Bulletin PD-20520 rev. M 07/04

International
IOR Rectifier

10MQ100N

SCHOTTKY RECTIFIER

2.1 Amp

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

Major Ratings and Characteristics

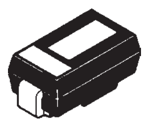
Characteristics	10MQ100N	Units
I_F DC	2.1	A
V_{RRM}	100	V
I_{FSM} @ tp = 5 μs sine	120	A
V_F @ 1.5Apk, T_J=125°C	0.68	V
T_J range	- 55 to 150	°C

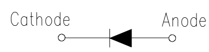
Description/ Features

The 10MQ100N 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

Case Styles
10MQ100N





SMA

Voltage Ratings

	Part number	10MQ100N
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 °C, rectangular wave form. On PC board 9mm[2] island (.013mm thick copper pad area)	
I_{FSM}	Max. Peak One Cycle Non-Repetitive	120	A	5μs Sine or 3μs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
	Surge Current * See Fig. 6, T_J = 25°C	30		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy	1.0	mJ	T_J = 25 °C, I_{AS} = 0.5A, L = 8mH	
I_{AR}	Repetitive Avalanche Current	0.5	A		

Electrical Specifications

	Parameters	10MQ	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (1)	0.78	V	@ 1A	T_J = 25 °C
	* See Fig. 1	0.85	V	@ 1.5A	
		0.63	V	@ 1A	T_J = 125 °C
		0.68	V	@ 1.5A	
I_{RM}	Max. Reverse Leakage Current (1)	0.1	mA	T_J = 25 °C	V_R = rated V_R
	* See Fig. 2	1	mA	T_J = 125 °C	
$V_{F(TO)}$	Threshold Voltage	0.52	V	T_J = T_J max.	
r_t	Forward Slope Resistance	78.4	mΩ		
C_T	Typical Junction Capacitance	38	pF	V_R = 10V_{DC}, T_J = 25°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		

(*) $\frac{dPtot}{dTj} < \frac{1}{Rth(j\text{-}a)}$ thermal runaway condition for a diode on its own heatsink

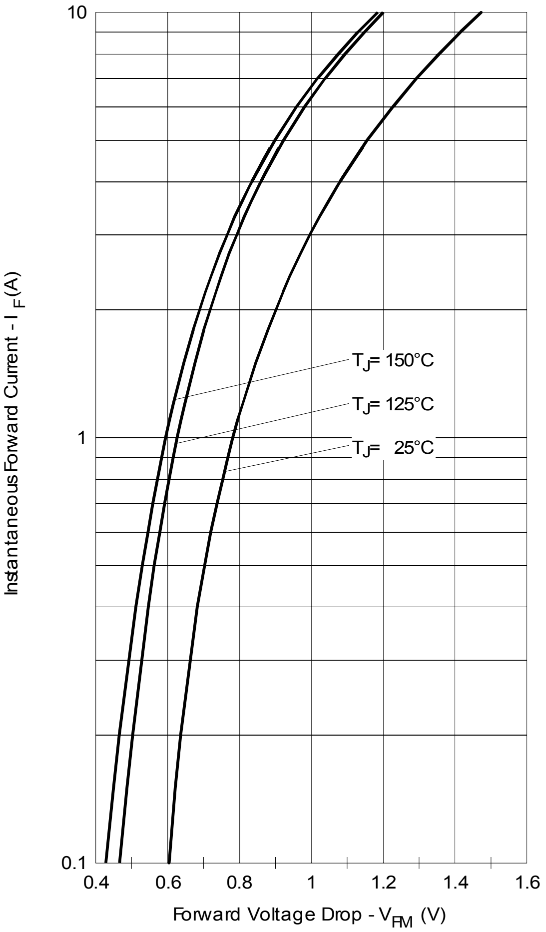


Fig. 1 - Maximum Forward Voltage Drop Characteristics

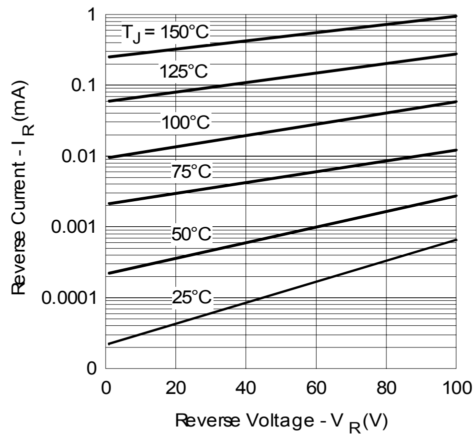


Fig. 2 - Typical Peak Reverse Current
Vs. Reverse Voltage

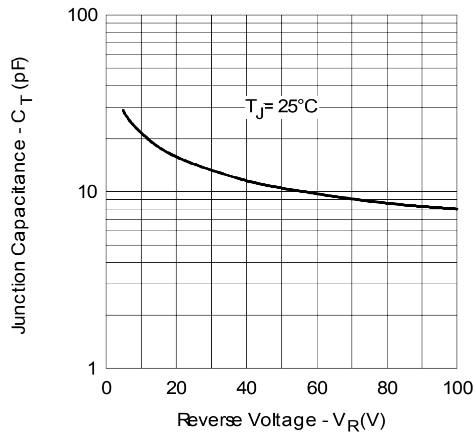


Fig. 3 - Typical Junction Capacitance
Vs. Reverse Voltage

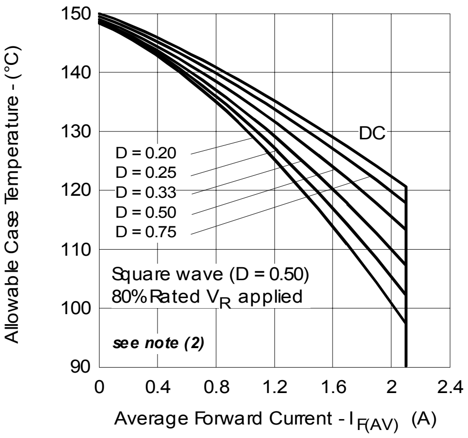


Fig. 4 - Maximum Average Forward Current Vs. Allowable Lead Temperature

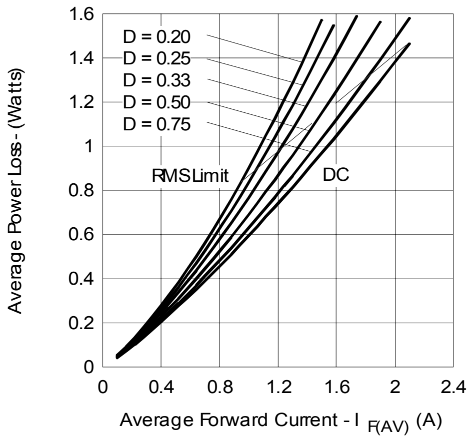


Fig. 5 - Maximum Average Forward Dissipation Vs. Average Forward Current

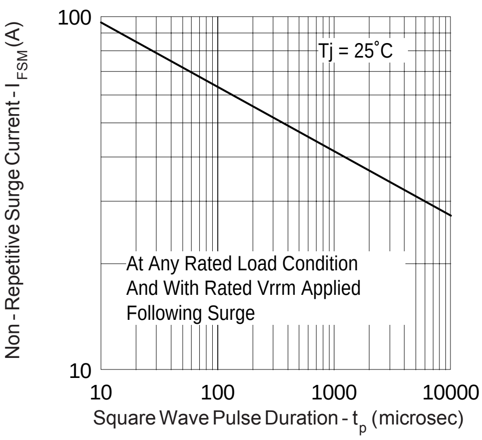
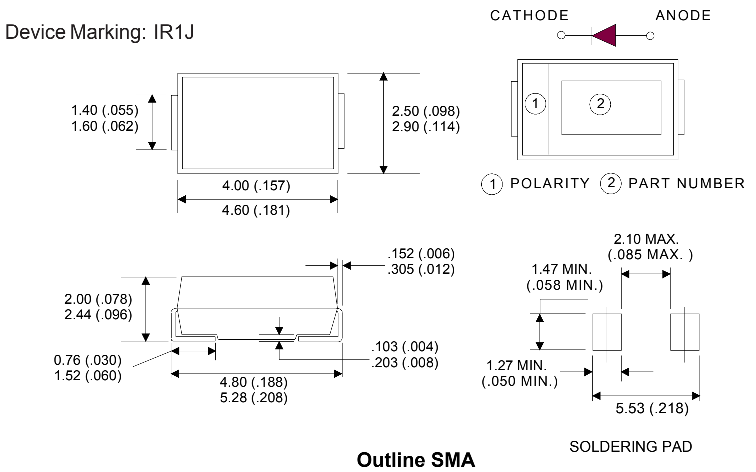


Fig. 6 - Maximum Peak Surge Forward Current Vs. Pulse Duration

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

Outline Table



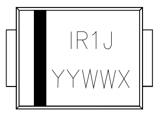
Outline SMA

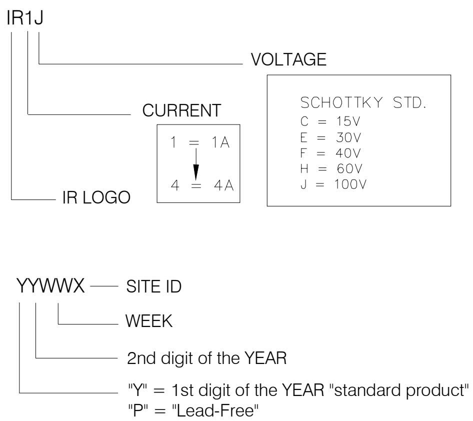
Dimensions in millimeters and (inches)

For recommended footprint and soldering techniques refer to application note #AN-994

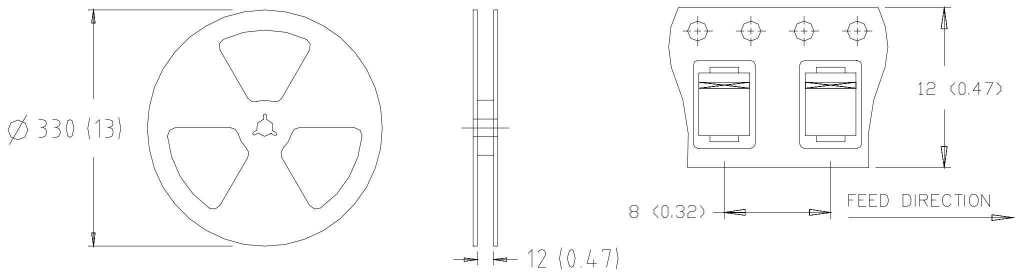
Marking & Identification

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



Dimensions in millimetres and (inches)

Ordering Information Table

Device Code

10	M	Q	100	N	TR	-
1	2	3	4	5	6	7

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

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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