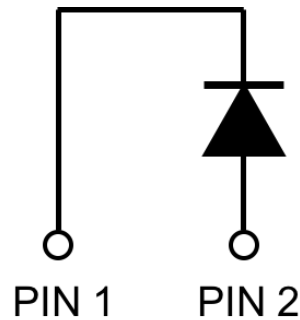


### Package TO-220-FP-2L Inner Circuit

### Product Summary



$V_R$	<b>650 V</b>	
$I_F$	<b>15.5A</b> ( $T_c=25^\circ\text{C}$ )	<b>8A</b> ( $T_c=126^\circ\text{C}$ )
$Q_C$	<b>16 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
- ◆ Fully Isolated Case

### 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	$V_{RRM}$	$T_J = 25^\circ\text{C}$	650	V
Peak Reverse Surge Voltage	$V_{RSM}$	$T_J = 25^\circ\text{C}$	650	V
DC Blocking Voltage	$V_R$	$T_J = 25^\circ\text{C}$	650	V
Continuous Forward Current	$I_F$	$T_C = 25^\circ\text{C}$	15.5	A
		$T_C = 126^\circ\text{C}$	8	A
		$T_C = 135^\circ\text{C}$	7	A

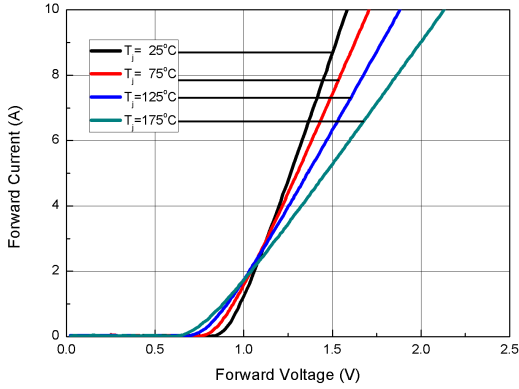
### Maximum Ratings

Parameter	Symbol	Test Conditions	Value	Unit
Non-Repetitive Peak Forward Surge Current	$I_{FSM}$	$T_C = 25^\circ\text{C}$ , $T_P = 10\text{ ms}$ Half Sine Wave	67	A
		$T_C = 125^\circ\text{C}$ , $T_P = 10\text{ ms}$ Half Sine Wave	56	A
		$T_C = 25^\circ\text{C}$ , $T_P = 10\ \mu\text{s}$ Pulse	469	A
Repetitive Peak Forward Surge Current	$I_{FRM}$	$T_C = 25^\circ\text{C}$ , $T_P = 10\text{ ms}$ Half Sine Wave, $D = 0.1$	54	A
		$T_C = 125^\circ\text{C}$ , $T_P = 10\text{ ms}$ Half Sine Wave, $D = 0.1$	48	A
Power Dissipation	$P_D$	$T_C = 25^\circ\text{C}$	46.15	W
		$T_C = 125^\circ\text{C}$	15.38	W
Operating Junction and Storage Temperature	$T_J$		175	$^\circ\text{C}$
	$T_{stg}$		-55 to 175	$^\circ\text{C}$
Thermal Resistance Junction to Case	$R_{\theta JC}$		3.25	$^\circ\text{C}/\text{W}$

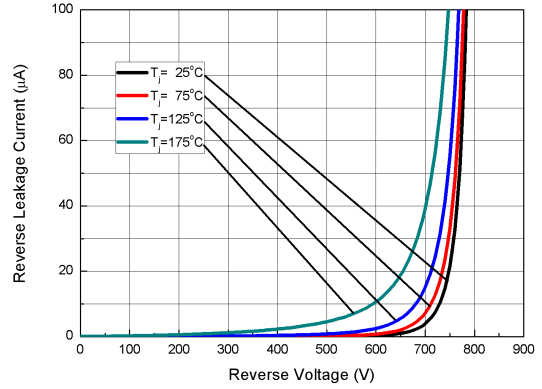
### Electrical Characteristics

Parameter	Symbol	Test Conditions	Typ.	Max.	Unit
DC Blocking Voltage	$V_{DC}$	$I_R = 100\ \mu\text{A}$ , $T_J = 25^\circ\text{C}$	> 650		V
Forward Voltage	$V_F$	$I_F = 8\text{A}$ , $T_J = 25^\circ\text{C}$	1.45	1.8	V
		$I_F = 8\text{A}$ , $T_J = 175^\circ\text{C}$	1.8	2.2	V
Reverse Current	$I_R$	$V_R = 600\text{V}$ , $T_J = 25^\circ\text{C}$	< 1	40	$\mu\text{A}$
		$V_R = 600\text{V}$ , $T_J = 175^\circ\text{C}$	12	160	$\mu\text{A}$
Total Capacitive Charge	$Q_C$	$I_F = 8\text{A}$ , $dI/dt = 300\text{A}/\mu\text{s}$ , $V_R = 400\text{V}$ , $T_J = 25^\circ\text{C}$	16		nC
Total Capacitance	$C$	$V_R = 1\text{V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{ MHz}$	301		pF
		$V_R = 200\text{V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{ MHz}$	48		
		$V_R = 400\text{V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{ MHz}$	48		

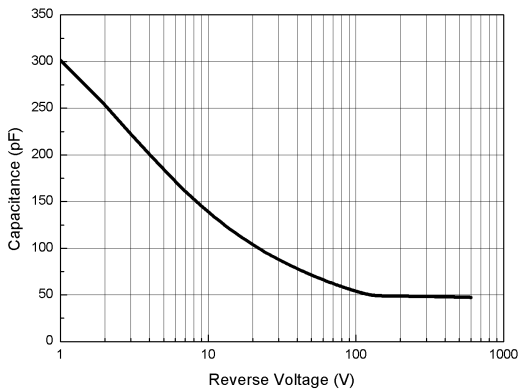
### Device Performances



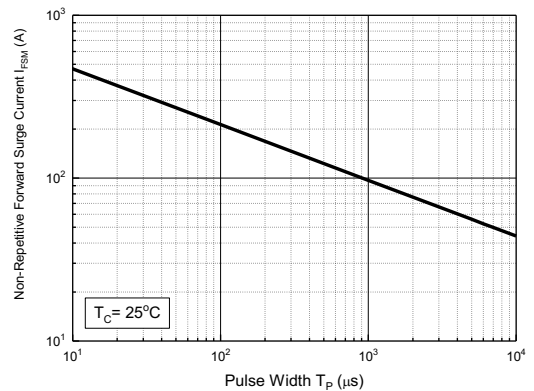
**Fig. 1 Forward Characteristics**



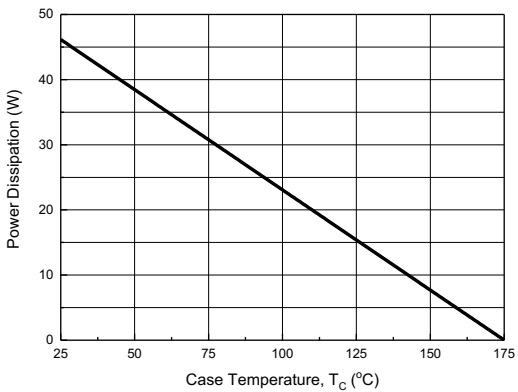
**Fig. 2 Reverse Characteristics**



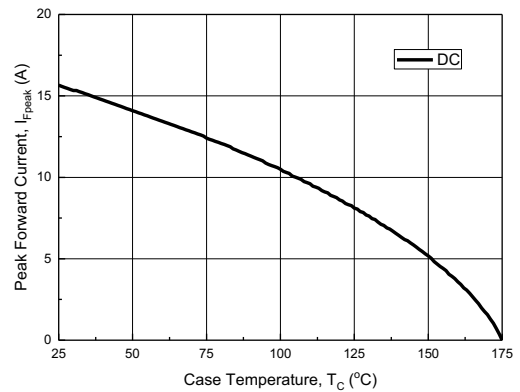
**Fig. 3 Capacitance vs. Reverse Voltage**



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

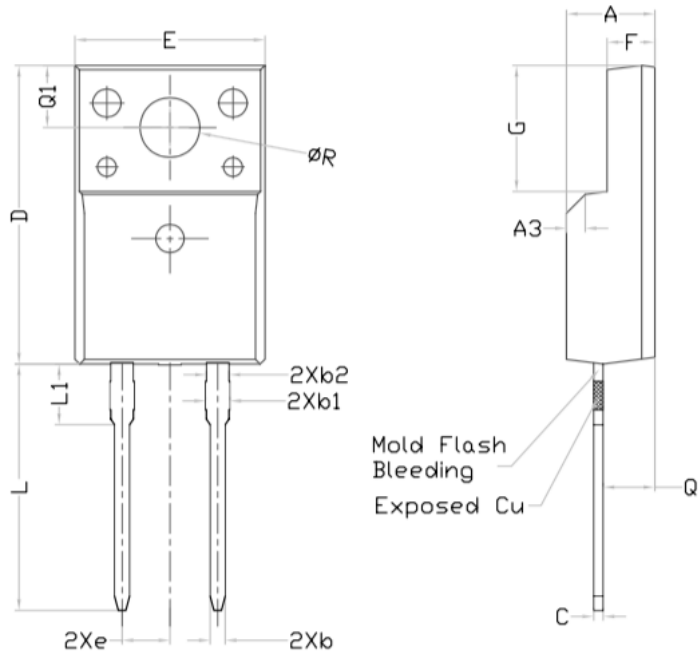


**Fig. 5 Power Derating**



**Fig. 6 Current Derating**

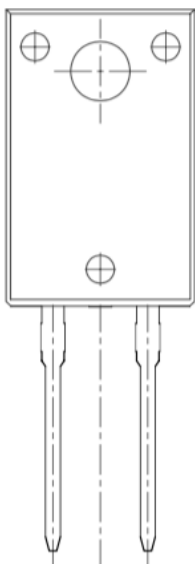
### Package Dimensions TO-220-FP-2L



SYMBOL	DIMENSIONS		
	Min.	Nom.	Max.
A	4.60	4.70	4.80
b	0.70	0.80	0.91
b1	1.20	1.30	1.47
b2	1.10	1.20	1.30
C	0.45	0.50	0.63
D	15.80	15.87	15.97
e	2.54		
E	10.00	10.10	10.30
F	2.44	2.54	2.64
G	6.50	6.70	6.90
L	12.90	13.10	13.30
L1	3.13	3.23	3.33
Q	2.65	2.75	2.85
Q1	3.20	3.30	3.40
$\phi R$	3.08	3.18	3.28

**Note:**

1. All Dimension Are In mm.
2. Package Body Sizes Exclude Mold Flash And Burrs  
Mold Flash Should Be Less Than 6 Mil.



BOTTOM VIEW

