

$V_{RM} = 400\text{ V}$, $I_{F(AV)} = 1.0\text{ A}$, $t_{rr} = 400\text{ ns}$
Fast Recovery Diode
EU02

Description

The EU02 is a fast recovery diode of 400 V / 1.0 A. The maximum t_{rr} of 400 ns is realized by optimizing a life-time control.

Features

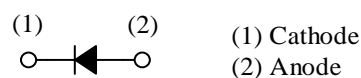
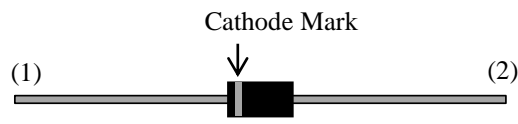
- V_{RM} ----- 400 V
- $I_{F(AV)}$ ----- 1.0 A
- V_F ----- 1.4 V
- t_{rr1} ----- 400 ns
- Bare Leads: Pb-free (RoHS Compliant)
- Flammability: Equivalent to UL94V-0

Applications

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

Package

Axial ($\phi 2.7 \times 5.0L / \phi 0.6$)



Not to scale

Absolute Maximum Ratings

Unless otherwise specified, $T_A = 25\text{ }^\circ\text{C}$.

| Parameter | Symbol | Conditions | Rating | Unit |
|------------------------------------|-------------|--|------------|----------------------|
| Nonrepetitive Peak Reverse Voltage | V_{RSM} | | 450 | V |
| Repetitive Peak Reverse Voltage | V_{RM} | | 400 | V |
| Average Forward Current | $I_{F(AV)}$ | See Figure 2 and Figure 3 | 1.0 | A |
| Surge Forward Current | I_{FSM} | Half cycle sine wave, positive side, 10 ms, 1 shot | 15 | A |
| I^2t Limiting Value | I^2t | $1\text{ ms} \leq t \leq 10\text{ ms}$ | 1.1 | A^2s |
| Junction Temperature | T_J | | -40 to 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{STG} | | -40 to 150 | $^\circ\text{C}$ |

Electrical Characteristics

Unless otherwise specified, $T_A = 25\text{ }^\circ\text{C}$.

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|--|---------------|---|------|------|------|--------------------|
| Forward Voltage Drop | V_F | $T_J = 25\text{ }^\circ\text{C}$, $I_F = 1.0\text{ A}$ | — | — | 1.4 | V |
| | | $T_J = 100\text{ }^\circ\text{C}$, $I_F = 1.0\text{ A}$ | — | 0.9 | — | V |
| Reverse Leakage Current | I_R | $V_R = V_{RM}$ | — | — | 10 | μA |
| Reverse Leakage Current under High Temperature | $H \cdot I_R$ | $V_R = V_{RM}$, $T_J = 100\text{ }^\circ\text{C}$ | — | — | 300 | μA |
| Reverse Recovery Time | t_{rr1} | $I_F = I_{RP} = 10\text{ mA}$, 90% recovery point, $T_J = 25\text{ }^\circ\text{C}$ | — | — | 400 | ns |
| | t_{rr2} | $I_F = 10\text{ mA}$, $I_{RP} = 20\text{ mA}$, 75% recovery point, $T_J = 25\text{ }^\circ\text{C}$ | — | — | 180 | ns |
| Thermal Resistance ⁽¹⁾ | $R_{th(J-L)}$ | See Figure 1 | — | — | 20 | $^\circ\text{C/W}$ |

Mechanical Characteristics

| Parameter | Conditions | Min. | Typ. | Max. | Unit |
|----------------|------------|------|------|------|------|
| Package Weight | | — | 0.2 | — | g |

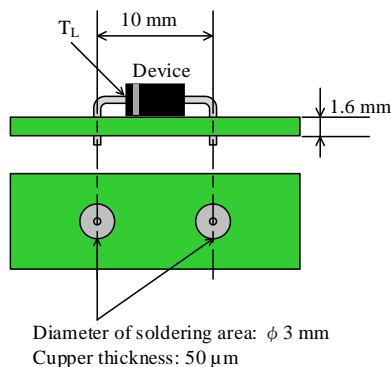


Figure 1. Lead Temperature Measurement Conditions

⁽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

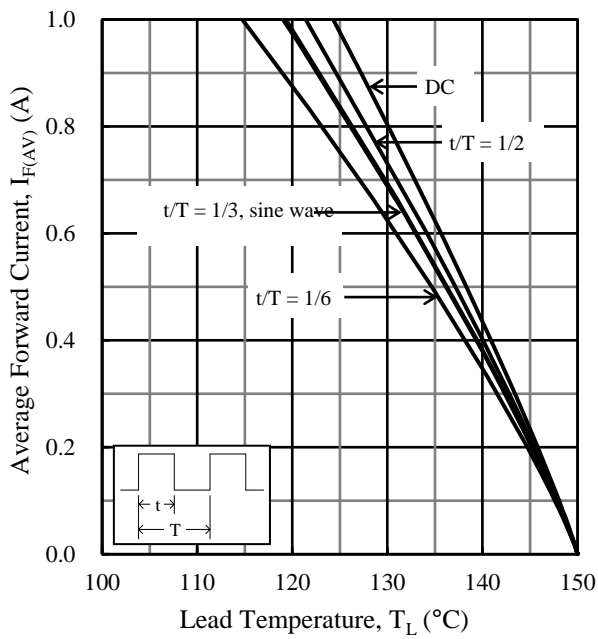


Figure 2. $I_{F(AV)}$ vs. $T_L^{(2)}$ ($T_J = 150\text{ }^\circ\text{C}$, $V_R = 0\text{ V}$)

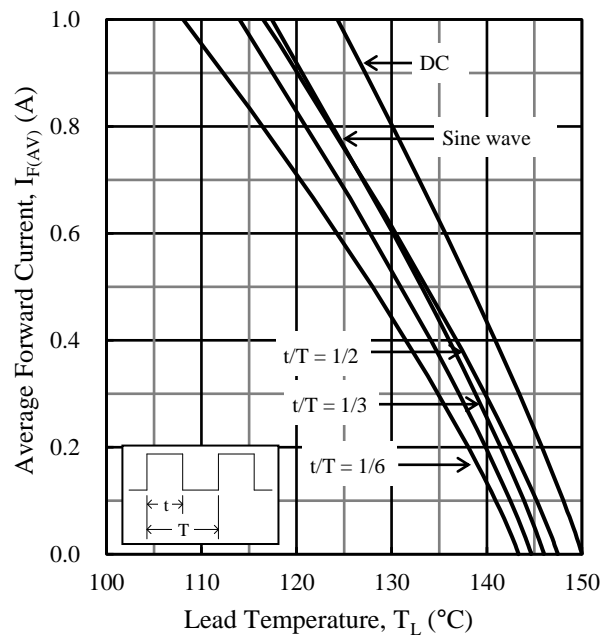


Figure 3. $I_{F(AV)}$ vs. $T_L^{(2)}$ ($T_J = 150\text{ }^\circ\text{C}$, $V_R = 400\text{ V}$)

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

Characteristic Curves

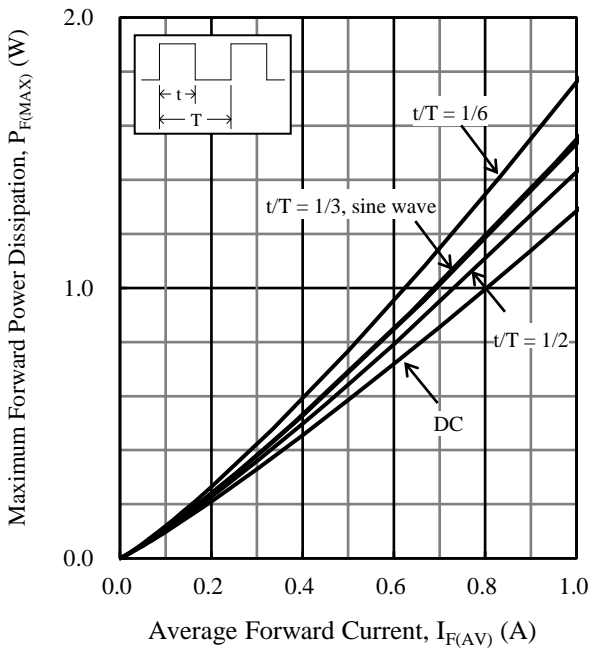


Figure 4. $P_{F(MAX)}$ vs. $I_{F(AV)}$ ($T_J = 150\text{ }^\circ\text{C}$)

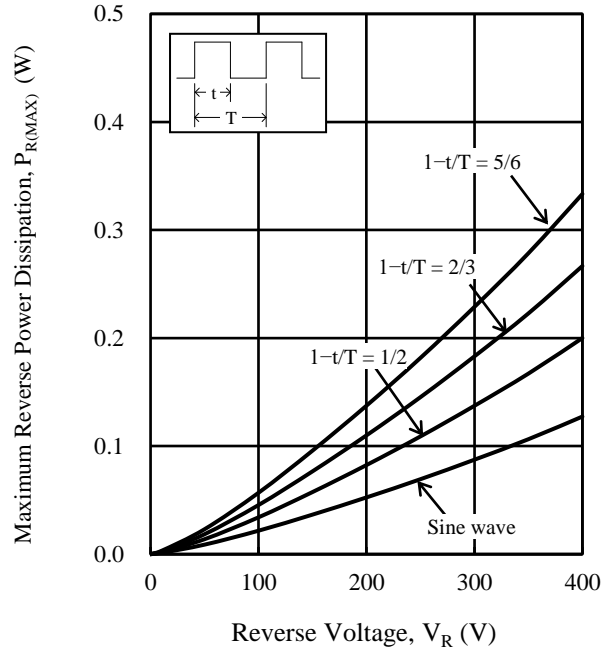


Figure 5. $P_{R(MAX)}$ vs. V_R ($T_J = 150\text{ }^\circ\text{C}$)

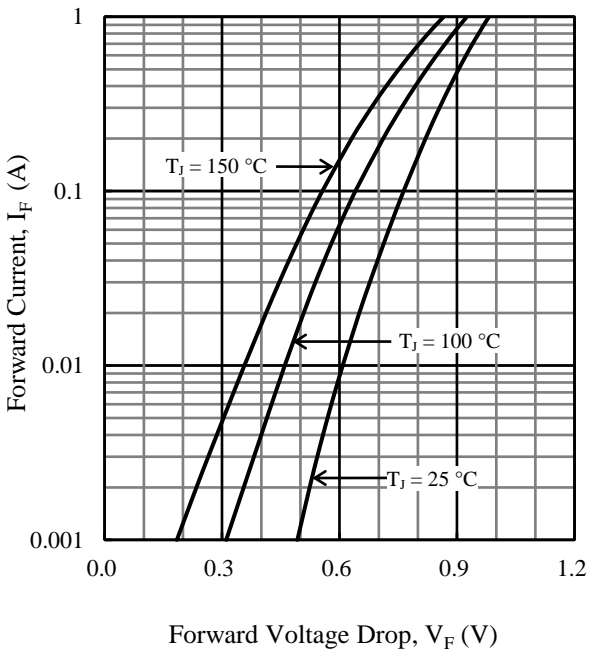


Figure 6. Typical Characteristics: I_F vs. V_F

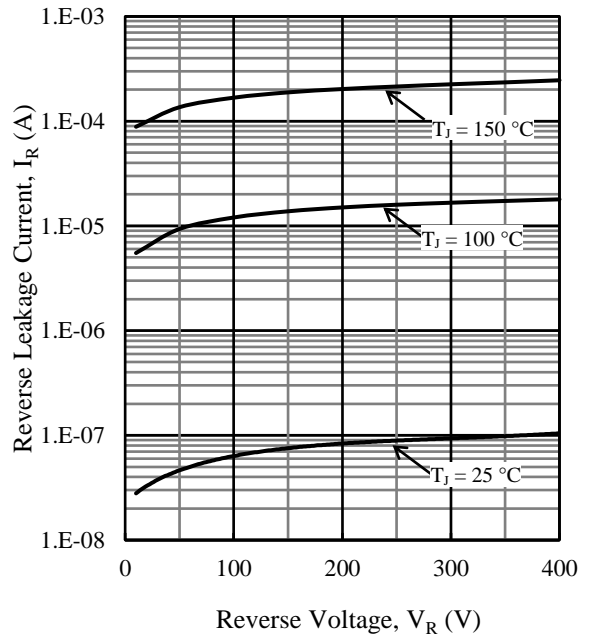


Figure 7. Typical Characteristics: I_R vs. V_R

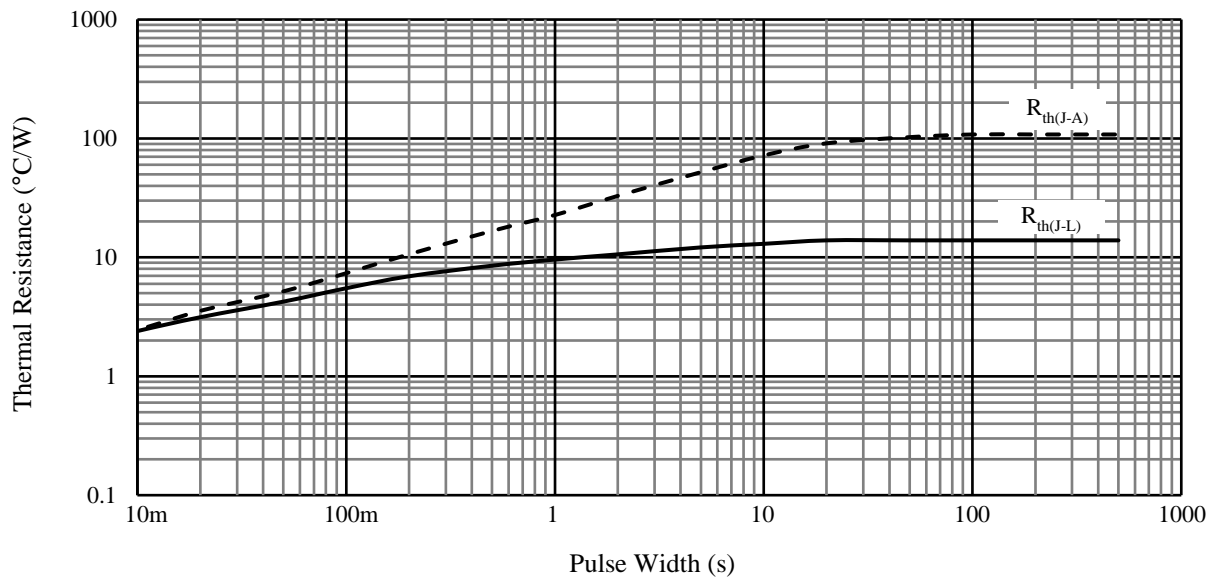
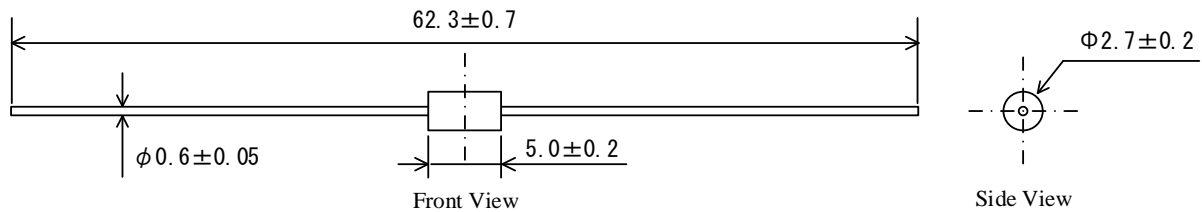


Figure 8. Typical Transient Thermal Resistance Characteristics

EU02

Physical Dimensions

- Axial ($\phi 2.7 \times 5.0L / \phi 0.6$)



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: $260\text{ }^{\circ}\text{C} / 10\text{ s}$, 1 time
 - Soldering Iron: $350\text{ }^{\circ}\text{C} / 3.5\text{ s}$, 1 time (Soldering should be at a distance of at least 1.5 mm from the body of the product.)

Marking Diagram

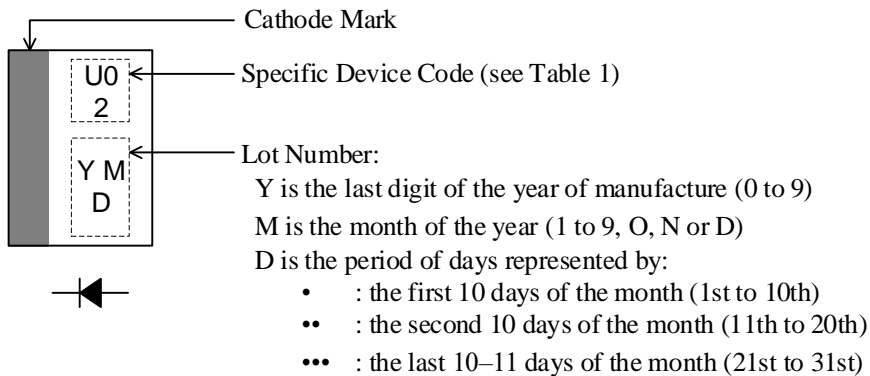


Table 1. Specific Device Code

| Specific Device Code | Part Number |
|----------------------|-------------|
| U02 | EU02 |

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