

**TO-220FL-2L Plastic-Encapsulate Diode****MURF20H60** HYPERFAST RECTIFIER, FRED**MAIN CHARACTERISTICS**

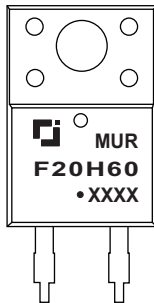
I_O	20A
V_{RRM}	600V
T_{rr}	19ns
T_j	175℃
$V_{F(typ)}$	1.3V(@ $T_j=150^{\circ}C$)

FEATURES

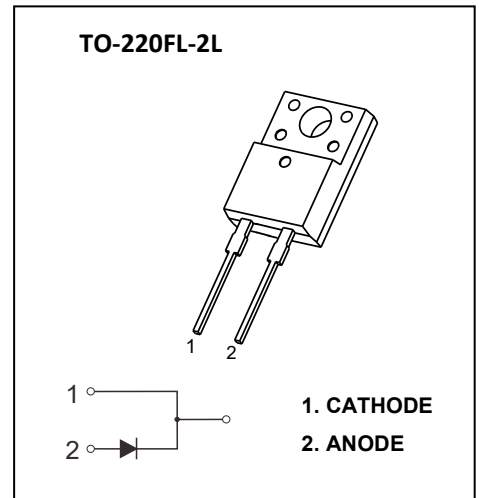
- Ultrafast Recovery Times and Low Recovery Loss
- Low Forward Voltage
- Low Reverse Leakage Current

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

MURF20H60= Device code
Solid dot = Green molding compound device
if none, the normal device
XXXX = Code

**MAXIMUM RATINGS ($T_c=25^{\circ}C$ unless otherwise noted)**

Symbol	Parameter	MURF20H60	Unit
V_{RRM}	Peak Repetitive Reverse Voltage	600	V
V_R	DC Blocking Voltage		
$I_{F(AV)}$	Average Forward Current($T_c=122^{\circ}C$)	20	A
$I_{F(RMS)}$	RMS Forward Current($T_c=122^{\circ}C$)	28	A
I_{FSM}	Non-Repetitive Surge Forward Current (8.3ms)	280	A
P_D	Power dissipation	83	W
$R_{\theta JC}$	Thermal Resistance From Junction to Case	1.8	℃/W
T_j	Operating Junction Temperature Range	-55 ~ +175	℃
T_{stg}	Storage Temperature Range	-55 ~ +175	℃

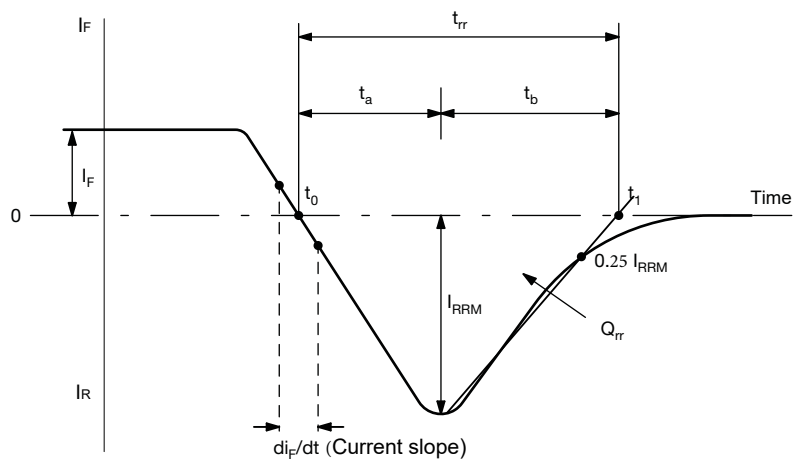
Typical Characteristics

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	$V_R=600\text{V}$			10	μA
					500	μA
V_F	Forward Voltage	$I_F=20\text{A}$		2.15	2.5	V
				1.3		V
C_{tot}	Total Capacitance	$V_R=200\text{V}, f=1\text{MHz}$		30		pF
t_{rr}	Reverse Recovery time	$I_F=0.5\text{A}, I_R=1\text{A}, I_{rr}=0.25\text{A}$		31		ns
		$I_F=1\text{A}, V_R=30\text{V}, di_F/dt = 200\text{A}/\mu\text{s}$		19		ns

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

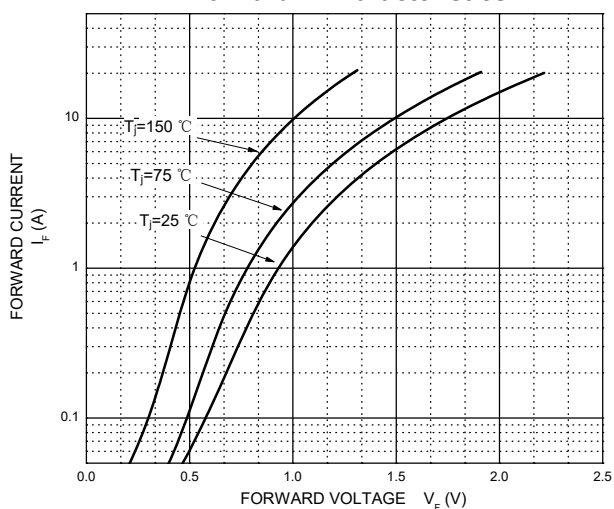
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t_{rr}	Reverse Recovery Time	$I_F=20\text{A}, V_R=400\text{V}, di_F/dt=200\text{A}/\mu\text{s}$		29		ns
I_{RRM}	Max. Reverse Recovery Current			2.3		A
Q_{rr}	Reverse Recovery Charge			38		nC
t_{rr}	Reverse Recovery Time	$I_F=20\text{A}, V_R=400\text{V}, di_F/dt=200\text{A}/\mu\text{s}, T_J=125^\circ\text{C}$		71		ns
I_{RRM}	Max. Reverse Recovery Current			6		A
Q_{rr}	Reverse Recovery Charge			236		nC
t_{rr}	Reverse Recovery Time	$I_F=20\text{A}, V_R=400\text{V}, di_F/dt=600\text{A}/\mu\text{s}, T_J=125^\circ\text{C}$		40		ns
I_{RRM}	Max. Reverse Recovery Current			17		A
Q_{rr}	Reverse Recovery Charge			367		nC



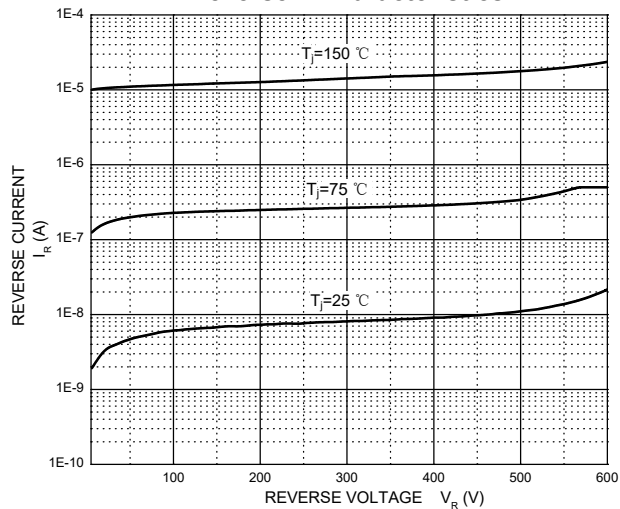
Reverse Recovery Waveform and Definitions

Typical Characteristics

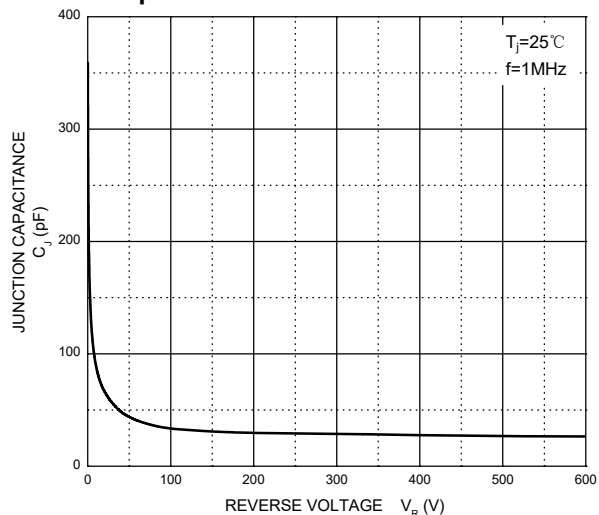
Forward Characteristics



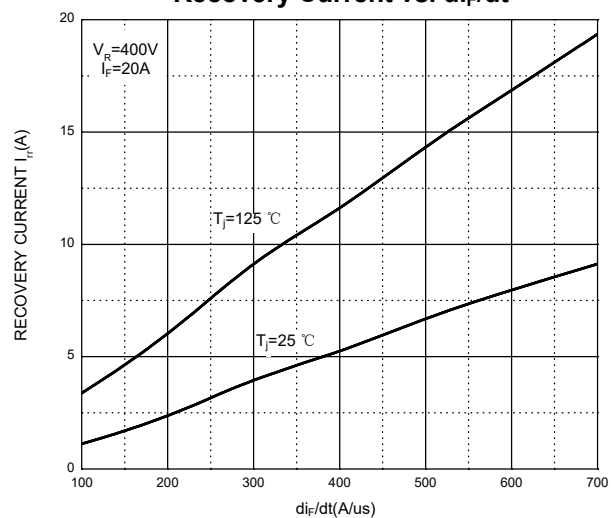
Reverse Characteristics



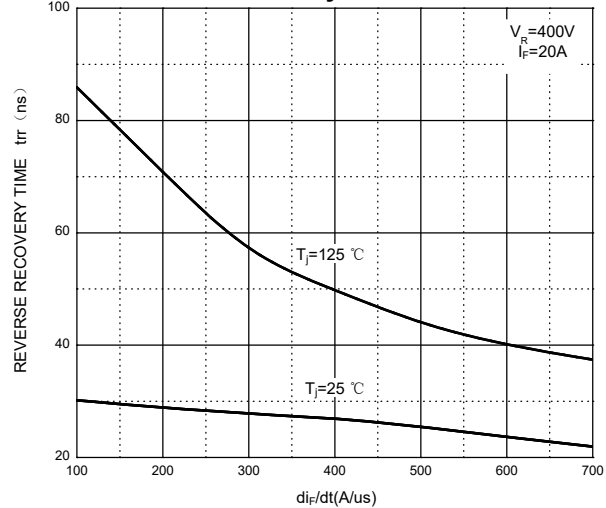
Capacitance Characteristics Per Diode



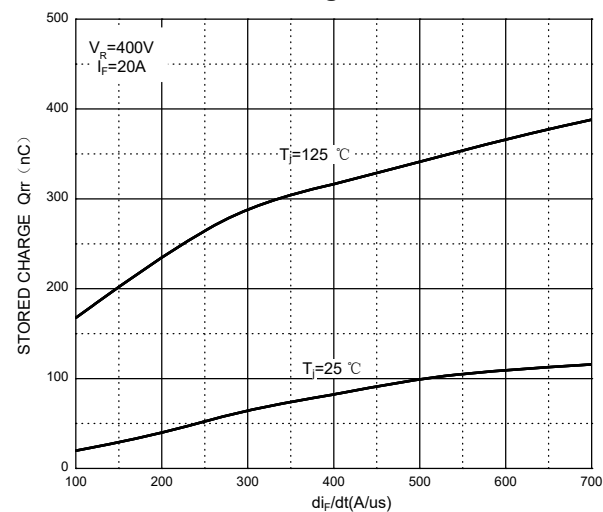
Recovery Current vs. di_F/dt



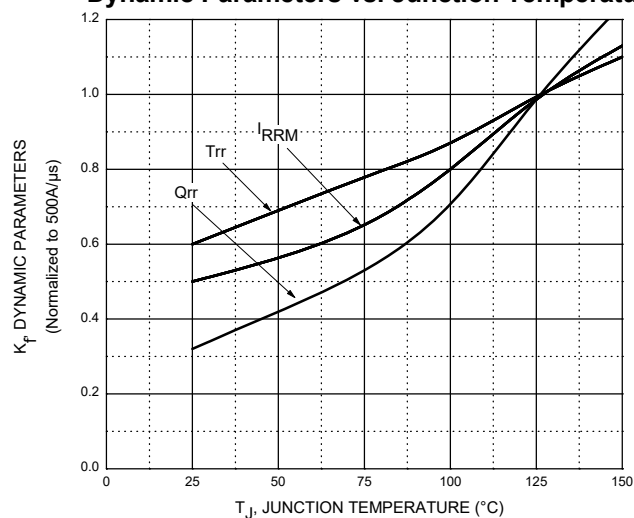
Reverse Recovery Time vs. di_F/dt



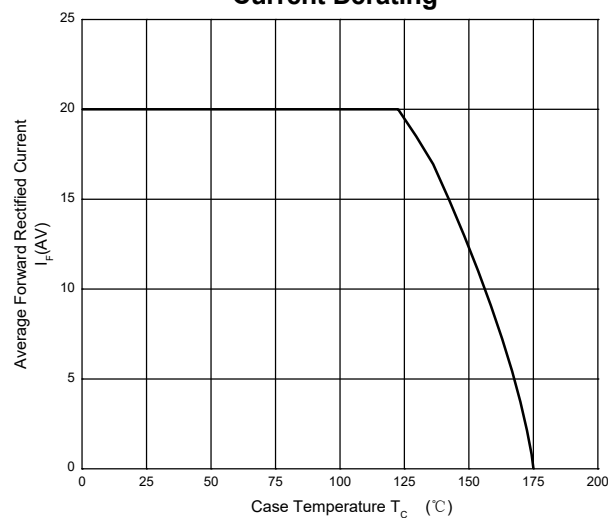
Stored Charge vs. di_F/dt



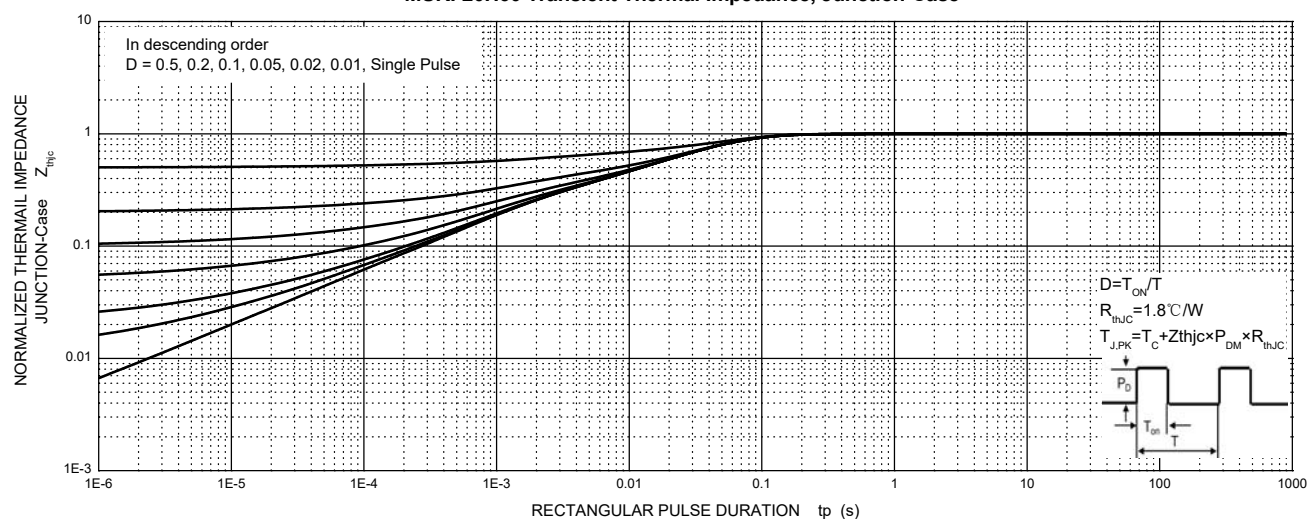
Dynamic Parameters vs. Junction Temperature



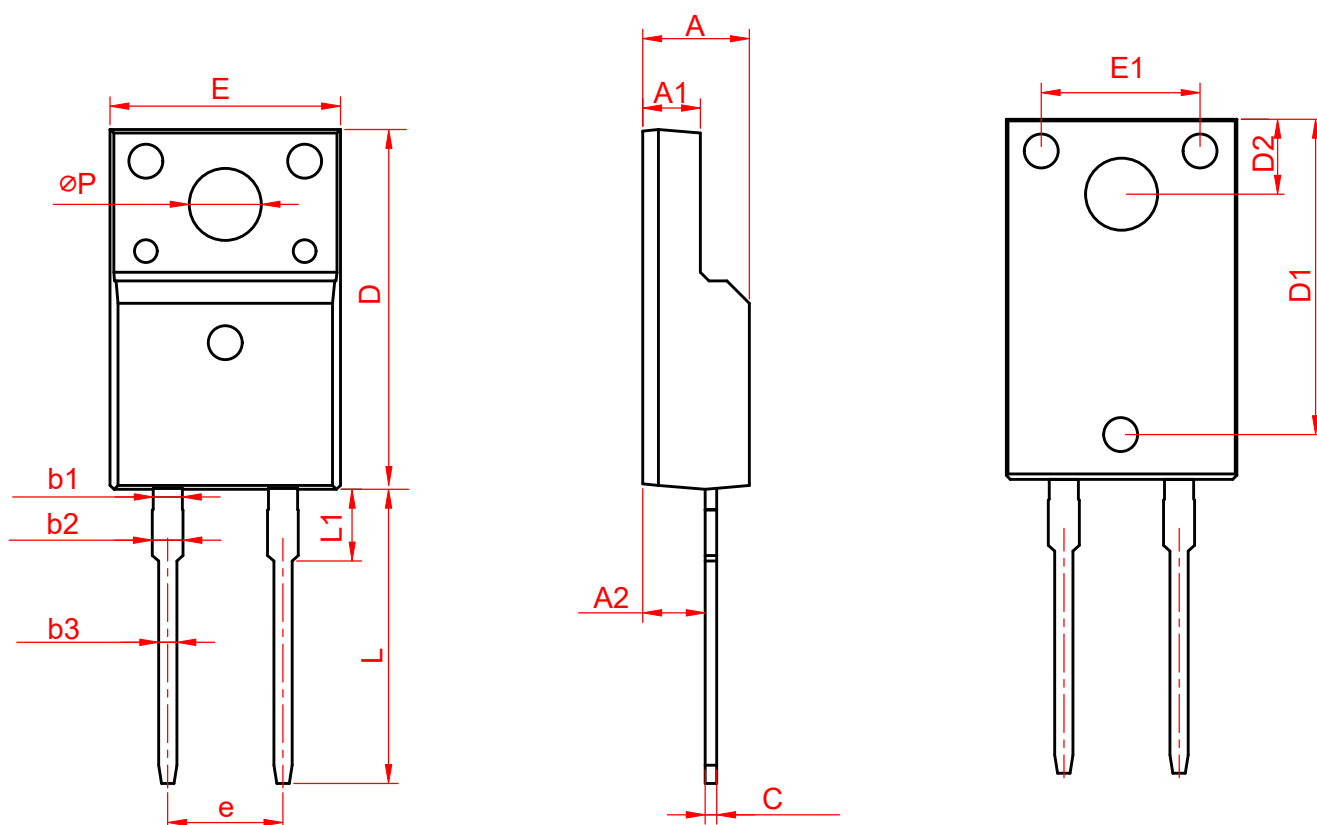
Current Derating



MURF20H60 Transient Thermal Impedance, Junction-Case



TO-220FL-2L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.50	4.90	0.177	0.193
A1	2.34	2.74	0.092	0.108
A2	2.66	2.86	0.105	0.113
b1	1.24	1.34	0.049	0.053
b2	1.28	1.44	0.050	0.057
b3	0.75	0.85	0.030	0.033
C	0.45	0.60	0.018	0.024
D	15.67	16.07	0.617	0.633
D1	13.80	14.00	0.543	0.550
D2	3.20	3.40	0.126	0.134
e	5.08TYP.		0.200TYP.	
E	9.96	10.36	0.392	0.408
E1	6.90	7.10	0.270	0.280
L	12.76	13.16	0.502	0.518
L1	-	3.33	-	0.131
ϕP	3.00	3.38	0.118	0.133