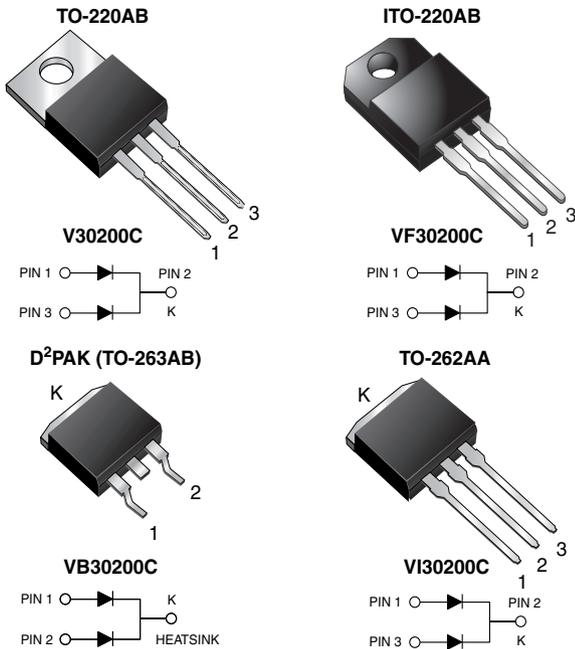


## Dual High Voltage TMBS<sup>®</sup> (Trench MOS Barrier Schottky) Rectifier

Ultra Low  $V_F = 0.526$  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, 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

### LINKS TO ADDITIONAL RESOURCES



3D Models

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 15 A
$V_{RRM}$	200 V
$I_{FSM}$	250 A
$V_F$ at $I_F = 15$ A	0.648 V
$T_J$ max.	150 °C
Package	TO-220AB, ITO-220AB, D <sup>2</sup> PAK (TO-263AB), TO-262AA
Circuit configurations	Common cathode

MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)						
PARAMETER	SYMBOL	V30200C	VF30200C	VB30200C	VI30200C	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	200				V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	per device			30	A
		per diode			15	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	250				A
Non-repetitive avalanche energy at $T_J = 25$ °C, $L = 60$ mH per diode	$E_{AS}$	200				mJ
Peak repetitive reverse current at $t_p = 2$ $\mu$ s, 1 kHz, $T_J = 38$ °C $\pm$ 2 °C per diode	$I_{RRM}$	0.5				A
Voltage rate of change (rated $V_R$ )	dV/dt	10 000				V/ $\mu$ s
Isolation voltage (ITO-220AB only) from terminal to heatsink $t = 1$ min	$V_{AC}$	1500				V
Operating junction and storage temperature range	$T_J, T_{STG}$	-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>	205 min.	-	V
Instantaneous forward voltage per diode <sup>(1)</sup>	I <sub>F</sub> = 5 A	T <sub>A</sub> = 25 °C	V <sub>F</sub>	0.691	-	
	I <sub>F</sub> = 10 A			0.770	-	
	I <sub>F</sub> = 15 A			0.841	1.10	
	I <sub>F</sub> = 5 A	T <sub>A</sub> = 125 °C		0.526	-	
	I <sub>F</sub> = 10 A			0.594	-	
	I <sub>F</sub> = 15 A			0.648	0.72	
Reverse current per diode <sup>(2)</sup>	V <sub>R</sub> = 180 V	T <sub>A</sub> = 25 °C	I <sub>R</sub>	2.4	-	μA
		T <sub>A</sub> = 125 °C		3.8	-	mA
	V <sub>R</sub> = 200 V	T <sub>A</sub> = 25 °C		5.3	160	μA
		T <sub>A</sub> = 125 °C		6.0	12	mA

**Notes**

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	V30200C	VF30200C	VB30200C	VI30200C	UNIT
Typical thermal resistance per diode	R <sub>θJC</sub>	2.0	5.5	2.0	2.0	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	V30200C-E3/4W	2.248	4W	50/tube	Tube
ITO-220AB	VF30200C-E3/4W	1.75	4W	50/tube	Tube
TO-263AB	VB30200C-E3/4W	1.39	4W	50/tube	Tube
TO-263AB	VB30200C-E3/8W	1.39	8W	800/reel	Tape and reel
TO-262AA	VI30200C-E3/4W	1.46	4W	50/tube	Tube

**RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)**

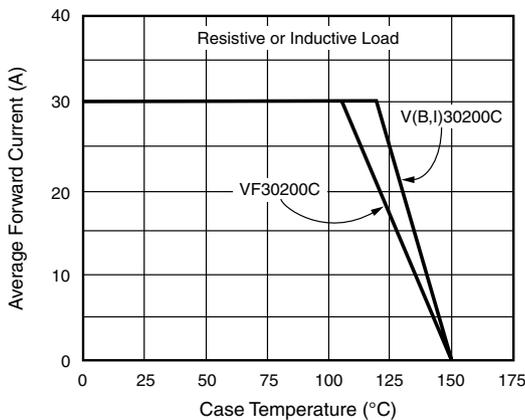


Fig. 1 - Forward Derating Curve

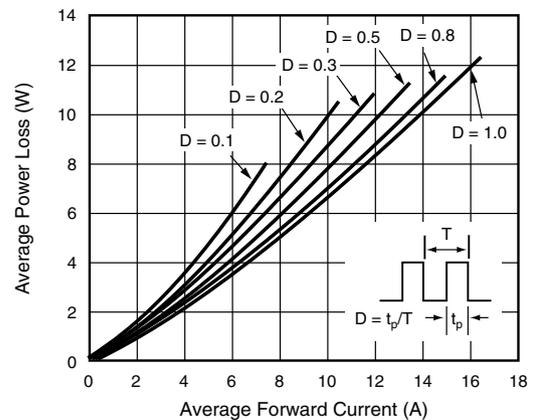


Fig. 2 - Forward Power Loss Characteristics Per Diode

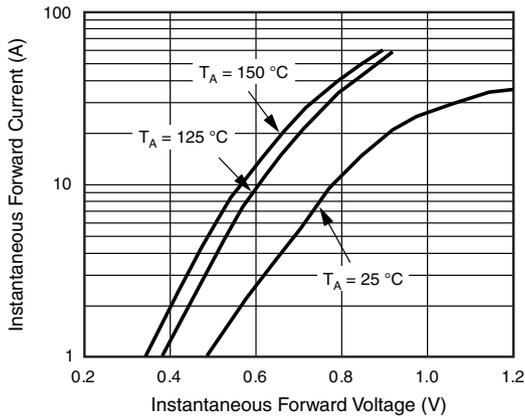


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

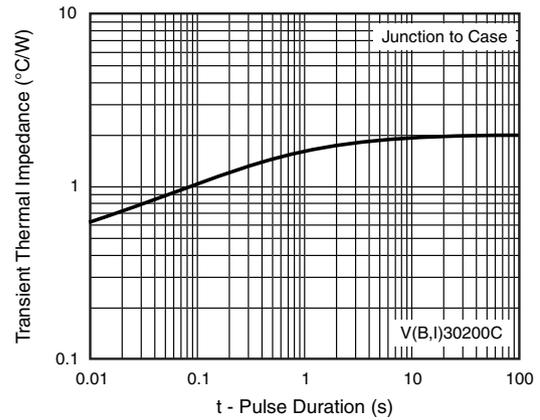


Fig. 6 - Typical Transient Thermal Impedance Per Diode

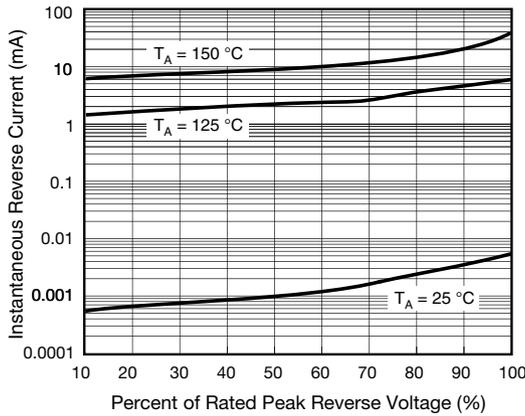


Fig. 4 - Typical Reverse Characteristics Per Diode

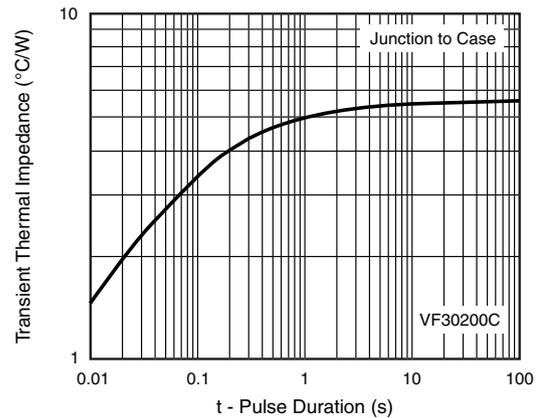


Fig. 7 - Typical Transient Thermal Impedance Per Diode

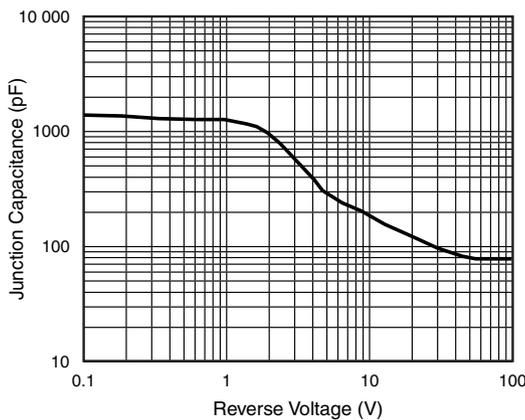
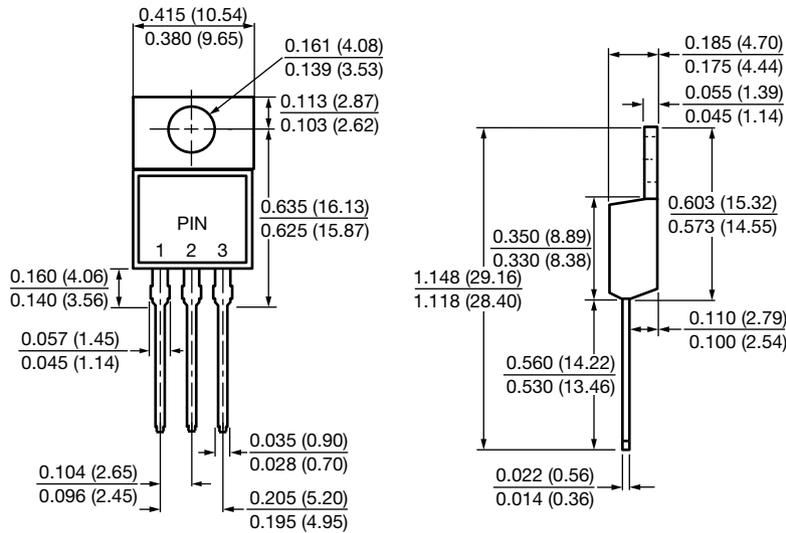


Fig. 5 - Typical Junction Capacitance Per Diode

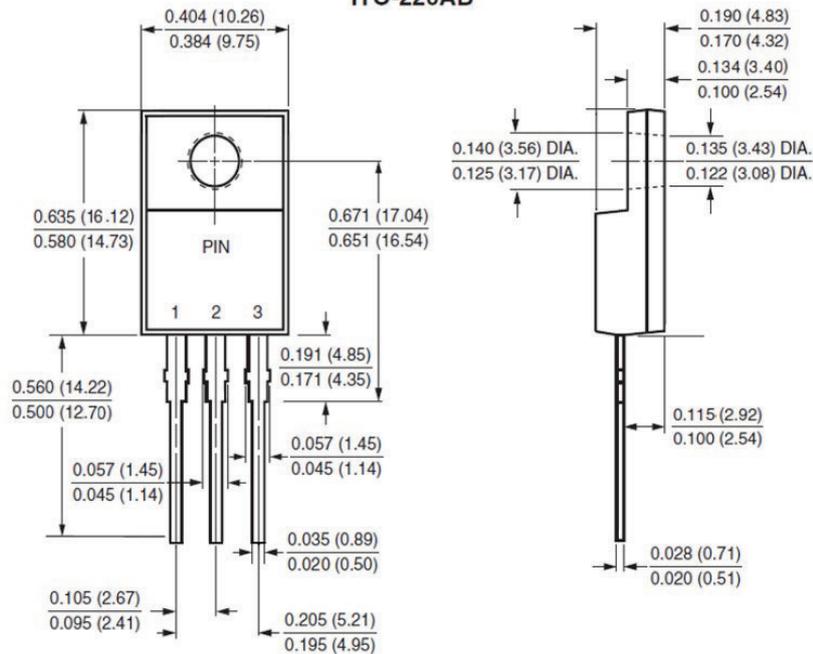


### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

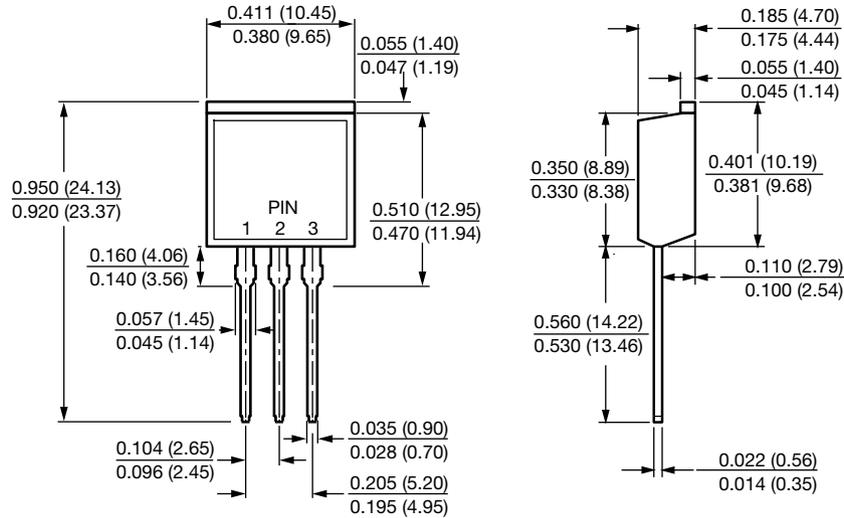
#### TO-220AB



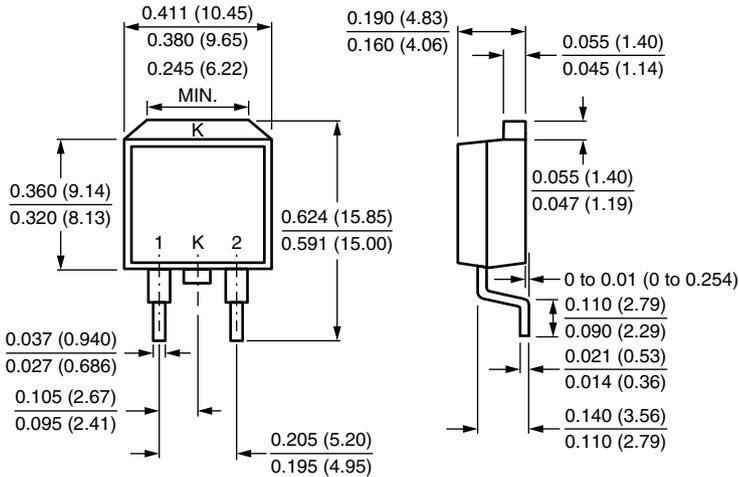
#### ITO-220AB



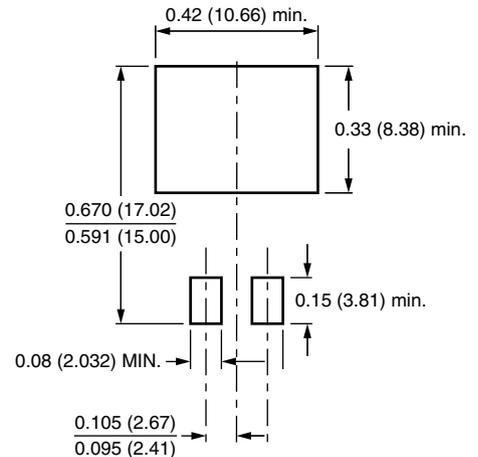
## TO-262AA



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



## Mounting Pad Layout





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