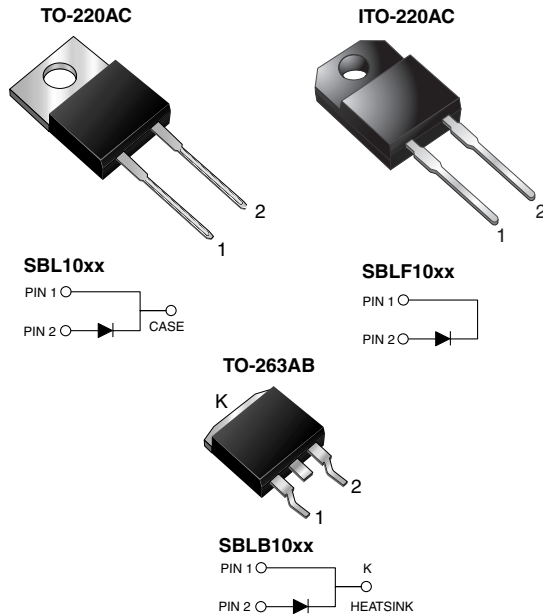


## Schottky Barrier Rectifier



### FEATURES

- Guardring for overvoltage protection
- Lower power losses, high efficiency
- Low forward voltage drop
- High forward surge capability
- High frequency operation
- 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-220AC and ITO-220AC package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



**RoHS**  
COMPLIANT

### 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-002 and JESD22-B102

E3 suffix for consumer 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       |
| $V_{RRM}$               | 30 V, 40 V |
| $I_{FSM}$               | 250 A      |
| $V_F$                   | 0.60 V     |
| $T_J \text{ max.}$      | 125 °C     |

| MAXIMUM RATINGS ( $T_C = 25 \text{ }^\circ\text{C}$ unless otherwise noted)        |                |               |         |      |
|--|----------------|---------------|---------|------|
| PARAMETER  | SYMBOL         | SBL1030       | SBL1040 | UNIT |
| Maximum repetitive peak reverse voltage  | $V_{RRM}$      | 30            | 40      | V    |
| Working peak reverse voltage   | $V_{RWM}$      | 21            | 28      | V    |
| Maximum DC blocking voltage  | $V_{DC}$       | 30            | 40      | V    |
| Maximum average forward rectified current at $T_C = 110 \text{ }^\circ\text{C}$    | $I_{F(AV)}$    | 10            |         | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 250           |         | A    |
| Operating junction and storage temperature range                                   | $T_J, T_{STG}$ | - 40 to + 125 |         | °C   |
| Isolation voltage (ITO-220AC only) from terminal to heatsink $t = 1 \text{ min}$   | $V_{AC}$       | 1500          |         | V    |



| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                 |                                   |        |       |      |
|--|-----------------|-----------------------------------|--------|-------|------|
| PARAMETER  | TEST CONDITIONS |                                   | SYMBOL | VALUE | UNIT |
| Maximum instantaneous forward voltage <sup>(1)</sup>   | 10 A            |                                   | $V_F$  | 0.6   | V    |
| Maximum instantaneous reverse current at DC blocking voltage <sup>(1)</sup>                  |                 | $T_C = 25\text{ }^\circ\text{C}$  | $I_R$  | 1.0   | mA   |
|  |                 | $T_C = 100\text{ }^\circ\text{C}$ |        | 50    |      |

**Note:**

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

| <b>THERMAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                 |     |      |      |                    |
|---|-----------------|-----|------|------|--------------------|
| PARAMETER   | SYMBOL          | SBL | SBLF | SBLB | UNIT               |
| Typical thermal resistance from junction to case per leg                                  | $R_{\theta JC}$ | 2.0 | 5.0  | 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-220AC                              | SBL1030-E3/45                 | 1.80            | 45           | 50/tube       | Tube          |
| ITO-220AC                             | SBLF1030-E3/45                | 1.94            | 45           | 50/tube       | Tube          |
| TO-263AB                              | SBLB1030-E3/45                | 1.33            | 45           | 50/tube       | Tube          |
| TO-263AB                              | SBLB1030-E3/81                | 1.33            | 81           | 800/reel      | Tape and reel |
| TO-220AC                              | SBL1030HE3/45 <sup>(1)</sup>  | 1.80            | 45           | 50/tube       | Tube          |
| ITO-220AC                             | SBLF1030HE3/45 <sup>(1)</sup> | 1.94            | 45           | 50/tube       | Tube          |
| TO-263AB                              | SBLB1030HE3/45 <sup>(1)</sup> | 1.33            | 45           | 50/tube       | Tube          |
| TO-263AB                              | SBLB1030HE3/81 <sup>(1)</sup> | 1.33            | 81           | 800/reel      | Tape and reel |

**Note:**

(1) Automotive grade AEC Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES

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

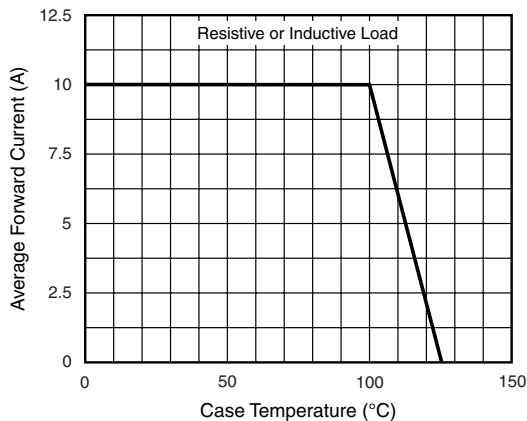


Figure 1. Forward Current Derating Curve

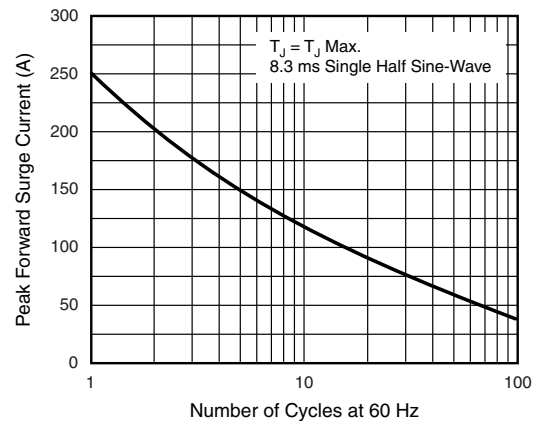


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

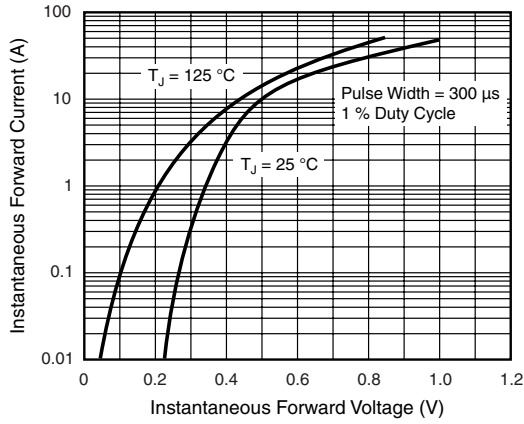


Figure 3. Typical Instantaneous Forward Characteristics

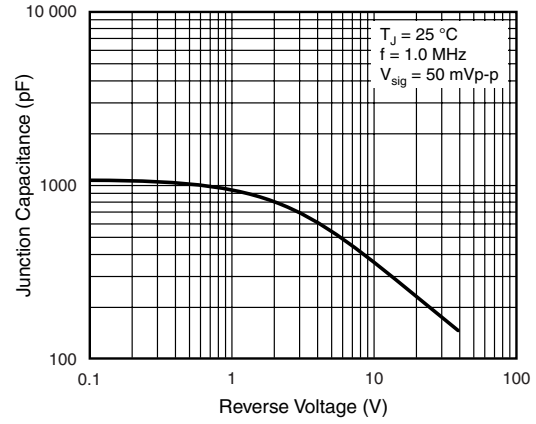


Figure 5. Typical Junction Capacitance

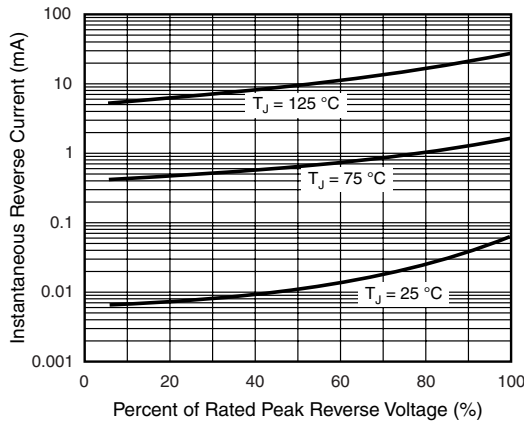


Figure 4. Typical Reverse Characteristics

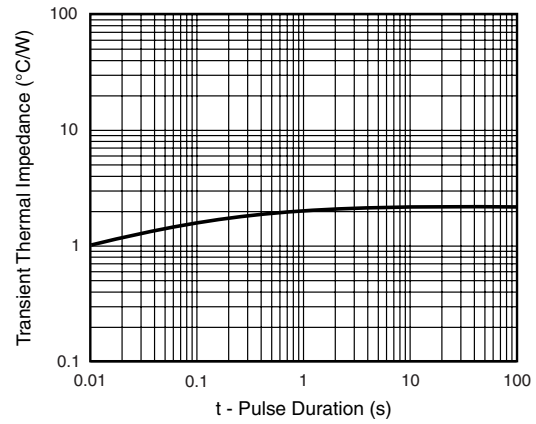
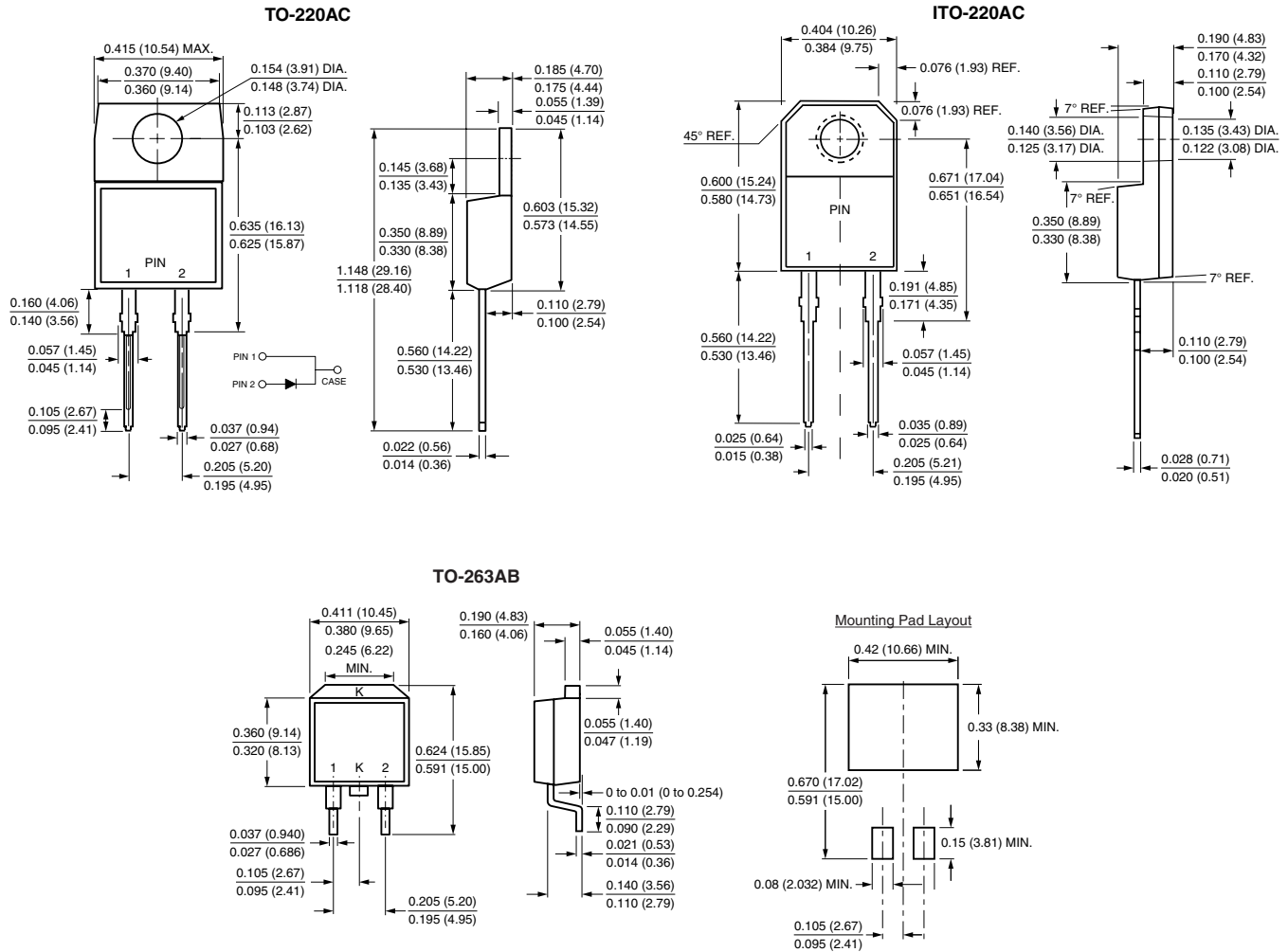


Figure 6. Typical Transient Thermal Impedance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





## Disclaimer

All product specifications and data are subject to change without notice.

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