

# HCH120S15D1

## eSiC Silicon Carbide Schottky Diode

1200V, 15A

### Description

The 1200V eSiC 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 eSiC family is suitable for application requiring high power efficiency

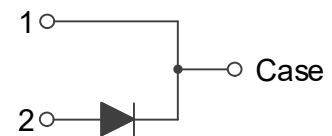
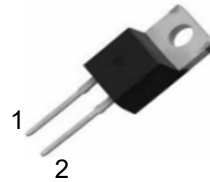
### Applications

- 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	$T_C = 157^\circ\text{C}$ 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	$^\circ\text{C}$	

### Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case, Max.	0.51	$^\circ\text{C}/\text{W}$

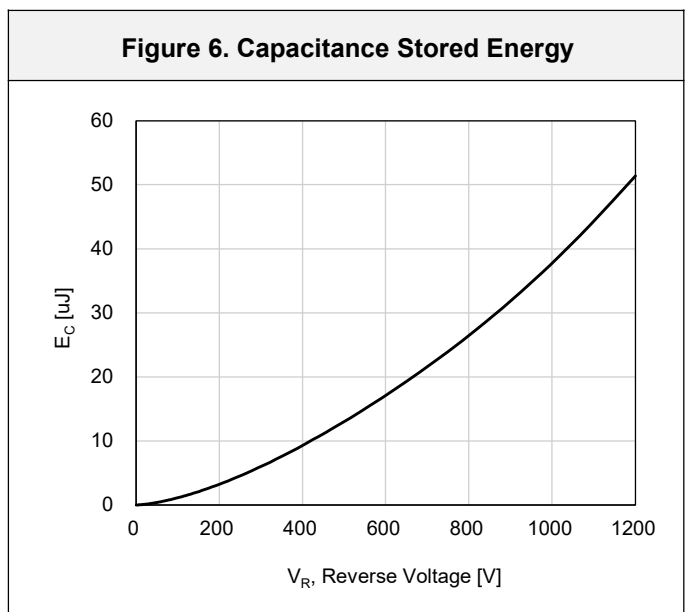
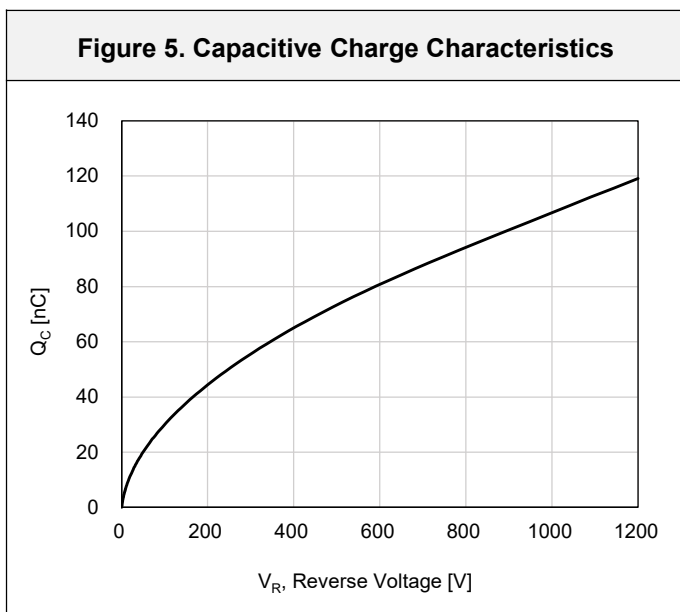
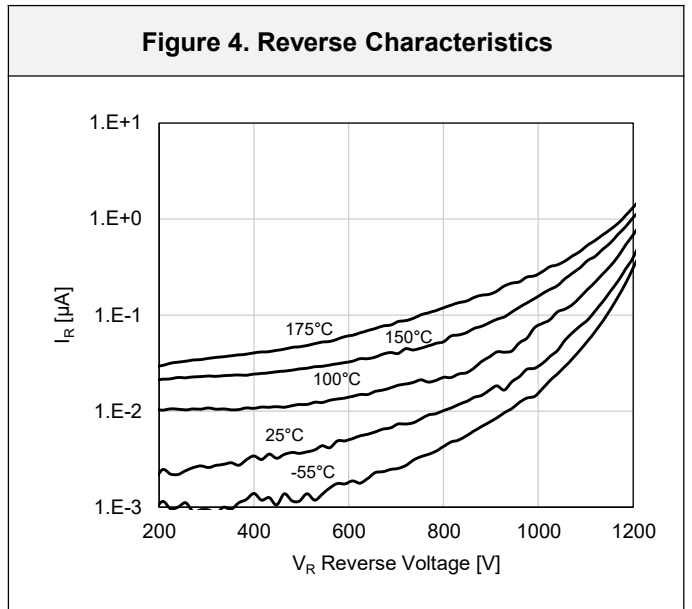
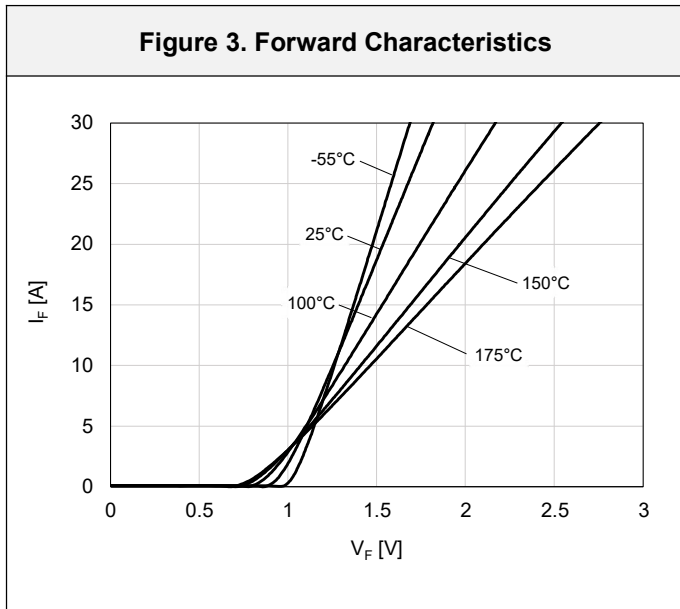
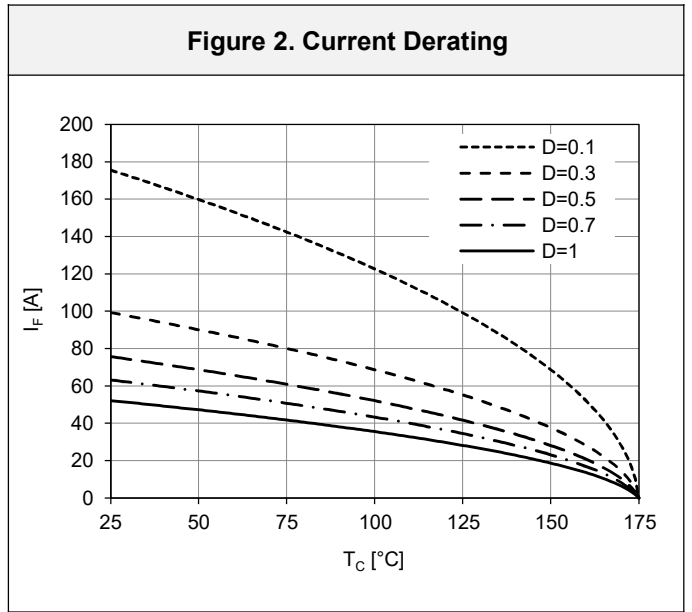
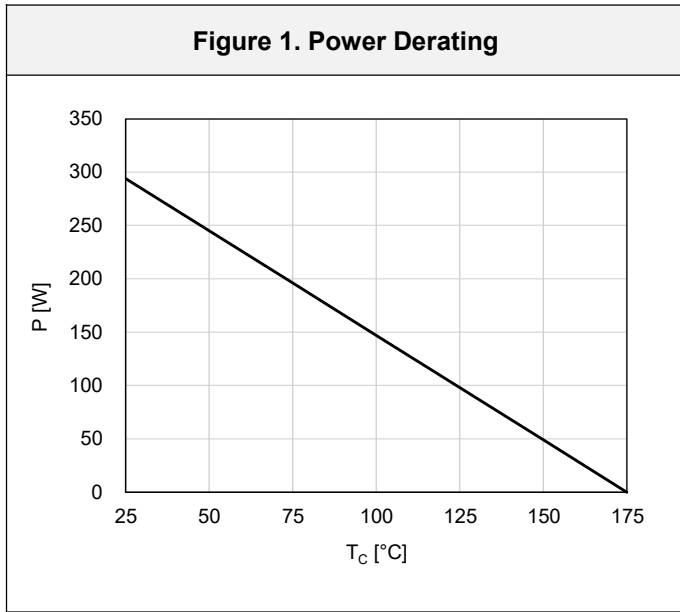
## Package Marking and Ordering Information

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

## Electrical Characteristics (T<sub>C</sub> = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V <sub>F</sub>	Forward Voltage	I <sub>F</sub> = 15 A, T <sub>C</sub> = 25°C		1.39	1.70	V
		I <sub>F</sub> = 15 A, T <sub>C</sub> = 175°C		1.8	-	
I <sub>R</sub>	Reverse Current	V <sub>R</sub> = 1200 V, T <sub>C</sub> = 25°C		-	100	μA
		V <sub>R</sub> = 1200 V, T <sub>C</sub> = 175°C		-	300	
Q <sub>C</sub>	Total Capacitive Charge	V <sub>R</sub> = 800 V, T <sub>C</sub> = 25°C		92		nC
C	Total Capacitance	V <sub>R</sub> = 1 V, f = 100 kHz		1010		pF
		V <sub>R</sub> = 800 V, f = 100 kHz		65		
E <sub>C</sub>	Capacitance Stored Energy	V <sub>R</sub> = 800 V, T <sub>C</sub> = 25°C		26		μJ

Typical Performance Characteristics



Typical Performance Characteristics

Figure 7. Capacitance Characteristics

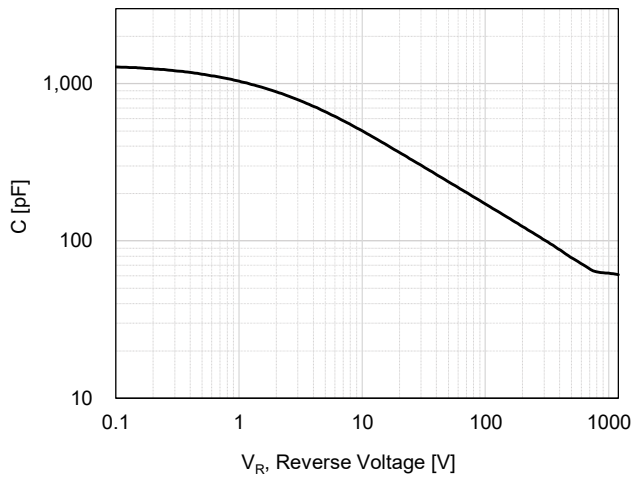
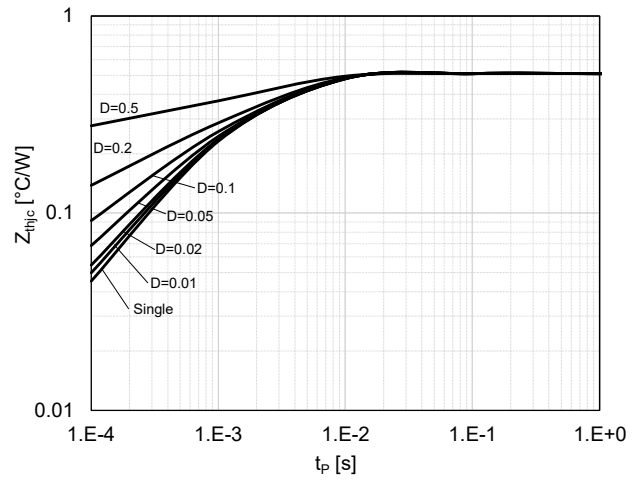
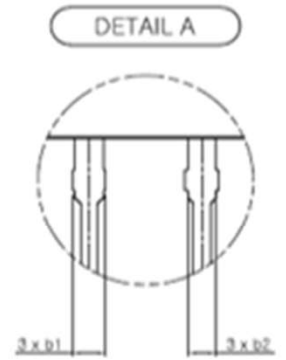
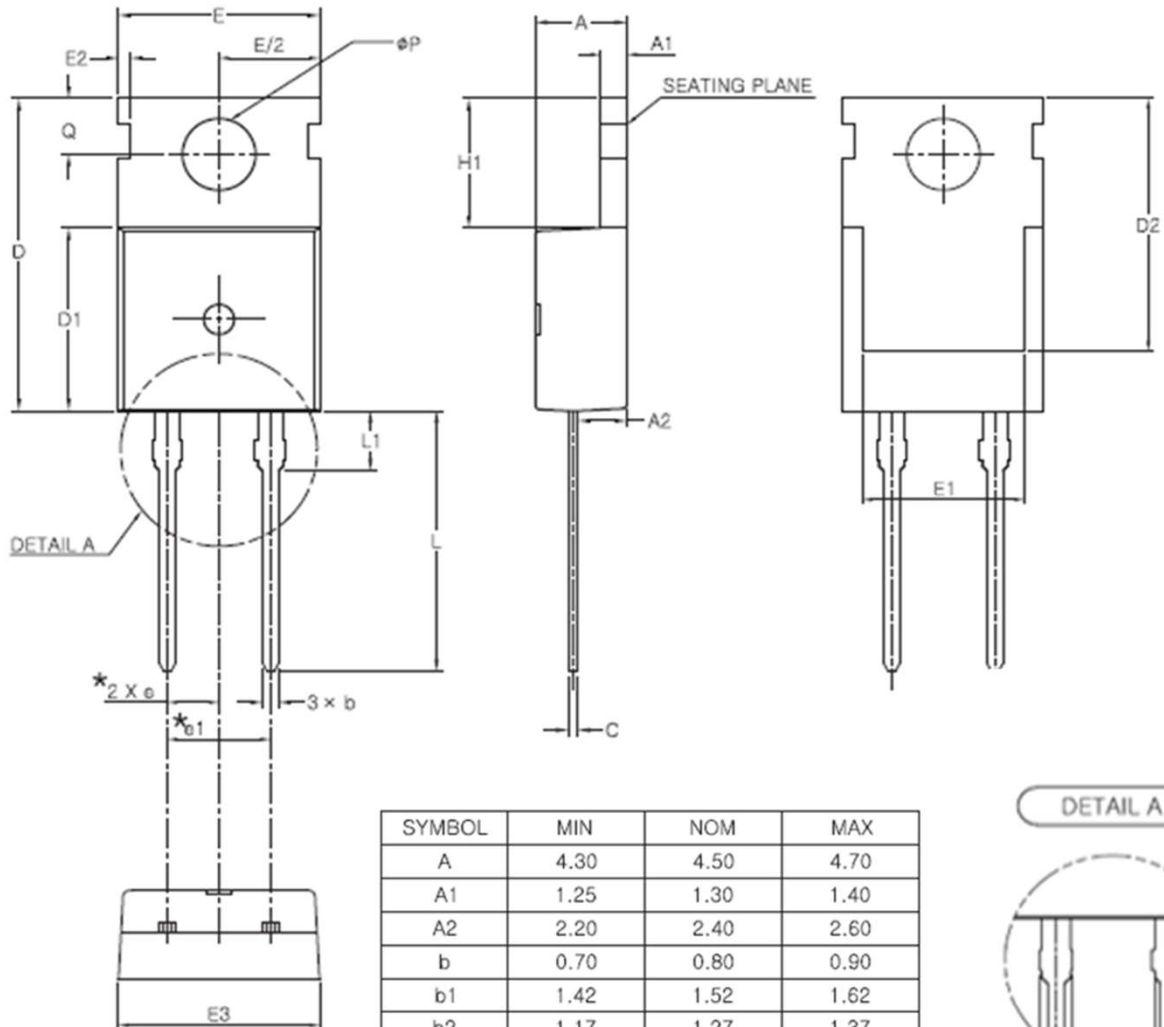


Figure 8. Transient Thermal Response Curve



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)		
$\phi P$	3.50	3.60	3.70
Q	2.70	2.80	2.90

\* Dimensions in millimeters