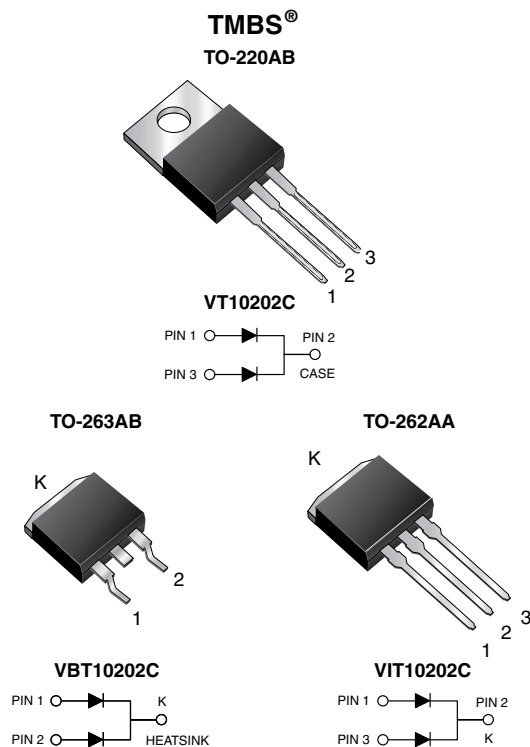




Dual High Voltage Trench MOS Barrier Schottky Rectifier

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

FEATURES

- Trench MOS Schottky technology generation 2
- 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 and TO-262AA package)
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE

TYPICAL APPLICATIONS

For use in high frequency DC/DC converters, switching power supplies, freewheeling diodes, OR-ing diode, and reverse battery protection.

MECHANICAL DATA

Case: TO-220AB, TO-263AB, and TO-262AA

Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 1A whisker test

Polarity: As marked

Mounting Torque: 10 in-lbs max.

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	2 x 5 A
V_{RRM}	200 V
I_{FSM}	100 A
V_F at $I_F = 5\text{ A}$ ($T_A = 125\text{ °C}$)	0.65 V
T_J max.	175 °C
Package	TO-220AB, TO-263AB, TO-262AA
Diode variations	Common cathode

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

PARAMETER		SYMBOL	VT10202C	VBT10202C	VIT10202C	UNIT
Maximum repetitive peak reverse voltage		V _{RRM}	200			V
Maximum average forward rectified current (fig. 1)	per device	I _{F(AV)}	10			A
	per diode		5			
Maximum DC reverse voltage		V _{DC}	160			V
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode		I _{FSM}	100			A
Voltage rate of change (rated V _R)		dV/dt	10 000			V/μs
Operating junction and storage temperature range		T _J , T _{STG}	-40 to +175			°C

**ELECTRICAL CHARACTERISTICS** ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage per diode ⁽¹⁾	$I_F = 2.5\text{ A}$	V_F	0.74	-	V
	$I_F = 5\text{ A}$		0.80	0.88	
	$I_F = 2.5\text{ A}$		0.58	-	
	$I_F = 5\text{ A}$		0.65	0.73	
Reverse current per diode ⁽²⁾	$V_R = 160\text{ V}$	I_R	0.2	-	μA
	$T_A = 25^\circ\text{C}$		0.4	-	mA
	$T_A = 125^\circ\text{C}$		-	150	μA
	$V_R = 200\text{ V}$		1.0	5	mA

Notes(1) Pulse test: 300 μs pulse width, 1 % duty cycle(2) Pulse test: Pulse width $\leq 5\text{ ms}$ **THERMAL CHARACTERISTICS** ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	VT10202C	VBT10202C	VIT10202C	UNIT
Typical thermal resistance	per diode	$R_{\theta JC}$	3.4		°C/W
	per device	$R_{\theta JC}$	2.2		
	per device	$R_{\theta JA}^{(1)(2)}$	52		

Notes(1) The heat generated must be less than the thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{\theta JA}$

(2) Free air, without heatsink

ORDERING INFORMATION (Example)

PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	VT10202C-M3/4W	1.89	4W	50/tube	Tube
TO-263AB	VBT10202C-M3/4W	1.38	4W	50/tube	Tube
TO-263AB	VBT10202C-M3/8W	1.38	8W	800/reel	Tape and reel
TO-262AA	VIT10202C-M3/4W	1.46	4W	50/tube	Tube

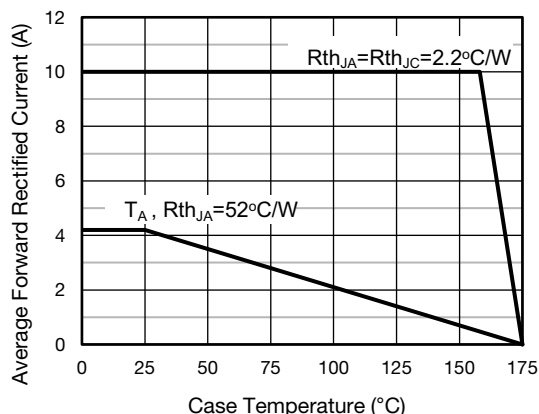
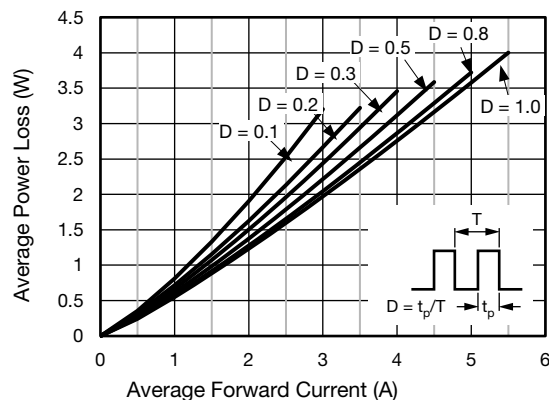
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)Fig. 1 - Maximum Forward Current Derating Curve
($D = \text{Duty Cycle} = 0.5$)

Fig. 2 - Forward Power Loss Characteristics Per Diode

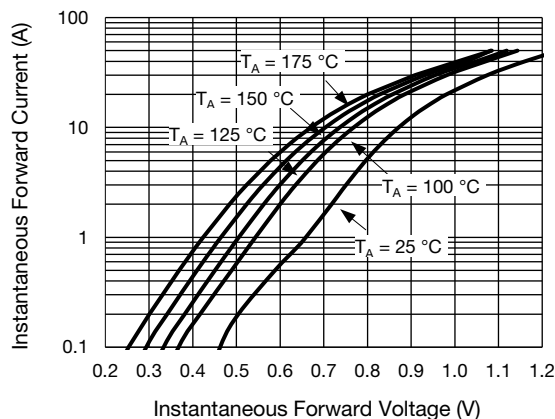


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

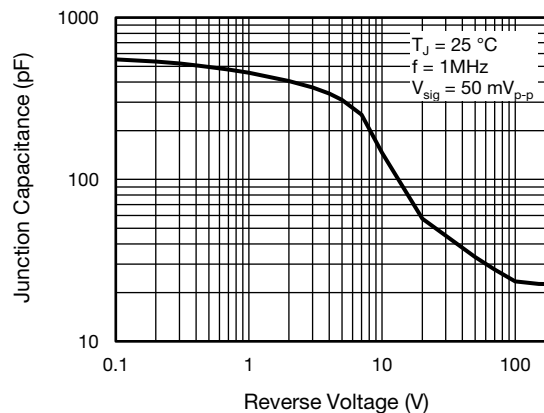


Fig. 5 - Typical Junction Capacitance Per Diode

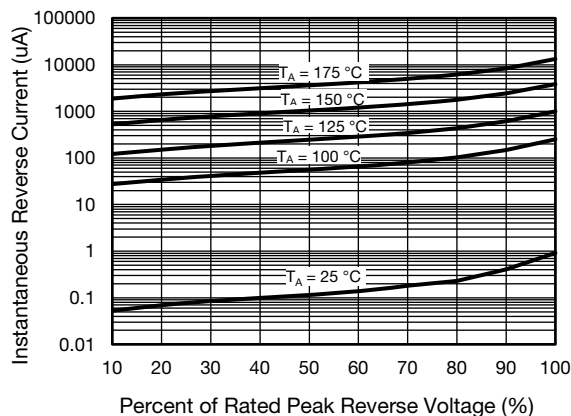


Fig. 4 - Typical Reverse Characteristics Per Diode

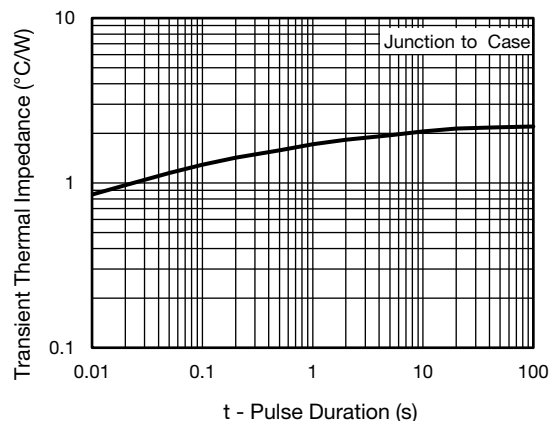
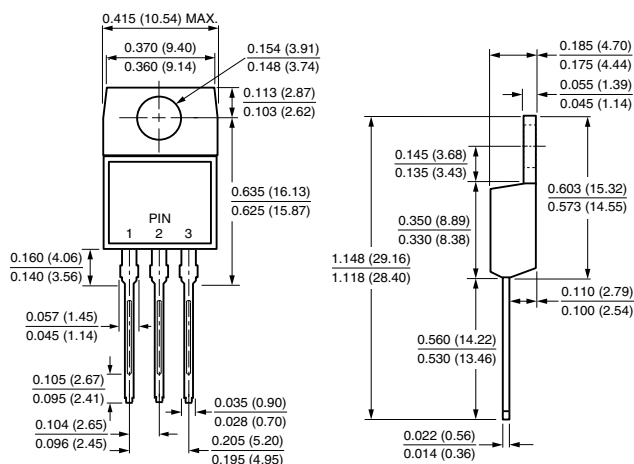


Fig. 6 - Typical Transient Thermal Impedance Per Device

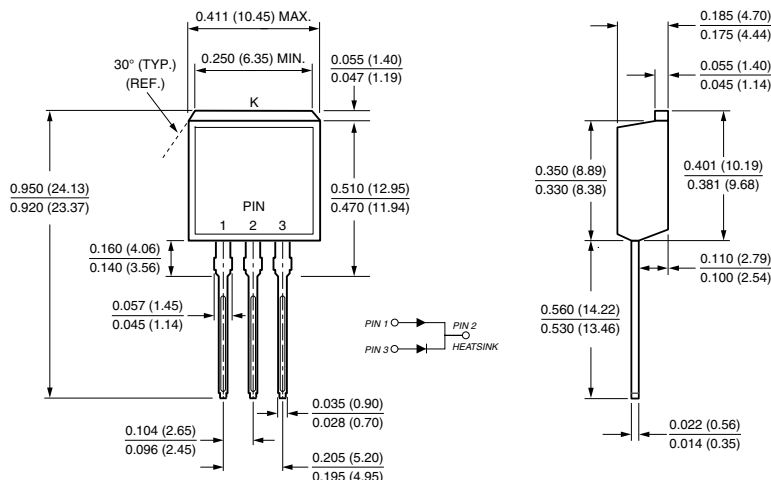


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

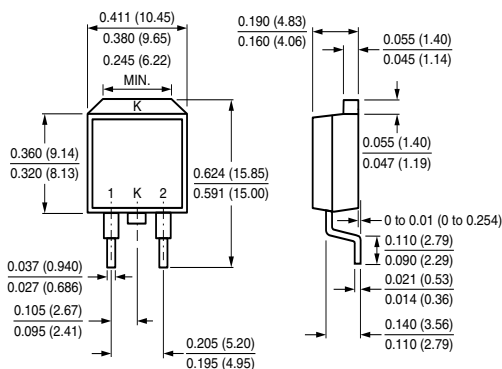
TO-220AB



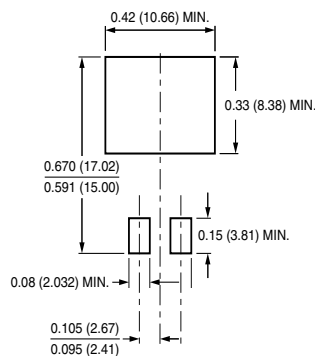
TO-262AA



TO-263AB



Mounting Pad Layout





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