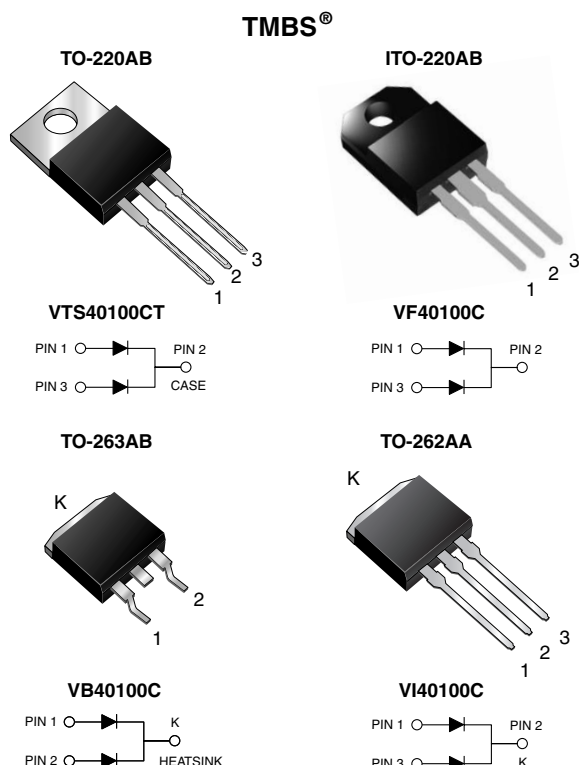


Dual High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.375\text{ V}$ at $I_F = 5\text{ A}$



FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Low thermal resistance
- Meets MSL level 1, per J-STD-020C, LF max peak of 245 °C (for TO-263AB package)
- Solder dip 260 °C, 40 seconds (for TO-220AB, ITO-220AB & TO-262AA package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



TYPICAL APPLICATIONS

For use in high frequency inverters, switching power supplies, free-wheeling diodes, oring diode, dc-to-dc converters and reverse battery protection.

MECHANICAL DATA

Case: TO-220AB, ITO-220AB, TO-263AB & TO-262AA

Epoxy meets UL 94V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

E3 suffix for commercial grade

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	2 x 20 A
V_{RRM}	100 V
I_{FSM}	250 A
V_F at $I_F = 20\text{ A}$	0.61 V
$T_j\text{ max.}$	150 °C

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

PARAMETER	SYMBOL	VT40100CT	VF40100C	VB40100C	VI40100C	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	100				V
Maximum average forward rectified current (see Fig. 1)	$I_{F(AV)}$	40 20				A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	I_{FSM}	250				A
Isolation voltage (ITO-220AB only) From terminal to heatsink $t = 1\text{ minute}$	V_{AC}	1500				V
Operating junction and storage temperature range	T_J, T_{STG}	- 40 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 per diode ⁽¹⁾	at $I_F = 5\text{ A}$ $I_F = 10\text{ A}$ $I_F = 20\text{ A}$	$T_A = 25\text{ }^{\circ}\text{C}$	V_F	0.463 0.535 0.664	- - 0.73	V
		$T_A = 125\text{ }^{\circ}\text{C}$		0.375 0.445 0.605	- - 0.67	
	at $I_F = 5\text{ A}$ $I_F = 10\text{ A}$ $I_F = 20\text{ A}$	$T_A = 25\text{ }^{\circ}\text{C}$				
		$T_A = 125\text{ }^{\circ}\text{C}$				
Reverse current at rated V_R per diode ⁽²⁾	at $V_R = 70\text{ V}$	$T_A = 25\text{ }^{\circ}\text{C}$	I_R	13.7	-	μA
		$T_A = 125\text{ }^{\circ}\text{C}$		8.4	-	mA
	at $V_R = 100\text{ V}$	$T_A = 25\text{ }^{\circ}\text{C}$		69.6	1000	μA
		$T_A = 125\text{ }^{\circ}\text{C}$		22.5	45	mA

Notes:

(1) Pulse test: 300 μs pulse width, 1 % duty cycle

(2) Pulse test: 10 ms pulse width

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)						
PARAMETER	SYMBOL	VTS40100CT	VF40100C	VB40100C	VI40100C	UNIT
Typical thermal resistance per diode	$R_{\theta JC}$	2.0	4.0	2.0	2.0	$^{\circ}\text{C/W}$

ORDERING INFORMATION (Example)						
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
TO-220AB	VTS40100CT-E3/45	1.85	45	50/tube	Tube	
ITO-220AB	VF40100C-E3/45	1.80	45	50/tube	Tube	
TO-263AB	VB40100C-E3/4W	1.39	4W	50/tube	Tube	
TO-263AB	VB40100C-E3/8W	1.39	8W	800/reel	Tape and reel	
TO-262AA	VI40100C-E3/4W	1.46	4W	50/tube	Tube	

RATINGS AND CHARACTERISTICS CURVES

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

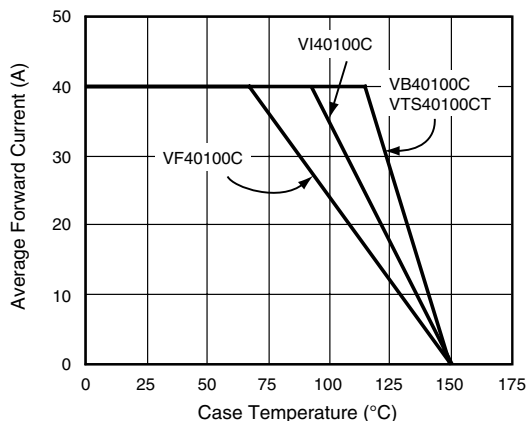


Figure 1. Forward Current Derating Curve

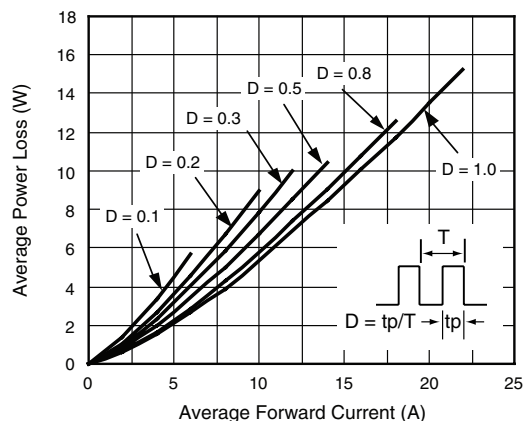


Figure 2. Forward Power Loss Characteristics Per Diode

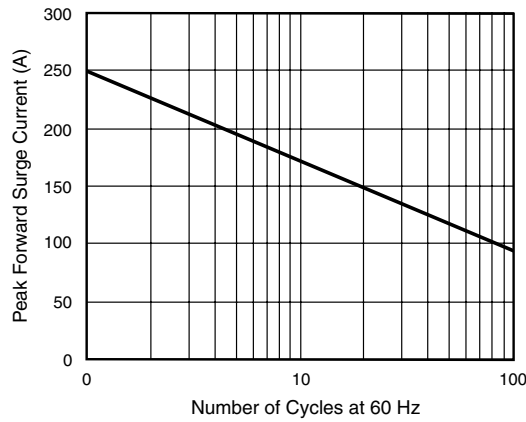


Figure 3. Maximum Non-Repetitive Peak Forward Surge Current Per Diode

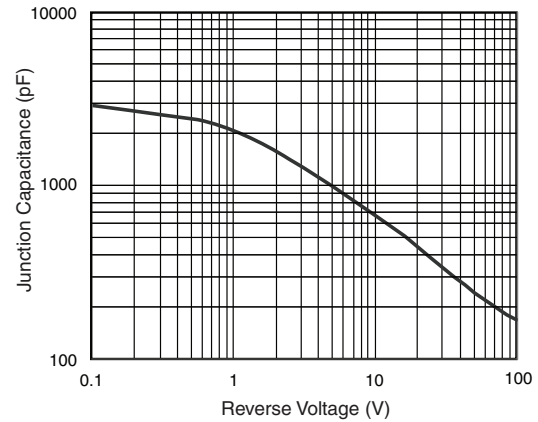


Figure 6. Typical Junction Capacitance Per Diode

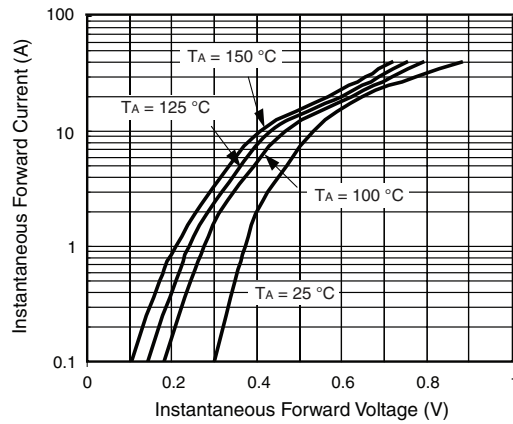


Figure 4. Typical Instantaneous Forward Characteristics Per Diode

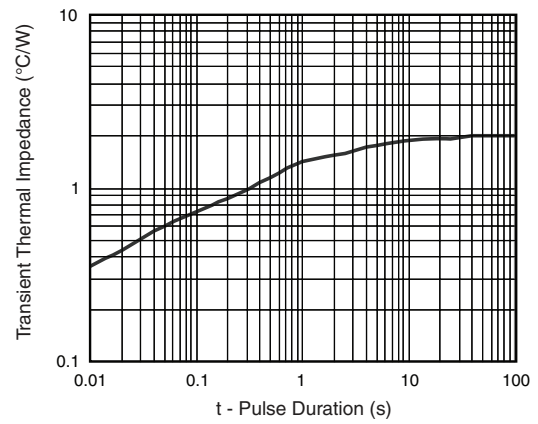


Figure 7. Typical Transient Thermal Impedance Per Diode

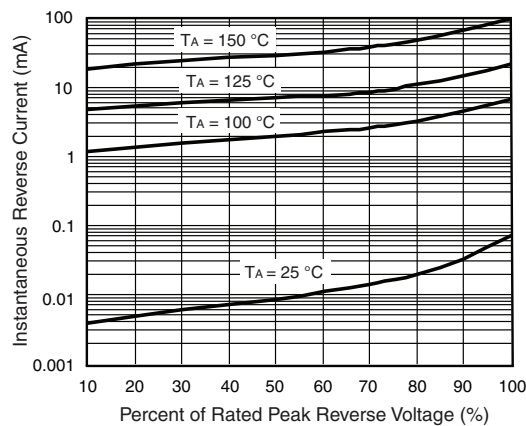
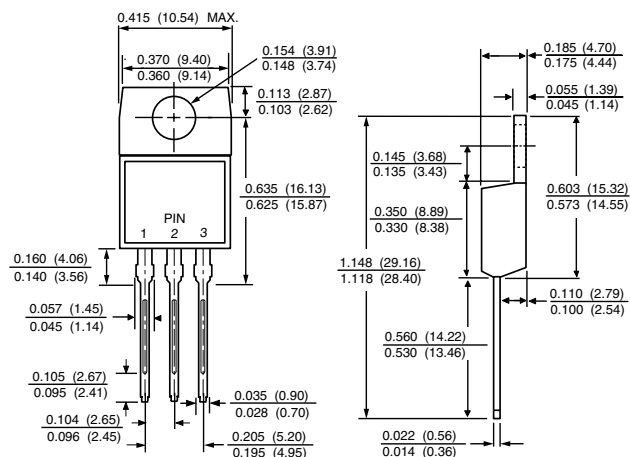


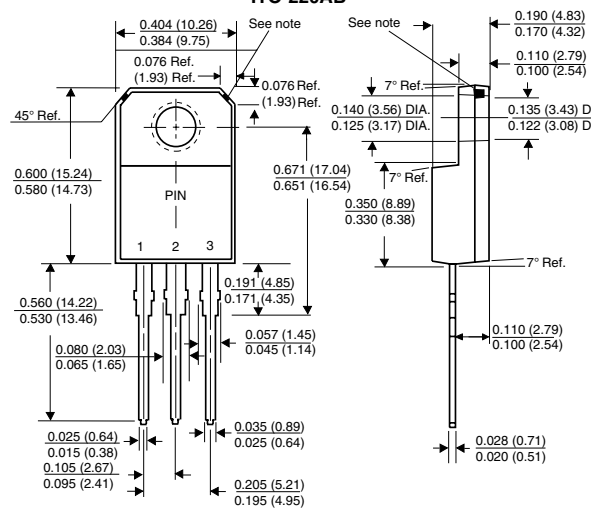
Figure 5. Typical Reverse Characteristics Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB

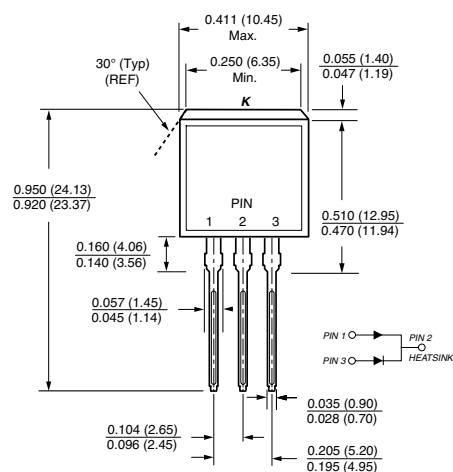


ITO-220AB

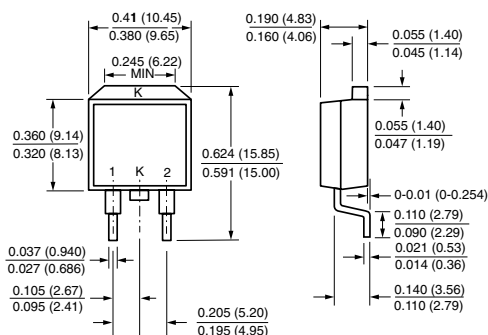


Note: Copper exposure is allowable for 0.005 (0.13) Max. from the body

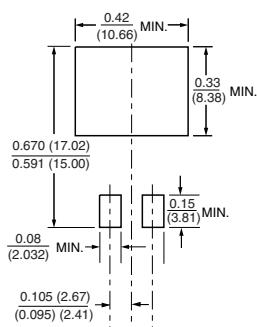
TO-262AA



TO-263AB



Mounting Pad Layout





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