$V_{RM} = 600 \text{ V}$, $I_{F(AV)} = 0.5 \text{ A}$, $t_{rr} = 100 \text{ ns}$

Fast Recovery Diode

AG01A

Description

The AG01A is a fast recovery diode of 600 V / 0.5 A. The maximum $t_{rr}$ of 100 ns is realized by optimizing a life-time control.

Features

- $V_{RM}$: $600 \text{ V}$
- $I_{F(AV)}$: $0.5 \text{ A}$
- $V_F$: $1.8 \text{ V}$
- $t_{rr}$: $100 \text{ ns}$
- Bare Leads: Pb-free (RoHS Compliant)

Applications

- White Goods
- Audiovisual Equipment
- Lighting Equipment
- Industrial Electronic Equipment (Communication Equipment and Factory Automation)
- Freewheel Diode (Offline Buck and Buck-boost Converter)

Package

Axial ($\phi 2.4 \times 2.9L / \phi 0.57$)

Cathode Mark

Not to scale

(1) Cathode
(2) Anode

(1) (2)
Absolute Maximum Ratings

Unless otherwise specified, $T_A = 25 \, ^\circ C$

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Rating</th>
<th>Unit</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Repetitive Reverse Voltage</td>
<td>$V_{RSM}$</td>
<td>600</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Repetitive Reverse Voltage</td>
<td>$V_{RM}$</td>
<td>600</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Average Forward Current</td>
<td>$I_{(AV)}$</td>
<td>0.5</td>
<td>A</td>
<td>See Figure 2 and Figure 3. $T_L = 130 , ^\circ C$</td>
</tr>
<tr>
<td>Surge Forward Current</td>
<td>$I_{FSM}$</td>
<td>15</td>
<td>A</td>
<td>Half cycle sine wave, positive side, 10 ms, 1 shot</td>
</tr>
<tr>
<td>$I't$ Limiting Value</td>
<td>$I't$</td>
<td>1.13</td>
<td>$A^2s$</td>
<td>1 ms $\leq t \leq 10$ ms</td>
</tr>
<tr>
<td>Junction Temperature</td>
<td>$T_J$</td>
<td>$-40$ to $150$</td>
<td>$^\circ C$</td>
<td></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>$T_{STG}$</td>
<td>$-40$ to $150$</td>
<td>$^\circ C$</td>
<td></td>
</tr>
</tbody>
</table>

Electrical Characteristics

Unless otherwise specified, $T_A = 25 \, ^\circ C$

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward Voltage Drop</td>
<td>$V_F$</td>
<td>$T_J = 25 , ^\circ C, I_F = 0.5 , A$</td>
<td>—</td>
<td>—</td>
<td>1.8</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$T_J = 100 , ^\circ C, I_F = 0.5 , A$</td>
<td>—</td>
<td>1.1</td>
<td>—</td>
<td>V</td>
</tr>
<tr>
<td>Reverse Leakage Current</td>
<td>$I_R$</td>
<td>$V_R = V_{RM}$</td>
<td>—</td>
<td>—</td>
<td>100</td>
<td>$\mu A$</td>
</tr>
<tr>
<td>Reverse Leakage Current Under High Temperature</td>
<td>$H_I_R$</td>
<td>$V_R = V_{RM}, T_J = 100 , ^\circ C$</td>
<td>—</td>
<td>—</td>
<td>500</td>
<td>$\mu A$</td>
</tr>
<tr>
<td>Reverse Recovery Time</td>
<td>$I_{r1}$</td>
<td>$I_F = I_{RP} = 100 , mA, 90%$ recovery point, $T_J = 25 , ^\circ C$</td>
<td>—</td>
<td>—</td>
<td>100</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>$I_{r2}$</td>
<td>$I_F = 100 , mA, I_{RP} = 200 , mA, 75%$ recovery point, $T_J = 25 , ^\circ C$</td>
<td>—</td>
<td>—</td>
<td>50</td>
<td>ns</td>
</tr>
<tr>
<td>Thermal Resistance$^{(1)}$</td>
<td>$R_{th(J-L)}$</td>
<td>See Figure 1.</td>
<td>—</td>
<td>—</td>
<td>22</td>
<td>$^\circ C/W$</td>
</tr>
</tbody>
</table>

$^{(1)}$ $R_{th(J-L)}$ is thermal resistance between junction and lead.

Figure 1  Lead Temperature Measurement Conditions
Rating and Characteristic Curves

Figure 2. \( I_{F(AV)} \) vs. \( T_L \) Typical Characteristics\(^{(2)} \)
\((V_R = 0 \text{ V})\)

Figure 3. \( I_{F(AV)} \) vs. \( T_L \) Typical Characteristics\(^{(2)} \)
\((V_R = 600 \text{ V})\)

Figure 4. \( V_F \) vs. \( I_F \) Typical Characteristics

Figure 5. \( V_R \) vs. \( I_R \) Typical Characteristics

\(^{(2)}\) See Figure 1 for the lead temperature measurement conditions.
Physical Dimensions

- Axial (φ2.4 × 2.9L / φ0.57)

![Physical Dimension Diagram]

NOTES:
- Dimensions in millimeters
- Bare leads: Pb-free (RoHS compliant)
- When soldering the products, it is required to minimize the working time, within the following limits:
  - Flow: 260 ± 5 °C / 10 ± 1 s, 2 times
  - Soldering Iron: 380 ± 10 °C / 3.5 ± 0.5 s, 1 time (Soldering should be at a distance of at least 1.5 mm from the body of the product.)

Marking Diagram

![Marking Diagram]

Lot Number:
- Y is the last digit of the year of manufacture (0 to 9)
- M is the month of the year (1 to 9, O, N or D)

Table 1. Specific Device Code

<table>
<thead>
<tr>
<th>Specific Device Code</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>AG01A</td>
</tr>
</tbody>
</table>

Table 2. $V_{RM}$ Rank

<table>
<thead>
<tr>
<th>Rank</th>
<th>$V_{RM}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>600 V</td>
</tr>
</tbody>
</table>
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