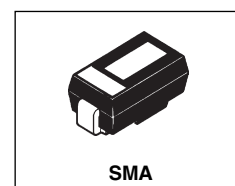


**SCHOTTKY RECTIFIER**

**10MQ060N**

**2.1 Amp**



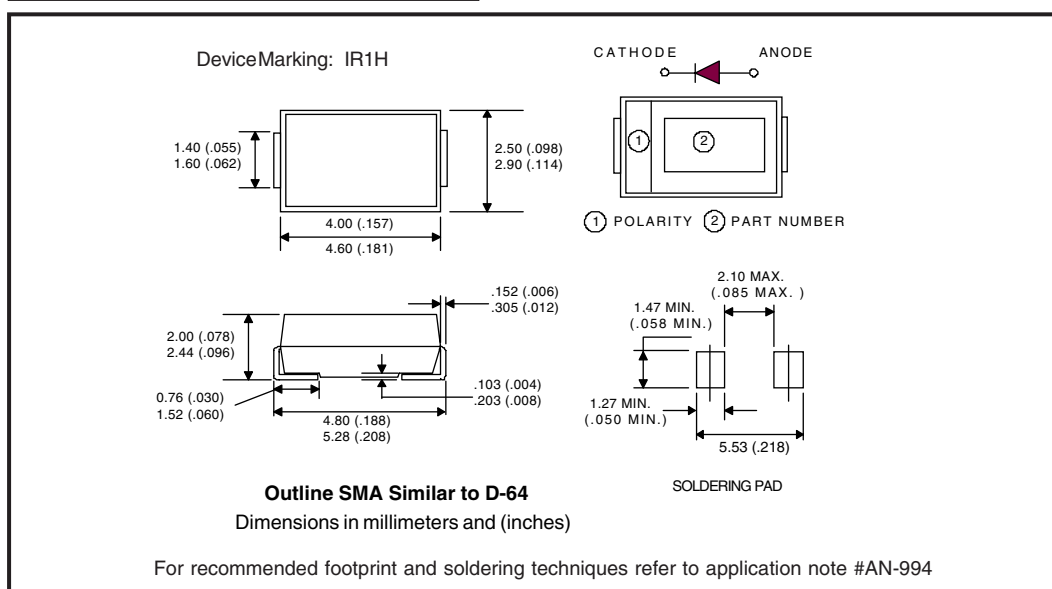
**Major Ratings and Characteristics**

| Characteristics                   | 10MQ060N   | Units      |
|-----------------------------------|------------|------------|
| $I_F$ DC                          | 2.1        | A          |
| $V_{RRM}$                         | 60         | V          |
| $I_{FSM}$ @ $t_p=5\mu s$ sine     | 40         | A          |
| $V_F$ @ 1.5Apk, $T_J=125^\circ C$ | 0.63       | V          |
| $T_J$ range                       | -40 to 150 | $^\circ C$ |

**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



## 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<br>* See Fig. 4                | 1.5  | A     | 50% duty cycle @ $T_C = 120^\circ\text{C}$ , rectangular wave form<br>On PC board 9mm <sup>2</sup> island (.013mm thick copper pad area) |
| $I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 6 | 40   | A     | 5 $\mu$ s Sine or 3 $\mu$ s Rect. pulse                                                                                                  |
|                                                                         | 10   |       | 10ms Sine or 6ms Rect. pulse                                                                                                             |

Following any rated load condition and with rated  $V_{RWM}$  applied

## Electrical Specifications

| Parameters                                                | 10MQ | Units      | Conditions                                                       |
|-----------------------------------------------------------|------|------------|------------------------------------------------------------------|
| $V_{FM}$ Max. Forward Voltage Drop (1)<br>* See Fig. 1    | 0.63 | V          | @ 1A                                                             |
|                                                           | 0.71 | V          | @ 1.5A                                                           |
|                                                           | 0.57 | V          | @ 1A                                                             |
|                                                           | 0.63 | V          | @ 1.5A                                                           |
| $I_{RM}$ Max. Reverse Leakage Current (1)<br>* See Fig. 2 | 0.5  | mA         | $T_J = 25^\circ\text{C}$                                         |
|                                                           | 7.5  | mA         | $T_J = 125^\circ\text{C}$                                        |
| $V_{F(TO)}$ Threshold Voltage                             | 0.45 | V          | $T_J = T_J \text{ max.}$                                         |
| $r_t$ Forward Slope Resistance                            | 86.8 | m $\Omega$ |                                                                  |
| $C_T$ Typical Junction Capacitance                        | 31   | 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                      |

(1) Pulse Width < 300 $\mu$ s, Duty Cycle < 2%

## Thermal-Mechanical Specifications

| Parameters                                             | 10MQ        | Units              | Conditions   |
|--------------------------------------------------------|-------------|--------------------|--------------|
| $T_J$ Max. Junction Temperature Range                  | -40 to 150  | $^\circ\text{C}$   |              |
| $T_{stg}$ Max. Storage Temperature Range               | -40 to 150  | $^\circ\text{C}$   |              |
| $R_{thJA}$ Max. Thermal Resistance Junction to Ambient | 160         | $^\circ\text{C/W}$ | DC operation |
| wt Approximate Weight                                  | 0.07(0.026) | g(oz.)             |              |
| Case Style                                             | SMA         |                    | Similar D-64 |
| Device Marking                                         | IR1H        |                    |              |

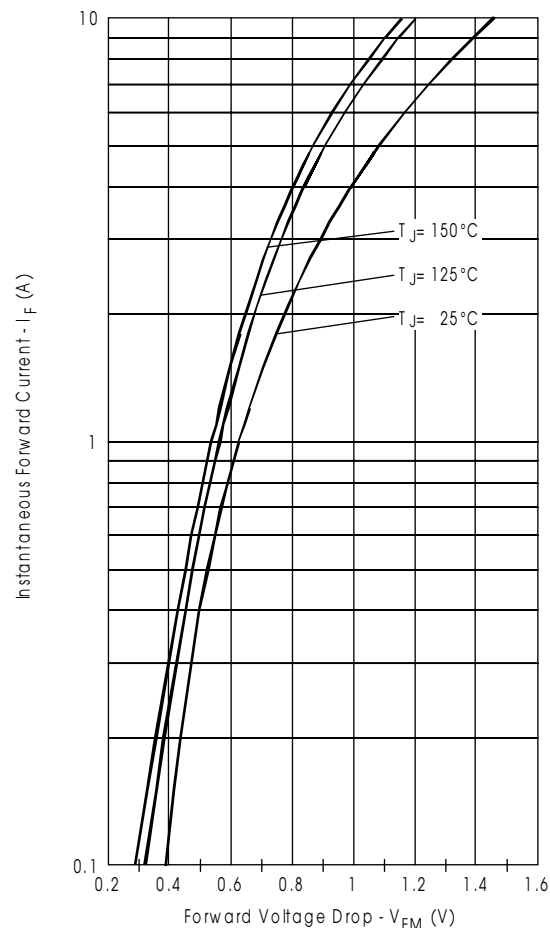


Fig. 1 -Maximum Forward Voltage Drop Characteristics

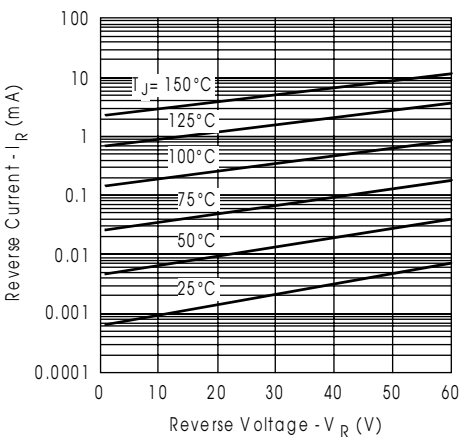


Fig. 2 -Typical Peak Reverse Current Vs. Reverse Voltage

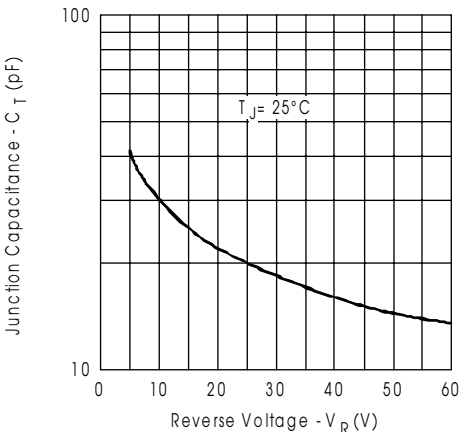


Fig. 3 -Typical Junction Capacitance Vs. Reverse Voltage

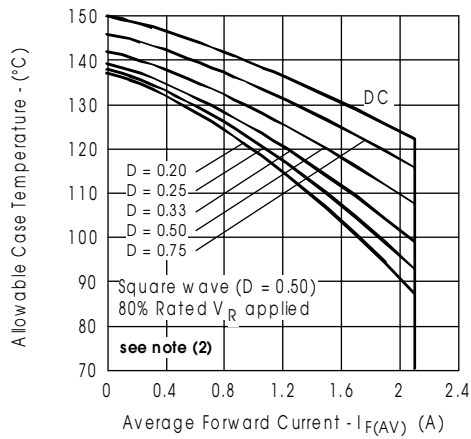


Fig. 4 - Maximum Average Forward Current  
Vs. Allowable Lead Temperature

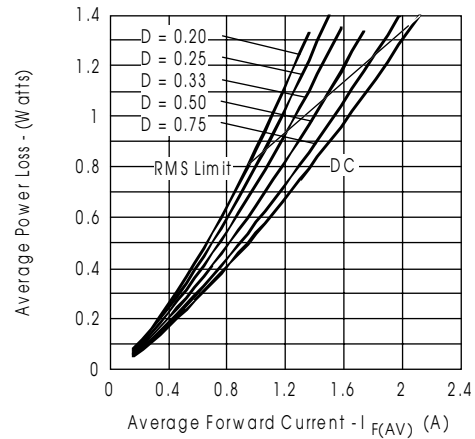


Fig. 5 - Maximum Average Forward Dissipation  
Vs. Average Forward Current

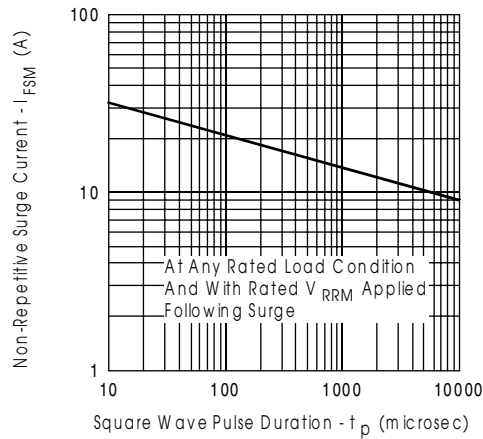


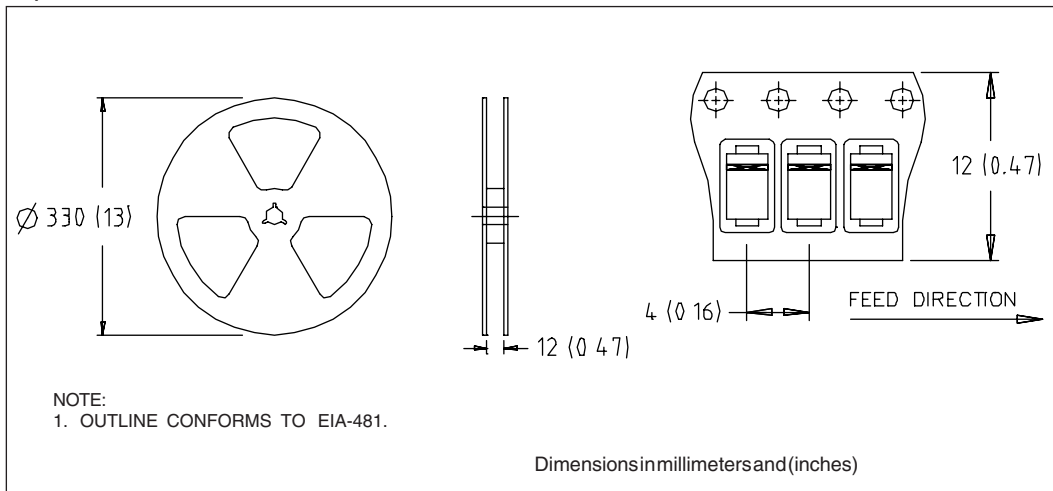
Fig. 6 - Maximum Peak Surge Forward Current Vs. Pulse Duration

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

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

$P_{d_{REV}}$  = Inverse Power Loss =  $V_{R1} \times I_R (1 - D)$ ;  $I_R @ V_{R1} = 80\%$  rated  $V_R$

## Tape & Reel Information



## Marking & Identification

Each device has 4 characters, configured two digits on two rows, for identification. The first row designates the device as manufactured by International Rectifier as indicated by the letters "IR". The second row indicates the current rating and voltage/process. See the drawing below for marking code.

### FIRST ROW

IR

### SECOND ROW

1st DIGIT = CURRENT RATING

2nd DIGIT = VOLTAGE/PROCESS

EXAMPLE: IR — INTERNATIONAL RECTIFIER

1H — 60 VOLT

1 — 1 AMP

### 1st DIGIT

CURRENT

1 = 1 AMP

### 2nd DIGIT

VOLTAGE/PROCESS

B = 15 VOLTS/STANDARD

E = 30 VOLTS

F = 40 VOLTS

H = 60 VOLTS

J = 100 VOLTS

## 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

10MQ060N

PD-20519 rev. D 11/99

International  
**IOR** Rectifier

International  
**IOR** Rectifier

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**IR GERMANY:** Saalburgstrasse 157, 61350 Bad Homburg. Tel: ++ 49 6172 96590. Fax: ++ 49 6172 965933.  
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**IR FAR EAST:** K&H Bldg., 2F, 30-4 Nishi-Ikebukuro 3-Chome, Toshima-Ku, Tokyo, Japan 171. Tel: 81 3 3983 0086.  
**IR SOUTHEAST ASIA:** 1 Kim Seng Promenade, Great World City West Tower, 13-11, Singapore 237994. Tel: ++ 65 838 4630.  
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<http://www.irf.com>

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Data and specifications subject to change without notice.