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

**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 VRMS, 1 minute
- Solder dip 275 °C max. 10 s, per JESD 22-B106

**LINKS TO ADDITIONAL RESOURCES**

**PRIMARY CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$I_{FAM}$</td>
<td>$I_F$</td>
<td>25 A</td>
</tr>
<tr>
<td>$V_{RMS}$</td>
<td>$I_{FSM}$</td>
<td>600 V</td>
</tr>
<tr>
<td>$I_R$</td>
<td>$T_J$</td>
<td>550 A</td>
</tr>
<tr>
<td>$V_F$ at $I_F = 12.5$ A, $T_A = 125$ °C</td>
<td>$T_J$ max.</td>
<td>0.76 V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>150 °C</td>
</tr>
</tbody>
</table>

**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)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum repetitive peak reverse voltage</td>
<td>$V_{RRM}$</td>
<td>600 V</td>
</tr>
<tr>
<td>Maximum average forward rectified output current at $T_G = 105$ °C</td>
<td>$I_O$</td>
<td>25 A</td>
</tr>
<tr>
<td>$T_A = 25$ °C</td>
<td>$I_O$</td>
<td>3.6 A</td>
</tr>
<tr>
<td>Non-repetitive peak forward surge current 8.3 ms single sine-wave, $T_J = 25$ °C</td>
<td>$I_{FSM}$</td>
<td>550 A</td>
</tr>
<tr>
<td>Rating for fusing ($t &lt; 8.3$ ms)</td>
<td>$T_J = 25$ °C</td>
<td>$I^2t$</td>
</tr>
<tr>
<td>Operating junction and storage temperature range</td>
<td>$T_{J, TSTG}$</td>
<td>-55 to +150 °C</td>
</tr>
</tbody>
</table>

**Notes**

(1) Unit case mounted on aluminum plate heatsink
(2) Units mounted on PCB without heatsink
## ELECTRICAL CHARACTERISTICS (\(T_A = 25^\circ\text{C}\) unless otherwise noted)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITIONS</th>
<th>SYMBOL</th>
<th>TYP.</th>
<th>MAX.</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instantaneous forward voltage</td>
<td>(I_F = 12.5\ A) (T_A = 25^\circ\text{C}) (T_A = 125^\circ\text{C})</td>
<td>(V_F) (^{(1)})</td>
<td>0.89</td>
<td>0.92</td>
<td>V</td>
</tr>
<tr>
<td>Reverse current per diode</td>
<td>(V_R = 600\ V) (T_A = 25^\circ\text{C}) (T_A = 125^\circ\text{C})</td>
<td>(I_R) (^{(2)})</td>
<td>0.2</td>
<td>10</td>
<td>(\mu\text{A})</td>
</tr>
<tr>
<td>Typical reverse recovery time</td>
<td>(I_F = 0.5\ A, I_R = 1.0\ A, I_{rr} = 0.25\ A) (T_A = 25^\circ\text{C}) (T_A = 125^\circ\text{C})</td>
<td>(t_{rr}) (^{(3)})</td>
<td>1.8</td>
<td>-</td>
<td>(\mu\text{s})</td>
</tr>
<tr>
<td>Typical junction capacitance</td>
<td>(4.0\ V, 1\ \text{MHz})</td>
<td>(C_J)</td>
<td>330</td>
<td>-</td>
<td>(\text{pF})</td>
</tr>
</tbody>
</table>

### Notes

1. Pulse test: 300 \(\mu\text{s}\) pulse width, 1 % duty cycle
2. Pulse test: pulse width \(\leq 40\ \text{ms}\)

## THERMAL CHARACTERISTICS (\(T_A = 25^\circ\text{C}\) unless otherwise noted)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>SYMBOL</th>
<th>LVB2560</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum thermal resistance</td>
<td>(R_{JJA}) (^{(1)})</td>
<td>25</td>
<td>(\degree\text{C/W})</td>
</tr>
<tr>
<td></td>
<td>(R_{JJC}) (^{(1)})</td>
<td>1.0</td>
<td></td>
</tr>
</tbody>
</table>

### Notes

1. With heatsink
2. Without heatsink, free air

## EMC SURGE IMMUNITY TEST STANDARD (\(T_A = 25^\circ\text{C}\), unless otherwise noted)

<table>
<thead>
<tr>
<th>STANDARDS</th>
<th>TEST TYPE</th>
<th>TEST CONDITIONS</th>
<th>SYMBOL</th>
<th>CLASS</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEC 61000-4-5</td>
<td>Power supply coupling mode, line to line</td>
<td>(1.2/50\ \mu\text{s}) waveform, (R = 2\ \Omega, T_A = 25^\circ\text{C}) (^{(1)})</td>
<td>(V_{PEAK})</td>
<td>-</td>
<td>6 kV maximum</td>
</tr>
</tbody>
</table>

### Note

1. Immunity to IEC 61000-4-5 peak pulse voltage test, \(1.2/50\ \mu\text{s}\), \(2\ \Omega\), 5 times each of positive and negative polarity test

## ORDERING INFORMATION (Example)

<table>
<thead>
<tr>
<th>PREFERRED P/N</th>
<th>UNIT WEIGHT (g)</th>
<th>PREFERRED PACKAGE CODE</th>
<th>BASE QUANTITY</th>
<th>DELIVERY MODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LVB2560-M3/45</td>
<td>7.1</td>
<td>45</td>
<td>20</td>
<td>Tube</td>
</tr>
</tbody>
</table>
RATINGS AND CHARACTERISTICS CURVES \((T_A = 25 \, ^\circ C\) unless otherwise noted\)

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Fig. 1 - Derating Curve Output Rectified Current

![Derating Curve Output Rectified Current](image)

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Fig. 2 - Forward Current Derating Curve

![Forward Current Derating Curve](image)

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Fig. 3 - Forward Power Dissipation

![Forward Power Dissipation](image)

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Fig. 4 - Typical Forward Characteristics Per Diode

![Typical Forward Characteristics Per Diode](image)

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Fig. 5 - Typical Reverse Characteristics Per Diode

![Typical Reverse Characteristics Per Diode](image)

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Fig. 6 - Typical Junction Capacitance Per Diode

![Typical Junction Capacitance Per Diode](image)
PACKAGE OUTLINE DIMENSIONS in millimeters

Case Style GSIB-5S

2.5 ± 0.2
2.2 ± 0.2
1 ± 0.1
10 ± 0.2
7.5 ± 0.2
7.5 ± 0.2

4.6 ± 0.2
3.6 ± 0.2
4 ± 0.2
11 ± 0.2
20 ± 0.3
30 ± 0.3

5

17 ± 0.5

2.7 ± 0.2

0.7 ± 0.1

7.5 ± 0.2
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