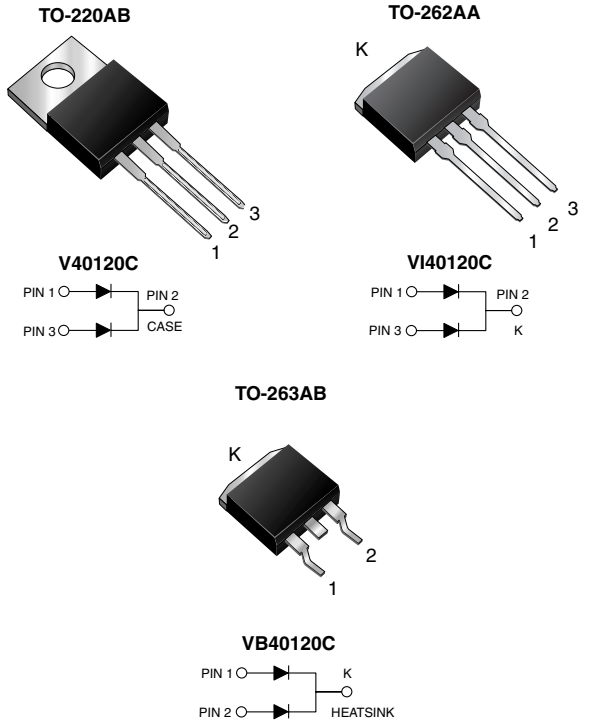
Dual High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low V_F = 0.423 V at I_F = 5 A



MAJOR RATINGS AND CHARACTERISTICS	
$I_{F(AV)}$	2 x 20 A
V_{RRM}	120 V
I_{FSM}	250 A
V_F at I_F = 20 A	0.630 V
T_j max.	150 °C

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-220 & TO-262 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, TO-262AA & TO263AB
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

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)						
PARAMETER		**SYMBOL**	**V40120C**	**VB40120C**	**VI40120C**	**UNIT**
Maximum repetitive peak reverse voltage		V_{RRM}	120			V
Maximum average forward rectified current (see Fig. 1)	per device per diode	$I_{F(AV)}$	40 20			A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	per diode	I_{FSM}	250			A
Peak repetitive reverse current per diode at t_p = 2 µs, 1 kHz		I_{RRM}	1.0			A
Voltage rate of change (rated V_R)		dv/dt	10000			V/µs
Operating junction and storage temperature range		T_J, T_{STG}	- 20 to + 150			°C

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)					
PARAMETER	**TEST CONDITIONS**	**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Breakdown voltage	at I_R = 1.0 mA T_j = 25 °C	$V_{(BR)}$	120 (minimum)	-	V
Instantaneous forward voltage per diode (1)	at I_F = 5 A I_F = 10 A T_j = 25 °C I_F = 20 A	V_F	0.494 0.584 0.768	- - 0.84	V
	at I_F = 5 A I_F = 10 A T_j = 125 °C I_F = 20 A		0.423 0.518 0.630	- - 0.68	
Reverse current at rated V_R per diode (1)	at V_R = 90 V T_j = 25 °C T_j = 125 °C	I_R	11 10	- -	µA mA
	at V_R = 120 V T_j = 25 °C T_j = 125 °C		31 22	500 40	µA mA

Note:

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

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)					
PARAMETER	**SYMBOL**	**V40120C**	**VB40120C**	**VI40120C**	**UNIT**
Typical thermal resistance per diode	$R_{\theta JC}$	2.0			°C/W

ORDERING INFORMATION					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TO-220AB	V40120C-E3/45	2.248	45	50/Tube	Tube
TO-263AB	VB40120C-E3/4W	1.39	4W	50/Tube	Tube
TO-263AB	VB40120C-E3/8W	1.39	8W	800/Reel	Tape & Reel
TO-262AA	VI40120C-E3/4W	1.458	4W	50/Tube	Tube

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

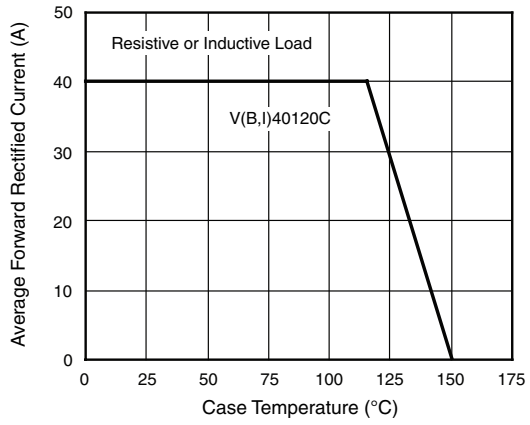


Figure 1. Maximum Forward Current Derating Curve

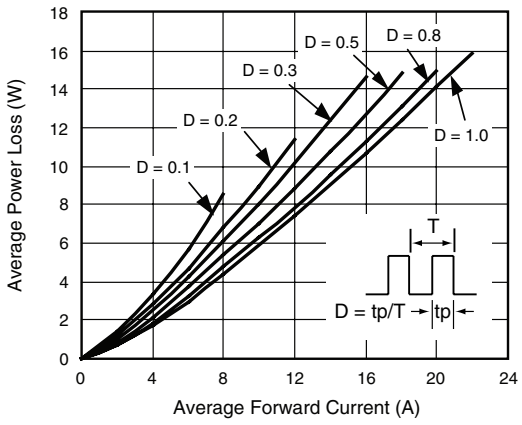


Figure 2. Forward Power Loss Characteristics Per Diode

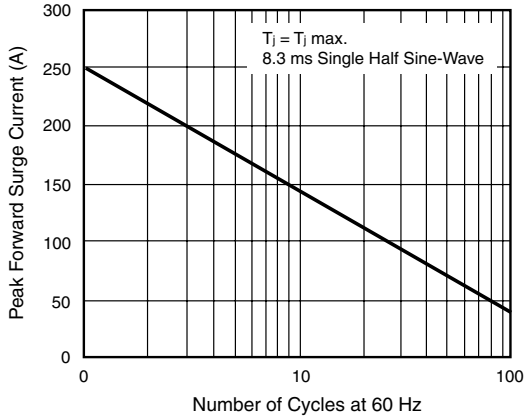


Figure 3. Maximum Non-Repetitive Peak Forward Surge Current Per Diode

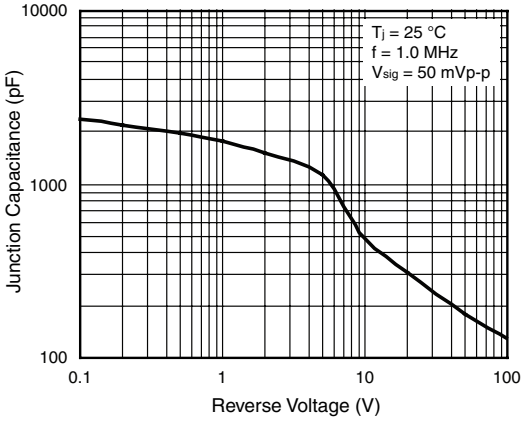


Figure 6. Typical Junction Capacitance Per Diode

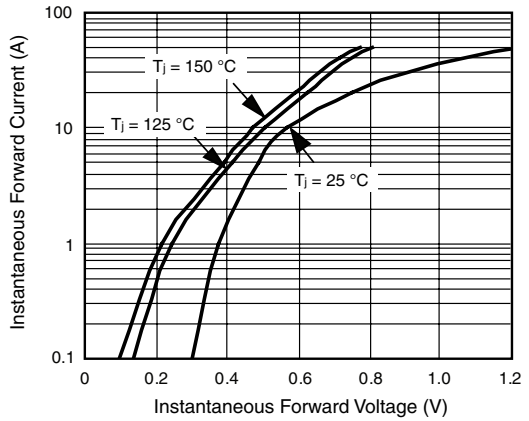


Figure 4. Typical Instantaneous Forward Characteristics Per Diode

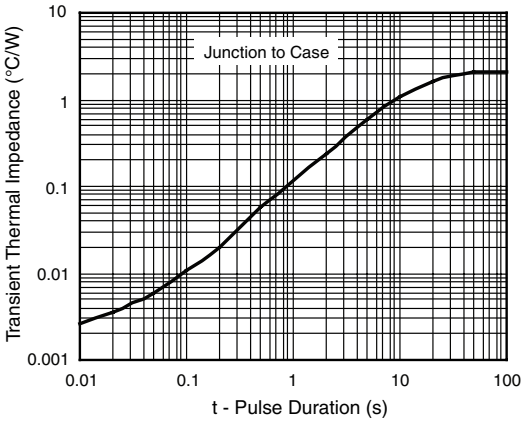


Figure 7. Typical Transient Thermal Impedance Per Diode

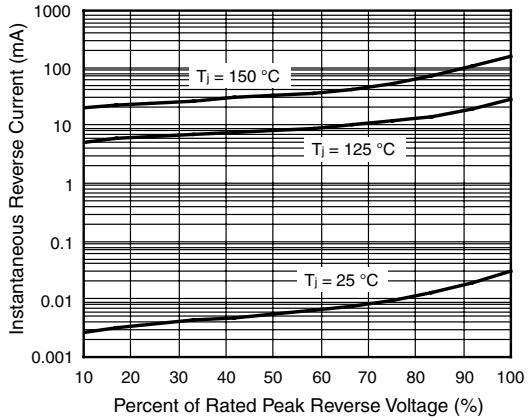
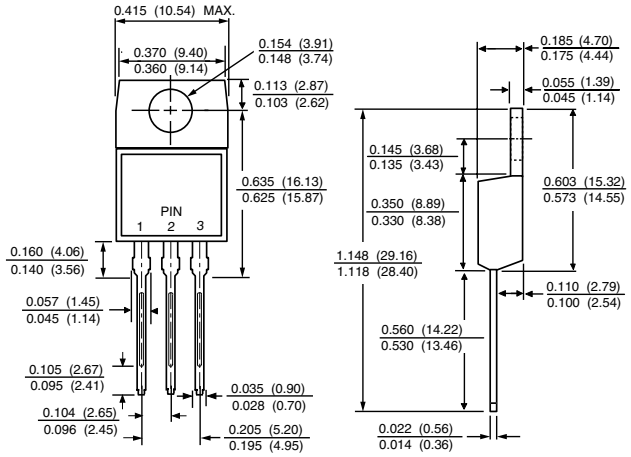


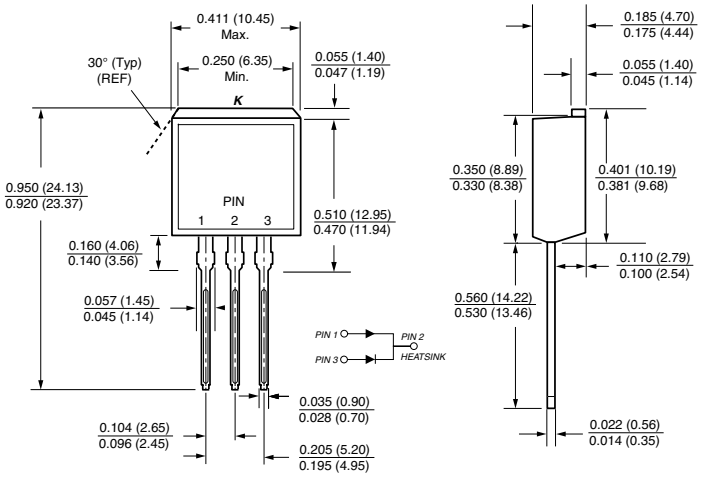
Figure 5. Typical Reverse Characteristics Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

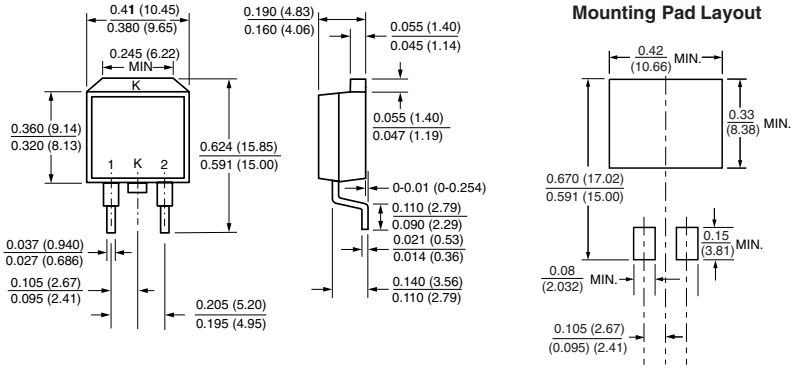
TO-220AB



TO-262AA



TO-263AB



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