# International Rectifier

# MBRS340TRPbF

# SCHOTTKY RECTIFIER

3 Amp

 $I_{F(AV)} = 3.0 Amp$  $V_R = 20V$ 

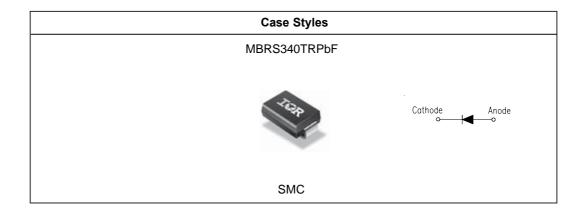
#### **Major Ratings and Characteristics**

Characteristics	Value	Units
I <sub>F(AV)</sub> Rectangular waveform	3.0	А
V <sub>RRM</sub>	40	V
I <sub>FSM</sub> @t <sub>p</sub> =5µs sine	1580	А
V <sub>F</sub> @3.0Apk,T <sub>J</sub> =125°C	0.43	V
T <sub>J</sub> range	- 55 to 150	°C

#### **Description/Features**

The MBRS340TRPbF surface-mount Schottky rectifier has been designed for applications requiring low forward drop and 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
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Lead-Free ("PbF" suffix)



#### MBRS340TRPbF

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# Voltage Ratings

	Partnumber	MBRS340PbF
$V_R$	Max. DC Reverse Voltage (V)	40
V <sub>RWM</sub> Max. Working Peak Reverse Voltage (V)		

# Absolute Maximum Ratings

	Parameters	Value	Units	Conditions	
I <sub>F(AV)</sub>	Max. Average Forward Current	3.0	Α	50% duty cycle @ T <sub>L</sub> =118 °C, rectangular wave form	
		4.0		50% duty cycle @ $T_L = 110 ^{\circ}\text{C}$ , r	ectangular waveform
I <sub>FSM</sub>	Max. Peak One Cycle Non-Repetitive	1580	А	5μs Sine or 3μs Rect. pulse	Following any rated load condition and
	Surge Current	80		10ms Sine or 6ms Rect. pulse	with rated V <sub>RRM</sub> applied
E <sub>AS</sub>	Non Repetitive Avalanche Energy	6	mJ	T <sub>J</sub> =25°C, I <sub>AS</sub> =1.0A, L=12mH	
I <sub>AR</sub>	Repetitive Avalanche Current	1.0	А	Current decaying linearly to zero in 1 µsec Frequency limited by T <sub>J</sub> max. Va = 1.5 x Vr typical	

# **Electrical Specifications**

	Parameters		Value	Units	Conditions	
V <sub>FM</sub>	Max. Forward Voltage Drop	(1)	0.525	V	@ 3A	T 25 °C
			0.68	V	@ 6A	T <sub>J</sub> = 25 °C
			0.43	V	@ 3A	T 405.00
			0.57	V	@ 6A	T <sub>J</sub> = 125 °C
I <sub>RM</sub>	Max. Reverse Leakage	(1)	2.0	mA	T <sub>J</sub> = 25 °C	
	Current		20	mA	T <sub>J</sub> = 100°C	$V_R = \text{rated } V_R$
			35	mA	T <sub>J</sub> = 125 °C	
C <sub>T</sub>	Max. Junction Capacitance		230	pF	V <sub>R</sub> = 5V <sub>DC</sub> (test signal range 100KHz to 1Mhz) 25°C	
L <sub>S</sub>	Typical Series Inductance		3.0	nΗ	Measured lead to lead 5mm from package body	
dv/dt	Max. Voltage Rate of Change		10000	V/µs	(Rated V <sub>R</sub> )	

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

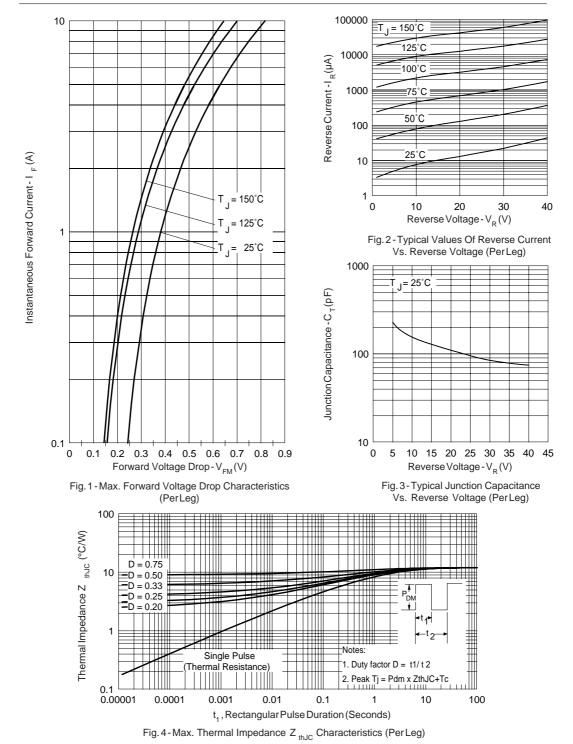
# Thermal-Mechanical Specifications

	Parameters	Value	Units	Conditions
T <sub>J</sub>	Max.JunctionTemperatureRange (*)	-55 to 150	°C	
T <sub>stg</sub>	Max. Storage Temperature Range	-55 to 150	°C	
R <sub>thJL</sub>	Max.Thermal Resistance Junction to Lead (**)	12	°C/W	DCoperation
R <sub>thJA</sub>	Max.Thermal Resistance Junction to Ambient	46	°C/W	DCoperation
wt	Approximate Weight	0.24(0.008)	g(oz.)	
	Case Style	SMC		Similar to DO-214AB
	Device Marking	IR34		

 $<sup>\</sup>frac{\text{(*)}}{\text{dTj}} < \frac{\text{dPtot}}{\text{Rth(j-a)}} < \frac{1}{\text{Rth(j-a)}} \qquad \text{thermal runaway condition for a diode on its own heatsink}$ 

<sup>(\*\*)</sup> Mounted 1 inch square PCB

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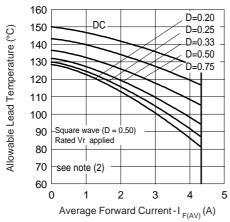
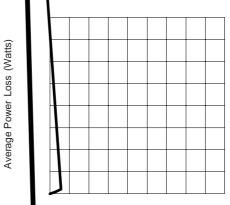


Fig. 4-Maximum Average Forward Current Vs. Allowable Lead Temperature



Average Forward Current - I F(AV) (A)
ig.5-Maximum Average Forward Dissipation
Vs. Average Forward Current

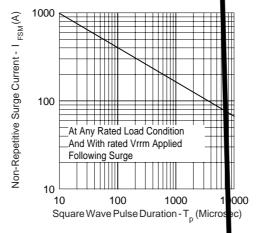
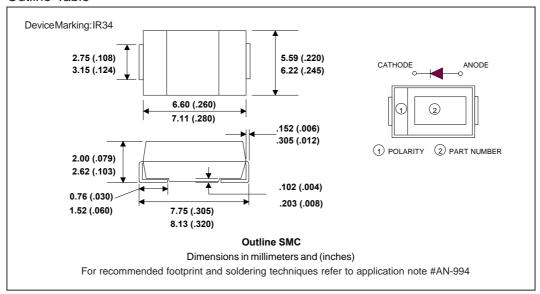


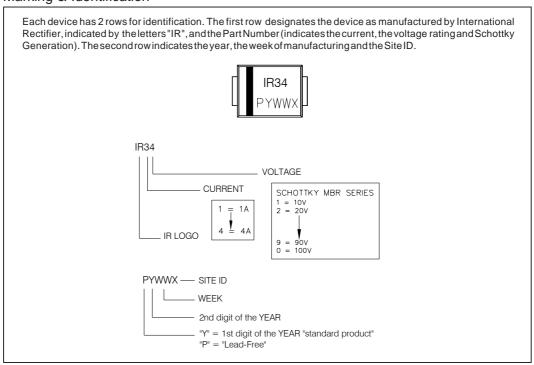
Fig. 6 - Maximum Peak Surge Forward Current Vs. I ulse Duration

 $\begin{tabular}{ll} \textbf{(2)} & Formula used: $T_C = T_J - (Pd + Pd_{REV})$ x $R_{thJC}$; \\ & Pd = Forward Power Loss = I_{F(AV)} x V_{FM} @ (I_{F(AV)}/D) $ (see Fig. 6); \\ & Pd_{REV} = Inverse Power Loss = V_{R1} x I_R (1 - D); I_R @ V_{R1} = 80\% \ rated V_R $ (1 - D); I_R @ V_{R1} = 80\% \ rated V_R $ (1 - D); I_R @ V_{R2} = 80\% \ rated V_R $ (1 - D); I_R @ V_{R3} = 80\% \ rated V_R $ (1 - D) \ rated V_R $ (1 - D$ 

#### Outline Table

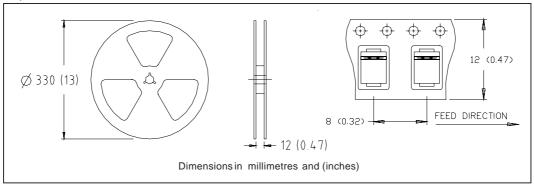


#### Marking & Identification

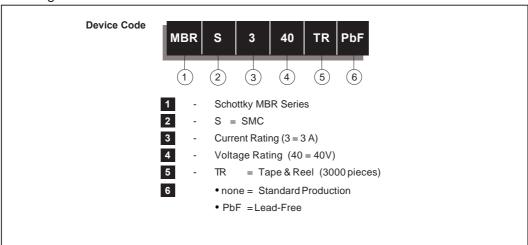


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#### Tape & Reel Information



#### Ordering Information Table



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.



IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7309



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