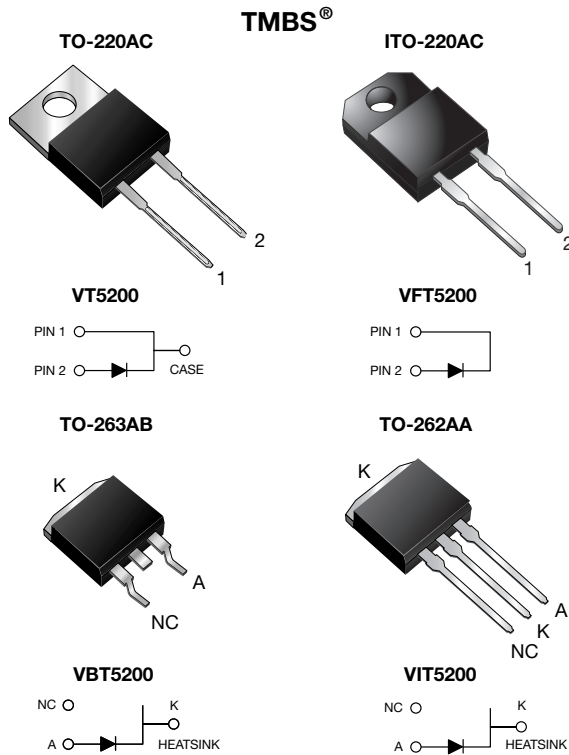




Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.58 \text{ V}$ at $I_F = 2.5 \text{ A}$



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 dip 275 °C max. 10 s, per JESD 22-B106 (for TO-220AC, ITO-220AC and TO-262AA package)
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC



RoHS
COMPLIANT

TYPICAL APPLICATIONS

For use in high frequency converters, switching power supplies, freewheeling diodes, OR-ing diode, dc-to-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 maximum

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	5.0 A
V_{RRM}	200 V
I_{FSM}	80 A
V_F at $I_F = 5.0 \text{ A}$	0.65 V
$T_J \text{ max.}$	150 °C

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

PARAMETER	SYMBOL	VT5200	VFT5200	VBT5200	VIT5200	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	200				V
Maximum 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 $T_J = 25 \text{ °C}$, $L = 60 \text{ mH}$	E_{AS}	30				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}	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 $t = 1 \text{ min}$	V_{AC}	1500				V
Operating junction and storage temperature range	T_J, T_{STG}	- 40 to + 150				°C

VT5200, VFT5200, VBT5200, VIT5200

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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 (minimum)	-	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 _{θJC}	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)

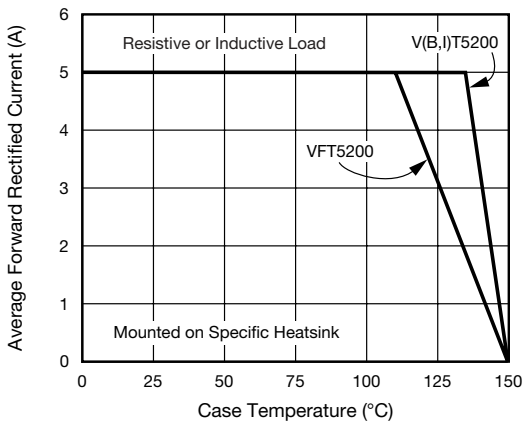


Fig. 1 - Maximum Forward Current Derating Curve

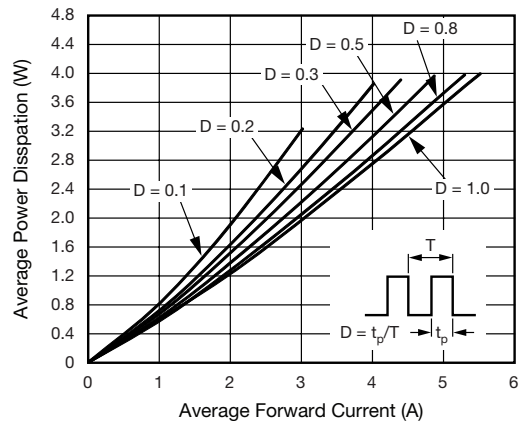


Fig. 2 - Forward Power Dissipation Characteristics

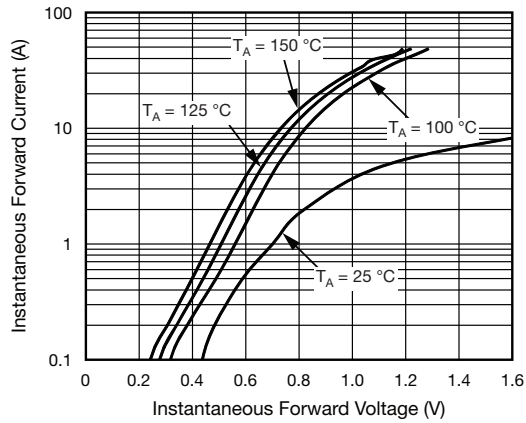


Fig. 3 - Typical Instantaneous Forward Characteristics

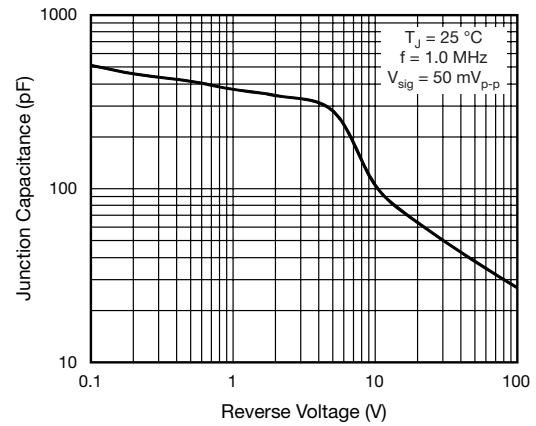


Fig. 5 - Typical Junction Capacitance

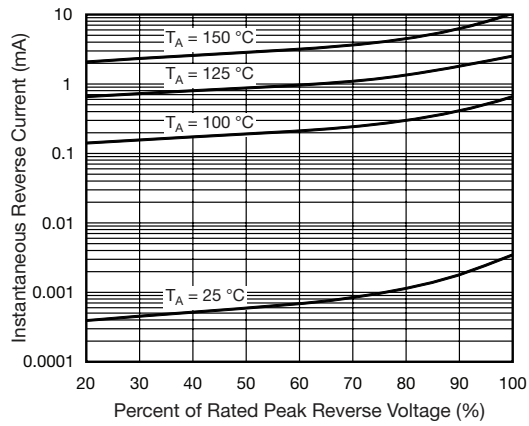


Fig. 4 - Typical Reverse Characteristics

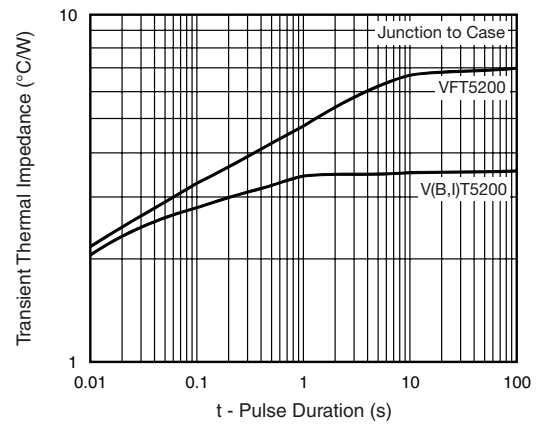


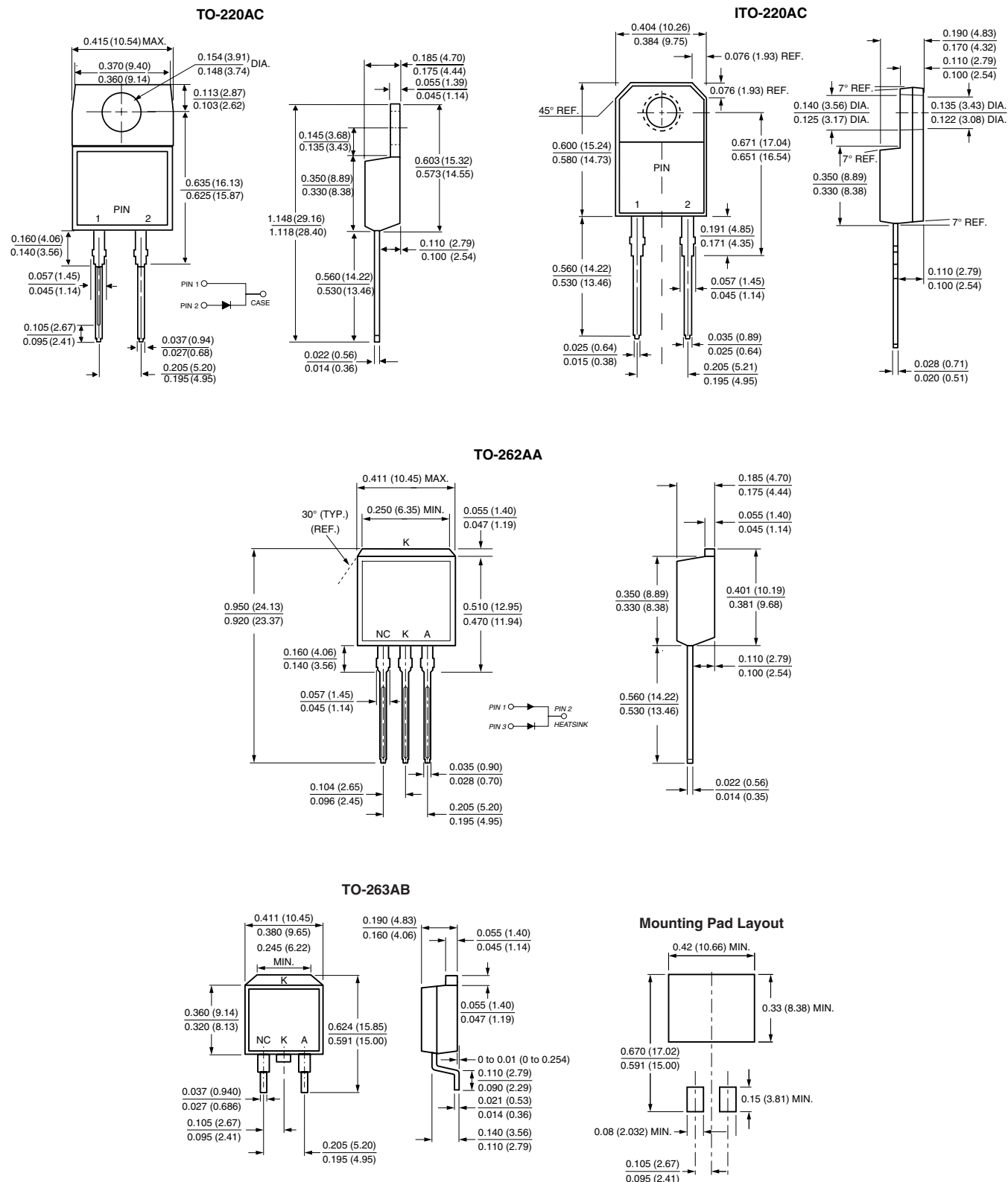
Fig. 6 - Typical Transient Thermal Impedance

VT5200, VFT5200, VBT5200, VIT5200

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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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