

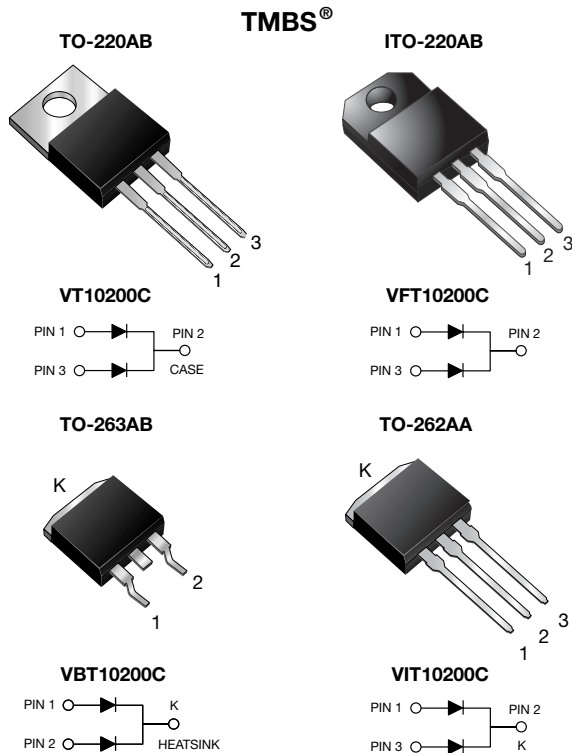


# VT10200C, VFT10200C, VBT10200C, VIT10200C

Vishay General Semiconductor

## 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-220AB, ITO-220AB 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-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

$I_{F(AV)}$	2 x 5.0 A
$V_{RRM}$	200 V
$I_{FSM}$	80 A
$V_F$ at $I_F = 5.0\text{ A}$	0.65 V
$T_J$ max.	150 °C

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

PARAMETER	SYMBOL	VT10200C	VFT10200C	VBT10200C	VIT10200C	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	200				V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	10.0				A
		5.0				
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	80				A
Non-repetitive avalanche energy at $T_J = 25\text{ °C}$ , $L = 60\text{ mH}$ per diode	$E_{AS}$	30				mJ
Peak repetitive reverse current at $t_p = 2\text{ }\mu\text{s}$ , 1 kHz, $T_J = 38\text{ °C} \pm 2\text{ °C}$ per diode	$I_{RRM}$	0.5				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 <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Breakdown voltage	I <sub>R</sub> = 1.0 mA	T <sub>A</sub> = 25 °C	V <sub>BR</sub>	200 (minimum)	-	V
Instantaneous forward voltage per diode	I <sub>F</sub> = 2.5 A	T <sub>A</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.81	-	V
	I <sub>F</sub> = 5.0 A			1.10	1.60	
	I <sub>F</sub> = 2.5 A	T <sub>A</sub> = 125 °C		0.58	-	
	I <sub>F</sub> = 5.0 A			0.65	0.73	
Reverse current per diode	V <sub>R</sub> = 180 V	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	1.7	-	μA
		T <sub>A</sub> = 125 °C		1.8	-	mA
	V <sub>R</sub> = 200 V	T <sub>A</sub> = 25 °C		-	150	μA
		T <sub>A</sub> = 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 <sub>A</sub> = 25 °C unless otherwise noted)							
PARAMETER	SYMBOL	VT10200C	VFT10200C	VBT10200C	VIT10200C	UNIT	
Typical thermal resistance	per diode	R <sub>θJC</sub>	3.5	7.0	3.5	3.5	°C/W
	per device		2.5	5.5	2.5	2.5	

ORDERING INFORMATION (Example)						
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
TO-220AB	VT10200C-E3/4W	1.88	4W	50/tube	Tube	
ITO-220AB	VFT10200C-E3/4W	1.72	4W	50/tube	Tube	
TO-263AB	VBT10200C-E3/4W	1.37	4W	50/tube	Tube	
TO-263AB	VBT10200C-E3/8W	1.37	8W	800/reel	Tape and reel	
TO-262AA	VIT10200C-E3/4W	1.44	4W	50/tube	Tube	

## RATINGS AND CHARACTERISTICS CURVES

(T<sub>A</sub> = 25 °C unless otherwise noted)

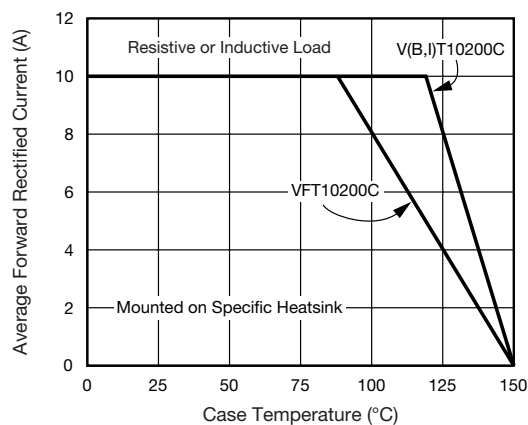


Fig. 1 - Maximum Forward Current Derating Curve

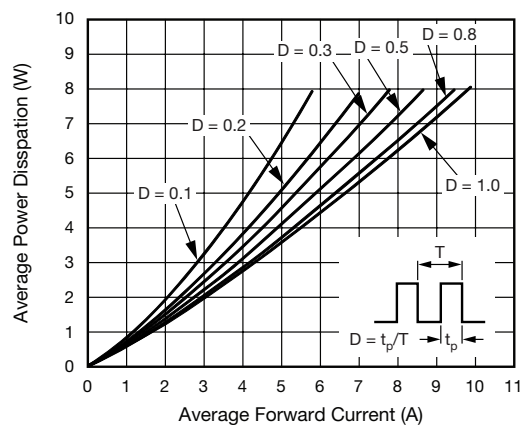


Fig. 2 - Forward Power Loss Characteristics Per Device



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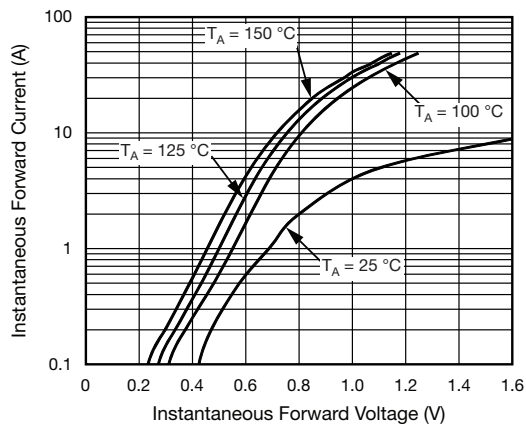


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

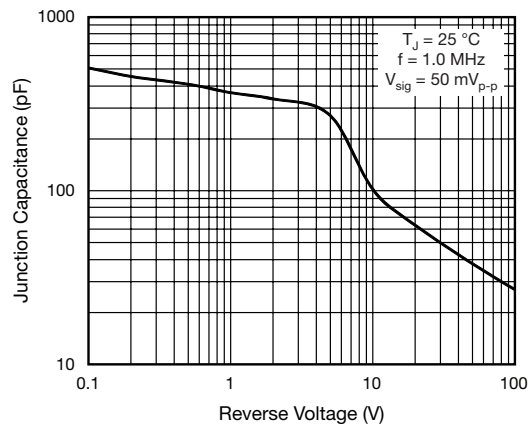


Fig. 5 - Typical Junction Capacitance Per Diode

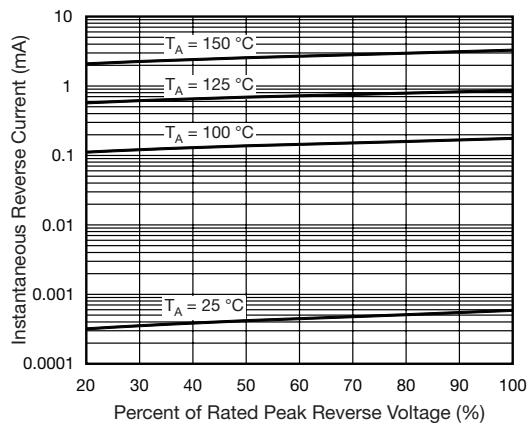


Fig. 4 - Typical Reverse Characteristics Per Diode

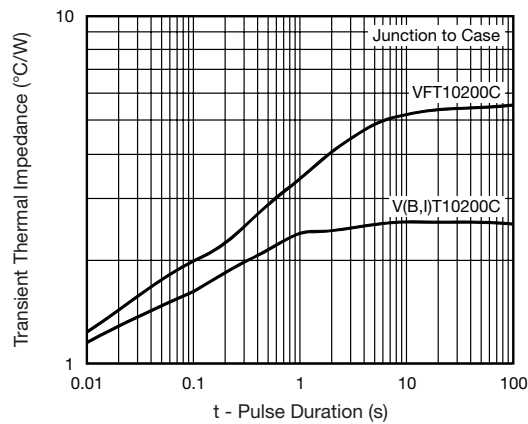


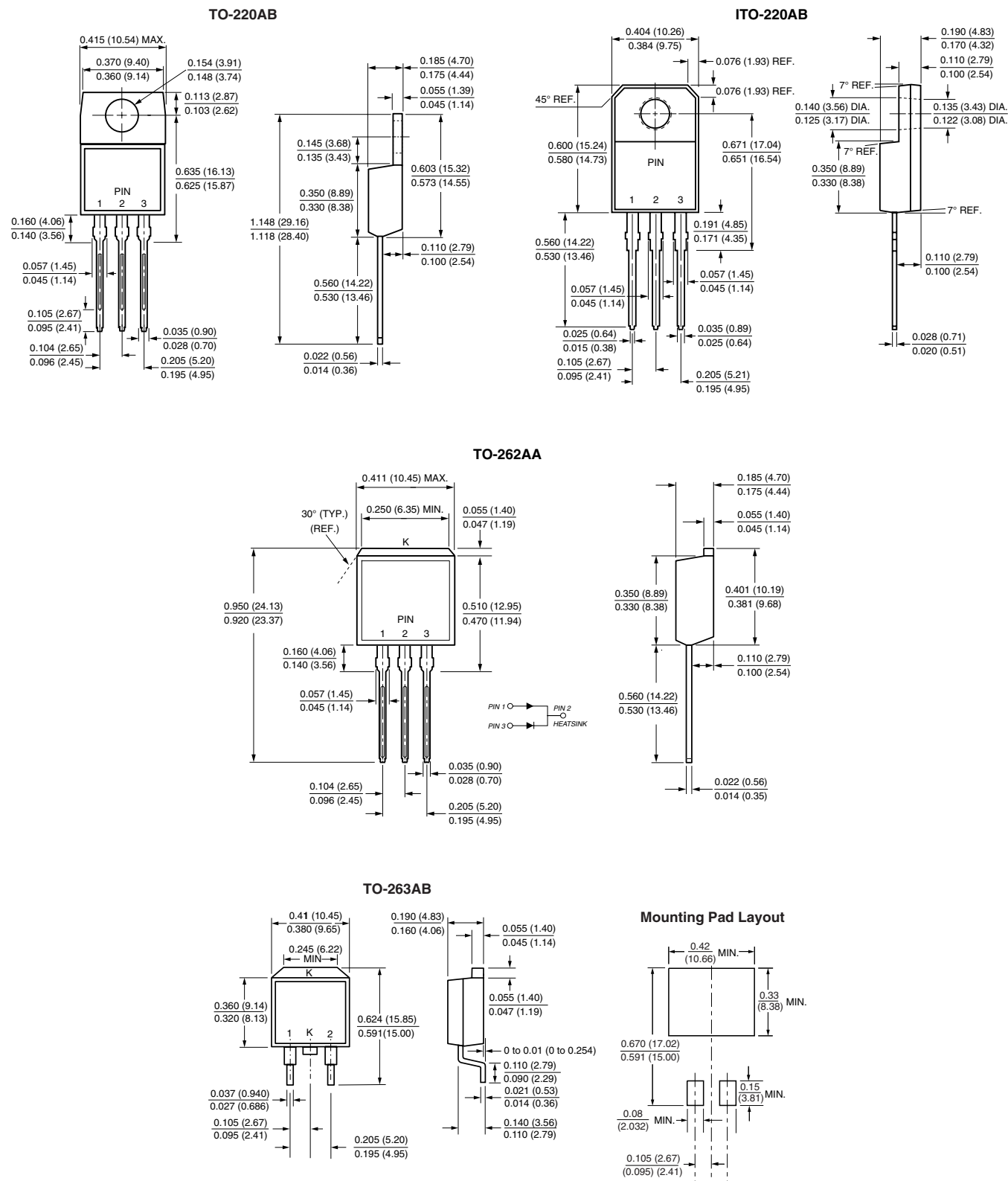
Fig. 6 - Typical Transient Thermal Impedance Per Device

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## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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