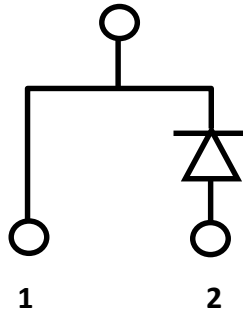


Package TO-220-2L



Inner Circuit



Product Summary

V_R	600 V	
I_F	8.5A ($T_c=135^\circ\text{C}$)	6A ($T_c=152^\circ\text{C}$)
Q_C	13 nC	



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
- ◆ UPS

Maximum Ratings

Parameter	Symbol	Test Conditions	Value	Unit
Peak Repetitive Reverse Voltage	V_{RRM}	$T_J = 25^\circ\text{C}$	600	V
Peak Reverse Surge Voltage	V_{RSM}	$T_J = 25^\circ\text{C}$	600	V
DC Blocking Voltage	V_R	$T_J = 25^\circ\text{C}$	600	V
Continuous Forward Current	I_F	$T_C = 25^\circ\text{C}$	18	A
		$T_C = 135^\circ\text{C}$	8.5	A
		$T_C = 152^\circ\text{C}$	6	A

Maximum Ratings

Parameter	Symbol	Test Conditions	Value	Unit
Non-Repetitive Peak Forward Surge Current	I _{FSM}	T _C = 25°C, T _P = 10 ms Half Sine Wave	49	A
		T _C = 125°C, T _P = 10 ms Half Sine Wave	44	A
		T _C = 25°C, T _P = 10 μs Pulse	209	A
Repetitive Peak Forward Surge Current	I _{FRM}	T _C = 25°C, T _P = 10 ms Half Sine Wave, D = 0.1	38	A
		T _C = 125°C, T _P = 10 ms Half Sine Wave, D = 0.1	34	A
Power Dissipation	P _D	T _C = 25°C	71	W
		T _C = 125°C	23	W
Operating Junction and Storage Temperature	T _J		175	°C
	T _{stg}		-55 to 175	°C
Thermal Resistance Junction to Case	R _{θJC}		2.1	°C/W

Electrical Characteristics

Parameter	Symbol	Test Conditions	Typ.	Max.	Unit
DC Blocking Voltage	V _{DC}	I _R = 100 μA, T _J = 25°C	> 650		V
Forward Voltage	V _F	I _F = 6A, T _J = 25°C	1.5	1.8	V
		I _F = 6A, T _J = 175°C	1.9	2.2	V
Reverse Current	I _R	V _R = 600V, T _J = 25°C	< 1	30	μA
		V _R = 600V, T _J = 175°C	10	160	μA
Total Capacitive Charge	Q _C	I _F = 6A, dI/dt=300A/μs, V _R =400V, T _J =25°C	13		nC
Total Capacitance	C	V _R =1V, T _J =25°C, f =1 MHz	244		pF
		V _R =200V, T _J =25°C, f =1 MHz	37		
		V _R =400V, T _J =25°C, f =1 MHz	36		

Device Performances

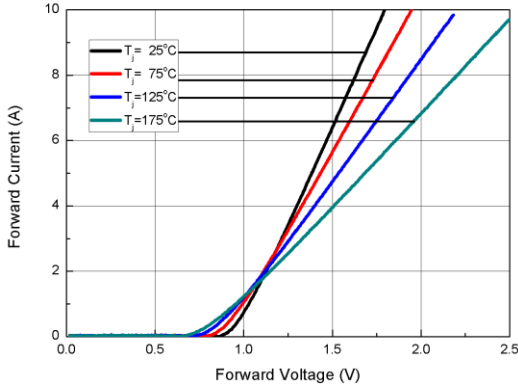


Fig. 1 Forward Characteristics

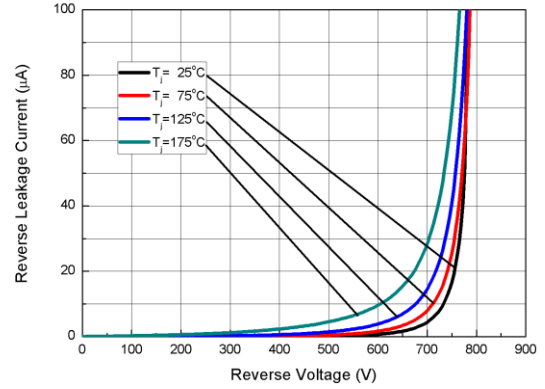


Fig. 2 Reverse Characteristics

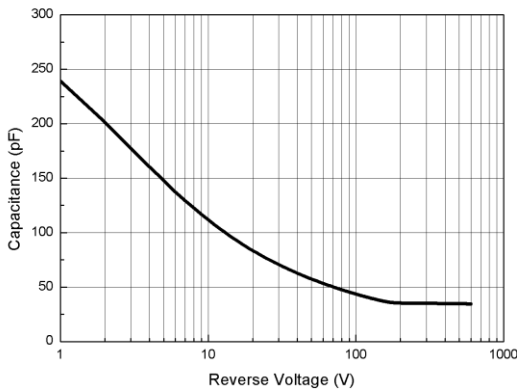


Fig. 3 Capacitance vs. Reverse Voltage

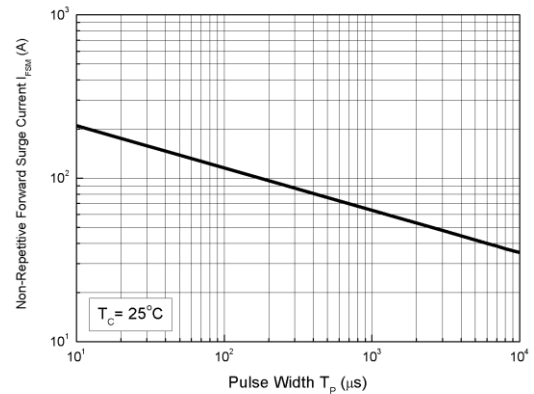


Fig. 4 Non-Repetitive Peak Forward Surge Current (Pulse Mode)

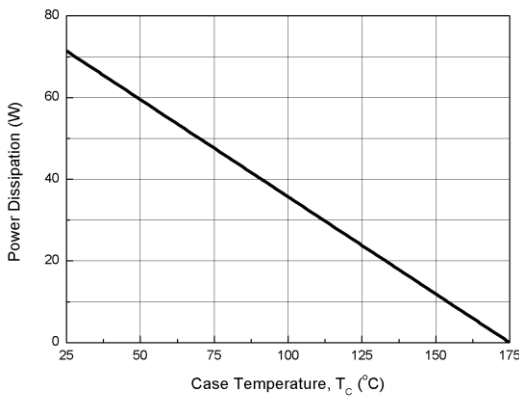


Fig. 5 Power Derating

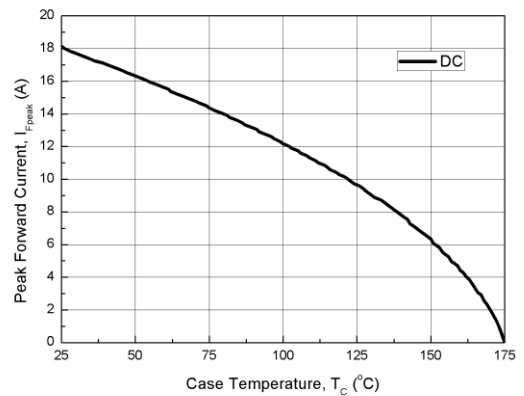
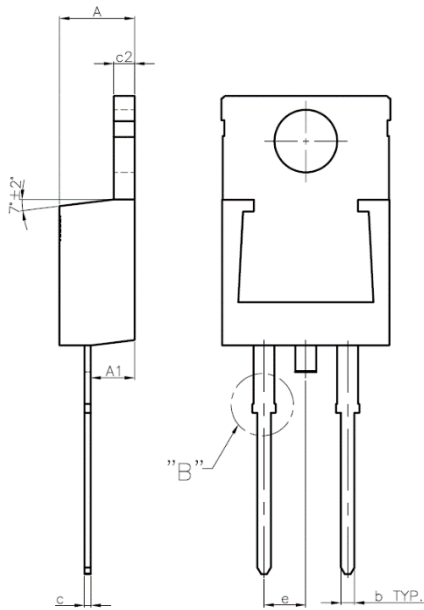
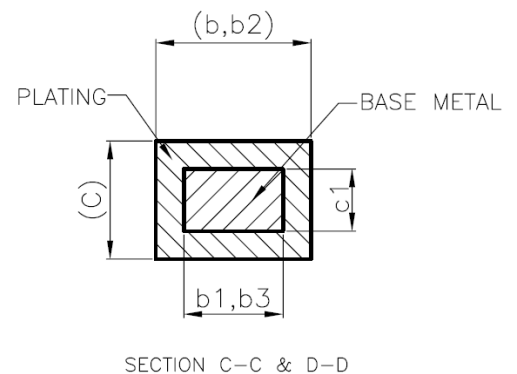
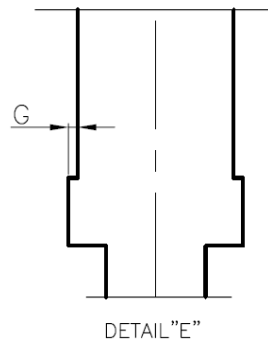
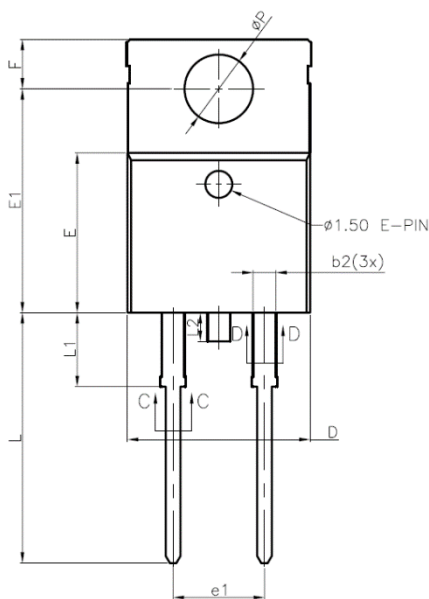


Fig. 6 Current Derating

Package Dimensions TO-220-2L



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	4.470	—	4.670	0.176	—	0.184
A1	2.520	—	2.820	0.099	—	0.111
b	0.710	0.813	0.910	0.028	0.032	0.036
b1	0.710	—	0.910	0.028	—	0.036
b2	1.170	1.270	1.370	0.046	0.050	0.054
b3	1.170	—	1.370	0.046	—	0.054
c	0.279	—	0.483	0.011	—	0.019
c1	0.279	—	0.432	0.011	—	0.017
c2	1.170	—	1.370	0.046	—	0.054
D	10.010	—	10.310	0.394	—	0.406
E	8.763	8.890	9.017	0.345	0.350	0.355
E1	12.294	12.446	12.548	0.484	0.490	0.494
e	—	2.54 BSC	—	—	0.100 BSC	—
e1	4.980	—	5.180	0.196	—	0.204
F	2.642	2.743	2.946	0.104	0.108	0.116
G	0.000	—	0.127	0.000	—	0.005
L	13.700	—	14.10	0.539	—	0.555
L1	4.04	4.11	4.19	0.159	0.162	0.165
L2	—	—	1.60	—	—	0.063
øP	3.790	—	3.890	0.149	—	0.153



NOTES:
 1. All dimension are in mm[inch].
 2. Tolerance : ± 0.004 inch.