

**TO-220F-2L Plastic-Encapsulate Diode**

**MURF15H60** HYPERFAST RECTIFIER, FRED

**MAIN CHARACTERISTICS**

<b>I<sub>O</sub></b>	<b>15A</b>
<b>V<sub>RRM</sub></b>	<b>600V</b>
<b>T<sub>rr</sub></b>	<b>18ns</b>
<b>T<sub>j</sub></b>	<b>175°C</b>
<b>V<sub>F(typ)</sub></b>	<b>1.15V(@T<sub>j</sub>=150°C)</b>

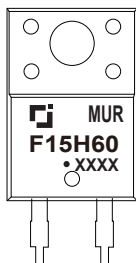
**FEATURES**

- Ultrafast Recovery Times and Low Recovery Loss
- Low Forward Voltage
- Low Reverse Leakage Current

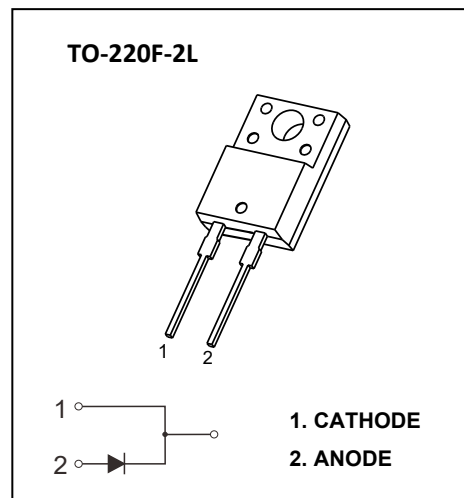
**APPLICATIONS**

Specifically designed to improve efficiency of PFC and output rectification stages of EV / HEV battery charging stations, booster stage of solar inverters and UPS applications, these devices are perfectly matched to operate with MOSFETs or high speed IGBTs.

**MARKING**



MURF15H60 = Device code  
 Solid dot = Green molding compound device  
 if none, the normal device  
 XXXX = Code



**MAXIMUM RATINGS ( T<sub>c</sub>=25°C unless otherwise noted )**

Symbol	Parameter	MURF15H60	Unit
<b>V<sub>RRM</sub></b>	Peak Repetitive Reverse Voltage	600	V
<b>V<sub>R</sub></b>	DC Blocking Voltage		
<b>I<sub>F(AV)</sub></b>	Average Forward Current(T <sub>C</sub> =66°C)	15	A
<b>I<sub>F(RMS)</sub></b>	RMS Forward Current(T <sub>C</sub> =66°C)	21	A
<b>I<sub>FSM</sub></b>	Non-Repetitive Surge Forward Current (8.3ms)	224	A
<b>P<sub>D</sub></b>	Power dissipation	45.5	W
<b>R<sub>θJC</sub></b>	Thermal Resistance From Junction to Case	3.3	°C/W
<b>T<sub>j</sub></b>	Operating Junction Temperature Range	-55 ~ +175	°C
<b>T<sub>stg</sub></b>	Storage Temperature Range	-55 ~ +175	°C

# Typical Characteristics

## ELECTRICAL CHARACTERISTICS ( $T_c=25^\circ\text{C}$ unless otherwise specified)

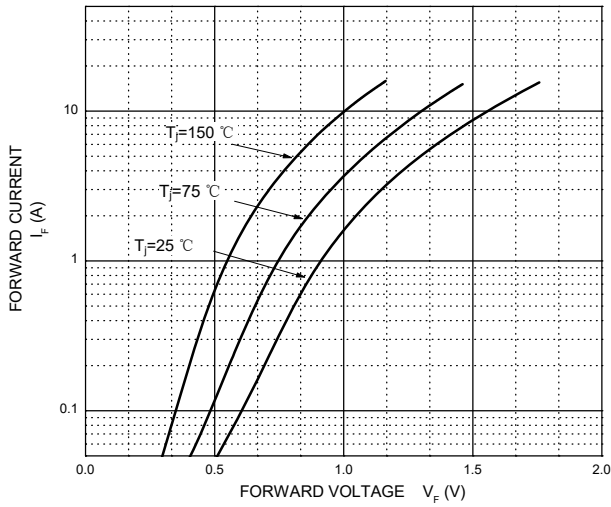
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{(BR)}$	Reverse Voltage	$I_R=100\mu\text{A}$	600			V
$I_R$	Reverse Current	$V_R=600\text{V}$	$T_j=25^\circ\text{C}$		10	$\mu\text{A}$
			$T_j=150^\circ\text{C}$		800	$\mu\text{A}$
$V_F$	Forward Voltage	$I_F=15\text{A}$	$T_j=25^\circ\text{C}$	1.75	2.2	V
			$T_j=150^\circ\text{C}$	1.15		V
$C_{tot}$	Total Capacitance	$V_R=200\text{V}, f=1\text{MHz}$		24		pF
trr	Reverse Recovery time	$I_F=0.5\text{A}, I_R=1\text{A}, I_{rr}=0.25\text{A}$		23		ns
		$I_F=1\text{A}, V_R=30\text{V}, di_F/dt=200\text{A}/\mu\text{s}$		18		ns

## ELECTRICAL CHARACTERISTICS ( $T_c=25^\circ\text{C}$ unless otherwise specified)

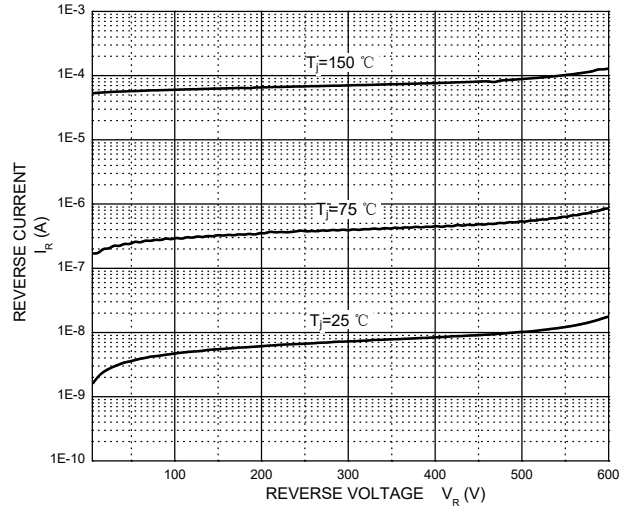
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
trr	Reverse Recovery Time	$I_F=15\text{A}, V_R=400\text{V}, di_F/dt=200\text{A}/\mu\text{s}$		31		ns
$I_{RRM}$	Max. Reverse Recovery Current			2.7		A
Qrr	Reverse Recovery Charge			50		nC
trr	Reverse Recovery Time	$I_F=15\text{A}, V_R=400\text{V}, di_F/dt=200\text{A}/\mu\text{s}, T_j=125^\circ\text{C}$		74		ns
$I_{RRM}$	Max. Reverse Recovery Current			6		A
Qrr	Reverse Recovery Charge			269		nC
trr	Reverse Recovery Time	$I_F=15\text{A}, V_R=400\text{V}, di_F/dt=600\text{A}/\mu\text{s}, T_j=125^\circ\text{C}$		41		ns
$I_{RRM}$	Max. Reverse Recovery Current			17		A
Qrr	Reverse Recovery Charge			374		nC

# Typical Characteristics

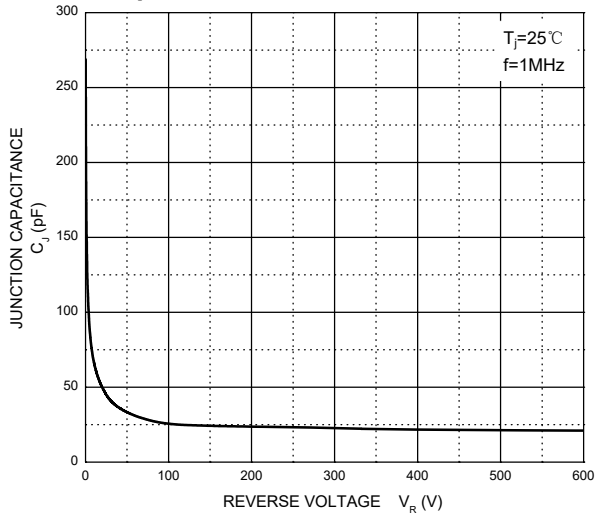
**Forward Characteristics**



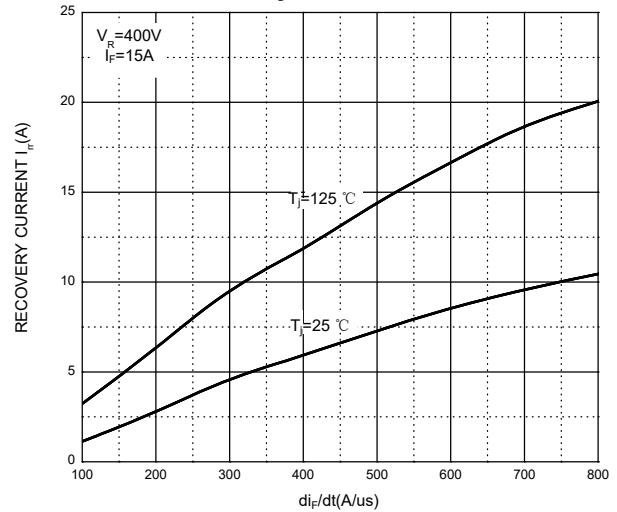
**Reverse Characteristics**



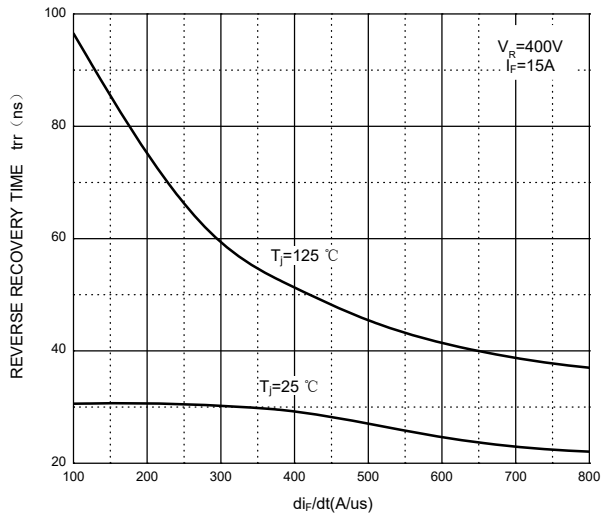
**Capacitance Characteristics Per Diode**



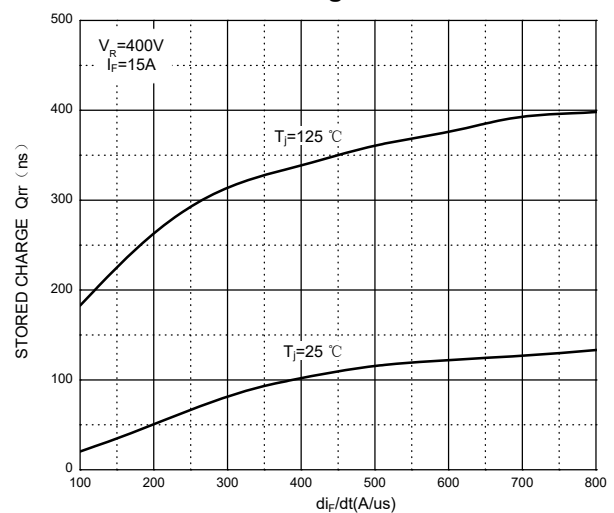
**Recovery Current vs.  $di_F/dt$**



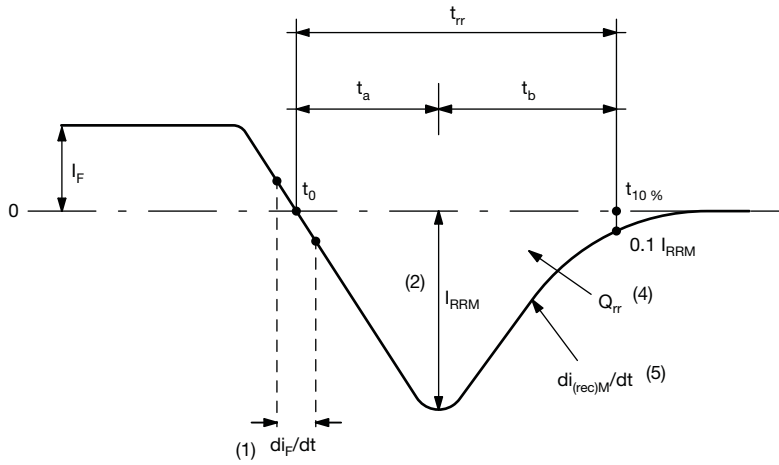
**Reverse Recovery Time vs.  $di_F/dt$**



**Stored Charge vs.  $di_F/dt$**

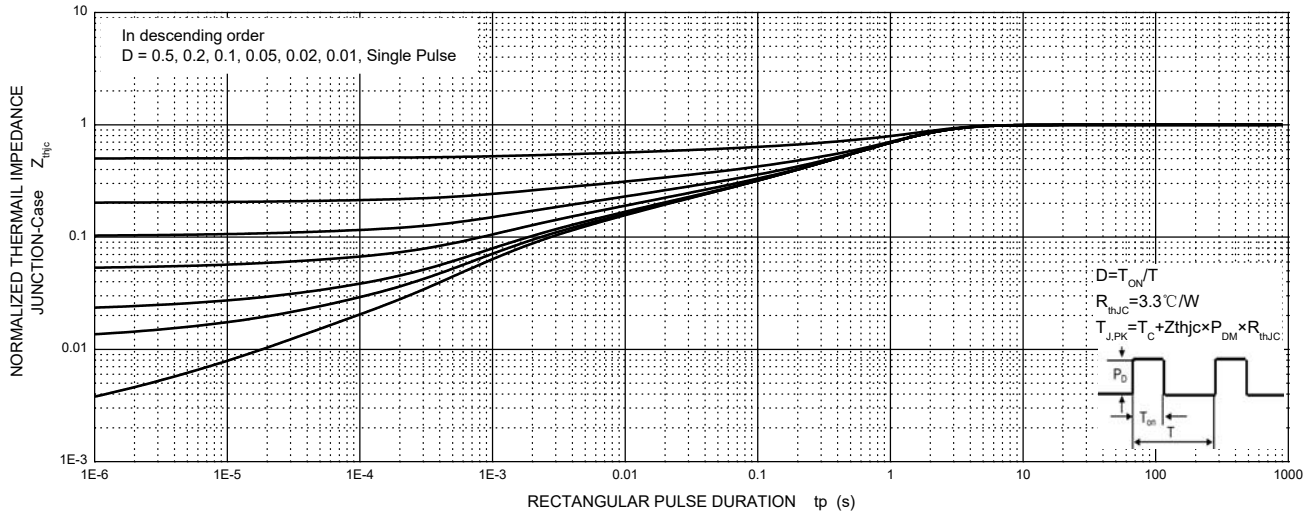


# Typical Characteristics

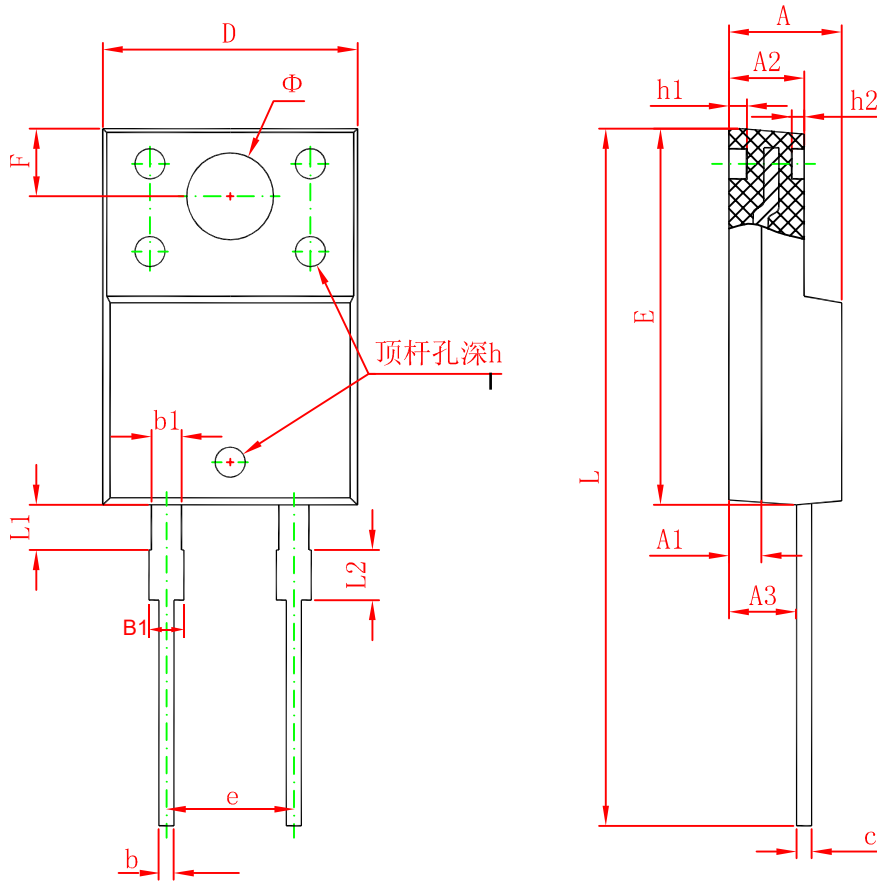


Reverse Recovery Waveform and Definitions

## MURF15H60 Transient Thermal Impedance, Junction-Case



# TO-220F-2L Package Outline Dimensions



Symbol			Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.300	4.700	0.169	0.185
A1	1.200 REF.		0.047 REF.	
A2	2.800	3.200	0.110	0.126
A3	2.500	2.900	0.098	0.114
b	0.710	0.910	0.028	0.036
b1	1.100	1.350	0.043	0.053
B1	1.150	1.400	0.045	0.055
c	0.500	0.750	0.020	0.030
D	9.960	10.360	0.392	0.408
E	14.800	15.200	0.583	0.598
e	5.080 TYP.		0.200 TYP.	
F	2.700 REF.		0.106 REF.	
$\Phi$	3.300 REF.		0.130 REF.	
h	0.000	0.300	0.000	0.012
h1	0.800 REF.		0.031 REF.	
h2	0.500 REF.		0.020 REF.	
L	28.000	28.400	1.102	1.118
L1	2.100	2.400	0.082	0.094
L2	1.300	1.700	0.051	0.066

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