

$V_{RM} = 600\text{ V}$, $I_{F(AV)} = 0.7\text{ A}$, $t_{rr} = 1.5\text{ }\mu\text{s}$
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 μs is realized by optimizing a life-time control.

Features

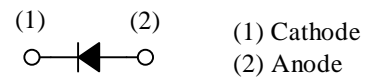
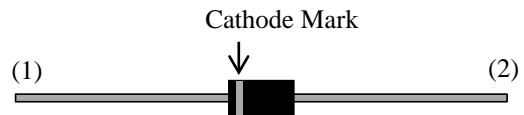
- V_{RM} ----- 600 V
- $I_{F(AV)}$ ----- 0.7 A
- V_F ----- 3.0 V
- t_{rr1} ----- 1.5 μs
- Bare Leads: Pb-free (RoHS Compliant)
- Flammability: Equivalent to UL94V-0

Applications

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

Package

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



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	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	$T_J = 25\text{ }^{\circ}\text{C}$, $I_F = 0.7\text{ A}$	—	—	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	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	$^{\circ}\text{C/W}$

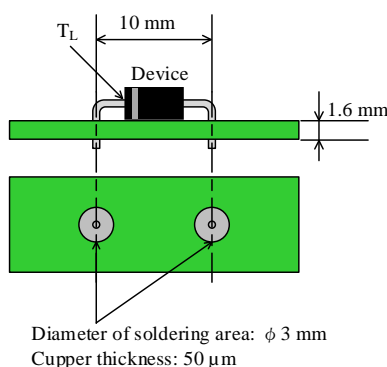


Figure 1. Lead Temperature Measurement Conditions

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

Rating and Characteristic Curves

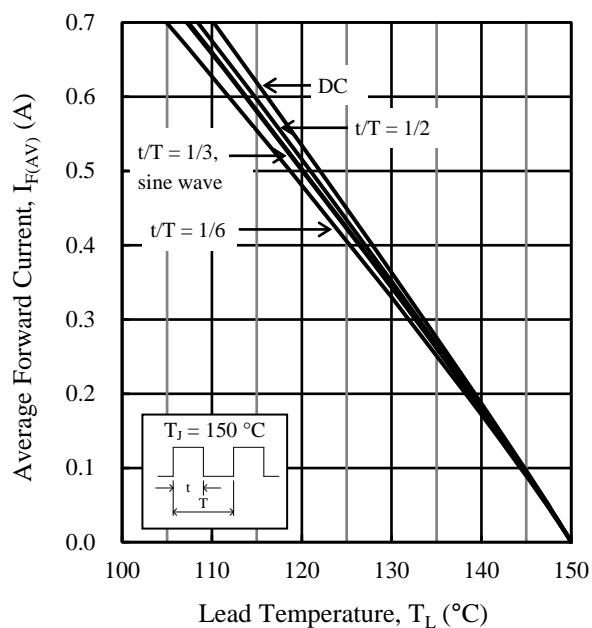


Figure 2. Typical Characteristics: $I_{F(AV)}$ vs. $T_L^{(2)}$
($V_R = 0$ V)

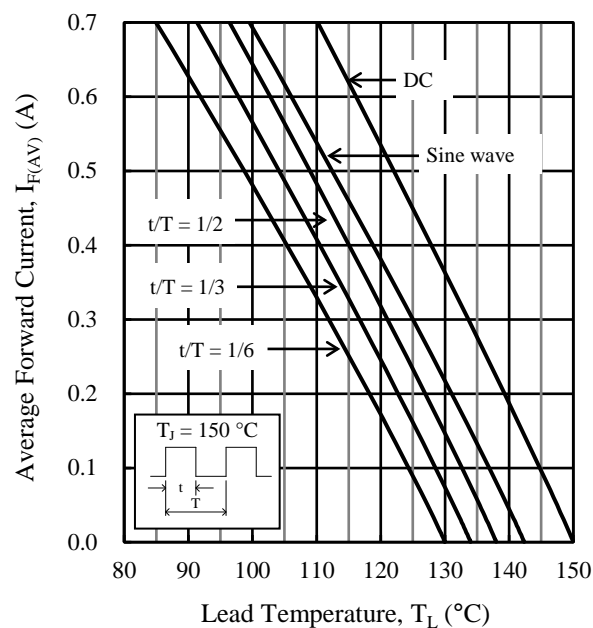


Figure 3. Typical Characteristics: $I_{F(AV)}$ vs. $T_L^{(2)}$
($V_R = 600$ V)

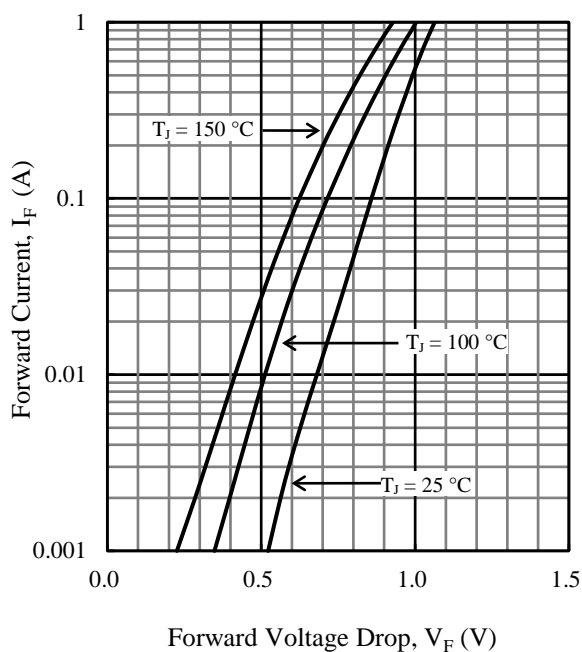


Figure 4. Typical Characteristics: I_F vs. V_F

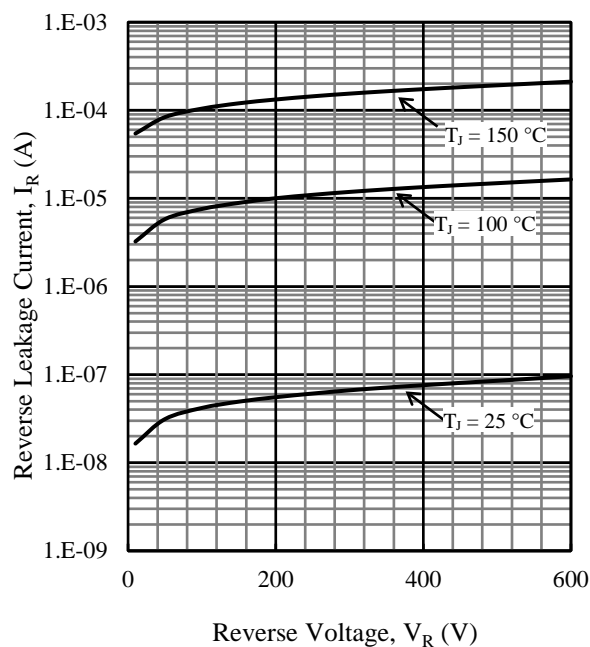
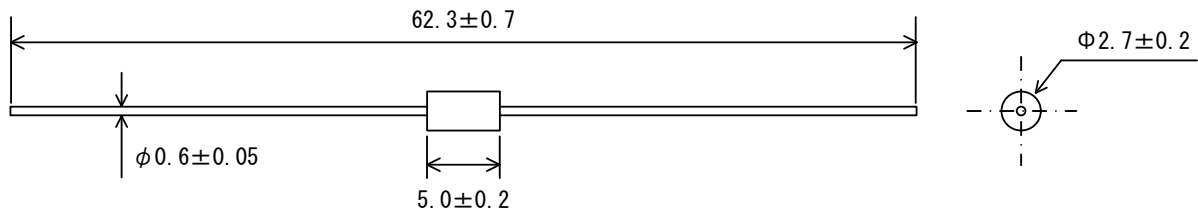


Figure 5. Typical Characteristics: I_R vs. V_R

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

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

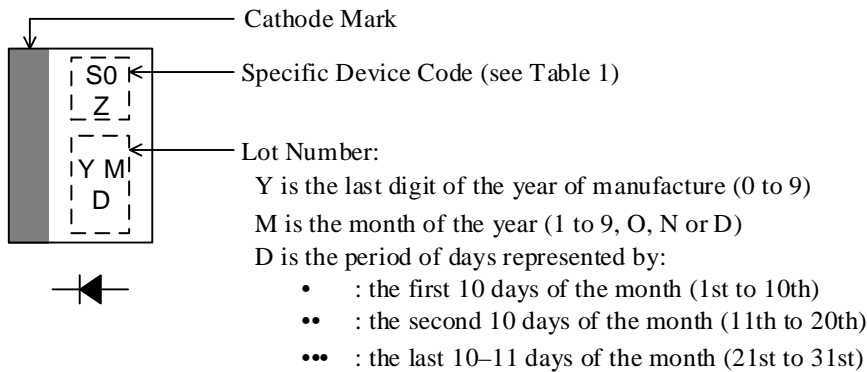


Table 1. Specific Device Code

Specific Device Code	Part Number
S0Z	ES01A

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