

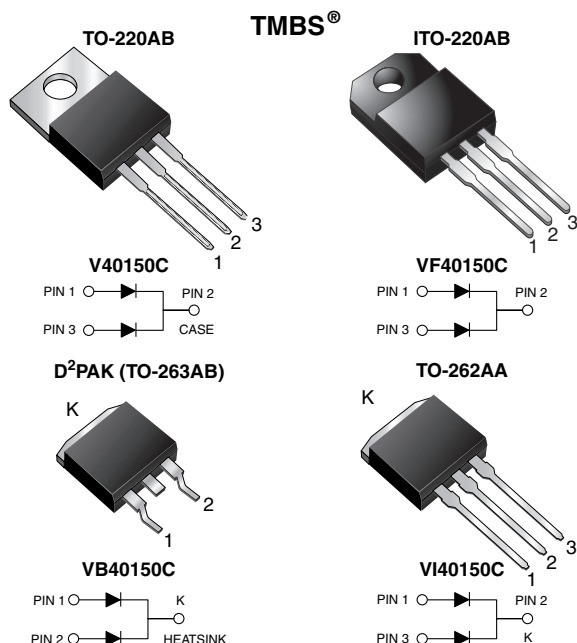


THE DATASHEET OF VB40150C-E3/8W



Dual High Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.55 \text{ V}$ at $I_F = 5 \text{ A}$



LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 20 A
V_{RRM}	150 V
I_{FSM}	160 A
V_F at $I_F = 20 \text{ A}$	0.75 V
$T_J \text{ max.}$	150 °C
Package	TO-220AB, ITO-220AB, D²PAK (TO-263AB), TO-262AA
Circuit configuration	Common cathode

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)							
PARAMETER		SYMBOL	V40150C	VF40150C	VB40150C	VI40150C	UNIT
Max. repetitive peak reverse voltage		V _{RRM}	150				V
Max. average forward rectified current (fig. 1)	per device	I _{F(AV)}	40				A
	per diode	I _{F(AV)}	20				
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode		I _{FSM}	160				A
Non-repetitive avalanche energy at T _J = 25 °C, L = 60 mH per diode		E _{AS}	150				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
Isolation voltage (ITO-220AB only) from terminal to heatsink t = 1 min		V _{AC}	1500				V
Operating junction and storage temperature range		T _J , T _{STG}	-55 to +150				°C

FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C (for D²PAK (TO-263AB) package)
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106 (for TO-220AB, ITO-220AB and TO-262AA package)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS COMPLIANT

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: TO-220AB, ITO-220AB, D²PAK (TO-263AB), and TO-262AA

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 max.



ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP	MAX.	UNIT
Breakdown voltage	I _R = 1.0 mA	T _A = 25 °C	V _{BR}	150 (min.)	-	V
Instantaneous forward voltage per diode ⁽¹⁾	I _F = 5 A	T _A = 25 °C	V _F	0.69	-	V
	I _F = 10 A			0.84	-	
	I _F = 20 A			1.15	1.43	
	I _F = 5 A	T _A = 125 °C		0.55	-	
	I _F = 10 A			0.64	-	
	I _F = 20 A			0.75	0.82	
	Reverse current per diode ⁽²⁾	V _R = 100 V		T _A = 25 °C	I _R	
T _A = 125 °C			2.5	-		mA
V _R = 150 V		T _A = 25 °C	-	250		μA
		T _A = 125 °C	5	25		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	V40150C	VF40150C	VB40150C	VI40150C	UNIT
Typical thermal resistance per diode	$R_{\theta JC}$	1.8	4	1.8	1.8	$^{\circ}\text{C/W}$

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	V40150C-E3/4W	1.89	4W	50/tube	Tube
ITO-220AB	VF40150C-E3/4W	1.75	4W	50/tube	Tube
D ² PAK (TO-263AB)	VB40150C-E3/4W	1.39	4W	50/tube	Tube
D ² PAK (TO-263AB)	VB40150C-E3/8W	1.39	8W	800/reel	Tape and reel
TO-262AA	VI40150C-E3/4W	1.46	4W	50/tube	Tube

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

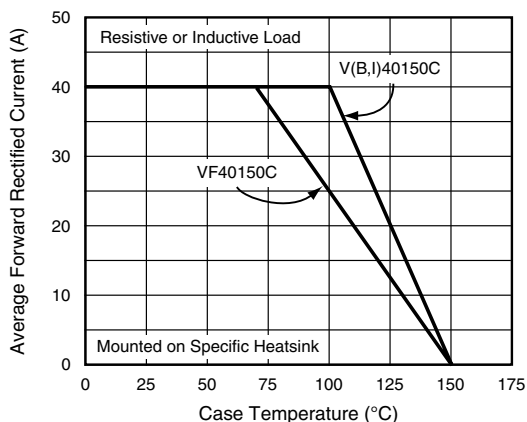


Fig. 1 - Maximum Forward Current Derating Curve

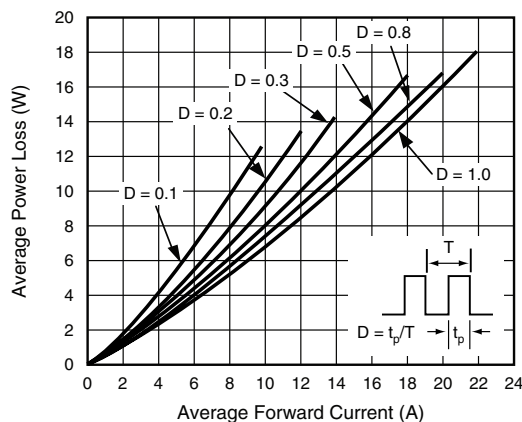


Fig. 2 - Forward Power Loss Characteristics Per Diode

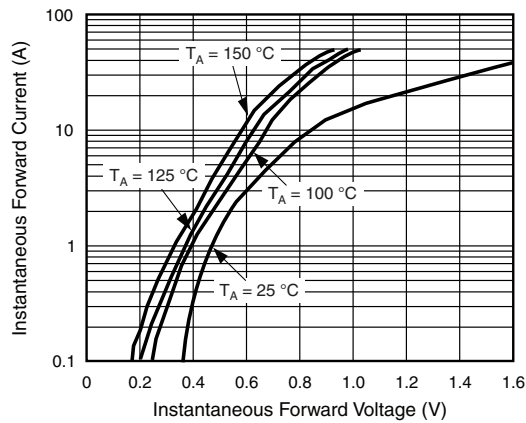


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

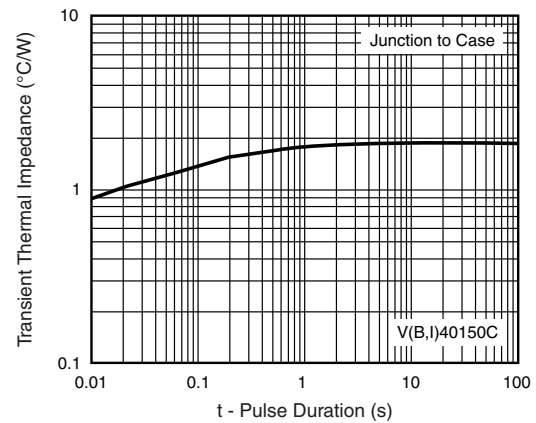


Fig. 6 - Typical Transient Thermal Impedance Per Diode

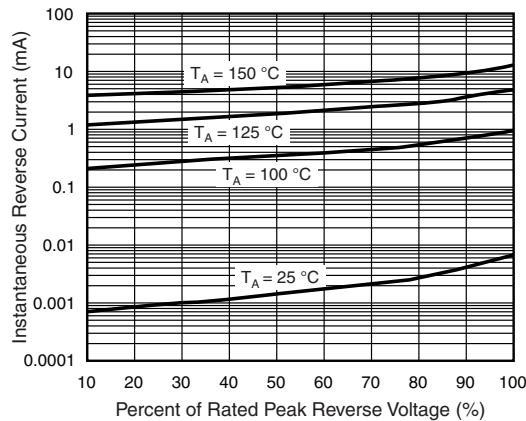


Fig. 4 - Typical Reverse Characteristics Per Diode

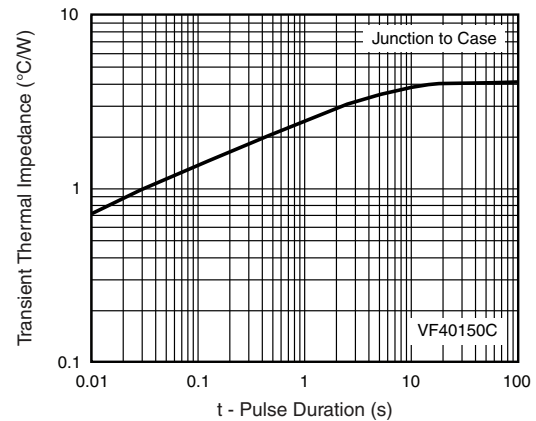


Fig. 7 - Typical Transient Thermal Impedance Per Diode

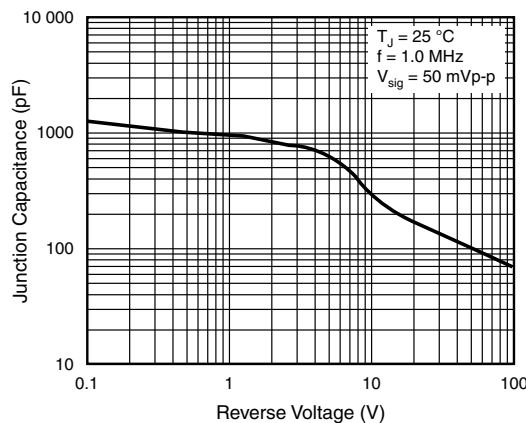
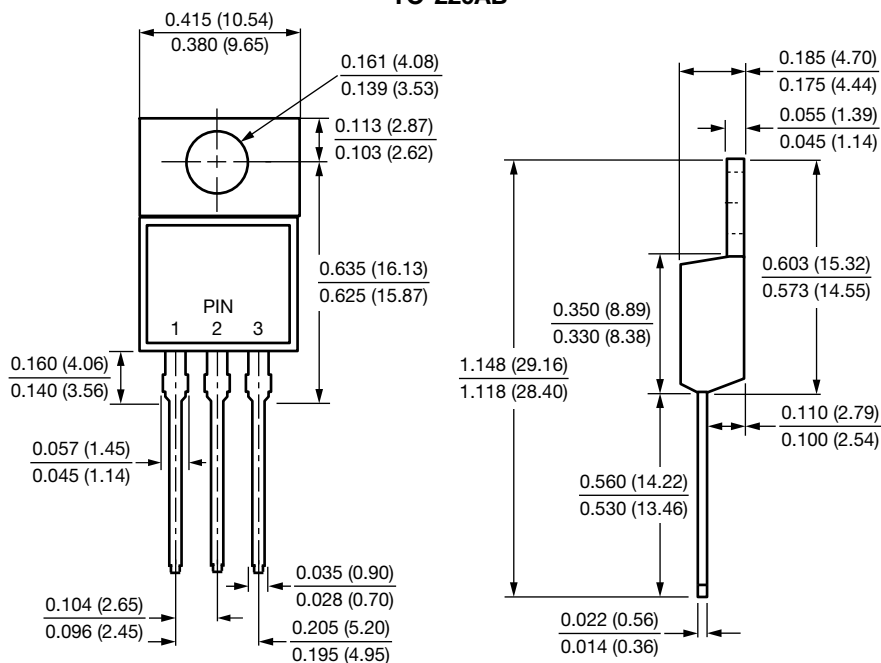


Fig. 5 - Typical Junction Capacitance

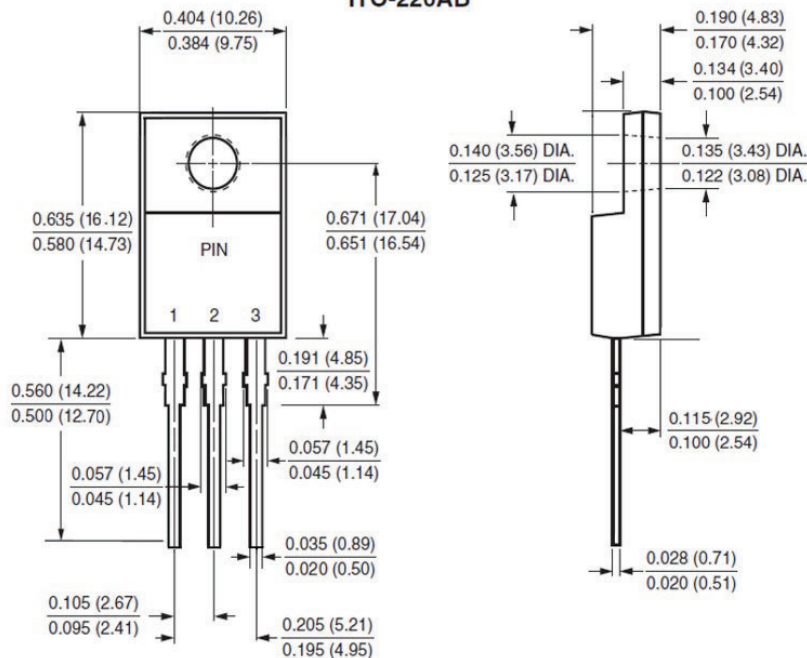


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB

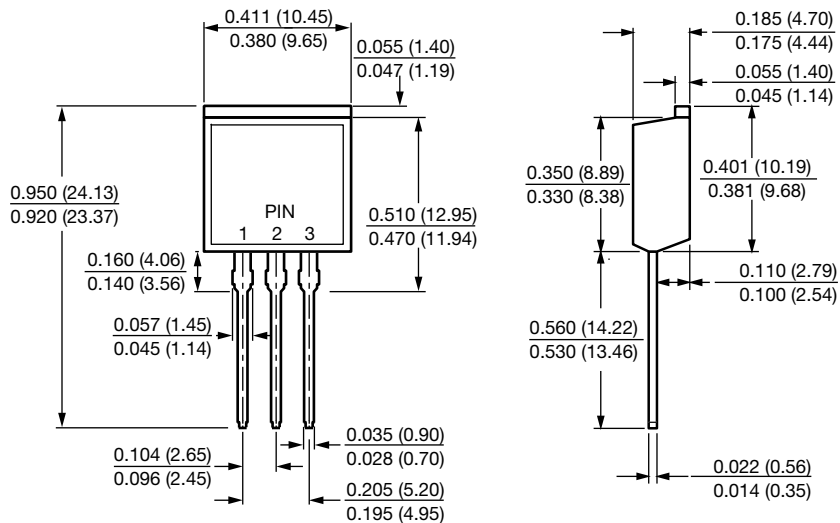


ITO-220AB

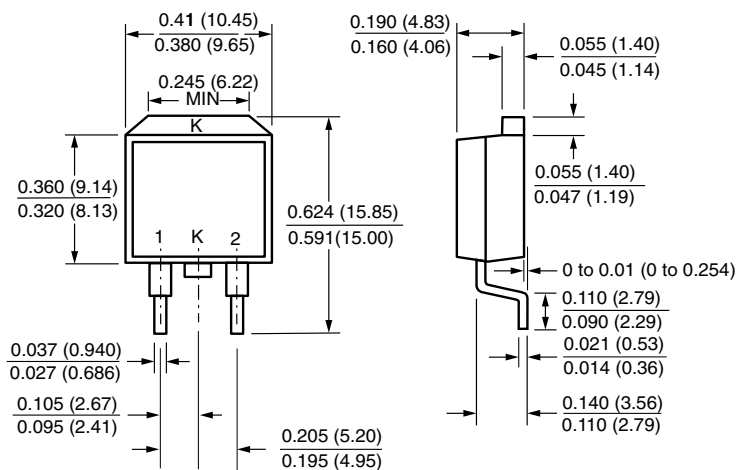




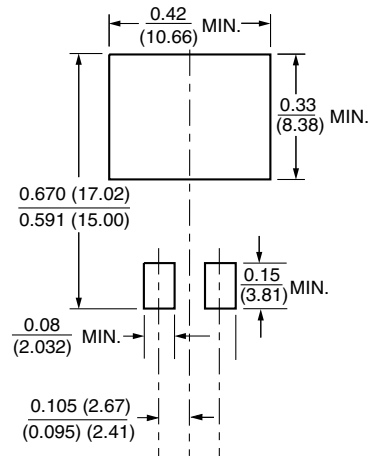
TO-262AA



D²PAK (TO-263AB)



Mounting Pad Layout





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