

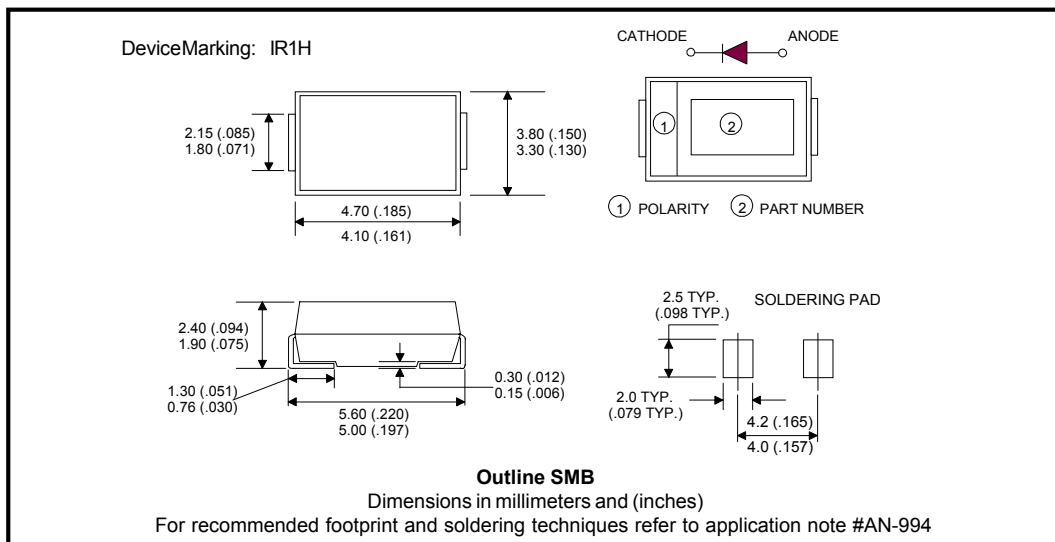
Major Ratings and Characteristics

| Characteristics | 10BQ060 | Units |
|--|------------|------------------|
| $I_{F(AV)}$ Rectangular waveform | 1.0 | A |
| V_{RRM} | 60 | V |
| I_{FSM} @tp=5 μ s sine | 700 | A |
| V_F @1.0Apk, $T_J=125^\circ\text{C}$ | 0.57 | V |
| T_J range | -55 to 150 | $^\circ\text{C}$ |

Description/Features

The 10BQ060 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 | 10BQ060 |
| V_R Max. DC Reverse Voltage (V) | 60 |
| V_{RWM} Max. Working Peak Reverse Voltage (V) | |

Absolute Maximum Ratings

| Parameters | 10BQ | Units | Conditions |
|--|------|-------|--|
| $I_{F(AV)}$ Max. Average Forward Current | 1.0 | A | 50% duty cycle @ $T_L = 103^\circ\text{C}$, rectangular waveform |
| I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current | 700 | A | 5 μs Sine or 3 μs Rect. pulse |
| | 42 | | 10ms Sine or 6ms Rect. pulse |
| E_{AS} Non-Repetitive Avalanche Energy | 4.0 | mJ | $T_J = 25^\circ\text{C}$, $I_{AS} = 1.0\text{A}$, $L = 10\text{mH}$ |
| I_{AR} Repetitive Avalanche Current | 0.4 | A | Current decaying linearly to zero in 1 μsec Frequency limited by T_J max. $V_a = 1.5 \times V_r$ typical |

Electrical Specifications

| Parameters | 10BQ | Units | Conditions |
|---|-------|------------------|---|
| V_{FM} Max. Forward Voltage Drop (1) * See Fig. 1 | 0.6 | V | @ 1A |
| | 0.76 | V | @ 2A |
| | 0.57 | V | @ 1A |
| | 0.69 | V | @ 2A |
| I_{RM} Max. Reverse Leakage Current (1) * See Fig. 2 | 0.1 | mA | $T_J = 25^\circ\text{C}$ |
| | 5.0 | mA | $T_J = 125^\circ\text{C}$ |
| C_T Typical Junction Capacitance | 62 | pF | $V_R = 5V_{DC}$, (test signal range 100kHz to 1MHz) 25°C |
| L_S Typical Series Inductance | 2.0 | nH | Measured lead to lead 5mm from package body |
| dv/dt Max. Voltage Rate of Charge (Rated V_R) | 10000 | V/ μs | |

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

Thermal-Mechanical Specifications

| Parameters | 10BQ | Units | Conditions |
|--|-------------|--------------------|------------------|
| T_J Max. Junction Temperature Range (*) | -55 to 150 | $^\circ\text{C}$ | |
| T_{stg} Max. Storage Temperature Range | -55 to 150 | $^\circ\text{C}$ | |
| R_{thJL} Max. Thermal Resistance Junction to Lead (**) | 36 | $^\circ\text{C/W}$ | DC operation |
| R_{thJA} Max. Thermal Resistance Junction to Ambient | 80 | $^\circ\text{C/W}$ | |
| wt Approximate Weight | 0.10(0.003) | g(oz.) | |
| Case Style | SMB | | Similar DO-214AA |
| Device Marking | IR1H | | |

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

(**) Mounted 1 inch square PCB

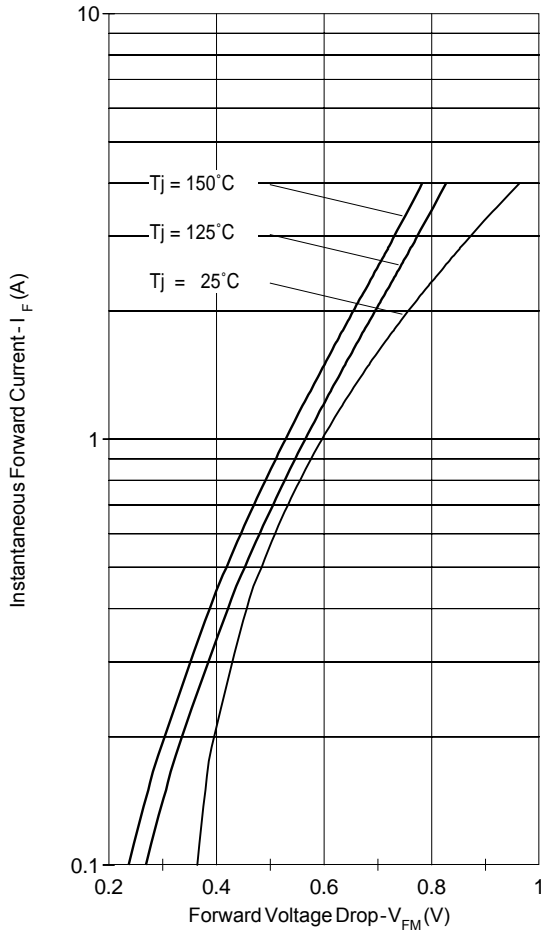


Fig. 1 - Maximum Forward Voltage Drop Characteristics

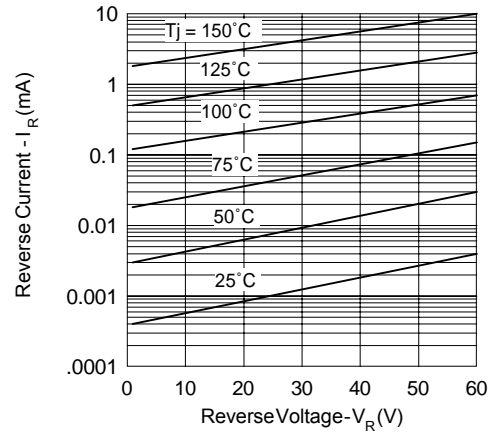


Fig. 2 - Typical Peak Reverse Current Vs. Reverse Voltage

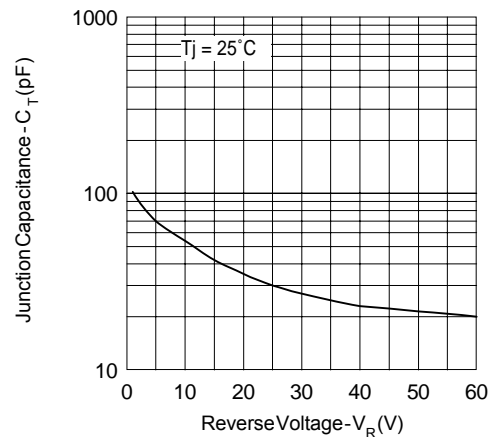


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

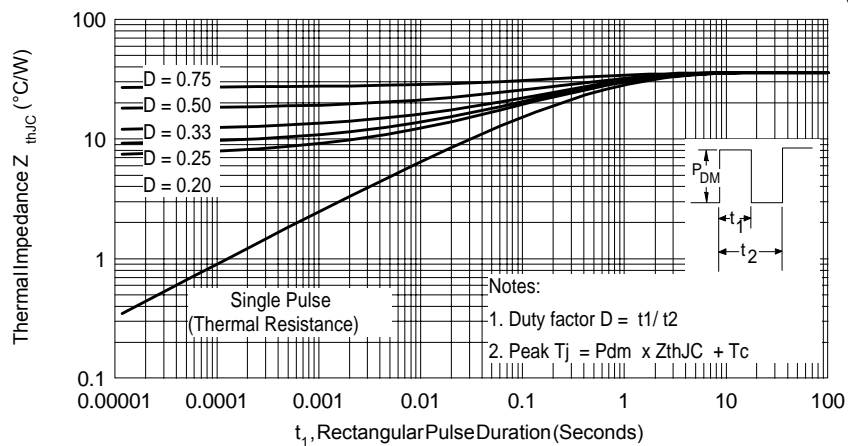


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

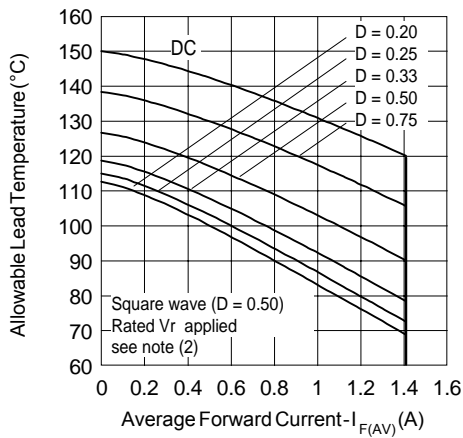


Fig. 4- Maximum Average Forward Current Vs. Allowable Lead Temperature

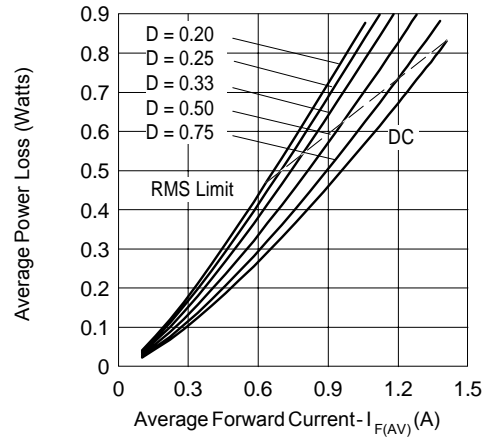


Fig. 5- Maximum Average Forward Dissipation Vs. Average Forward Current

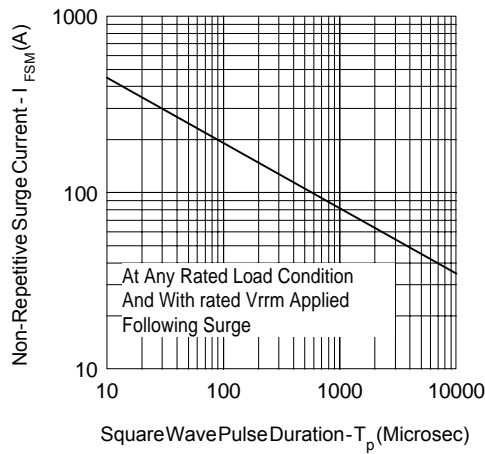


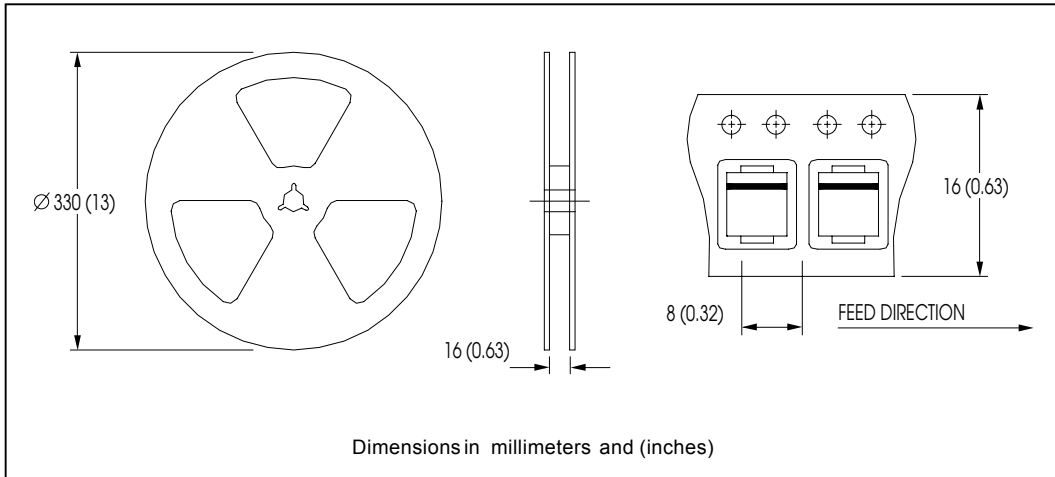
Fig. 6- Maximum Peak Surge Forward Current Vs. Pulse Duration

(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);

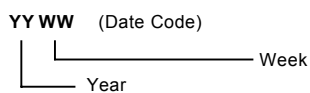
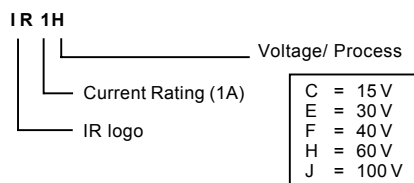
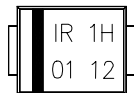
Pd_{REV} = Inverse Power Loss = $V_{R1} \times I_{R1} (1 - D)$; $I_{R1} @ V_{R1} = 80\%$ rated V_R

Tape & Reel Information



Marking & Identification

Each device has 8 characters, configured 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.



Ordering Information

10BQ SERIES - TAPE AND REEL

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

EXAMPLE: 10BQ060TR-6000PIECES

10BQ SERIES - BULK QUANTITIES

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

EXAMPLE: 10BQ060 - 2000PIECES

10BQ060

Bulletin PD-2.438 rev. D 02/02

International
IOR Rectifier

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