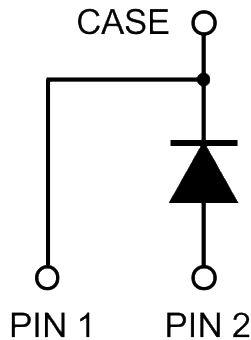


### Package TO-220-2L



### Inner Circuit



### Product Summary

$V_R$	<b>1200 V</b>	
$I_F$	<b>7A</b> ( $T_c=135^\circ\text{C}$ )	<b>5A</b> ( $T_c=153^\circ\text{C}$ )
$Q_C$	<b>14 nC</b>	



### 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	$V_{RRM}$	$T_J = 25^\circ\text{C}$	1200	V
Peak Reverse Surge Voltage	$V_{RSM}$	$T_J = 25^\circ\text{C}$	1200	V
DC Blocking Voltage	$V_R$	$T_J = 25^\circ\text{C}$	1200	V
Continuous Forward Current	$I_F$	$T_C = 25^\circ\text{C}$	15	A
		$T_C = 135^\circ\text{C}$	7	A
		$T_C = 153^\circ\text{C}$	5	A

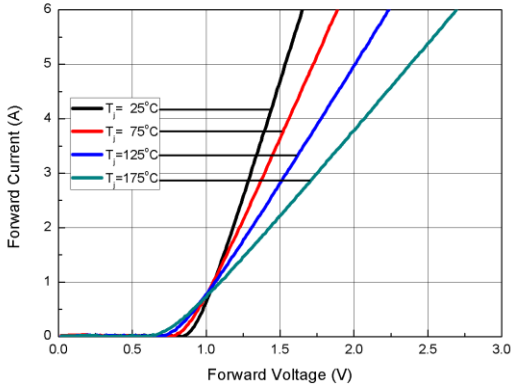
### Maximum Ratings

Parameter	Symbol	Test Conditions	Value	Unit
Non-Repetitive Peak Forward Surge Current	I <sub>FSM</sub>	T <sub>C</sub> = 25°C, T <sub>P</sub> = 10 ms Half Sine Wave	54	A
		T <sub>C</sub> = 125°C, T <sub>P</sub> = 10 ms Half Sine Wave	49	A
		T <sub>C</sub> = 25°C, T <sub>P</sub> = 10 μs Pulse	336	A
Repetitive Peak Forward Surge Current	I <sub>FRM</sub>	T <sub>C</sub> = 25°C, T <sub>P</sub> = 10 ms Half Sine Wave, D = 0.1	41	A
		T <sub>C</sub> = 125°C, T <sub>P</sub> = 10 ms Half Sine Wave, D = 0.1	37	A
Power Dissipation	P <sub>D</sub>	T <sub>C</sub> = 25°C	83	W
		T <sub>C</sub> = 125°C	27.5	W
Operating Junction and Storage Temperature	T <sub>J</sub>		175	°C
	T <sub>stg</sub>		-55 to 175	°C
Thermal Resistance Junction to Case	R <sub>θJC</sub>		1.8	°C/W

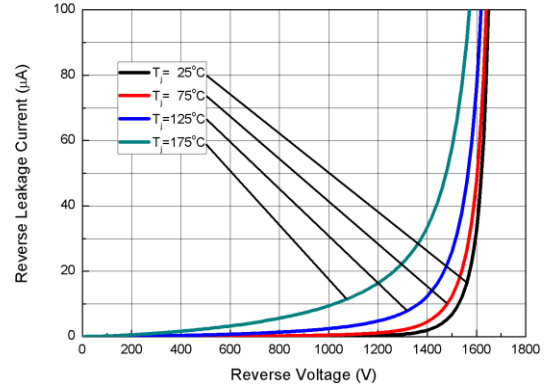
### Electrical Characteristics

Parameter	Symbol	Test Conditions	Typ.	Max.	Unit
DC Blocking Voltage	V <sub>DC</sub>	I <sub>R</sub> = 100 μA, T <sub>J</sub> = 25°C	> 1200		V
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> = 5A, T <sub>J</sub> = 25°C	1.55	1.8	V
		I <sub>F</sub> = 5A, T <sub>J</sub> = 175°C	2.4	2.7	V
Reverse Current	I <sub>R</sub>	V <sub>R</sub> = 1200V, T <sub>J</sub> = 25°C	< 1	100	μA
		V <sub>R</sub> = 1200V, T <sub>J</sub> = 175°C	16	500	μA
Total Capacitive Charge	Q <sub>C</sub>	I <sub>F</sub> = 5A, dI/dt=300A/μs, V <sub>R</sub> =400V, T <sub>J</sub> =25°C	14		nC
Total Capacitance	C	V <sub>R</sub> =1V, T <sub>J</sub> =25°C, f=1 MHz	249		pF
		V <sub>R</sub> =400V, T <sub>J</sub> =25°C, f=1 MHz	26		
		V <sub>R</sub> =800V, T <sub>J</sub> =25°C, f=1 MHz	23		

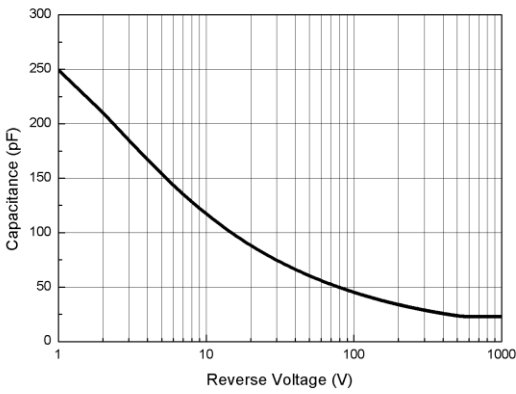
### Device Performances



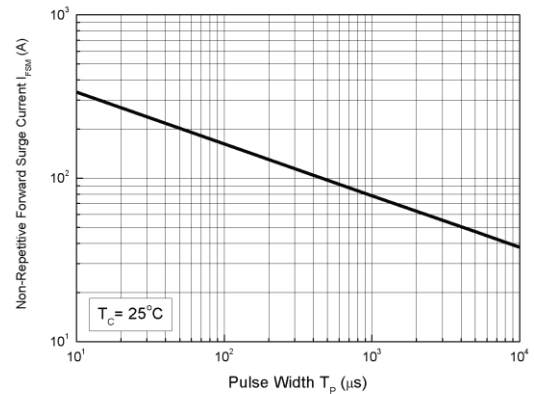
**Fig. 1 Forward Characteristics**



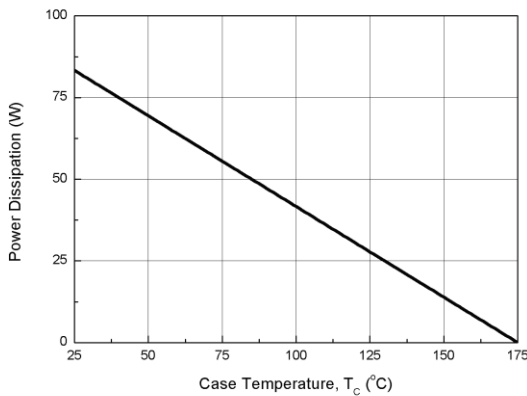
**Fig. 2 Reverse Characteristics**



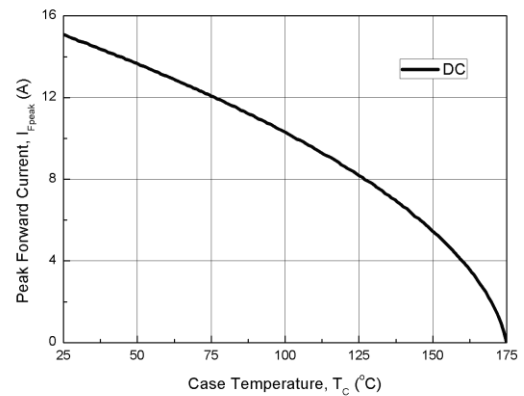
**Fig. 3 Capacitance vs. Reverse Voltage**



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

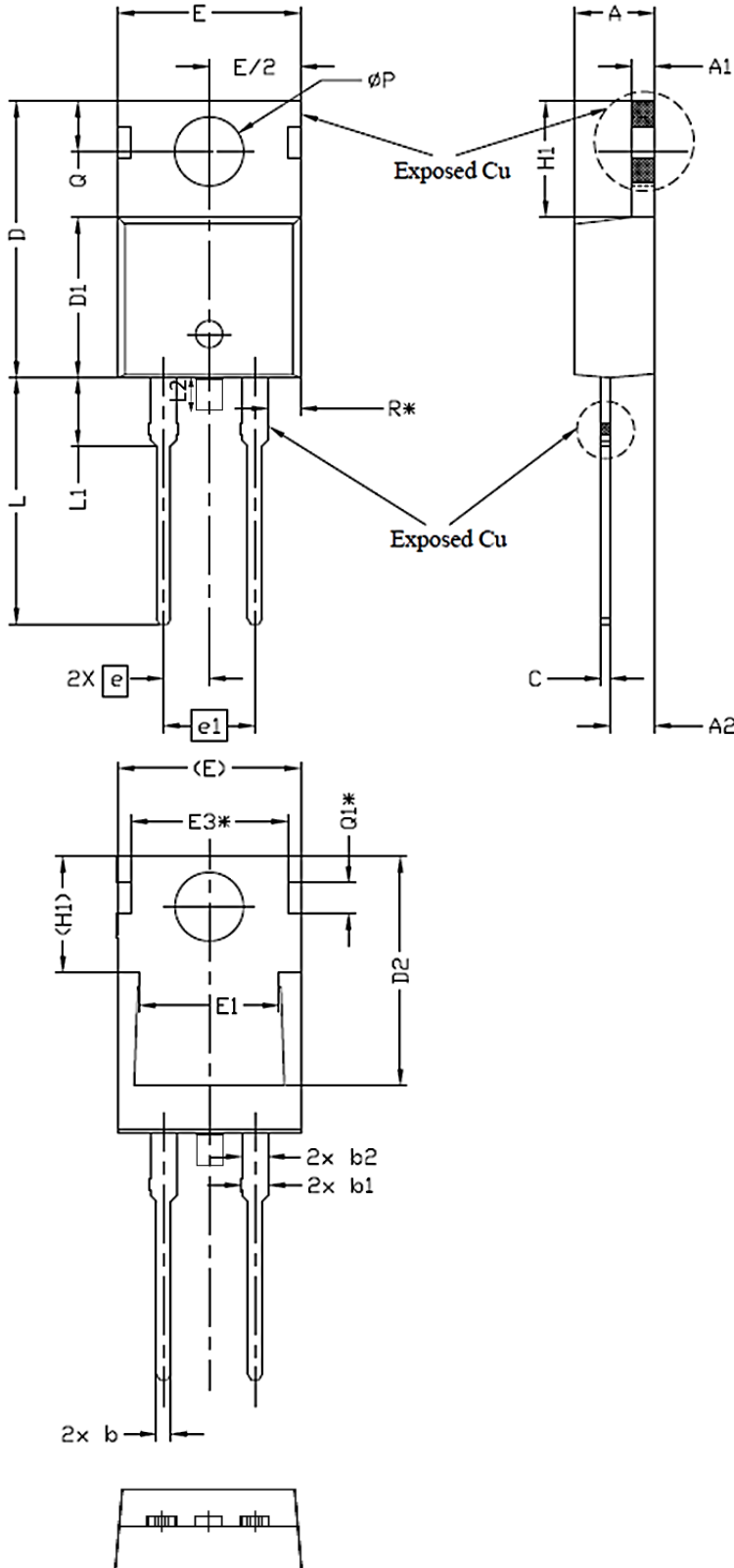


**Fig. 5 Power Derating**



**Fig. 6 Current Derating**

### Package Dimensions TO-220-2L



SYMBOL	DIMENSIONS			NOTES
	MIN.	NOM.	MAX.	
A	4.24	4.44	4.67	
A1	1.15	1.27	1.40	
A2	2.30	2.48	2.82	
b	0.70	0.81	0.91	
b1	1.20	1.55	1.75	
b2	1.17	1.36	1.70	
c	0.279	0.441	0.600	
D	14.70	15.28	16.00	4
D1	8.76	8.91	9.02	
D2	11.91	12.73	12.83	5
E	9.96	10.16	10.36	4,5
E1	6.0		9.0	5
E3*	8.70REF.			
e	2.54BSC			
e1	5.08BSC			
H1	6.17	6.37	6.60	5,6
L	13.47	13.72	14.10	
L1	3.60	3.95	4.23	
L2			1.6	Trimmed
			0	Real 2 pins
$\phi P$	3.75	3.84	3.93	
Q	2.60	2.77	3.00	
Q1*	1.73REF.			
R*	1.82REF.			

**Note:**

1. Package Reference: JEDEC TO220, Variation AB.
2. All Dimensions Are In mm.
3. Slot Required, Notch May Be Rounded
4. Dimension D & E Do Not Include Mold Flash. Mold Flash Shall Not Exceed 0.127mm Pre Side. These Dimensions Are Measured At The Outermost Extreme Of The Plastic Body.
5. Thermal Pad Contour Optional Within Dimensions E, H1, D2 & E1.
6. Dimension E2 & H1 Define A Zone Where Stamping And Singulation Irregularities Are Allowed.
7. "\*" is reference .