

Description

The AP01C is a high voltage fast recovery diode of 1000 V / 0.2 A. The maximum t_{rr} of 200 ns is realized by optimizing a life-time control.

Features

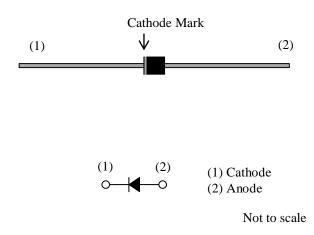
- t_{rr1}------ 200 ns
- Bare Leads: Pb-free (RoHS Compliant)
- Flammability: Equivalent to UL94V-0

Applications

- Secondary-side Rectifier Diode (Flyback Converter, LLC Converter, etc.)
- Freewheel Diode (Offline Buck Converter, Offline Buck-boost Converter, etc.)

Package

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



Absolute Maximum Ratings

| Parameter | Symbol | Conditions | Rating | Unit |
|------------------------------------|--------------------|---|------------|------------------|
| Nonrepetitive Peak Reverse Voltage | V _{RSM} | | 1050 | V |
| Repetitive Peak Reverse Voltage | V _{RM} | | 1000 | V |
| Average Forward Current | I _{F(AV)} | See Figure 2 and Figure 3 | 0.2 | А |
| Surge Forward Current | I _{FSM} | Half cycle sine wave, positive side, 10 ms, 1 shot | 5 | А |
| I ² t Limiting Value | I ² t | $1 \text{ ms} \le t \le 10 \text{ ms}$ | 0.125 | A ² s |
| Junction Temperature | TJ | | -40 to 150 | °C |
| Storage Temperature | T _{STG} | | -40 to 150 | °C |

Unless otherwise specified, $T_A = 25$ °C.

Electrical Characteristics

| Unless otherwise specified, $T_A = 25$ °C. | | | | | | |
|---|----------------------|--|------|------|------|------|
| Parameter | Symbol | Conditions | Min. | Тур. | Max. | Unit |
| Forward Voltage Drop | N7 | $T_J = 25 \ ^{\circ}C, \ I_F = 0.2 \ A$ | | | 4.0 | V |
| | $V_{\rm F}$ | $T_J = 100 \ ^{\circ}C, I_F = 0.2 A$ | | 1.6 | | V |
| Reverse Leakage Current | I _R | $V_R = V_{RM}$ | _ | | 100 | μA |
| Reverse Leakage Current under High Temperature | $H \cdot I_R$ | $V_R = V_{RM}, T_J = 100 \ ^\circ C$ | | | 500 | μA |
| Reverse Recovery Time | t _{rr1} | $I_F = I_{RP} = 100 \text{ mA},$ 90% recovery point, $T_J = 25 \text{ °C}$ | | | 200 | ns |
| | t _{rr2} | $I_F = 100 \text{ mA}, I_{RP} = 200 \text{ mA},$ 75% recovery point, $T_J = 25 \text{ °C}$ | | | 80 | ns |
| Thermal Resistance ⁽¹⁾ | R _{th(J-L)} | See Figure 1. | | | 22 | °C/W |

Mechanical Characteristics

| Parameter | Conditions | Min. | Тур. | Max. | Unit |
|----------------|------------|------|------|------|------|
| Package Weight | | | 0.17 | | g |

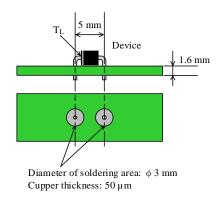


Figure 1. Lead Temperature Measurement Conditions

 $^{^{(1)}}$ R_{th (J-L)} is thermal resistance between junction and lead. Lead temperature (T_L) is measured near the root of pin (see Figure 1).

Derating Curves

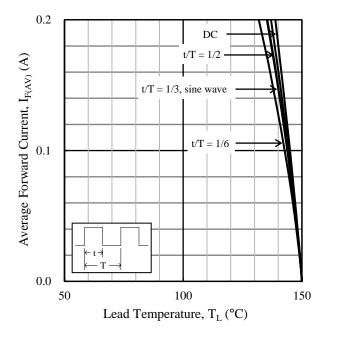


Figure 2. $I_{F(AV)}$ vs. $T_L^{(2)}$ ($T_J = 150 \text{ °C}$, $V_R = 0 \text{ V}$)

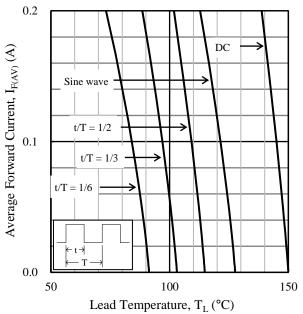


Figure 3. $I_{F(AV)}$ vs. $T_L^{(2)}$ ($T_J = 150 \text{ °C}$, $V_R = 1000 \text{ V}$)

⁽²⁾ See Figure 1 for the lead temperature measurement conditions.

Characteristic Curves

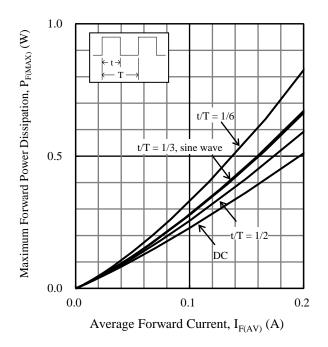


Figure 4. $P_{F(MAX)}$ vs. $I_{F(AV)}$ (T_J = 150 °C)

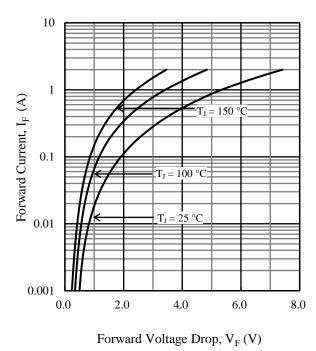


Figure 6. Typical Characteristics: I_F vs. V_F

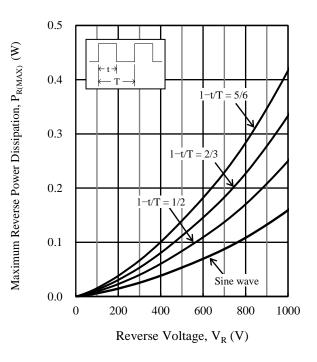


Figure 5. $P_{R(MAX)}$ vs. V_R ($T_J = 150 \ ^{\circ}C$)

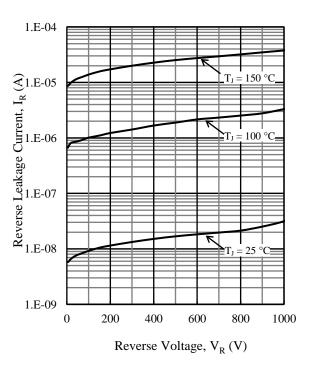


Figure 7. Typical Characteristics: I_R vs. V_R

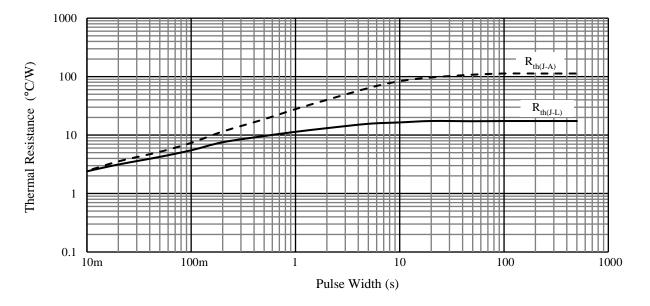
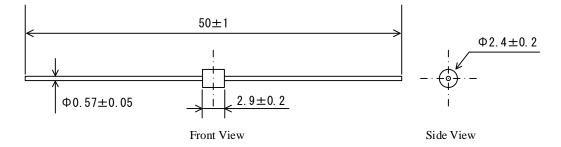


Figure 8. Typical Transient Thermal Resistance Characteristics

Physical Dimensions

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

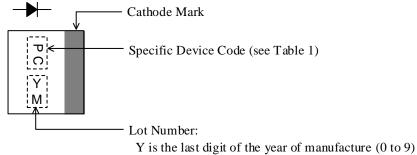


NOTES:

- Dimensions in millimeters
- Bare leads: Pb-free (RoHS compliant)
- The total length of the product is the dimension when delivered separately and depends on the taping and lead forming specifications.
- The allowance position of body against the center of the total length of the product is 0.5 mm (max.); see Front View.
- The allowance position of lead against the center of body is 0.2 mm (max.); see Side View.
- The burr may exist up to 2 mm from the body of lead root.
- When soldering the products, it is required to minimize the working time within the following limits:
 Flow: 260 °C / 10 s, 1 time
 Soldering Iron: 350 °C / 3.5 s, 1 time (Soldering should be at a distance of at least 1.5 mm from the body of the

Marking Diagram

product.)



M is the month of the year (1 to 9, 0, N or D)

Table 1. Specific Device Code

| Specific Device Code | Part Number |
|----------------------|-------------|
| PC | AP01C |

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