

HCW120D60D1Q

SiC Silicon Carbide Schottky Diode

1200V, 60A

Description

The 1200V SiC is an advanced Power Master Semiconductor's silicon carbide diode family. This technology combines the benefits of excellent low forward voltage and robustness. Consequently, the SiC family is suitable for application requiring high power efficiency.

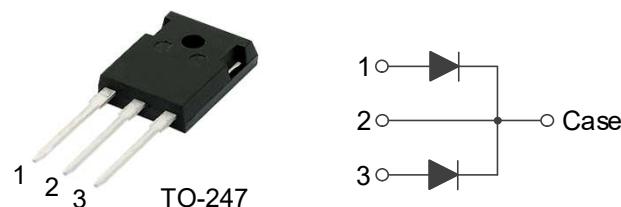
Applications

- Solar inverter, UPS
- EV charging station
- Power Factor Correction

Features (Per Leg/Device)

V_{RRM}	I_F	$T_{J,max}$	Q_C
1200 V	30 / 60 A	175 °C	121 nC

- No reverse recovery current
- Low forward voltage
- 175°C Max junction temperature
- High surge current capability
- Switching behavior independent of temperature
- Pb-Free, Halogen Free and RoHS compliant



Absolute Maximum Ratings (Per Leg / Device, Per Leg unless otherwise specified)

Symbol	Parameter	Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V
I_F	Forward Current	30 / 60	A
$I_{F,SM}$	Non-Repetitive Forward Surge Current	135	A
		115	A
$I_{F,Max}$	Non-Repetitive Peak Forward Current	1180	A
		980	A
I^2dt value	$\int I^2t$	91	A ² s
		66	A ² s
P_{tot}	Power Dissipation	217	W
T_J, T_{STG}	Operating Junction and Storage Temperature	-55 to +175	°C

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case, Max.(Per Leg / Per Device)	0.69 / 0.35	°C/W

Package Marking and Ordering Information

Part Number	Top Marking	Package	Packing Method	Quantity
HCW120D60D1Q	HCW120D60D1Q	TO-247	Tube	30 units

Electrical Characteristics (Per Leg, $T_C = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_F	Forward Voltage	$I_F = 30 \text{ A}, T_C = 25^\circ\text{C}$		1.63	1.95	V
		$I_F = 30 \text{ A}, T_C = 175^\circ\text{C}$		2.0	-	
I_R	Reverse Current	$V_R = 1200 \text{ V}, T_C = 25^\circ\text{C}$		-	100	μA
		$V_R = 1200 \text{ V}, T_C = 175^\circ\text{C}$		-	300	
Q_C	Total Capacitive Charge	$V_R = 800 \text{ V}, T_C = 25^\circ\text{C}$		121		nC
C	Total Capacitance	$V_R = 1 \text{ V}, f = 100 \text{ kHz}$		1357		pF
		$V_R = 800 \text{ V}, f = 100 \text{ kHz}$		85		
E_C	Capacitance Stored Energy	$V_R = 800 \text{ V}, T_C = 25^\circ\text{C}$		34		μJ

Typical Performance Characteristics (Per Leg)

Figure 1. Power Derating

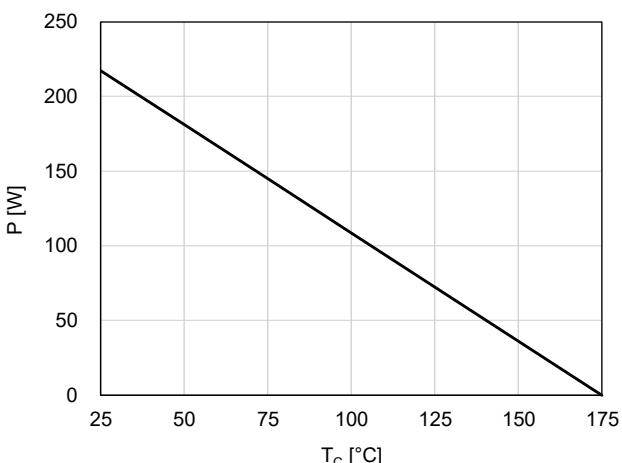


Figure 2. Current Derating

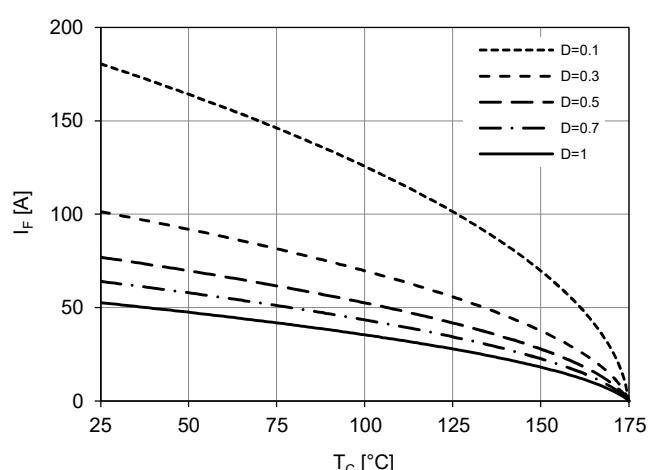


Figure 3. Forward Characteristics

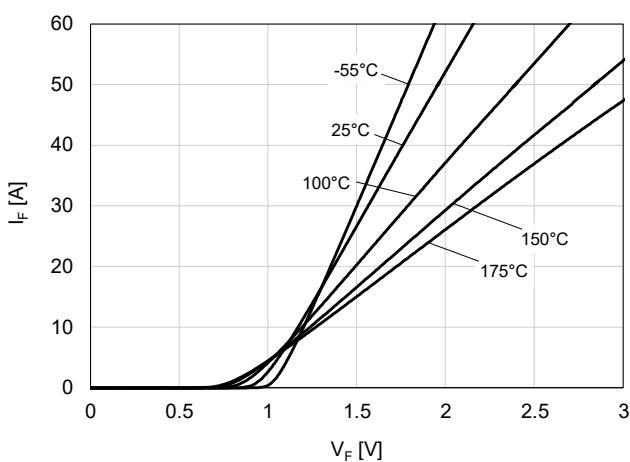


Figure 4. Reverse Characteristics

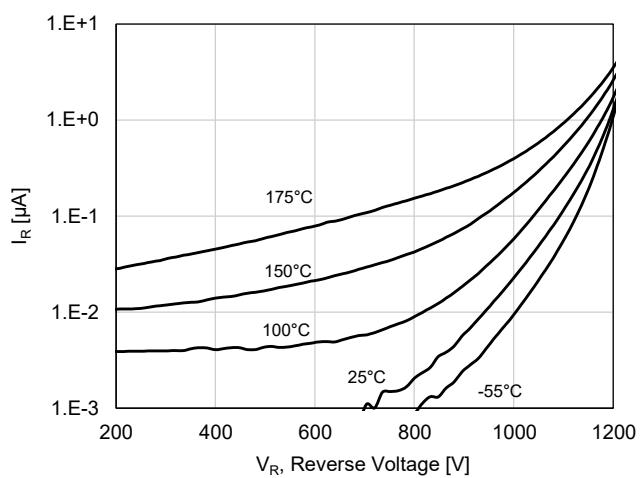


Figure 5. Capacitive Charge Characteristics

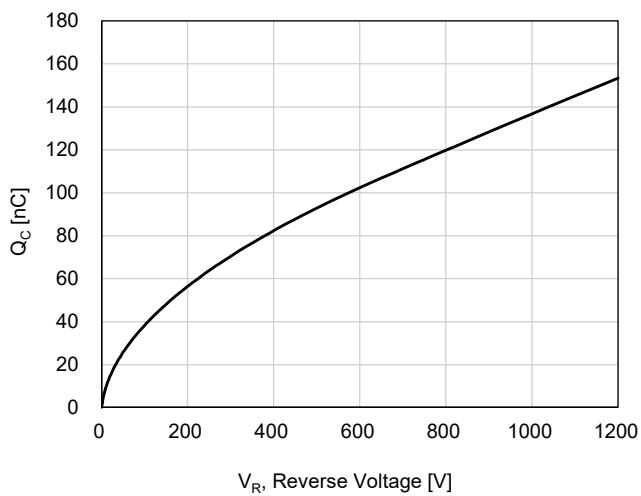
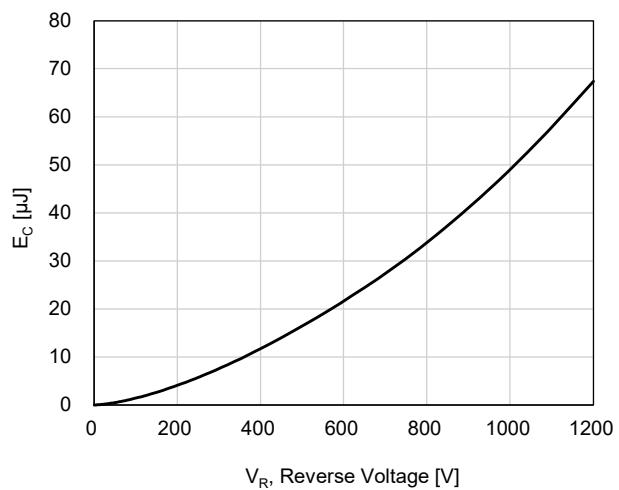
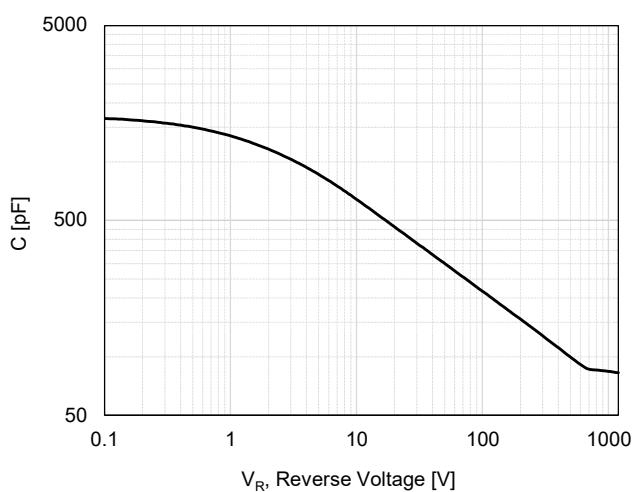
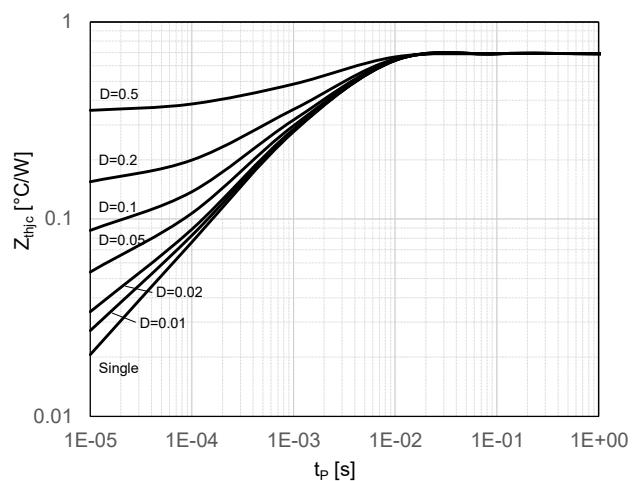


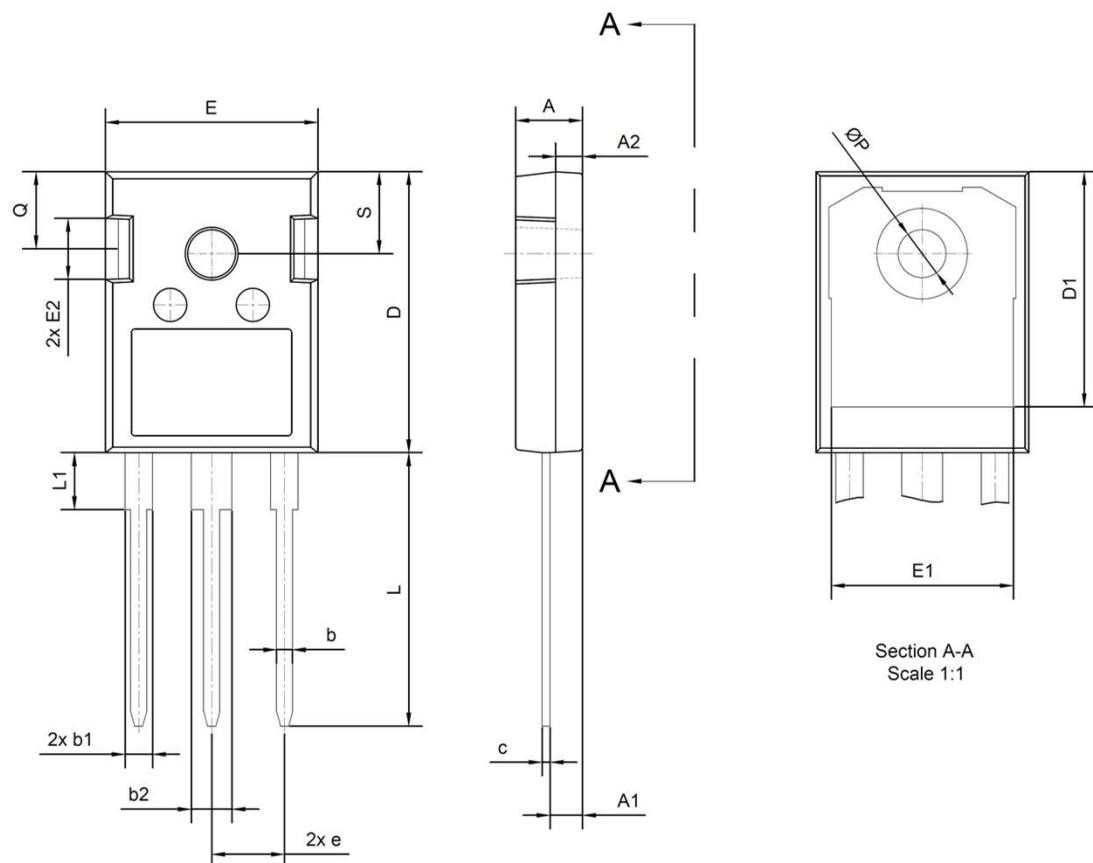
Figure 6. Capacitance Stored Energy



Typical Performance Characteristics (Per Leg)**Figure 7. Capacitance Characteristics****Figure 8. Transient Thermal Response Curve**

Package Outlines

TO-247



SYMBOL	Common		
	DIMENSIONS MILLIMETER		
	MIN.	NOM.	MAX.
A	4.80	5.00	5.20
A1	2.29	2.42	2.54
A2	1.90	2.00	2.10
b	1.10	1.20	1.30
b1	1.91	2.06	2.20
b2	2.92	3.06	3.20
c	0.50	0.60	0.70
D	20.80	21.07	21.34
D1	17.23	17.63	18.03
E	15.75	15.94	16.13
E1	13.46	13.66	13.86
E2	4.32	4.58	4.83
e	5.46 BSC		
L	19.85	20.05	20.25
L1	4.05	4.27	4.48
ØP	3.56	3.61	3.66
Q	5.38	5.79	6.20
S	6.15 BSC		