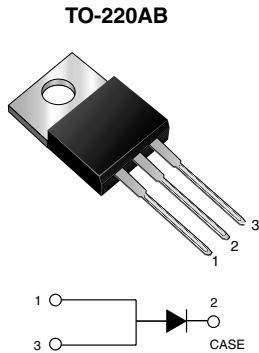




## High-Voltage Trench MOS Barrier Schottky Rectifier



### FEATURES

- Guardring for overvoltage protection
- Lower power losses, high efficiency
- Low forward voltage drop
- High forward surge capability
- High frequency operation
- Solder Dip 260 °C, 40 seconds
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

### TYPICAL APPLICATIONS

For use in low voltage, high frequency rectifier of switching mode power supplies, free-wheeling diodes, dc-to-dc converters or polarity protection applications.

### MAJOR RATINGS AND 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

### MECHANICAL DATA

**Case:** TO-220AB

Epoxy meets UL 94V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D  
E3 suffix for commercial grade

**Polarity:** As marked

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

### 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 (see 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	10000		V/ $\mu$ s
Operating junction and storage temperature range	$T_J, T_{STG}$	- 55 to + 150		°C

# M2035S & M2045S

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<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage <sup>(1)</sup>	at $I_F = 10\text{ A}$ at $I_F = 20\text{ A}$	$T_j = 25\text{ }^\circ\text{C}$	$V_F$	0.52 0.62	- 0.70	V
	at $I_F = 10\text{ A}$ at $I_F = 20\text{ A}$	$T_j = 125\text{ }^\circ\text{C}$		0.42 0.55	- 0.61	
Maximum reverse current at rated $V_R$ <sup>(1)</sup>	$T_j = 25\text{ }^\circ\text{C}$ $T_j = 125\text{ }^\circ\text{C}$		$I_R$	80 24	200 35	$\mu\text{A}$ mA
Typical junction capacitance	at 4.0 V, 1 MHz		$C_J$	700		pF

**Note:**

(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	M2035S	M2045S	UNIT
Typical thermal resistance	$R_{\theta JC}$	2.0		$^\circ\text{C/W}$

<b>ORDERING INFORMATION</b>				
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

( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)

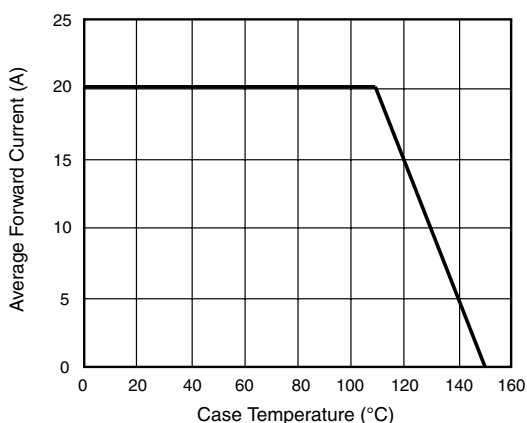


Figure 1. Forward Current Derating Curve

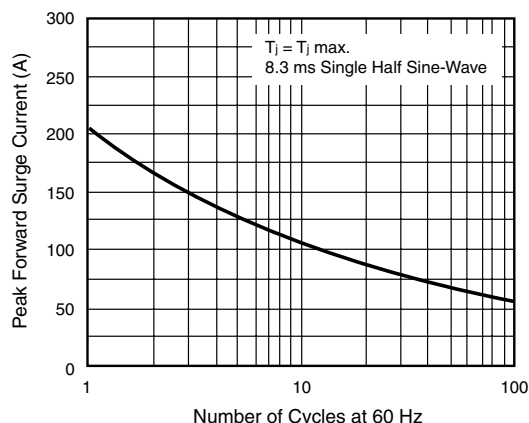


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current



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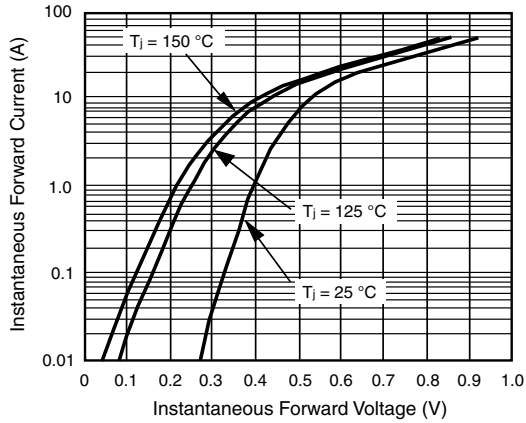


Figure 3. Typical Instantaneous Forward Characteristics

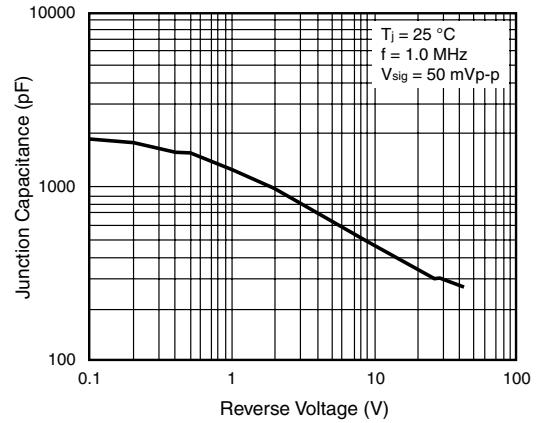


Figure 5. Typical Junction Capacitance

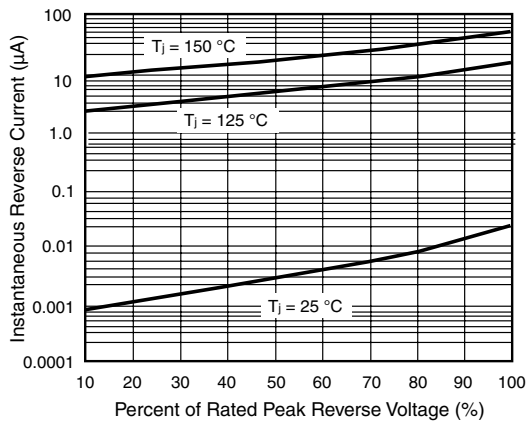
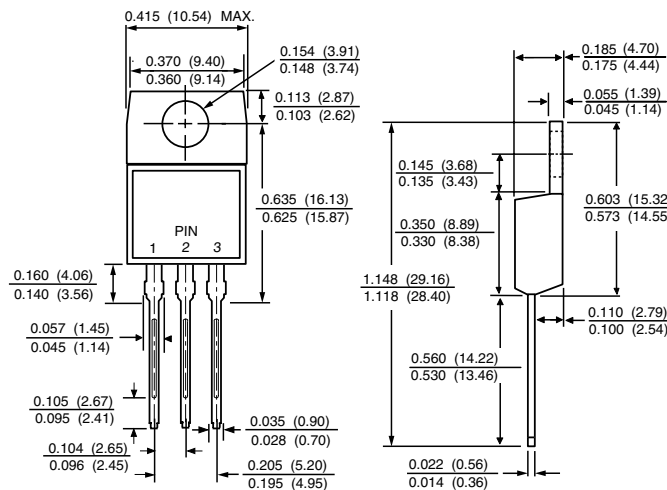


Figure 4. Typical Reverse Characteristics

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### TO-220AB





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