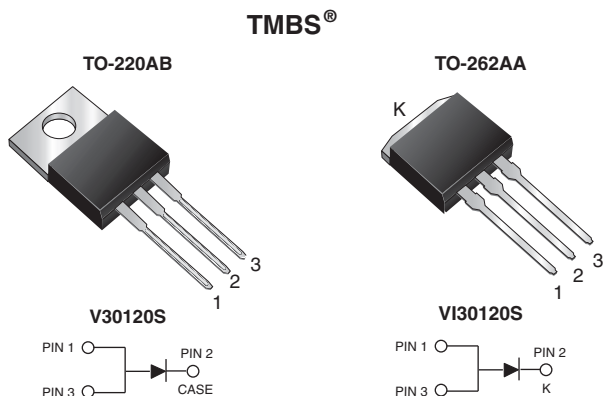


# High Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.43 \text{ V}$  at  $I_F = 5 \text{ A}$



## FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- AEC-Q101 qualified
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

## TYPICAL APPLICATIONS

For use in high frequency DC/DC converters, switching power supplies, freewheeling diodes, OR-ing diode, and reverse battery protection.

## MECHANICAL DATA

**Case:** TO-220AB and TO-262AA

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

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

M3 suffix meets JESD 201 class 1A whisker test, HM3 suffix meets JESD 201 class 2 whisker test

**Polarity:** As marked

**Mounting Torque:** 10 in-lbs max.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	30 A
$V_{RRM}$	120 V
$I_{FSM}$	300 A
$V_F$ at $I_F = 30 \text{ A}$	0.74 V
$T_J$ max.	150 °C
Package	TO-220AB, TO-262AA
Diode variation	Single

MAXIMUM RATINGS ( $T_A = 25 \text{ °C}$ unless otherwise noted)				
PARAMETER	SYMBOL	V30120S	VI30120S	UNIT
Max. repetitive peak reverse voltage	$V_{RRM}$	120		V
Max. average forward rectified current (fig. 1)	$I_{F(AV)}$	30		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	300		A
Voltage rate of change (rated $V_R$ )	$dV/dt$	10 000		V/ $\mu$ s
Operating junction and storage temperature range	$T_J, T_{STG}$	- 40 to + 150		°C



ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I <sub>F</sub> = 5 A	T <sub>A</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.50	-	V
	I <sub>F</sub> = 15 A			0.70	-	
	I <sub>F</sub> = 30 A			0.99	1.10	
	I <sub>F</sub> = 5 A	T <sub>A</sub> = 125 °C		0.43	-	
	I <sub>F</sub> = 15 A			0.60	-	
	I <sub>F</sub> = 30 A			0.74	0.82	
Reverse current	V <sub>R</sub> = 90 V	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	18	-	μA
		T <sub>A</sub> = 125 °C		12	-	mA
	V <sub>R</sub> = 120 V	T <sub>A</sub> = 25 °C		-	500	μA
		T <sub>A</sub> = 125 °C		22	35	mA

**Notes**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle(2) Pulse test: Pulse width  $\leq 40\text{ ms}$ 

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	V30120S	VI30120S	UNIT
Typical thermal resistance	$R_{\theta JC}$	1.6		$^{\circ}\text{C/W}$

<b>ORDERING INFORMATION</b> (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	V30120S-M3/4W	1.88	4W	50/tube	Tube
TO-262AA	VI30120S-M3/4W	1.45	4W	50/tube	Tube
TO-220AB	V30120SHM3/4W <sup>(1)</sup>	1.88	4W	50/tube	Tube
TO-262AA	VI30120SHM3/4W <sup>(1)</sup>	1.45	4W	50/tube	Tube

**Note**

(1) AEC-Q101 qualified



**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

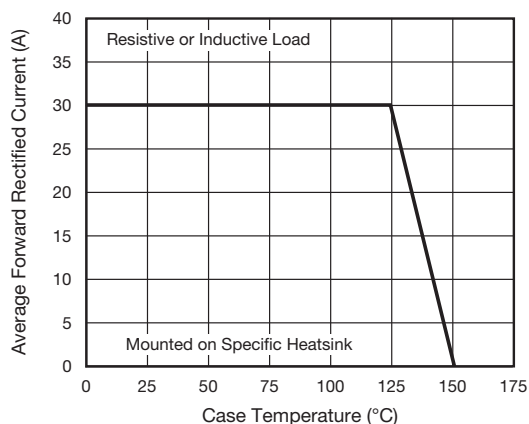


Fig. 1 - Forward Current Derating Curve

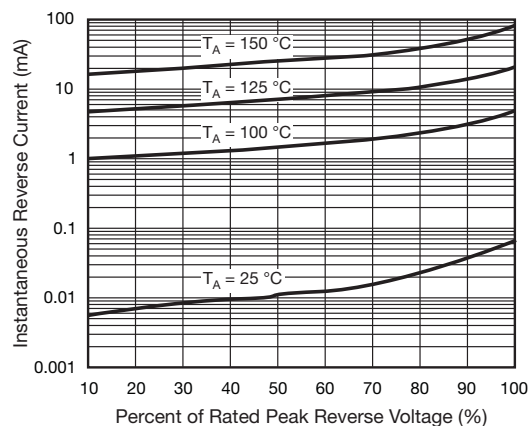


Fig. 4 - Typical Reverse Characteristics

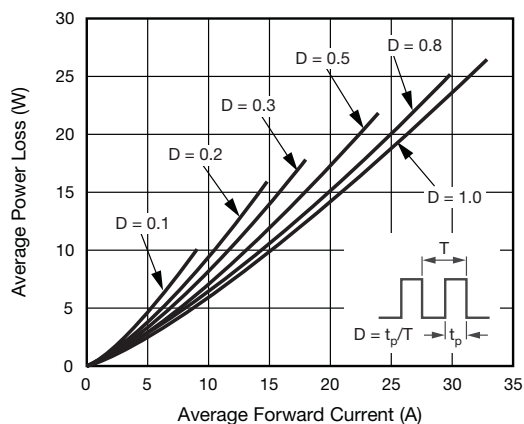


Fig. 2 - Forward Power Loss Characteristics

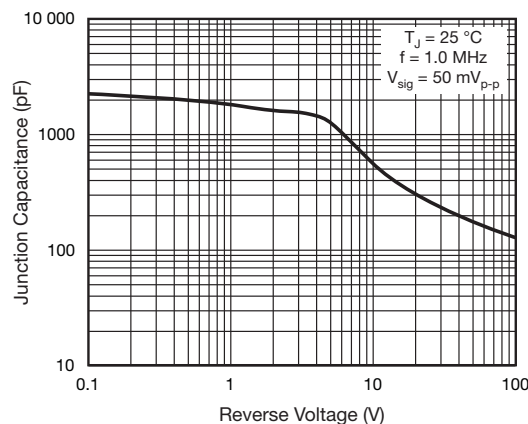


Fig. 5 - Typical Junction Capacitance

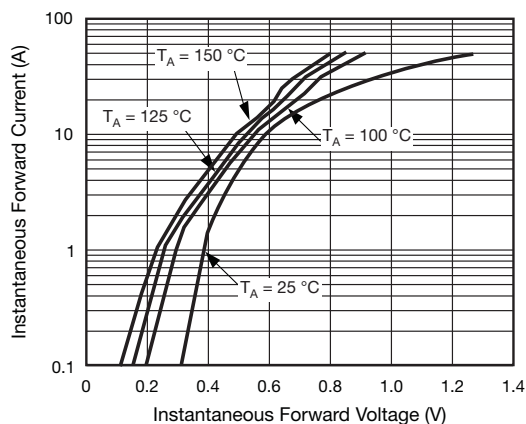


Fig. 3 - Typical Instantaneous Forward Characteristics

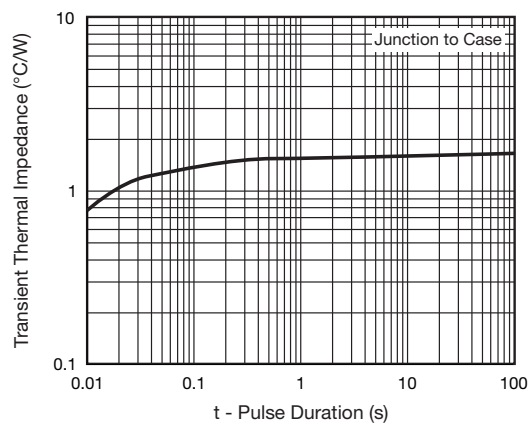
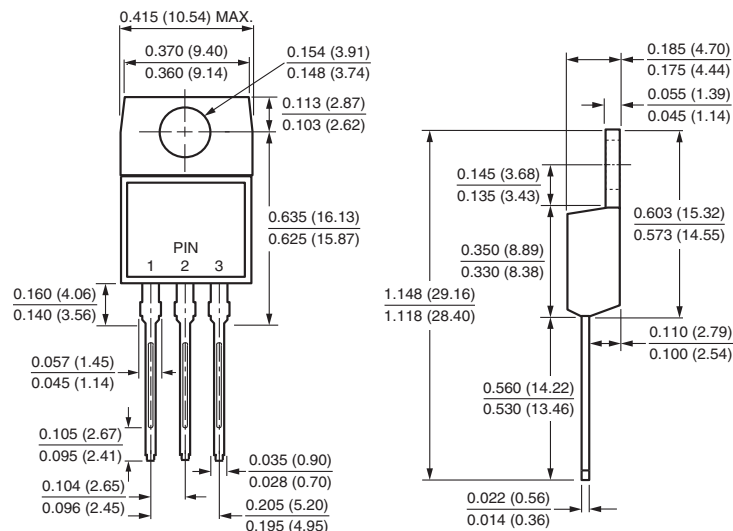


Fig. 6 - Typical Transient Thermal Impedance

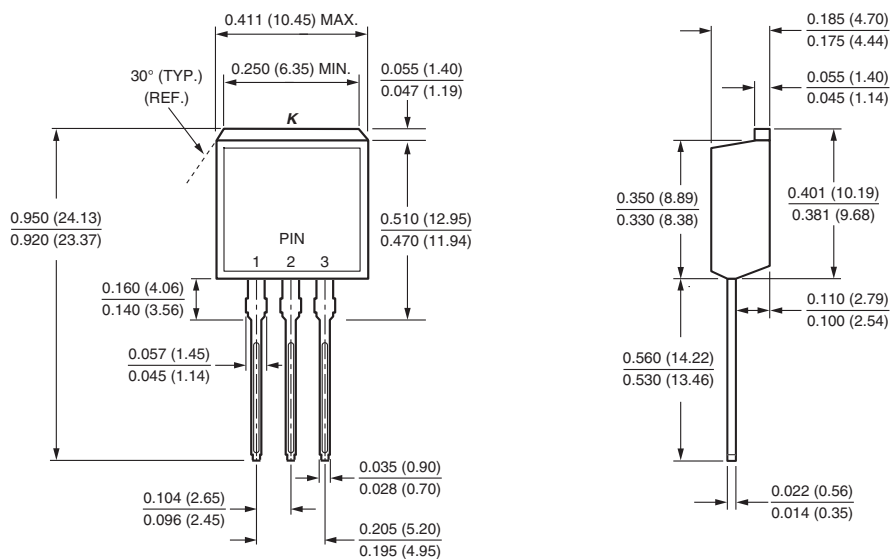


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB



TO-262AA





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