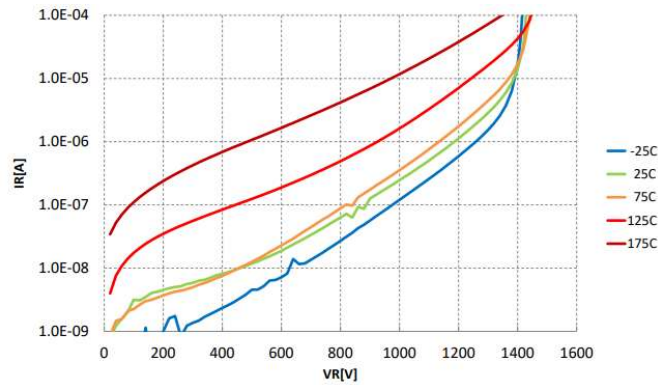


Figure 3. Typical Junction Capacitance

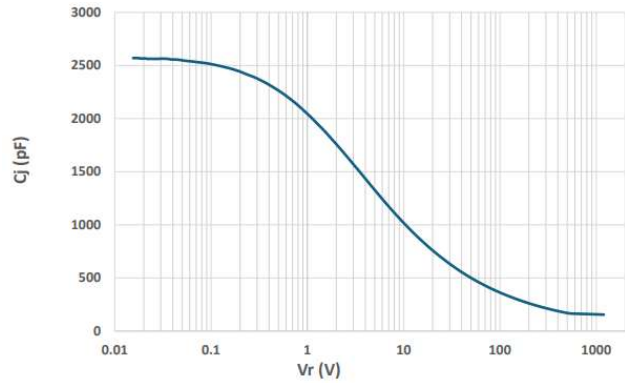


Figure 4. Typical Capacitance Charge

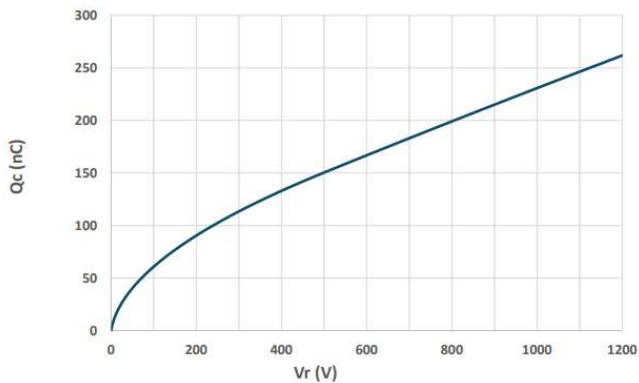


Figure 5. Capacitance Stored Energy

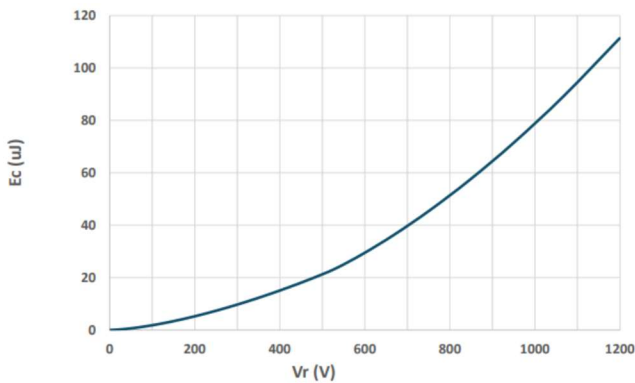


Figure 6. Transient Thermal Impedance

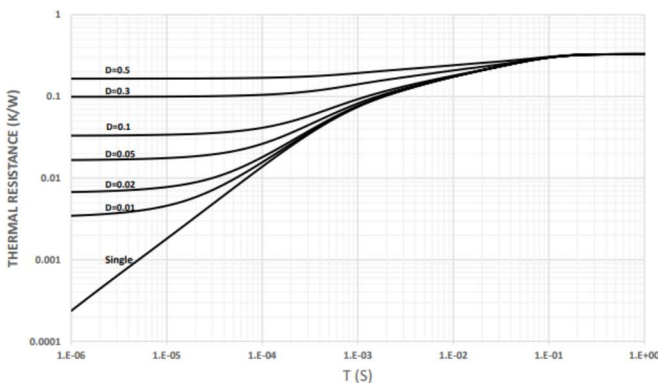


Figure 7. Transient Thermal Impedance, $R_{\theta JA}$

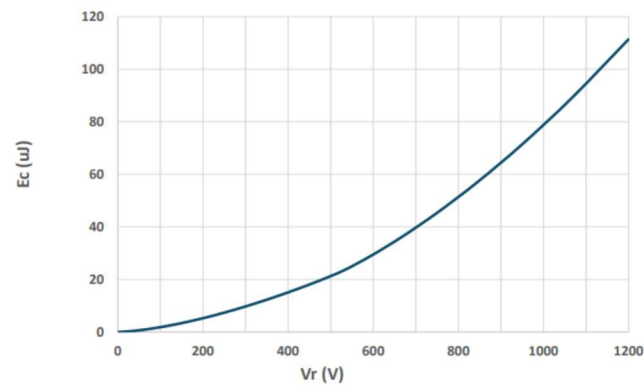
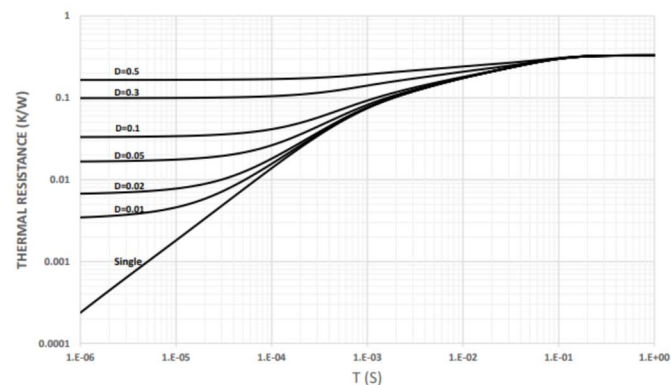
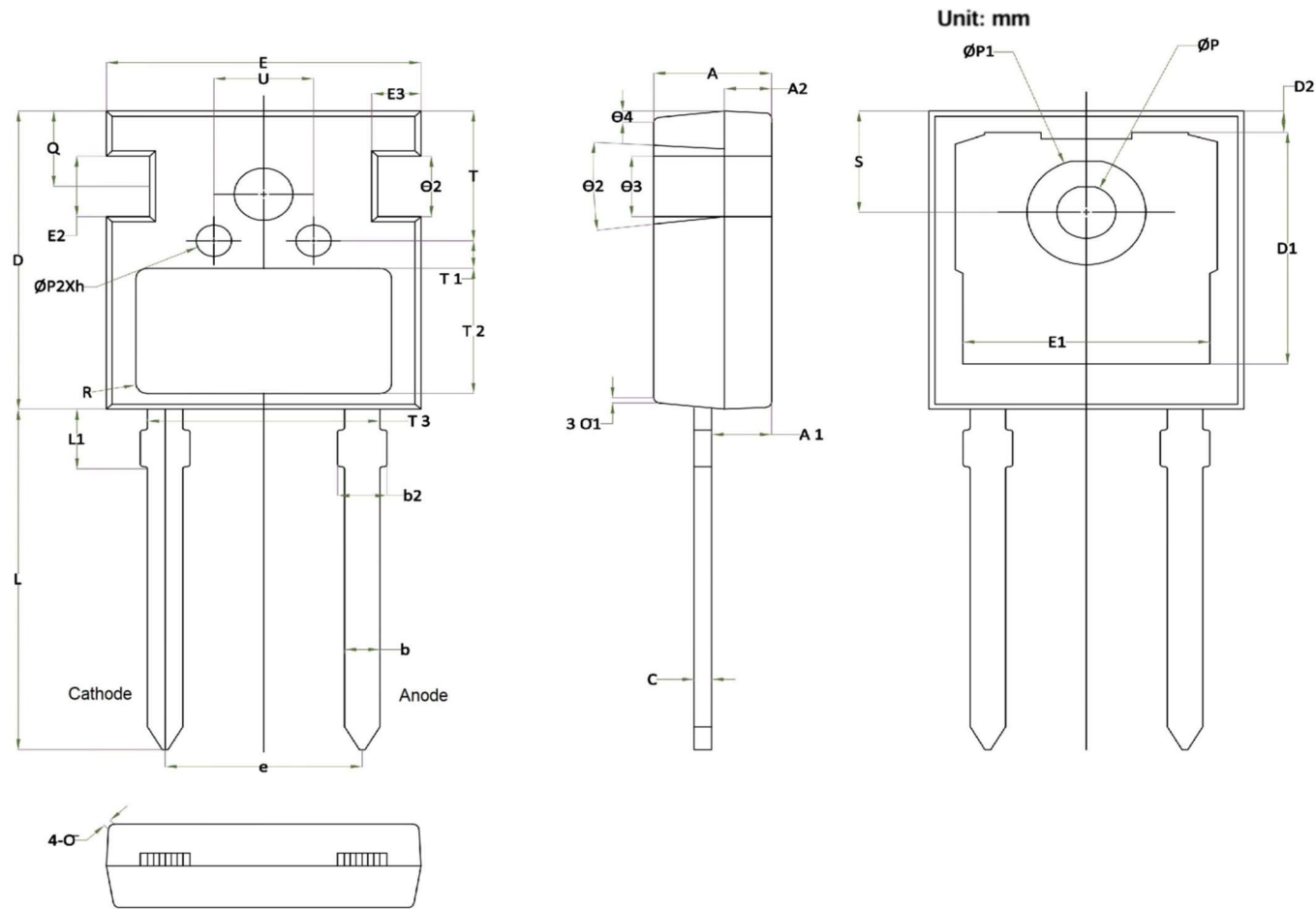


Figure 8. Power Dissipation



Package Dimensions:

TO-247-2L



TO-247-2L							
DIM.	MIN.	TYP	MAX	DIM	MIN	TYP	MAX
A	4.90	5.00	5.10	ΦP	3.50	3.60	3.70
A1	2.31	2.41	2.51	ΦP1	--	--	7.30
A2	1.90	2.00	2.10	ΦP2	2.40	2.50	2.60
b	1.16	1.21	1.26	Q	5.60	5.80	6.00
b2	1.91	2.01	2.21	S	6.15BSC		
c	0.59	0.61	0.66	R	0.50REF		
D	20.90	21.0	21.10	T	9.80	--	10.20
D1	16.25	16.55	16.85	T1	1.65REF		
D2	1.05	1.20	1.35	T2	8.00REF		
E	15.70	15.80	15.90	T3	12.80REF		
E1	13.10	13.30	13.50	U	6.00	--	6.40
E2	4.90	5.00	5.10	Θ1	6°	7°	8°
E3	2.40	2.50	2.60	Θ2	1°	5°	6°
e	10.88BSC			Θ3	1°	--	1.5°
h	0.05	0.10	0.15	Θ4	14°	15°	16°
L	19.80	19.92	20.10				
L1	--	--	4.30				
All dimension in millimeter							