



Silicon Carbide Schottky Diode

ASC3DA02012HD

V_{RRM}	=	1200 V
I_F	=	20 A
Q_C	=	65 nC

Features

- Low Schottky barrier height
- No reverse recovery
- 3DSiC® technology
- Avalanche capability
- Surge current capability

Advantages

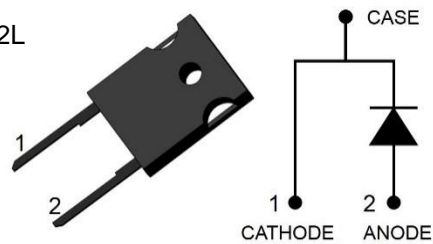
- Unipolar rectifier
- High efficiency
- Low switching losses
- Ease of paralleling with thermal stability
- Low capacitive charge

Applications

- General purpose
- Power switching circuits
- Freewheeling diodes
- SMPS, Solar Inverter, UPS

Package

TO-247-2L



Absolute Maximum Ratings

Symbol	Parameter	Conditions	Values	Unit
V_{RRM}	Peak repetitive Reverse Voltage		1200	V
I_F	Continuous Forward Current	$T_C = 25^\circ\text{C}$ $T_C = 150^\circ\text{C}$	25 20	A
$I_{F,Max}$	Non-repetitive Peak Forward Current	$T_C = 25^\circ\text{C}$, $t_P = 10\mu\text{s}$, pulse $T_C = 150^\circ\text{C}$, $t_P = 10\mu\text{s}$, pulse	1100 900	A
I_{FSM}	Non-repetitive Forward Surge Current	$T_C = 25^\circ\text{C}$, $t_P = 10\text{ms}$, half sine pulse $T_C = 150^\circ\text{C}$, $t_P = 10\text{ms}$, half sine pulse	160 140	A
P_{tot}	Power Dissipation	$T_C = 25^\circ\text{C}$ $T_C = 150^\circ\text{C}$	200	W
T_J	Operating Junction Temperature Range		-55 to +175	$^\circ\text{C}$

Electrical Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_F	Forward Voltage	$I_F = 20\text{ A}$, $T_C = 25^\circ\text{C}$ $I_F = 20\text{ A}$, $T_C = 100^\circ\text{C}$ $I_F = 20\text{ A}$, $T_C = 175^\circ\text{C}$		1.55 1.8 2.3		V
I_R	Reverse Current	$V_R = 1200\text{ V}$, $T_C = 25^\circ\text{C}$ $V_R = 1200\text{ V}$, $T_C = 100^\circ\text{C}$ $V_R = 1200\text{ V}$, $T_C = 175^\circ\text{C}$		0.2 0.4 3		μA
Q_C	Total Capacitive Charge	$V_R = 800\text{ V}$, $dI/dt = 200\text{ A}/\mu\text{s}$		65	70	nC
C	Total Capacitance	$V_R = 1\text{ V}$, $f = 100\text{ kHz}$ $V_R = 400\text{ V}$, $f = 100\text{ kHz}$ $V_R = 1000\text{ V}$, $f = 100\text{ kHz}$		4100 115 75		pF

Thermal Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case		0.55		$^\circ\text{C}/\text{W}$

Typical Performance

Fig. 1. Forward Characteristics

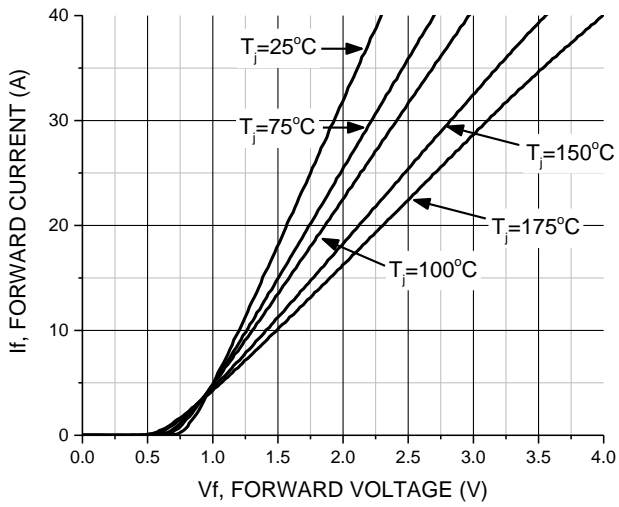


Fig. 2. Reverse Characteristics

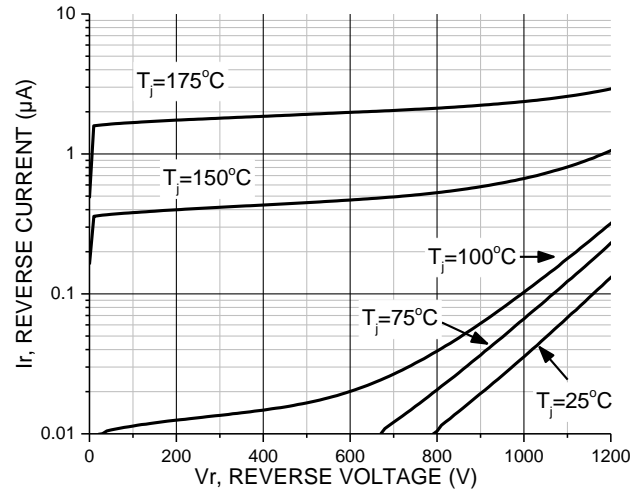


Fig. 3. Reverse Characteristics

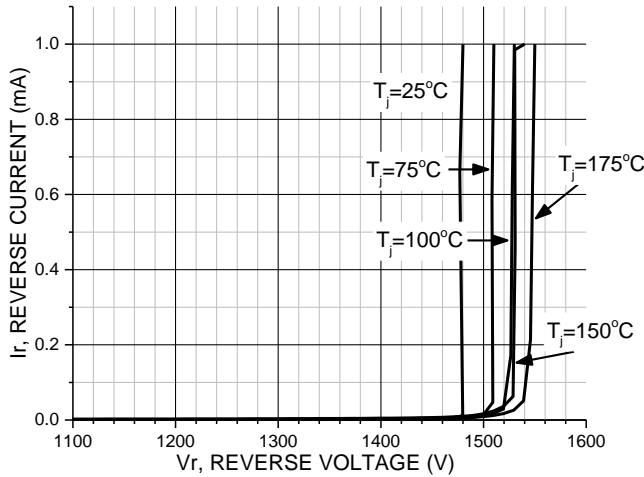


Fig. 4. Capacitance vs. Reverse Voltage

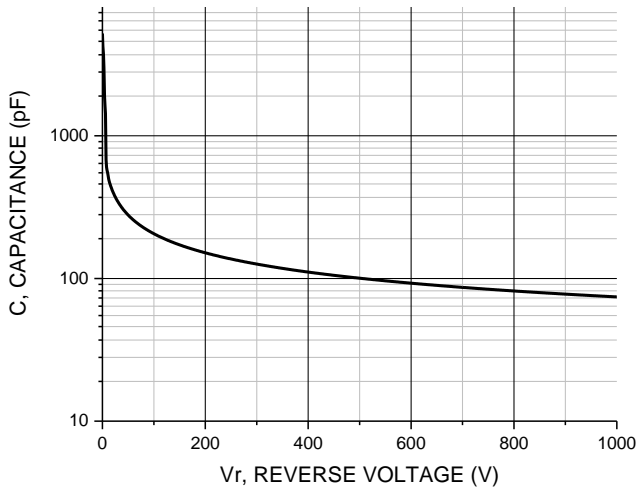
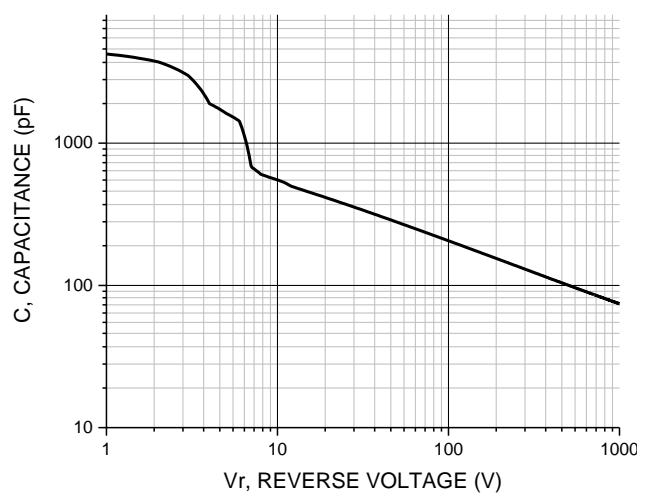
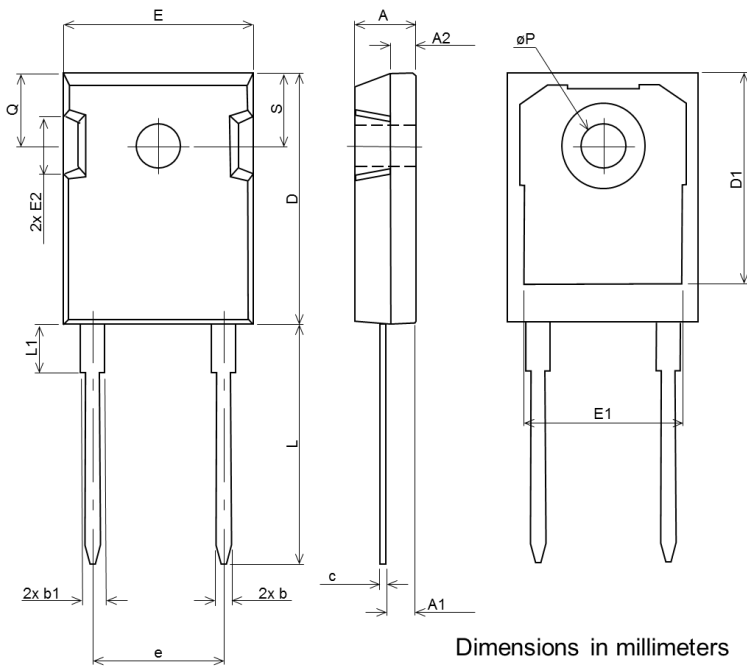


Fig. 5. Capacitance vs. Reverse Voltage



Package Dimensions



Symbol	Min.	Nom.	Max.
A	4.83	5.02	5.21
A1	2.29	2.41	2.54
A2	1.91	2.04	2.16
b	1.14	1.27	1.40
b1	1.91	2.10	2.20
c	0.61	0.71	0.80
D	20.80	21.07	21.34
D1	17.43	17.63	17.83
E	15.75	15.94	16.13
E1	13.06	13.26	13.46
E2	4.32	4.58	4.83
e	10.90		
L	19.81	20.19	20.57
L1	3.81	4.07	4.32
P	3.55	3.60	3.65
Q	5.59	5.90	6.20
S	6.15		

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