

# International **ICR** Rectifier

SCHOTTKY RECTIFIER

**10MQ100NPbF**

2.1 Amp

$I_{F(AV)} = 2.1\text{Amp}$   
 $V_R = 100\text{V}$

**Major Ratings and Characteristics**

Characteristics	Value	Units
$I_F$ DC	2.1	A
$V_{RRM}$	100	V
$I_{FSM}$ @ $t_p = 5\ \mu\text{s}$ sine	120	A
$V_F$ @ $1.5\text{Apk}$ , $T_J = 125^\circ\text{C}$	0.68	V
$T_J$ range	-55 to 150	$^\circ\text{C}$

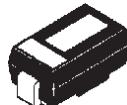
**Description/ Features**

The 10MQ100NPbF surface mount Schottky rectifier has been designed for applications requiring low forward drop and very small foot prints on PC boards. Typical applications are in disk drives, switching power supplies, converters, free-wheeling diodes, battery charging, and reverse battery protection.

- Small foot print, surface mountable
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Lead-Free ("PbF" suffix)

**Case Styles**

10MQ100NPbF



Cathode  
Anode

SMA

### Voltage Ratings

Part number	10MQ100NPbF	
$V_R$ Max. DC Reverse Voltage (V)		100
$V_{RWM}$ Max. Working Peak Reverse Voltage (V)		

### Absolute Maximum Ratings

Parameters	10MQ	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current * See Fig. 4	1.5	A	50% duty cycle @ $T_L = 126^\circ\text{C}$ , rectangular wave form. On PCboard 9mm <sup>2</sup> island (.013mm thick copper pad area)
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 6, $T_J = 25^\circ\text{C}$	120	A	5μs Sine or 3μs Rect. pulse
	30		10ms Sine or 6ms Rect. pulse
$E_{AS}$ Non-Repetitive Avalanche Energy	1.0	mJ	$T_J = 25^\circ\text{C}$ , $I_{AS} = 0.5\text{A}$ , $L = 8\text{mH}$
$I_{AR}$ Repetitive Avalanche Current	0.5	A	

### Electrical Specifications

Parameters	10MQ	Units	Conditions
$V_{FM}$ Max. Forward Voltage Drop (1) * See Fig. 1	0.78	V	$T_J = 25^\circ\text{C}$
	0.85	V	
	0.63	V	$T_J = 125^\circ\text{C}$
	0.68	V	
$I_{RM}$ Max. Reverse Leakage Current (1) * See Fig. 2	0.1	mA	$V_R = \text{rated } V_R$
	1	mA	
$V_{FTO}$ Threshold Voltage	0.52	V	$T_J = T_J \text{ max.}$
$r_t$ Forward Slope Resistance	78.4	mΩ	
$C_T$ Typical Junction Capacitance	38	pF	$V_R = 10V_{DC}$ , $T_J = 25^\circ\text{C}$ , test signal = 1Mhz
$L_S$ Typical Series Inductance	2.0	nH	Measured lead to lead 5mm from package body
$dv/dt$ Max. Voltage Rate of Change (Rated $V_R$ )	10000	V/μs	

(1) Pulse Width < 300μs, Duty Cycle < 2%

### Thermal-Mechanical Specifications

Parameters	10MQ	Units	Conditions
$T_J$ Max. Junction Temperature Range (*)	-55 to 150	°C	
$T_{stg}$ Max. Storage Temperature Range	-55 to 150	°C	
$R_{thJA}$ Max. Thermal Resistance Junction to Ambient	80	°C/W	DC operation
wt Approximate Weight	0.07(0.002)	g (oz.)	
Case Style	SMA		Similar D-64
Device Marking	IR1J		

(\*)  $\frac{dP_{tot}}{dT_J} < \frac{1}{R_{th}(j-a)}$  thermal runaway condition for a diode on its own heatsink

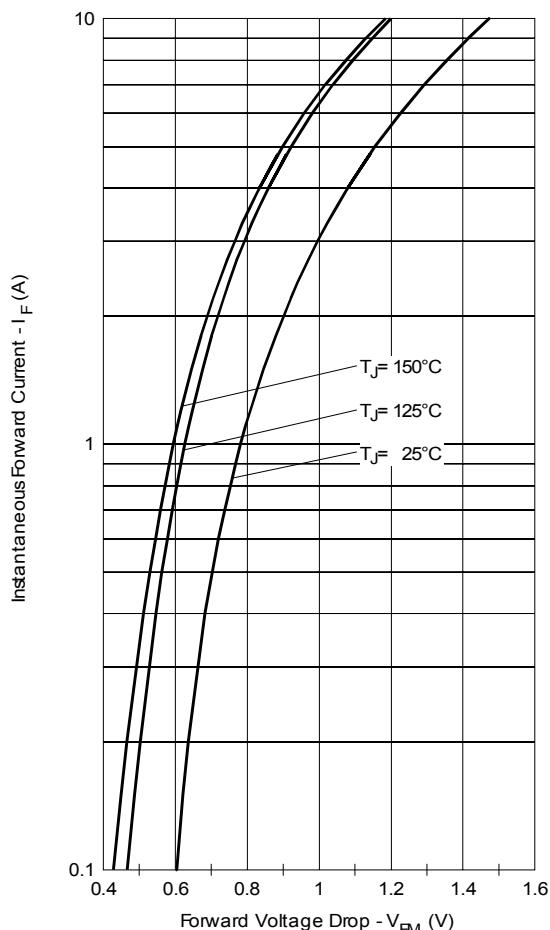


Fig. 1 - Maximum Forward Voltage Drop Characteristics

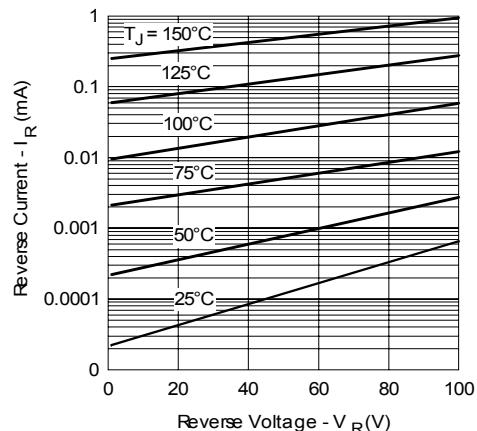


Fig. 2 - Typical Peak Reverse Current  
Vs. Reverse Voltage

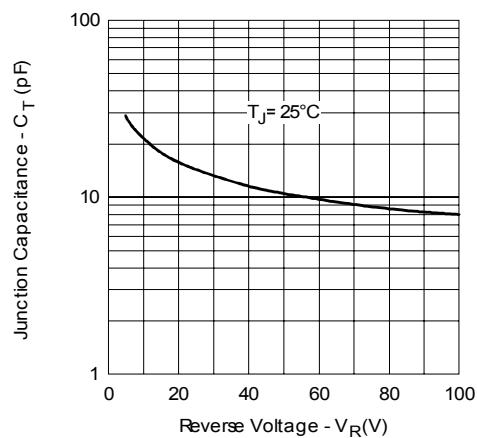


Fig. 3 - Typical Junction Capacitance  
Vs. Reverse Voltage

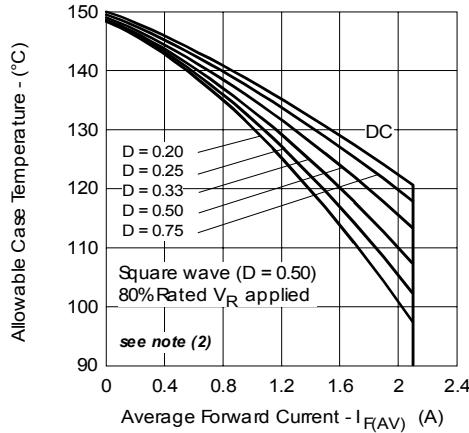


Fig. 4 - Maximum Average Forward Current  
Vs. Allowable Lead Temperature

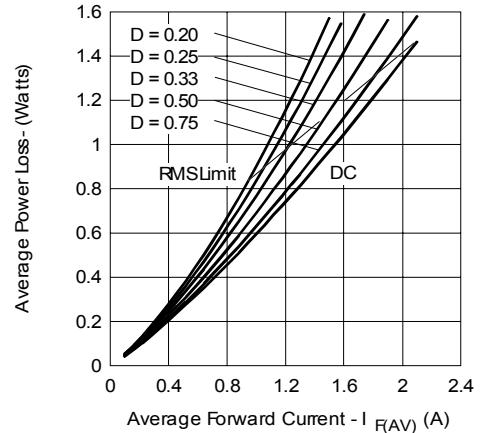


Fig. 5 - Maximum Average Forward Dissipation  
Vs. Average Forward Current

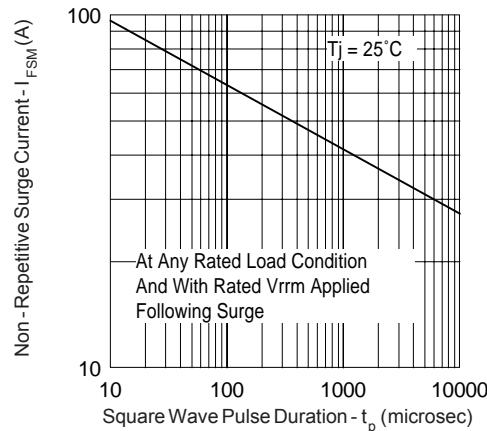
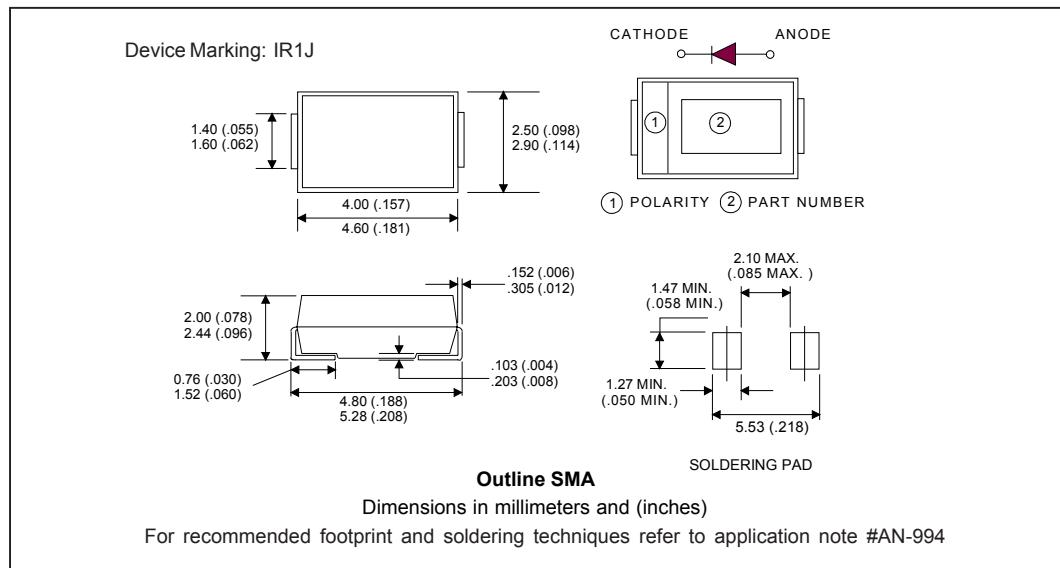


Fig. 6 - Maximum Peak Surge Forward Current Vs. Pulse Duration

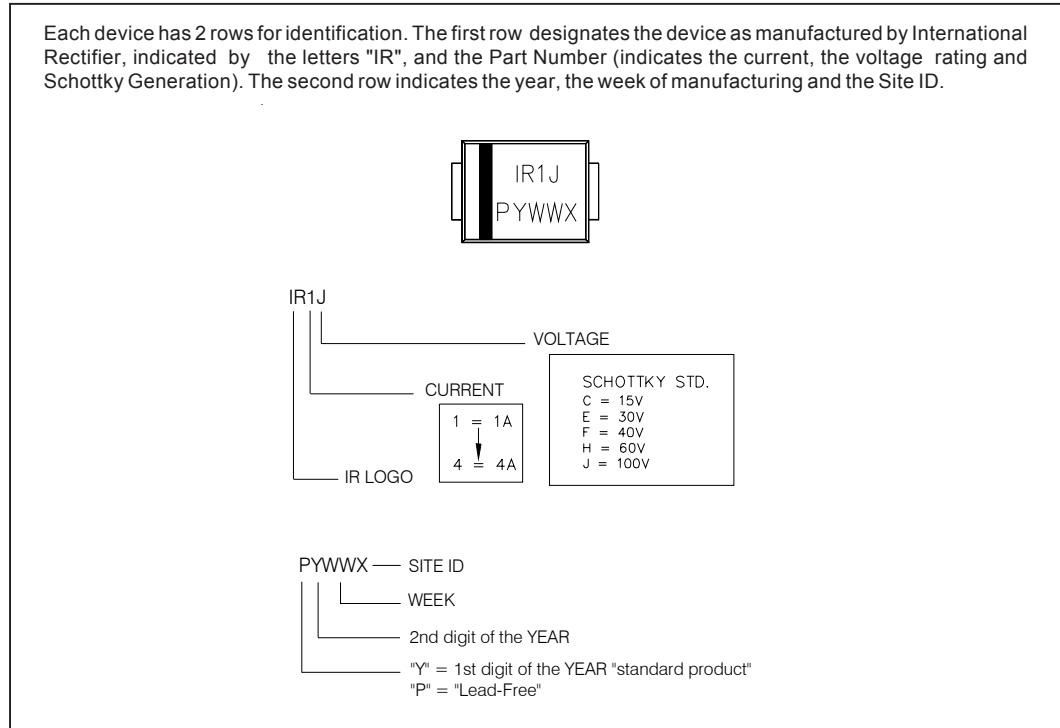
(2) Formula used:  $T_c = T_j - (P_d + P_{d_{REV}}) \times R_{thJC}$ ;  
 $P_d = \text{Forward Power Loss} = I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$  (see Fig. 6);  
 $P_{d_{REV}} = \text{Inverse Power Loss} = V_{R1} \times I_R (1 - D)$ ;  $I_R @ V_{R1} = 80\% \text{ rated } V_R$

Outline Table

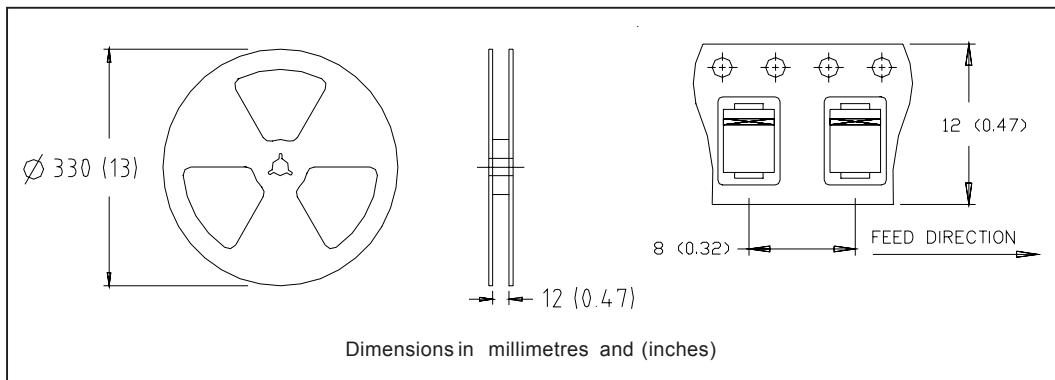


Marking & Identification

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



### Tape & Reel Information



### Ordering Information Table

Device Code						
10	M	Q	100	N	TR	PbF
1	2	3	4	5	6	7
<b>1</b> - Current Rating						
<b>2</b> - M = SMA						
<b>3</b> - Q = Schottky Q Series						
<b>4</b> - Voltage Rating (100 = 100V)						
<b>5</b> - N = New SMA						
<b>6</b> - • none = Box (1000 pieces) • TR = Tape & Reel (7500 pieces)						
<b>7</b> - • none = Standard Production • PbF = Lead-Free						

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

International  
**IR** Rectifier

**IR WORLD HEADQUARTERS:** 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105  
TAC Fax: (310) 252-7309  
06/04



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