

1200V Silicon Carbide Schottky Diode

GENERAL DESCRIPTION

- ◆ 1200V Schottky rectifier
- ◆ Zero Forward/Reverse Recovery Current
- ◆ High Blocking Voltage
- ◆ High frequency operation
- ◆ Switching characteristics independent of temperature
- ◆ Positive temperature coefficient of forward voltage(VF)

BENEFIT

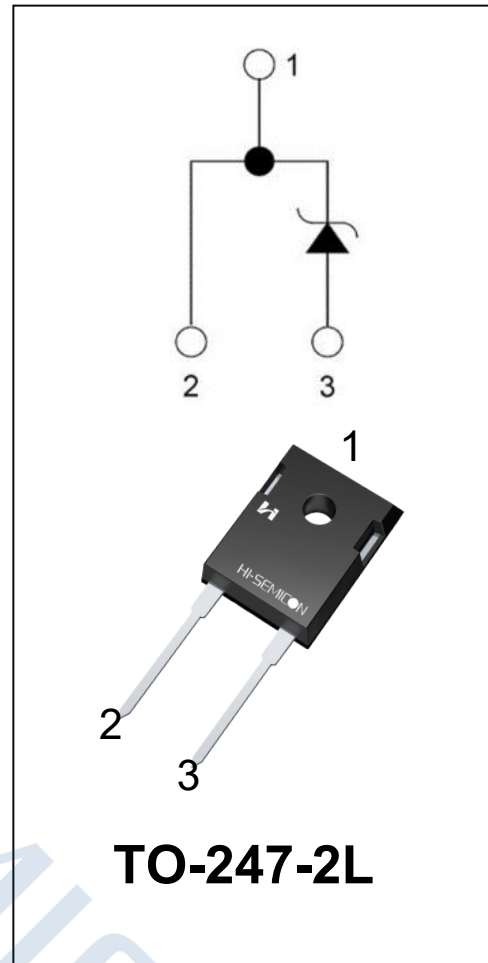
- ◆ Replace bipolar with unipolar rectifiers
- ◆ Essentially no switching losses
- ◆ higher efficiency
- ◆ Reduction of heat requirements
- ◆ Parallel devices without thermal runaway

Product Summary

- ◆  $V_R=1200V$
- ◆  $I_F=30A(TC=150^{\circ}C)$
- ◆  $Q_C=155nC(V_R=800V)$

Applications

- ◆ Motor Drives
- ◆ Solar / Wind Inverters
- ◆ Uninterruptable power supplies
- ◆ AC/DC converters
- ◆ DC/DC Converters



ORDERING INFORMATION

Part No.	Package	Marking	Material	Packing
SC3D30120H	TO-247-2L	C3D30120	Pb free	Tube

ABSOLUTE MAXIMUM RATINGS (T<sub>J</sub>=25°C unless otherwise noted)

Characteristics		Symbol	Ratings	Unit
Repetitive peak reverse voltage		V <sub>RRM</sub>	1200	V
Continuous forward current	T <sub>C</sub> =25°C	I <sub>F</sub>	80	A
	T <sub>C</sub> =135°C		40	
	T <sub>C</sub> =150°C		30	
Repetitive peak forward surge current	tp=10ms T <sub>C</sub> =25°C	I <sub>FRM</sub>	200	A
	tp=10ms T <sub>C</sub> =110°C		190	
Non-repetitive peak forward surge current	tp=10ms T <sub>C</sub> =25°C	I <sub>FSM</sub>	230	A
	tp=10ms T <sub>C</sub> =110°C		220	
Power dissipation	T <sub>C</sub> =25°C	P <sub>tot</sub>	330	W
	T <sub>C</sub> =110°C		140	
Single Pulse Avalanche Energy	L=2mH, I <sub>AS</sub> =15A	EAS	225	mJ
Diode dv/dt ruggedness	VR = 0-1200V	dv/dt	80	V/ns
Operating junction temperature		T <sub>J</sub>	-55~175	°C
Storage temperature range		T <sub>stg</sub>	-55~175	
Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds		TL	300	°C

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
DC Blocking Voltage	VDC	T <sub>J</sub> =25°C	1200	--	--	V
Forward voltage drop	V <sub>F</sub>	I <sub>F</sub> =30A, T <sub>J</sub> =25°C	--	1.45	1.8	V
		I <sub>F</sub> =30A, T <sub>J</sub> =125°C	--	1.75	--	
		I <sub>F</sub> =30A, T <sub>J</sub> =175°C	--	1.95	--	
Reverse leakage current	I <sub>R</sub>	V <sub>R</sub> =1200V, T <sub>J</sub> =25°C	--	15	200	uA
		V <sub>R</sub> =1200V, T <sub>J</sub> =125°C	--	60	--	
		V <sub>R</sub> =1200V, T <sub>J</sub> =175°C	--	100	--	
Total capacitance	C	V <sub>R</sub> =1V, f=1MHz	--	1810	--	pF
		V <sub>R</sub> =400V, f=1MHz	--	145	--	
		V <sub>R</sub> =800V, f=1MHz	--	102	--	
Total capacitance charge	Q <sub>C</sub>	V <sub>R</sub> =800V, T <sub>J</sub> =25°C	--	155	--	nC

THERMAL CHARACTERISTICS

Characteristics	Symbol	Typ.	Unit
Thermal Resistance, Junction-to-Case	R <sub>θJC</sub>	0.45	°C/W

Typical Performance Characteristics

Figure.1: Forward characteristics

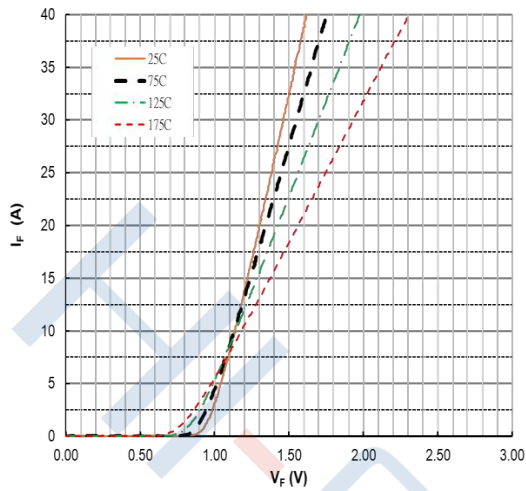


Figure.2: Forward Characteristics

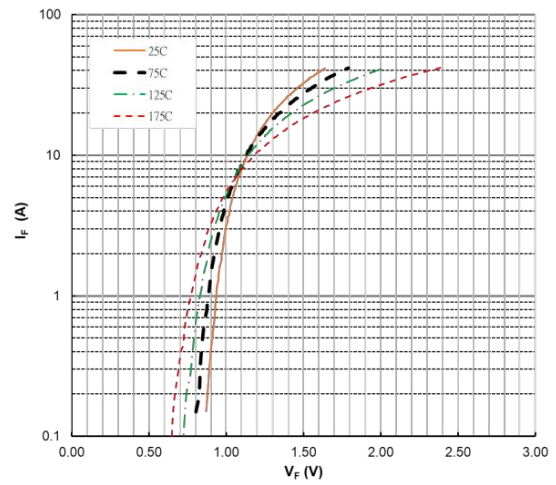


Figure.3: Reverse Characteristics

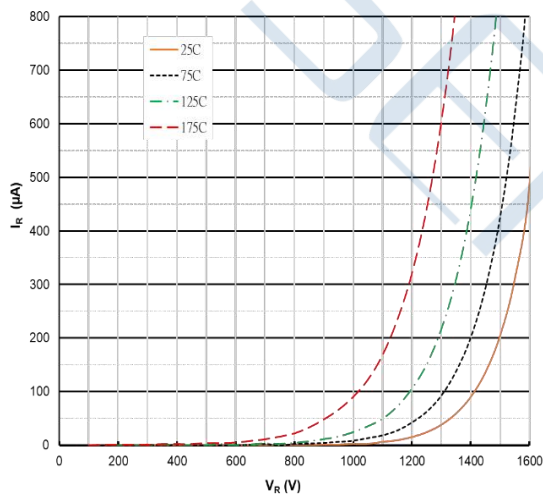


Figure.4: Power Derating

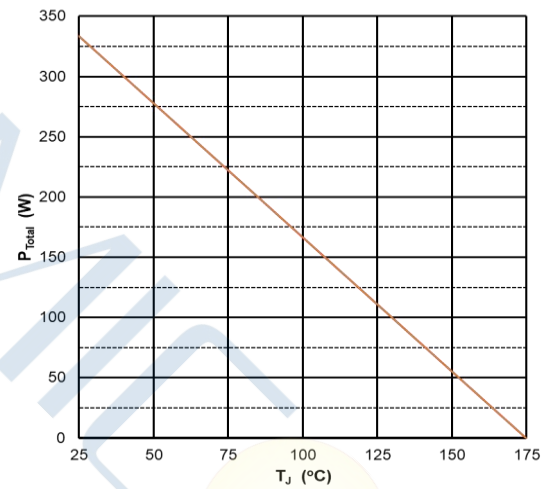


Figure.5: Reversecharge vs. Reverse Voltage

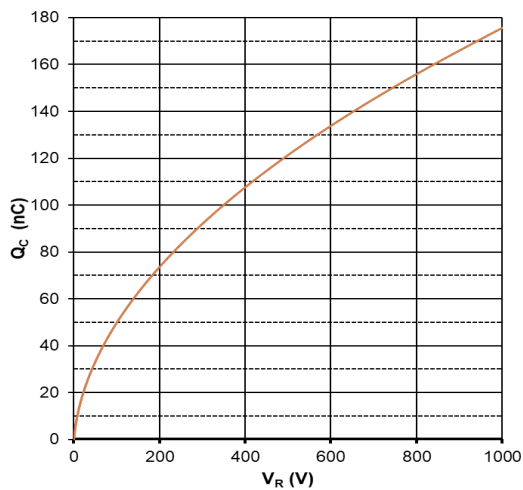
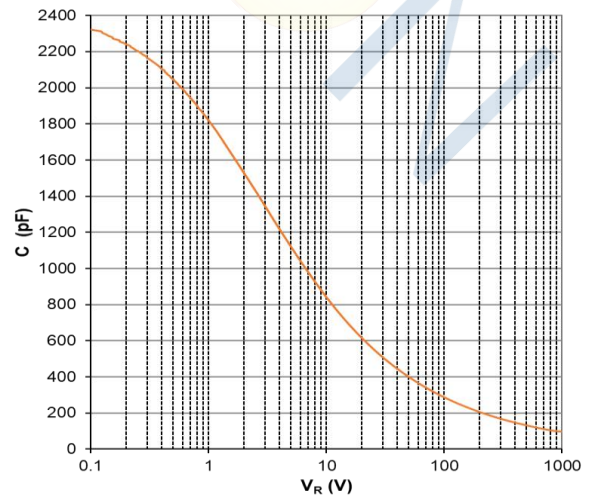
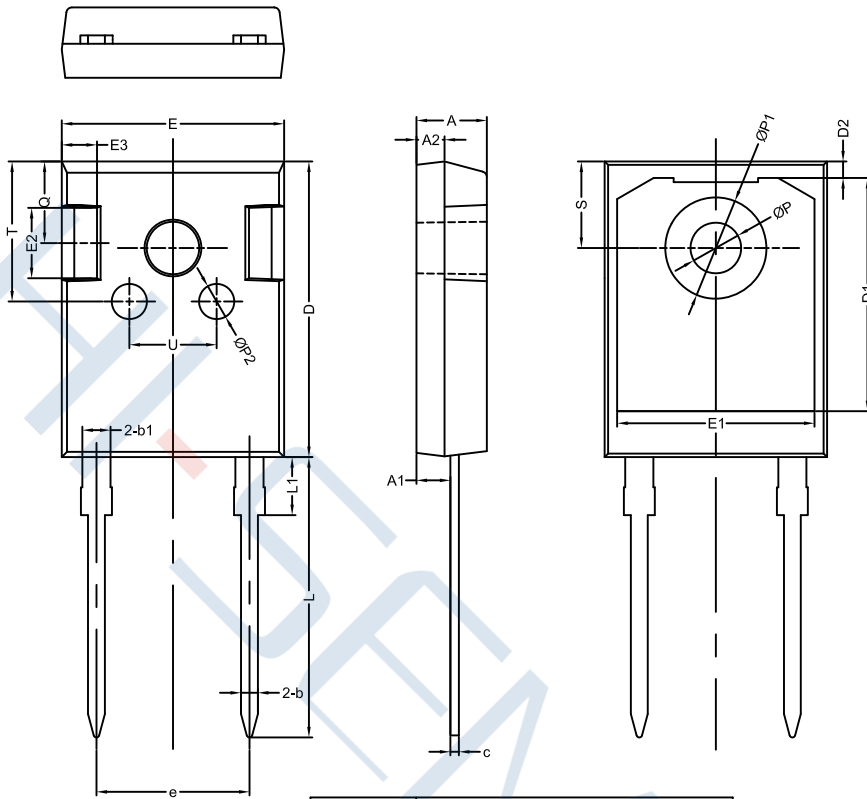


Figure.6: Capacitance vs. Reverse Voltage



Package Dimensions of TO-274-2L



符号	机械尺寸/mm		
	最小值	典型值	最大值
A	4.80	5.00	5.20
A1	2.21	2.41	2.61
A2	1.90	2.00	2.10
b	1.10	1.20	1.35
b1		2.00	
c	0.55	0.60	0.75
D	20.80	21.00	21.20
D1		16.58	
D2		1.17	
E	15.60	15.80	16.0
E1		14.02	
E2		5.00	
E3		2.50	
e		10.88	
L	19.42	19.92	20.42
L1		4.13	
P	3.50	3.60	3.70
P1		7.19	
P2		2.50	
Q		5.80	
S	6.05	6.15	6.25
T		10.00	
U		6.20	

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