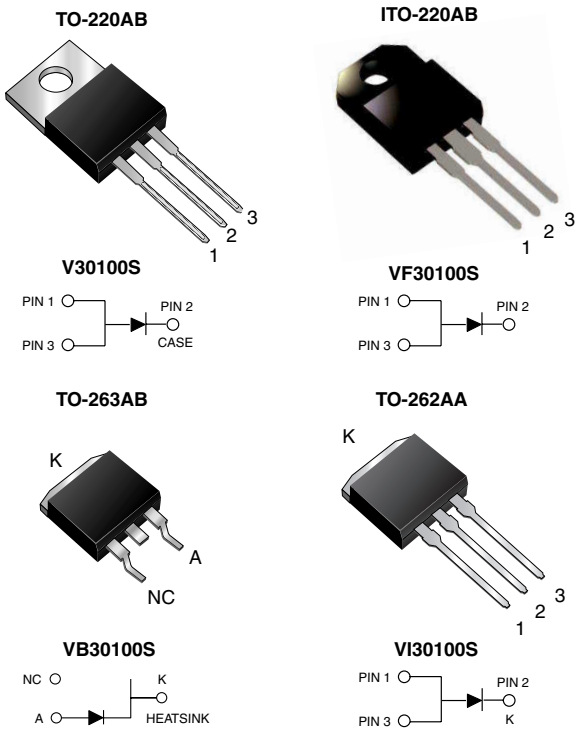
High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low V_F = 0.385 V at I_F = 5 A



MAJOR RATINGS AND CHARACTERISTICS	
$I_{F(AV)}$	30 A
V_{RRM}	100 V
I_{FSM}	250 A
V_F at I_F = 30 A	0.685 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-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

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**SYMBOL**	**V30100S**	**V30100S**	**V30100S**	**V30100S**	**UNIT**
Maximum repetitive peak reverse voltage	V_{RRM}	100				V
Maximum average forward rectified current (see Fig. 1)	$I_{F(AV)}$	30				A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	250				A
Peak repetitive reverse current per leg at t_p = 2 µs, 1 kHz	I_{RRM}	1.0				A
Voltage rate of change (rated V_R)	dv/dt	10000				V/µs
Isolation voltage (ITO-220AB only) From terminal to heatsink t = 1 minute	V_{AC}	1500				V
Operating junction and storage temperature range	T_J, T_{STG}	- 40 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	$V_{(BR)}$	100 (minimum)	-	V
Instantaneous forward voltage (1)	at I_F = 5 A I_F = 10 A I_F = 30 A	T_j = 25 °C	V_F	0.463 0.535 0.773	- - 0.85	V
	at I_F = 5 A I_F = 10 A I_F = 30 A	T_j = 125 °C		0.385 0.455 0.685	- - 0.75	
Reverse current (1)	at V_R = 70 V	T_j = 25 °C T_j = 125 °C	I_R	13.9 8.5	- -	µA mA
	at V_R = 100 V	T_j = 25 °C T_j = 125 °C		69.9 22.5	1000 45	µA mA

Note:

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

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**SYMBOL**	**V30100S**	**VF30100S**	**VB30100S**	**VI30100S**	**UNIT**
Typical thermal resistance per leg	$R_{\theta JC}$	2.0	4.0	2.0	2.0	°C/W

ORDERING INFORMATION					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TO-220AB	V30100S-E3/45	1.875	45	50/Tube	Tube
ITO-220AB	VF30100S-E3/45	1.805	45	50/Tube	Tube
TO-263AB	VB30100S-E3/4W	1.380	4W	50/Tube	Tube
TO-263AB	VB30100S-E3/8W	1.380	8W	800/Reel	Tape & Reel
TO-262AA	VI30100S-E3/4W	1.455	4W	50/Tube	Tube

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

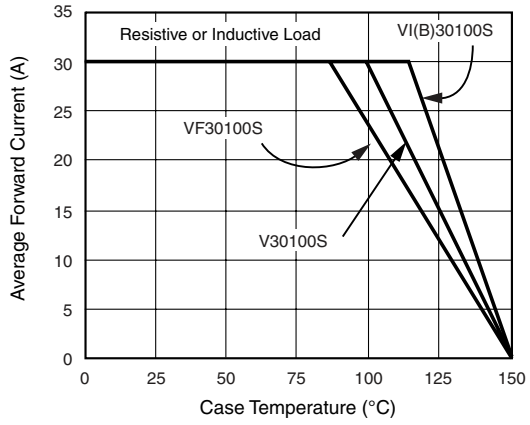


Figure 1. Forward Current Derating Curve

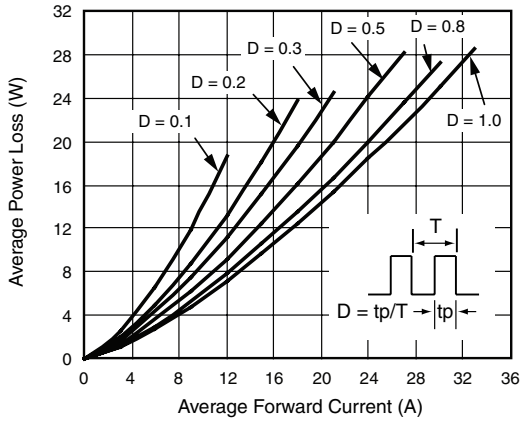


Figure 2. Forward Power Loss Characteristics Per Leg

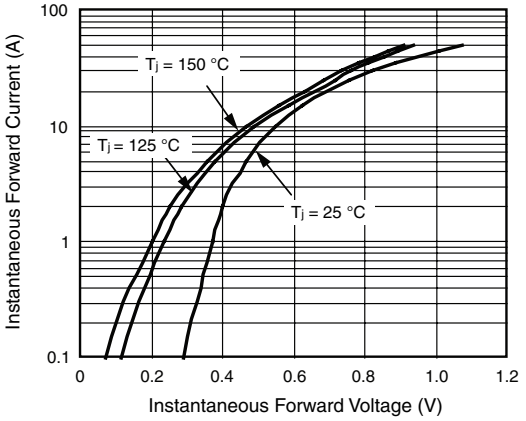


Figure 3. Typical Instantaneous Forward Characteristics Per Leg

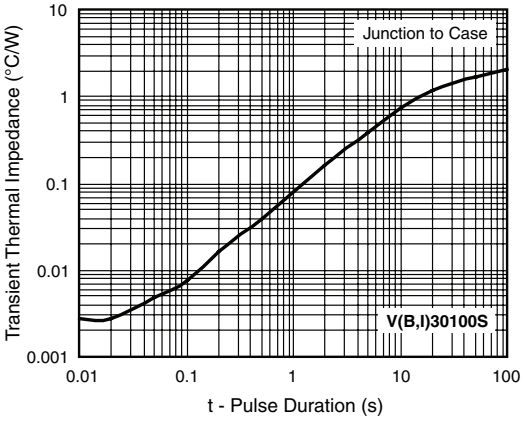


Figure 6. Typical Transient Thermal Impedance Per Leg

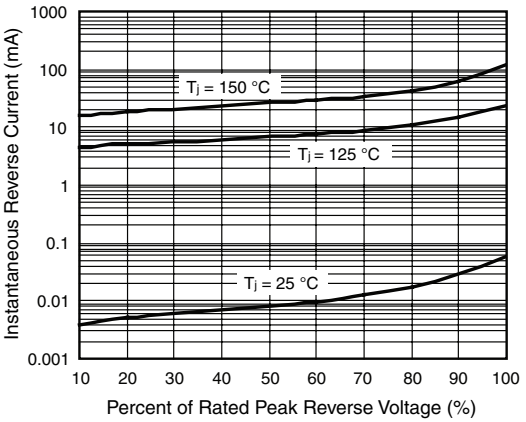


Figure 4. Typical Reverse Characteristics Per Leg

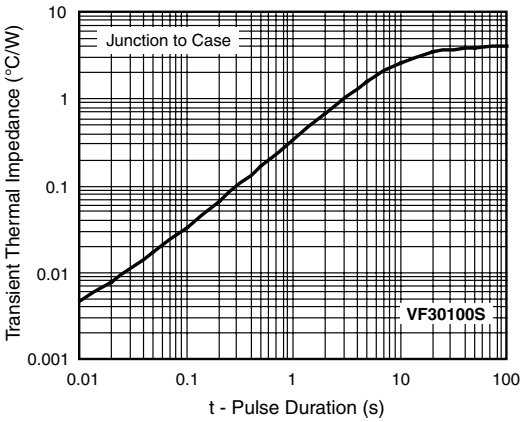


Figure 7. Typical Transient Thermal Impedance Per Leg

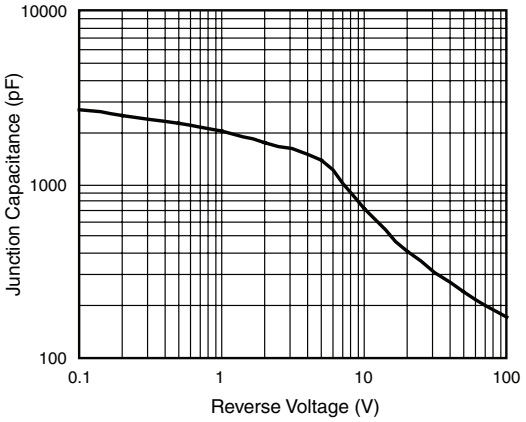
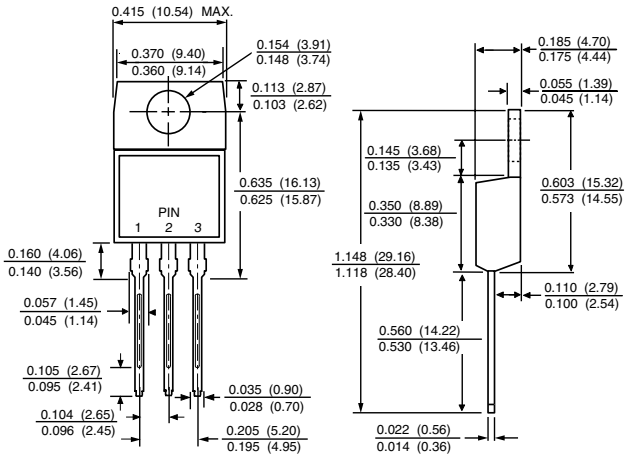


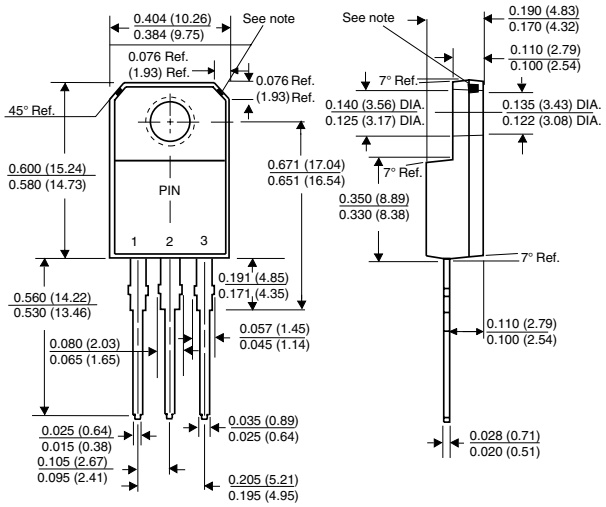
Figure 5. Typical Junction Capacitance Per Leg

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB

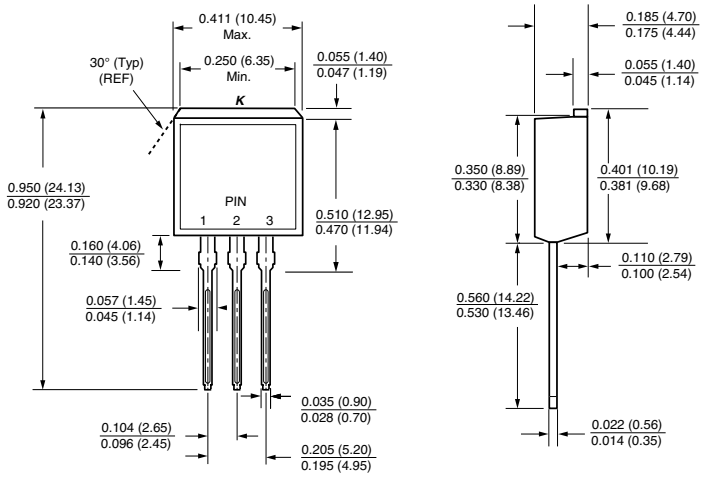


ITO-220AB

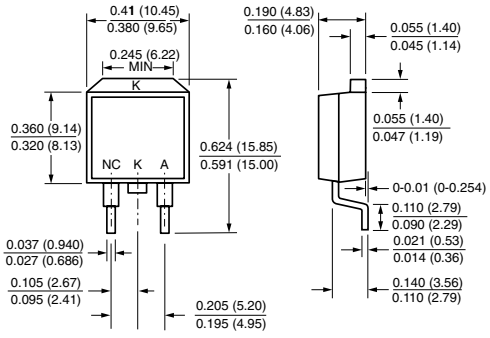


Note: Copper exposure is allowable for 0.005 (0.13) Max. from the body

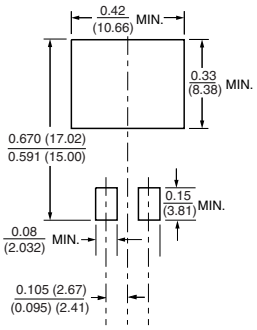
TO-262AA



TO-263AB



Mounting Pad Layout



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