

$V_{RM} = 1500\text{ V}$, $I_{F(AV)} = 0.5\text{ A}$, $t_{rr} = 1.5\text{ ns}$
Fast Recovery Diode
ES01F

Description

The ES01F is a high voltage fast recovery diode of 1500 V / 0.5 A.

Features

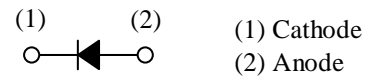
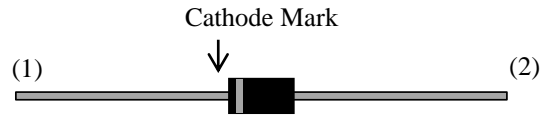
- V_{RM} ----- 1500 V
- $I_{F(AV)}$ ----- 0.5 A
- V_F ----- 2.0 V
- t_{rr1} ----- 1.5 μ s
- Bare Leads: Pb-free (RoHS Compliant)
- Flammability: Equivalent to UL94V-0

Applications

- High Voltage Rectification Circuit (Bridge Circuit, 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} | | 1550 | V |
| Repetitive Peak Reverse Voltage | V_{RM} | | 1500 | V |
| Average Forward Current | $I_{F(AV)}$ | See Figure 2 and Figure 3 | 0.5 | 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 | $T_J = 25\text{ }^\circ\text{C}$, $I_F = 0.5\text{ A}$ | — | — | 2.0 | V |
| | | $T_J = 100\text{ }^\circ\text{C}$, $I_F = 0.5\text{ A}$ | — | 1.0 | — | V |
| Reverse Leakage Current | I_R | $V_R = V_{RM}$ | — | — | 10 | μA |
| Reverse Leakage Current under High Temperature | $H \cdot I_R$ | $V_R = V_{RM}$, $T_J = 100\text{ }^\circ\text{C}$ | — | — | 200 | μA |
| Reverse Recovery Time | t_{rr1} | $I_F = I_{RP} = 10\text{ mA}$, 90% recovery point, $T_J = 25\text{ }^\circ\text{C}$ | — | — | 1.5 | μs |
| | t_{rr2} | $I_F = 10\text{ mA}$, $I_{RP} = 20\text{ mA}$, 75% recovery point, $T_J = 25\text{ }^\circ\text{C}$ | — | — | 0.6 | μs |
| Thermal Resistance ⁽¹⁾ | $R_{th(J-L)}$ | See Figure 1 | — | — | 20 | $^\circ\text{C/W}$ |

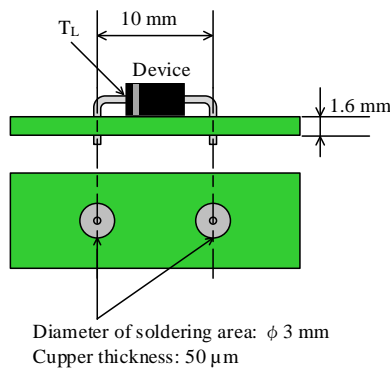


Figure 1. Lead Temperature Measurement Conditions

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

Rating and Characteristic Curves

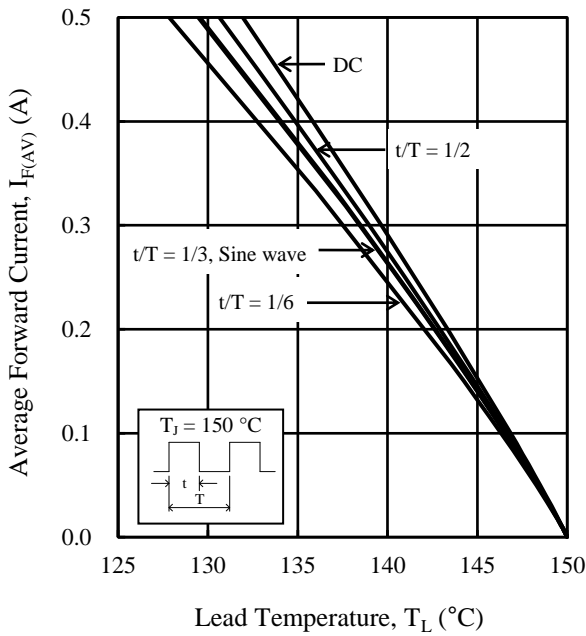


Figure 2. Typical Characteristics: $I_{F(AV)}$ vs. $T_L^{(2)}$ ($V_R = 0\text{ V}$)

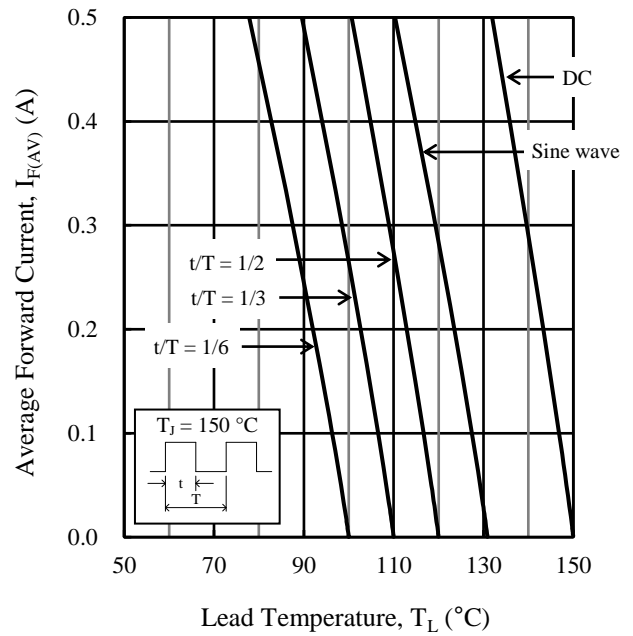


Figure 3. Typical Characteristics: $I_{F(AV)}$ vs. $T_L^{(2)}$ ($V_R = 1500\text{ V}$)

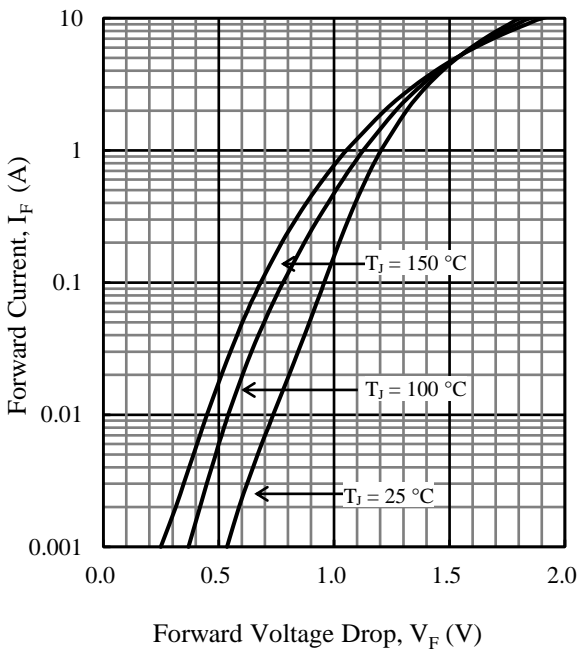


Figure 4. Typical Characteristics: I_F vs. V_F

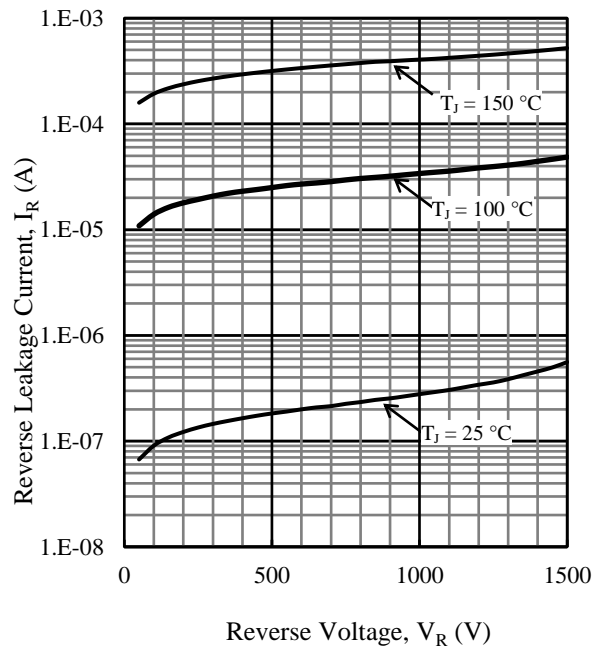


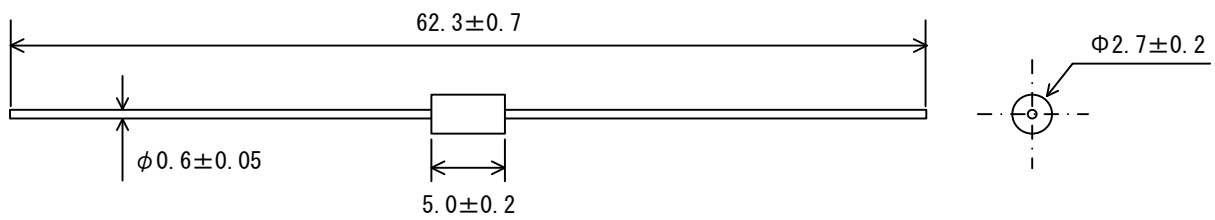
Figure 5. Typical Characteristics: I_R vs. V_R

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

ES01F

Physical Dimensions

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



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: $260 \pm 5 \text{ }^\circ\text{C} / 10 \pm 1 \text{ s}$, 2 times
 Soldering Iron: $380 \pm 10 \text{ }^\circ\text{C} / 3.5 \pm 0.5 \text{ s}$, 1 time (Soldering should be at a distance of at least 1.5 mm from the body of the product.)

Marking Diagram

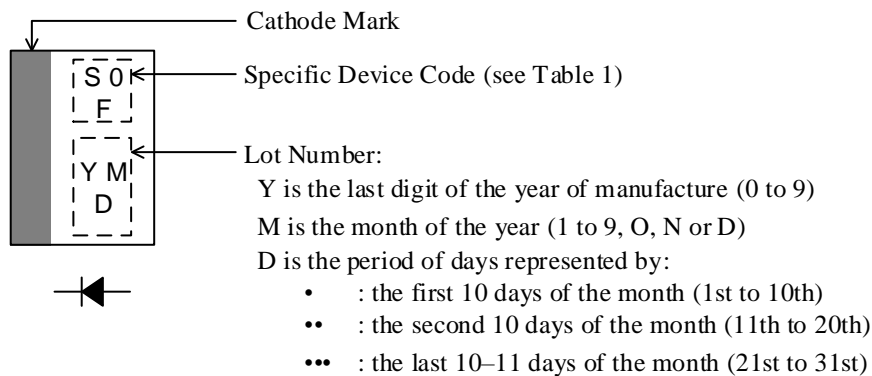


Table 1. Specific Device Code

| Specific Device Code | Part Number |
|----------------------|-------------|
| S0F | ES01F |

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