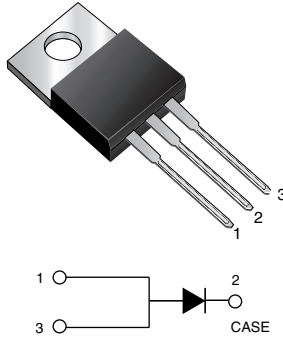


## Schottky Barrier Rectifier

**TO-220AB**

**RoHS**  
COMPLIANT

**FEATURES**

- Trench MOS Schottky technology
- Power pack
- Guardring for overvoltage protection
- Lower power losses, high efficiency
- Low forward voltage drop
- High forward surge capability
- High frequency operation
- Solder dip 275 °C max.10 s, per JESD 22-B106
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

**TYPICAL APPLICATIONS**

For use in low voltage, high frequency rectifier of switching mode power supplies, freewheeling diodes, DC/DC converters, or polarity protection application.

**MECHANICAL DATA**

**Case:** TO-220AB

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-E3 - RoHS-compliant, commercial grade

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test

**Polarity:** As marked

**Mounting Torque:** 10 in-lbs maximum

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	20 A
$V_{RRM}$	35 V, 45 V
$I_{FSM}$	200 A
$V_F$ at $I_F = 20$ A	0.55 V
$T_J$ max.	150 °C
Package	TO-220AB
Diode variations	Single die

MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)				
PARAMETER	SYMBOL	M2035S	M2045S	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	35	45	V
Maximum average forward rectified current (fig.1)	$I_{F(AV)}$	20		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	200		A
Peak repetitive reverse current per leg at $t_p = 2$ $\mu$ s, 1 kHz	$I_{RRM}$	2.0		A
Voltage rate of change (rated $V_R$ )	dV/dt	10 000		V/ $\mu$ s
Operating junction and storage temperature range	$T_J, T_{STG}$	- 55 to + 150		°C



ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	TEST CONDITIONS	TYP.	MAX.	UNIT	
Instantaneous forward voltage	V <sub>F</sub> <sup>(1)</sup>	I <sub>F</sub> = 10 A	T <sub>J</sub> = 25 °C	0.52	-	V
		I <sub>F</sub> = 20 A		0.62	0.70	
		I <sub>F</sub> = 10 A	T <sub>J</sub> = 125 °C	0.42	-	
		I <sub>F</sub> = 20 A		0.55	0.61	
Maximum reverse current at rated V <sub>R</sub>	I <sub>R</sub> <sup>(2)</sup>		T <sub>J</sub> = 25 °C	80	200	μA
			T <sub>J</sub> = 125 °C	24	35	mA
Typical junction capacitance	C <sub>J</sub>	4.0 V, 1 MHz	700		pF	

**Notes**

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	M2035S	M2045S	UNIT
Typical thermal resistance	R <sub>θJC</sub>	2.0		°C/W

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
M2045S-E3/4W	1.877	4W	50/tube	Tube

**RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)**

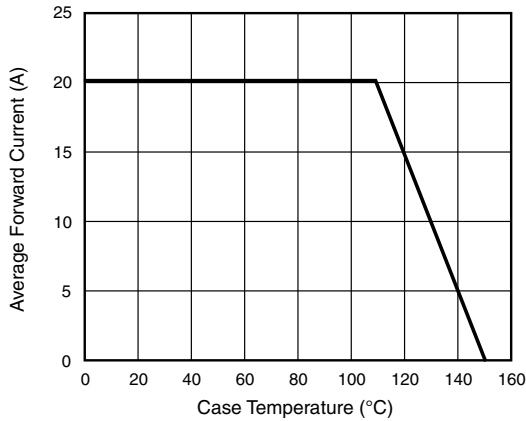


Fig. 1 - Forward Current Derating Curve

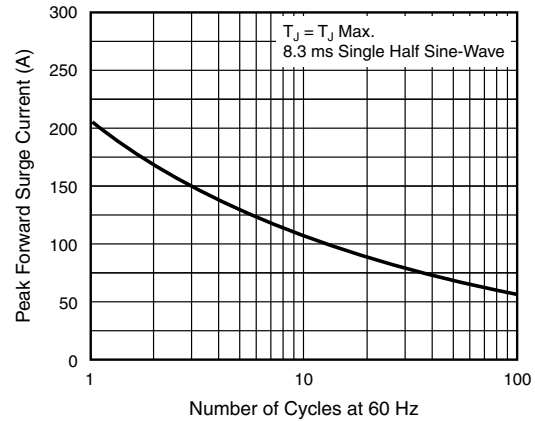


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

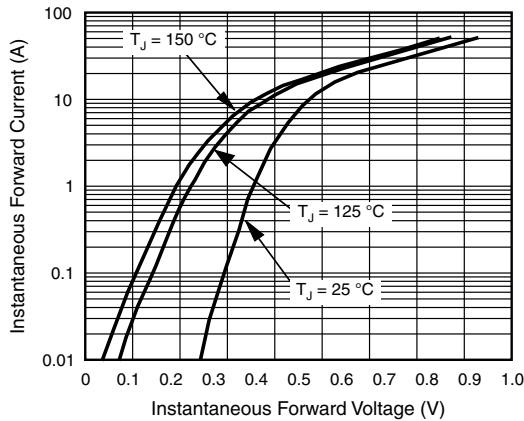


Fig. 3 - Typical Instantaneous Forward Characteristics

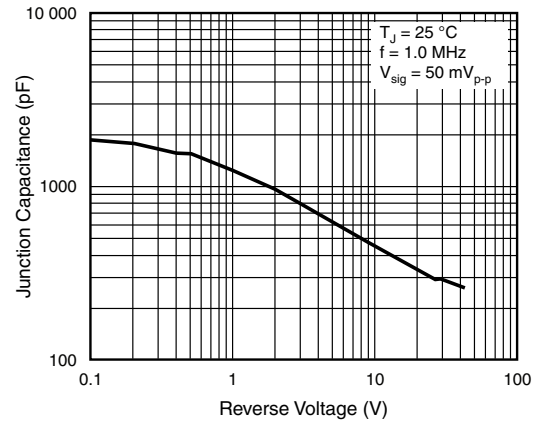


Fig. 5 - Typical Junction Capacitance

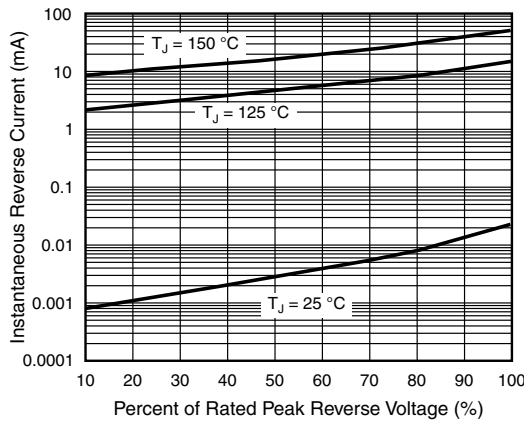
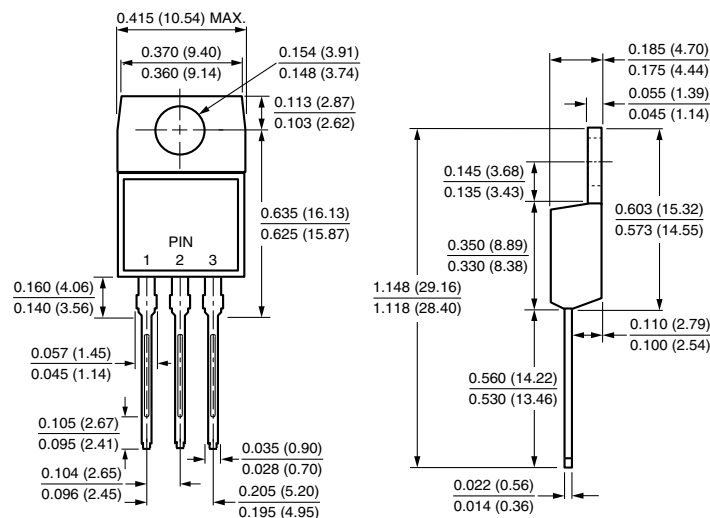


Fig. 4 - Typical Reverse Characteristics

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### TO-220AB





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