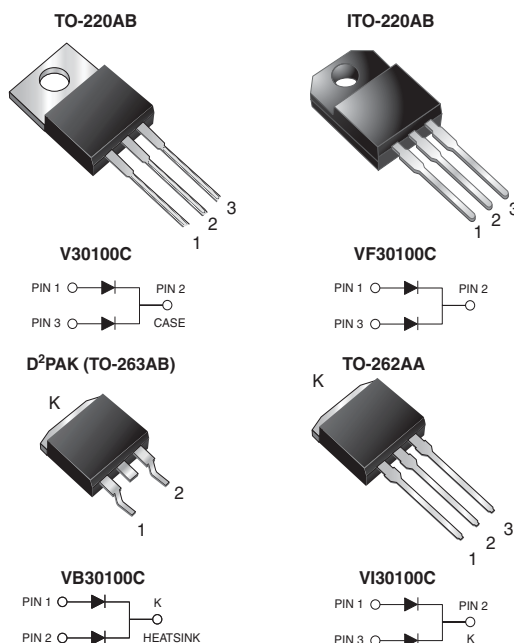




## Dual High Voltage TMBS® (Trench MOS Barrier Schottky) Rectifier

Ultra Low  $V_F = 0.455 \text{ V}$  at  $I_F = 5 \text{ A}$



### ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 15 A
$V_{RRM}$	100 V
$I_{FSM}$	160 A
$V_F$ at $I_F = 15 \text{ A}$	0.63 V
$T_J \text{ max.}$	150 °C
Package	TO-220AB, ITO-220AB, D <sup>2</sup> PAK (TO-263AB), TO-262AA
Circuit configuration	Common cathode

### 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)
- Low thermal resistance
- 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](http://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, D<sup>2</sup>PAK (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

MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	V30100C	VF30100C	VB30100C	VI30100C	UNIT
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	100				V
Maximum average forward rectified current (fig. 1)	<div>per device per diode</div> I <sub>F(AV)</sub>	30				A
		15				
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	I <sub>FSM</sub>	160				A
Non-repetitive avalanche energy at T <sub>J</sub> = 25 °C, L = 60 mH per diode	E <sub>AS</sub>	210				mJ
Peak repetitive reverse current at t <sub>p</sub> = 2 μs, 1 kHz, T <sub>J</sub> = 38 °C ± 2 °C per diode	I <sub>RRM</sub>	1.0				A
Voltage rate of change (rated V <sub>R</sub> )	dV/dt	10 000				V/μs
Isolation voltage (ITO-220AB only) from terminal to heatsink t = 1 min	V <sub>AC</sub>	1500				V
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-40 to +150				°C



ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Breakdown voltage	I <sub>R</sub> = 10 mA	T <sub>A</sub> = 25 °C	V <sub>BR</sub>	100 (minimum)	-	V
Instantaneous forward voltage per diode	I <sub>F</sub> = 5 A	T <sub>A</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.516	-	V
	I <sub>F</sub> = 7.5 A			0.576	-	
	I <sub>F</sub> = 15 A			0.734	0.80	
	I <sub>F</sub> = 5 A	T <sub>A</sub> = 125 °C		0.455	-	
	I <sub>F</sub> = 7.5 A			0.522	-	
	I <sub>F</sub> = 15 A			0.627	0.68	
Reverse current per diode	V <sub>R</sub> = 70 V	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	7.2	-	μA
		T <sub>A</sub> = 125 °C		8.0	-	mA
	V <sub>R</sub> = 100 V	T <sub>A</sub> = 25 °C		65	500	μA
		T <sub>A</sub> = 125 °C		20	35	mA

## Notes

(1) Pulse test: 300  $\mu\text{s}$  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	V30100C	VF30100C	VB30100C	VI30100C	UNIT
Typical thermal resistance per diode	$R_{\theta JC}$	2.5	5.5	2.5	2.5	$^{\circ}\text{C/W}$

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	V30100C-E3/4W	1.88	4W	50/tube	Tube
ITO-220AB	VF30100C-E3/4W	1.75	4W	50/tube	Tube
TO-263AB	VB30100C-E3/4W	1.39	4W	50/tube	Tube
TO-263AB	VB30100C-E3/8W	1.39	8W	800/reel	Tape and reel
TO-262AA	VI30100C-E3/4W	1.46	4W	50/tube	Tube

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

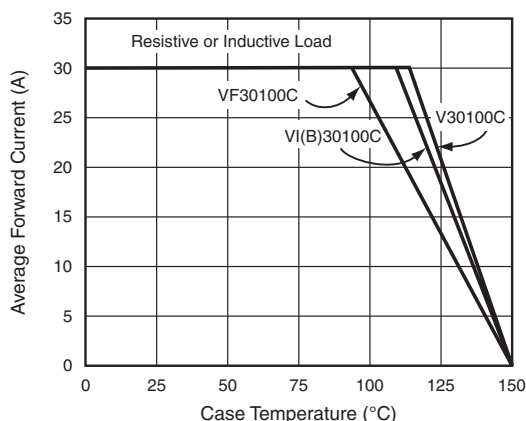


Fig. 1 - Forward Current Derating Curve

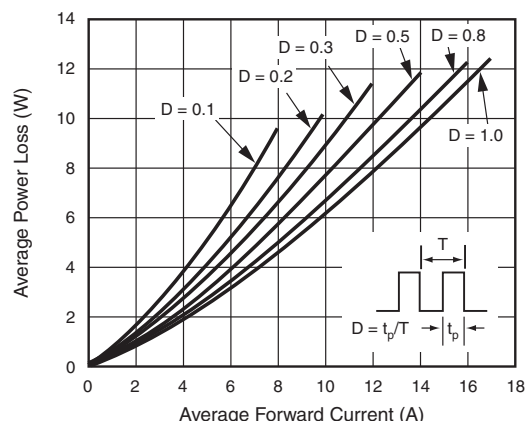


Fig. 2 - Forward Power Loss Characteristics Per Diode

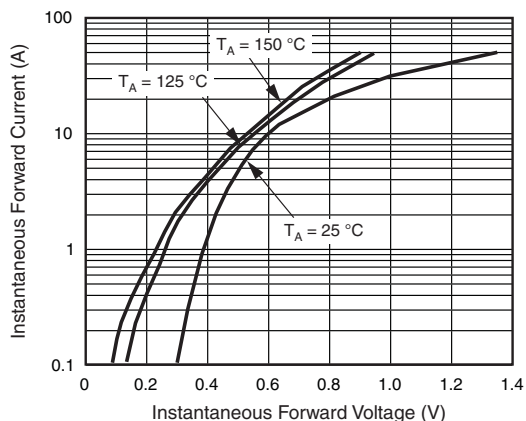


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

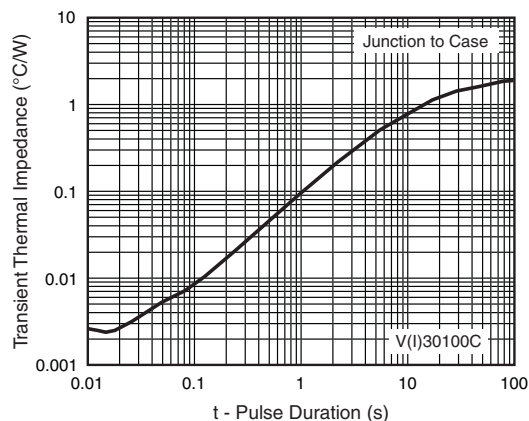


Fig. 6 - Typical Transient Thermal Impedance Per Diode

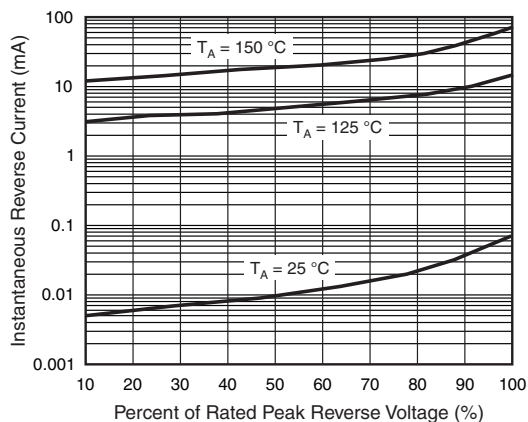


Fig. 4 - Typical Reverse Characteristics Per Diode

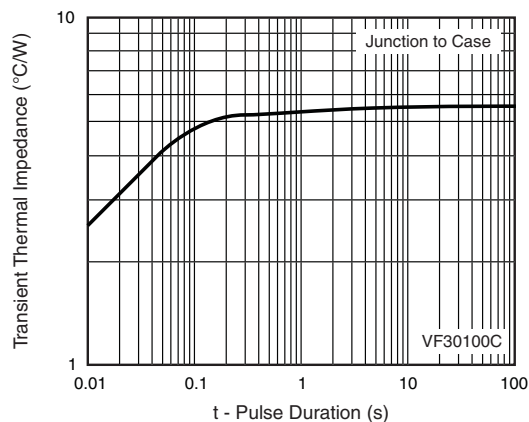


Fig. 7 - Typical Transient Thermal Impedance Per Diode

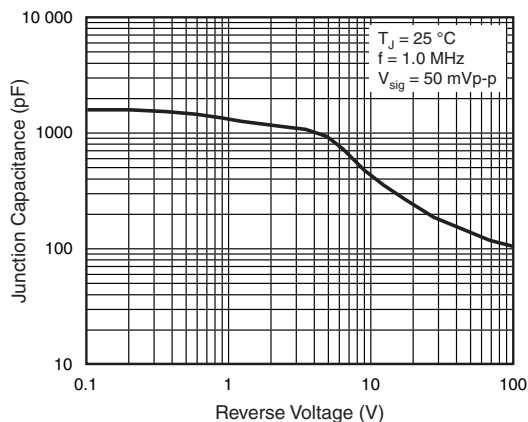
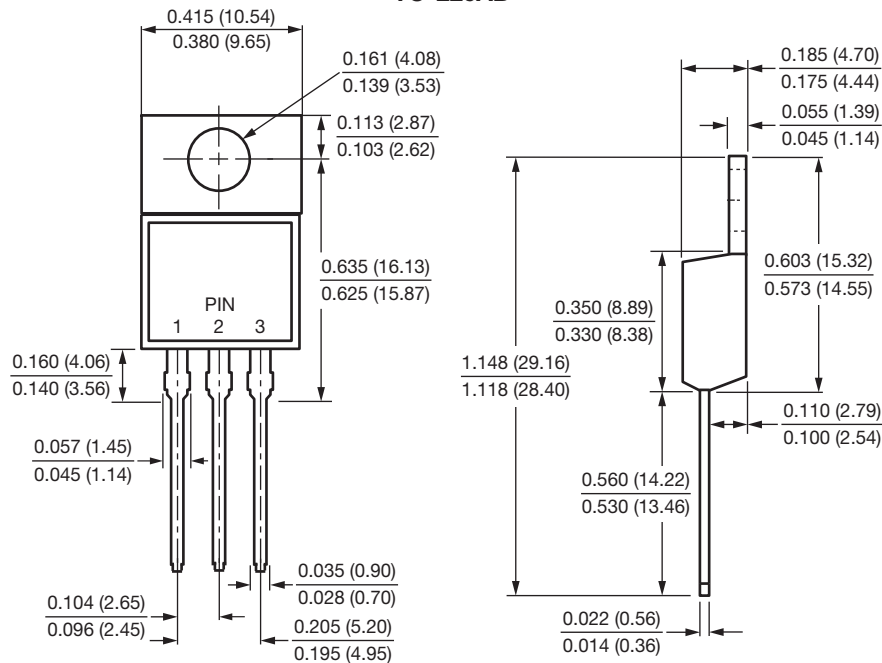


Fig. 5 - Typical Junction Capacitance

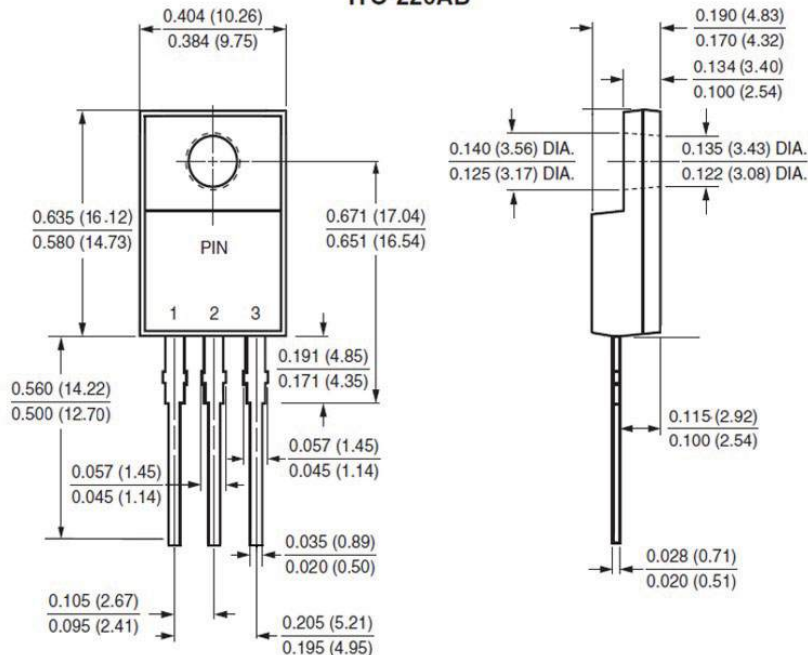


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

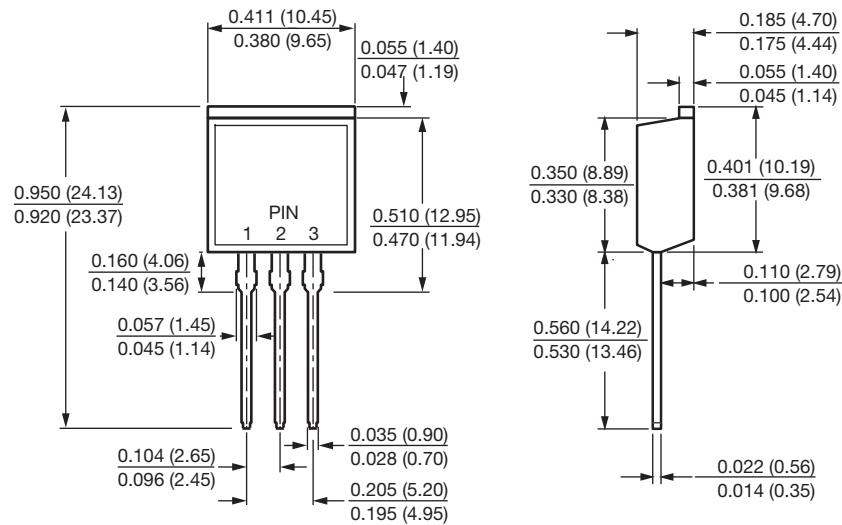
TO-220AB



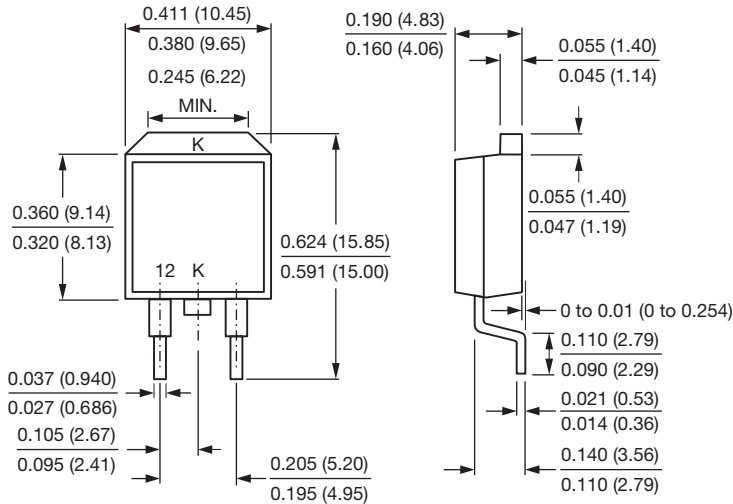
ITO-220AB



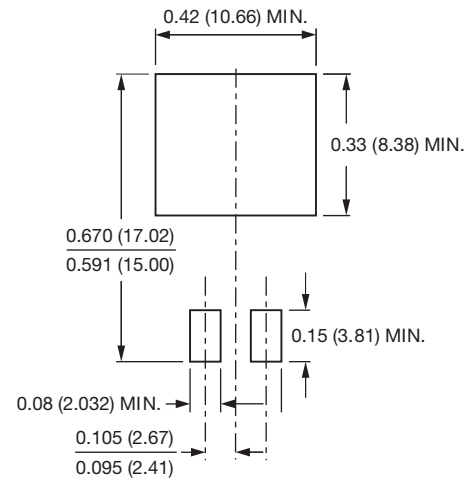
## TO-262AA



## D<sup>2</sup>PAK (TO-263AB)



## Mounting Pad Layout





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