

■ Features

- Low Conduction and Switching Loss
- Positive Temperature Coefficient on V_f
- Temperature Independent Switching Behavior
- Fast Reverse Recovery
- High Surge Current Capability
- Pb-free lead plating

■ Benefits

- Higher System Efficiency
- Parallel Device Convenience
- High Temperature Application
- High Frequency Operation
- Hard Switching & High Reliability
- Environmental Protection

■ Applications

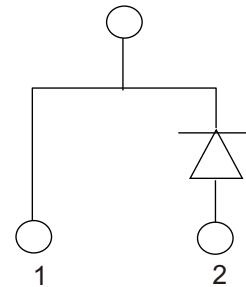
- SMPS
- PFC
- Solar/Wind Renewable Energy
- Power Inverters
- Motor Drives

■ Maximum ratings and electrical characteristics

■ Outline



Package TO-220-2L



Inner Circuit

Parameter	Conditions	Symbol	SIC20C65			UNIT
Marking code			SIC20C65			
Peak Repetitive Reverse Voltage	$T_J=25^{\circ}\text{C}$	V_{RRM}	650			V
Peak Reverse Surge Voltage	$T_J=25^{\circ}\text{C}$	V_{RSM}	650			V
DC Blocking Voltage	$T_J=25^{\circ}\text{C}$	V_R	650			V
Continuous Forward Current	$T_c=25^{\circ}\text{C}$	I_F	44			A
	$T_c=110^{\circ}\text{C}$		27			
	$T_c=135^{\circ}\text{C}$		20			
Non-Repetitive Peak Forward surge current	$T_c=25^{\circ}\text{C}, T_p=10\text{ms}, \text{Half Sine-Wave}$	I_{FSM}	150			A
	$T_c=125^{\circ}\text{C}, T_p=10\text{ms}, \text{Half Sine-Wave}$		129			
Repetitive Peak Forward surge current	$T_c=25^{\circ}\text{C}, T_p=10\text{ms}, \text{Half Sine-Wave}, D=0.1$	I_{FRM}	99			A
	$T_c=125^{\circ}\text{C}, T_p=10\text{ms}, \text{Half Sine-Wave}, D=0.1$		91			
Power Dissipation	$T_c=25^{\circ}\text{C}$	P_D	136			W
	$T_c=125^{\circ}\text{C}$		45			
Operation Junction Temperature		T_J	175			$^{\circ}\text{C}$
Storage Temperature		T_{stg}	-55 to 150			$^{\circ}\text{C}$
Thermal Resistance Junction to Case		$R_{\theta JC}$	1.1			$^{\circ}\text{C/W}$
Parameter	Conditions	Symbol	MIN.	TYP.	MAX.	UNIT
DC Blocking Voltage	$I_R=500\mu\text{A}, T_J=25^{\circ}\text{C}$	V_{DC}		>650		V
Forward Voltage	$I_F=20\text{A}, T_J=25^{\circ}\text{C}$	V_F		1.5	1.8	V
	$I_F=20\text{A}, T_J=175^{\circ}\text{C}$			1.9	2.2	
Reverse Current	$V_R=650\text{V}, T_J=25^{\circ}\text{C}$	I_R		5	100	μA
	$V_R=650\text{V}, T_J=125^{\circ}\text{C}$			75	500	
Total Capacitive Charge	$I_F=20\text{A}, dI/dt=300\text{A}/\mu\text{s}, V_R=400\text{V}, T_J=25^{\circ}\text{C}$	Q_C		45		nC
Total Capacitive	$V_R=1\text{V}, T_J=25^{\circ}\text{C}, f=1\text{MHz}$	C		857		pF
	$V_R=200\text{V}, T_J=25^{\circ}\text{C}, f=1\text{MHz}$			121		
	$V_R=400\text{V}, T_J=25^{\circ}\text{C}, f=1\text{MHz}$			119		

■ Rating and characteristic curves

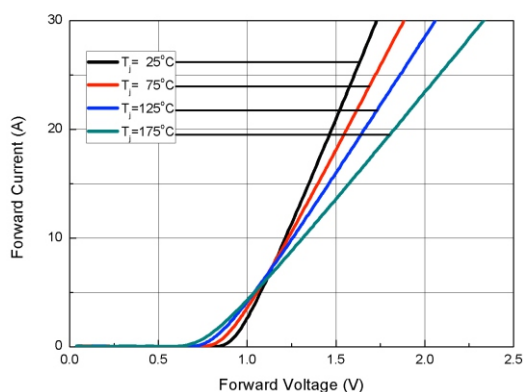


Fig. 1 Forward Characteristics

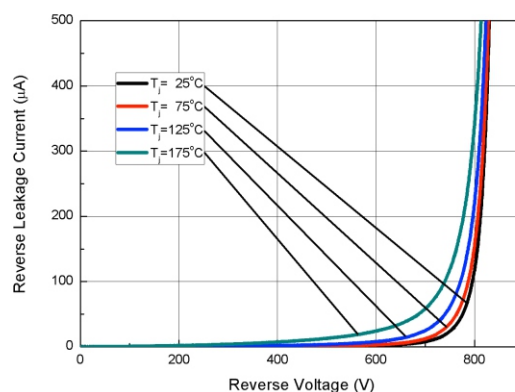


Fig. 2 Reverse Characteristics

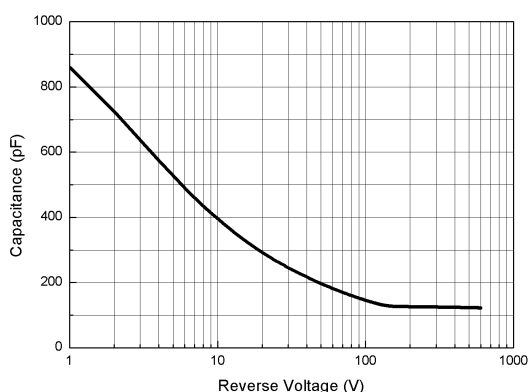


Fig. 3 Capacitance vs. Reverse Voltage

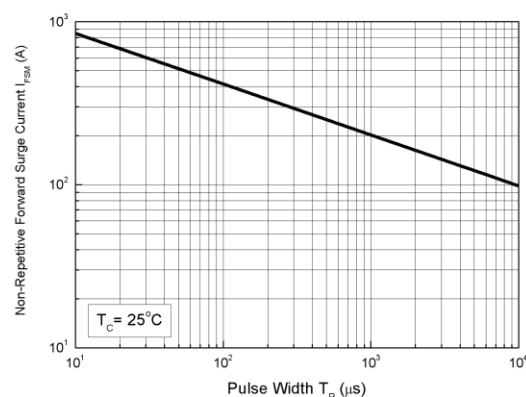


Fig. 4 Non-Repetitive Peak Forward Surge Current (Pulse Mode)

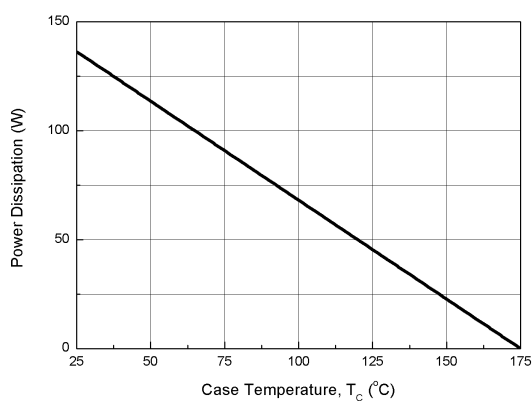


Fig. 5 Power Derating

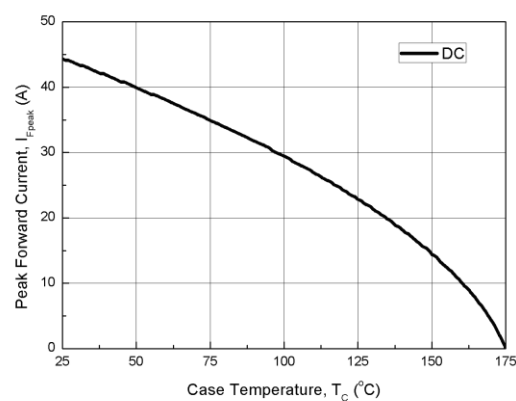
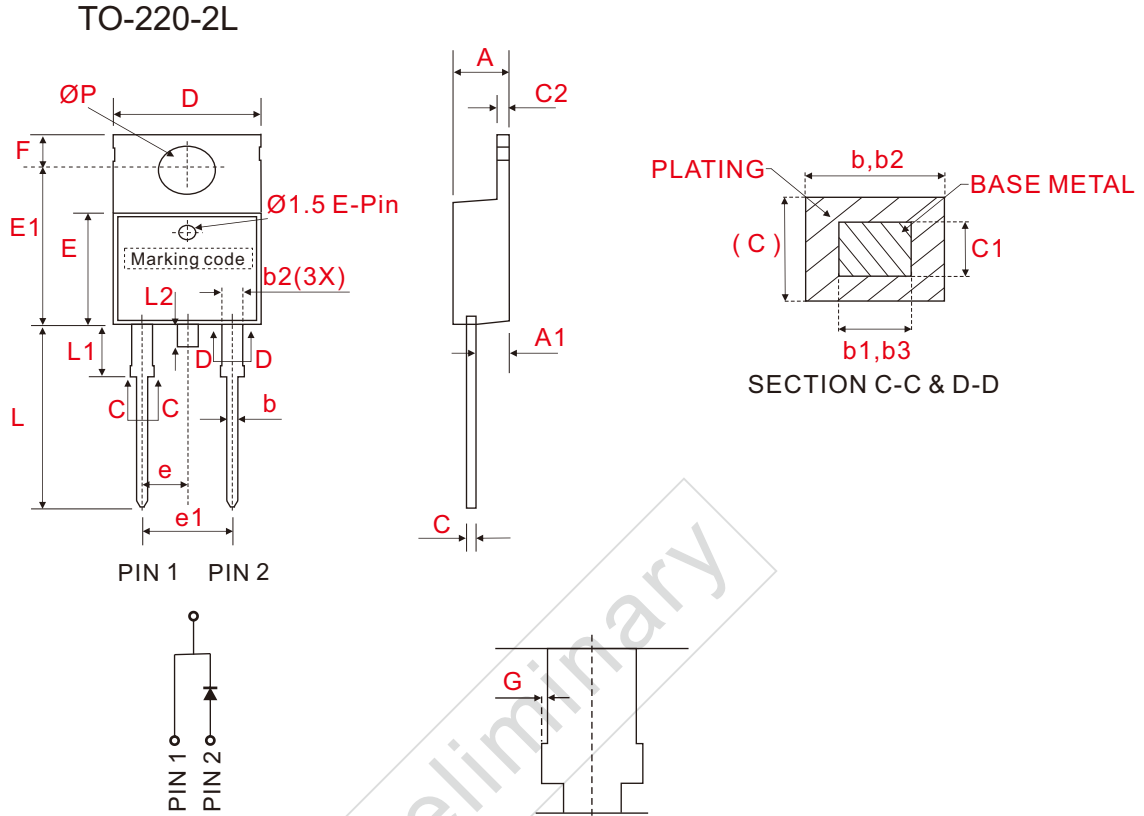


Fig. 6 Current Derating

■ Outline



symbol	Dimensions in inches(millimeters)		
	Min	Nom	Max
A	0.176(4.470)	—	0.184(4.670)
A1	0.099(2.520)	—	0.111(2.820)
b	0.028(0.710)	0.032(0.813)	0.036(0.910)
b1	0.028(0.710)	—	0.036(0.910)
b2	0.046(1.170)	0.050(1.270)	0.054(1.370)
b3	0.046(1.170)	—	0.054(1.370)
c	0.011(0.279)	—	0.019(0.483)
c1	0.011(0.279)	—	0.017(0.432)
c2	0.046(1.170)	—	0.054(1.370)
D	0.394(10.010)	—	0.406(10.310)
E	0.345(8.763)	0.350(8.890)	0.355(9.017)
E1	0.484(12.294)	0.490(12.446)	0.494(12.548)
e	—	0.1(2.54) BSC	—
e1	0.196(4.980)	—	0.204(5.180)
F	0.104(2.642)	0.108(2.743)	0.116(2.946)
G	0.000(0.000)	—	0.005(0.127)
L	0.539(13.7)	—	0.555(14.10)
L1	0.159(4.04)	0.162(4.11)	0.165(4.19)
L2	—	—	0.063(1.60)
$\varnothing P$	0.149(3.790)	—	0.153(3.890)

NOTES:

1. All dimension are in mil[inch].

2. Tolerance: ± 0.004 inch.

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Preliminary