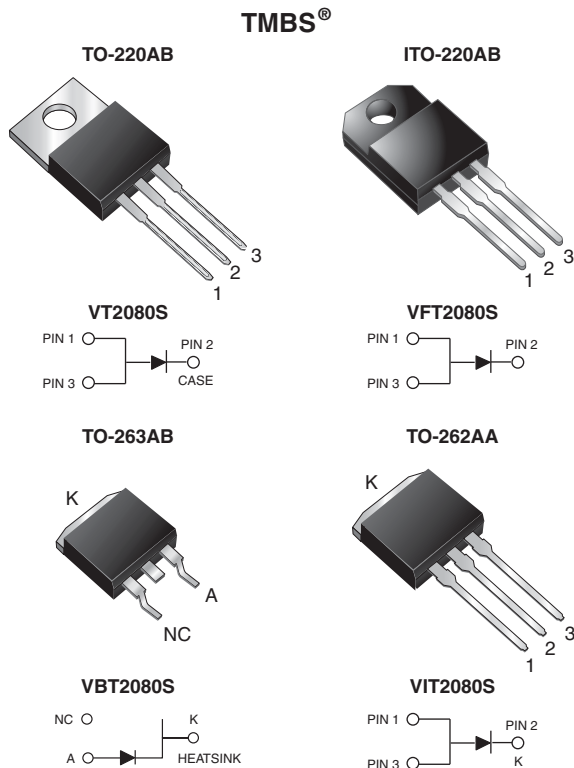


Trench MOS Barrier Schottky Rectifier

 Ultra Low $V_F = 0.46\text{ V}$ 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)
- 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

$I_{F(AV)}$	20 A
V_{RRM}	80 V
I_{FSM}	150 A
V_F at $I_F = 20\text{ A}$	0.70 V
T_J max.	150 °C
Package	TO-220AB, ITO-220AB, TO-263AB, TO-262AA
Diode variations	Single die

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

PARAMETER	SYMBOL	VT2080S	VFT2080S	VBT2080S	VIT2080S	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}		80			V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$		20			A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	I_{FSM}		150			A
Non-repetitive avalanche energy at $T_J = 25\text{ °C}$, $L = 60\text{ mH}$	E_{AS}		160			mJ
Peak repetitive reverse current at $t_p = 2\text{ }\mu\text{s}$, 1 kHz, $T_J = 38\text{ °C} \pm 2\text{ °C}$	I_{RRM}		1.0			A
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	
Instantaneous forward voltage	$I_F = 5\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	0.52	-	V
	$I_F = 10\text{ A}$			0.61	-	
	$I_F = 20\text{ A}$			0.80	0.92	
	$I_F = 5\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$		0.46	-	
	$I_F = 10\text{ A}$	0.54		-		
	$I_F = 20\text{ A}$	0.70		0.78		
Reverse current	$V_R = 80\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$	$I_R^{(2)}$	30	700	μA
		$T_A = 125\text{ }^\circ\text{C}$		20	35	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	VT2080S	VFT2080S	VBT2080S	VIT2080S	UNIT
Typical thermal resistance	$R_{\theta JC}$	1.8	5.0	1.8	1.8	$^\circ\text{C/W}$

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	VT2080S-E3/4W	1.88	4W	50/tube	Tube
ITO-220AB	VFT2080S-E3/4W	1.75	4W	50/tube	Tube
TO-263AB	VBT2080S-E3/4W	1.38	4W	50/tube	Tube
TO-263AB	VBT2080S-E3/8W	1.38	8W	800/reel	Tape and reel
TO-262AA	VIT2080S-E3/4W	1.45	4W	50/tube	Tube

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

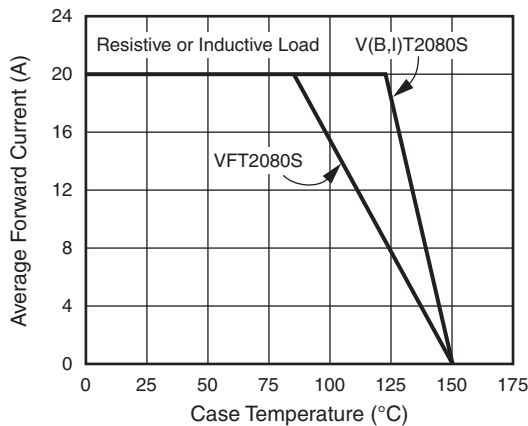


Fig. 1 - Maximum Forward Current Derating Curve

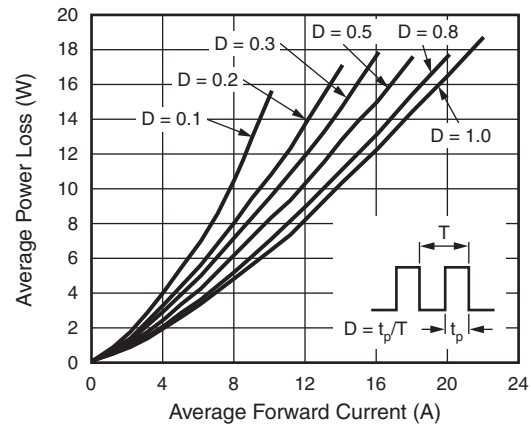


Fig. 2 - Forward Power Loss Characteristics

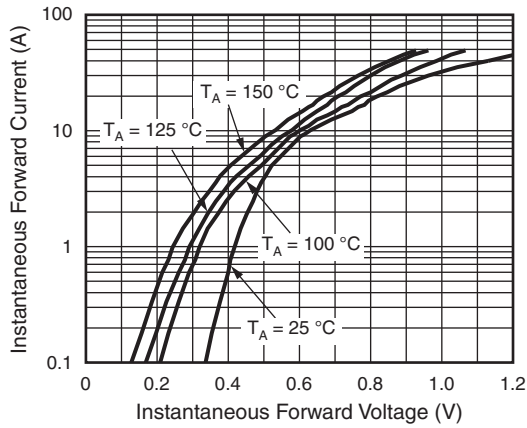


Fig. 3 - Typical Instantaneous Forward Characteristics

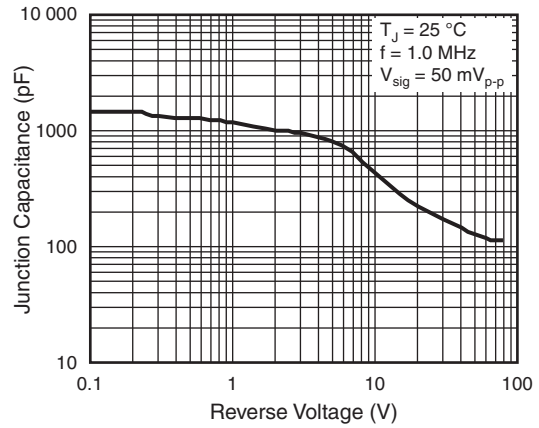


Fig. 5 - Typical Junction Capacitance

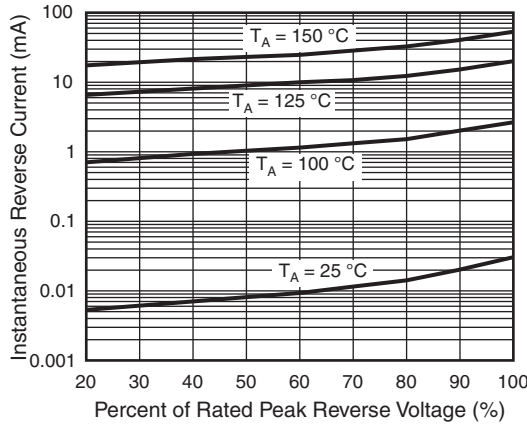


Fig. 4 - Typical Reverse Characteristics

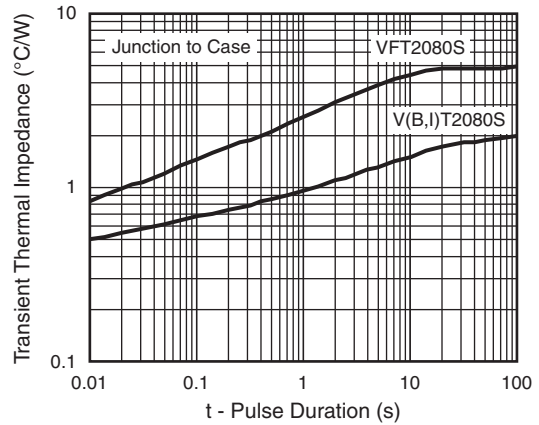
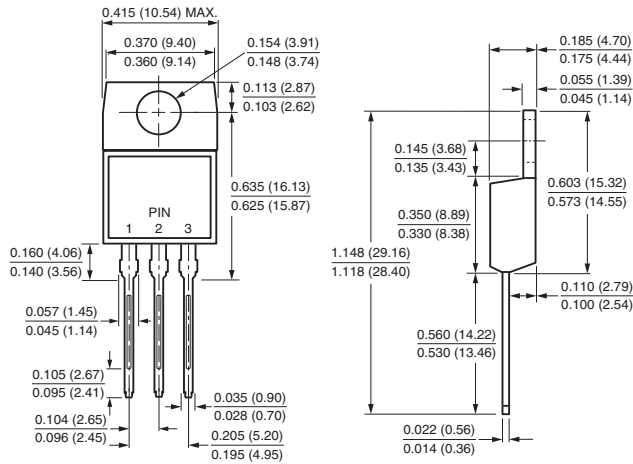


Fig. 6 - Typical Transient Thermal Impedance

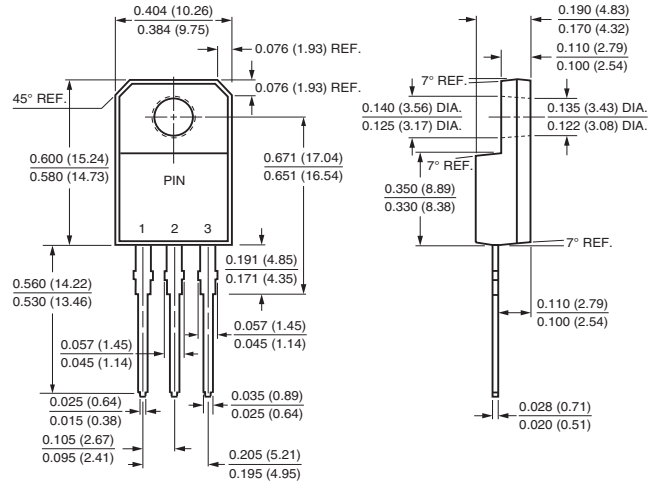


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

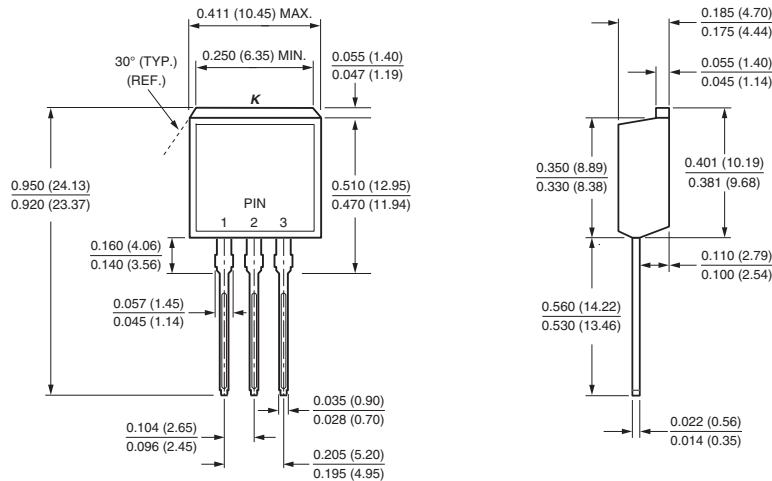
TO-220AB



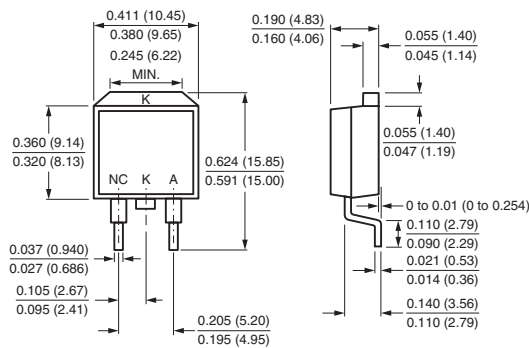
ITO-220AB



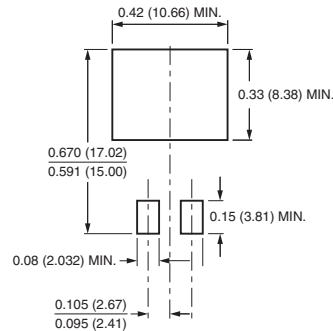
TO-262AA



TO-263AB



Mounting Pad Layout





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