

$V_{RM} = 1500\text{ V}$, $I_{F(AV)} = 0.5\text{ A}$, $t_{rr} = 1.5\text{ ns}$
Fast Recovery Diode
ES1F

Description

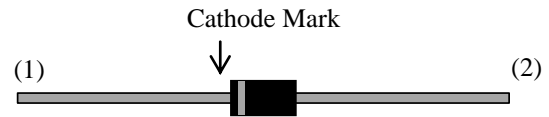
The ES1F is a high voltage fast recovery diode of 1500 V / 0.5 A.

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)

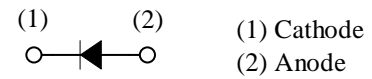
Package

Axial ($\phi 2.7 \times 5.0L / \phi 0.78$)



Applications

- High Voltage Rectification Circuit (Bridge Circuit, etc.)



(1) Cathode
(2) Anode

Not to scale

Absolute Maximum Ratings

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

Parameter	Symbol	Rating	Unit	Conditions
Peak Repetitive Reverse Voltage	V_{RSM}	1500	V	
Repetitive Reverse Voltage	V_{RM}	1500	V	
Average Forward Current	$I_{F(AV)}$	0.5	A	See Figure 2 and Figure 3
Surge Forward Current	I_{FSM}	20	A	Half cycle sine wave, positive side, 10 ms, 1 shot
I^2t Limiting Value	I^2t	2.0	A^2s	$1\text{ ms} \leq t \leq 10\text{ ms}$
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
		$T_J = 100\text{ }^\circ\text{C}, I_F = 0.5\text{ A}$	—	1.5	—	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	—	—	17	$^\circ\text{C/W}$

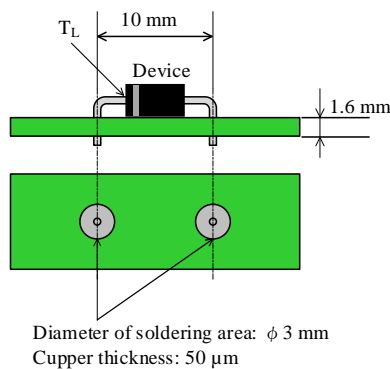


Figure 1 Lead Temperature Measurement Conditions

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

Rating and Characteristic Curves

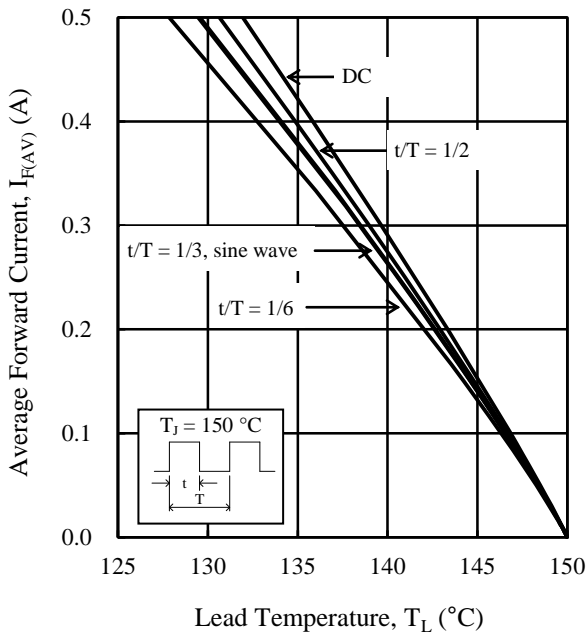


Figure 2. $I_{F(AV)}$ vs. T_L Typical Characteristics⁽²⁾
($V_R = 0$ V)

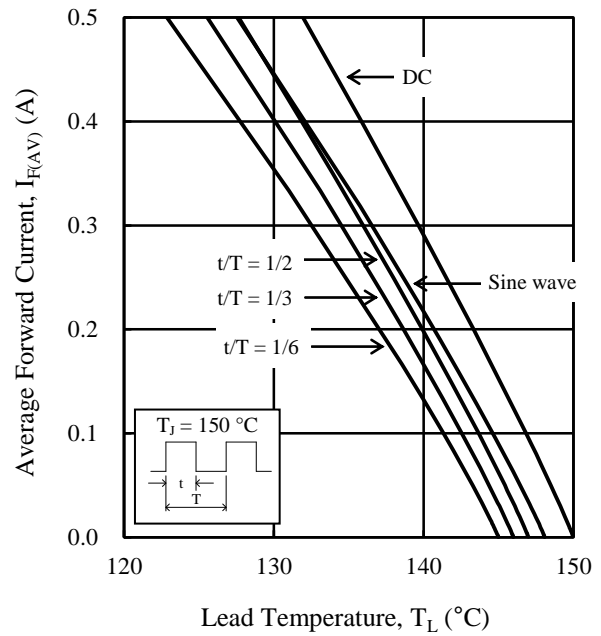


Figure 3. $I_{F(AV)}$ vs. T_L Typical Characteristics⁽²⁾
($V_R = 1500$ V)

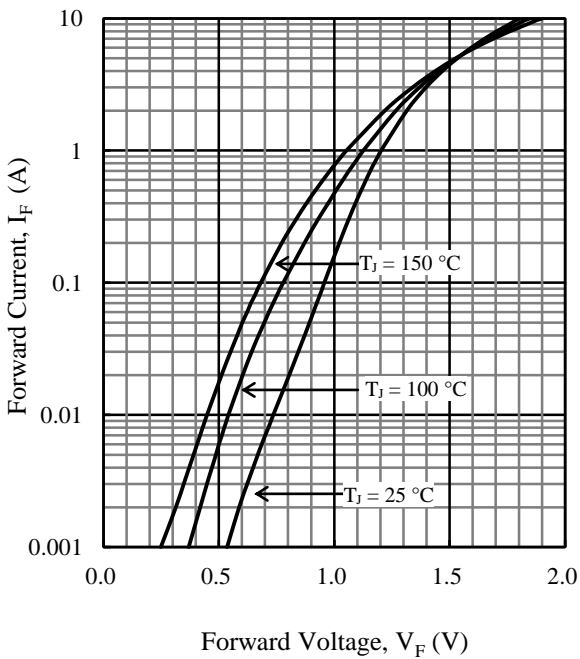


Figure 4. V_F vs. I_F Typical Characteristics

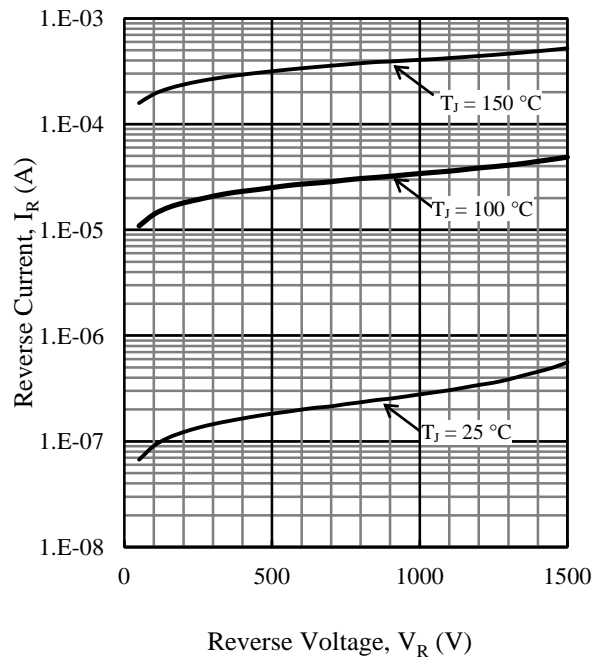


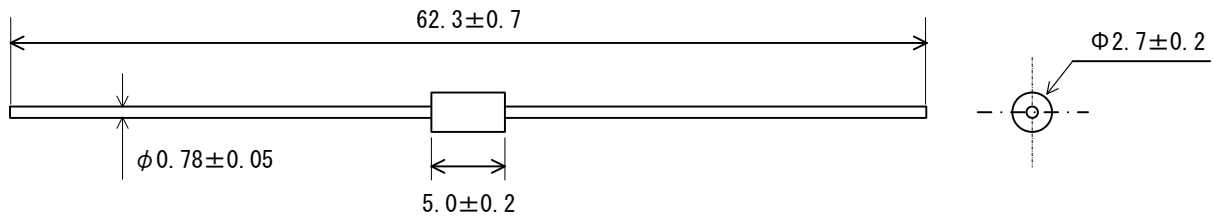
Figure 5. V_R vs. I_R Typical Characteristics

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

ES1F

Physical Dimensions

- Axial ($\phi 4 \times 7.2L / \phi 0.78$)



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

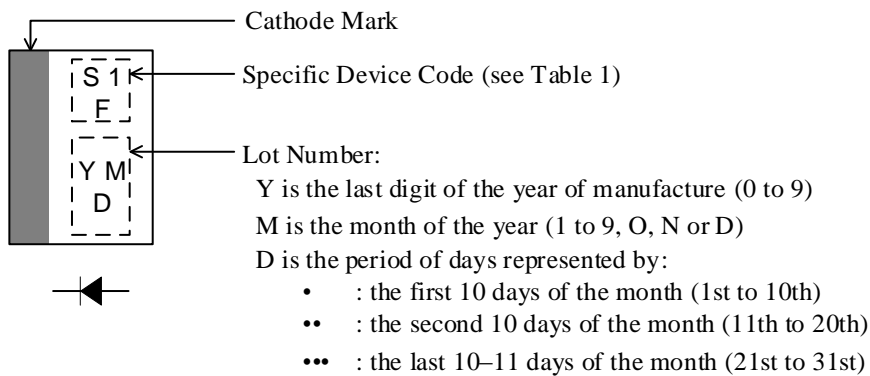


Table 1. Specific Device Code

Specific Device Code	Part Number
S1F	ES1F

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