

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

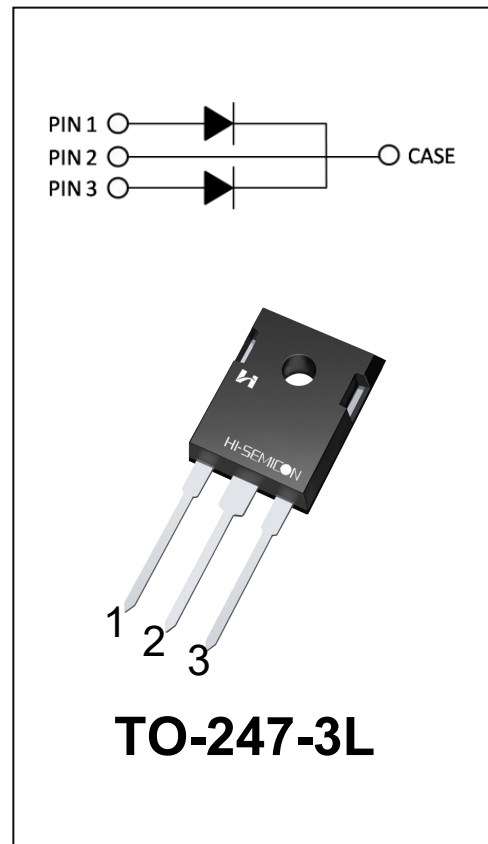
- ◆ Replace bipolar with unipolar rectifiers
- ◆ Essentially no switching losses
- ◆ higher efficiency
- ◆ Reduction of heat requirements
- ◆ Parallel devices without thermal runaway

Product Summary

- ◆ $V_R=1200V$
- ◆ $I_F=20A(TC=150^{\circ}C)$
- ◆ $Q_C=110nC(V_R=800V)$

Applications

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



ORDERING INFORMATION

Part No.	Package	Marking	Material	Packing
SC3D20120D	TO-247-3L	C3D20120	Pb free	Tube

ABSOLUTE MAXIMUM RATINGS ($T_J=25^{\circ}\text{C}$ 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)	$T_C=25^{\circ}\text{C}$	I_F	30	60	A
	$T_C=135^{\circ}\text{C}$		13	26	
	$T_C=150^{\circ}\text{C}$		10	20	
Repetitive peak forward surge current	$t_p=10\text{ms } T_C=25^{\circ}\text{C}$	I_{FRM}	90		A
	$t_p=10\text{ms } T_C=110^{\circ}\text{C}$		80		
Non-repetitive peak forward surge current	$t_p=10\text{ms } T_C=25^{\circ}\text{C}$	I_{FSM}	110		A
	$t_p=10\text{ms } T_C=110^{\circ}\text{C}$		100		
Power dissipation (per leg / per device)	$T_C=25^{\circ}\text{C}$	P_{tot}	150	300	W
	$T_C=110^{\circ}\text{C}$		65	150	
Diode dv/dt ruggedness		$VR = 0\text{-}1200\text{V}$	dv/dt	80	V/ns
Operating junction temperature		T_j	-55~175		$^{\circ}\text{C}$
Storage temperature range		T_{stg}	-55~175		
Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds		TL	300		$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
DC Blocking Voltage	VDC	$T_J=25^{\circ}\text{C}$	1200	--	--	V
Forward voltage drop	V_F	$I_F=10\text{A}, T_J=25^{\circ}\text{C}$	--	1.45	1.75	V
		$I_F=10\text{A}, T_J=125^{\circ}\text{C}$	--	1.75	--	
		$I_F=10\text{A}, T_J=175^{\circ}\text{C}$	--	2.0	--	
Reverse leakage current	I_R	$V_R=1200\text{V}, T_J=25^{\circ}\text{C}$	--	5	100	μA
		$V_R=1200\text{V}, T_J=125^{\circ}\text{C}$	--	25	--	
		$V_R=1200\text{V}, T_J=175^{\circ}\text{C}$	--	60	--	
Total capacitance	C	$V_R=1\text{V}, f=1\text{MHz}$	--	610	--	pF
		$V_R=400\text{V}, f=1\text{MHz}$	--	52	--	
		$V_R=800\text{V}, f=1\text{MHz}$	--	36	--	
Total capacitance charge	Q_C	$V_R=800\text{V}, T_J=25^{\circ}\text{C}$	--	55	--	nC

THERMAL CHARACTERISTICS

Characteristics	Symbol	Typ.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.5	$^{\circ}\text{C/W}$

Typical Performance Characteristics

Figure.1: Forward characteristics

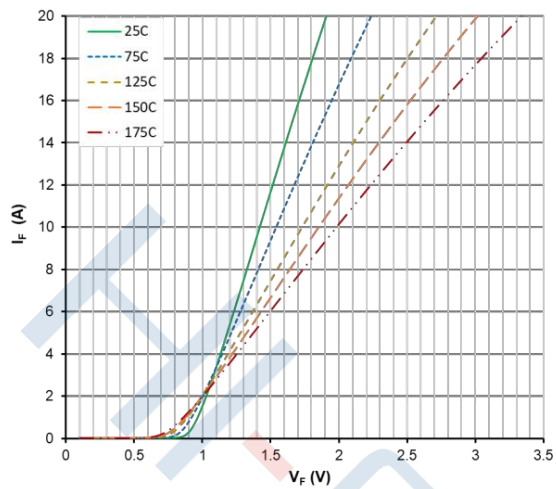


Figure.2: Forward Characteristics

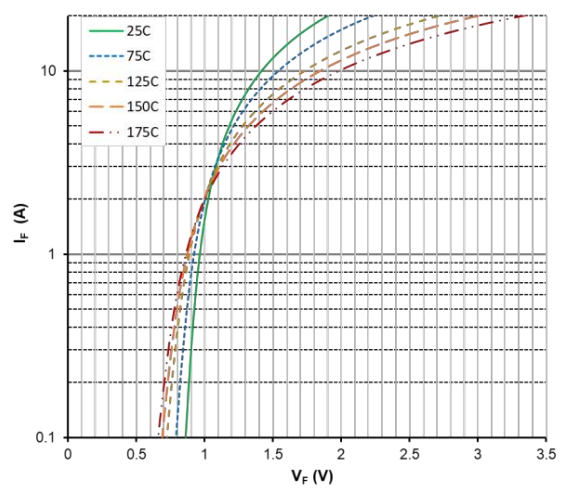


Figure.3: Reverse Characteristics

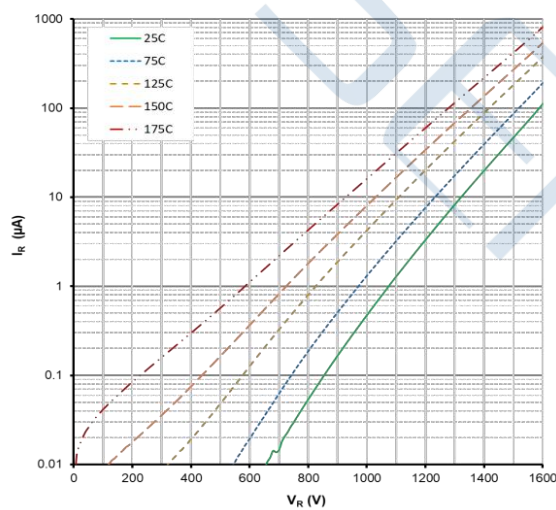


Figure.4: Power Derating

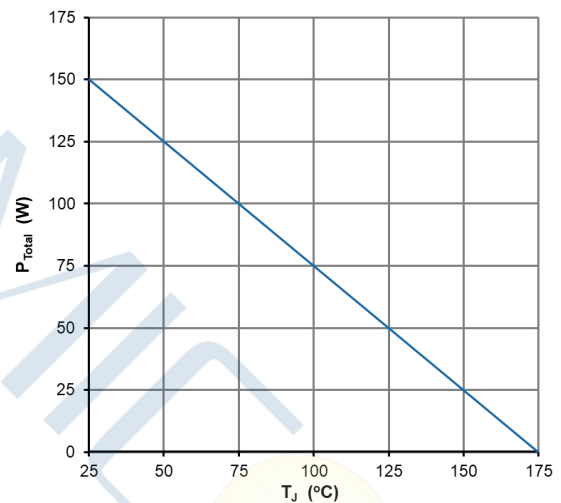


Figure.5: Reversecharge vs. Reverse Voltage

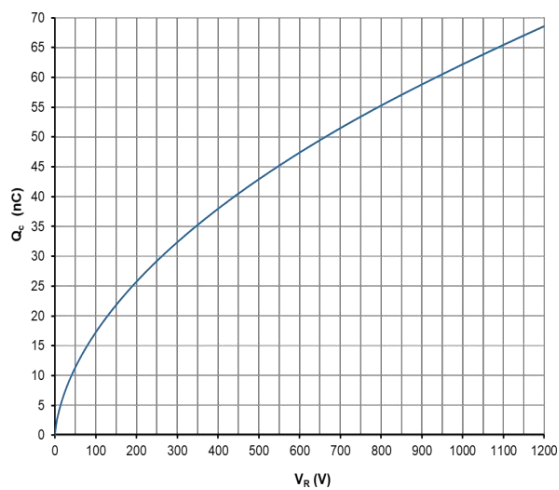
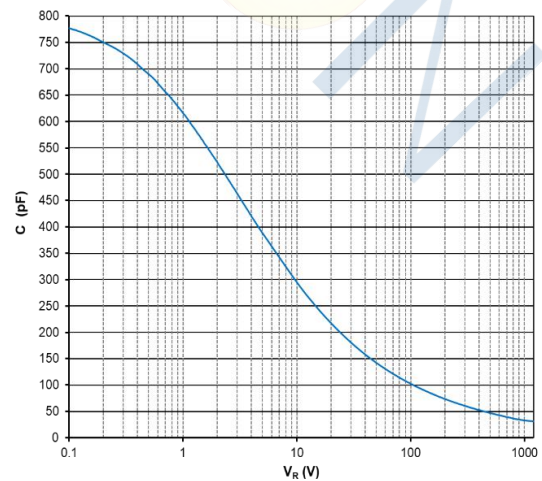
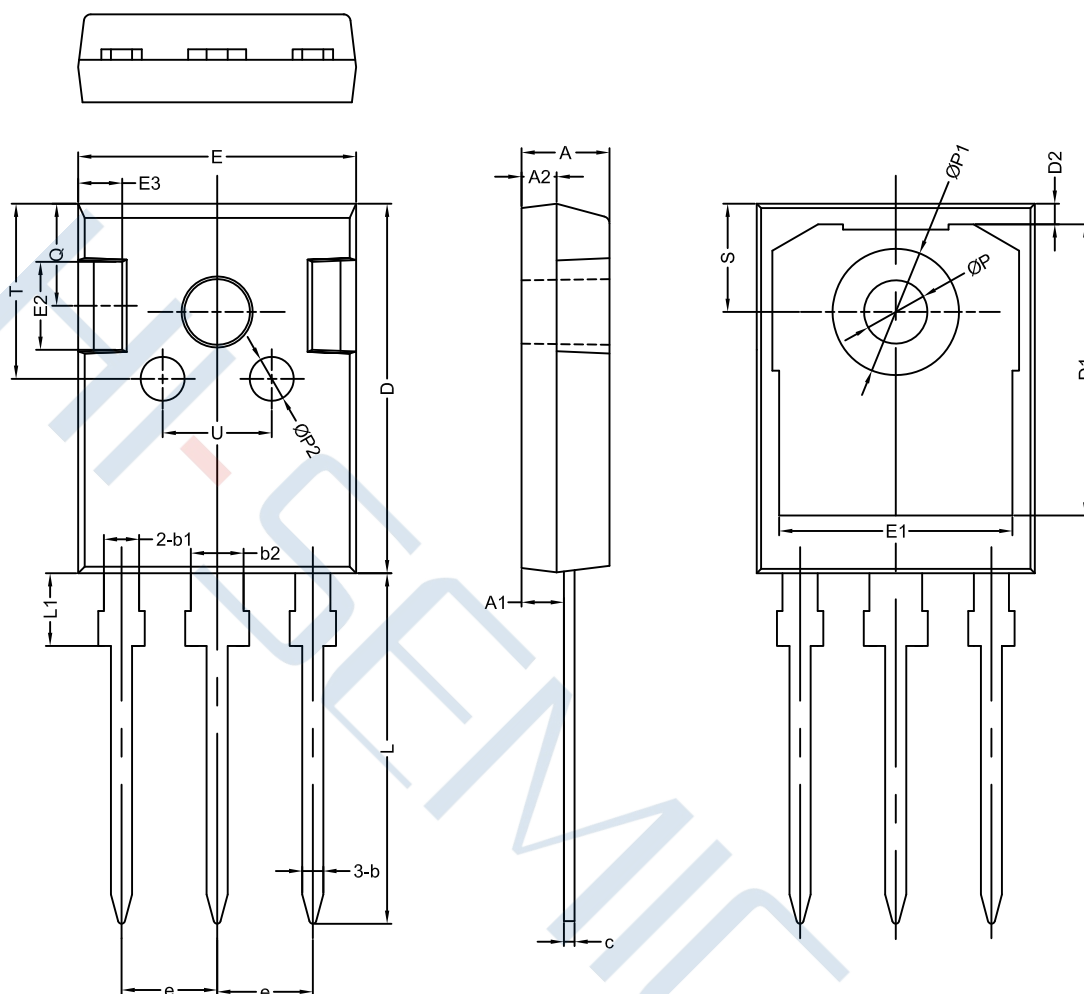


Figure.6: Capacitance vs. Reverse Voltage



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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