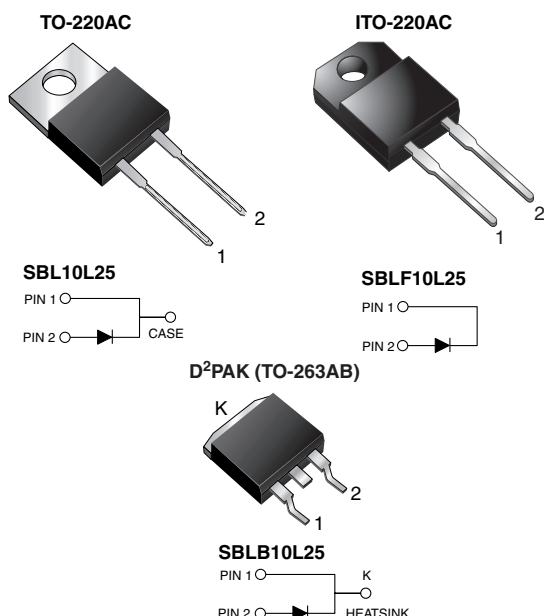


Low V_F Schottky Barrier Rectifier



LINKS TO ADDITIONAL RESOURCES



| PRIMARY CHARACTERISTICS | |
|-------------------------|--|
| $I_{F(AV)}$ | 10 A |
| V_{RRM} | 25 V |
| I_{FSM} | 240 A |
| V_F | 0.35 V |
| T_J max. | 150 °C |
| Package | TO-220AC, ITO-220AC, D ² PAK (TO-263AB) |
| Circuit configuration | Single |

FEATURES

- Power pack
- Guardring for overvoltage protection
- Low power loss, high efficiency
- Very 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 D²PAK (TO-263AB) package
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106 (for TO-220AC and ITO-220AC package)
- AEC-Q101 qualified available
 - Automotive ordering code:
 - Base P/NHE3 (for ITO-220AC)
 - Base P/NHM3 (for D²PAK (TO-263AB) package)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE
Available

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: TO-220AC, ITO-220AC, D²PAK (TO-263AB)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-E3 - RoHS-compliant, commercial grade

Molding compound meets UL 94 V-0 flammability rating

Base P/NHE3_X - RoHS-compliant, AEC-Q101 qualified
("X" denotes revision code, e.g. A, B, ...)

Base P/N-M3 - RoHS-compliant, halogen-free, commercial grade

Base P/NHM3 - RoHS-compliant, halogen-free, AEC-Q101 qualified

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 and M3 suffix meets JESD 201 class 1A whisker test, HE3 and HM3 suffix meets JESD 201 class 2 whisker test

Polarity: as marked

Mounting Torque: 10 in-lbs maximum

**MAXIMUM RATINGS** ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

| PARAMETER | SYMBOL | SBL10L25 SBLB10L25 SBLF10L25 | UNIT |
|--|----------------|------------------------------------|--------------------|
| Maximum repetitive peak reverse voltage | V_{RRM} | 25 | V |
| Working peak reverse voltage | V_{RWM} | 18 | |
| Maximum DC blocking voltage | V_{DC} | 25 | |
| Maximum average forward rectified current at $T_C = 135\text{ }^{\circ}\text{C}$ | $I_{F(AV)}$ | 10 | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | 240 | |
| Peak repetitive reverse surge current at $t_p = 2.0\text{ }\mu\text{s}$, 1 kHz | I_{RRM} | 1.0 | |
| Voltage rate of change (rated V_R) | dV/dt | 10 000 | V/ μs |
| Operating junction and storage temperature range | T_J, T_{STG} | -65 to +150 | $^{\circ}\text{C}$ |
| Isolation voltage (ITO-220AC only) from terminal to heatsink $t = 1\text{ min}$ | V_{AC} | 1500 | V |

ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

| PARAMETER | SYMBOL | TEST CONDITIONS | VALUE | UNIT |
|--|-------------|---|-------------------------------------|------|
| Maximum instantaneous forward voltage | $V_F^{(1)}$ | $I_F = 10\text{ A}$, $T_J = 25\text{ }^{\circ}\text{C}$ | 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 | $I_R^{(2)}$ | Rated V_R | $T_J = 25\text{ }^{\circ}\text{C}$ | 0.80 |
| | | | $T_J = 125\text{ }^{\circ}\text{C}$ | 260 |

Notes(1) Pulse test: 300 μs pulse width, 1 % duty cycle(2) Pulse test: pulse width $\leq 40\text{ ms}$ **THERMAL CHARACTERISTICS** ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

| PARAMETER | SYMBOL | SBL10L25 | SBLF10L25 | SBLB10L25 | 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

| 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 |
| D ² PAK (TO-263AB) | SBLB10L25-M3/I | 1.33 | I | 800/reel | Tape and reel |
| ITO-220AC | SBLF10L25HE3_A/P ⁽¹⁾ | 1.94 | P | 50/tube | Tube |
| D ² PAK (TO-263AB) | SBLB10L25HM3/I ⁽¹⁾ | 1.33 | I | 800/reel | Tape and reel |

Note⁽¹⁾ AEC-Q101 qualified, available in ITO-220AC and D²PAK (TO-263AB)



RATINGS AND CHARACTERISTICS CURVES ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

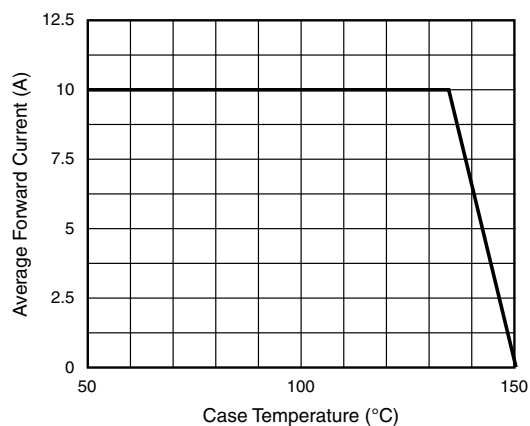


Fig. 1 - Forward Current Derating Curve

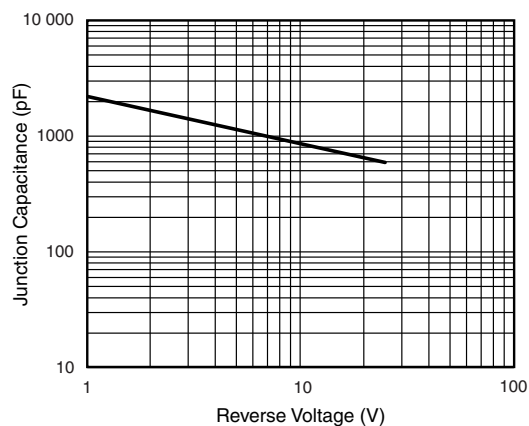


Fig. 4 - Typical Junction Capacitance

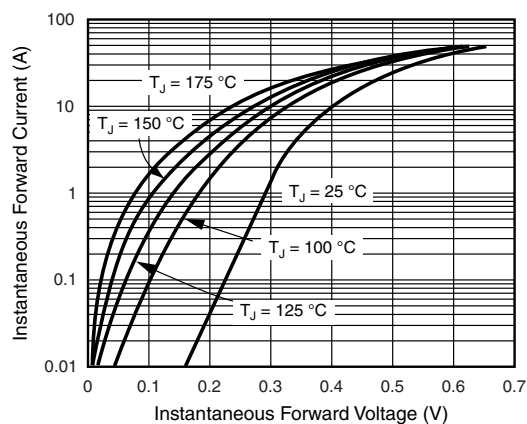


Fig. 2 - Typical Instantaneous Forward Characteristics

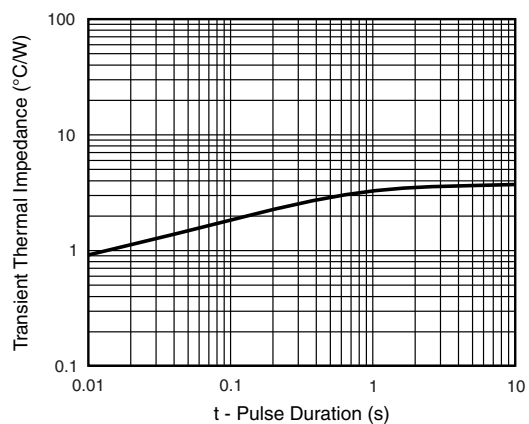


Fig. 5 - Typical Transient Thermal Impedance

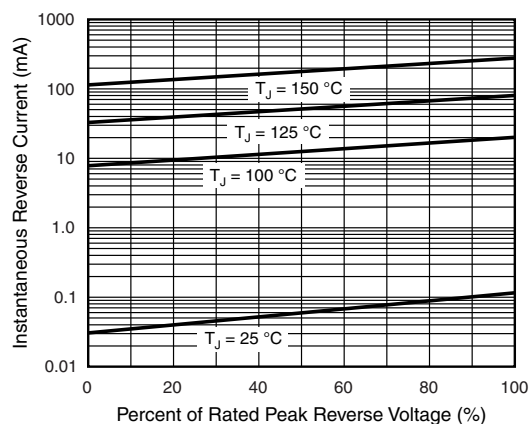
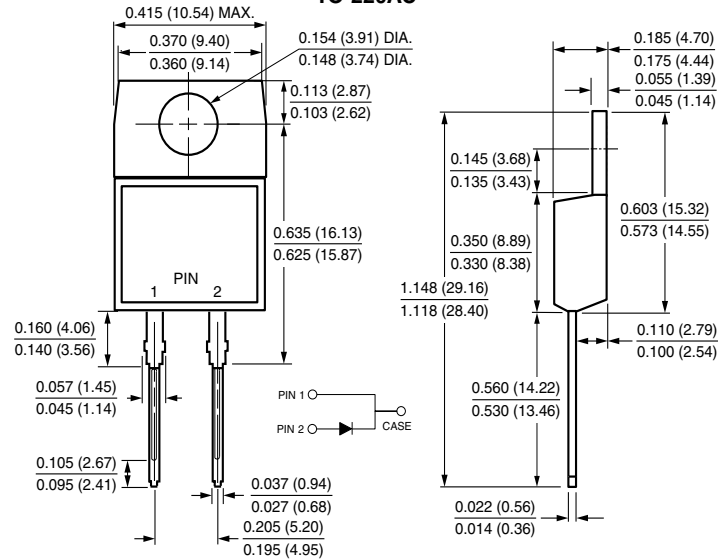


Fig. 3 - Typical Reverse Characteristics

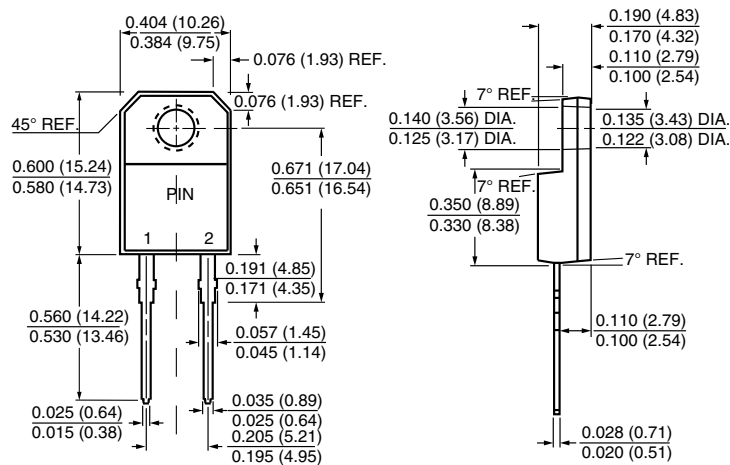


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

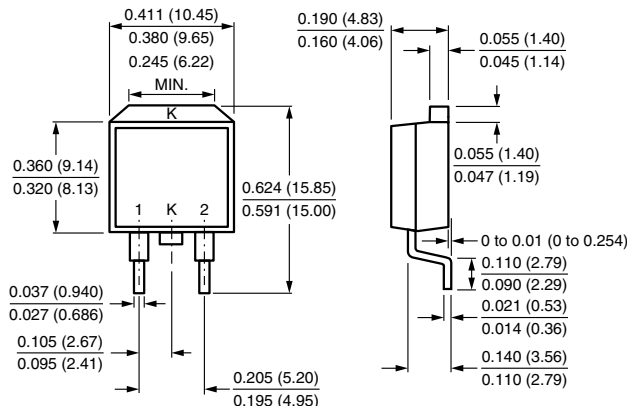
TO-220AC



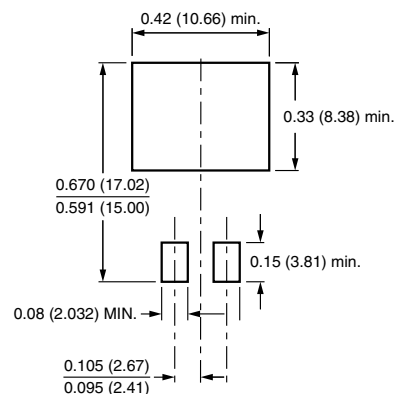
ITO-220AC



D²PAK (TO-263AB)



Mounting Pad Layout





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