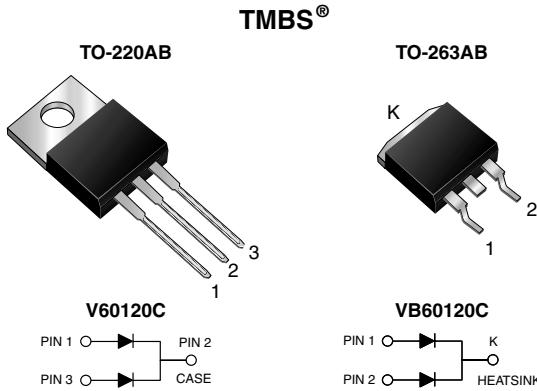


Dual High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low V_F = 0.41 V at I_F = 5 A



FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Low thermal resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C (for TO-263AB package)
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106 (for TO-220AB package)
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC



RoHS
COMPLIANT

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: TO-220AB and TO-263AB

Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS compliant, commercial grade

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

E3 suffix meets JESD 201 class 1A whisker test

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	2 x 30 A
V_{RRM}	120 V
I_{FSM}	300 A
V_F at I_F = 30 A	0.71 V
T_J max.	150 °C

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

PARAMETER	SYMBOL	V60120C	VB60120C	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	120		V
Maximum average forward rectified current (fig. 1)	per device	60		A
	per diode	30		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	I_{FSM}	300		A
Non-repetitive avalanche energy at T_J = 25 °C, L = 100 mH per diode	E_{AS}	260		mJ
Peak repetitive reverse current at t_p = 2 µs, 1 kHz, T_J = 38 °C ± 2 °C per diode	I_{RRM}	0.5		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

V60120C, VB60120C

Vishay General Semiconductor

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

PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Breakdown voltage	$I_R = 1.0 \text{ mA}$	$T_A = 25^\circ\text{C}$	V_{BR}	120 (minimum)	-	V	
Instantaneous forward voltage per diode	$I_F = 5 \text{ A}$	$T_A = 25^\circ\text{C}$	$V_F^{(1)}$	0.48	-	V	
	$I_F = 15 \text{ A}$			0.66	-		
	$I_F = 30 \text{ A}$			0.88	0.95		
	$I_F = 5 \text{ A}$	$T_A = 125^\circ\text{C}$		0.41	-		
	$I_F = 15 \text{ A}$			0.58	-		
	$I_F = 30 \text{ A}$			0.71	0.75		
	$V_R = 90 \text{ V}$	$T_A = 25^\circ\text{C}$		14	-	μA	
Reverse current at rated V_R per diode	$V_R = 90 \text{ V}$	$T_A = 125^\circ\text{C}$	$I_R^{(2)}$	11	-	mA	
	$V_R = 120 \text{ V}$	$T_A = 25^\circ\text{C}$		40	500	μA	
	$V_R = 120 \text{ V}$	$T_A = 125^\circ\text{C}$		15	45	mA	

Notes

(1) Pulse test: 300 μs pulse width, 1 % duty cycle(2) Pulse test: Pulse width $\leq 40 \text{ ms}$ THERMAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	V60120C	VB60120C	UNIT
Typical thermal resistance per diode	$R_{\theta\text{JC}}$	2.2	2.2	$^\circ\text{C/W}$

ORDERING INFORMATION (Example)

PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	V60120C-E3/4W	1.89	4W	50/tube	Tube
TO-263AB	VB60120C-E3/4W	1.38	4W	50/tube	Tube
TO-263AB	VB60120C-E3/8W	1.38	8W	800/reel	Tape and reel

RATINGS AND CHARACTERISTICS CURVES

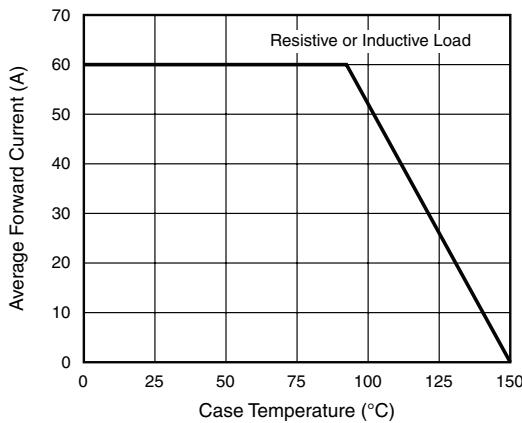
 $(T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig. 1 - Forward Current Derating Curve

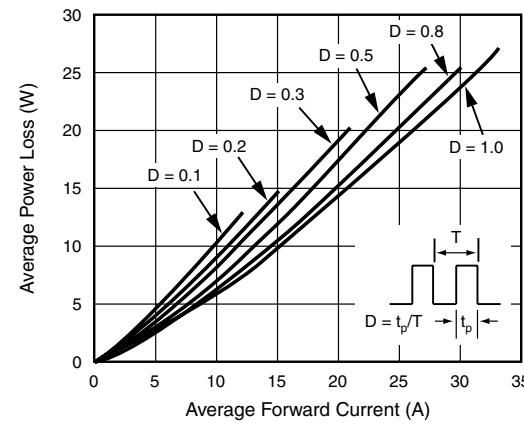


Fig. 2 - Forward Power Loss Characteristics Per Diode

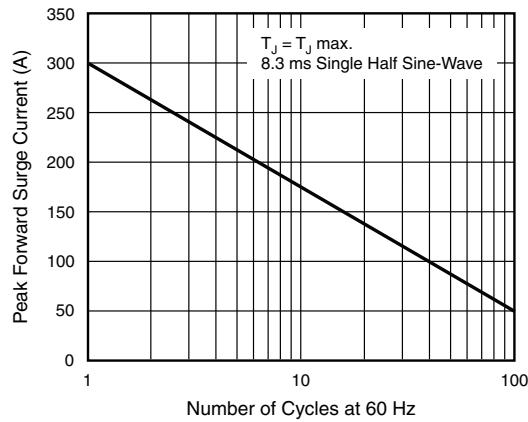


Fig. 3 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

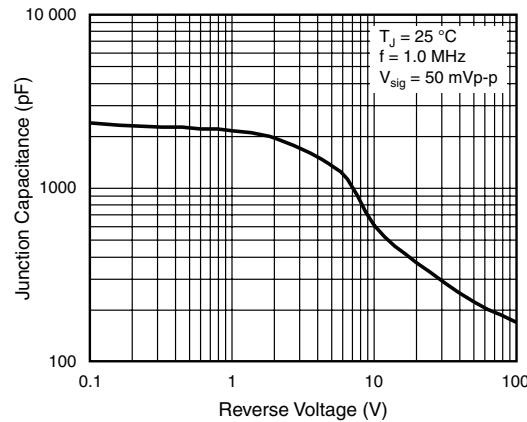


Fig. 6 - Typical Junction Capacitance Per Diode

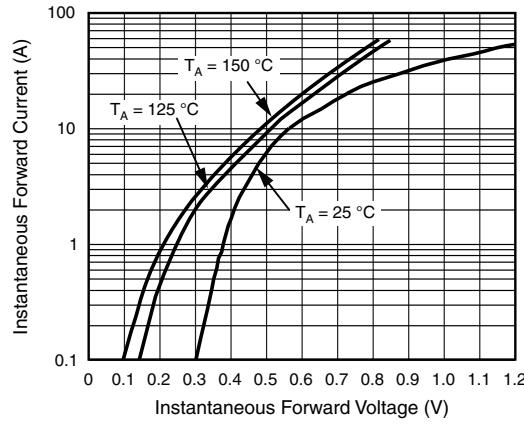


Fig. 4 - Typical Instantaneous Forward Characteristics Per Diode

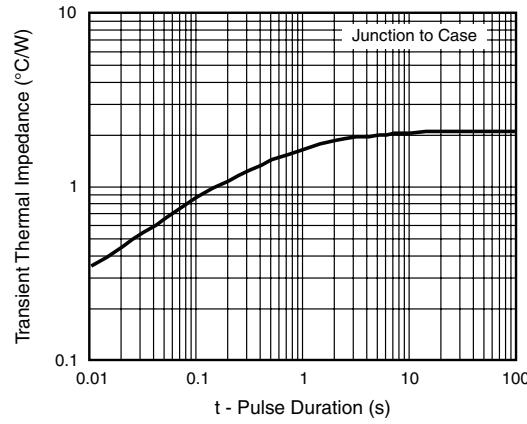


Fig. 7 - Typical Transient Thermal Impedance Per Diode

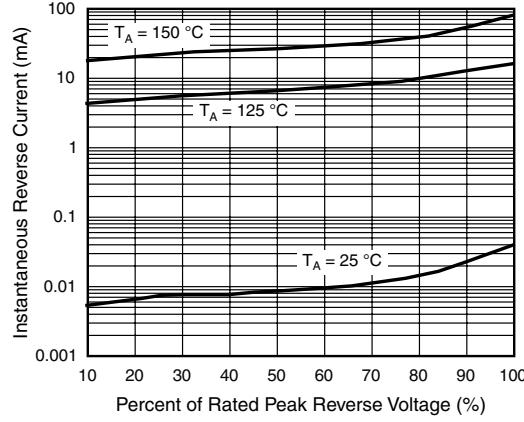
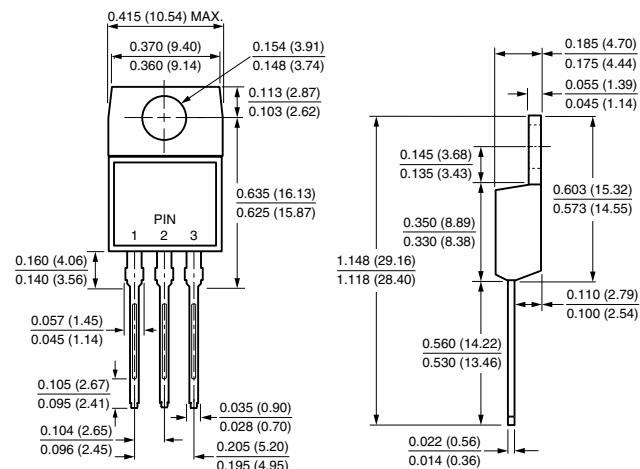


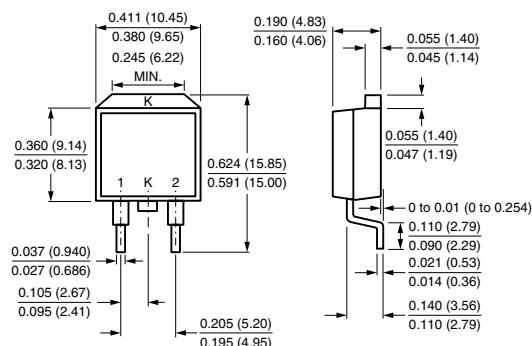
Fig. 5 - Typical Reverse Characteristics Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

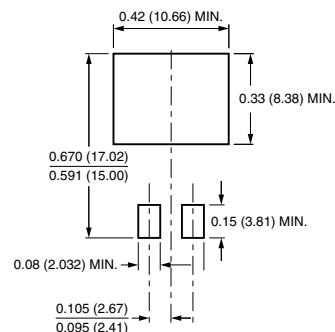
TO-220AB



TO-263AB



Mounting Pad Layout



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