

1200-V Direct WBG Diode

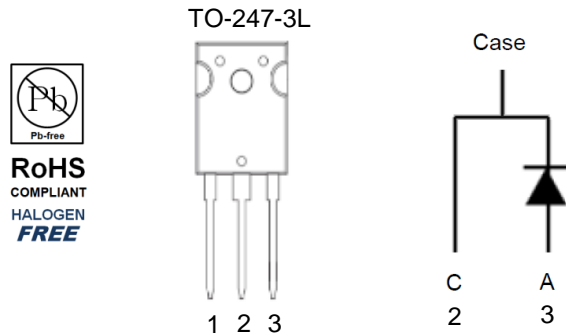
Key Features:

- SiC performance
- Easy paralleling
- High current carrying capability
- Very low junction capacitance
- Highly stable V_F and Q_{RR} at elevated temperatures

Typical Applications:

- Soft switching topologies
- Secondary side rectification

PRODUCT SUMMARY		
V_{BR} (V)	V_F (V)	$I_{F(AV)}$ (A)
1200	1.85	20



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Limit	Units
Cathode-Anode Voltage		V_{BR}	1200	V
Diode Forward Current ^{a d}	$T_C=25^\circ\text{C}$	$I_{F(AV)}$	20 / 40	A
Single Pulse Forward Current ^b	$T_C=25^\circ\text{C}$	I_{FSM}	90	A
Joule Integral		i^2t	40	$\text{A}^2\cdot\text{s}$
Power Dissipation ^{a d}	$T_C=25^\circ\text{C}$	P_D	52 / 104	W
Storage Temperature Range		T_{stg}	-55 to 175	$^\circ\text{C}$
Operating Junction Temperature		T_J	-40 to 175	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS				
Parameter		Symbol	Maximum	Units
Maximum Junction-to-Ambient ^c		$R_{\theta JA}$	40	$^\circ\text{C}/\text{W}$
Maximum Junction-to-Case ^d		$R_{\theta JC}$	2.9 / 1.45	

Notes

- Package Limited
- Pulse width limited by maximum junction temperature
- Surface Mounted on 1" x 1" FR4 Board.
- Per leg / Per device

Electrical Characteristics

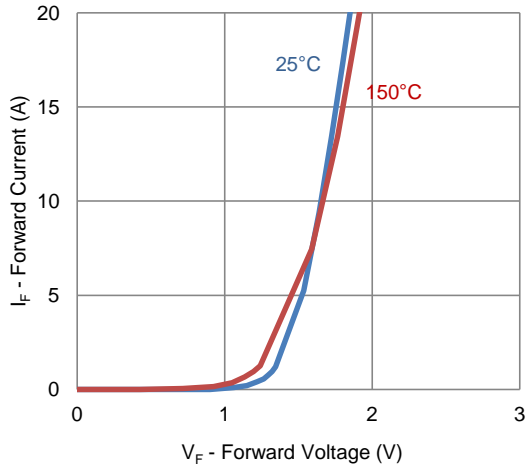
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Forward Voltage ^a	V_F	$I_F = 20 \text{ A}$		1.85		V
		$I_F = 20 \text{ A}, T_J = 150^\circ\text{C}$		1.92		
Repetitive Peak Reverse Voltage	V_{RRM}	$T_J = -40^\circ\text{C to } 150^\circ\text{C}$	1200			V
Junction Capacitance	C_J	$V_R = 200 \text{ V}, V_{\text{sine}} = 0.6 V_{\text{eff}},$ $f = 100 \text{ kHz}$		12		pF
Reverse Leakage Current	I_R	$V_R = 1200 \text{ V}$			10	uA
		$V_R = 1200 \text{ V}, T_J = 120^\circ\text{C}$			60	uA
Dynamic ^b						
Reverse Recovery Time	T_{rr}	$I_F = 20 \text{ A}, dI/dt = 100 \text{ A/us},$ $V_R = 800 \text{ V}, T_J = 25^\circ\text{C}$		84		ns
Reverse Recovery Charge	Q_{rr}			213		nC
Peak Recovery Current	I_{RRM}			4.3		A
Reverse Recovery Time	T_{rr}	$I_F = 20 \text{ A}, dI/dt = 100 \text{ A/us},$ $V_R = 800 \text{ V}, T_J = 150^\circ\text{C}$		82		ns
Reverse Recovery Charge	Q_{rr}			197		nC
Peak Recovery Current	I_{RRM}			3.9		A
Reverse Recovery Time	T_{rr}	$I_F = 20 \text{ A}, dI/dt = 500 \text{ A/us},$ $V_R = 800 \text{ V}, T_J = 25^\circ\text{C}$		47		ns
Reverse Recovery Charge	Q_{rr}			482		nC
Peak Recovery Current	I_{RRM}			17.9		A
Reverse Recovery Time	T_{rr}	$I_F = 20 \text{ A}, dI/dt = 500 \text{ A/us},$ $V_R = 800 \text{ V}, T_J = 150^\circ\text{C}$		45		ns
Reverse Recovery Charge	Q_{rr}			435		nC
Peak Recovery Current	I_{RRM}			15.9		A

Notes

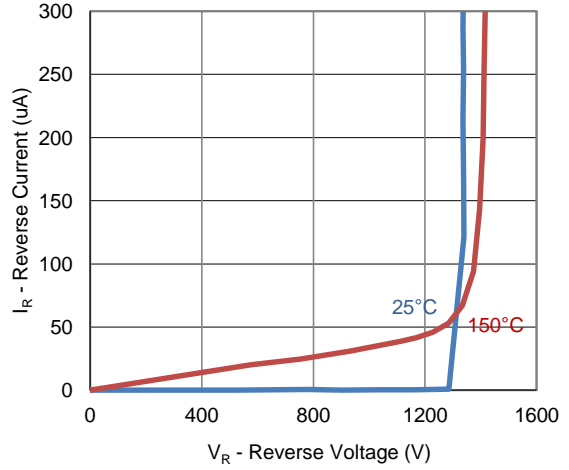
- Pulse test: $PW \leq 300\mu\text{s}$ duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing.

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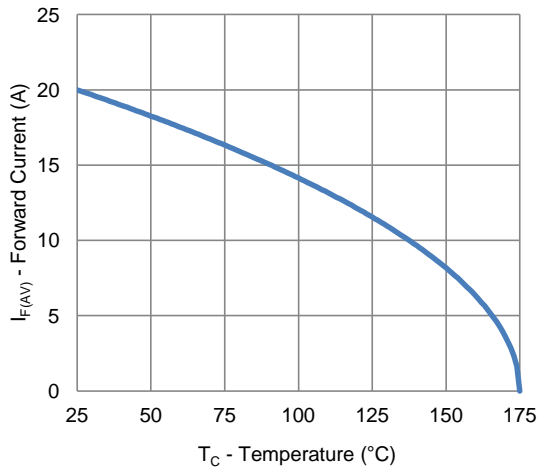
Typical Electrical Characteristics



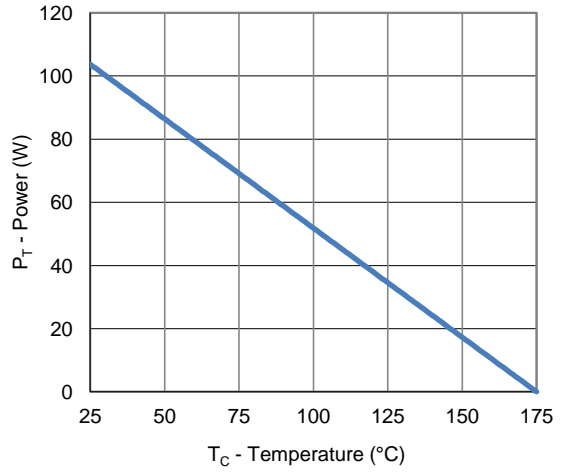
1. Forward Characteristics



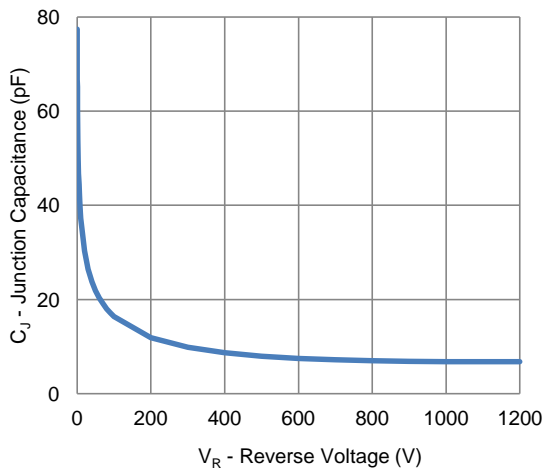
2. Reverse Characteristics



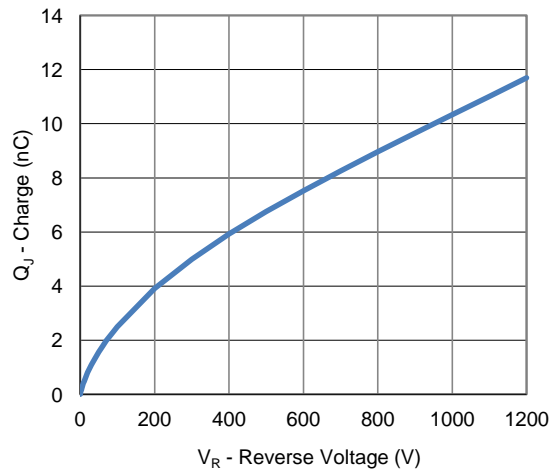
3. Current Derating



4. Power Derating

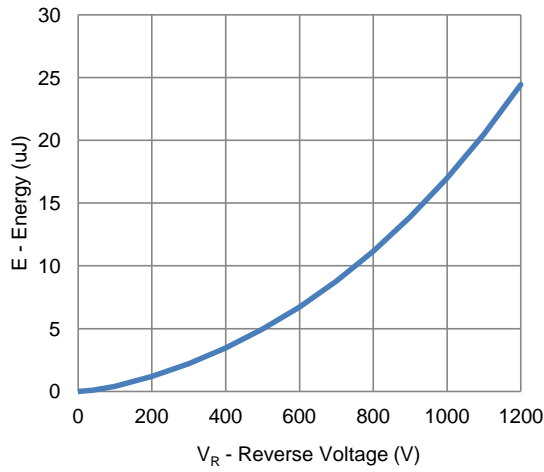


5. Junction Capacitance vs. Reverse Voltage

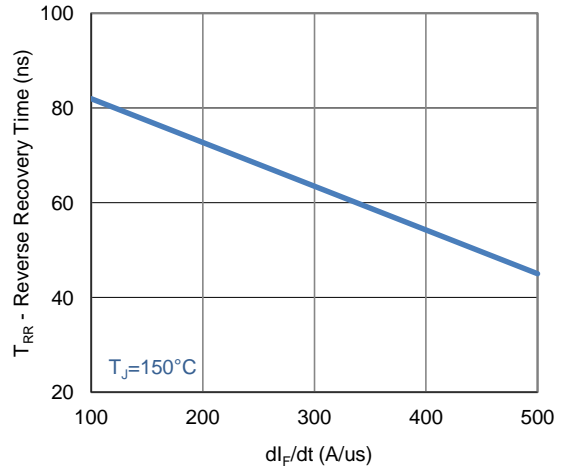


6. Total Capacitance Charge vs. Reverse Voltage

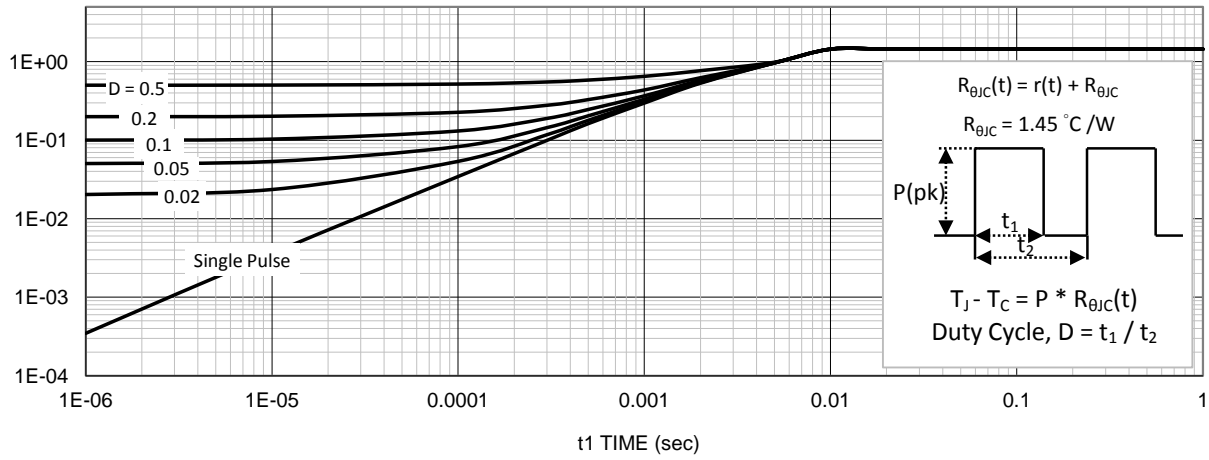
Typical Electrical Characteristics



7. Capacitance Stored Energy vs. Reverse Voltage

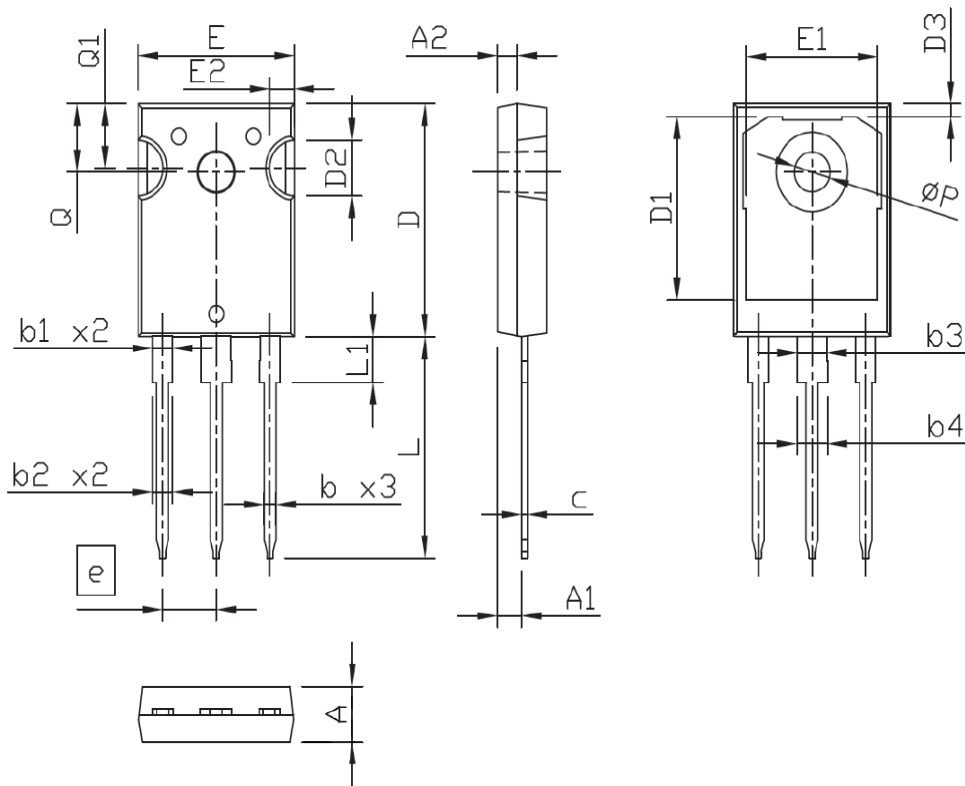


8. Reverse Recovery Time vs. di_F/dt



9. Thermal Transient Junction to Ambient

Package Information



SYMBOLS	DIMENSIONS IN MILLIMETERS		
	MIN	NOM	MAX
A	4.90	5.00	5.10
A1	2.32	2.42	2.52
A2	1.90	2.00	2.10
b	1.17	1.22	1.27
b1	1.97	2.02	2.07
b2	2.00	2.10	2.20
b3	2.97	3.02	3.07
b4	3.00	3.10	3.20
c	0.59	0.62	0.66
D	20.90	21.00	21.10
D1	16.25	16.55	16.85
D2	5.00 TYP		
D3	1.05	1.20	1.35
e	5.44 BSC		
E	15.70	15.80	15.90
E1	13.06	13.26	13.46
E2	2.50 TYP		
L	19.72	19.92	20.12
L1	---	---	4.30
Q	6.15 BSC		
Q1	5.60	5.80	6.00
øP	3.55	3.60	3.65