

650V Silicon Carbide Schottky Diode

GENERAL DESCRIPTION

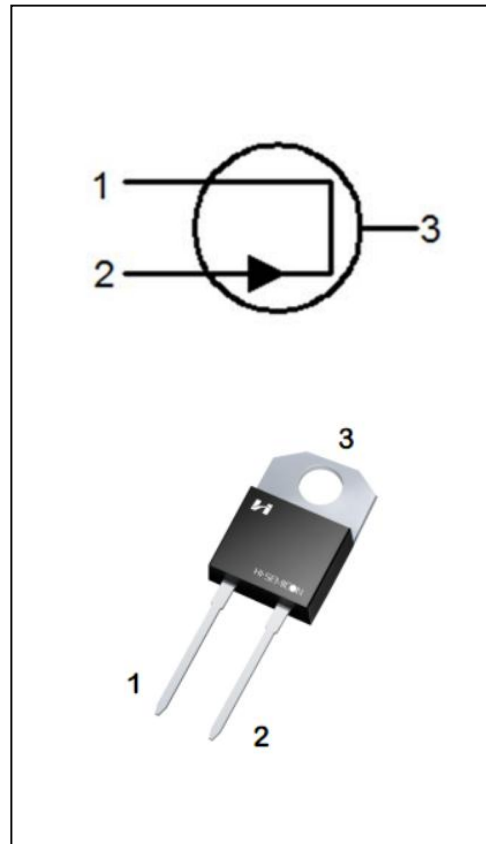
- ◆ 650V Schottky rectifier
- ◆ Zero reverse recovery current/voltage
- ◆ High frequency operation
- ◆ Switching characteristics independent of temperature
- ◆ Positive temperature coefficient of forward voltage(V_F)

BENEFIT

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

Applications

- ◆ Switched mode power supplies (SMPS)
- ◆ Uninterruptible power supply (UPS)
- ◆ Free wheeling diodes in inverter stages
- ◆ LED lighting power
- ◆ AC/DC Converters



ORDERING INFORMATION

Part No.	Package	Marking	Material	Packing
SC3D20065A	TO-220A-2L	C3D20065	Pb free	Tube

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

Characteristics	Symbol	Ratings	Unit
Repetitive peak reverse voltage	V _{RRM}	650	V
Maximum DC blocking voltage	V _{DC}	650	V
Surge peak reverse voltage	V _{RSM}	650	V
Continuous forward current	I _F	T _C =25°C	58
		T _C =135°C	25
		T _C =148°C	20
Repetitive peak forward surge current tp=10ms T _C =25°C	I _{FRM}	120	A
Non-repetitive peak forward surge current tp=10ms T _C =25°C	I _{FSM}	110	A
Power dissipation T _C =25°C	P _{tot}	118	W
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	V _{DC}	I _R = 250μA, T _J = 25°C	650	--	--	V
Forward voltage drop	V _F	I _F =20A, T _J =25°C	--	1.5	1.8	V
		I _F =20A, T _J =125°C	--	1.6	--	
		I _F =20A, T _J =175°C	--	1.7	--	
Reverse leakage current	I _R	V _R =650V, T _J =25°C	--	20	80	uA
		V _R =650V, T _J =125°C	--	120	--	
		V _R =650V, T _J =175°C	--	250	--	
Total capacitance	C	V _R =0V, f=1MHz, T _J =25°C	--	772	--	pF
		V _R =200V, f=1MHz, T _J =25°C	--	91	--	
		V _R =400V, f=1MHz, T _J =25°C	--	65	--	
Total capacitance charge	Q _C	V _R =400V, T _J =25°C	--	44.2	--	nC

THERMAL CHARACTERISTICS

Characteristics	Symbol	TYP	Unit
Thermal Resistance, Junction-to-Case	R _{θJC}	0.85	°C/W

Typical Performance Characteristics

Figure.1: Forward characteristics

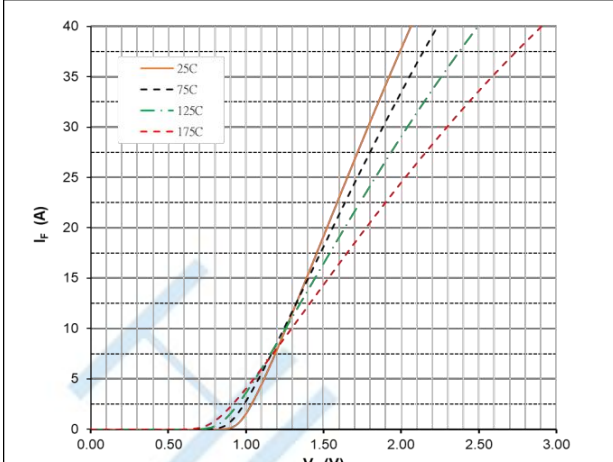


Figure.2: Reverse characteristics

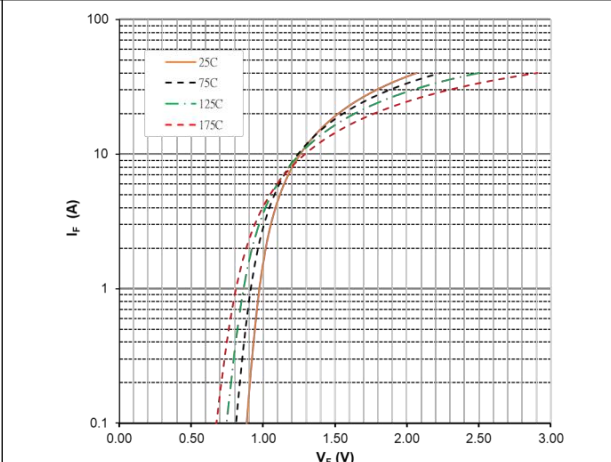


Figure.3: Capacitance vs reverse voltage

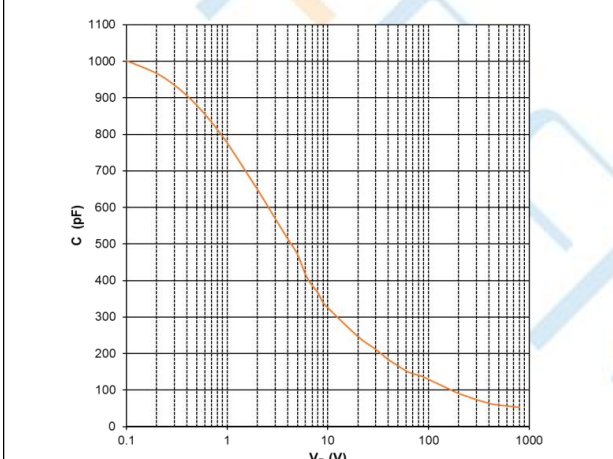


Figure.4: Reverse characteristics

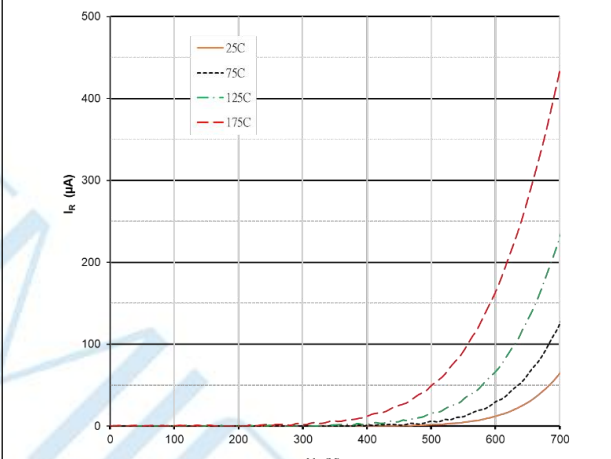


Figure.5: Power Derating

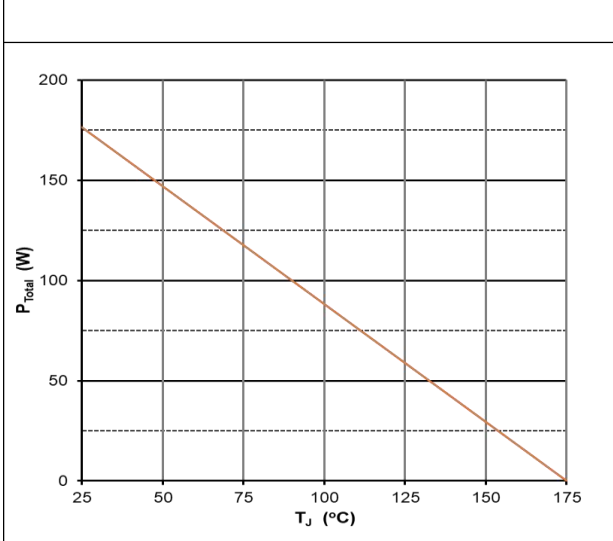
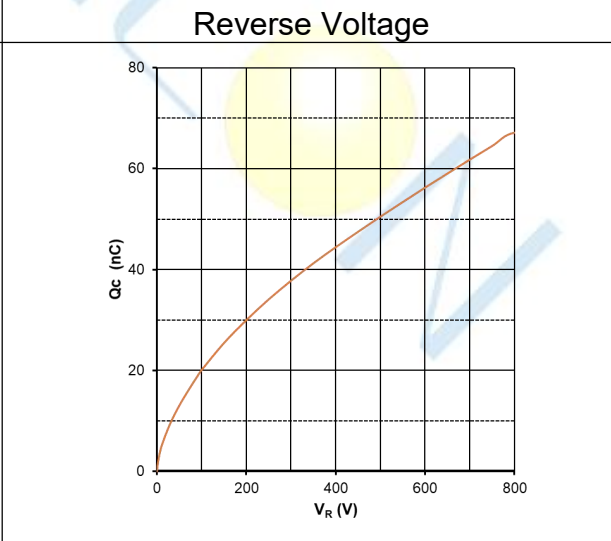
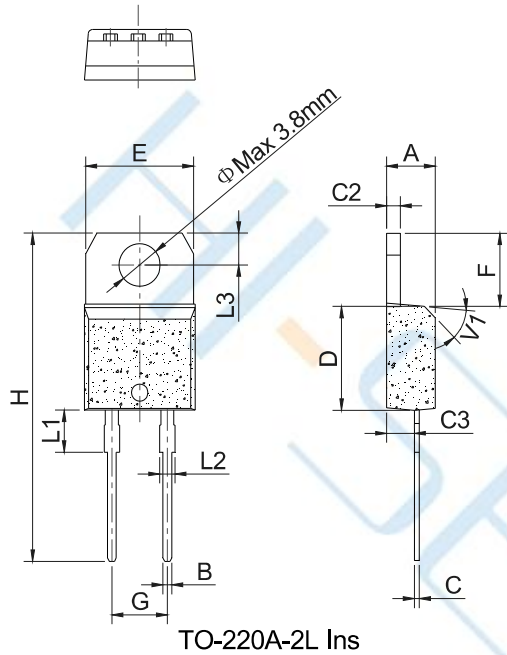


Figure.6: Recovery Charge vs Reverse Voltage



Package Dimensions of TO-220A-2L



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.80		10.4	0.386		0.409
F	6.55		6.95	0.258		0.274
G		5.08			0.2	
H	28.0		29.8	1.102		1.173
L1		3.75			0.148	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
V1		45°			45°	

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