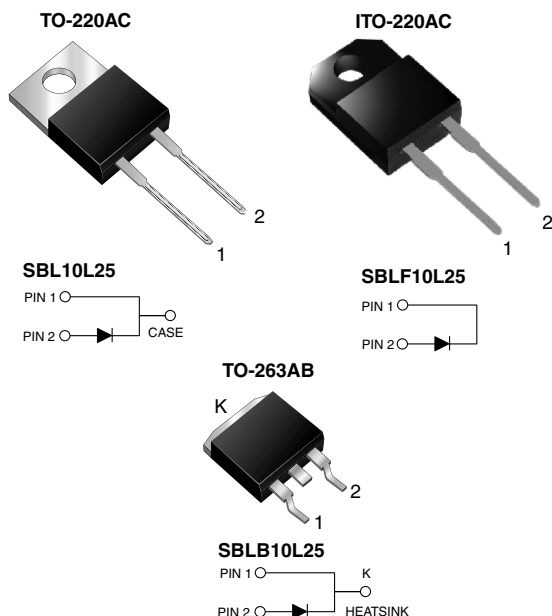


Low V_F Schottky Barrier Rectifier



FEATURES

- Guardring for overvoltage protection
- Lower power losses, high efficiency
- Very low forward voltage drop
- High forward surge capability
- High frequency operation
- Meets MSL level 1, per J-STD-020C, LF maximum peak of 245 °C (for TO-263AB package)
- Solder dip 260 °C, 40 s (for TO-220AC and ITO-220AC package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



TYPICAL APPLICATIONS

For use in low voltage, high frequency rectifier of switching mode power supplies, freewheeling diodes, dc-to-dc converters and polarity protection application.

MECHANICAL DATA

Case: TO-220AC, ITO-220AC, TO-263AB

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, meets JESD 201 class 1A whisker test, HE3 suffix for high reliability grade (AEC Q101 qualified), meets JESD 201 class 2 whisker test

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	10 A
V_{RRM}	25 V
I_{FSM}	240 A
V_F	0.35 V
$T_J \text{ max.}$	150 °C

MAXIMUM RATINGS ($T_C = 25$ °C unless otherwise noted)

PARAMETER	SYMBOL	SBL10L25	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	25	V
Working peak reverse voltage	V_{RWM}	18	V
Maximum DC blocking voltage	V_{DC}	25	V
Maximum average forward rectified current at $T_C = 135$ °C	$I_{F(AV)}$	10	A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	240	A
Peak repetitive reverse current at $t_p = 2$ μ s, 1 kHz	I_{RRM}	1.0	A
Voltage rate of change (rated V_R)	dV/dt	10000	V/ μ s
Operating junction and storage temperature range	T_J, T_{STG}	- 65 to + 150	°C
Isolation voltage (ITO-220AC only) from terminal to heatsink $t = 1$ min	V_{AC}	1500	V

ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)					
PARAMETER	TEST CONDITIONS		SYMBOL	VALUE	UNIT
Maximum instantaneous forward voltage ⁽¹⁾	$I_F = 10\text{ A}$	$T_J = 25\text{ }^{\circ}\text{C}$	V_F	0.46	V
	$I_F = 10\text{ A}$	$T_J = 125\text{ }^{\circ}\text{C}$		0.35	
	$I_F = 20\text{ A}$	$T_J = 25\text{ }^{\circ}\text{C}$		0.55	
	$I_F = 20\text{ A}$	$T_J = 125\text{ }^{\circ}\text{C}$		0.48	
Maximum instantaneous reverse current at DC blocking voltage ⁽¹⁾		$T_J = 25\text{ }^{\circ}\text{C}$ $T_J = 125\text{ }^{\circ}\text{C}$	I_R	0.80 260	mA

Note:

(1) Pulse test: 300 μs pulse width, 2 % duty cycle

THERMAL CHARACTERISTICS ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	SBL	SBLF	SBLB	UNIT
Typical thermal resistance from junction to case per leg	$R_{\theta JC}$	1.5	4.0	1.5	$^{\circ}\text{C/W}$

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AC	SBL10L25-E3/45	1.80	45	50/tube	Tube
ITO-220AC	SBLF10L25-E3/45	1.94	45	50/tube	Tube
TO-263AB	SBLB10L25-E3/45	1.33	45	50/tube	Tube
TO-263AB	SBLB10L25-E3/81	1.33	81	800/reel	Tape reel
TO-220AC	SBL10L25HE3/45 ⁽¹⁾	1.80	45	50/tube	Tube
ITO-220AC	SBLF10L25HE3/45 ⁽¹⁾	1.94	45	50/tube	Tube
TO-263AB	SBLB10L25HE3/45 ⁽¹⁾	1.33	45	50/tube	Tube
TO-263AB	SBLB10L25HE3/81 ⁽¹⁾	1.33	81	800/reel	Tape reel

Note:

(1) Automotive grade AEC Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

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

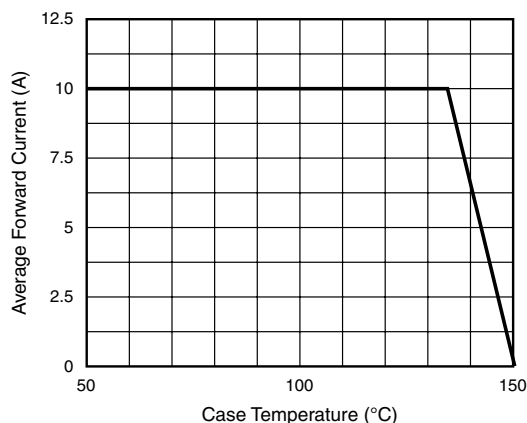


Figure 1. Forward Current Derating Curve

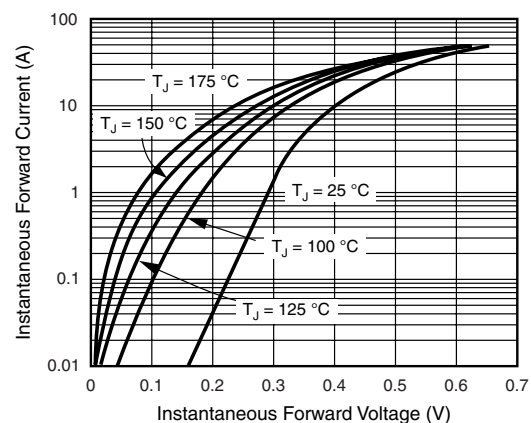


Figure 2. Typical Instantaneous Forward Characteristics

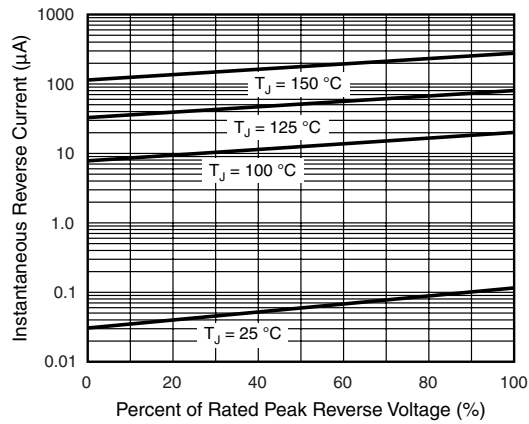


Figure 3. Typical Reverse Characteristics

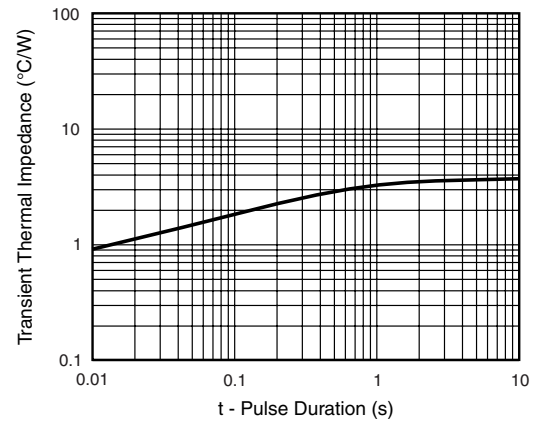


Figure 5. Typical Transient Thermal Impedance

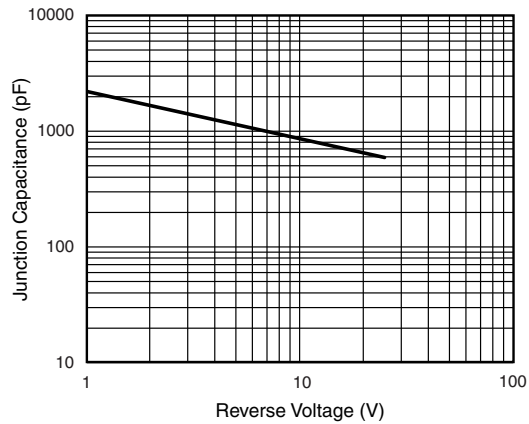
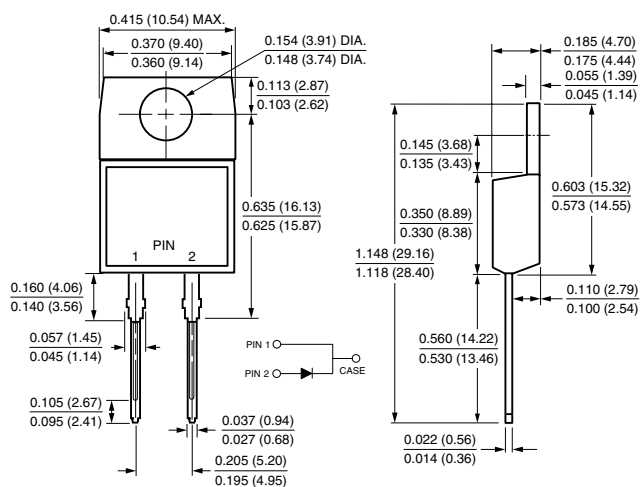


Figure 4. Typical Junction Capacitance

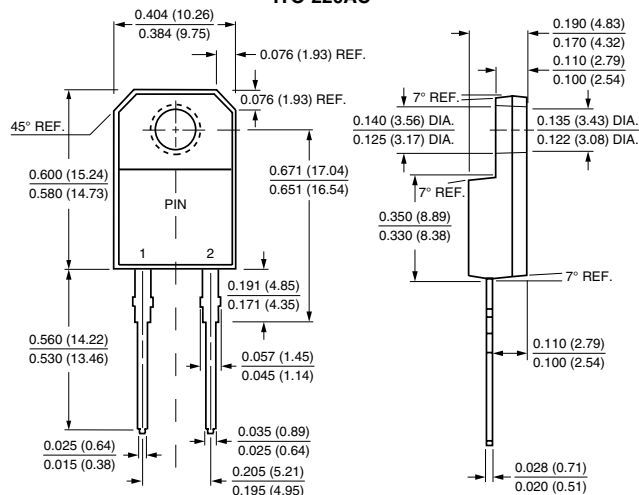
Vishay General Semiconductor

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

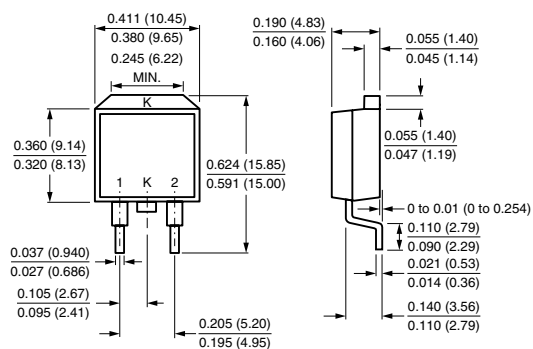
TO-220AC



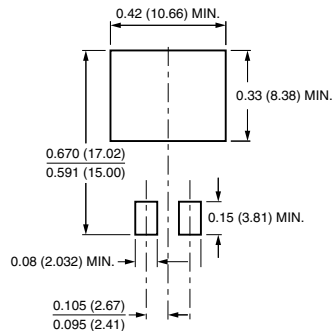
ITO-220AC



TO-263AB



Mounting Pad Layout





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