

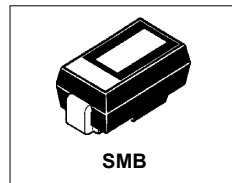
# International IOR Rectifier

## MURS120

### Ultrafast Rectifier

#### Features

- Ultrafast Recovery Time
- Low Forward Voltage Drop
- Low Leakage Current
- 175°C Operating Junction Temperature



$$t_{rr} = 25\text{ns}$$

$$I_{F(AV)} = 1\text{Amp}$$

$$V_R = 200\text{V}$$

#### Description/ Applications

International Rectifier's MUR.. series are the state of the art Ultra fast recovery rectifiers specifically designed with optimized performance of forward voltage drop and ultra fast recovery time.

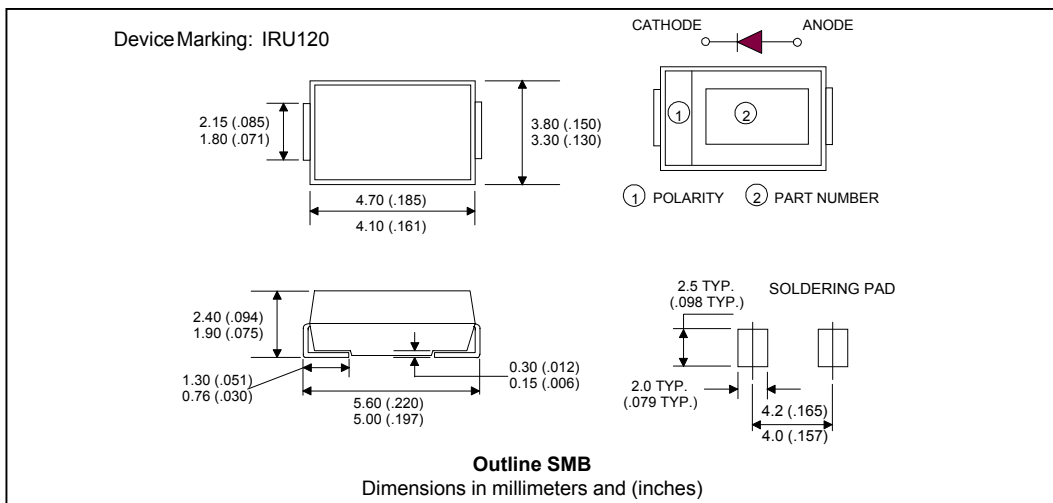
The planar structure and the platinum doped life time control, guarantee the best overall performance, ruggedness and reliability characteristics.

These devices are intended for use in the output rectification stage of SMPS, UPS, DC-DC converters as well as free-wheeling diode in low voltage inverters and chopper motor drives.

Their extremely optimized stored charge and low recovery current minimize the switching losses and reduce over dissipation in the switching element and snubbers.

#### Absolute Maximum Ratings

Parameters	Max	Units
$V_{RRM}$ Peak Repetitive Peak Reverse Voltage	200	V
$I_{F(AV)}$ Average Rectified Forward Current, $T_L = 158^\circ\text{C}$	1	A
$I_{FSM}$ Non Repetitive Peak Surge Current	40	
$T_J, T_{STG}$ Operating Junction and Storage Temperatures	- 65 to 175	$^\circ\text{C}$



**Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise specified)**

Parameters	Min	Typ	Max	Units	Test Conditions
V <sub>BR</sub> , V <sub>r</sub> Breakdown Voltage, Blocking Voltage	200	-	-	V	I <sub>R</sub> = 100μA
V <sub>F</sub> Forward Voltage	-	0.83	0.875	V	I <sub>F</sub> = 1A
	-	0.65	0.71	V	I <sub>F</sub> = 1A, T <sub>J</sub> = 150°C
I <sub>R</sub> Reverse Leakage Current	-	0.1	2	μA	V <sub>R</sub> = V <sub>R</sub> Rated
	-	11	50	μA	T <sub>J</sub> = 150°C, V <sub>R</sub> = V <sub>R</sub> Rated
C <sub>T</sub> Junction Capacitance	-	12	-	pF	V <sub>R</sub> = 200V

**Dynamic Recovery Characteristics @ T<sub>J</sub> = 25°C (unless otherwise specified)**

Parameters	Min	Typ	Max	Units	Test Conditions
t <sub>rr</sub> Reverse Recovery Time	-	-	35	ns	I <sub>F</sub> = 1.0A, di <sub>F</sub> /dt = 50A/μs, V <sub>R</sub> = 30V
	-	-	25		I <sub>F</sub> = 0.5A, I <sub>R</sub> = 1.0A, I <sub>REC</sub> = 0.25A

**Thermal - Mechanical Characteristics**

Parameters		Min	Typ	Max	Units
T <sub>J</sub>	Max. Junction Temperature Range	-	-	175	°C
T <sub>Stg</sub>	Max. Storage Temperature Range	- 65	-	175	
R <sub>thJL</sub>	Thermal Resistance, Junction to Lead	-	-	21	°C/W
Wt	Weight	-	0.1	-	g
		-	0.07	-	(oz)
wt	Approximate Weight	0.10 (0.003)			g (oz.)
	Case Style	SMB			
	Device Marking	IRU120			

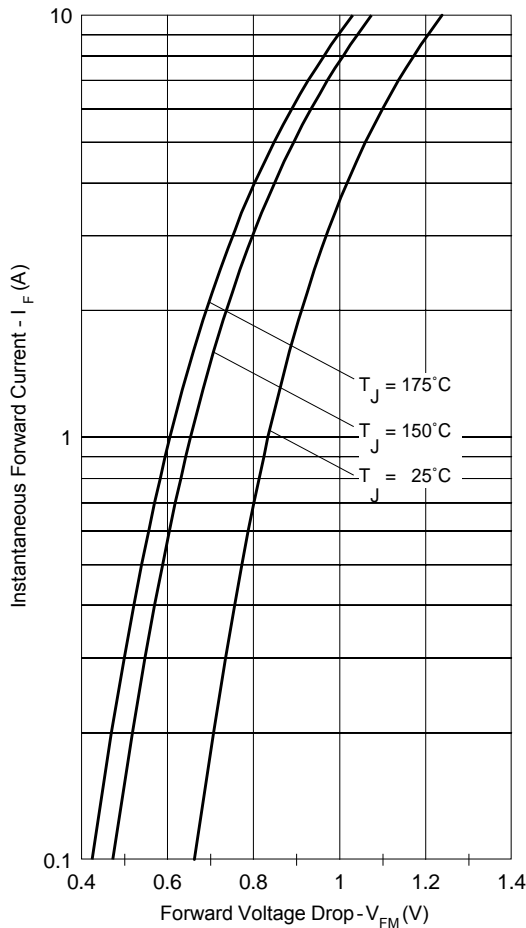


Fig. 1 - Typical Forward Voltage Drop Characteristics

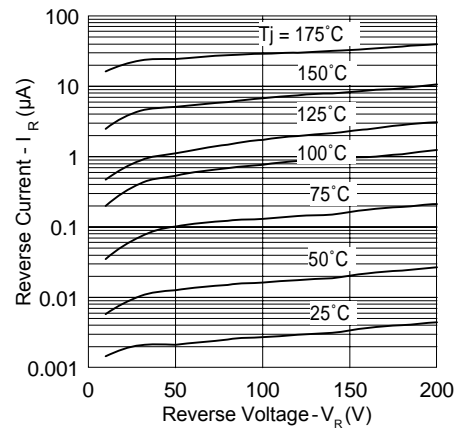


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage

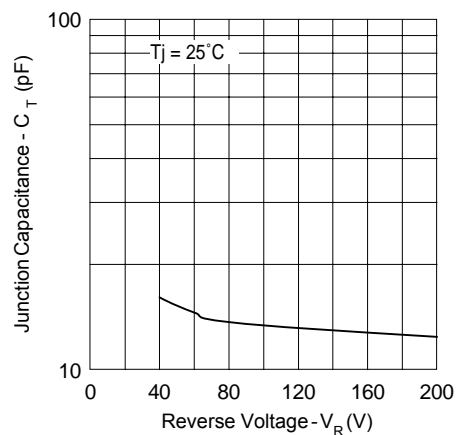


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

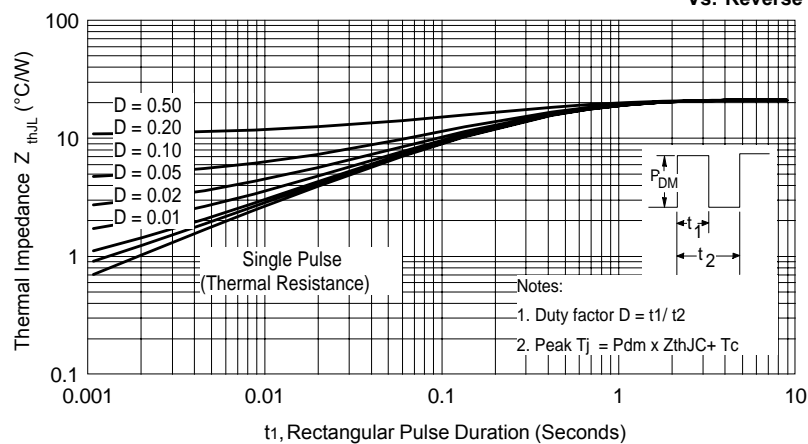
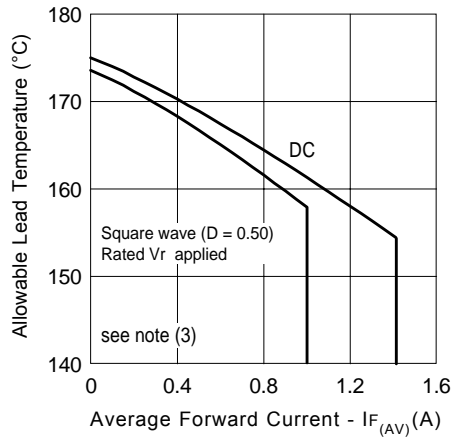
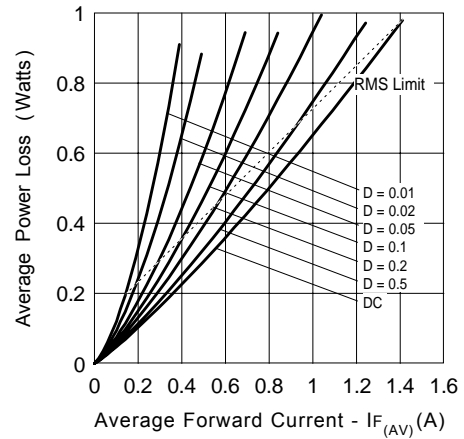


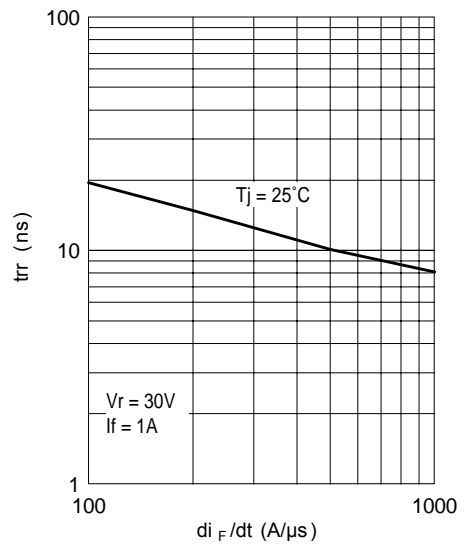
Fig. 4 - Max. Thermal Impedance  $Z_{thJC}$  Characteristics



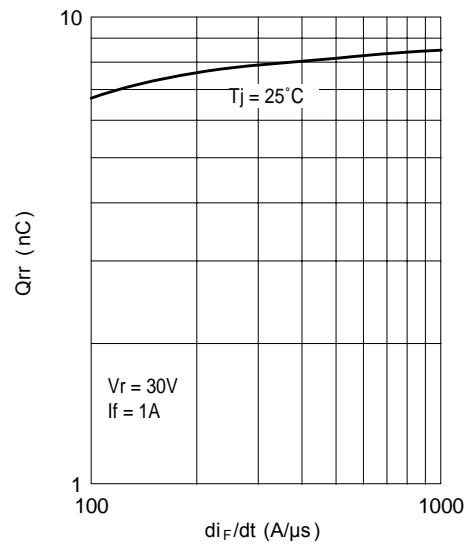
**Fig. 5 - Max. Allowable Lead Temperature Vs. Average Forward Current**



**Fig. 6 - Forward Power Loss Characteristics**



**Fig. 7 - Typical Reverse Recovery vs.  $di_F/dt$**



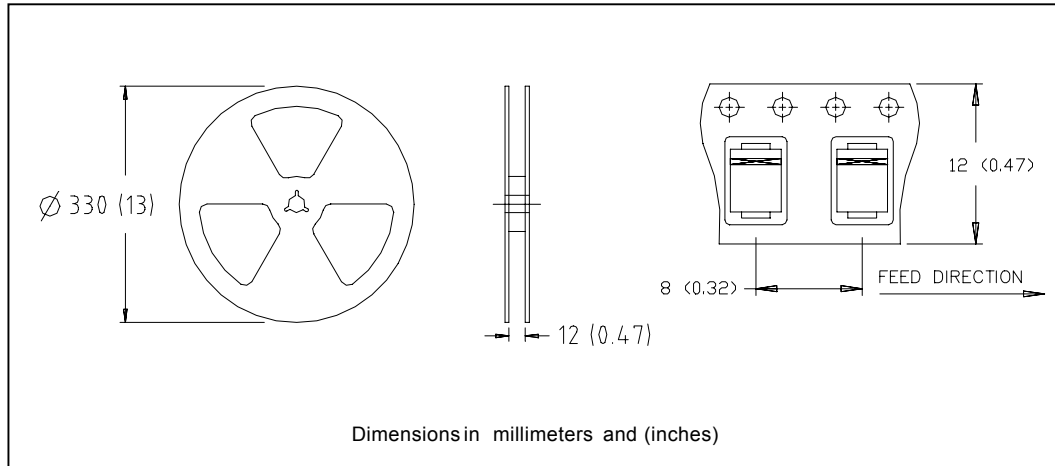
**Fig. 8 - Typical Stored Charge vs.  $di_F/dt$**

(3) Formula used:  $T_C = T_J - (P_d + P_{d_{REV}}) \times R_{thJC}$ ;

$P_d$  = Forward Power Loss =  $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$  (see Fig. 6);

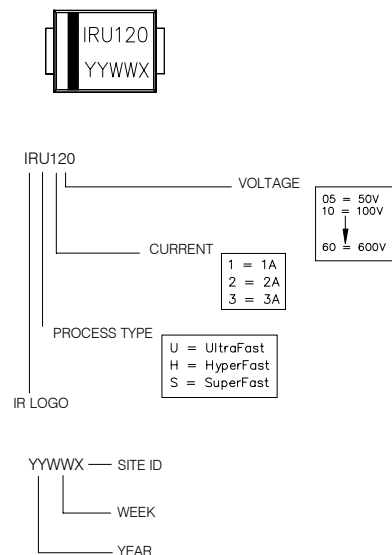
$P_{d_{REV}}$  = Inverse Power Loss =  $V_{R1} \times I_{R1} (1 - D)$ ;  $I_{R1} @ V_{R1}$  = rated  $V_R$

## Tape & Reel Information



## Marking & Identification

Each device has 2 rows for identification. The first row designates the device as manufactured by International Rectifier as indicated by the letters "IR", the process and the Part Number ( indicates the current rating and voltage/process). The second row indicates the year and the week of manufacturing and the Site ID.



## Ordering Information

### MURS SERIES - TAPE AND REEL

WHEN ORDERING, INDICATE THE PART NUMBER AND THE QUANTITY ( IN MULTIPLES OF 3000 PIECES).

EXAMPLE: MURS120TR - 6000 PIECES

### MURS.. SERIES - BULK QUANTITIES

WHEN ORDERING, INDICATE THE PART NUMBER AND THE QUANTITY ( IN MULTIPLES OF 1000 PIECES).

EXAMPLE: MURS120 - 2000 PIECES

## Ordering Information Table

## Device Code

The diagram illustrates the four-digit device code structure for the MUR120. The code is represented as a black bar divided into four segments: 'MUR', 'S', '1', and '20'. Below each segment is a circle containing a number (1, 2, 3, and 4 respectively), connected to the segment by a vertical line.

<b>1</b>	-	Ultrafast MUR Series
<b>2</b>	-	Package Style: SMB
<b>3</b>	-	Current Rating (1 = 1A)
<b>4</b>	-	Voltage Rating (20 = 200V)

Data and specifications subject to change without notice.  
This product has been designed and qualified for Industrial Level.  
Qualification Standards can be found on IR's Web site.

International  
**IOR** Rectifier

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