

International
IOR Rectifier

SCHOTTKY RECTIFIER

15MQ040NPbF

3 Amp

$$I_{F(AV)} = 3\text{Amp}$$

$$V_R = 40\text{V}$$

Major Ratings and Characteristics

Characteristics	Value	Units
I_F DC	3	A
V_{RRM}	40	V
I_{FSM} @ $t_p = 5\mu\text{s}$ sine	330	A
V_F @ 2A , $T_J = 125^\circ\text{C}$	0.43	V
T_J range	-40 to 150	$^\circ\text{C}$

Description/ Features

The 15MQ040NPbF Schottky rectifier is designed to be used for low-power applications where a reverse voltage of 40 volts is encountered and surface mountable is required.

Applications

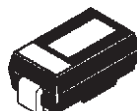
- Switching power supplies
- Meter protection
- Reverse protection for power input to PC board circuits
- Battery isolation and charging
- Low threshold voltage diode
- Free-wheeling or by-pass diode
- Low voltage clamp

Features

- Surface mountable
- Extremely low forward voltage
- Improved reverse blocking voltage capability relative to other similar size Schottky
- Compact size
- Lead-Free ("PbF" suffix)

Case Styles

15MQ040NPbF



SMA



Voltage Ratings

Part number	15MQ040NPbF
V_R Max. DC Reverse Voltage (V)	40
V_{RWM} Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

Parameters	15MQ	Units	Conditions		
I _{F(AV)} Max. Average Forward Current * See Fig. 4	2.1	A	50% duty cycle @ T _L = 105 °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	330	A	5μs Sine or 3μs Rect. pulse	Following any rated load condition and with rated V _{RRM} applied	
	140		10ms Sine or 6ms Rect. pulse		
E _{AS} Non-Repetitive Avalanche Energy	6.0	mJ	T _J = 25 °C, I _{AS} = 1A, L = 12mH		
I _{AR} Repetitive Avalanche Current	1.0	A			

Electrical Specifications

Parameters		15MQ	Units	Conditions	
V _{FM}	Max. Forward Voltage Drop (1)	0.42	V	@ 1A	T _J = 25 °C
	* See Fig. 1	0.49	V	@ 2A	
		0.34	V	@ 1A	T _J = 125 °C
		0.43	V	@ 2A	
I _{RM}	Max. Reverse Leakage Current (1)	0.5	mA	T _J = 25 °C	V _R = rated V _R
	* See Fig. 2	20	mA	T _J = 125 °C	
V _{F(TO)}	Threshold Voltage	0.26	V	T _J = T _J max.	
r _t	Forward Slope Resistance	64.6	mΩ		
C _T	Typical Junction Capacitance	134	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 < 300 μs , Duty Cycle < 2%

Thermal-Mechanical Specifications

Parameters	15MQ	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	80	$^\circ\text{C/W}$	DC operation
wt Approximate Weight	0.07(0.002)	g (oz.)	
Case Style	SMA		Similar D-64
Device Marking	IR3F		

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

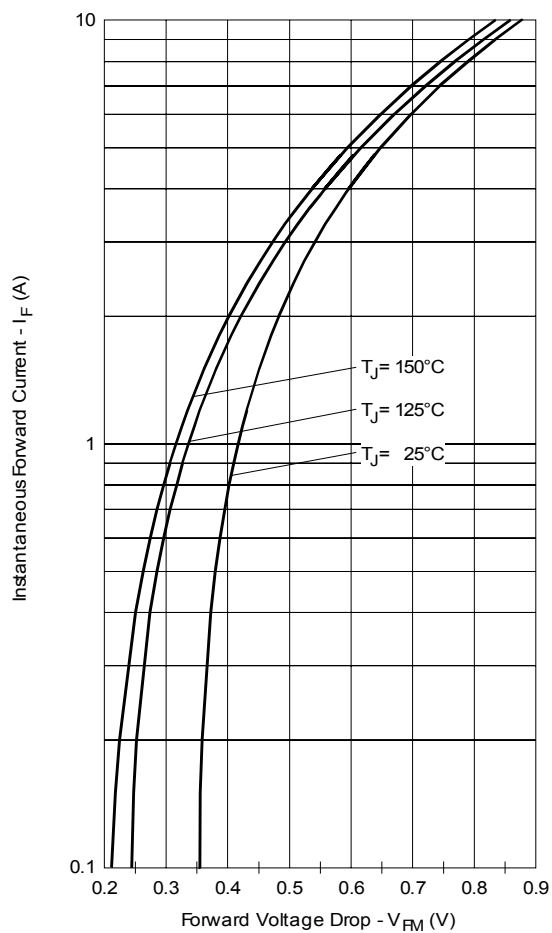


Fig. 1 - Maximum Forward Voltage Drop Characteristics

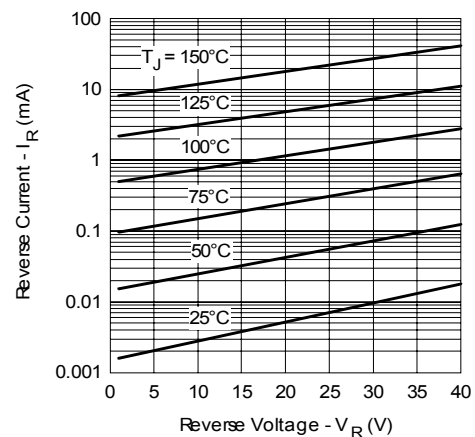


Fig. 2 - Typical Peak Reverse Current Vs. Reverse Voltage

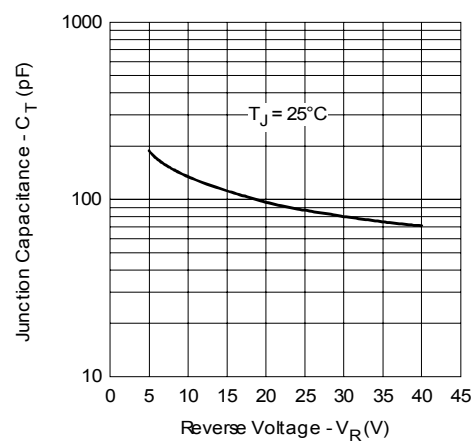


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

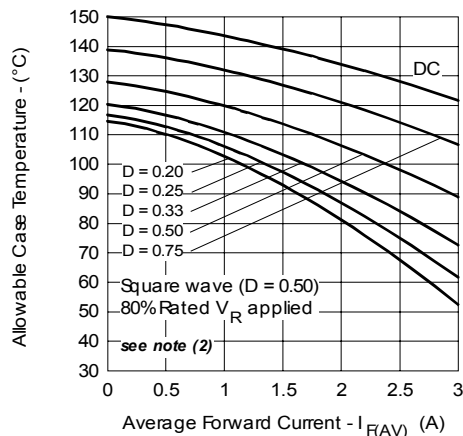


Fig. 4 - Maximum Average Forward Current Vs. Allowable Lead Temperature

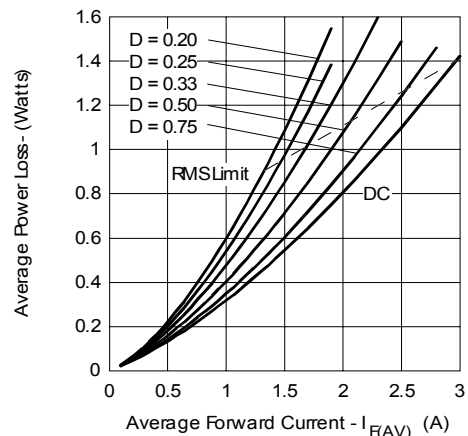


Fig. 5 - Maximum Average Forward Dissipation Vs. Average Forward Current

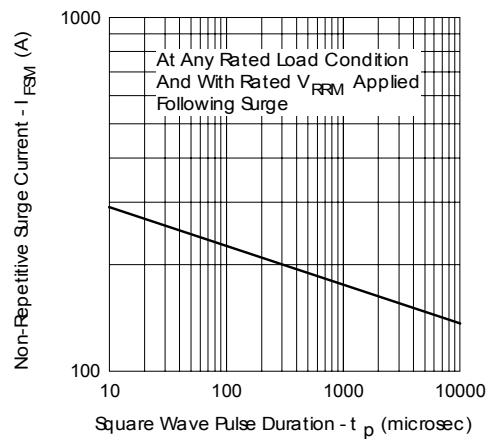


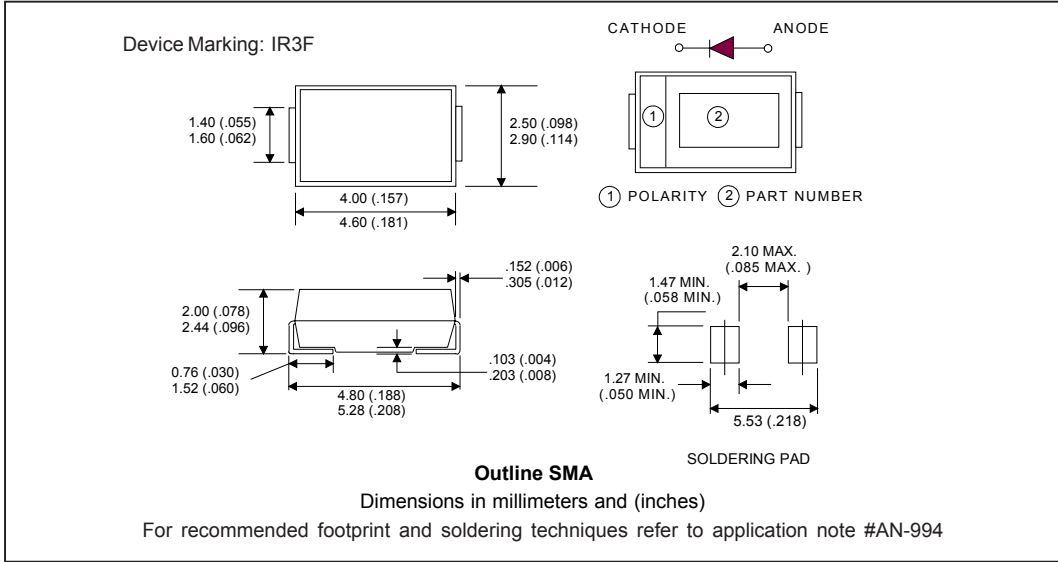
Fig. 6 - Maximum Peak Surge Forward Current Vs. Pulse Duration

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

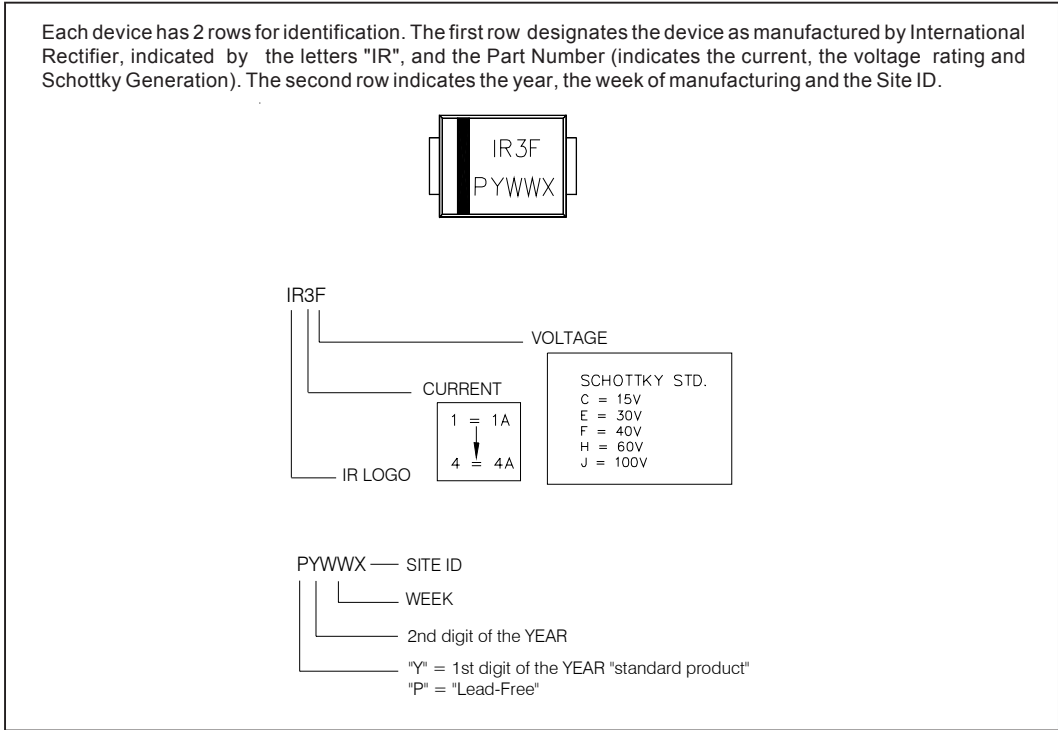
P_d = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);

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

Outline Table



Marking & Identification

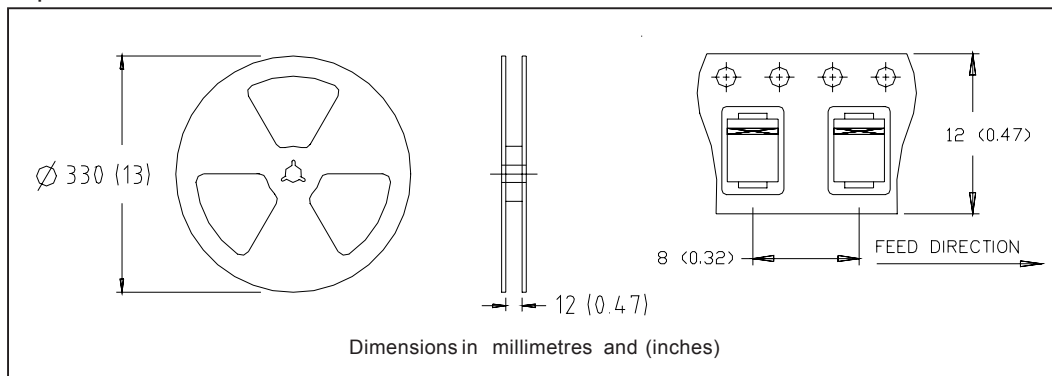


15MQ040NPbF

Bulletin PD-20775 06/04

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Tape & Reel Information



Ordering Information Table

Device Code						
15	M	Q	040	N	TR	PbF
①	②	③	④	⑤	⑥	⑦
1	-	Current Rating				
2	-	M = SMA				
3	-	Q = Schottky Q Series				
4	-	Voltage Rating (040 = 40V)				
5	-	N = New SMA				
6	-	<ul style="list-style-type: none"> • none = Box (1000 pieces) • TR = Tape & Reel (7500 pieces) 				
7	-	<ul style="list-style-type: none"> • 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.

International
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06/04



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