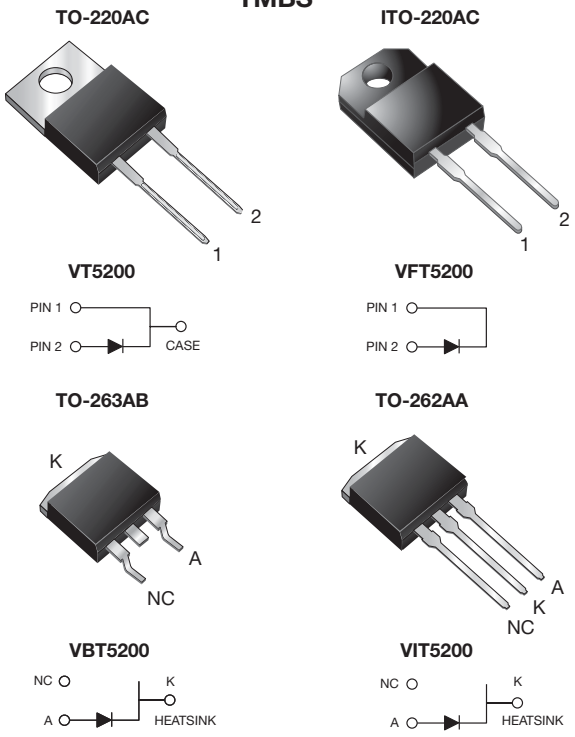
Trench MOS Barrier Schottky Rectifier

Ultra Low V_F = 0.58 V at I_F = 2.5 A

TMBS®



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 dip 275 °C max. 10 s, per JESD 22-B106 (for TO-220AC, ITO-220AC 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-220AC, ITO-220AC, 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 max.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	5.0 A
V_{RRM}	200 V
I_{FSM}	80 A
V_F at I_F = 5.0 A	0.65 V
T_J max.	150 °C
Package	TO-220AC, ITO-220AC, TO-263AB, TO-262AA
Diode variation	Single

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	VT5200	VFT5200	VBT5200	VIT5200	UNIT
Max. repetitive peak reverse voltage	V_{RRM}	200				V
Max. average forward rectified current (fig. 1)	$I_{F(AV)}$	5.0				A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	80				A
Non-repetitive avalanche energy at T_J = 25 °C, L = 60 mH	E_{AS}	30				mJ
Peak repetitive reverse current at t_p = 2 µs, 1 kHz, T_J = 38 °C ± 2 °C	I_{RRM}	0.5				A
Voltage rate of change (rated V_R)	dV/dt	10 000				V/µs
Isolation voltage (ITO-220AC 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 = 1.0 mA	T_A = 25 °C	V_{BR}	200 (min.)	-	V
Instantaneous forward voltage	I_F = 2.5 A	T_A = 25 °C	V_F (1)	0.81	-	V
	I_F = 5.0 A			1.10	1.60	
	I_F = 2.5 A	T_A = 125 °C		0.58	-	
	I_F = 5.0 A			0.65	0.73	
Reverse current	V_R = 180 V	T_A = 25 °C	I_R (2)	1.7	-	μA
		T_A = 125 °C		1.8	-	mA
	V_R = 200 V	T_A = 25 °C		-	150	μA
		T_A = 125 °C		2.5	10	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	VT5200	VFT5200	VBT5200	VIT5200	UNIT
Typical thermal resistance	$R_{\theta JC}$	3.5	7.0	3.5	3.5	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AC	VT5200-E3/4W	1.82	4W	50/tube	Tube
ITO-220AC	VFT5200-E3/4W	1.65	4W	50/tube	Tube
TO-263AB	VBT5200-E3/4W	1.36	4W	50/tube	Tube
TO-263AB	VBT5200-E3/8W	1.36	8W	800/reel	Tape and reel
TO-262AA	VIT5200-E3/4W	1.44	4W	50/tube	Tube

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

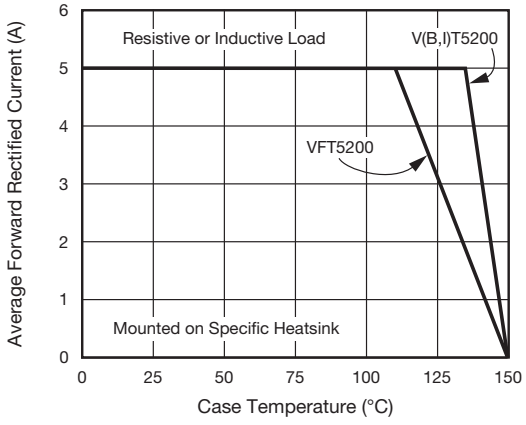


Fig. 1 - Maximum Forward Current Derating Curve

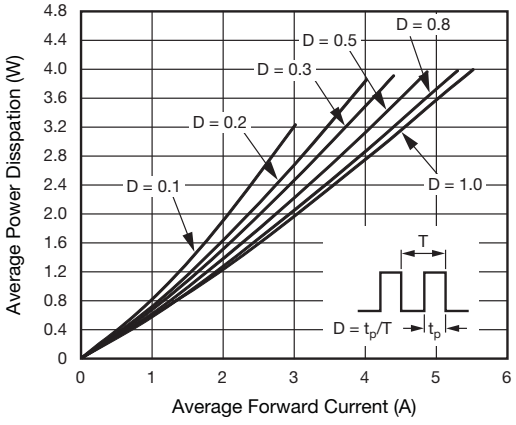


Fig. 2 - Forward Power Dissipation Characteristics

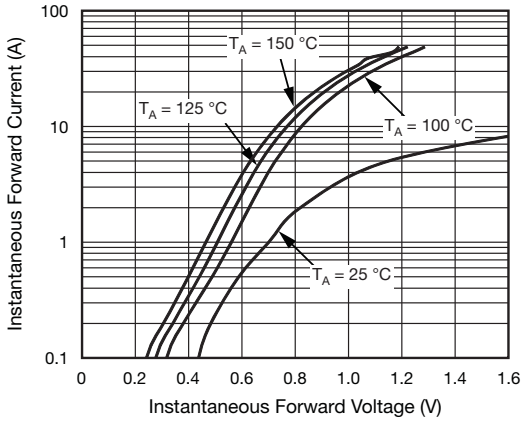


Fig. 3 - Typical Instantaneous Forward Characteristics

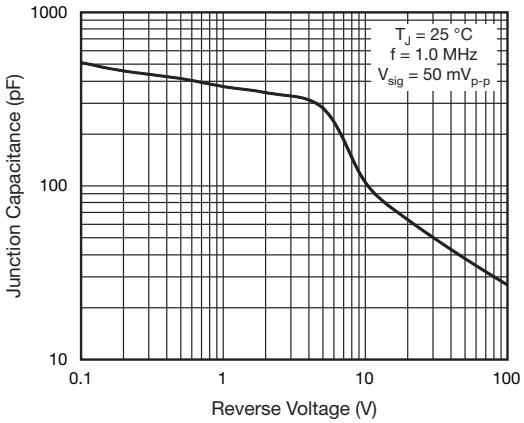


Fig. 5 - Typical Junction Capacitance

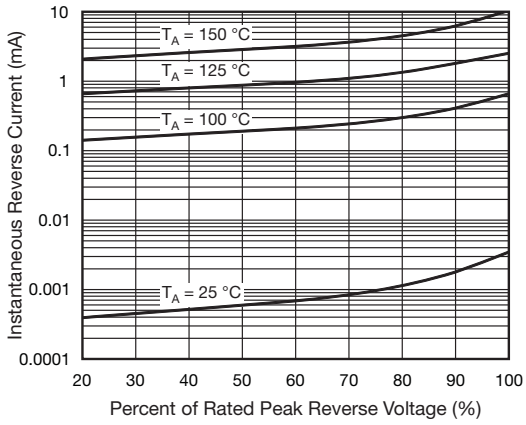


Fig. 4 - Typical Reverse Characteristics

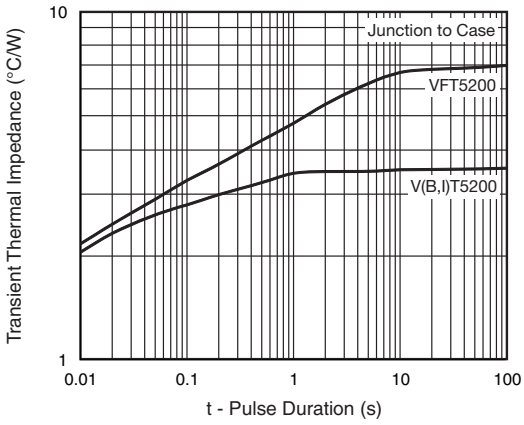
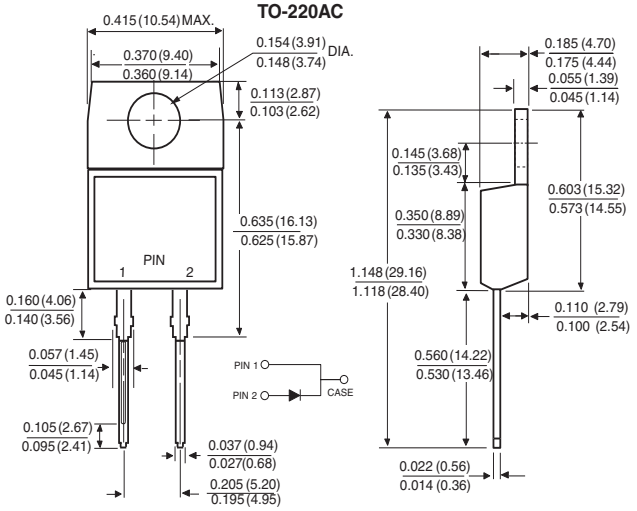


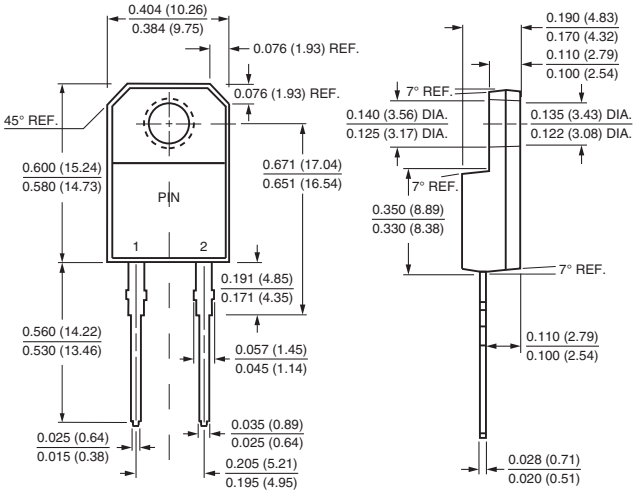
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

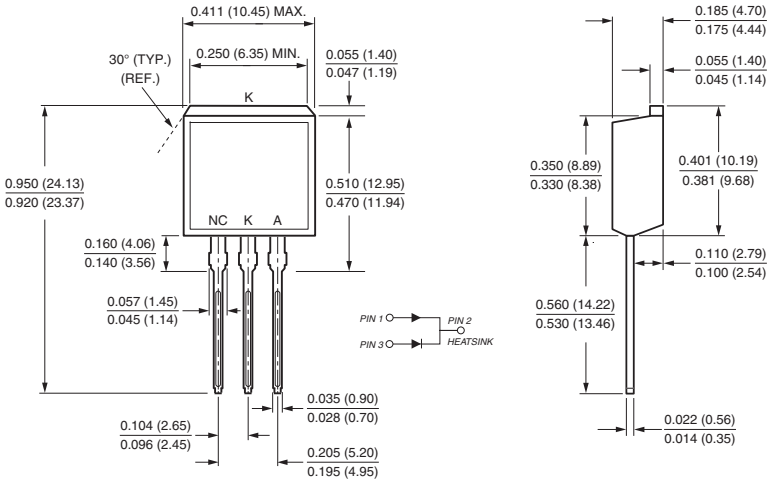
TO-220AC



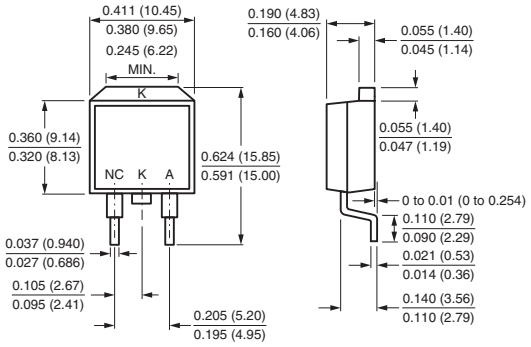
ITO-220AC



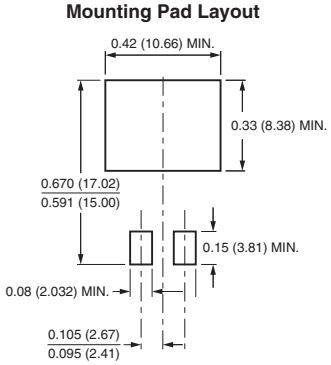
TO-262AA



TO-263AB



Mounting Pad Layout



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