

HCH120S15D1

SiC Silicon Carbide Schottky Diode

1200V, 15A

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.

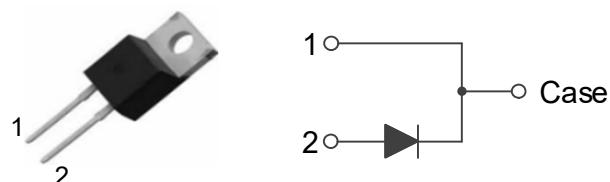
Applications

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

Features

V_{RRM}	I_F	$T_{J,max}$	Q_c
1200 V	15 A	175 °C	92 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 ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Unit	
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V	
I_F	Forward Current	15	A	
$I_{F,SM}$	Non-Repetitive Forward Surge Current	$T_C = 25^\circ\text{C}$, $t_p = 10 \text{ ms}$	106	A
		$T_C = 150^\circ\text{C}$, $t_p = 10 \text{ ms}$	90	A
$I_{F,Max}$	Non-Repetitive Peak Forward Current	$T_C = 25^\circ\text{C}$, $t_p = 10 \mu\text{s}$	850	A
		$T_C = 150^\circ\text{C}$, $t_p = 10 \mu\text{s}$	722	A
I^2dt value	$\int I^2 dt$	$T_C = 25^\circ\text{C}$, $t_p = 10 \text{ ms}$	$56 \text{ A}^2\text{s}$	
		$T_C = 150^\circ\text{C}$, $t_p = 10 \text{ ms}$	$40 \text{ A}^2\text{s}$	
P_{tot}	Power Dissipation	$T_C = 25^\circ\text{C}$	294	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.	0.51	°C/W

Package Marking and Ordering Information

Part Number	Top Marking	Package	Packing Method	Quantity
HCH120S15D1	HCH120S15D1	TO-220	Tube	50 units

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

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_F	Forward Voltage	$I_F = 15 \text{ A}, T_C = 25^\circ\text{C}$		1.39	1.70	V
		$I_F = 15 \text{ A}, T_C = 175^\circ\text{C}$		1.8	-	
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	$V_R = 800 \text{ V}, T_C = 25^\circ\text{C}$		92		nC
C	Total Capacitance	$V_R = 1 \text{ V}, f = 100 \text{ kHz}$		1010		pF
		$V_R = 800 \text{ V}, f = 100 \text{ kHz}$		65		
E_C	Capacitance Stored Energy	$V_R = 800 \text{ V}, T_C = 25^\circ\text{C}$		26		μJ

Typical Performance Characteristics

Figure 1. Power Derating

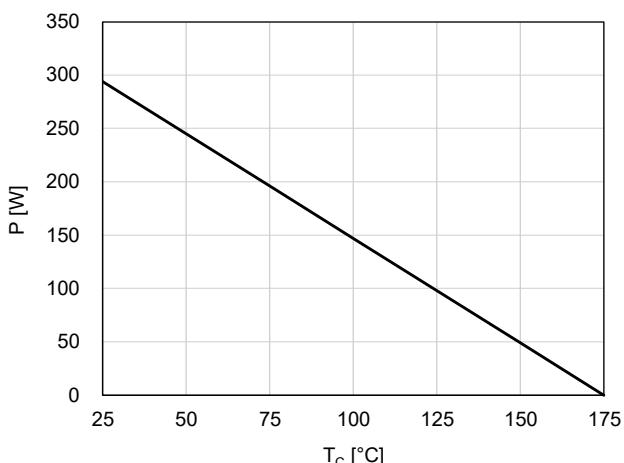


Figure 2. Current Derating

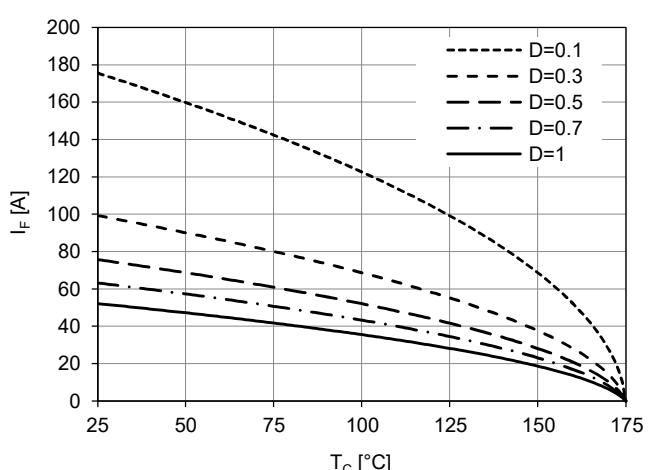


Figure 3. Forward Characteristics

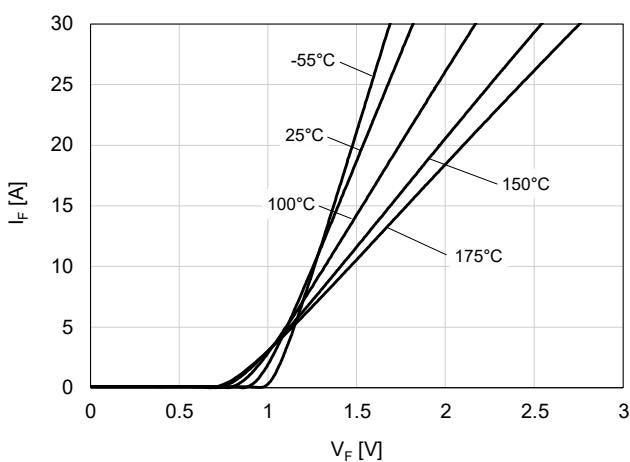


Figure 4. Reverse Characteristics

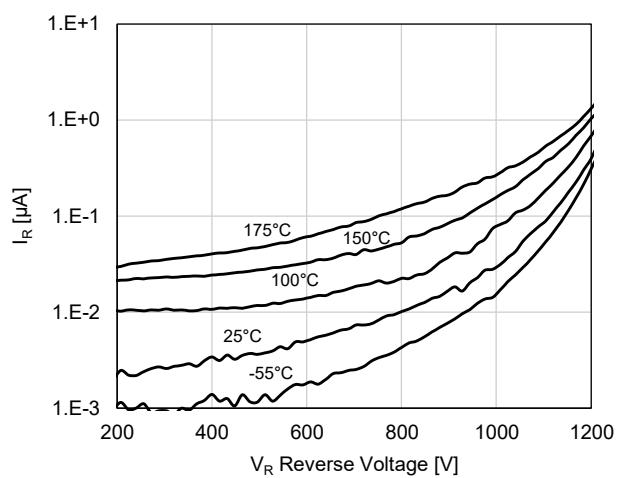


Figure 5. Capacitive Charge Characteristics

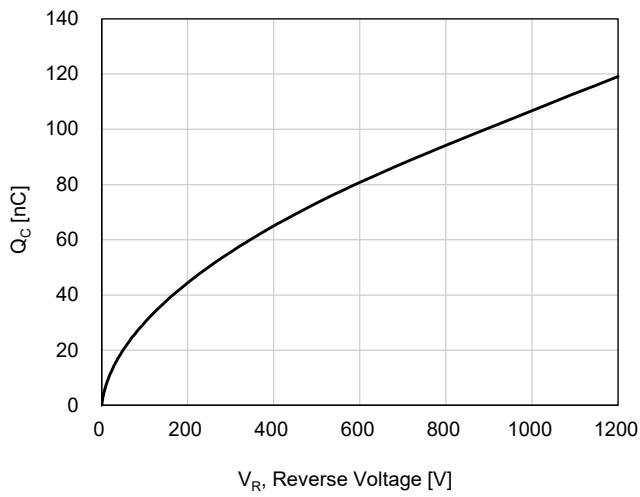
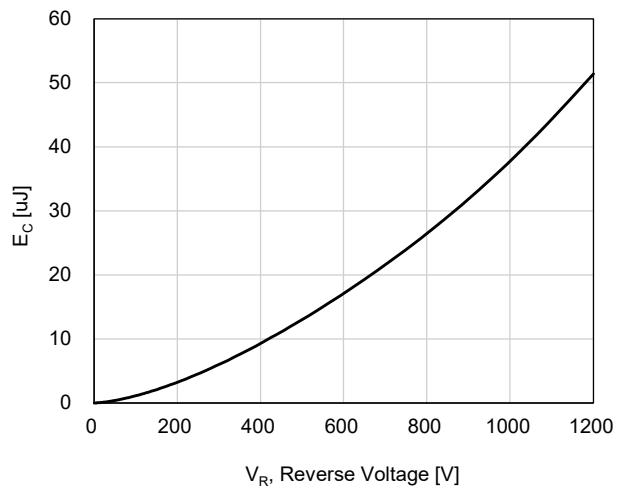
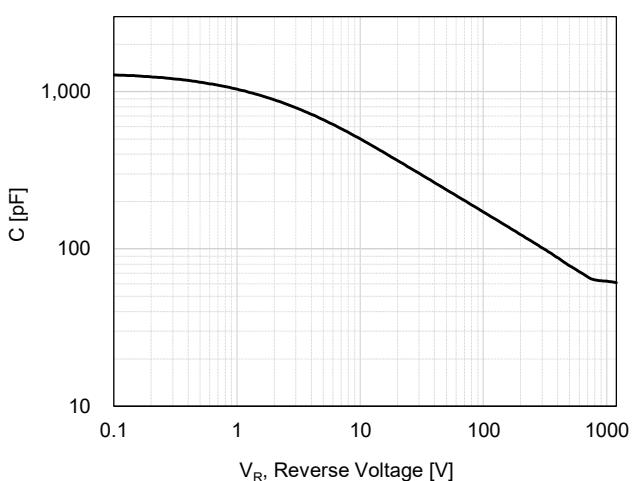
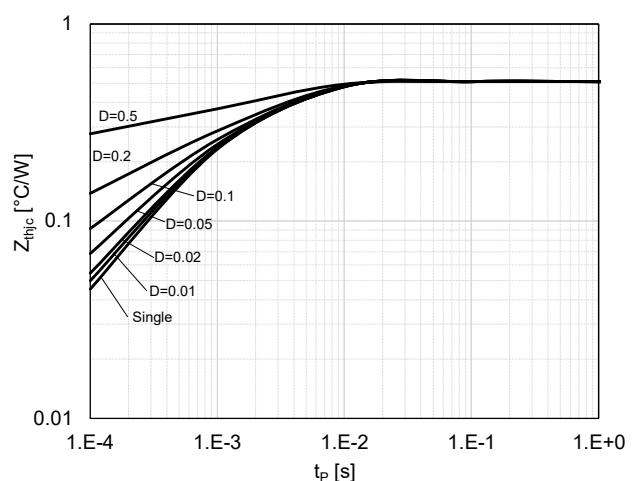


Figure 6. Capacitance Stored Energy



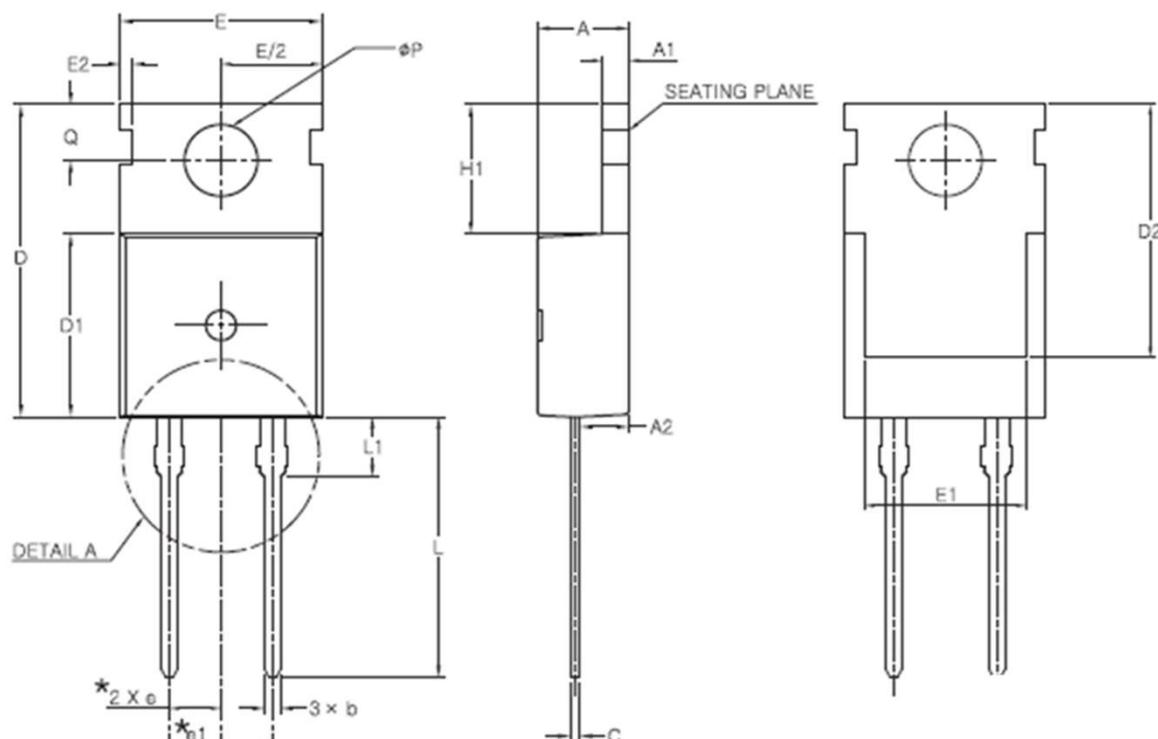
Typical Performance Characteristics

Figure 7. Capacitance Characteristics**Figure 8. Transient Thermal Response Curve**

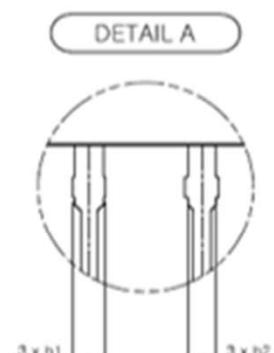
Package Outlines

TO-220-2L

TO-220-2L



SYMBOL	MIN	NOM	MAX
A	4.30	4.50	4.70
A1	1.25	1.30	1.40
A2	2.20	2.40	2.60
b	0.70	0.80	0.90
b1	1.42	1.52	1.62
b2	1.17	1.27	1.37
c	0.45	0.50	0.60
D	15.50	15.70	15.90
D1	9.00	9.20	9.40
D2	(12.70)		
E	9.70	9.90	10.10
E1	(8.00)		
E2	(0.60)		
E3	9.70	9.90	10.10
e	2.54 BSC		
e1	5.08 BSC		
H1	6.30	6.50	6.70
L	12.88	13.08	13.28
L1	(3.00)		
φP	3.50	3.60	3.70
Q	2.70	2.80	2.90



* Dimensions in millimeters