HCA120S10D1

SiC Silicon Carbide Schottky Diode

1200V, 10A

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

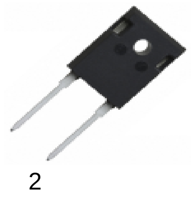
Applications

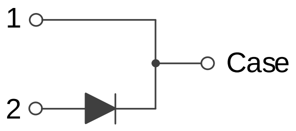
- Solar inverter, UPS
- EV charging station
- Power Factor Correction

Features

V_{RRM}	I_F	$T_{J,max}$	Q_C
1200 V	10 A	175 ℃	63 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 (T_C = 25℃ unless otherwise noted)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage		1200	V
I_F	Forward Current	T_C = 152℃	10	A
$I_{F,SM}$	Non-Repetitive Forward Surge Current	T_C = 25℃, t_p = 10 ms	79	A
		T_C = 150℃, t_p = 10 ms	67	A
$I_{F,Max}$	Non-Repetitive Peak Forward Current	T_C = 25℃, t_p = 10 μs	810	A
		T_C = 150℃, t_p = 10 μs	690	A
I^2dt value	$\int I^2t$	T_C = 25℃, t_p = 10 ms	31	A^2s
		T_C = 150℃, t_p = 10 ms	23	A^2s
P_{tot}	Power Dissipation	T_C = 25℃	153	W
T_J,T_{STG}	Operating Junction and Storage Temperature		-55 to +175	℃

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case, Max.	0.98	℃/W

Package Marking and Ordering Information

Part Number	Top Marking	Package	Packing Method	Quantity
HCA120S10D1	HCA120S10D1	TO-247	Tube	30 units

Electrical Characteristics (T_C = 25℃ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_F	Forward Voltage	I_F = 10 A, T_C = 25℃		1.39	1.70	V
		I_F = 10 A, T_C = 175℃		1.8	-	
I_R	Reverse Current	V_R = 1200 V, T_C = 25℃		-	100	μA
		V_R = 1200 V, T_C = 175℃		-	300	
Q_C	Total Capacitive Charge	V_R = 800 V, T_C = 25℃		63		nC
C	Total Capacitance	V_R = 1 V, f = 100 kHz		697		pF
		V_R = 800 V, f = 100 kHz		44		
E_C	Capacitance Stored Energy	V_R = 800 V, T_C = 25℃		18		μJ

Typical Performance Characteristics

Figure 1. Power Derating

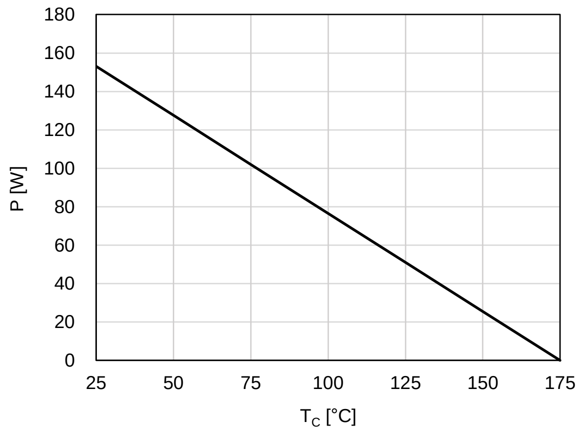


Figure 2. Current Derating

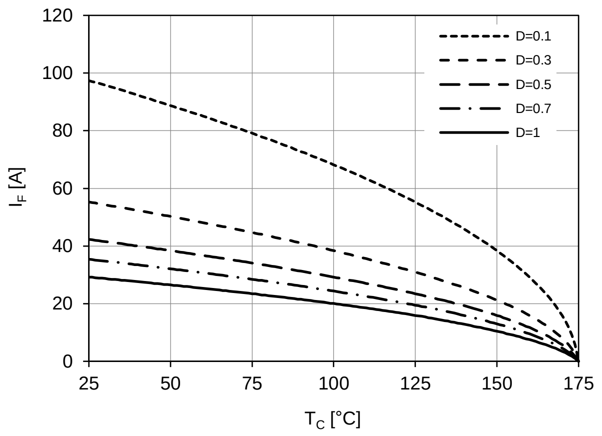


Figure 3. Forward Characteristics

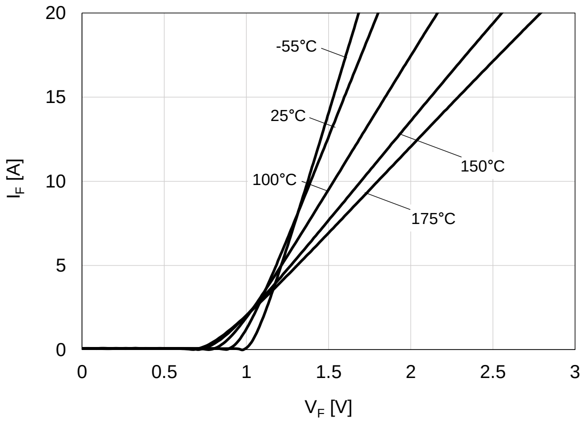


Figure 4. Reverse Characteristics

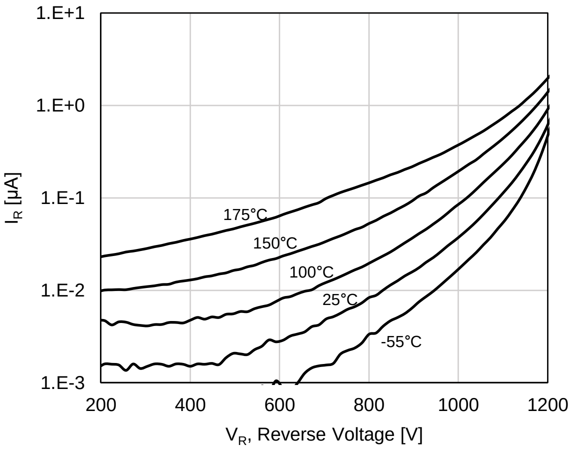


Figure 5. Capacitive Charge Characteristics

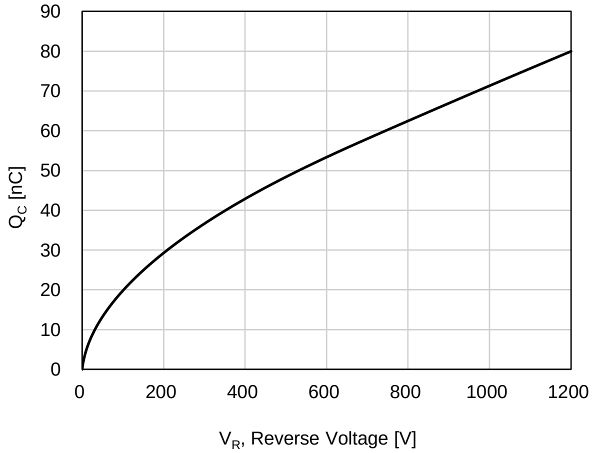
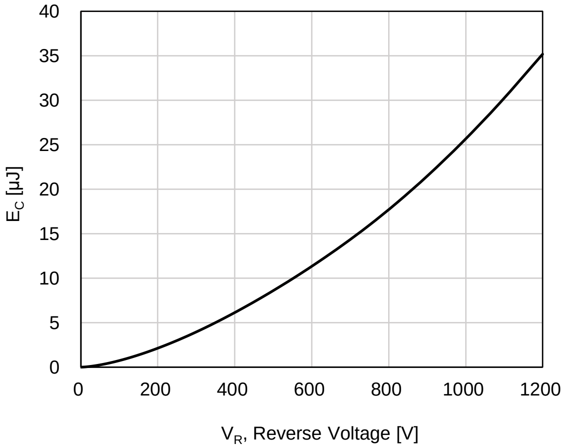


Figure 6. Capacitance Stored Energy



Typical Performance Characteristics

Figure 7. Capacitance Characteristics

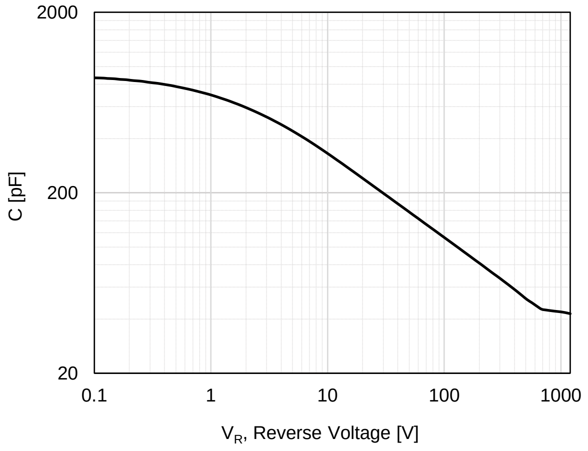
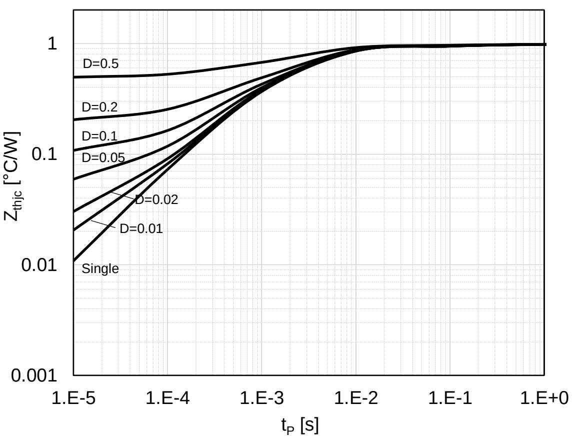
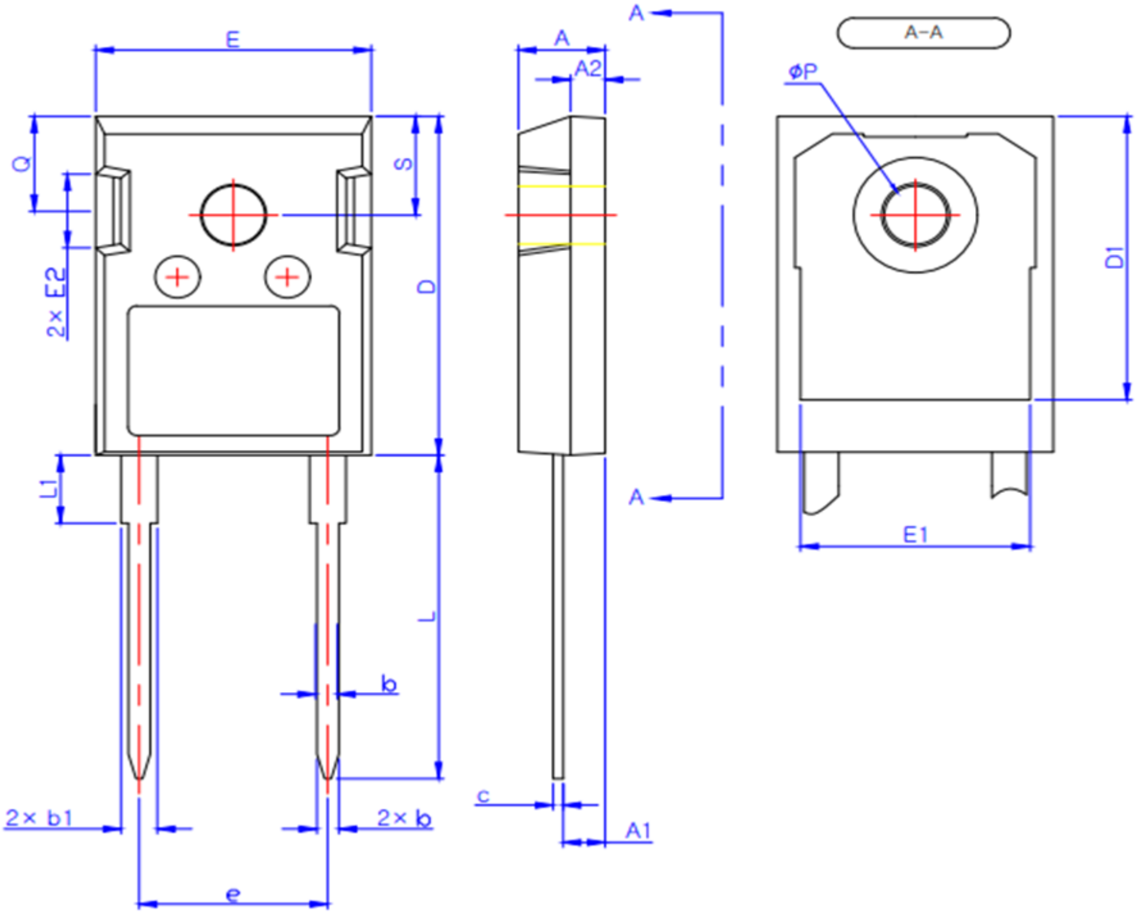


Figure 8. Transient Thermal Response Curve



Package Outlines

TO-247-2L



SYMBOL	MIN	MAX
A	4.80	5.20
A1	2.29	2.54
A2	1.90	2.10
b	1.10	1.30
b1	1.91	2.20
c	0.50	0.70
D	20.80	21.34
D1	17.43	17.83
E	15.75	16.13
E1	13.06	13.46
E2	4.32	4.83
e	10.90 BSC	
L	19.85	20.25
L1	–	4.49
ØP	3.55	3.65
Q	5.59	6.19
S	6.15 BSC	

* Dimensions in millimeters