

TO-220 Plastic-Encapsulate Diodes

HYPERFAST RECTIFIER,FRED

MAIN CHARACTERISTICS

I_o	15A
V_{RRM}	1200V
T_{rr}	24ns
T_j	175°C
$V_{F(typ)}$	1.8V(@ $T_j=150^\circ\text{C}$)

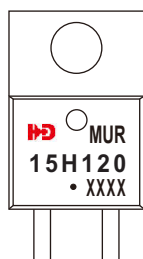
FEATURES

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

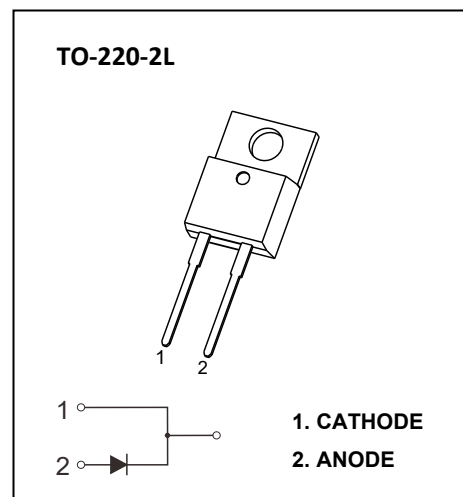
APPLICATIONS

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



MUR15H120 = Device code
Solid dot = Green molding compound device
if none, the normal device
XXXX = Code



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

Symbol	Parameter	MUR15H120	Unit
V_{RRM}	Peak Repetitive Reverse Voltage	1200	V
V_R	DC Blocking Voltage		
$I_{F(AV)}$	Average Forward Current($T_c=115^\circ\text{C}$)	15	A
$I_{F(RMS)}$	RMS Forward Current($T_c=115^\circ\text{C}$)	21	A
I_{FSM}	Non-Repetitive Surge Forward Current (8.3ms)	144	A
P_D	Power dissipation	79	W
$R_{\theta JC}$	Thermal Resistance From Junction to Case	1.9	$^\circ\text{C/W}$
T_j	Operating Junction Temperature Range	-55 ~ +175	$^\circ\text{C}$
T_{stg}	Storage Temperature Range	-55 ~ +175	$^\circ\text{C}$

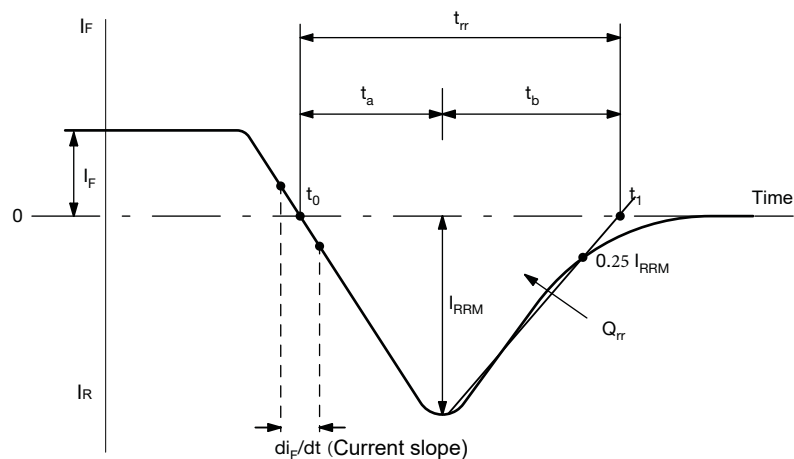
Typical Characteristics

ELECTRICAL CHARACTERISTICS (T_C=25°C unless otherwise specified)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
V _(BR)	Reverse Voltage	IR=100μA		1200			V
I _R	Reverse Current	VR=1200V	T _J =25℃			10	μA
			T _J =150℃			500	μA
V _F	Forward Voltage	IF=15A	T _J =25℃		2.6	3.2	V
			T _J =150℃		1.8		V
C _{tot}	Total Capacitance	VR=200V, f=1MHz			10		pF
trr	Reverse Recovery time	IF=0.5A, IR=1A, I _{rr} =0.25A			31		ns
		IF=1A, VR=30V, di _F /dt =200A/us			24		ns

ELECTRICAL CHARACTERISTICS (T_c=25°C unless otherwise specified)

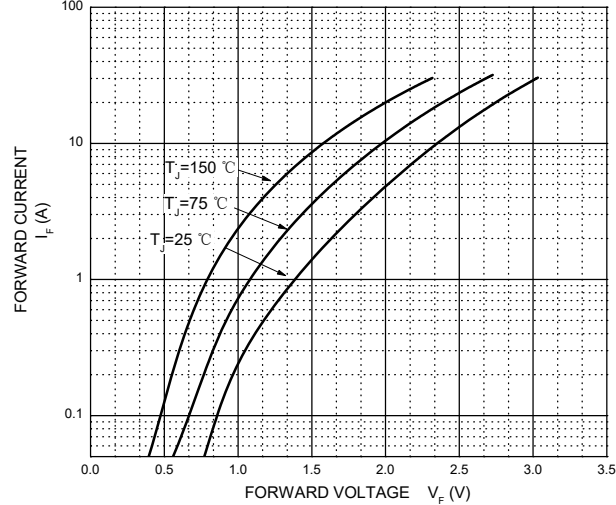
Symbol	Parameter	Test Comditions	Min.	Typ.	Max.	Unit
trr	Reverse Recovery Time	IF=15A, VR=600V, diF/dt=200A/μs		50		ns
I _{RRM}	Max. Reverse Recovery Current			5.0		A
Q _{rr}	Reverse Recovery Charge			149		nC
trr	Reverse Recovery Time	IF=15A, VR=600V, diF/dt=200A/μs, Tj=125℃		226		ns
I _{RRM}	Max. Reverse Recovery Current			10		A
Q _{rr}	Reverse Recovery Charge			1384		nC
trr	Reverse Recovery Time	IF=15A, VR=600V, diF/dt=600A/μs, Tj=125℃		115		ns
I _{RRM}	Max. Reverse Recovery Current			22		A
Q _{rr}	Reverse Recovery Charge			1515		nC



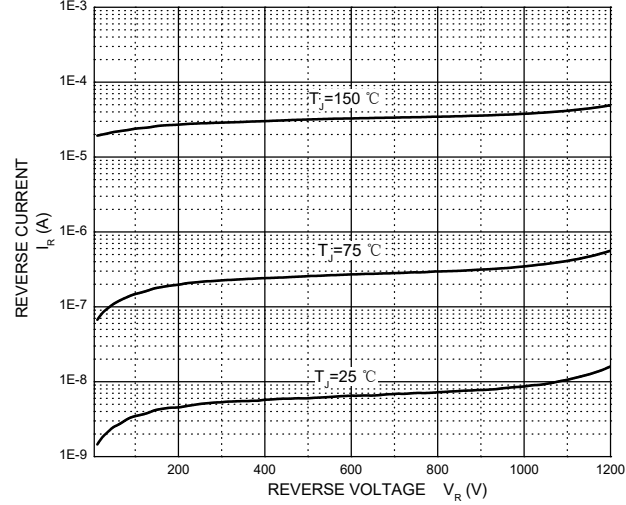
Reverse Recovery Waveform and Definitions

Typical Characteristics

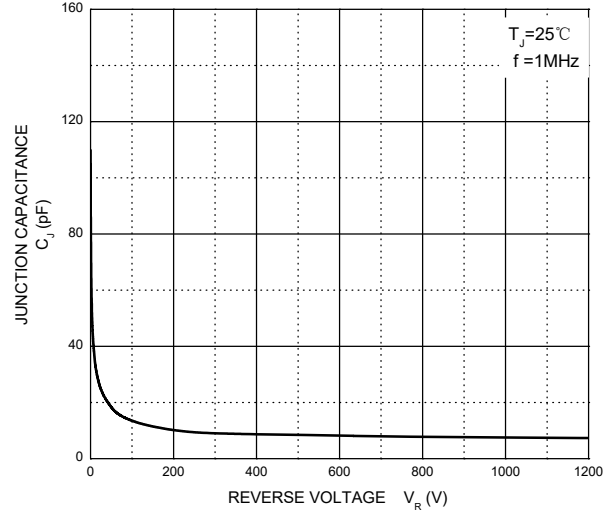
Forward Characteristics



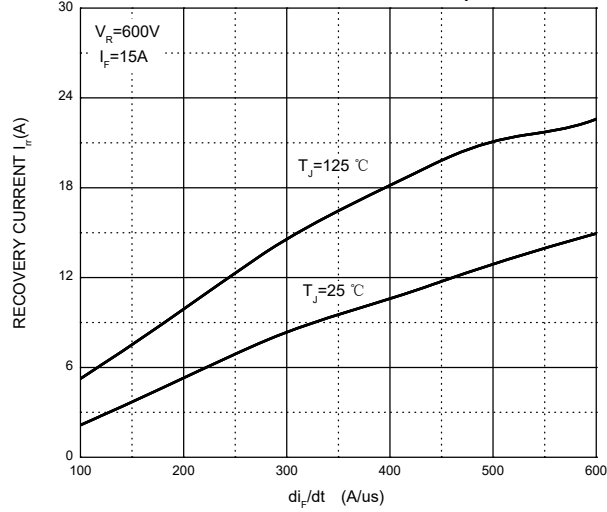
Reverse Characteristics



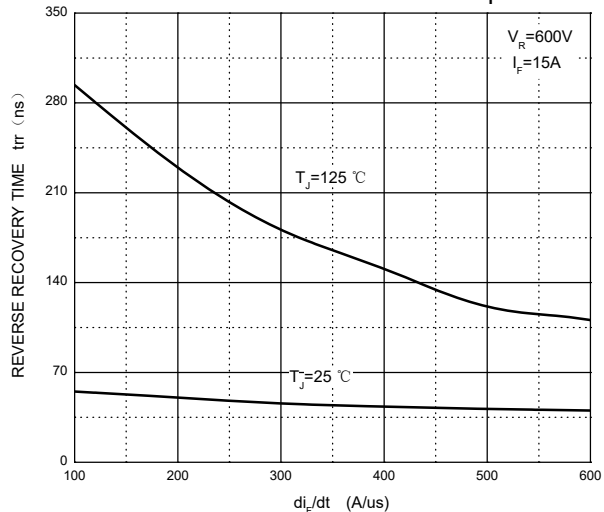
Capacitance Characteristics Per Diode



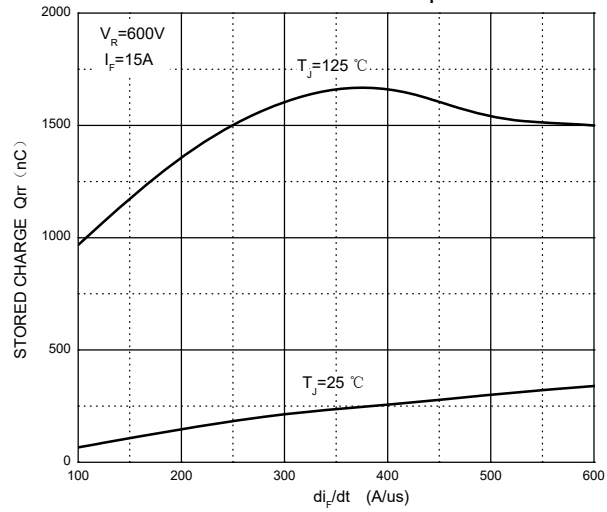
Recovery Current vs. di_F/dt



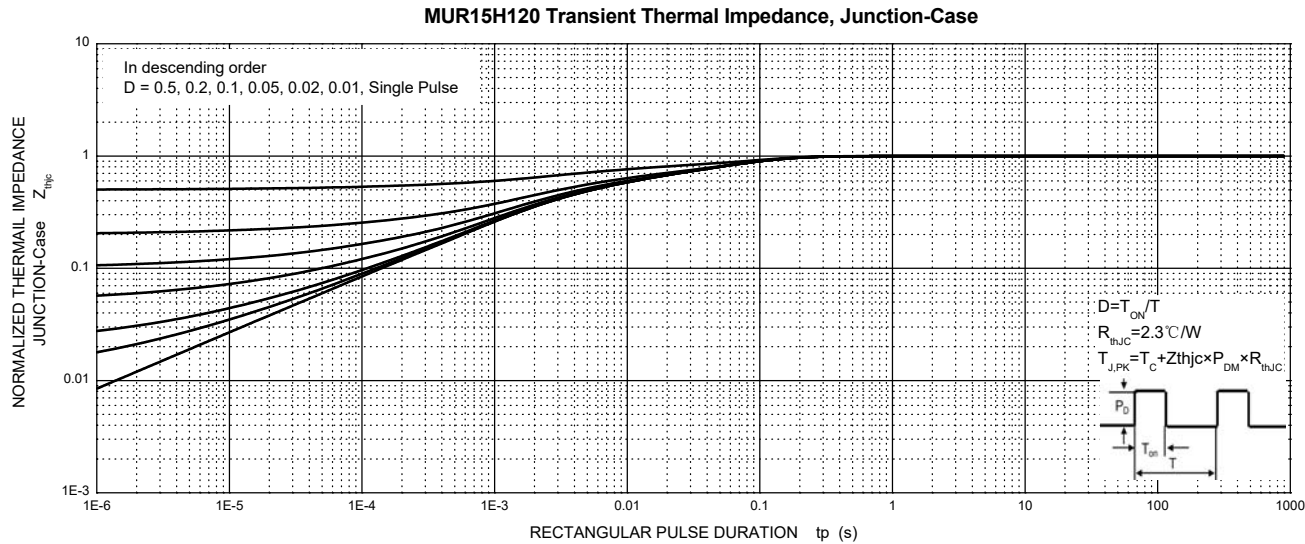
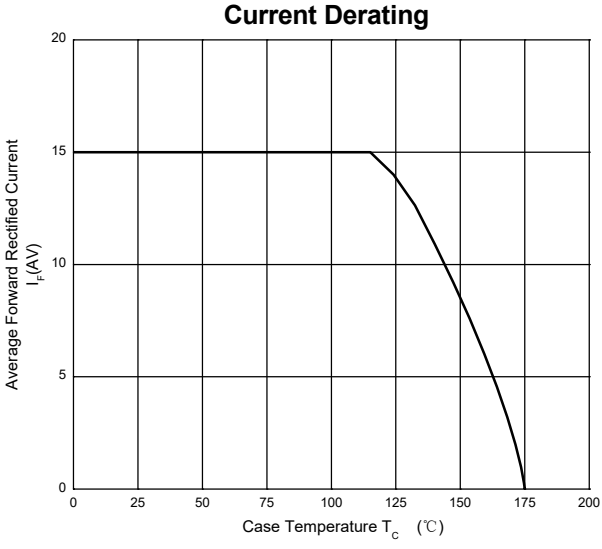
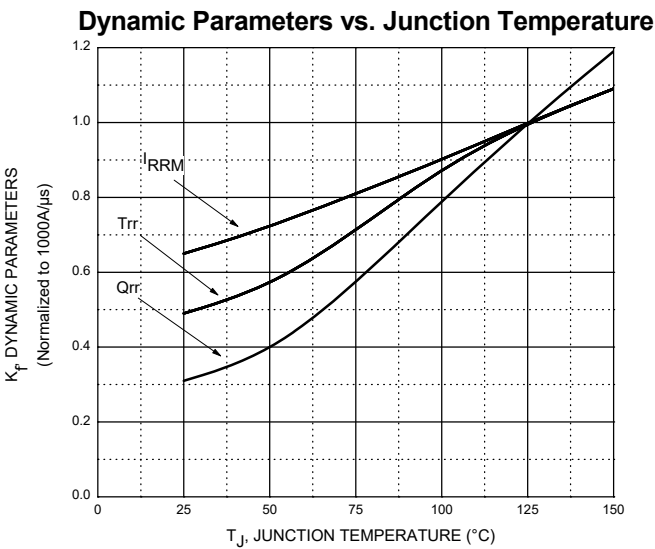
Reverse Recovery Time vs. di_F/dt



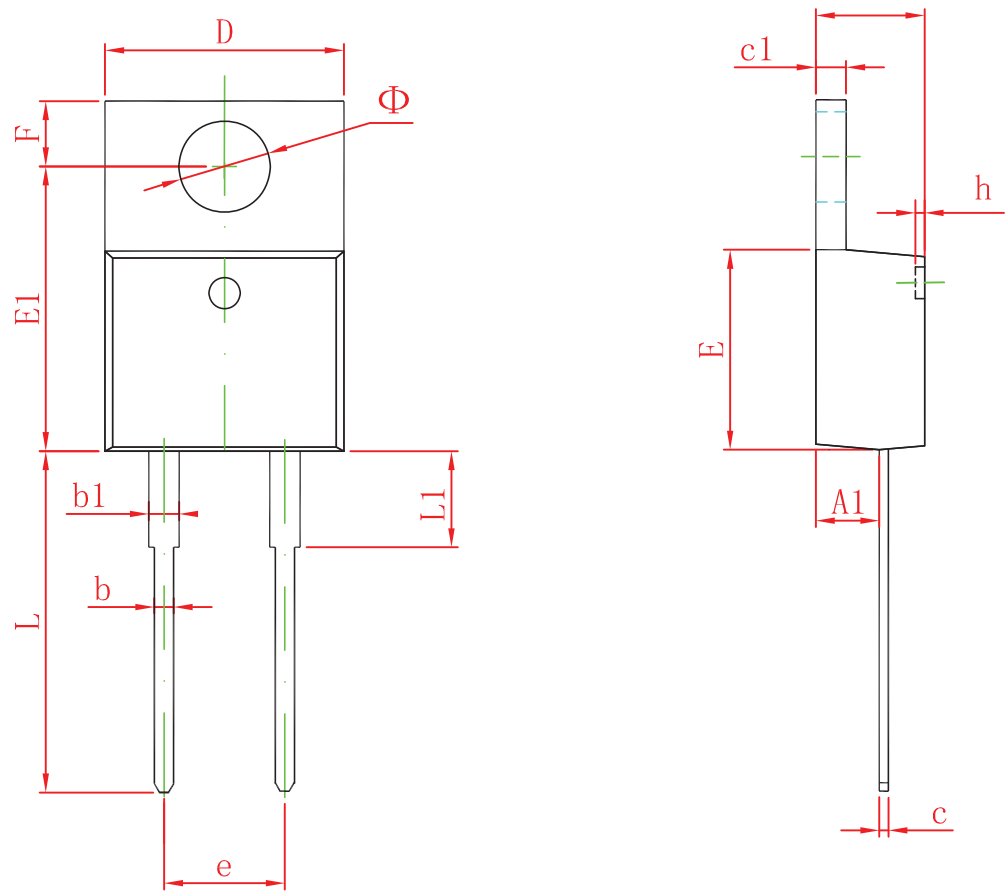
Stored Charge vs. di_F/dt



Typical Characteristics



TO- 220- 2L Package Outline Dimensions



Symbol			Dimensions In Inches	
	Min	Max	Min	Max
A	4.450	4.750	0.175	0.187
	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.300	0.500	0.012	0.020
c1	1.170	1.370	0.046	0.054
D	9.830	10.330	0.387	0.407
E	8.500	8.900	0.335	0.350
E1	12.050	12.650	0.474	0.498
e	5.080 TYP		0.200 TYP	
F	2.540	2.940	0.100	0.116
h	0.100 TYP		0.004 TYP	
L	13.300	13.800	0.523	0.543
L1	3.540	3.940	0.139	0.155
Φ	3.735	3.935	0.147	0.155