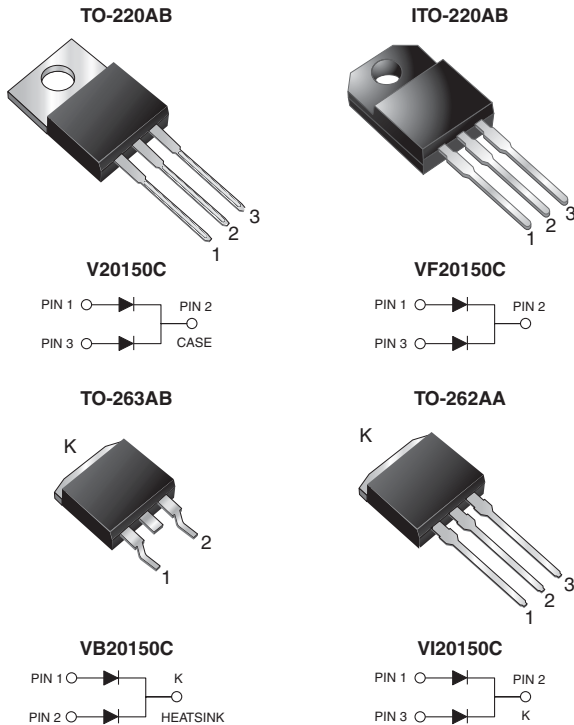


Dual High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.59 \text{ V}$ at $I_F = 5 \text{ A}$

TMBS®



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 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, 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 maximum

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	2 x 10 A
V_{RRM}	150 V
I_{FSM}	120 A
V_F at $I_F = 10 \text{ A}$	0.69 V
T_J max.	150 °C

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

PARAMETER	SYMBOL	V20150C	VF20150C	VB20150C	VI20150C	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	150				V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	20				A
		10				
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	I_{FSM}	120				A
Non-repetitive avalanche energy at $T_J = 25 \text{ °C}$, $L = 60 \text{ mH}$ per diode	E_{AS}	70				mJ
Peak repetitive reverse current at $t_p = 2 \text{ } \mu\text{s}$, 1 kHz, $T_J = 38 \text{ °C} \pm 2 \text{ °C}$ 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 $t = 1 \text{ min}$	V_{AC}	1500				V
Operating junction and storage temperature range	T_J, T_{STG}	- 55 to + 150				°C

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

PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT
Breakdown voltage	$I_R = 1.0\text{ mA}$ $T_A = 25\text{ }^{\circ}\text{C}$	V_{BR}	150 (minimum)	-	V
Instantaneous forward voltage per diode ⁽¹⁾	$I_F = 5\text{ A}$ $T_A = 25\text{ }^{\circ}\text{C}$	V_F	0.79	-	V
	$I_F = 10\text{ A}$ $T_A = 25\text{ }^{\circ}\text{C}$		1.05	1.20	
	$I_F = 5\text{ A}$ $T_A = 125\text{ }^{\circ}\text{C}$		0.59	-	
	$I_F = 10\text{ A}$ $T_A = 125\text{ }^{\circ}\text{C}$		0.69	0.75	
Reverse current per diode ⁽²⁾	$V_R = 100\text{ V}$ $T_A = 25\text{ }^{\circ}\text{C}$	I_R	1.3	-	μA
	$V_R = 100\text{ V}$ $T_A = 125\text{ }^{\circ}\text{C}$		1.2	-	mA
	$V_R = 150\text{ V}$ $T_A = 25\text{ }^{\circ}\text{C}$		-	150	μA
	$V_R = 150\text{ V}$ $T_A = 125\text{ }^{\circ}\text{C}$		3	15	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	V20150C	VF20150C	VB20150C	VI20150C	UNIT
Typical thermal resistance per diode	$R_{\theta JC}$	2.8	5.0	2.8	2.8	$^{\circ}\text{C/W}$

ORDERING INFORMATION (Example)

PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	V20150C-E3/4W	1.88	4W	50/tube	Tube
ITO-220AB	VF20150C-E3/4W	1.75	4W	50/tube	Tube
TO-263AB	VB20150C-E3/4W	1.39	4W	50/tube	Tube
TO-263AB	VB20150C-E3/8W	1.39	8W	800/reel	Tape and reel
TO-262AA	VI20150C-E3/4W	1.45	4W	50/tube	Tube

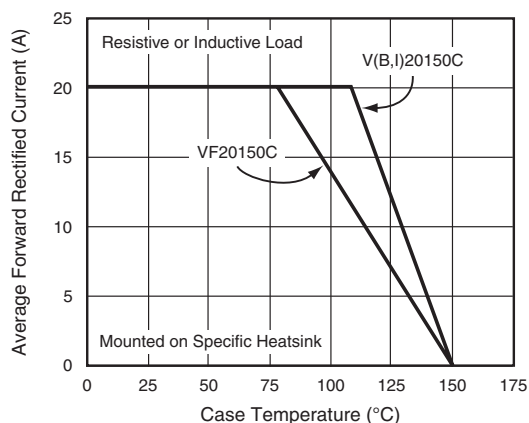
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Fig. 1 - Maximum Forward Current Derating Curve

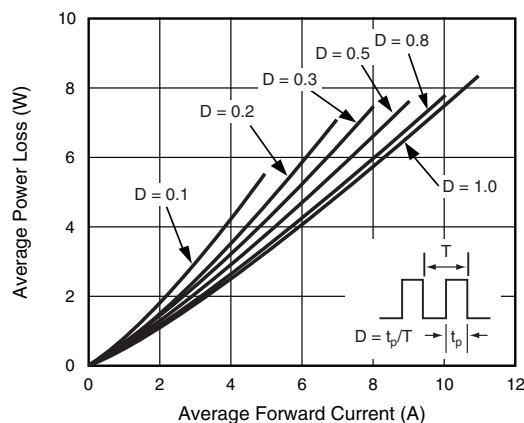


Fig. 2 - Forward Power Loss Characteristics Per Diode

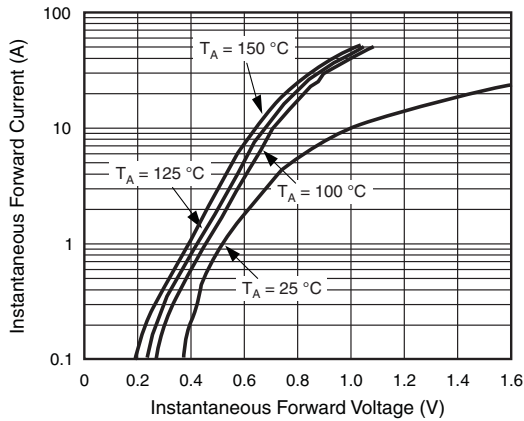


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

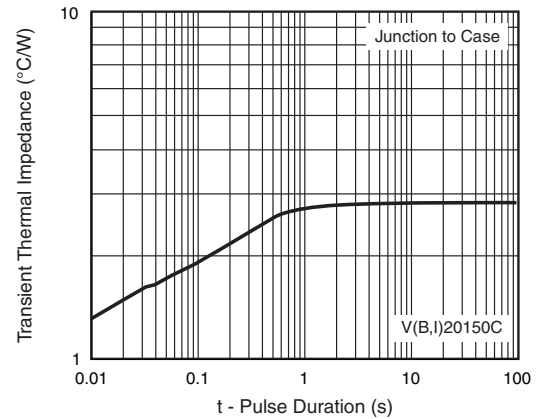


Fig. 6 - Typical Transient Thermal Impedance Per Diode

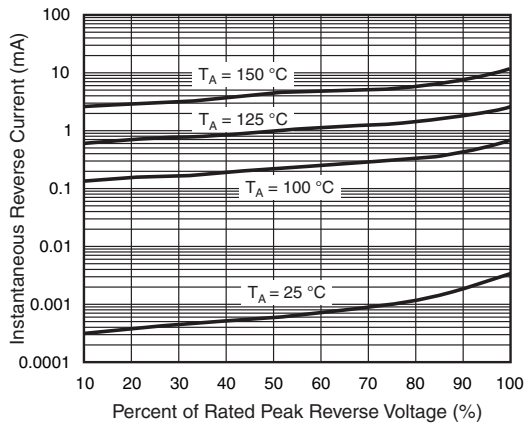


Fig. 4 - Typical Reverse Characteristics Per Diode

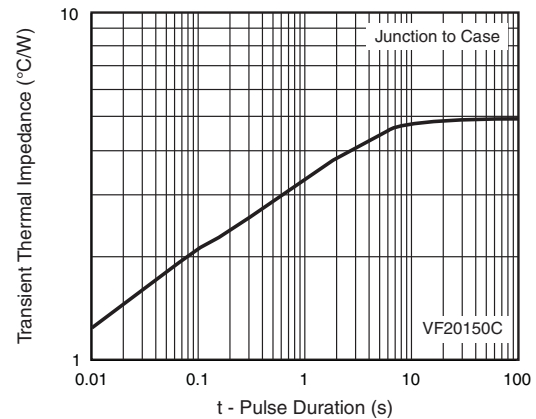


Fig. 7 - Typical Transient Thermal Impedance Per Diode

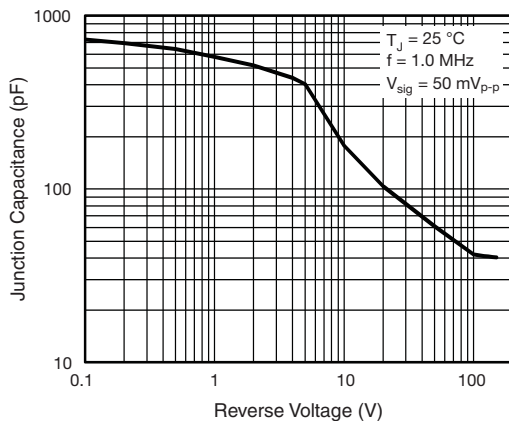
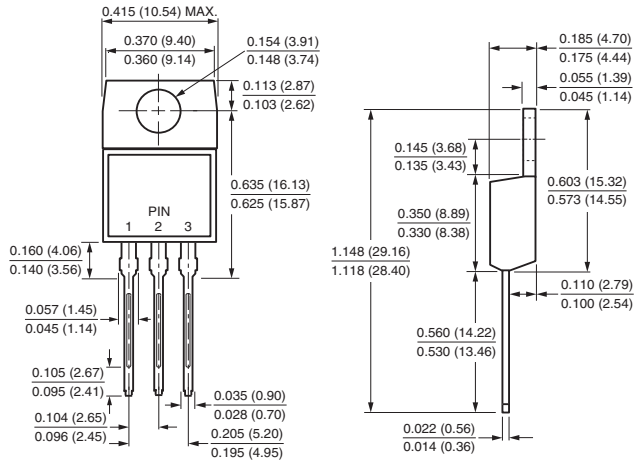


Fig. 5 - Typical Junction Capacitance

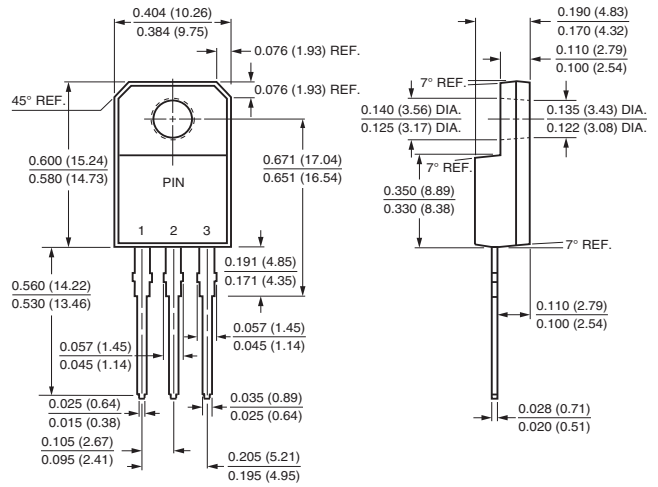


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

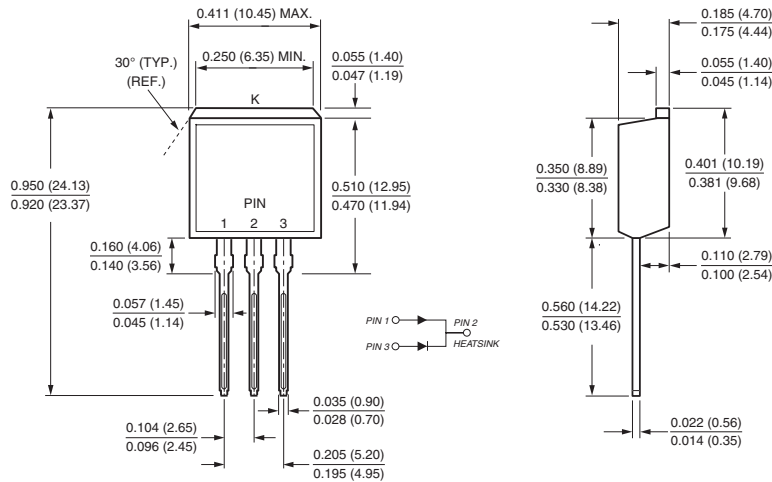
TO-220AB



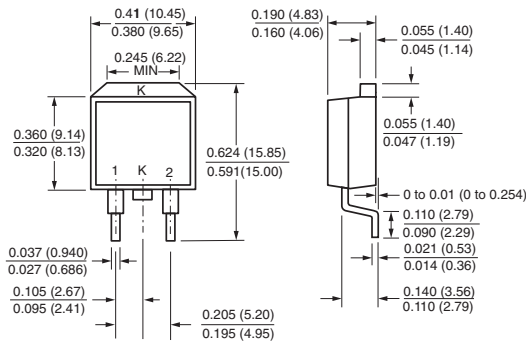
ITO-220AB



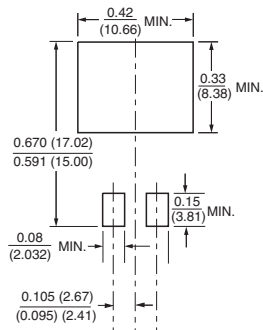
TO-262AA



TO-263AB



Mounting Pad Layout





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