General Purpose Plastic Rectifier

**FEATURES**
- Low forward voltage drop
- Low leakage current
- High forward surge capability
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC

**TYPICAL APPLICATIONS**
For use in general purpose rectification of power supplies, inverters, converters and freewheeling diodes application.

**Note**
- These devices are not AEC-Q101 qualified.

**MECHANICAL DATA**
Case: DO-201AD, molded epoxy body
Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS compliant, commercial grade
Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
E3 suffix meets JESD 201 class 1A whisker test
Polarity: Color band denotes cathode end

**PRIMARY CHARACTERISTICS**

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>SYMBOL</th>
<th>1N5400</th>
<th>1N5401</th>
<th>1N5402</th>
<th>1N5403</th>
<th>1N5404</th>
<th>1N5405</th>
<th>1N5406</th>
<th>1N5407</th>
<th>1N5408</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum average rectified current 0.5&quot; (12.5 mm) lead length at TL = 105 °C</td>
<td>$I_{F(AV)}$</td>
<td>50 100 200 300 400 500 600 800 1000</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load</td>
<td>$I_{FSM}$</td>
<td>35 70 140 210 280 350 420 560 700</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum full load reverse current, full cycle average 0.5&quot; (12.5 mm) lead length at TL = 105 °C</td>
<td>$I_{R(AV)}$</td>
<td>500</td>
<td>μA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating junction and storage temperature range</td>
<td>$T_J$, $T_{STG}$</td>
<td>-50 to +150</td>
<td>°C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>SYMBOL</th>
<th>1N5400</th>
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<th>1N5407</th>
<th>1N5408</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum repetitive peak reverse voltage</td>
<td>$V_{RRM}$</td>
<td>50</td>
<td>100</td>
<td>200</td>
<td>300</td>
<td>400</td>
<td>500</td>
<td>600</td>
<td>800</td>
<td>1000</td>
</tr>
<tr>
<td>Maximum RMS voltage</td>
<td>$V_{RMS}$</td>
<td>35</td>
<td>70</td>
<td>140</td>
<td>210</td>
<td>280</td>
<td>350</td>
<td>420</td>
<td>560</td>
<td>700</td>
</tr>
<tr>
<td>Maximum DC blocking voltage</td>
<td>$V_{DC}$</td>
<td>50</td>
<td>100</td>
<td>200</td>
<td>300</td>
<td>400</td>
<td>500</td>
<td>600</td>
<td>800</td>
<td>1000</td>
</tr>
<tr>
<td>Maximum average forward rectified current 0.5&quot; (12.5 mm) lead length at TL = 105 °C</td>
<td>$I_{F(AV)}$</td>
<td>3.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load</td>
<td>$I_{FSM}$</td>
<td>200</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum full load reverse current, full cycle average 0.5&quot; (12.5 mm) lead length at TL = 105 °C</td>
<td>$I_{R(AV)}$</td>
<td>500</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Operating junction and storage temperature range</td>
<td>$T_J$, $T_{STG}$</td>
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<td></td>
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<td></td>
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</tbody>
</table>
ELECTRICAL CHARACTERISTICS  \( (T_A = 25 \, ^\circ\text{C} \text{ unless otherwise noted}) \)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITIONS</th>
<th>SYMBOL</th>
<th>1N5400</th>
<th>1N5401</th>
<th>1N5402</th>
<th>1N5403</th>
<th>1N5404</th>
<th>1N5405</th>
<th>1N5406</th>
<th>1N5407</th>
<th>1N5408</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum instantaneous forward voltage</td>
<td>3.0 A</td>
<td>( V_F )</td>
<td>1.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Maximum DC reverse current at rated DC blocking voltage</td>
<td>( T_A = 25 , ^\circ\text{C} )</td>
<td>( I_R )</td>
<td>5.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>( \mu\text{A} )</td>
</tr>
<tr>
<td></td>
<td>( T_A = 150 , ^\circ\text{C} )</td>
<td></td>
<td>500</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Typical junction capacitance</td>
<td>4.0 V, 1 MHz</td>
<td>( C_J )</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>( \text{pF} )</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>SYMBOL</th>
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<th>1N5407</th>
<th>1N5408</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical thermal resistance ( R_{\text{JA}} ) ( (1) )</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>( ^\circ\text{C}/\text{W} )</td>
</tr>
</tbody>
</table>

Note

\( (1) \) Thermal resistance from junction to ambient at 0.375" (9.5 mm) lead length, P.C.B. mounted with 0.8" x 0.8" (20 mm x 20 mm) copper heatsinks

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>1N5404-E3/54</td>
<td>1.1</td>
<td>54</td>
<td>1400</td>
<td>13&quot; diameter paper tape and reel</td>
</tr>
<tr>
<td>1N5404-E3/73</td>
<td>1.1</td>
<td>73</td>
<td>1000</td>
<td>Ammo pack packaging</td>
</tr>
</tbody>
</table>

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

Fig. 1 - Forward Current Derating Curve

Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current
Fig. 3 - Typical Instantaneous Forward Characteristics

Fig. 4 - Typical Reverse Characteristics

Fig. 5 - Typical Junction Capacitance

Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-201AD
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