

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

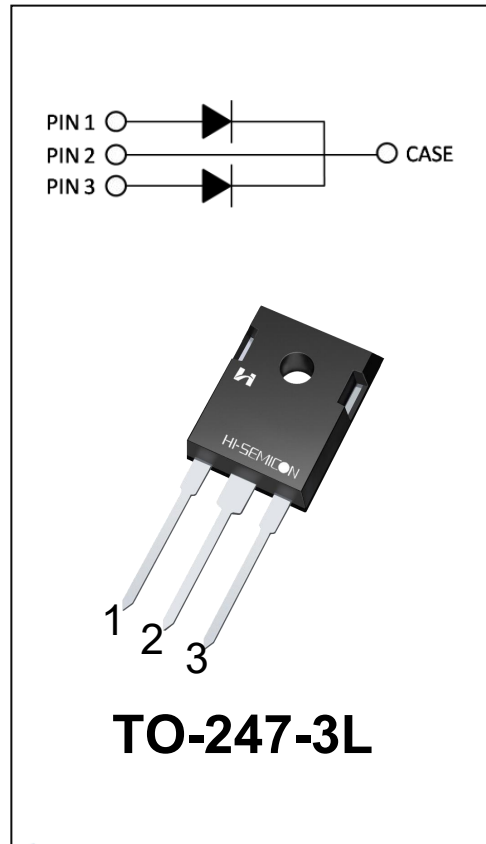
- ◆ Replace bipolar with unipolar rectifiers
- ◆ Essentially no switching losses
- ◆ higher efficiency
- ◆ Reduction of heat requirements
- ◆ Parallel devices without thermal runaway

Product Summary

- ◆ $V_R=1200V$
- ◆ $I_F=40A(TC=150^{\circ}C)$
- ◆ $Q_C=212nC(V_R=800V)$

Applications

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



ORDERING INFORMATION

Part No.	Package	Marking	Material	Packing
SC3D40120D	TO-247-3L	C3D40120	Pb free	Tube

ABSOLUTE MAXIMUM RATINGS (T_J=25°C unless otherwise noted)

Characteristics		Symbol	Ratings		Unit
Repetitive peak reverse voltage		V _{RRM}	1200		V
Maximum DC blocking voltage		V _R	1200		V
Surge peak reverse voltage		V _{RSM}	1200		V
Continuous forward current (per leg / per device)	T _C =25°C	I _F	55	110	A
	T _C =135°C		24	48	
	T _C =150°C		20	40	
Repetitive peak forward surge current	tp=10ms T _C =25°C	I _{FRM}	140		A
	tp=10ms T _C =110°C		130		
Non-repetitive peak forward surge current	tp=10ms T _C =25°C	I _{FSM}	110		A
	tp=10ms T _C =110°C		100		
Power dissipation (per leg / per device)	T _C =25°C	P _{tot}	250	429	W
	T _C =110°C		108	186	
Diode dv/dt ruggedness	VR = 0-1200V	dv/dt	80		V/ns
Operating junction temperature		T _J	-55~175		°C
Storage temperature range		T _{stg}	-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 _J =25°C	1200	--	--	V
Forward voltage drop	V _F	I _F =20A, T _J =25°C	--	1.45	1.8	V
		I _F =20A, T _J =125°C	--	1.8	--	
		I _F =20A, T _J =175°C	--	2.0	--	
Reverse leakage current	I _R	V _R =1200V, T _J =25°C	--	10	200	uA
		V _R =1200V, T _J =125°C	--	20	--	
		V _R =1200V, T _J =175°C	--	50	--	
Total capacitance	C	V _R =1V, f=1MHz	--	1190	--	pF
		V _R =400V, f=1MHz	--	101	--	
		V _R =800V, f=1MHz	--	72	--	
Total capacitance charge	Q _C	V _R =800V, T _J =25°C	--	106	--	nC

THERMAL CHARACTERISTICS

Characteristics	Symbol	Typ.	Unit
Thermal Resistance, Junction-to-Case	R _{θJC}	0.35	°C/W

Typical Performance Characteristics

Figure.1: Forward characteristics

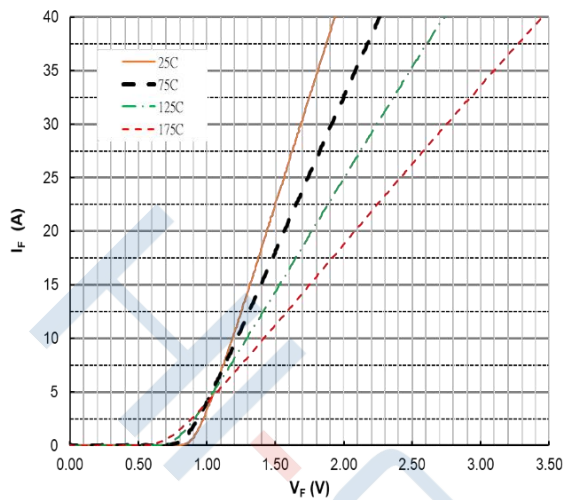


Figure.2: Forward Characteristics

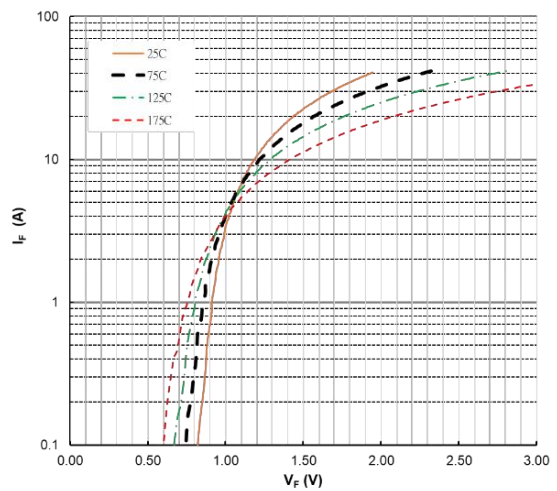


Figure.3: Reverse Characteristics

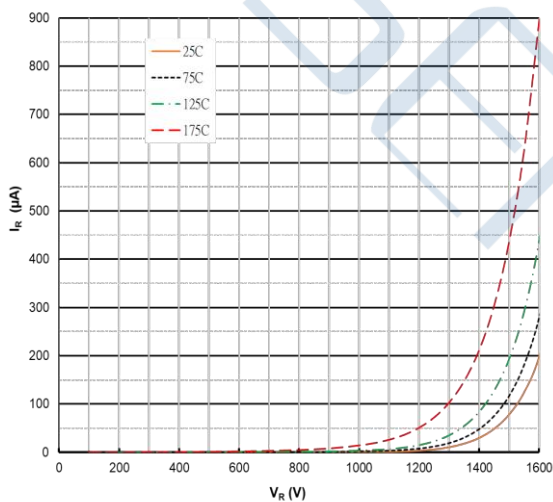


Figure.4: Power Derating

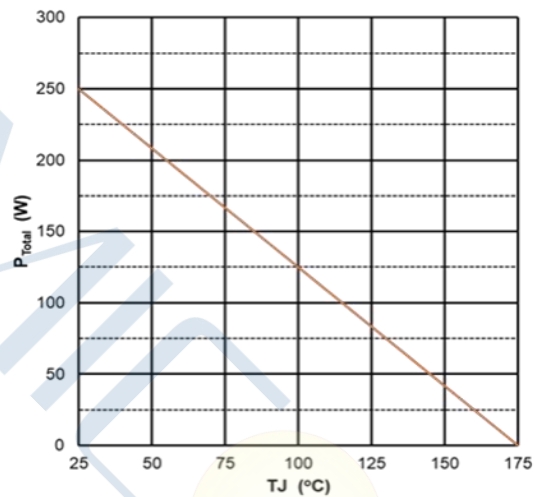


Figure.5: Reversecharge vs. Reverse Voltage

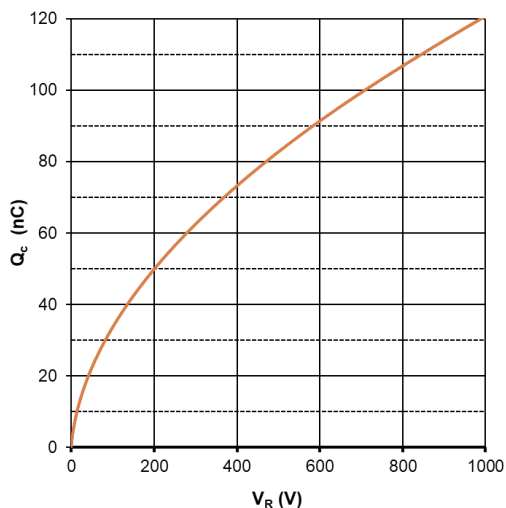
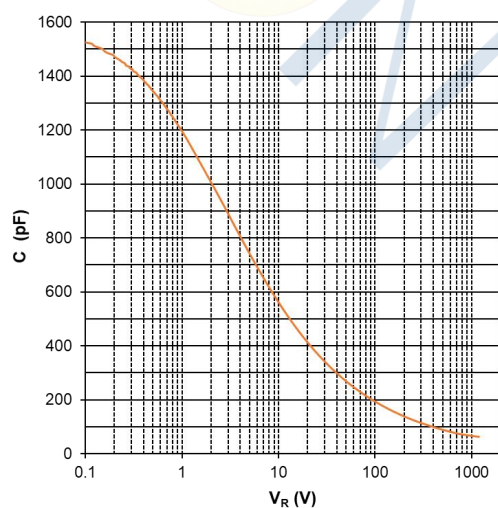
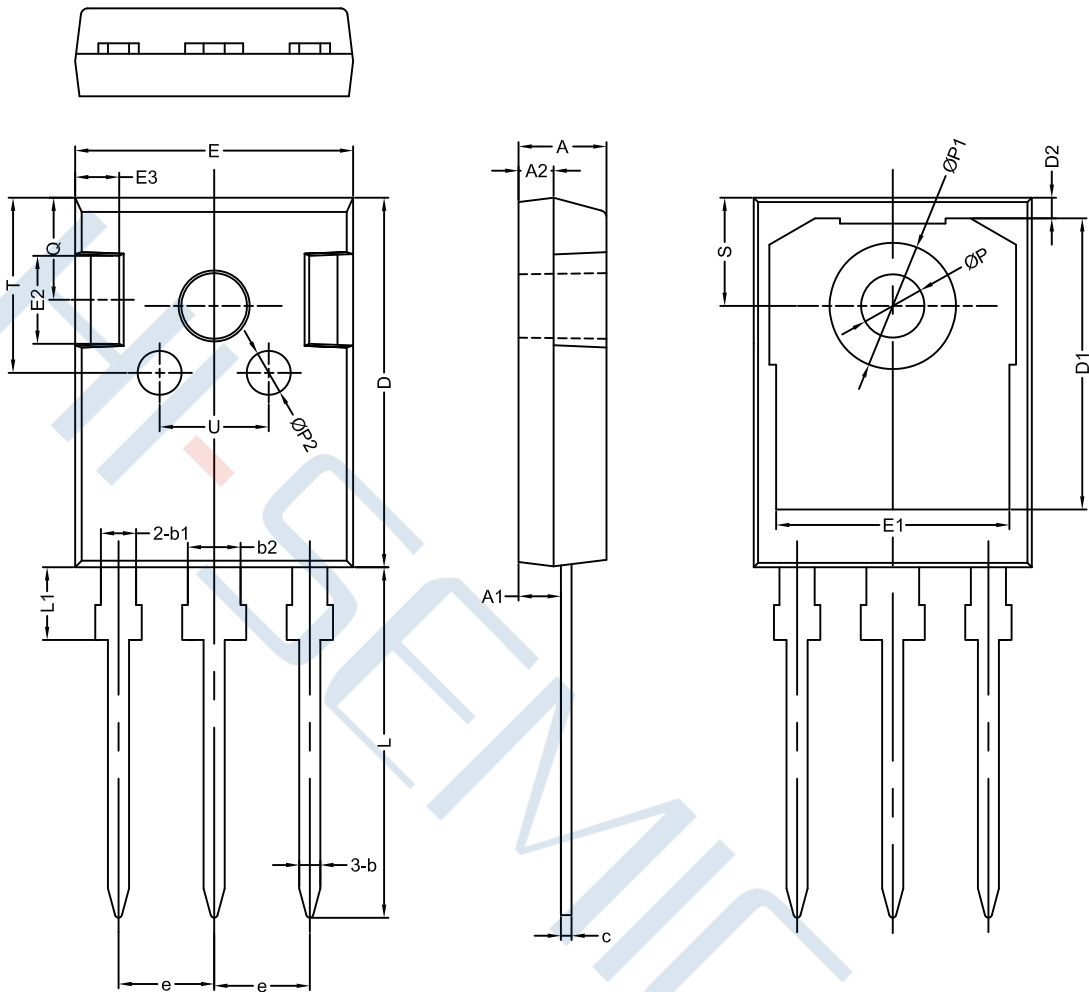


Figure.6: Capacitance vs. Reverse Voltage



Package Dimensions of TO-274-3L



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	
b2		3.00	
c	0.55	0.60	0.75
D	20.80	21.00	21.20
D1		16.55	
D2		1.20	
E	15.60	15.80	16.0
E1		13.30	
E2		5.00	
E3		2.50	
e		5.44	
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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