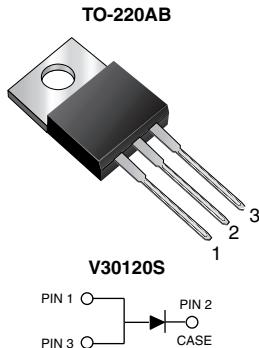


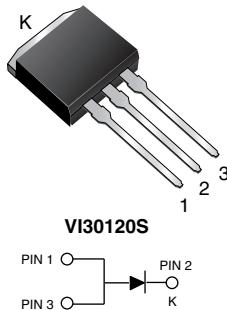
## High Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F$  = 0.43 V at  $I_F$  = 5 A

### TMBS®



### TO-262AA



**RoHS**  
COMPLIANT  
HALOGEN  
FREE

### 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)

### 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 A	0.74 V
$T_J$ max.	150 °C
Package	TO-220AB, TO-262AA
Diode variation	Single

### MAXIMUM RATINGS ( $T_A$ = 25 °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/μs
Operating junction and storage temperature range	$T_J, T_{STG}$	-40 to +150		°C

ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage	$I_F = 5 \text{ A}$	$T_A = 25^\circ\text{C}$	$V_F^{(1)}$	0.50	-	V	
	$I_F = 15 \text{ A}$			0.70	-		
	$I_F = 30 \text{ A}$			0.99	1.10		
	$I_F = 5 \text{ A}$	$T_A = 125^\circ\text{C}$		0.43	-		
	$I_F = 15 \text{ A}$			0.60	-		
	$I_F = 30 \text{ A}$			0.74	0.82		
Reverse current	$V_R = 90 \text{ V}$	$T_A = 25^\circ\text{C}$	$I_R^{(2)}$	18	-	$\mu\text{A}$	
		$T_A = 125^\circ\text{C}$		12	-	mA	
	$V_R = 120 \text{ V}$	$T_A = 25^\circ\text{C}$		-	500	$\mu\text{A}$	
		$T_A = 125^\circ\text{C}$		22	35	mA	

**Notes**

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

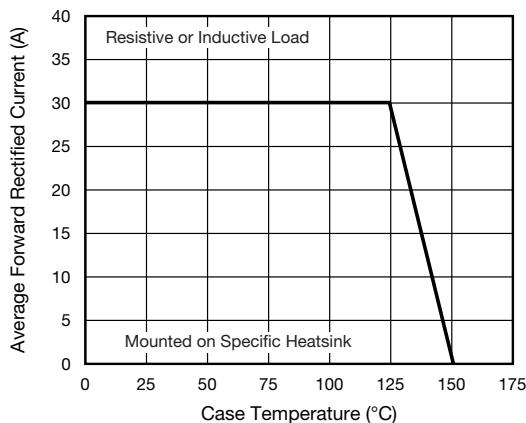
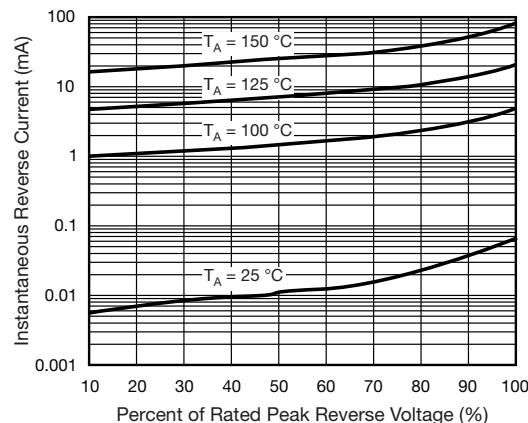
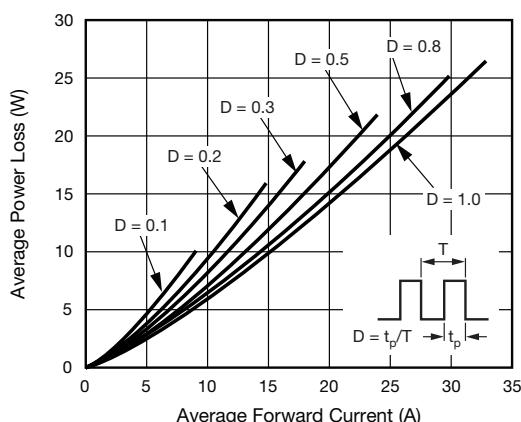
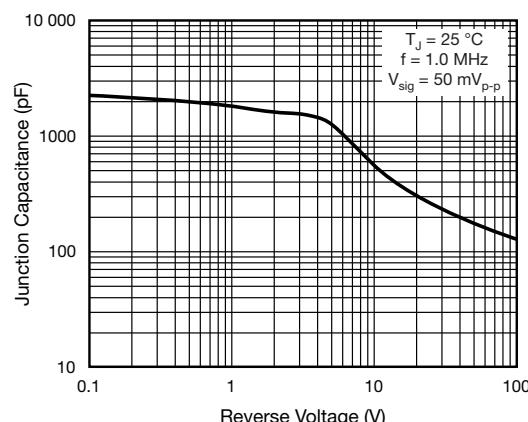
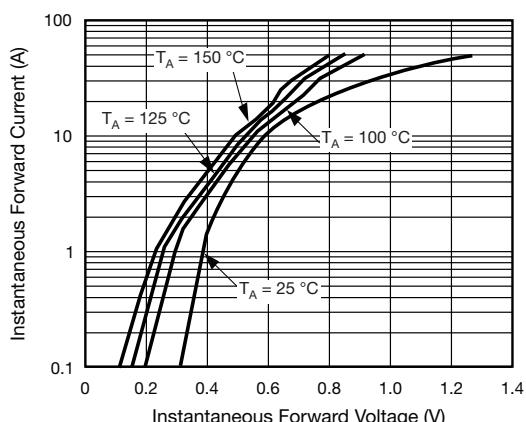
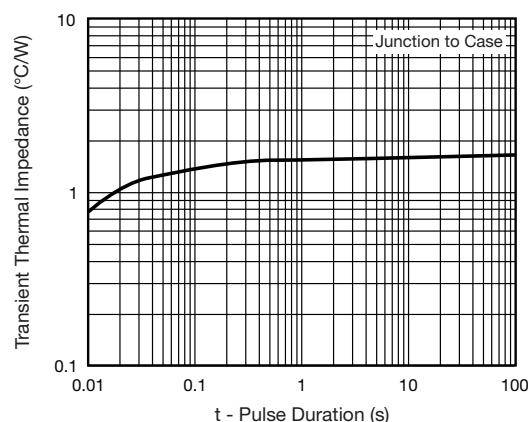
(2) Pulse test: Pulse width  $\leq 40 \text{ ms}$

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

ORDERING INFORMATION (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

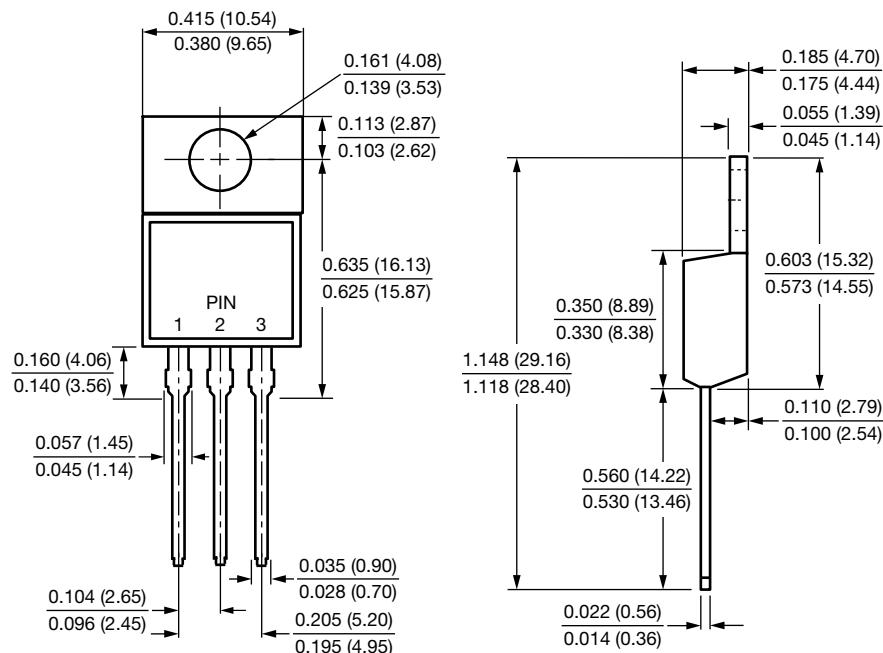
**Note**

(1) AEC-Q101 qualified

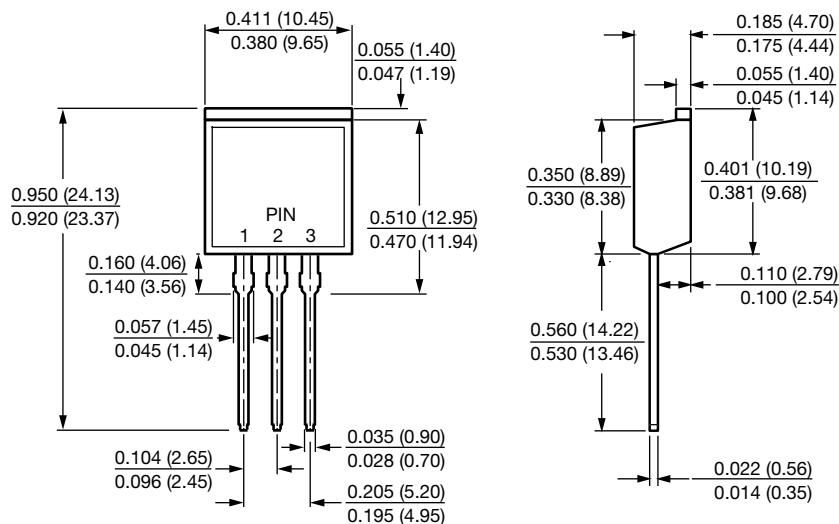
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

**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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