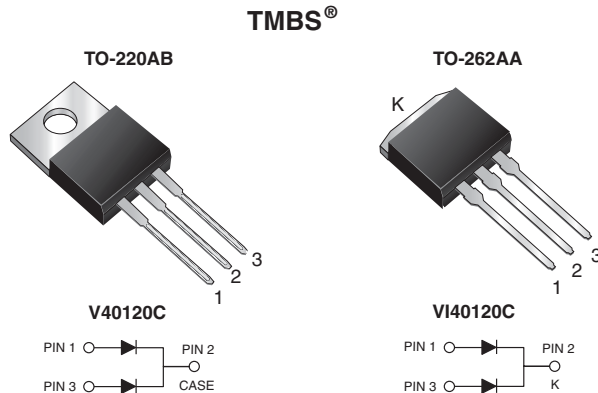




Dual High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.43$ V at $I_F = 5$ 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
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- **Halogen-free according to IEC 61249-2-21 definition**



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.

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	2 x 20 A
V_{RRM}	120 V
I_{FSM}	250 A
V_F at $I_F = 20$ A	0.63 V
T_J max.	150 °C

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 maximum

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)

PARAMETER	SYMBOL	V40120C	VI40120C	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	120		V
Maximum average forward rectified current (fig. 1)		per device	40	A
		per diode	20	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	I_{FSM}	250		A
Voltage rate of change (rated V_R)	dV/dt	10 000		V/ μ s
Operating junction and storage temperature range	T_J, T_{STG}	- 40 to + 150		°C

V40120C, VI40120C



Vishay General Semiconductor

ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage per diode	$I_F = 5\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	0.50	-	V
	$I_F = 10\text{ A}$			0.60	-	
	$I_F = 20\text{ A}$			0.78	0.88	
	$I_F = 5\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$		0.43	-	
	$I_F = 10\text{ A}$			0.53	-	
	$I_F = 20\text{ A}$			0.63	0.71	
Reverse current per diode	$V_R = 90\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$	$I_R^{(2)}$	19	-	μA
		$T_A = 125\text{ }^\circ\text{C}$		10	-	mA
	$V_R = 120\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$		-	500	μA
		$T_A = 125\text{ }^\circ\text{C}$		22	45	mA

Notes

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

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	V40120C	VI40120C	UNIT
Typical thermal resistance per diode	$R_{\theta JC}$	1.8		$^\circ\text{C/W}$

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	V40120C-M3/4W	1.88	4W	50/tube	Tube
TO-262AA	VI40120C-M3/4W	1.45	4W	50/tube	Tube
TO-220AB	V40120CHM3/4W ⁽¹⁾	1.88	4W	50/tube	Tube
TO-262AA	VI40120CHM3/4W ⁽¹⁾	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)

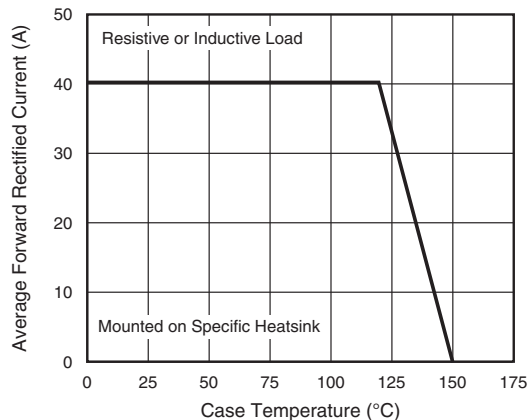


Fig. 1 - Maximum Forward Current Derating Curve

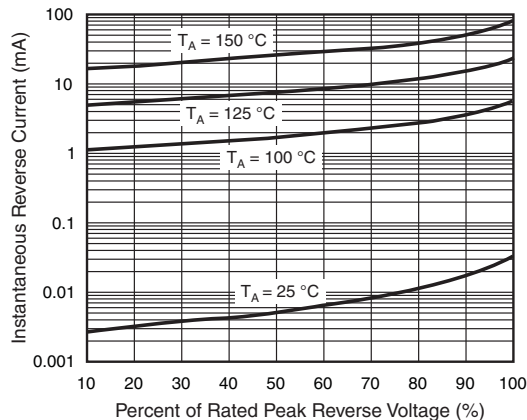


Fig. 4 - Typical Reverse Characteristics Per Diode

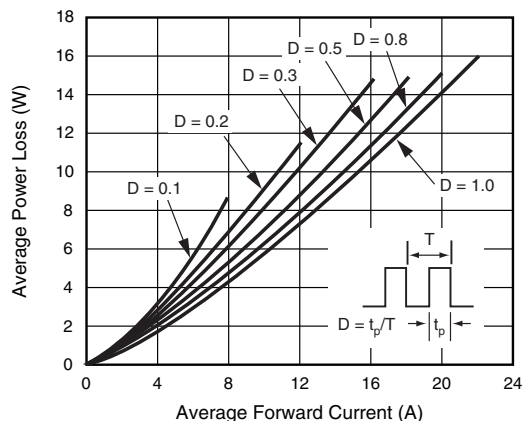


Fig. 2 - Forward Power Loss Characteristics Per Diode

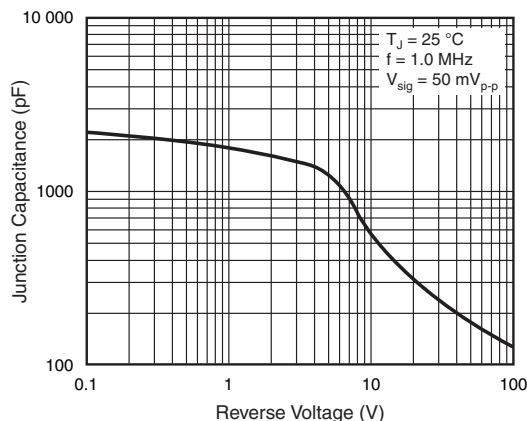


Fig. 5 - Typical Junction Capacitance Per Diode

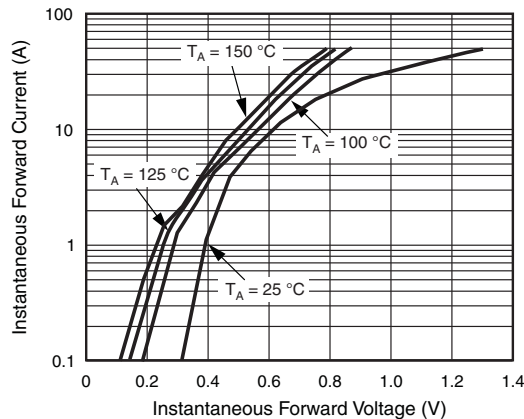


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

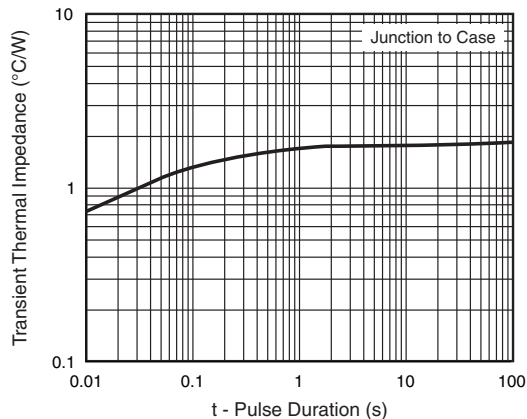


Fig. 6 - Typical Transient Thermal Impedance Per Diode

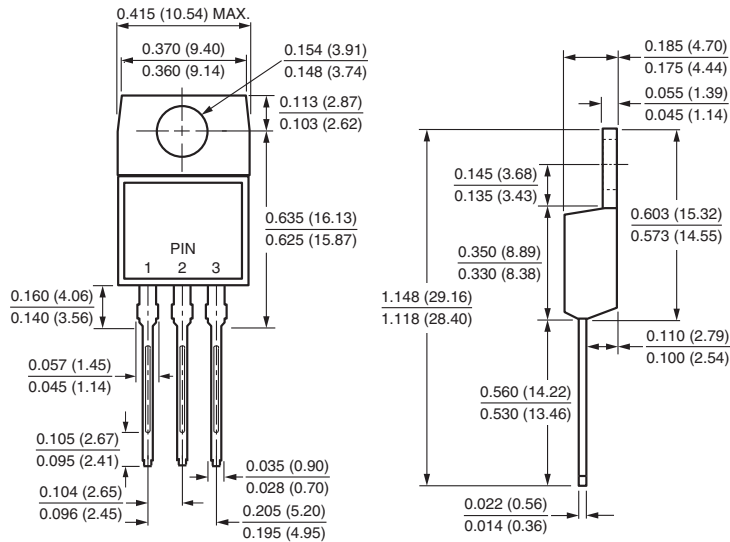
V40120C, VI40120C

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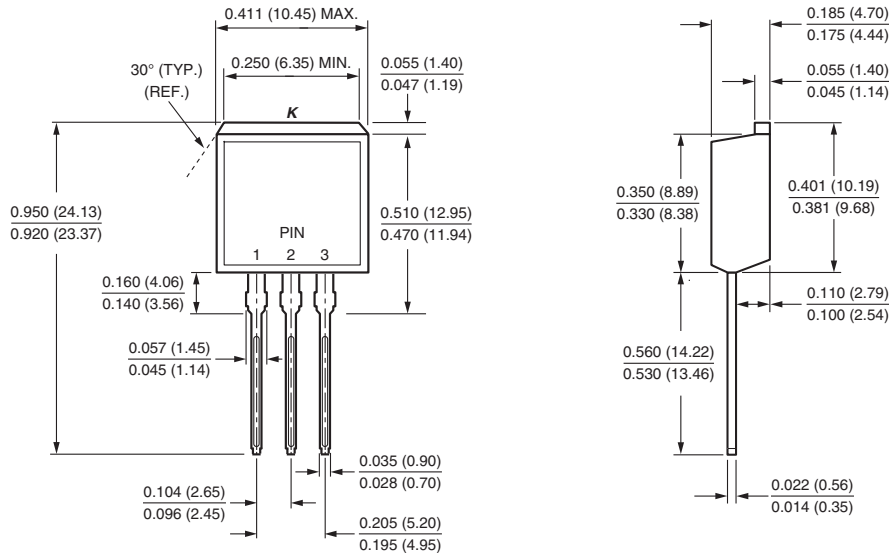


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB



TO-262AA





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