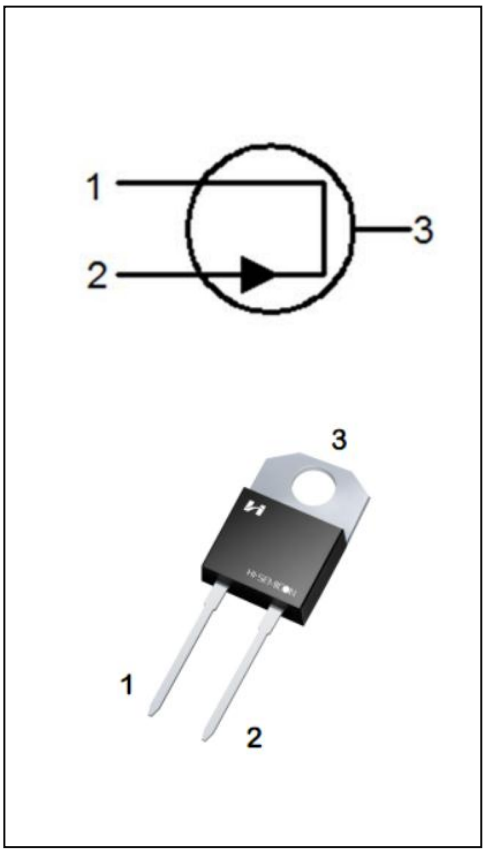
650V Silicon Carbide Schottky Diode



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
SC3D06065I	TO-220A-2L	C3D06065I	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	T_C=135℃	I_F	6	A
Repetitive peak forward surge current tp=10ms T_C=25℃		I_{FRM}	30	A
Non-repetitive peak forward surge current tp=10ms T_C=25℃		I_{FSM}	52	A
Power dissipation	T_C=25℃	P_{tot}	105	W
	T_C=110℃		46	
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
Forward voltage drop	V_F	I_F=6A, T_j=25℃	--	1.35	1.8	V
		I_F=6A, T_j=175℃	--	1.7	2.0	
Reverse leakage current	I_R	V_R=650V, T_j=25℃	--	--	20	uA
		V_R=650V, T_j=175℃	--	--	80	
Total capacitance	C	V_R=0V, f=1MHz	--	395	--	pF
		V_R=200V, f=1MHz	--	36	--	
		V_R=400V, f=1MHz	--	28	--	
Total capacitance charge	Q_C	V_R=400V, T_j=25℃	--	18.5	--	nC
Capacitance stored energy	E_C	V_R=400V	--	5.1	--	uJ

THERMAL CHARACTERISTICS

Characteristics	Symbol	MAX	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.7	℃/W

Typical Performance Characteristics

Figure.1: Forward characteristics

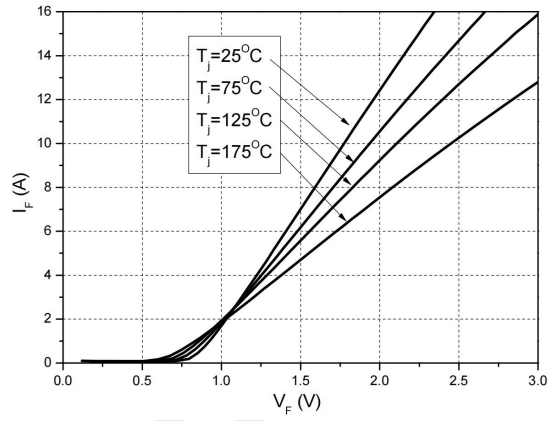


Figure.2: Reverse characteristics

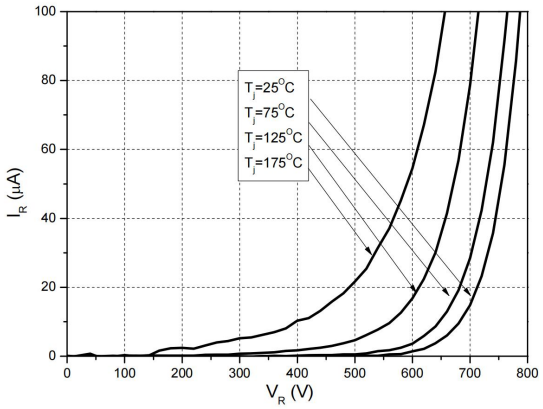


Figure.3: Capacitance vs reverse voltage

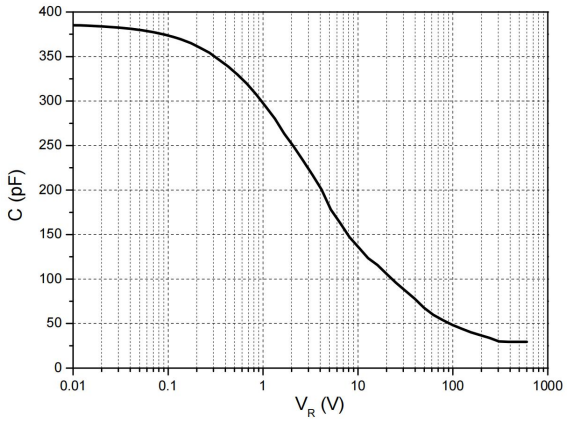


Figure.4: Transient thermal impedance

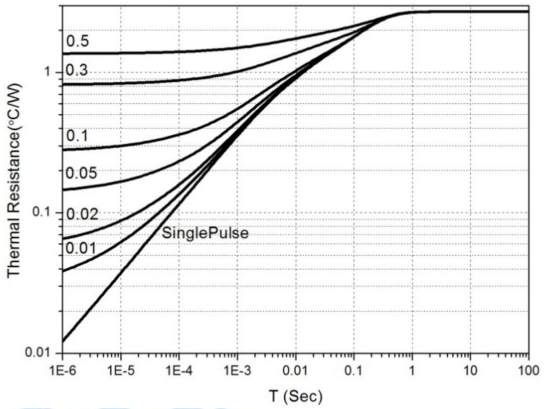


Figure.5: Cap-Charge vs reverse voltage

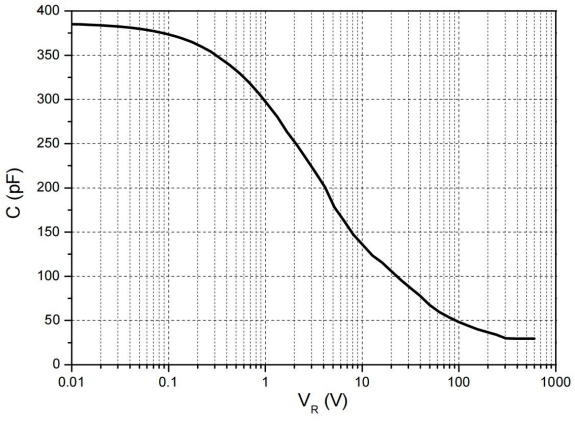
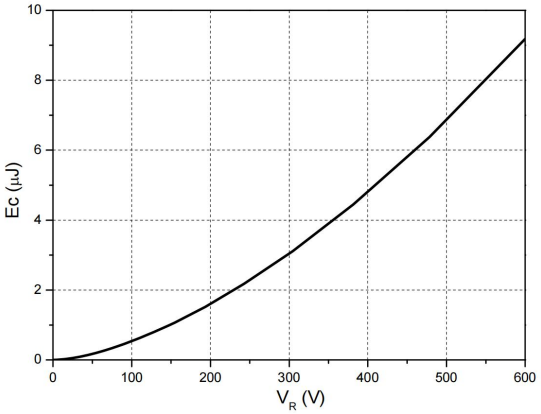


Figure.6: Capacitance stored energy



Typical Performance Characteristics

Figure.7: Power derating

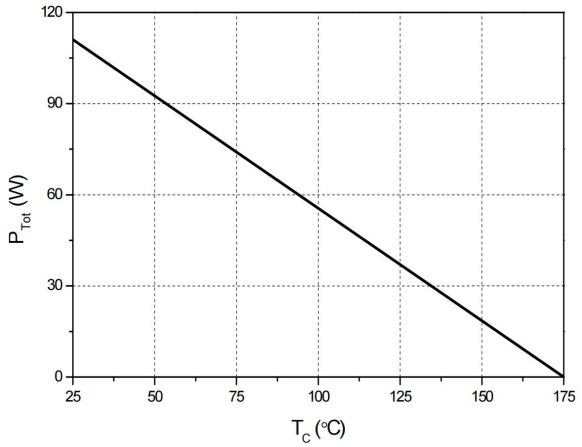
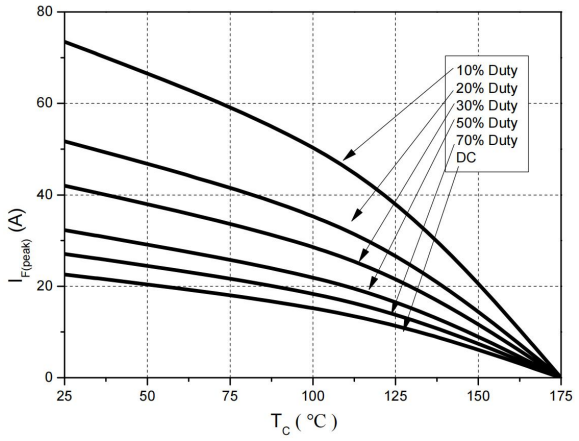
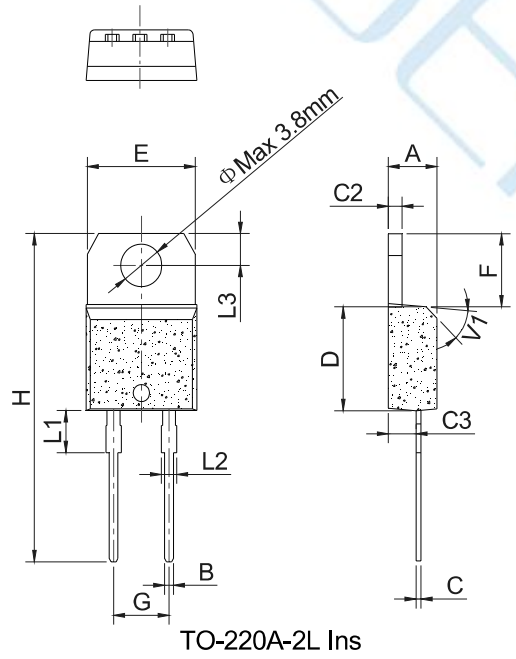


Figure.8: Current derating



Package Dimensions of TO-220A-2L



TO-220A-2L Ins

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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