V30100SG, VF30100SG, VB30100SG & VI30100SG

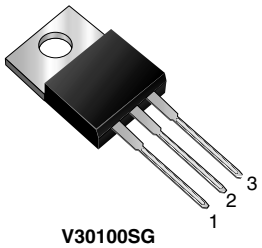
Vishay General Semiconductor

High-Voltage Trench MOS Barrier Schottky Rectifier

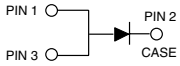
Ultra Low V_F = 0.437 V at I_F = 5 A

TMBS®

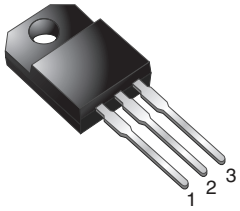
TO-220AB



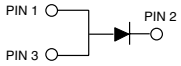
V30100SG



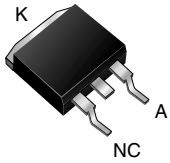
ITO-220AB



VF30100SG



TO-263AB



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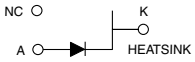
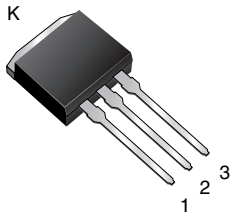
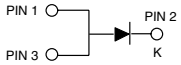


TO-262AA



VI30100SG



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-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, 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	
$I_{F(AV)}$	30 A
V_{RRM}	100 V
I_{FSM}	250 A
V_F at I_F = 30 A	0.76 V
T_J max.	150 °C

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	V30100SG	VF30100SG	VB30100SG	VI30100SG	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	100				V
Maximum average forward rectified current (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
Non-repetitive avalanche energy at T_J = 25 °C, L = 90 mH	E_{AS}	230				mJ
Peak repetitive reverse current at t_p = 2 µs, 1 kHz, T_J = 38 °C ± 2 °C	I_{RRM}	1.0				A
Voltage rate of change (rated V_R)	dV/dt	10 000				V/µs
Isolation voltage (ITO-220AB only) From terminal to heatsink t = 1 min	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	I_R = 10 mA	T_A = 25 °C	V_{BR}	105 (minimum)	-	V
Instantaneous forward voltage (1)	I_F = 5 A I_F = 10 A I_F = 30 A	T_A = 25 °C	V_F	0.50 0.60 0.92	- - 1.00	V
	I_F = 5 A I_F = 10 A I_F = 30 A	T_A = 125 °C		0.44 0.55 0.76	- - 0.83	
Reverse current (2)	V_R = 70 V	T_A = 25 °C T_A = 125 °C	I_R	8.8 6.5	- -	µA mA
	V_R = 100 V	T_A = 25 °C T_A = 125 °C		43 18	350 35	µA mA

Notes

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

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**SYMBOL**	**V30100SG**	**VF30100SG**	**VB30100SG**	**VI30100SG**	**UNIT**
Typical thermal resistance per leg	$R_{\theta JC}$	2.0	3.0	2.0	2.0	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TO-220AB	V30100SG-E3/4W	1.88	4W	50/tube	Tube
ITO-220AB	VF30100SG-E3/4W	1.74	4W	50/tube	Tube
TO-263AB	VB30100SG-E3/4W	1.37	4W	50/tube	Tube
TO-263AB	VB30100SG-E3/8W	1.37	8W	800/reel	Tape and reel
TO-262AA	VI30100SG-E3/4W	1.45	4W	50/tube	Tube

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

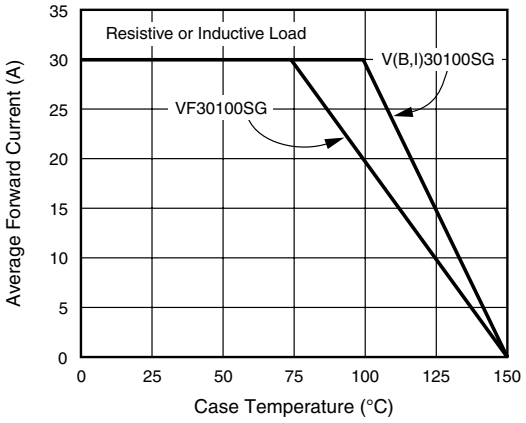


Figure 1. Forward Current Derating Curve

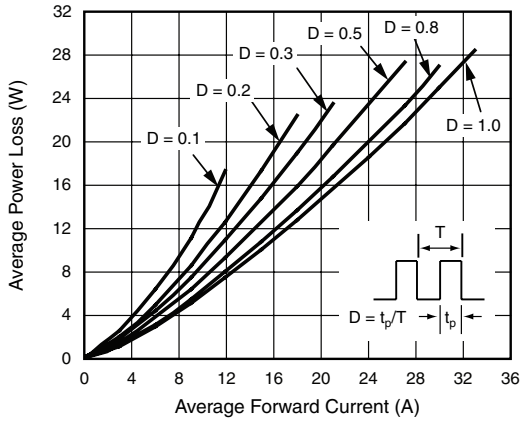


Figure 2. Forward Power Loss Characteristics

For technical questions within your region, please contact one of the following:
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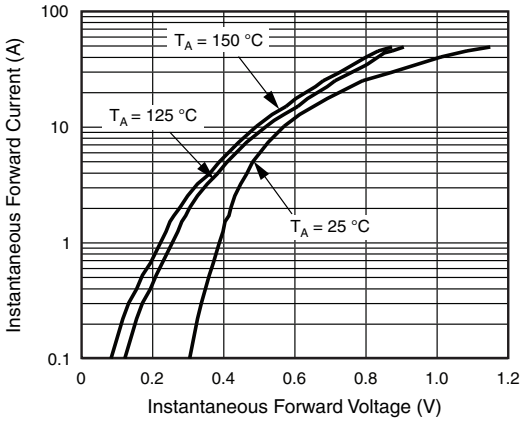


Figure 3. Typical Instantaneous Forward Characteristics

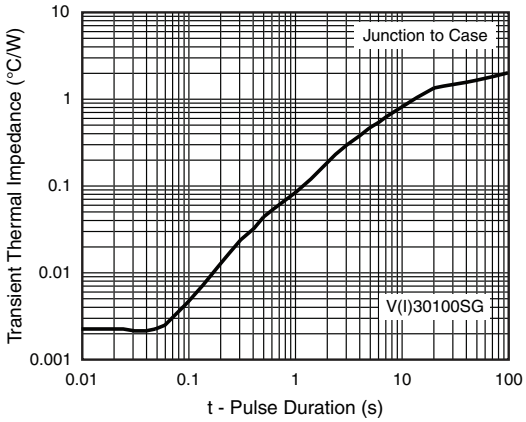


Figure 6. Typical Transient Thermal Impedance

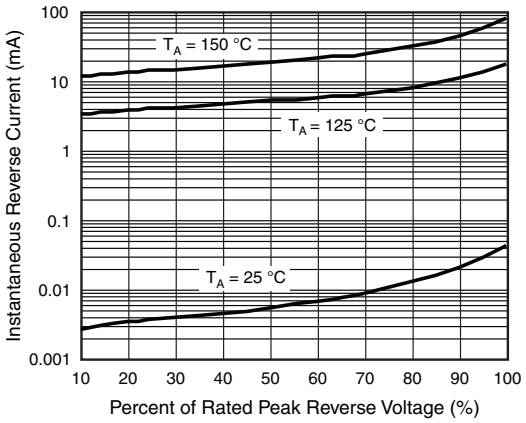


Figure 4. Typical Reverse Characteristics

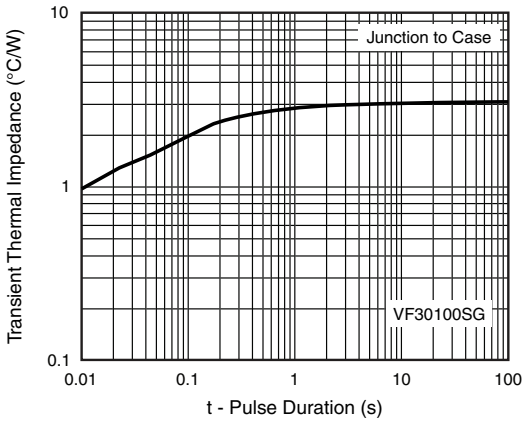


Figure 7. Typical Transient Thermal Impedance

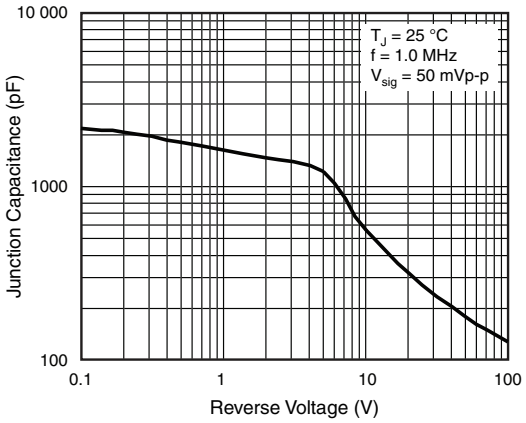
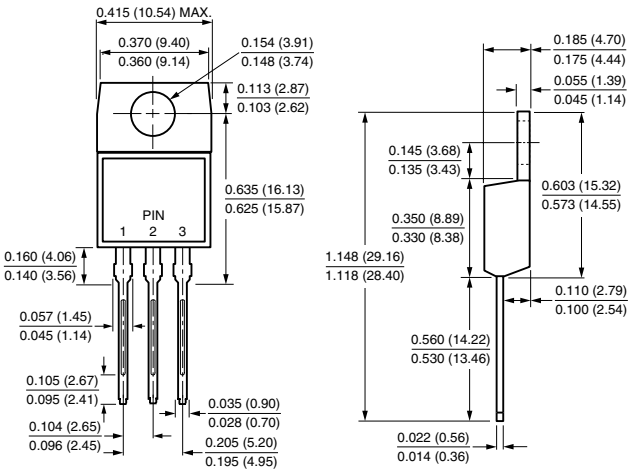


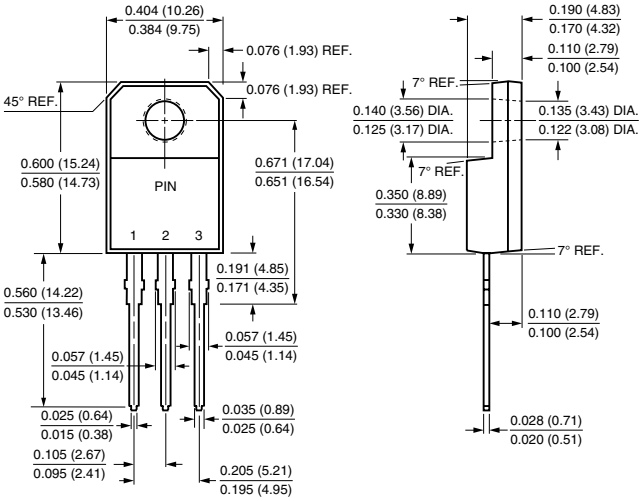
Figure 5. Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB



ITO-220AB



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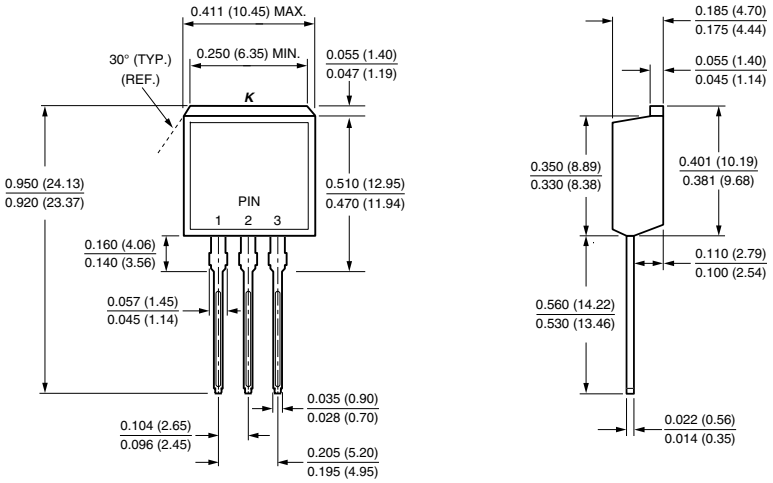

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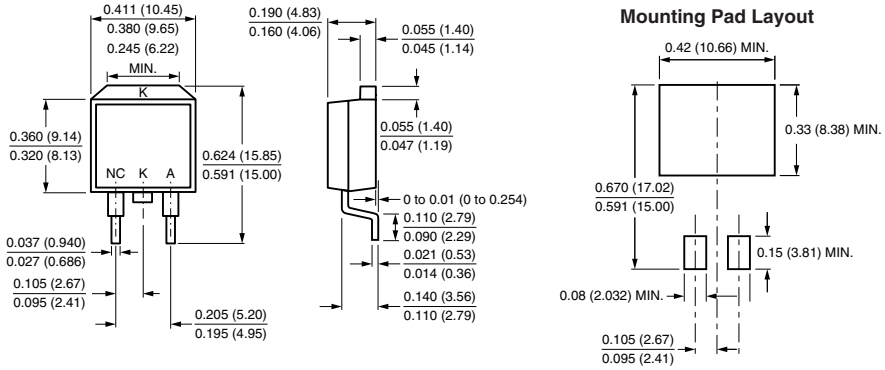

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