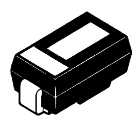
International
IOR Rectifier

10MQ060N

SCHOTTKY RECTIFIER

2.1 Amp



SMA

Major Ratings and Characteristics

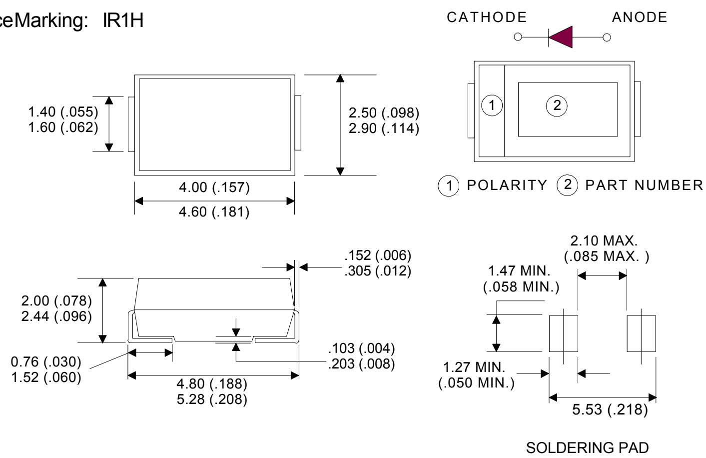
Characteristics	10MQ060N	Units
I_F DC	2.1	A
V_{RRM}	60	V
I_{FSM} @ tp = 5 μs sine	40	A
V_F @1.5Apk, T_J=125°C	0.63	V
T_J range	- 55 to 150	°C

Description/Features

The 10MQ060N 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

Device Marking: IR1H



Outline SMA Similar to D-64

Dimensions in millimeters and (inches)

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

Voltage Ratings

	Part number	10MQ060N
V_R	Max. DC Reverse Voltage (V)	60
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 = 120 °C, rectangular waveform. On PC board 9mm^2 island (.013mm thick copper pad area)	
I_{FSM}	Max. Peak One Cycle Non-Repetitive	40	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
	Surge Current * See Fig. 6	10		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy	4.0	mJ	T_J = 25 °C, I_{AS} = 1A, L = 10mH	
I_{AR}	Repetitive Avalanche Current	0.4	A		

Electrical Specifications

	Parameters	10MQ	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (1)	0.63	V	@ 1A	T_J = 25 °C
	* See Fig. 1	0.71	V	@ 1.5A	
		0.57	V	@ 1A	T_J = 125 °C
		0.63	V	@ 1.5A	
I_{RM}	Max. Reverse Leakage Current (1)	0.5	mA	T_J = 25 °C	V_R = rated V_R
	* See Fig. 2	7.5	mA	T_J = 125 °C	
$V_{F(TO)}$	Threshold Voltage	0.45	V	T_J = T_J max.	
r_t	Forward Slope Resistance	86.8	mΩ		
C_T	Typical Junction Capacitance	31	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	10000	V/µs	(Rated V_R)	

(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	IR1H		

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

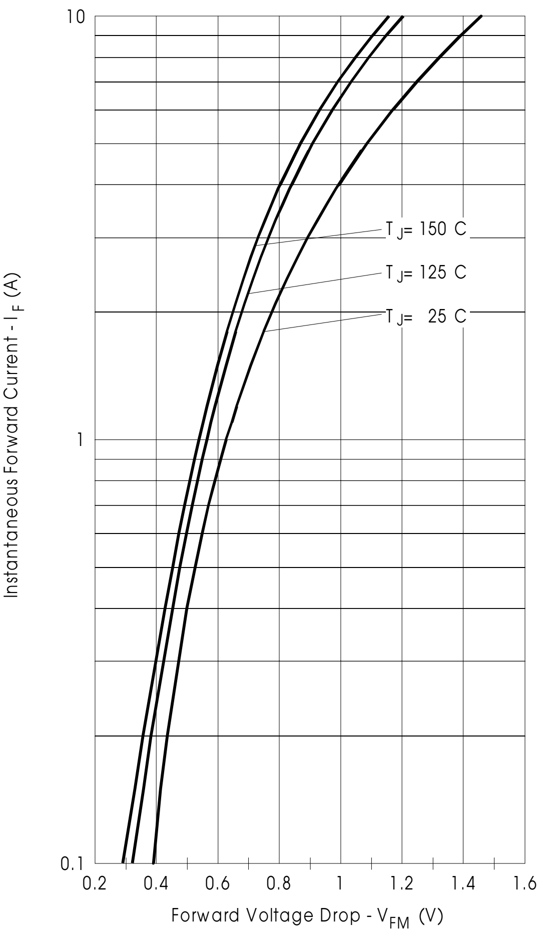


Fig. 1 - Maximum Forward Voltage Drop Characteristics

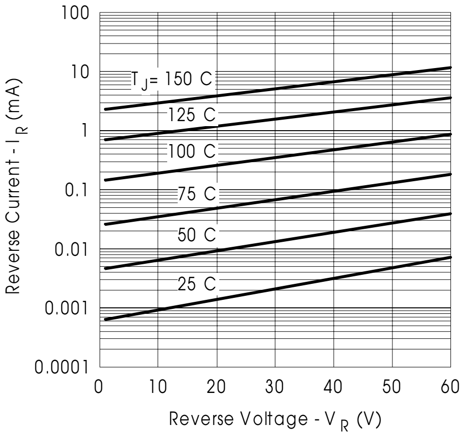


Fig. 2 - Typical Peak Reverse Current Vs. Reverse Voltage

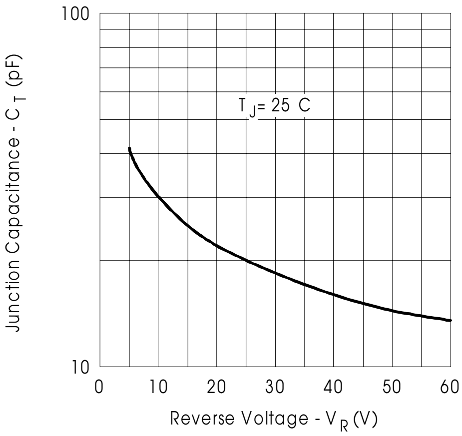


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

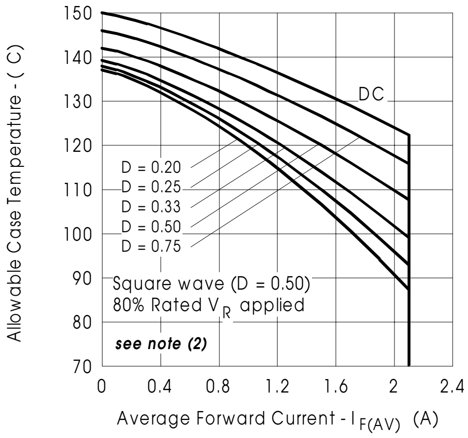


Fig. 4 - Maximum Average Forward Current Vs. Allowable Lead Temperature

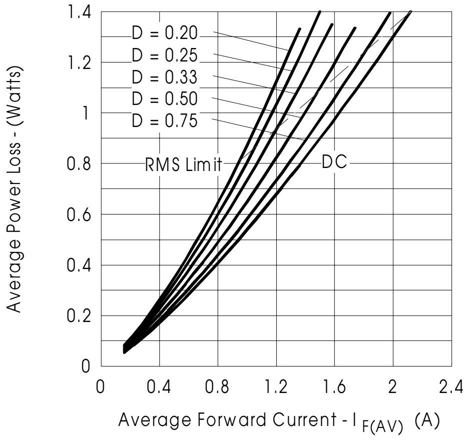


Fig. 5 - Maximum Average Forward Dissipation Vs. Average Forward Current

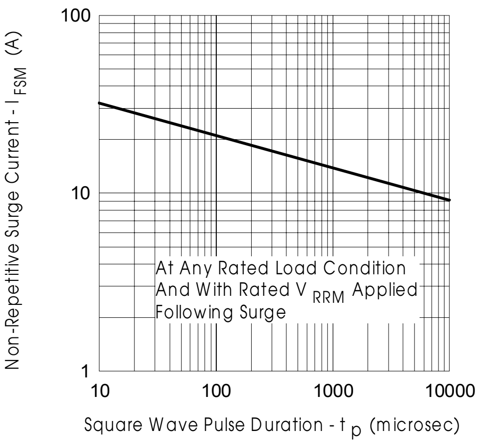


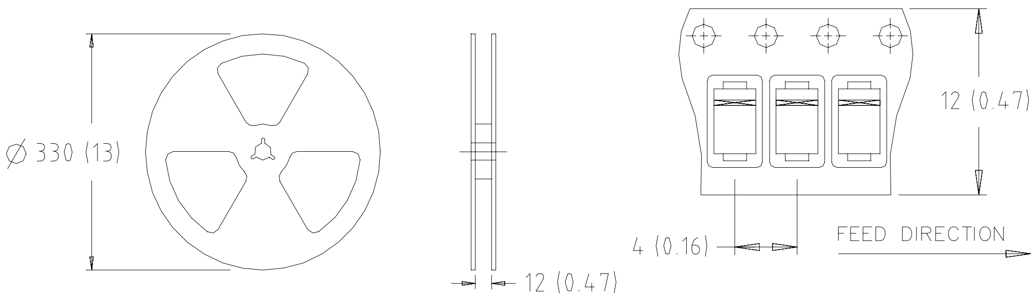
Fig. 6 - Maximum Peak Surge Forward Current Vs. Pulse Duration

(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

Tape & Reel Information

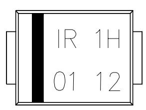


NOTE:
1. OUTLINE CONFORMS TO EIA-481.

Dimensions in millimeters and (inches)

Marking & Identification

Each device has 8 characters, configurated 4 digits on two rows, for identification. The first row designates the device as manufactured by International Rectifier as indicated by the letters "IR", and the Part Number (indicates the current rating and voltage/process). The second row indicates the year and the week of manufacturing.



I R 1H

- Voltage/ Process
- Current Rating (1A)
- IR logo

C	=	15 V
E	=	30 V
F	=	40 V
H	=	60 V
J	=	100 V

YY WW (Date Code)

- Week
- Year

Ordering Information

10MQ SERIES - TAPE AND REEL

WHEN ORDERING, INDICATE THE PART NUMBER AND THE QUANTITY (IN MULTIPLES OF 7500 PIECES).

EXAMPLE: 10MQ060TR - 15000 PIECES

10MQ SERIES - BULK QUANTITIES

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

EXAMPLE: 10MQ060 - 2000 PIECES

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

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7309
Visit us at www.irf.com for sales contact information. 02/02