

**$V_{RM} = 600\text{ V}$ ,  $I_{F(AV)} = 0.7\text{ A}$ ,  $t_{rr} = 1.5\text{ }\mu\text{s}$**   
**Fast Recovery Diode**  
**ES01A**

**Description**

The ES01A is a fast recovery diode of 600 V / 0.7 A. The maximum  $t_{rr}$  of 1.5  $\mu\text{s}$  is realized by optimizing a life-time control.

**Features**

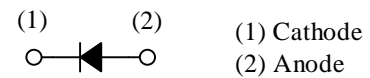
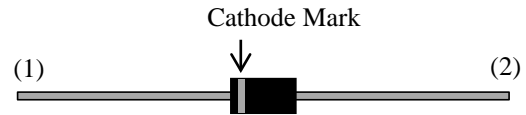
- $V_{RM}$ ----- 600 V
- $I_{F(AV)}$ ----- 0.7 A
- $V_F$ ----- 3.0 V
- $t_{rr1}$ ----- 1.5  $\mu\text{s}$
- Bare Leads: Pb-free (RoHS Compliant)
- Flammability: Equivalent to UL94V-0

**Applications**

- Secondary-side Rectifier Diode  
(Flyback Converter, LLC Converter, etc.)
- Freewheel Diode  
(Offline Buck Converter, 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	$V_{RSM}$		650	V
Repetitive Peak Reverse Voltage	$V_{RM}$		600	V
Average Forward Current	$I_{F(AV)}$	See Figure 2 and Figure 3	0.7	A
Surge Forward Current	$I_{FSM}$	Half cycle sine wave, positive side, 10 ms, 1 shot	20	A
$I^2t$ Limiting Value	$I^2t$	$1\text{ ms} \leq t \leq 10\text{ ms}$	2	$\text{A}^2\text{s}$
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	$V_F$	$T_J = 25\text{ }^\circ\text{C}$ , $I_F = 0.7\text{ A}$	—	—	3.0	V
		$T_J = 100\text{ }^\circ\text{C}$ , $I_F = 0.7\text{ A}$	—	0.97	—	V
Reverse Leakage Current	$I_R$	$V_R = V_{RM}$	—	—	10	$\mu\text{A}$
Reverse Leakage Current under High Temperature	$H \cdot I_R$	$V_R = V_{RM}$ , $T_J = 100\text{ }^\circ\text{C}$	—	—	200	$\mu\text{A}$
Reverse Recovery Time	$t_{rr1}$	$I_F = I_{RP} = 10\text{ mA}$ , 90% recovery point, $T_J = 25\text{ }^\circ\text{C}$	—	—	1.5	$\mu\text{s}$
	$t_{rr2}$	$I_F = 10\text{ mA}$ , $I_{RP} = 20\text{ mA}$ , 75% recovery point, $T_J = 25\text{ }^\circ\text{C}$	—	—	0.6	$\mu\text{s}$
Thermal Resistance <sup>(1)</sup>	$R_{th(J-L)}$	See Figure 1	—	—	20	$^\circ\text{C/W}$

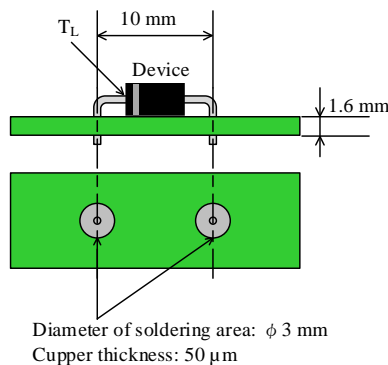


Figure 1. Lead Temperature Measurement Conditions

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

Rating and Characteristic Curves

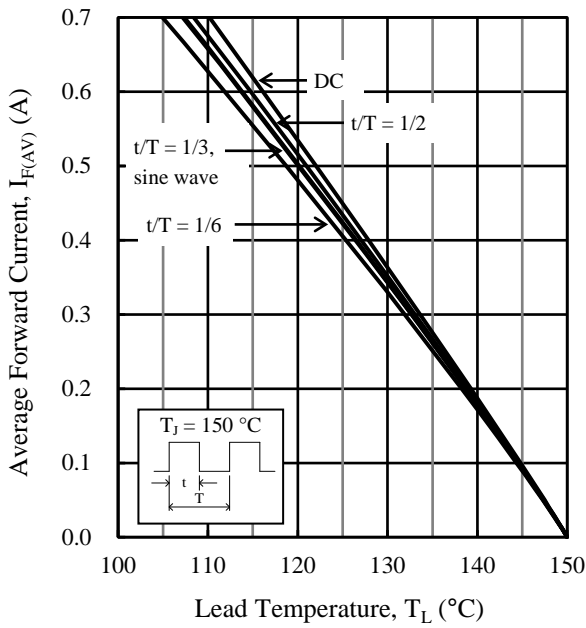


Figure 2. Typical Characteristics:  $I_{F(AV)}$  vs.  $T_L^{(2)}$  ( $V_R = 0$  V)

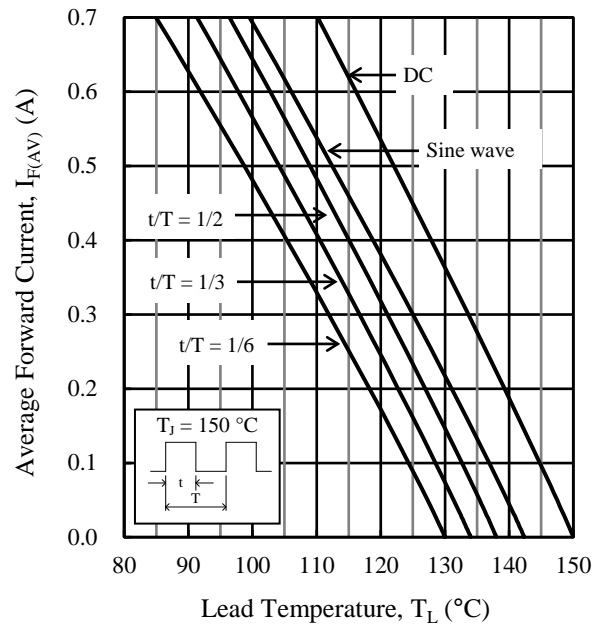


Figure 3. Typical Characteristics:  $I_{F(AV)}$  vs.  $T_L^{(2)}$  ( $V_R = 600$  V)

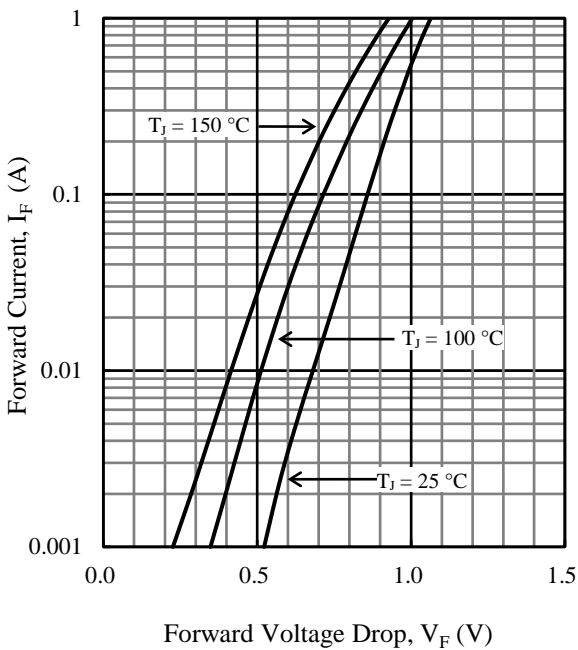


Figure 4. Typical Characteristics:  $I_F$  vs.  $V_F$

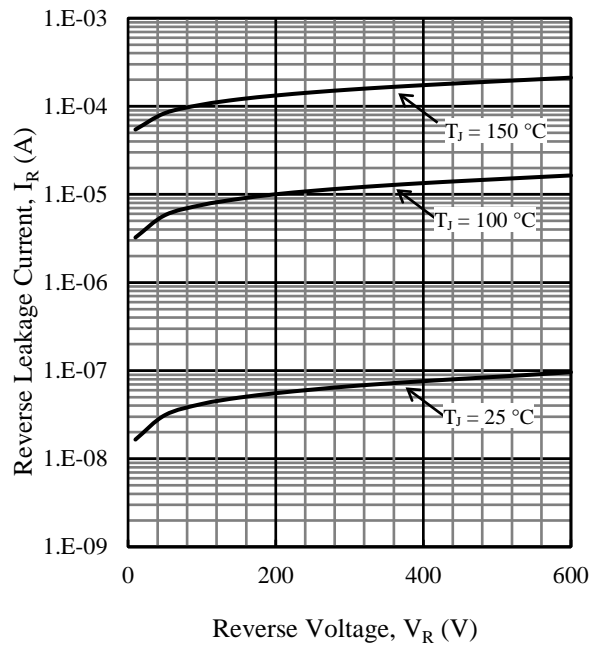


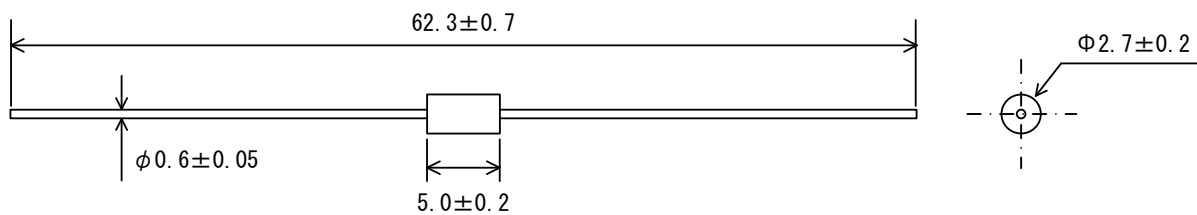
Figure 5. Typical Characteristics:  $I_R$  vs.  $V_R$

<sup>(2)</sup> See Figure 1 for the lead temperature measurement conditions.

# ES01A

## 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

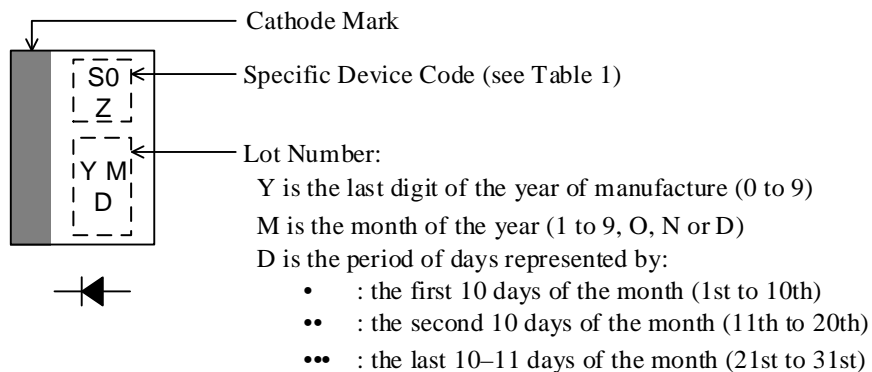


Table 1. Specific Device Code

Specific Device Code	Part Number
S0Z	ES01A

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