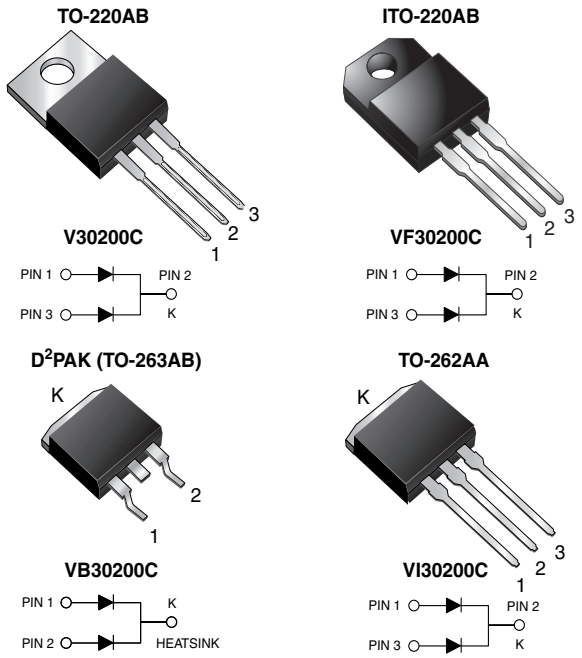
Dual High Voltage TMBS® (Trench MOS Barrier Schottky) Rectifier

Ultra Low V_F = 0.526 V at I_F = 5A



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

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 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, D²PAK (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)	per device	$I_{F(AV)}$	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 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}	-40 to +150				°C

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Breakdown voltage	I_R = 10 mA	T_A = 25 °C	V_{BR}	205 min.	-	V
Instantaneous forward voltage per diode (1)	I_F = 5 A	T_A = 25 °C	V_F	0.691	-	
	I_F = 10 A			0.770	-	
	I_F = 15 A			0.841	1.10	
	I_F = 5 A	T_A = 125 °C		0.526	-	
	I_F = 10 A			0.594	-	
	I_F = 15 A			0.648	0.72	
Reverse current per diode (2)	V_R = 180 V	T_A = 25 °C	I_R	2.4	-	µA
		T_A = 125 °C		3.8	-	mA
	V_R = 200 V	T_A = 25 °C		5.3	160	µA
		T_A = 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_A = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	V30200C	VF30200C	VB30200C	VI30200C	UNIT
Typical thermal resistance per diode	$R_{\theta JC}$	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_A = 25 °C unless otherwise noted)

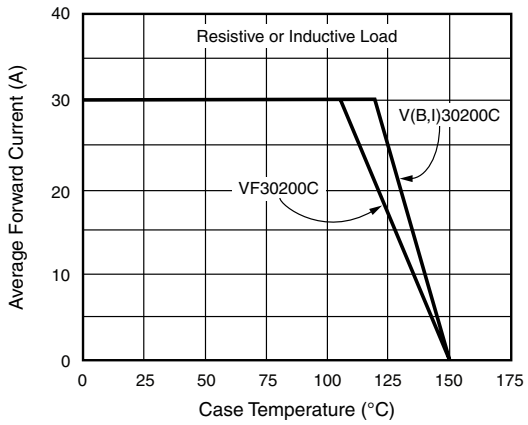


Fig. 1 - Forward Derating Curve

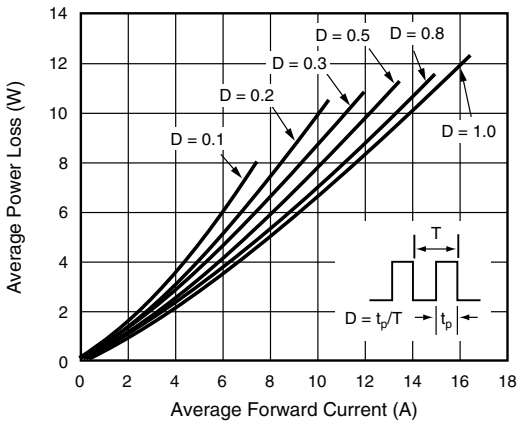


Fig. 2 - Forward Power Loss Characteristics Per Diode

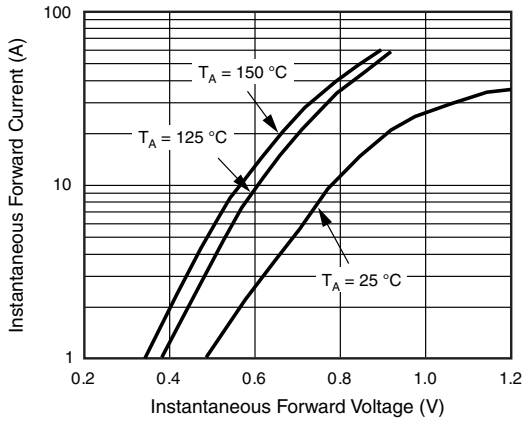


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

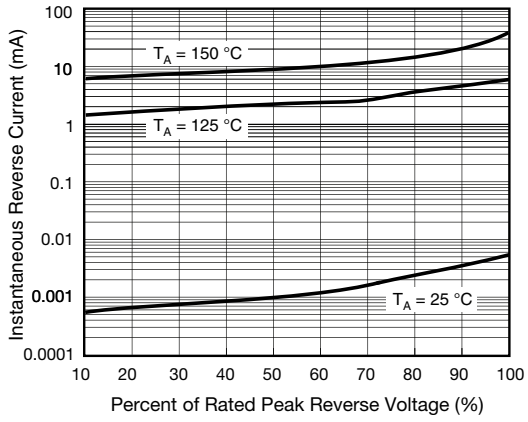


Fig. 4 - Typical Reverse Characteristics Per Diode

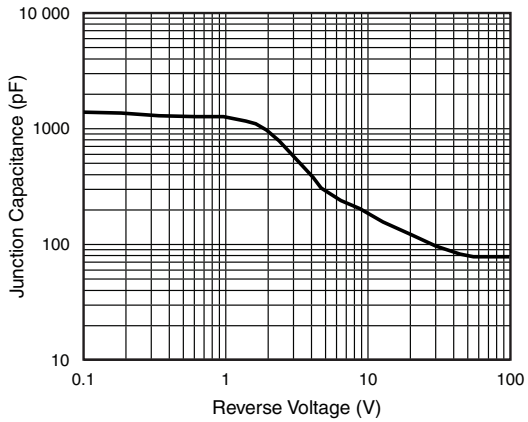


Fig. 5 - Typical Junction Capacitance Per Diode

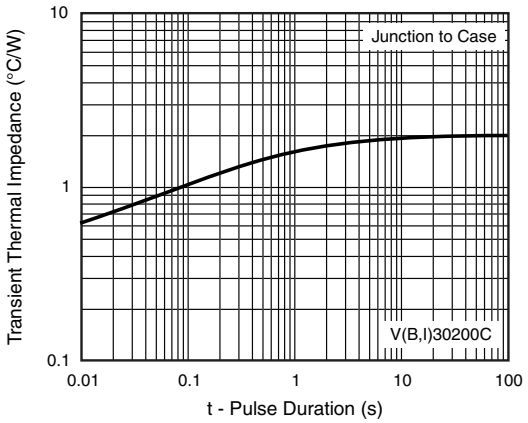


Fig. 6 - Typical Transient Thermal Impedance Per Diode

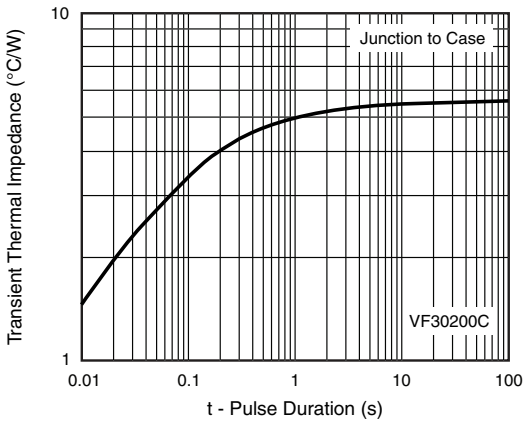
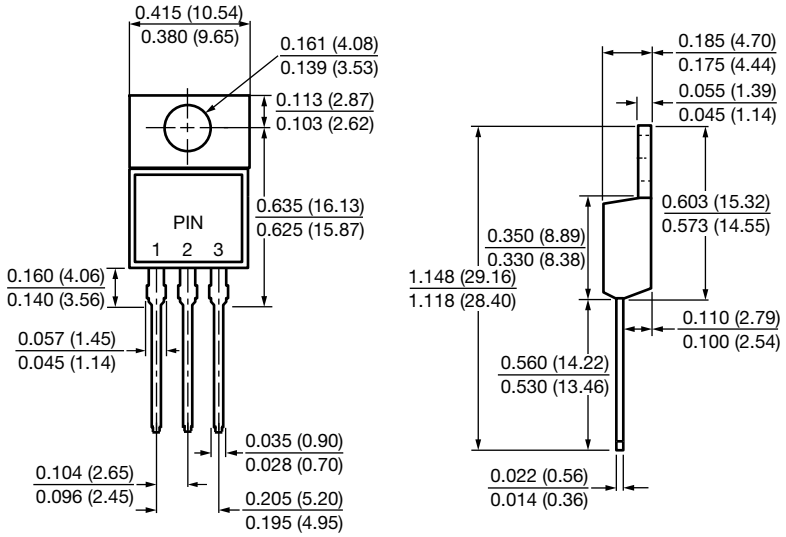


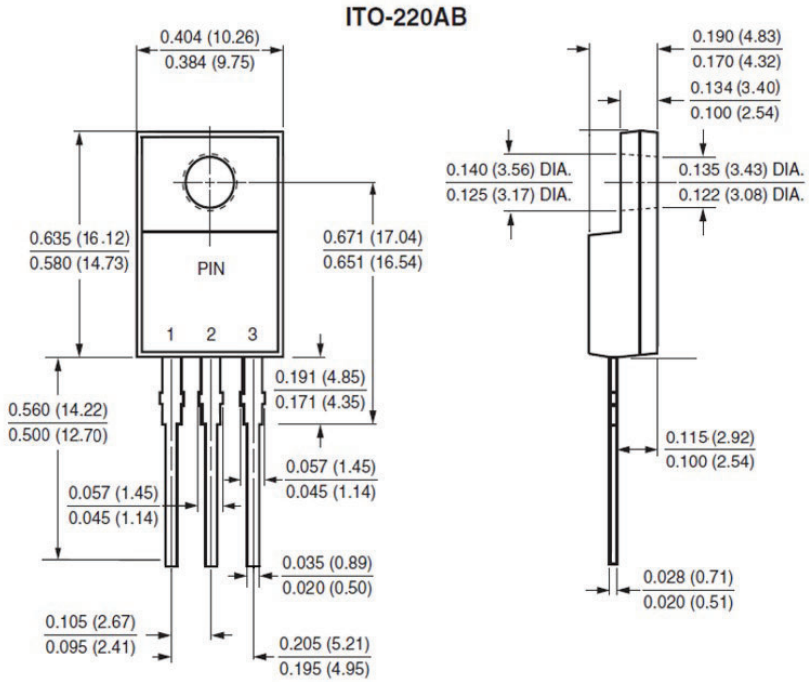
Fig. 7 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

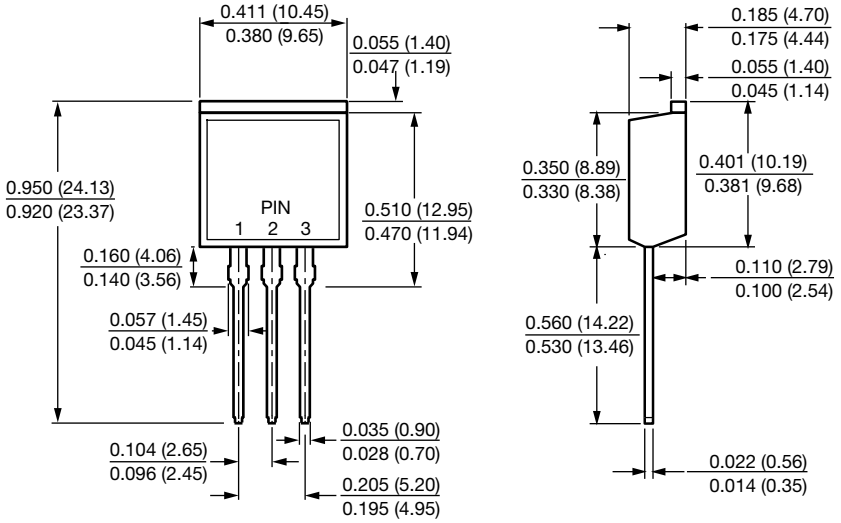
TO-220AB



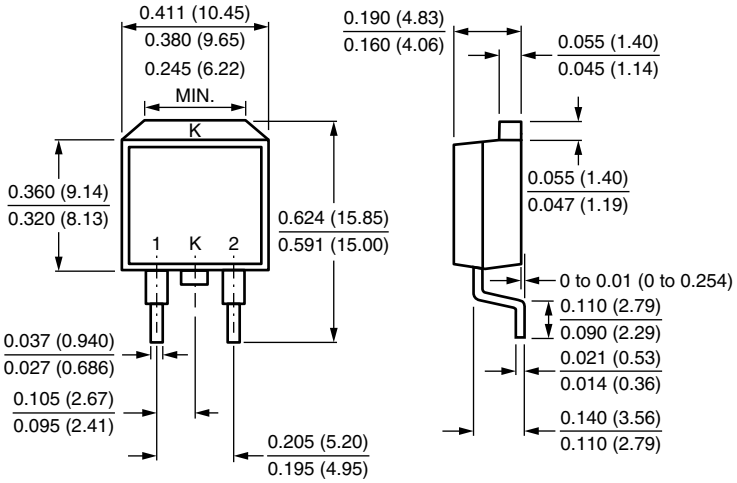
ITO-220AB



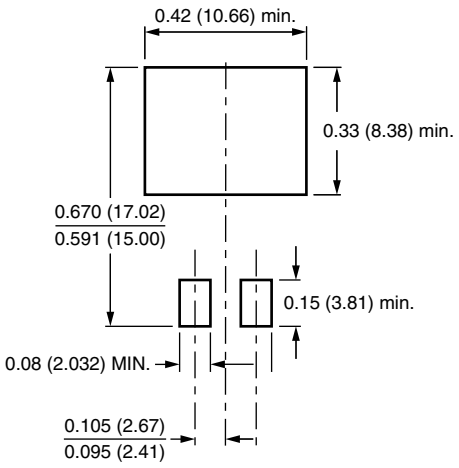
TO-262AA



D²PAK (TO-263AB)



Mounting Pad Layout



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