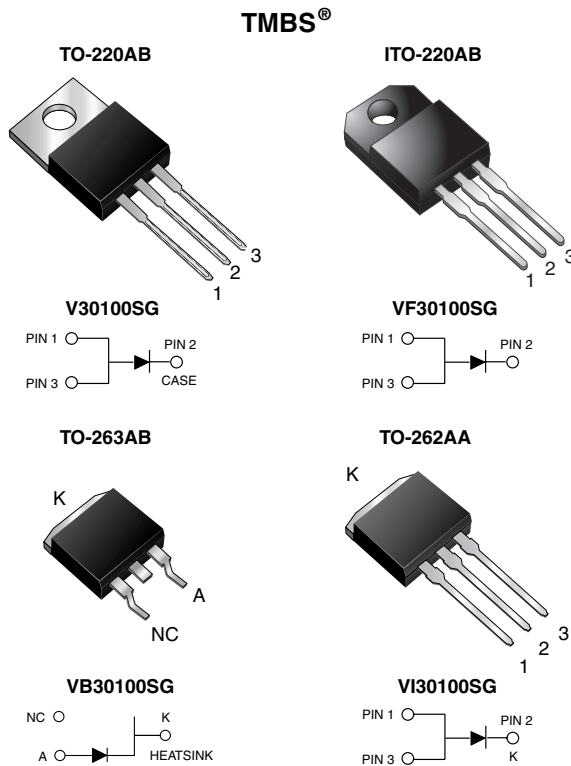




## High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.437\text{ V}$  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-020, LF maximum peak of 245 °C (for TO-263AB package)
- Solder dip 260 °C, 40 s (for TO-220AB, ITO-220AB and TO-262AA package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



**RoHS**  
COMPLIANT

### TYPICAL APPLICATIONS

For use in high frequency inverters, 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

Epoxy meets UL 94V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix for consumer grade, meets JESD 201 class 1A whisker test

**Polarity:** As marked

**Mounting Torque:** 10 in-lbs maximum

<b>PRIMARY CHARACTERISTICS</b>	
$I_{F(AV)}$	30 A
$V_{RRM}$	100 V
$I_{FSM}$	250 A
$V_F$ at $I_F = 30\text{ A}$	0.76 V
$T_J$ max.	150 °C

<b>MAXIMUM RATINGS</b> ( $T_A = 25\text{ °C}$ 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
Isolation voltage (ITO-220AB only) From terminal to heatsink $t = 1\text{ min}$	$V_{AC}$		1500			V
Operating junction and storage temperature range	$T_J, T_{STG}$		- 40 to + 150			°C



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Breakdown voltage	$I_R = 1.0\text{ mA}$	$T_A = 25\text{ }^\circ\text{C}$	$V_{BR}$	100 (minimum)	-	V
Instantaneous forward voltage <sup>(1)</sup>	$I_F = 5\text{ A}$ $I_F = 10\text{ A}$ $I_F = 30\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F$	0.50 0.60 0.92	- - 0.97	V
	$I_F = 5\text{ A}$ $I_F = 10\text{ A}$ $I_F = 30\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$		0.44 0.55 0.76	- - 0.81	
Reverse current <sup>(2)</sup>	$V_R = 70\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$ $T_A = 125\text{ }^\circ\text{C}$	$I_R$	8.8 6.5	- -	$\mu\text{A}$ mA
	$V_R = 100\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$ $T_A = 125\text{ }^\circ\text{C}$		43 18	350 35	$\mu\text{A}$ mA

**Notes:**

- (1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width  $\leq 40\text{ ms}$

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ 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	$^\circ\text{C/W}$

<b>ORDERING INFORMATION</b> (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**

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

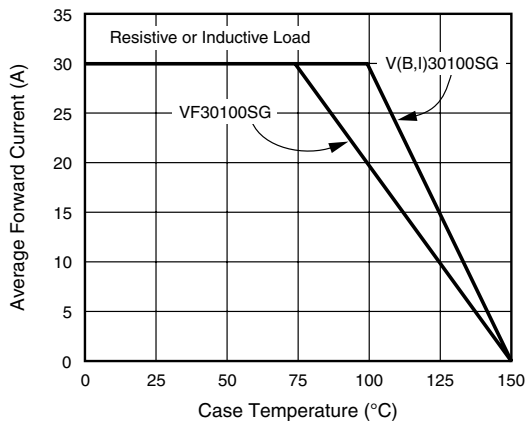


Figure 1. Forward Current Derating Curve

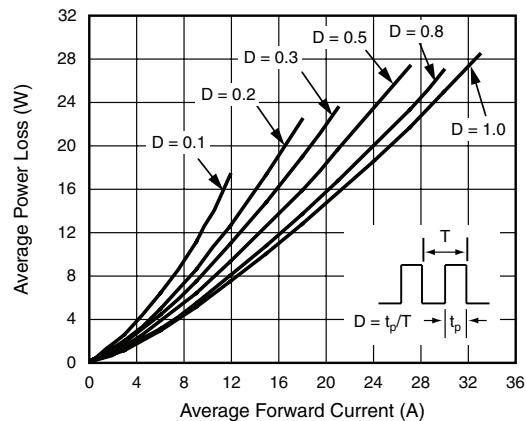


Figure 2. Forward Power Loss Characteristics



New Product  
**V30100SG, VF30100SG, VB30100SG & VI30100SG**

Vishay General Semiconductor

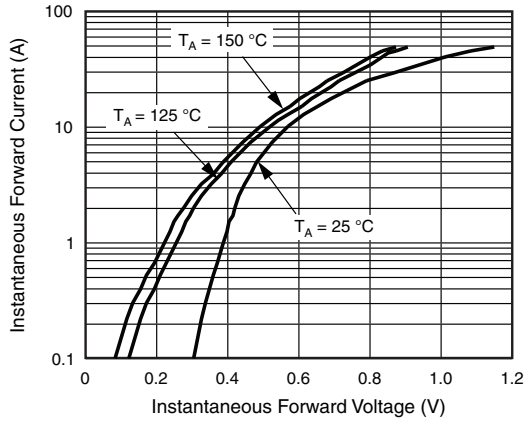


Figure 3. Typical Instantaneous Forward Characteristics

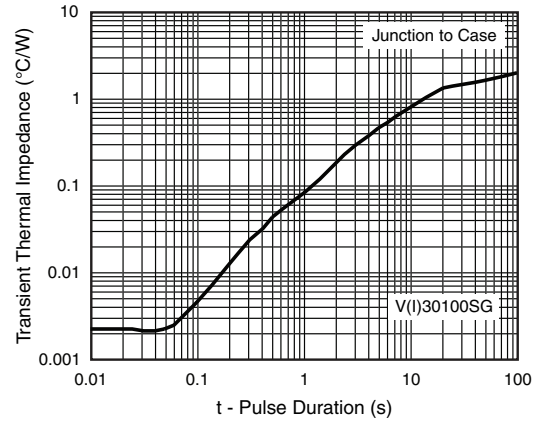


Figure 6. Typical Transient Thermal Impedance

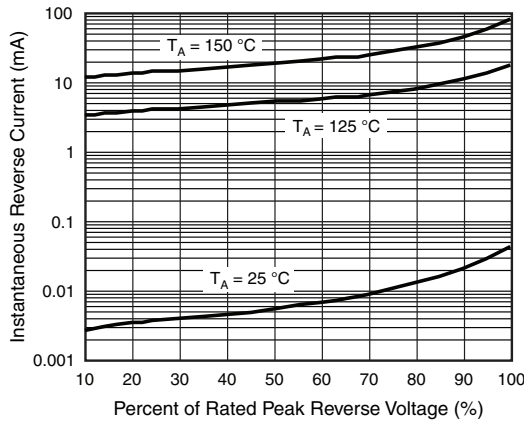


Figure 4. Typical Reverse Characteristics

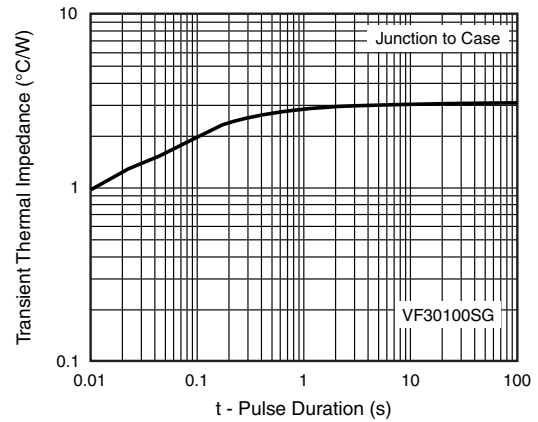


Figure 7. Typical Transient Thermal Impedance

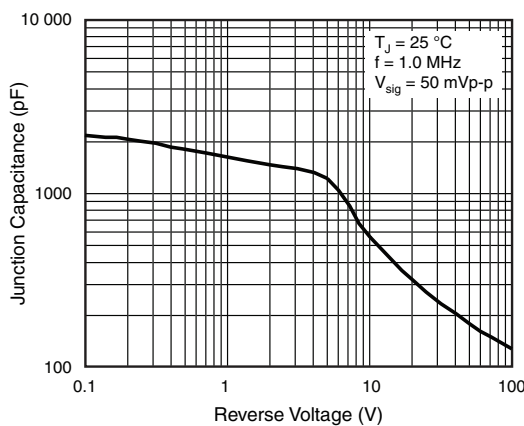


Figure 5. Typical Junction Capacitance





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