

SiC Schottky Diode

Features

- ◆ Zero Forward Recovery Voltage
- ◆ Zero Reverse Recovery Current
- ◆ Excellent Surge Current Capability
- ◆ Temperature Independent Switching
- ◆ Positive Temperature Coefficient on V_F
- ◆ High Frequency Operation

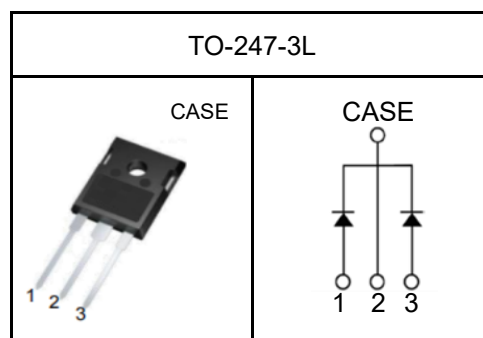
V_{RRM}	=	1200 V
$I_F(T_C=155^\circ\text{C})$	=	20 A**
Q_C	=	120 nC**

Benefits

- ◆ Increased Power Density
- ◆ Essentially no Switching Losses
- ◆ Reduction of Heat Sink Requirements
- ◆ Higher Efficiency
- ◆ Reduced EMI

Applications

- ◆ Uninterruptible Power Supplies
- ◆ Switch Mode Power Supplies
- ◆ Power Factor Correction
- ◆ Motor Drivers



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

Symbol	Parameter	Test conditions	Value	Unit
V_{RRM}	Repetitive peak reverse voltage		1200	V
V_{RSM}	Surge peak reverse voltage		1200	V
I_F	Continuous forward current	$T_C=25^\circ\text{C}$ $T_C=155^\circ\text{C}$	35*/70** 10*/20**	A
I_{FSM}	Non-Repetitive forward surge current	$T_C=25^\circ\text{C}$, $t_p=10\text{ms}$, Half Sine Wave	105*	A
I_{FRM}	Repetitive Peak Forward Surge Current	$T_C=25^\circ\text{C}$, $t_p=10\text{ms}$, Half Sine Wave	60*	A
$\int i^2 dt$	i^2t value	$T_C=25^\circ\text{C}$, $t_p=10\text{ms}$	55.1*	A ² S
P_{tot}	Power dissipation	$T_C=25^\circ\text{C}$ $T_C=110^\circ\text{C}$	197* 85*	W
T_J	Operating junction temperature		-55~175	$^\circ\text{C}$
T_{stg}	Storage temperature		-55~175	$^\circ\text{C}$

* Per Leg, ** Per Device

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Electrical Characteristics

Static Characteristics (Per Leg)

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
V_{DC}	DC blocking voltage	$T_J=25^{\circ}C$	1200			V
V_F	Diode forward voltage	$I_F=10A$ $T_J=25^{\circ}C$ $I_F=10A$ $T_J=175^{\circ}C$		1.45 2.1		V
I_R	Reverse current	$V_R=1200V$ $T_J=25^{\circ}C$ $V_R=1200V$ $T_J=175^{\circ}C$		0.2 14		μA

AC Characteristics (Per Leg)

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
Q_C	Total capacitive charge	$V_R=800V$ $T_J=25^{\circ}C$ $Q_C = \int_0^{V_R} C(V)dV$		60		nC
C	Total capacitance	$V_R=1V$ $f=1MHz$ $V_R=400V$ $f=1MHz$ $V_R=800V$ $f=1MHz$		610 60 50		pF
E_C	Capacitance stored energy	$V_R=800V$		15		μJ

Thermal Characteristics

Symbol	Parameter	Value			Unit
		Min.	Typ.	Max.	
$R_{th(jc)}$	Thermal resistance from junction to case		0.76* 0.38**		$^{\circ}C/W$

* Per Leg, ** Per Device

Typical Performance

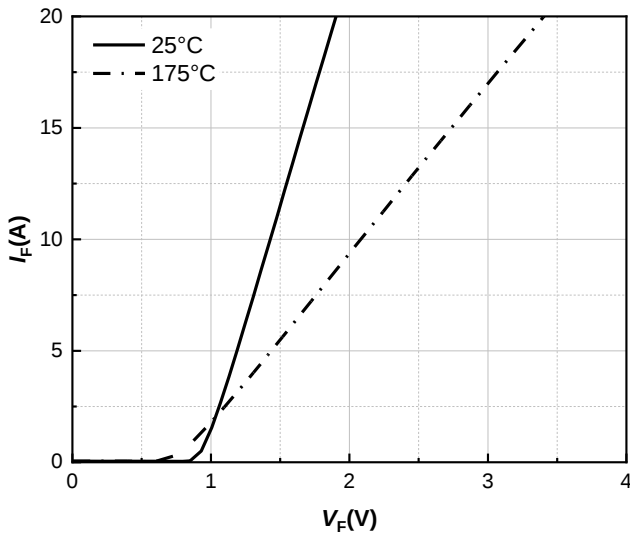


Figure 1. Typical forward characteristics

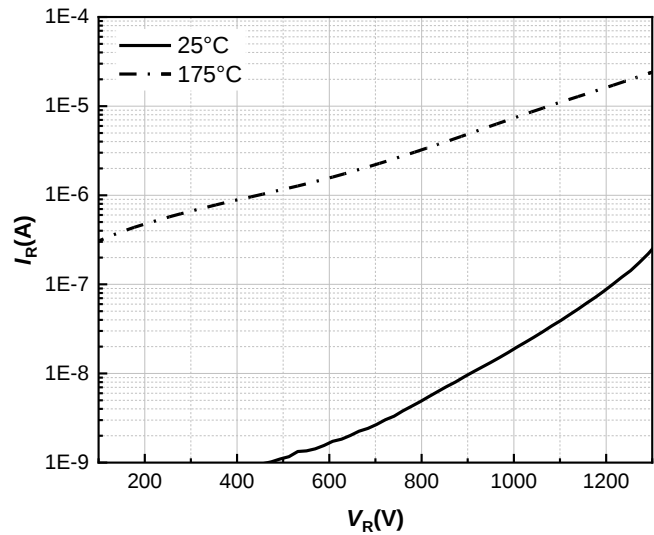


Figure 2. Typical reverse current as function of reverse voltage

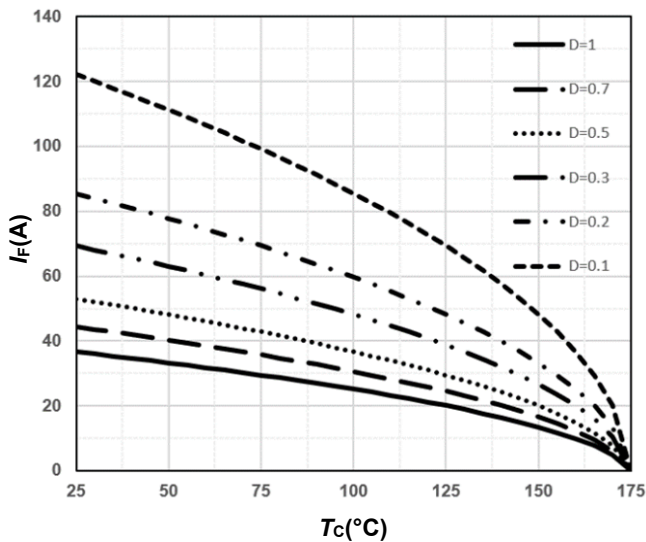


Figure 3. Diode forward current as function of temperature, D=duty cycle

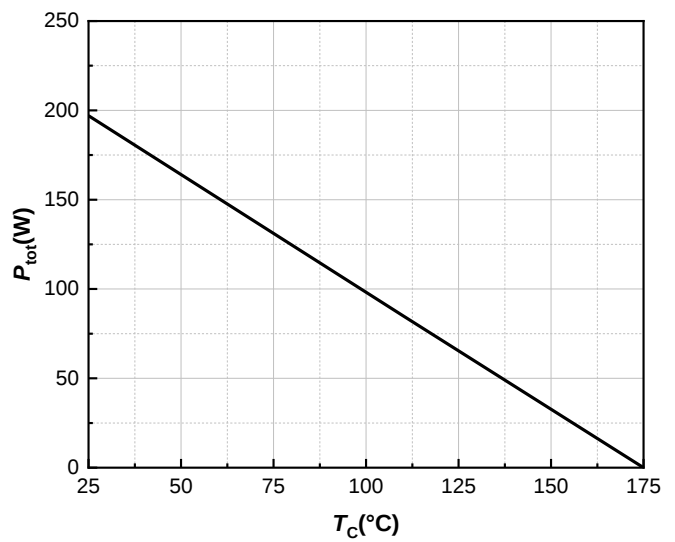
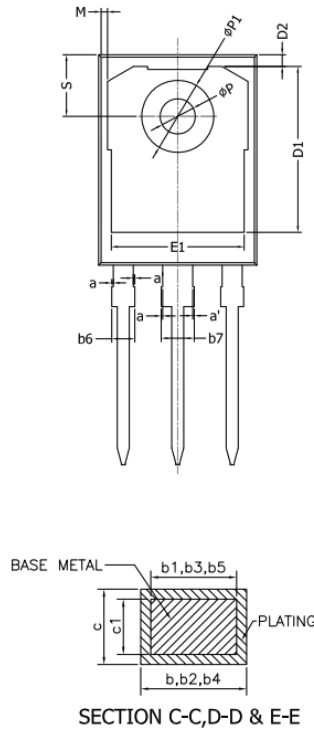
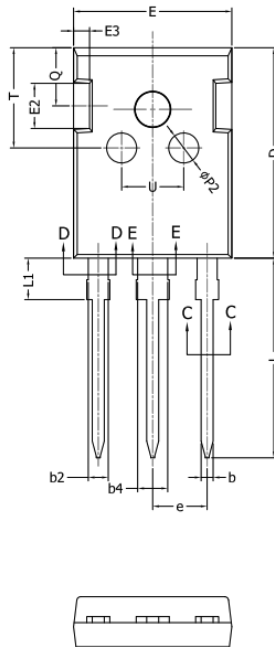


Figure 4. Power dissipation as function of case temperature

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Package Outlines



COMMON DIMENSIONS
(UNITS OF MEASURE =MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	4.90	5.00	5.10
A1	2.31	2.41	2.51
A2	1.90	2.00	2.10
a	0	---	0.15
a'	0	---	0.15
b	1.16	---	1.26
b1	1.15	1.2	1.22
b2	1.96	---	2.06
b3	1.95	2.00	2.02
b4	2.96	---	3.06
b5	2.96	3.00	3.02
b6	---	---	2.25
b7	---	---	3.25
c	0.59	---	0.66
c1	0.58	0.60	0.62
D	20.90	21.00	21.10
D1	16.25	16.55	16.85
D2	1.05	1.17	1.35
E	15.70	15.80	15.90
E1	13.10	13.30	13.50
E2	4.40	4.50	4.60
E3	1.50	1.60	1.70
e	5,436 BSC		
L	19.80	19.92	20.10
L1	---	---	4.30
M	0.35	---	0.95
P	3.40	3.50	3.60
P1	7.00	---	7.40
P2	2.40	2.50	2.60
Q	5.60	---	6.00
S	6.05	6.15	6.25
T	9.80	---	10.20
U	6.00	---	6.40