

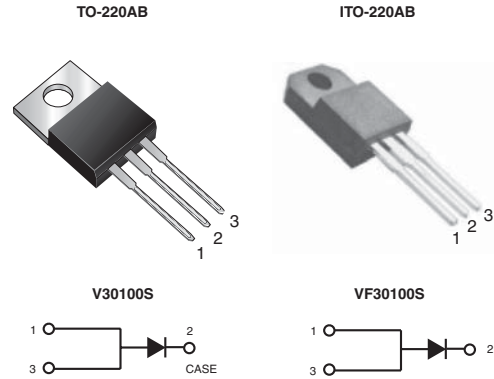


## High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.385\text{ V}$  at  $I_F = 5\text{ A}$

### Major Ratings and Characteristics

$I_{F(AV)}$	30 A
$V_{RRM}$	100 V
$I_{FSM}$	250 A
$V_F$ at $I_F = 30\text{ A}$	0.69 V
$T_J$ max.	150 °C



### Features

- Trench MOS Schottky Technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Low thermal resistance
- Solder Dip 260 °C, 40 seconds



### Mechanical Data

**Case:** TO-220AB, ITO-220AB

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

### Typical Applications

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

### Maximum Ratings

( $T_A = 25\text{ °C}$  unless otherwise specified)

Parameter	Symbol	V30100S	Unit
Maximum repetitive peak reverse voltage	$V_{RRM}$	100	V
RMS reverse voltage for sine wave	$V_{RMS}$	70	V
DC blocking voltage	$V_R$	100	V
Maximum average forward rectified (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 $t_p = 2\text{ }\mu\text{s}$ , 1 kHz	$I_{RRM}$	1.0	A
Voltage rate of change (rated $V_R$ )	$dv/dt$	10000	V/ $\mu\text{s}$
Isolation voltage (ITO-220AC only) From terminal to heatsink $t = 1\text{ minute}$	$V_{AC}$	1500	V
Operating junction and storage temperature range	$T_J, T_{STG}$	- 20 to + 150	°C

### Electrical Characteristics

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

Parameter	Test condition		Symbol	Typ.	Max.	Unit
Instantaneous forward voltage <sup>(1)</sup>	at $I_F = 5\text{ A}$ $I_F = 10\text{ A}$ $I_F = 20\text{ A}$ $I_F = 30\text{ A}$	$T_J = 25\text{ }^\circ\text{C}$	$V_F$	0.463	-	V
				0.535	-	
				0.664	-	
				0.773	0.85	
	at $I_F = 5\text{ A}$ $I_F = 10\text{ A}$ $I_F = 20\text{ A}$ $I_F = 30\text{ A}$	$T_J = 125\text{ }^\circ\text{C}$		0.385	-	
				0.455	-	
Reverse current at rated $V_R$ <sup>(1)</sup>	at $V_R = 70\text{ V}$	$T_J = 25\text{ }^\circ\text{C}$ $T_J = 125\text{ }^\circ\text{C}$	$I_R$	13.9	500	$\mu\text{A}$
				8.5	15	mA
	at $V_R = 100\text{ V}$	$T_J = 25\text{ }^\circ\text{C}$ $T_J = 125\text{ }^\circ\text{C}$		69.9	1000	$\mu\text{A}$
				22.5	45	mA

### Thermal Characteristics

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

Parameter	Symbol	V30100S	VF30100S	Unit
Typical thermal resistance	$R_{\theta JC}$	2.0	4.0	$^\circ\text{C/W}$

Notes:

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

### Ratings and Characteristics Curves

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

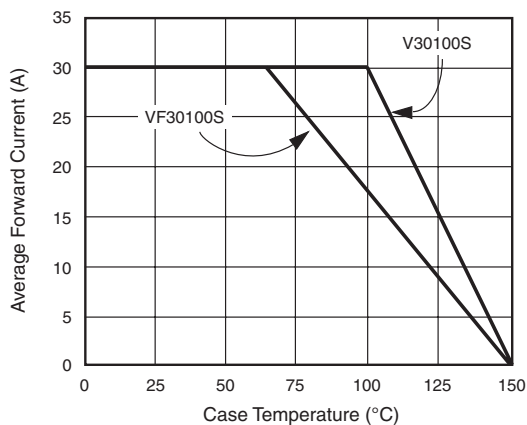


Figure 1. Forward Current Derating Curve

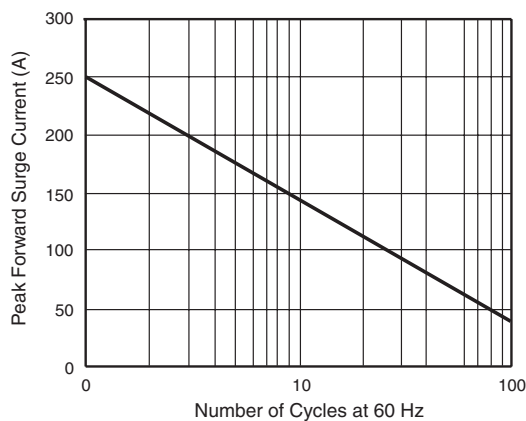


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

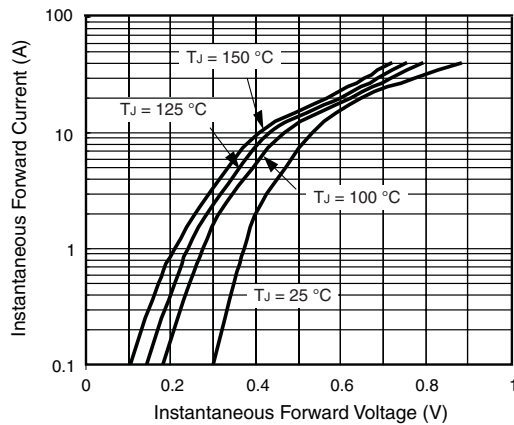


Figure 3. Typical Instantaneous Forward Characteristics Per Leg

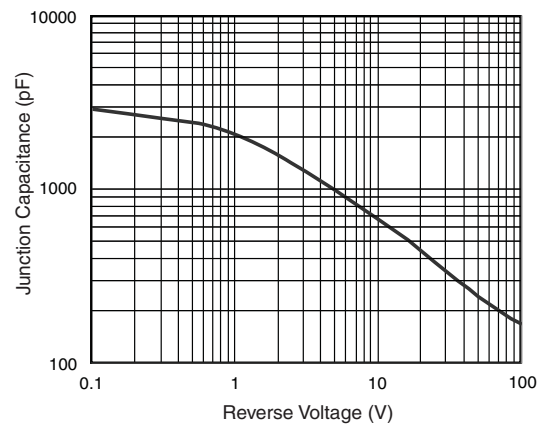


Figure 5. Typical Junction Capacitance

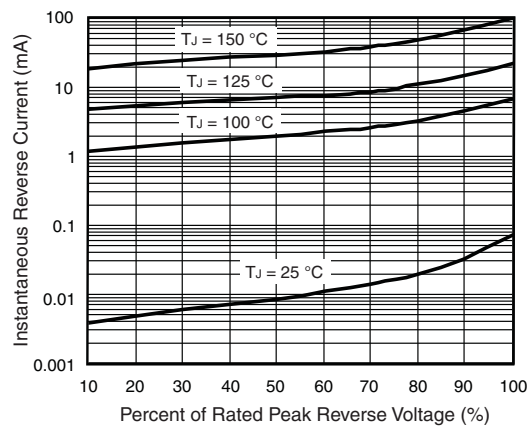


Figure 4. Typical Reverse Characteristics

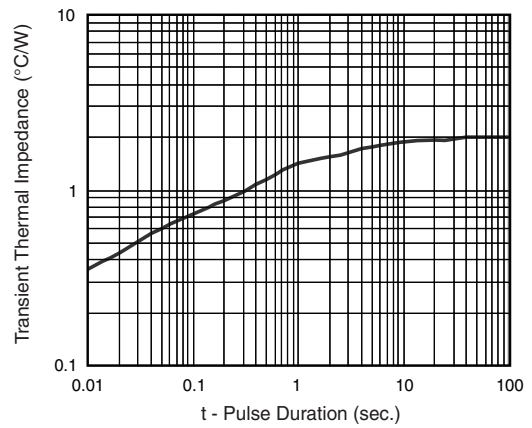
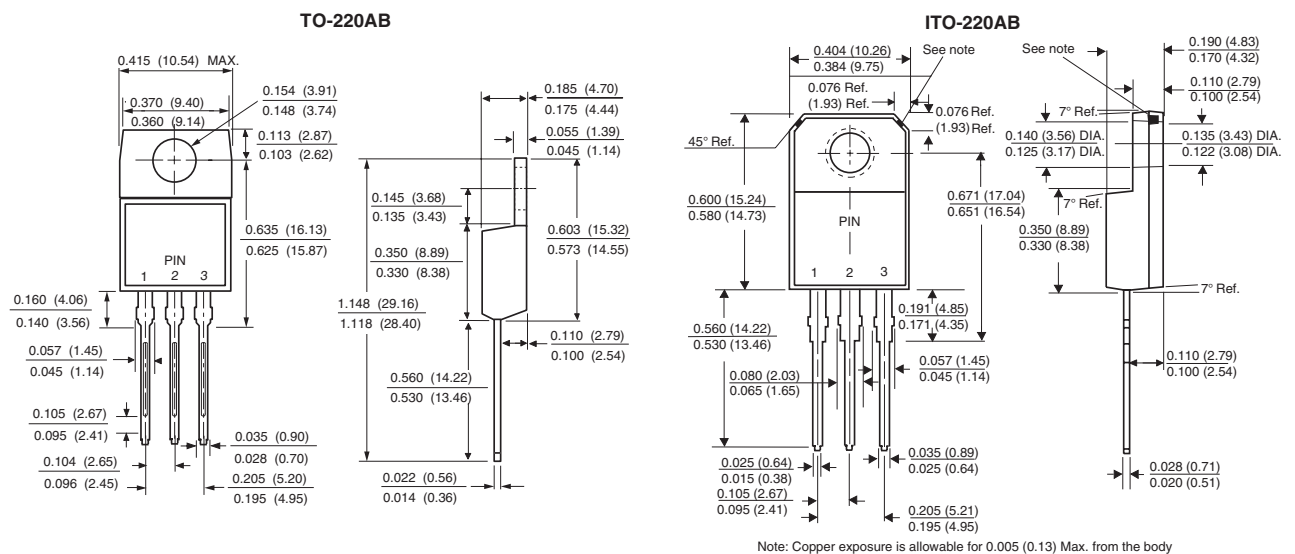


Figure 6. Typical Transient Thermal Impedance

## Package outline dimensions in inches (millimeters)





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