

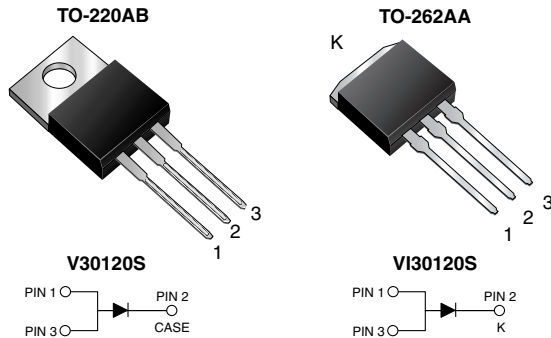


V30120S & VI30120S

New Product Vishay General Semiconductor

High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.402\text{ V}$ at $I_F = 5\text{ A}$



FEATURES



- Trench MOS Schottky Technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Low thermal resistance
- Solder Dip 260 °C, 40 seconds
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

TYPICAL APPLICATIONS

For use in high frequency inverters, switching power supplies, free-wheeling diodes, Oring diode, dc-to-dc converters and reverse battery protection.

MAJOR RATINGS AND CHARACTERISTICS

$I_{F(AV)}$	30 A
V_{RRM}	120 V
I_{FSM}	300 A
V_F at $I_F = 30\text{ A}$	0.70 V
T_j max.	150 °C

MECHANICAL DATA

Case: TO-220AB & TO-262AA

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

PARAMETER	SYMBOL	V30120S	VI30120S	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	120		V
Maximum average forward rectified current (see 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
Peak repetitive reverse current per leg at $t_p = 2\text{ }\mu\text{s}$, 1 kHz	I_{RRM}	1.0		A
Voltage rate of change (rated V_R)	dv/dt	10000		V/ μs
Operating junction and storage temperature range	T_J, T_{STG}	- 20 to + 150		°C

ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ °C}$ unless otherwise noted)

PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT
Breakdown voltage	at $I_R = 1.0\text{ mA}$ $T_j = 25\text{ °C}$	$V_{(BR)}$	120 (minimum)	-	V
Instantaneous forward voltage (1)	at $I_F = 5\text{ A}$ $I_F = 15\text{ A}$ $T_j = 25\text{ °C}$ $I_F = 30\text{ A}$	V_F	0.478 0.648 0.854	- - 0.95	V
	at $I_F = 5\text{ A}$ $I_F = 15\text{ A}$ $T_j = 125\text{ °C}$ $I_F = 30\text{ A}$		0.402 0.582 0.698	- - 0.75	

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ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT	
Reverse current ⁽¹⁾	at $V_R = 90\text{ V}$	I_R	$T_j = 25\text{ }^\circ\text{C}$	-	μA	
			$T_j = 125\text{ }^\circ\text{C}$	-	mA	
	at $V_R = 120\text{ V}$		$T_j = 25\text{ }^\circ\text{C}$	47.3	500	μA
			$T_j = 125\text{ }^\circ\text{C}$	23.5	35	mA

Note:

(1) Pulse test: 300 μs pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	V30120S	VI30120S	UNIT
Typical thermal resistance	$R_{\theta\text{JC}}$	2.2		$^\circ\text{C/W}$

ORDERING INFORMATION					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	V30120S-E3/45	1.884	45	50/Tube	Tube
TO-262AA	VI30120S-E3/4W	1.456	4W	50/Tube	Tube

RATINGS AND CHARACTERISTICS CURVES

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

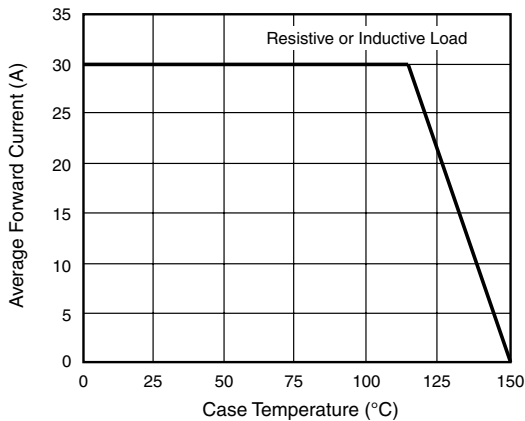


Figure 1. Forward Current Derating Curve

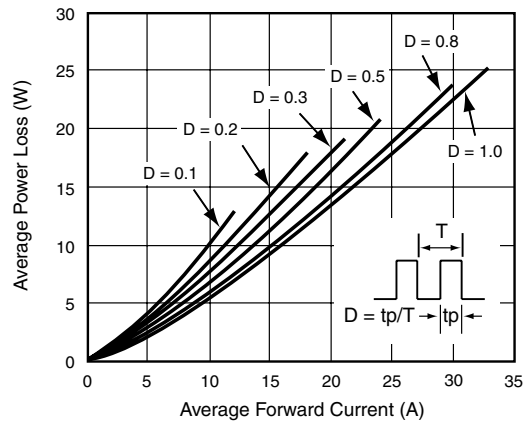


Figure 2. Forward Power Loss Characteristics

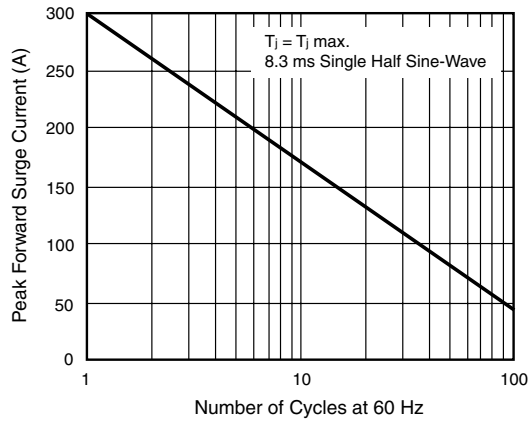


Figure 3. Maximum Non-Repetitive Peak Forward Surge Current

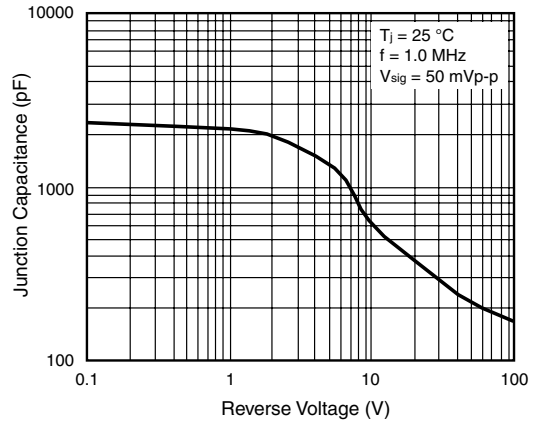


Figure 6. Typical Junction Capacitance

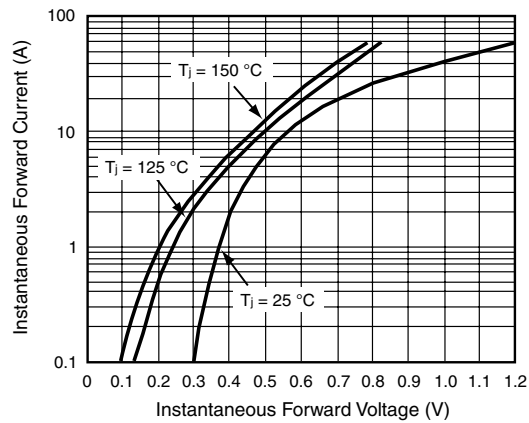


Figure 4. Typical Instantaneous Forward Characteristics

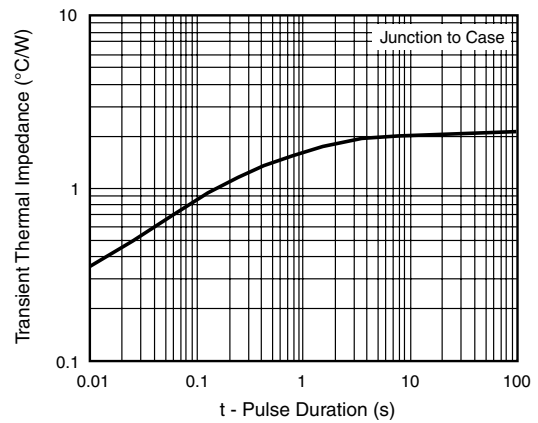


Figure 7. Typical Transient Thermal Impedance

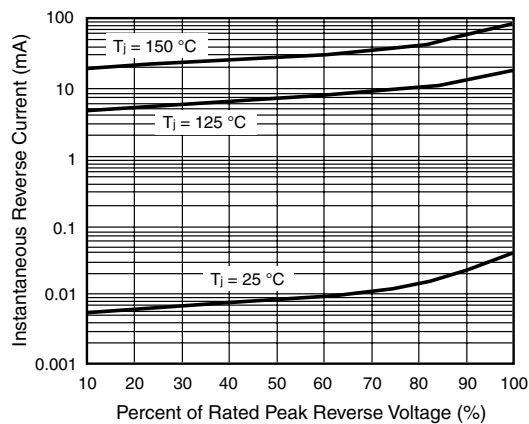


Figure 5. Typical Reverse Leakage Characteristics

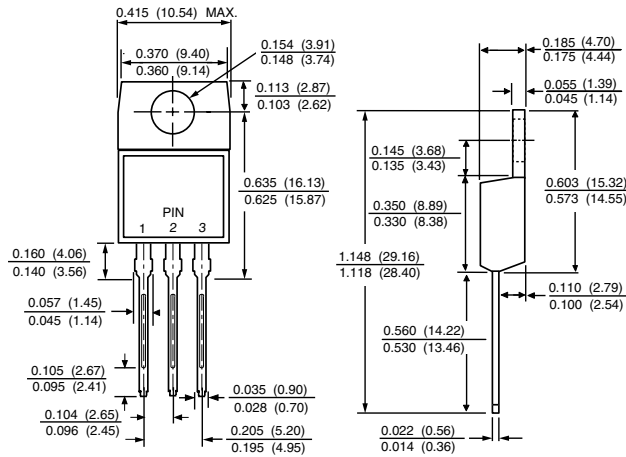
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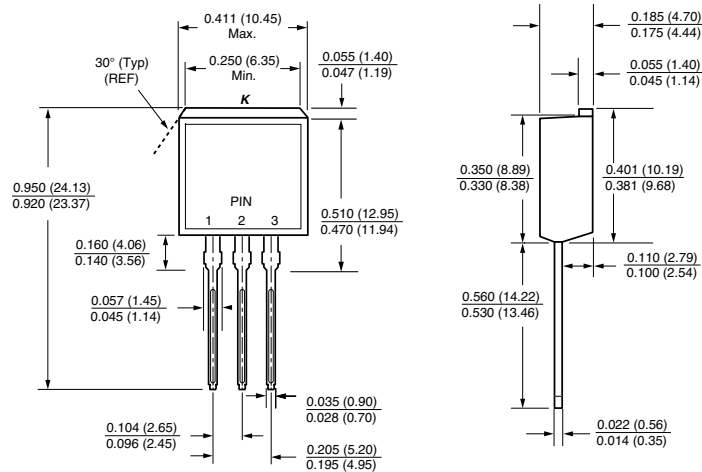


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB



TO-262AA





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