

International
IOR Rectifier

15MQ040N

SCHOTTKY RECTIFIER

3 Amp

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

$$V_R = 40V$$

Major Ratings and Characteristics

Characteristics	15MQ040N	Units
I_F DC	3	A
V_{RRM}	40	V
I_{FSM} @ $t_p = 5 \mu s$ sine	330	A
V_F @ $2A_{pk}$, $T_J = 125^\circ C$	0.43	V
T_J range	-40 to 150	$^\circ C$

Description/ Features

The 15MQ040N 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

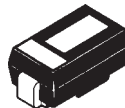
- Switching power supplies
- Meter protection
- Reverse protection for power input to PC board circuits
- Battery isolation and charging
- Low threshold voltage diode
- Free-wheeling or by-pass diode
- Low voltage clamp

Features

- Surface mountable
- Extremely low forward voltage
- Improved reverse blocking voltage capability relative to other similar size Schottky
- Compact size

Case Styles

15MQ040N



SMA



Voltage Ratings

Part number	15MQ040N
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) * See Fig. 1	0.42	V	@ 1A	T _J = 25 °C
		0.49	V	@ 2A	
		0.34	V	@ 1A	T _J = 125 °C
		0.43	V	@ 2A	
I _{RM}	Max. Reverse Leakage Current (1) * See Fig. 2	0.5	mA	T _J = 25 °C	V _R = rated V _R
		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

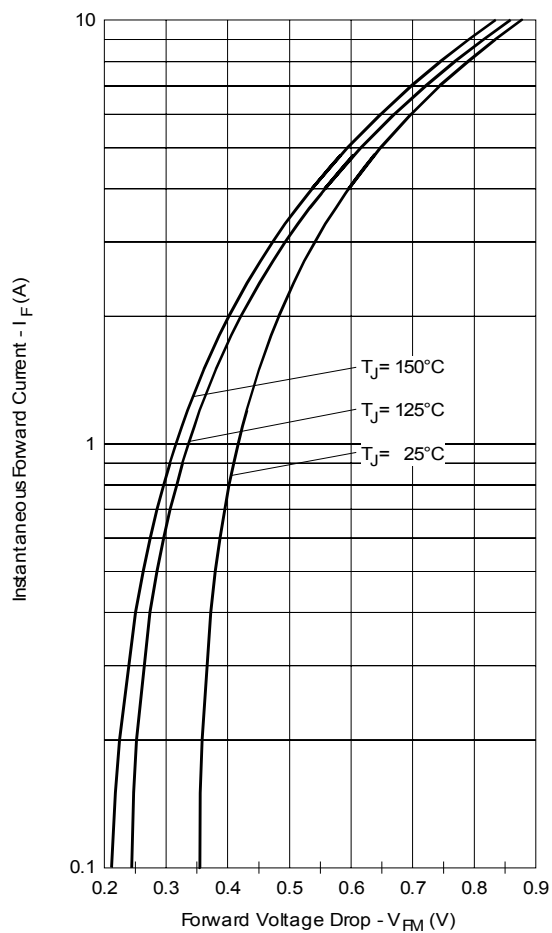


Fig. 1 - Maximum Forward Voltage Drop Characteristics

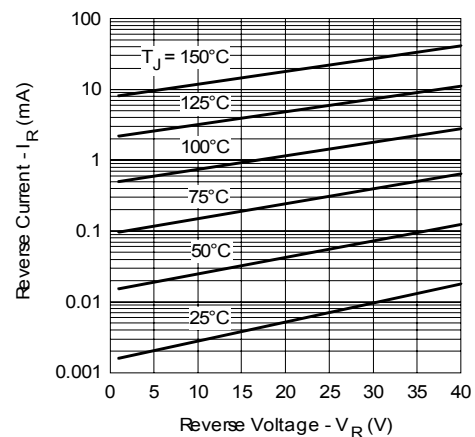


Fig. 2 - Typical Peak Reverse Current Vs. Reverse Voltage

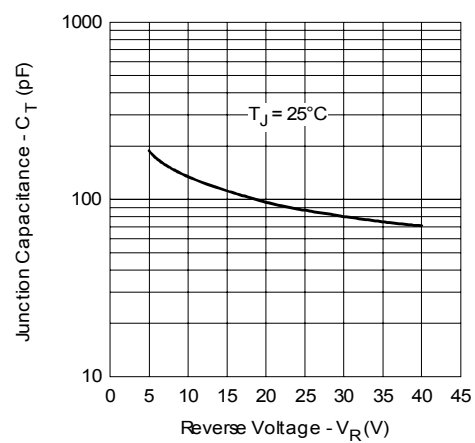


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

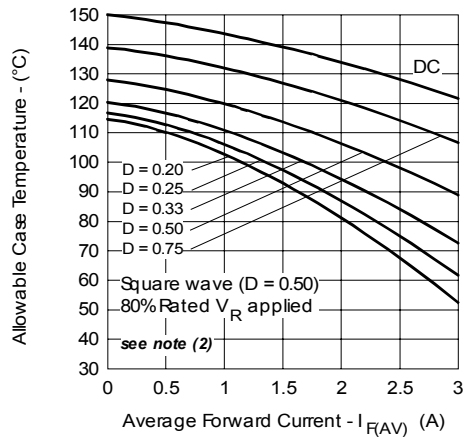


Fig. 4 - Maximum Average Forward Current Vs. Allowable Lead Temperature

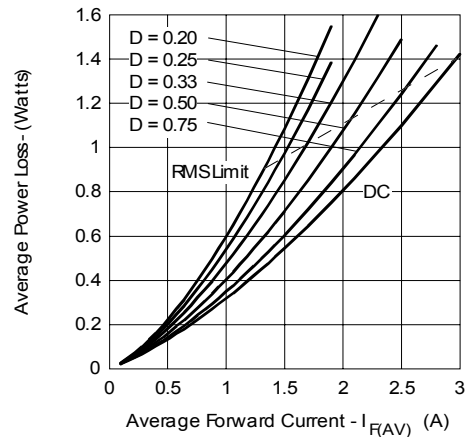


Fig. 5 - Maximum Average Forward Dissipation Vs. Average Forward Current

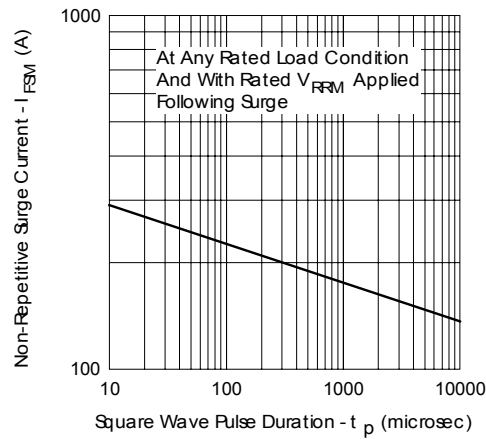


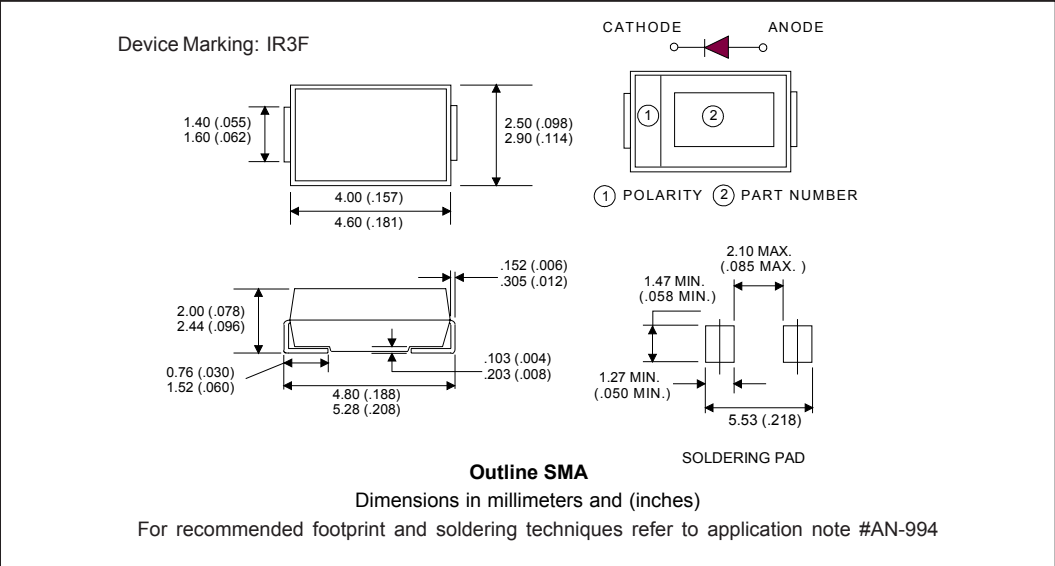
Fig. 6 - Maximum Peak Surge Forward Current Vs. Pulse Duration

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

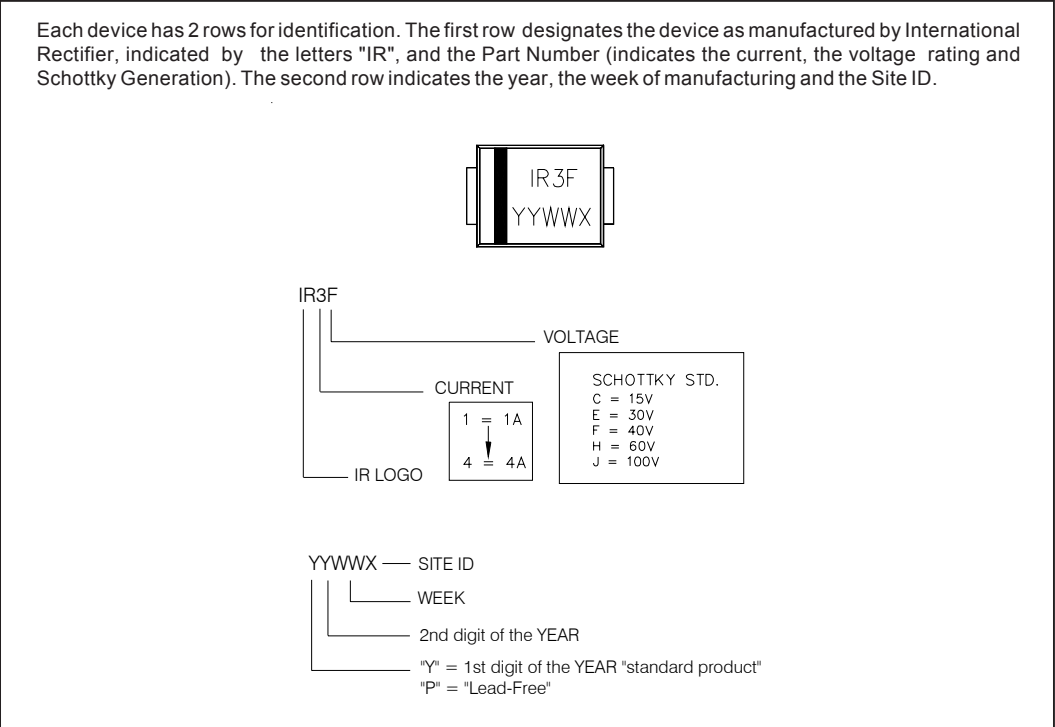
P_d = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);

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

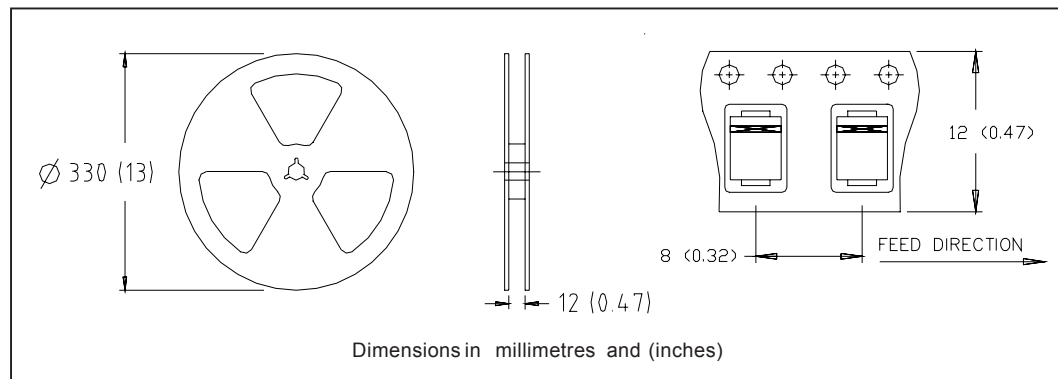
Outline Table



Marking & Identification



Tape & Reel Information



Ordering Information Table

Device Code						
15	M	Q	040	N	TR	-
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	-	• 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.
Qualification Standards can be found on IR's Web site.

International
IR Rectifier

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