



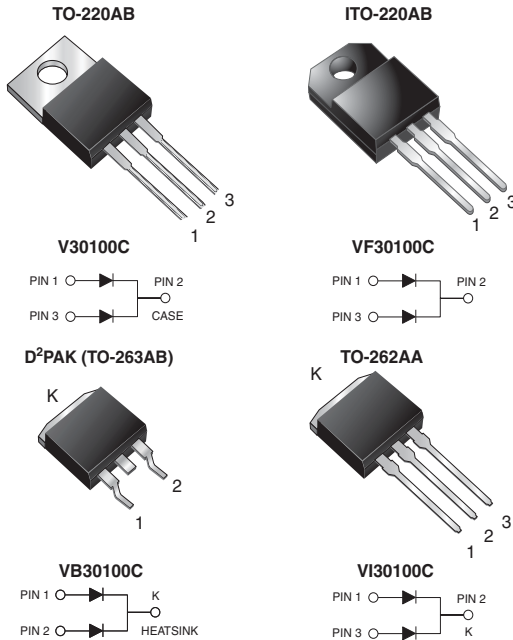
# V30100C-E3, VF30100C-E3, VB30100C-E3, VI30100C-E3

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Vishay General Semiconductor

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

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



### 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

### 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

MAXIMUM RATINGS ( $T_A = 25 \text{ °C}$ unless otherwise noted)						
PARAMETER	SYMBOL	V30100C	VF30100C	VB30100C	VI30100C	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$			100		V
Maximum average forward rectified current (fig. 1)				30		A
				15		
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 $T_J = 25 \text{ °C}$ , $L = 60 \text{ mH}$ per diode	$E_{AS}$			210		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	$I_{RRM}$			1.0		A
Voltage rate of change (rated $V_R$ )	$dV/dt$			10 000		V/ $\mu\text{s}$
Isolation voltage (ITO-220AB only) from terminal to heatsink $t = 1 \text{ min}$	$V_{AC}$			1500		V
Operating junction and storage temperature range	$T_J, T_{STG}$			-40 to +150		°C



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ELECTRICAL CHARACTERISTICS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Breakdown voltage	$I_R = 10\text{ mA}$	$T_A = 25\text{ }^\circ\text{C}$	$V_{BR}$	100 (minimum)	-	V
Instantaneous forward voltage per diode	$I_F = 5\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	0.516	-	V
				$I_F = 7.5\text{ A}$	0.576	
	$I_F = 15\text{ A}$	0.734		0.80		
	$T_A = 125\text{ }^\circ\text{C}$	$I_F = 5\text{ A}$		0.455	-	
		$I_F = 7.5\text{ A}$		0.522	-	
		$I_F = 15\text{ A}$		0.627	0.68	
Reverse current per diode	$V_R = 70\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$	$I_R^{(2)}$	7.2	-	$\mu\text{A}$
		$T_A = 125\text{ }^\circ\text{C}$		8.0	-	mA
	$V_R = 100\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$		65	500	$\mu\text{A}$
		$T_A = 125\text{ }^\circ\text{C}$		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)**

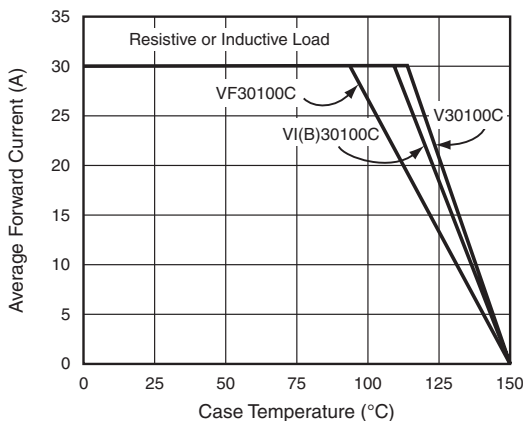


Fig. 1 - Forward Current Derating Curve

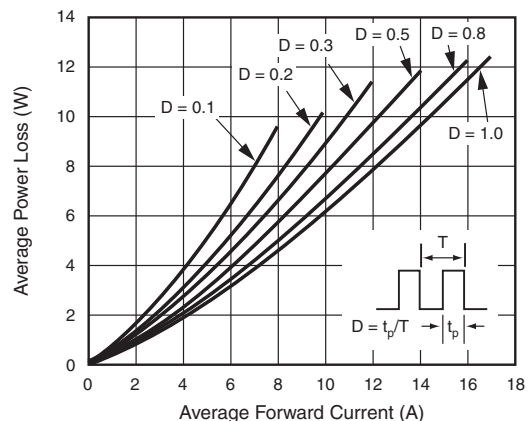


Fig. 2 - Forward Power Loss Characteristics Per Diode

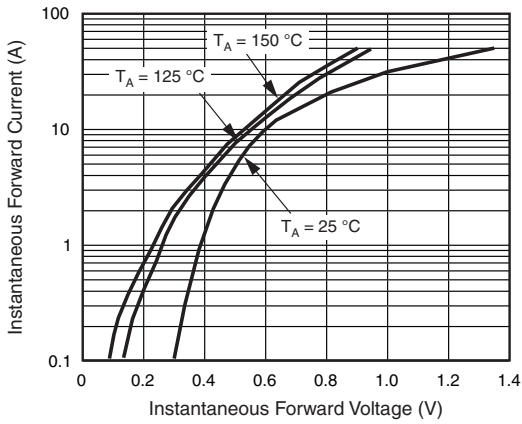


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

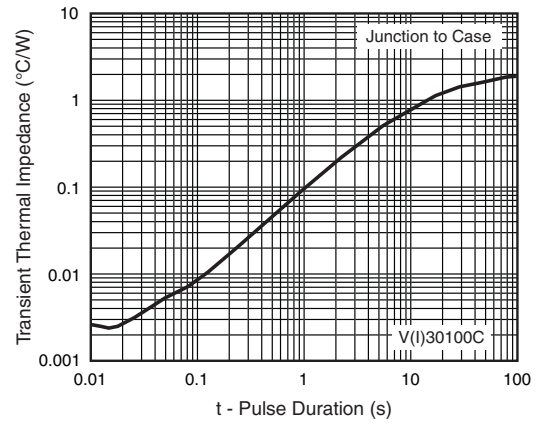


Fig. 6 - Typical Transient Thermal Impedance Per Diode

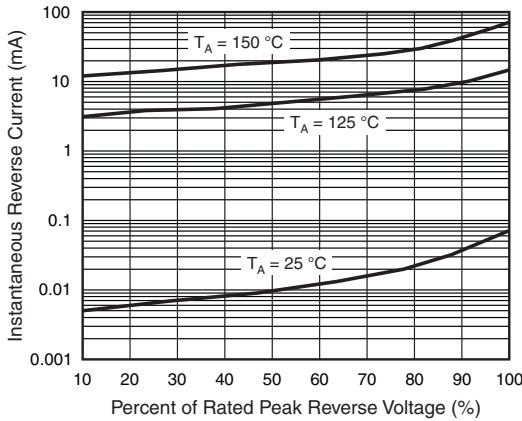


Fig. 4 - Typical Reverse Characteristics Per Diode

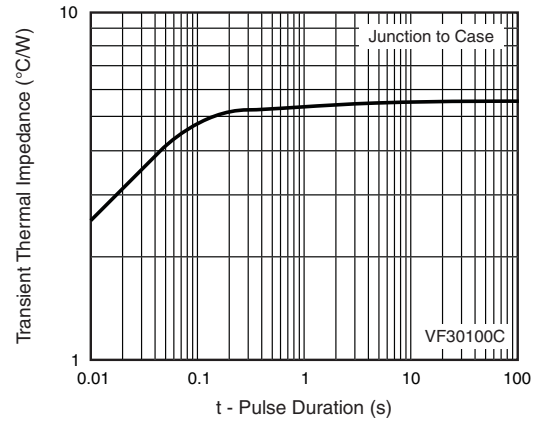


Fig. 7 - Typical Transient Thermal Impedance Per Diode

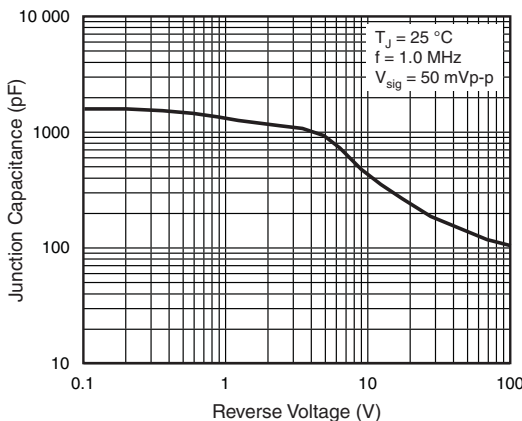


Fig. 5 - Typical Junction Capacitance



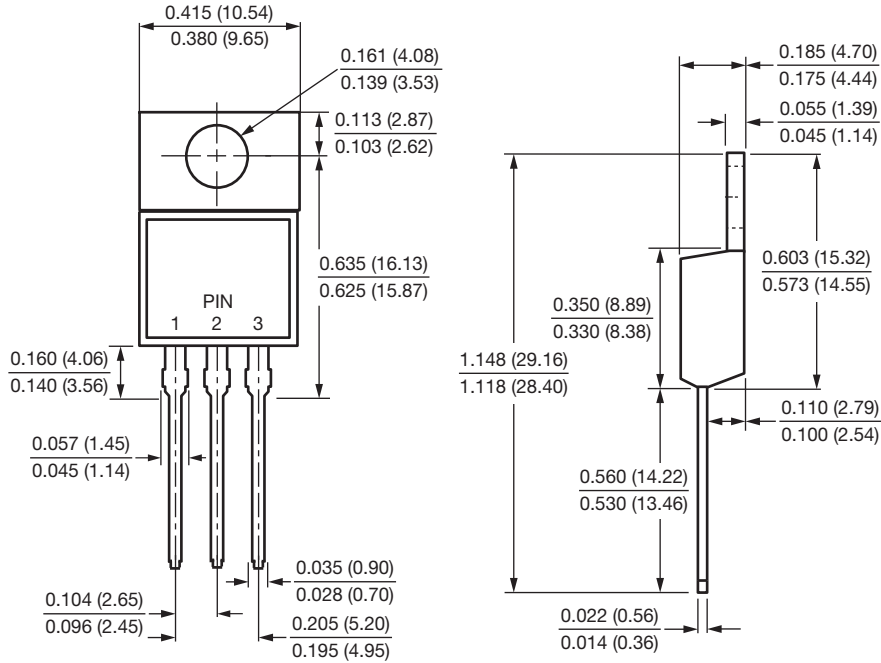
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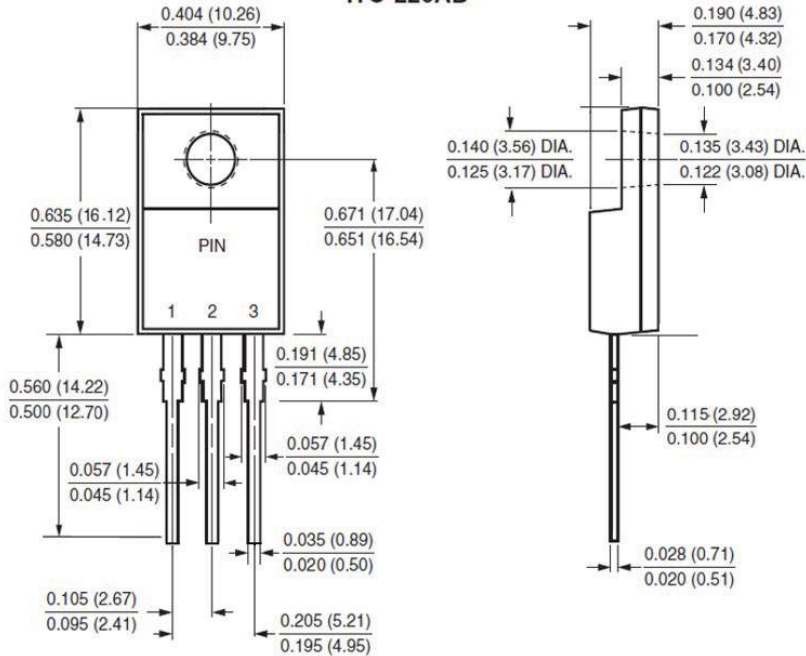
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## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### TO-220AB

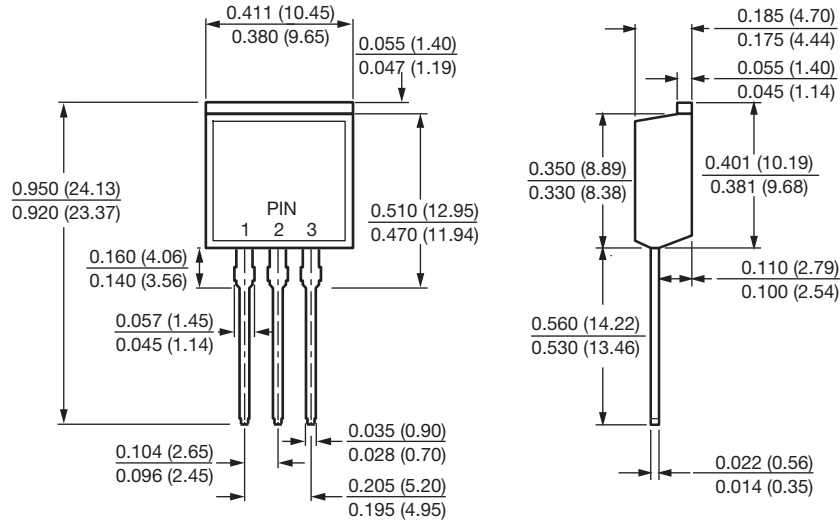


### ITO-220AB

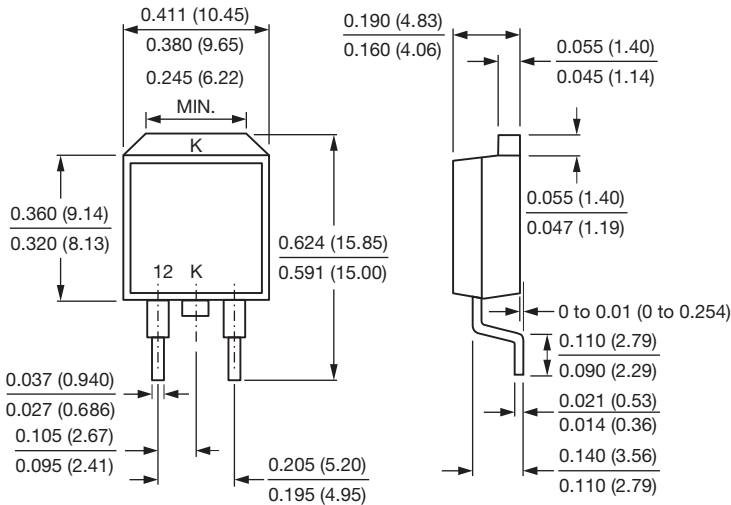




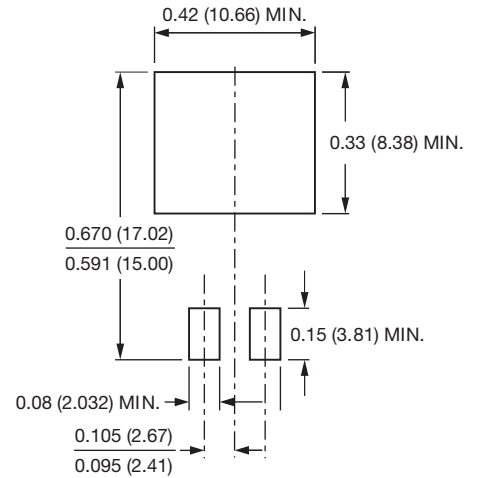
## TO-262AA



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



## Mounting Pad Layout





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