

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

$$V_R = 100\text{V}$$

Major Ratings and Characteristics

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

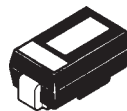
Description/ Features

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



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 PC board 9mm ² 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 | 5 μs Sine or 3 μs 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 | @ 1A |
| | 0.85 | V | @ 1.5A |
| | 0.63 | V | @ 1A |
| | 0.68 | V | @ 1.5A |
| I_{RM} Max. Reverse Leakage Current (1) * See Fig. 2 | 0.1 | mA | $T_J = 25^\circ\text{C}$ |
| | 1 | mA | $T_J = 125^\circ\text{C}$ |
| $V_{F(TO)}$ Threshold Voltage | 0.52 | V | $T_J = T_J \text{ max.}$ |
| r_t Forward Slope Resistance | 78.4 | m Ω | |
| C_T Typical Junction Capacitance | 38 | pF | $V_R = 10\text{V}_{DC}$, $T_J = 25^\circ\text{C}$, 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 < 300 μs , Duty Cycle < 2%

Thermal-Mechanical Specifications

| Parameters | 10MQ | 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_{thJA} Max. Thermal Resistance Junction to Ambient | 80 | $^\circ\text{C}/\text{W}$ | 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

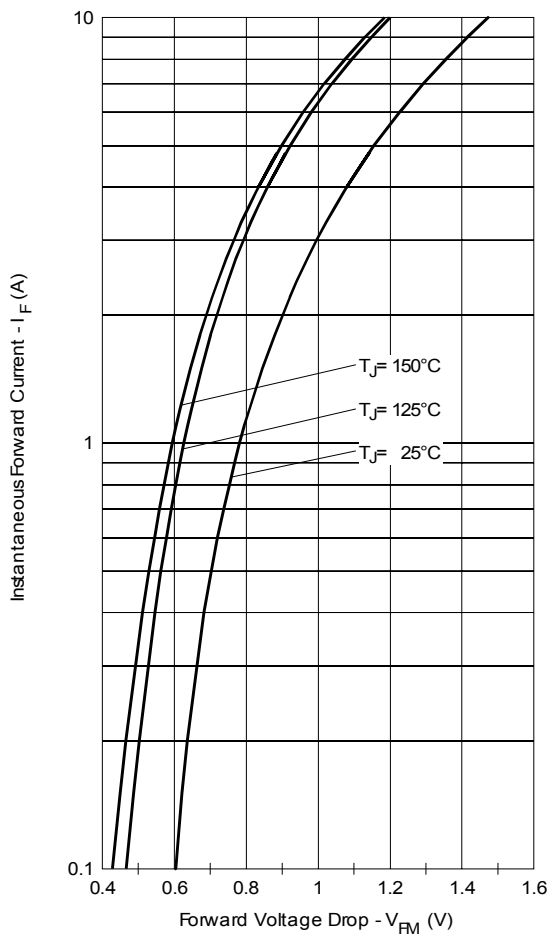


Fig. 1 - Maximum Forward Voltage Drop Characteristics

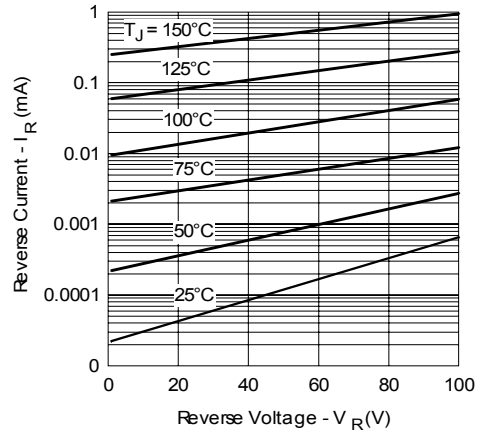


Fig. 2 - Typical Peak Reverse Current Vs. Reverse Voltage

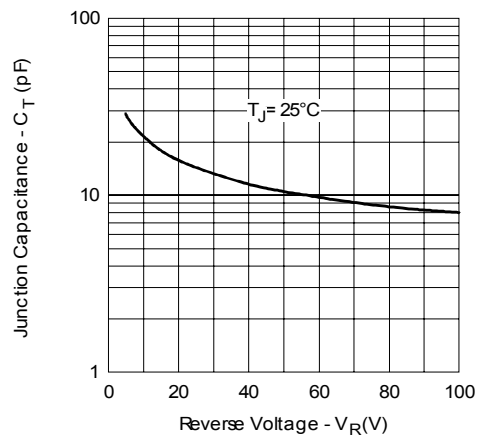


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

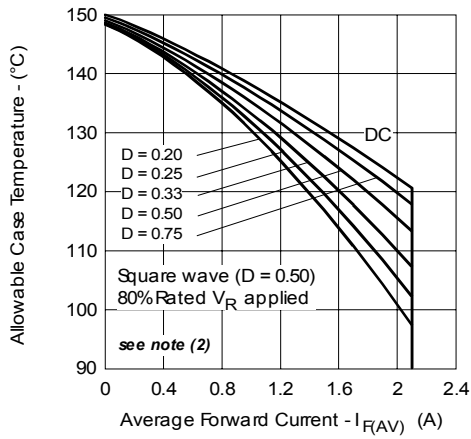


Fig. 4 - Maximum Average Forward Current Vs. Allowable Lead Temperature

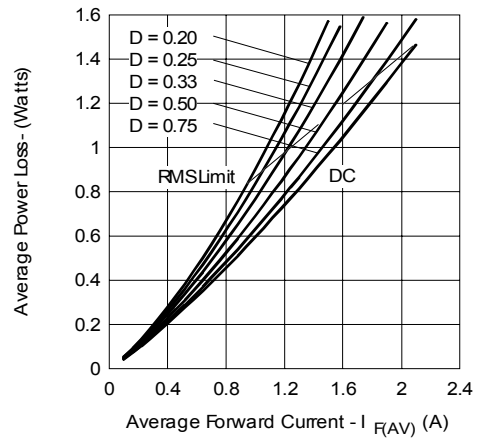


Fig. 5 - Maximum Average Forward Dissipation Vs. Average Forward Current

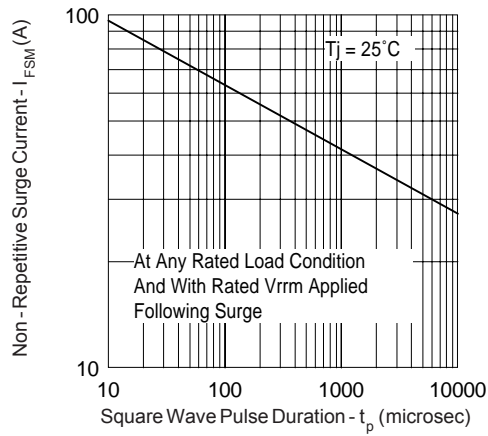
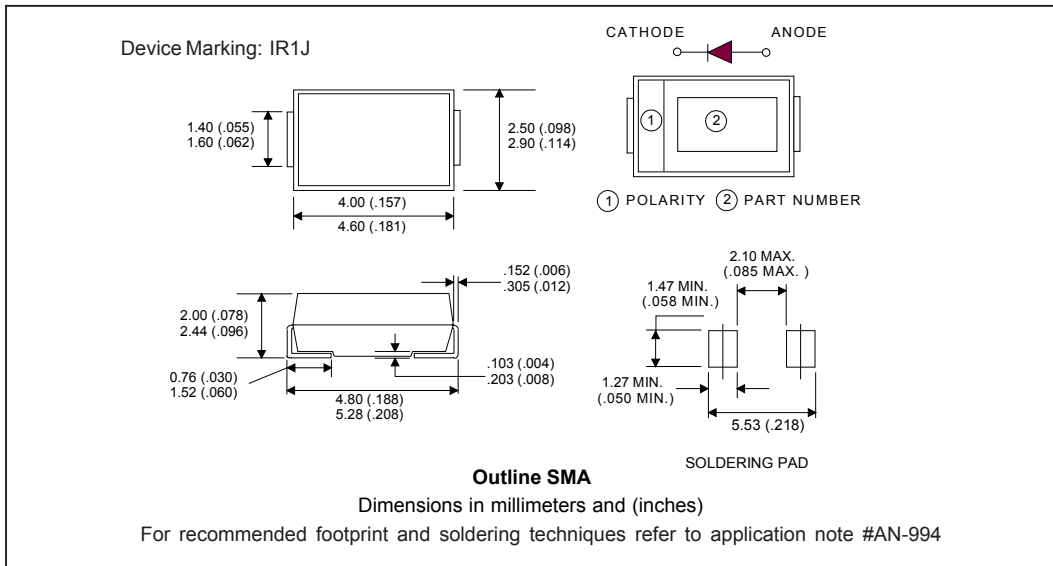


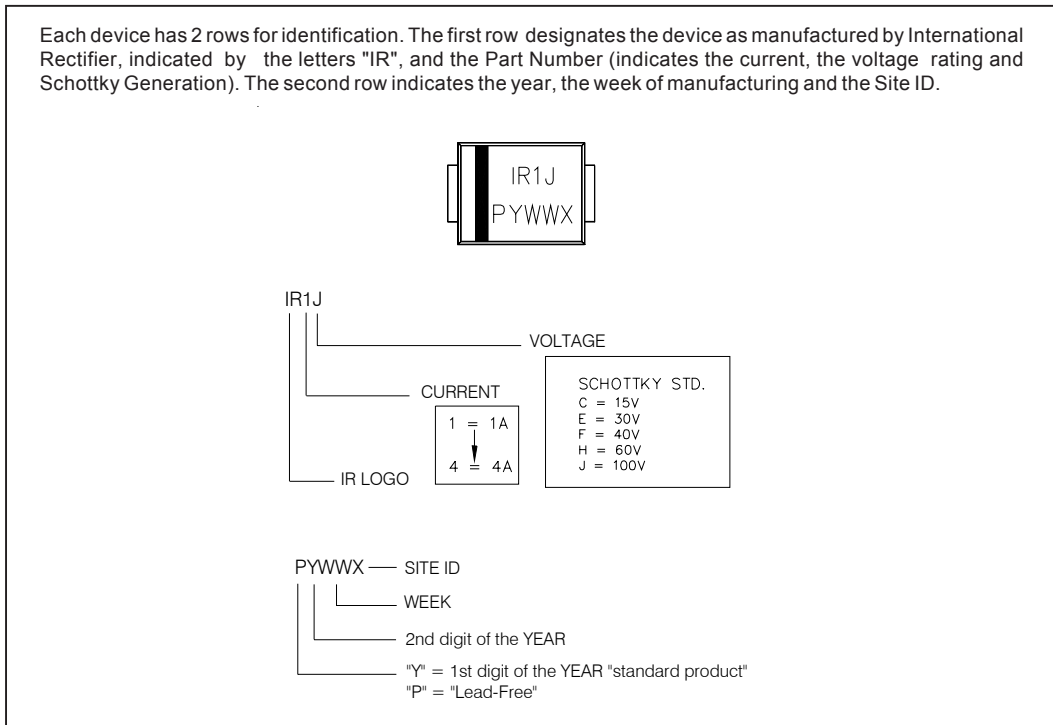
Fig. 6 - Maximum Peak Surge Forward Current Vs. Pulse Duration

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

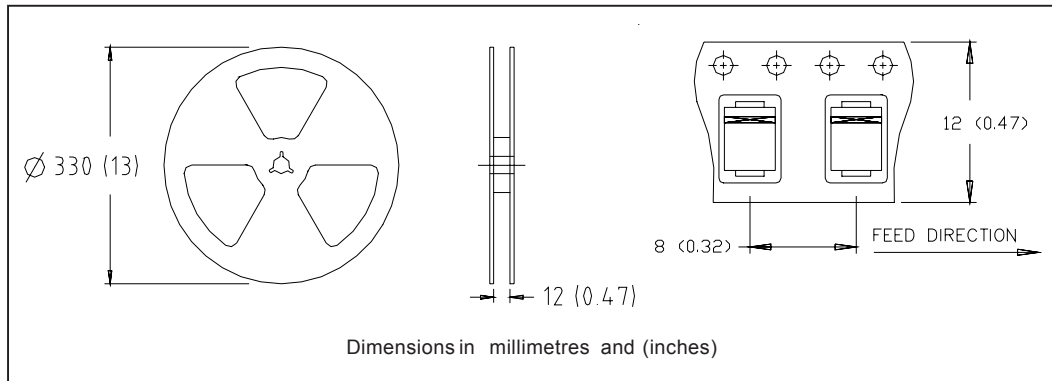
Outline Table



Marking & Identification



Tape & Reel Information



Ordering Information Table

| Device Code | | | | | | |
|-------------|--|----------|------------|----------|-----------|------------|
| 10 | M | Q | 100 | N | TR | PbF |
| 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 and Lead-Free.
 Qualification Standards can be found on IR's Web site.