

**TO-220F-B Plastic-Encapsulate Diode****MURF1640CT** HYPERFAST RECTIFIER,FRED**MAIN CHARACTERISTICS**

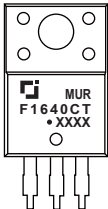
$I_o$	<b>16(8×2)A</b>
$V_{RRM}$	<b>400V</b>
$T_{rr}$	<b>23ns</b>
$T_j$	<b>150℃</b>
$V_{F(typ)}$	<b>1.1V(@<math>T_j=125℃</math>)</b>

**FEATURES**

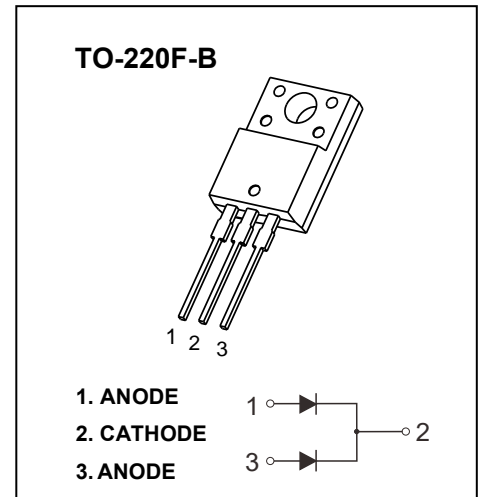
- Ultrafast Recovery Times and Low Recovery Loss
- Low Forward Voltage
- Low Reverse Leakage Current

**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**

MURF1640CT = Device code  
 Solid dot = Green molding compound device  
 if none, the normal device  
 XXXX = Code

**MAXIMUM RATINGS (  $T_c=25℃$  unless otherwise noted )**

Symbol	Parameter	MURF1640CT	Unit
$V_{RRM}$	Peak Repetitive Reverse Voltage	400	V
$V_R$	DC Blocking Voltage		
$I_{F(AV)}$	Average rectified output current@ Per leg( $T_c=118℃$ )	8	A
	Average rectified output current@ Total device( $T_c=118℃$ )	16	
$I_{F(RMS)}$	RMS Forward Current( $T_c=118℃$ )	11	A
$I_{FSM}$	Non-Repetitive Surge Forward Current (8.3ms)	110	A
$P_D$	Power dissipation	33	W
$R_{\theta JC}$	Thermal Resistance From Junction to Case	3.8	℃/W
$T_j$	Operating Junction Temperature Range	-55 ~ +150	℃
$T_{stg}$	Storage Temperature Range	-55 ~ +150	℃

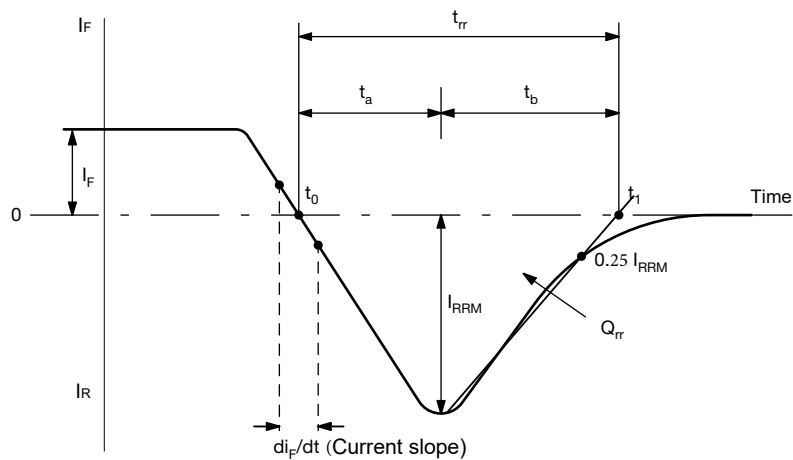
# Typical Characteristics

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{(BR)}$	Reverse Voltage	$I_R=100\mu\text{A}$	400			V
$I_R$	Reverse Current	$V_R=400\text{V}$	$T_j=25^\circ\text{C}$		1	$\mu\text{A}$
			$T_j=125^\circ\text{C}$		500	$\mu\text{A}$
$V_F$	Forward Voltage	$I_F=8\text{A}$	$T_j=25^\circ\text{C}$	1.2	1.4	V
			$T_j=125^\circ\text{C}$	1.1		V
$C_{tot}$	Total Capacitance	$V_R=200\text{V}, f=1\text{MHz}$		7		pF
$t_{rr}$	Reverse Recovery time	$I_F=0.5\text{A}, I_R=1\text{A}, I_{rr}=0.25\text{A}$		25		ns
		$I_F=1\text{A}, V_R=30\text{V}, di_F/dt=200\text{A}/\mu\text{s}$		23		ns

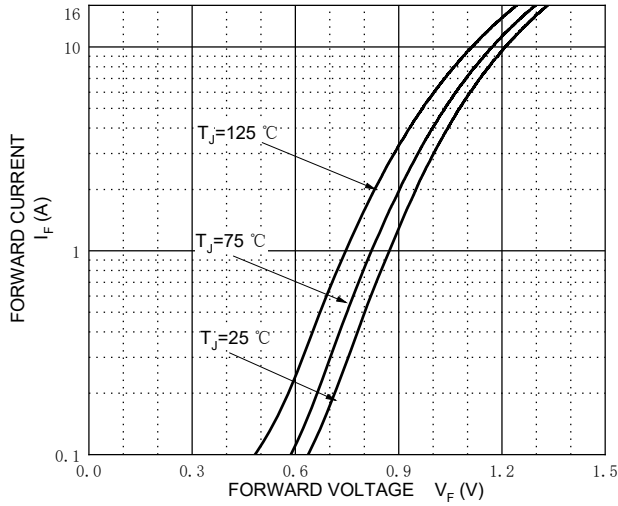
## ELECTRICAL CHARACTERISTICS ( $T_C=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$t_{rr}$	Reverse Recovery Time	$I_F=10\text{A}, V_R=200\text{V}, di_F/dt=200\text{A}/\mu\text{s}$		61		ns
$I_{RRM}$	Max. Reverse Recovery Current			4.6		A
$Q_{rr}$	Reverse Recovery Charge			170		nC
$t_{rr}$	Reverse Recovery Time	$I_F=10\text{A}, V_R=200\text{V}, di_F/dt=200\text{A}/\mu\text{s}, T_j=125^\circ\text{C}$		76		ns
$I_{RRM}$	Max. Reverse Recovery Current			6		A
$Q_{rr}$	Reverse Recovery Charge			269		nC
$t_{rr}$	Reverse Recovery Time	$I_F=10\text{A}, V_R=200\text{V}, di_F/dt=500\text{A}/\mu\text{s}, T_j=125^\circ\text{C}$		55		ns
$I_{RRM}$	Max. Reverse Recovery Current			14		A
$Q_{rr}$	Reverse Recovery Charge			421		nC

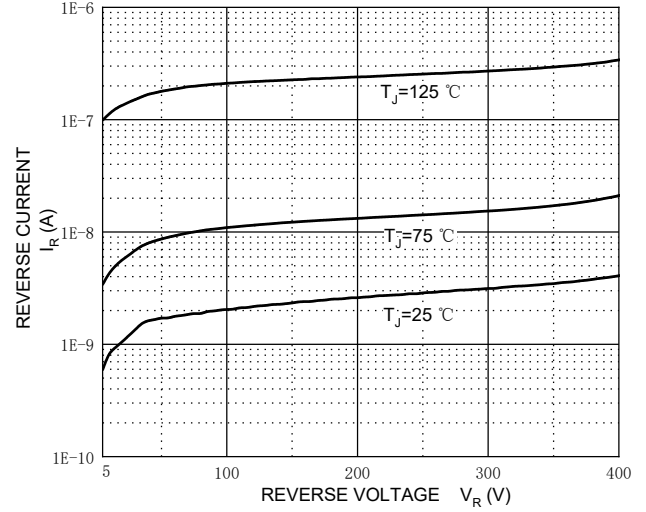


Reverse Recovery Waveform and Definitions

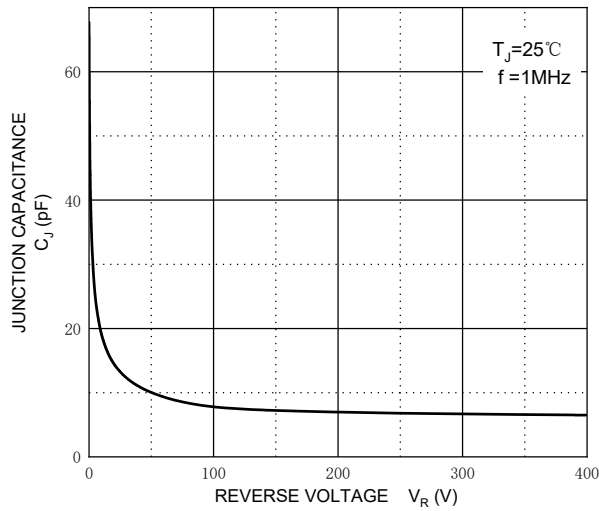
### Forward Characteristics



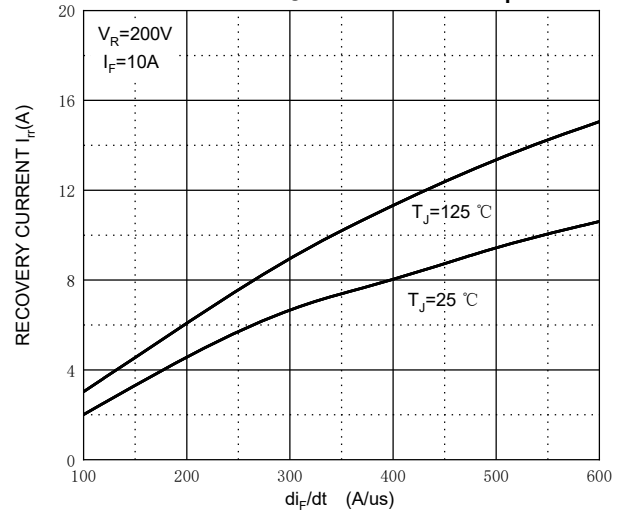
### Reverse Characteristics



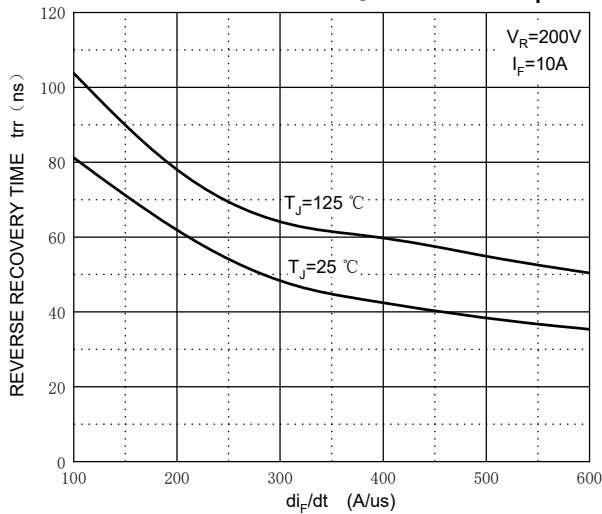
### Capacitance Characteristics Per Diode



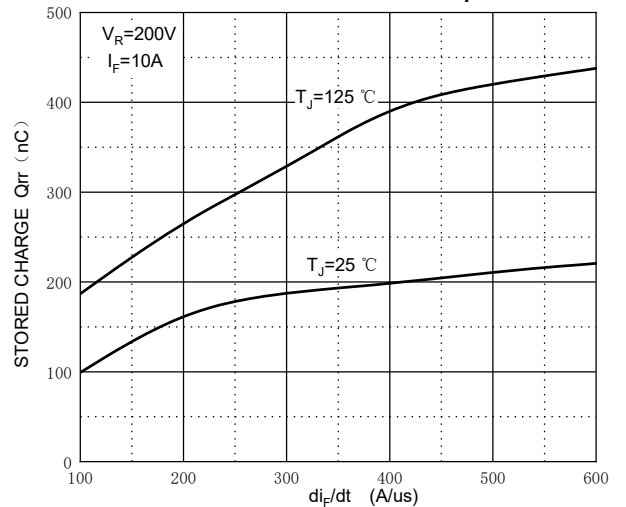
### Recovery Current vs. $di_F/dt$



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

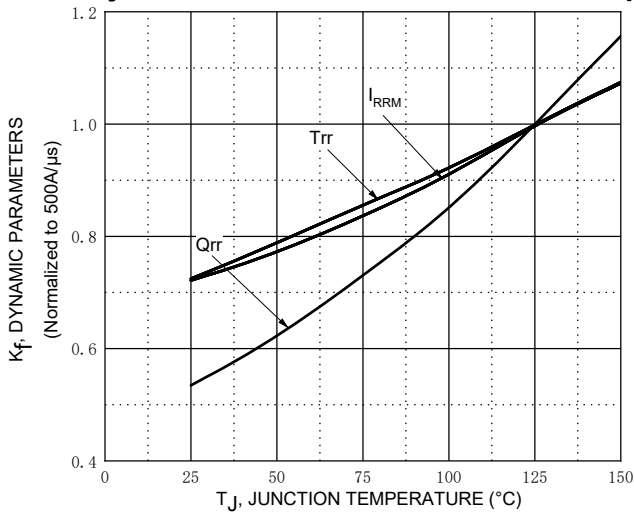


### Stored Charge vs. $di_F/dt$

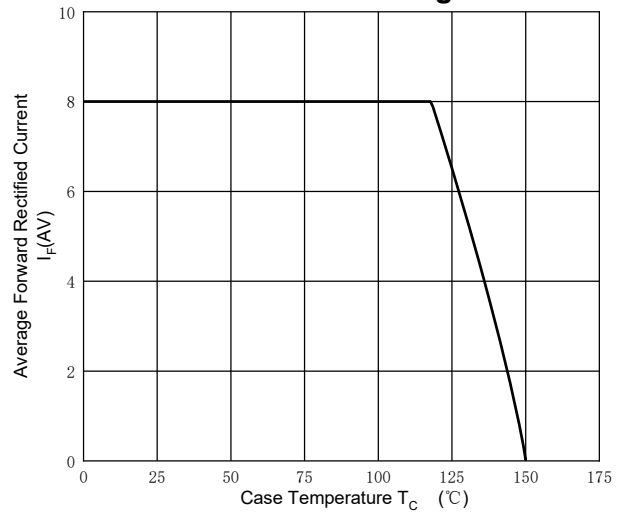


# Typical Characteristics

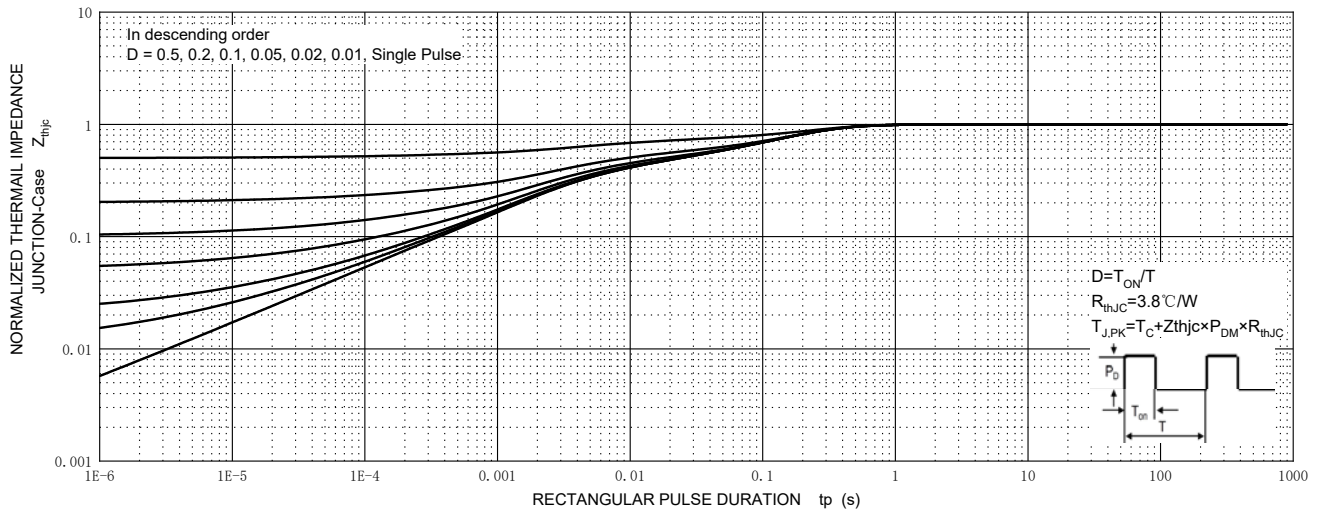
## Dynamic Parameters vs. Junction Temperature



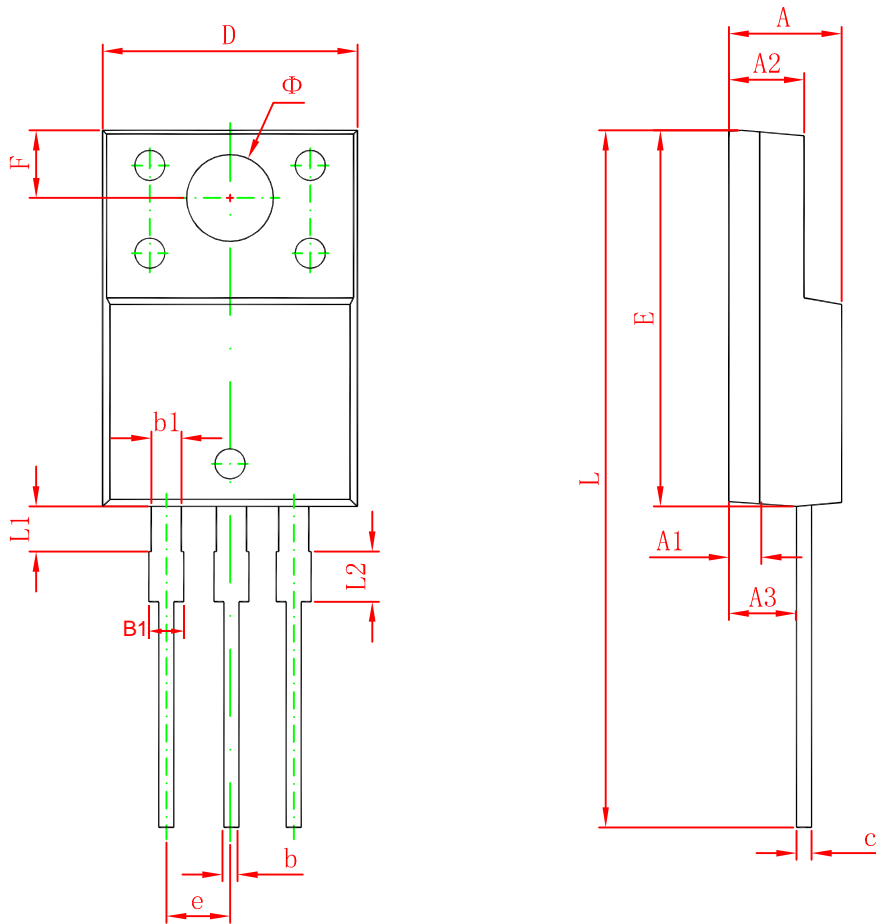
## Current Derating



## MURF1640CT Transient Thermal Impedance, Junction-Case



# TO-220F-B Package Outline Dimensions



Symbol	Dimensions In Millimeters		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	2.540 TYP.		0.100 TYP.	
F	2.700 REF.		0.106 REF.	
$\Phi$	3.300	3.700	0.130	0.146
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