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Vishay Semiconductor/Diodes Division
LVB1560-M3/45

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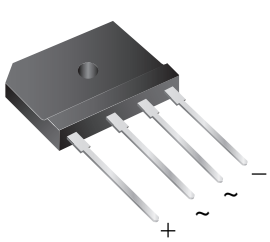
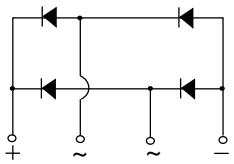
# Low $V_F$ Single-Phase Single In-Line Bridge Rectifiers





**Case Style GSIB-5S**

## FEATURES

- UL recognition file number E54214, Vol. 1
- Thin single in-line package
- Oxide planar chip junction
- Low forward voltage drop
- High surge current capability
- High case dielectric strength of 2500 $V_{RMS}$
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT
HALOGEN FREE

## TYPICAL APPLICATIONS

General purpose use in AC/DC bridge full wave rectification for switching power supply, home appliances and white-goods applications specially for telecom power supply, high efficiency desktop PC and server SMPS.

| PRIMARY CHARACTERISTICS | |
|---|---|
| Package | GSIB-5S |
| $I_{F(AV)}$ | 15 A |
| $V_{RRM}$ | 600 V |
| $I_{FSM}$ | 400 A |
| $I_R$ | 10 µA |
| $V_F$ at $I_F$ = 7.5 A, $T_A$ = 125 °C | 0.73 V |
| $T_J$ max. | 150 °C |
| Diode variations | In-Line |

## MECHANICAL DATA

**Case:** GSIB-5S
Epoxy meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
M3 suffix meets JESD 201 class 1A whisker test

**Polarity:** As marked on body

**Mounting Torque:** 10 cm-kg (8.8 in-lbs) maximum

**Recommended Torque:** 5.7 cm-kg (5 in-lbs)

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

| PARAMETER | | SYMBOL | LVB1560 | UNIT |
|---|---|---|---|---|
| Maximum repetitive peak reverse voltage | | $V_{RRM}$ | 600 | V |
| Maximum average forward rectified output current at | $T_C$ = 125 °C | $I_O$ (1) | 15 | A |
| | $T_A$ = 25 °C | $I_O$ (2) | 3.6 | |
| Non-repetiitive peak forward surge current 8.3 ms single sine-wave, $T_J$ = 25 °C | | $I_{FSM}$ | 400 | A |
| Rating for fusing (t < 8.3 ms) | $T_J$ = 25 °C | $I^2t$ | 664 | $A^2s$ |
| Operating junction and storage temperature range | | $T_J$, $T_{STG}$ | - 55 to + 150 | °C |

**Notes**
(1) Unit case mounted on aluminum plate heatsink
(2) Units mounted on PCB without heatsink

| ELECTRICAL CHARACTERISTICS ($T_A$ = 25 °C unless otherwise noted) | | | | | | |
|---|---|---|---|---|---|---|
| PARAMETER | TEST CONDITIONS | | SYMBOL | TYP. | MAX. | UNIT |
| Instantaneous forward voltage | $I_F$ = 7.5 A | $T_A$ = 25 °C | $V_F$ (1) | 0.87 | 0.90 | V |
| | | $T_A$ = 125 °C | | 0.73 | - | |
| Reverse current per diode | $V_R$ = 600 V | $T_A$ = 25 °C | $I_R$ (2) | 0.2 | 10 | µA |
| | | $T_A$ = 125 °C | | 60 | - | |
| Typical reverse recovery time | $I_F$ = 0.5 A, $I_R$ = 1.0 A, $I_{rr}$ = 0.25 A | | $t_{rr}$ | 1.8 | - | µs |
| Typical junction capacitance | 4.0 V, 1 MHz | | $C_J$ | 260 | - | pF |

**Notes**
(1) Pulse test: 300 µs pulse width, 1 % duty cycle
(2) Pulse test: pulse width ≤ 40 ms

| THERMAL CHARACTERISTICS ($T_A$ = 25 °C unless otherwise noted) | | | |
|---|---|---|---|
| PARAMETER | SYMBOL | LVB1560 | UNIT |
| Maximum thermal resistance | $R_{\theta JA}$ (2) | 25 | °C/W |
| | $R_{\theta JC}$ (1) | 1.0 | |

**Notes**
(1) With heatsink
(2) Without heatsink, free air

| EMC SURGE IMMUNITY TEST STANDARD ($T_A$ = 25 °C, unless otherwise noted) | | | | | |
|---|---|---|---|---|---|
| STANDARD | TEST TYPE | TEST CONDITIONS | SYMBOL | CLASS | VALUE |
| IEC 61000-4-5 | Power supply coupling mode, line to line | 1.2/50 µs waveform, R = 2 Ω, $T_A$ = 25 °C (1) | $V_{PEAK}$ | - | 6 kV maximum |

**Note**
(1) Immunity to IEC 61000-4-5 peak pulse voltage test, 1.2/50 µs, 2 Ω, 5 times each of positive and negative polarity test

| ORDERING INFORMATION (Example) | | | | |
|---|---|---|---|---|
| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| LVB1560-M3/45 | 6.9 | 45 | 20 | Tube |

## RATINGS AND CHARACTERISTICS CURVES

($T_A$ = 25 °C unless otherwise noted)

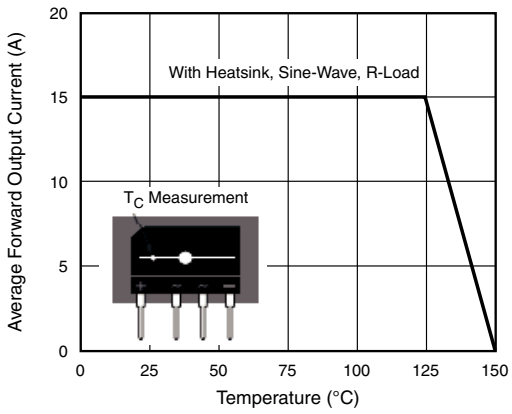



Fig. 1 - Derating Curve Output Rectified Current

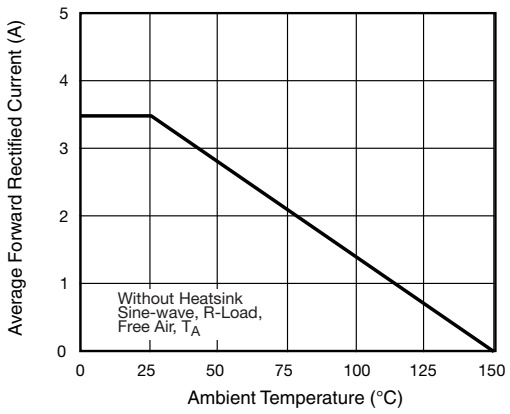



Fig. 2 - Forward Current Derating Curve

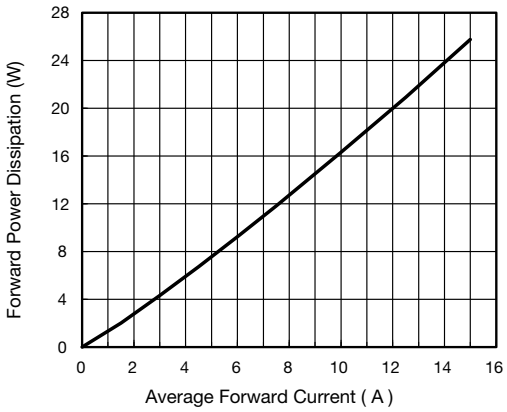



Fig. 3 - Forward Power Dissipation

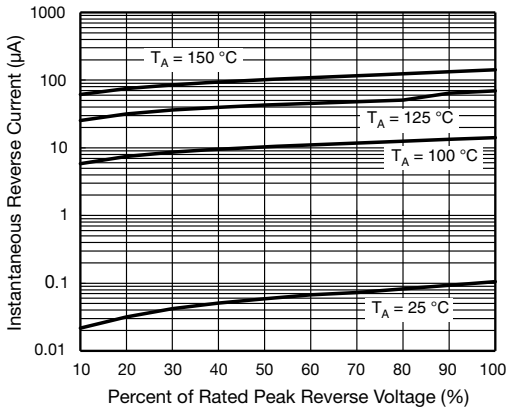



Fig. 5 - Typical Reverse Characteristics Per Diode

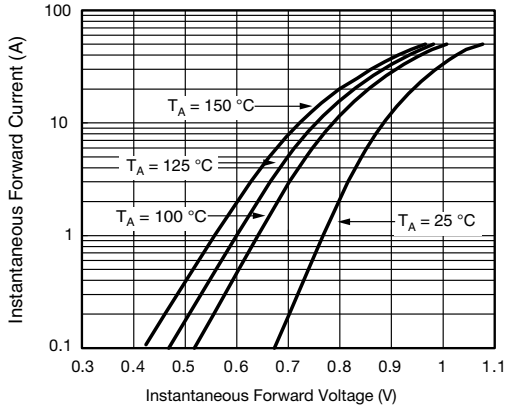



Fig. 4 - Typical Forward Characteristics Per Diode

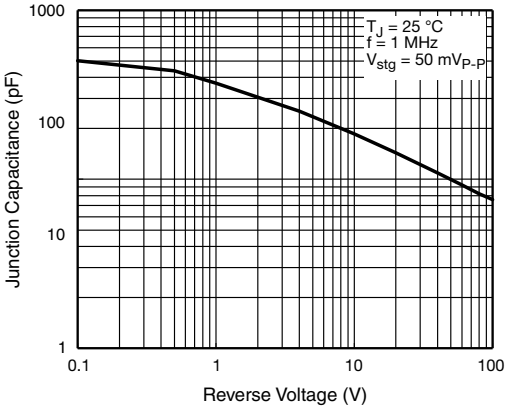
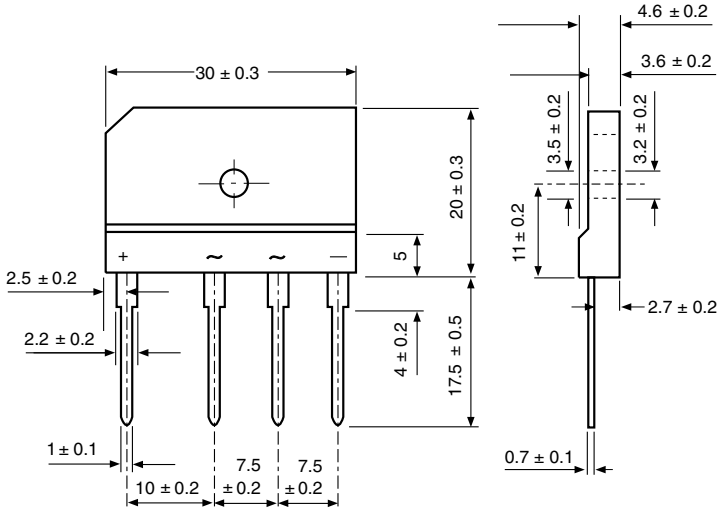



Fig. 6 - Typical Junction Capacitance Per Diode

## **PACKAGE OUTLINE DIMENSIONS** in millimeters

**Case Style GSIB-5S**



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