

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

**Description**

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

**Features**

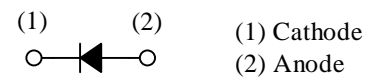
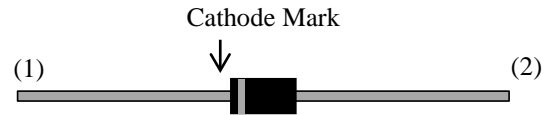
- $V_{RM}$ ----- 1500 V
- $I_{F(AV)}$ ----- 0.5 A
- $V_F$ ----- 2.0 V
- $t_{rr1}$ ----- 1.5  $\mu\text{s}$
- Bare Leads: Pb-free (RoHS Compliant)

**Applications**

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

**Package**

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



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	$\mu\text{A}$
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	—	—	17	$^\circ\text{C/W}$

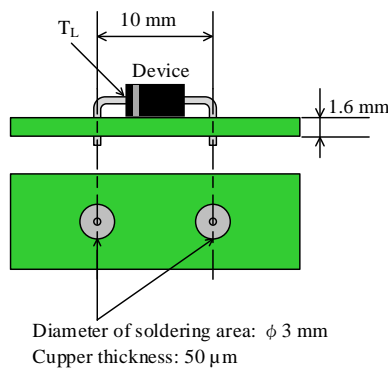


Figure 1 Lead Temperature Measurement Conditions

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

Rating and Characteristic Curves

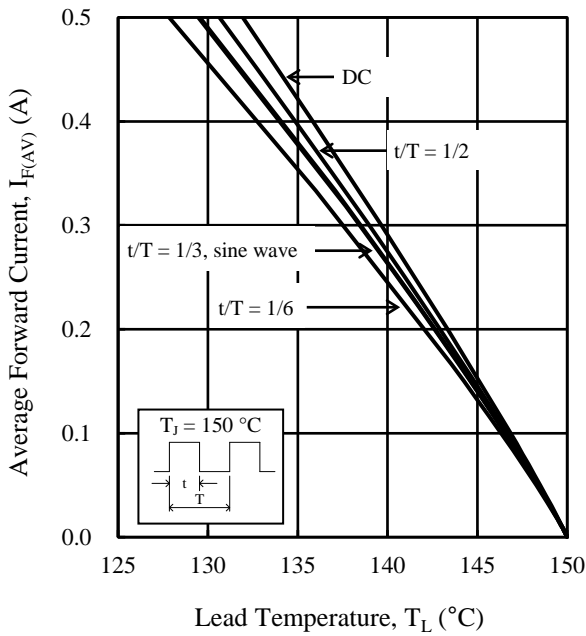


Figure 2.  $I_{F(AV)}$  vs.  $T_L$  Typical Characteristics<sup>(2)</sup>  
( $V_R = 0\text{ V}$ )

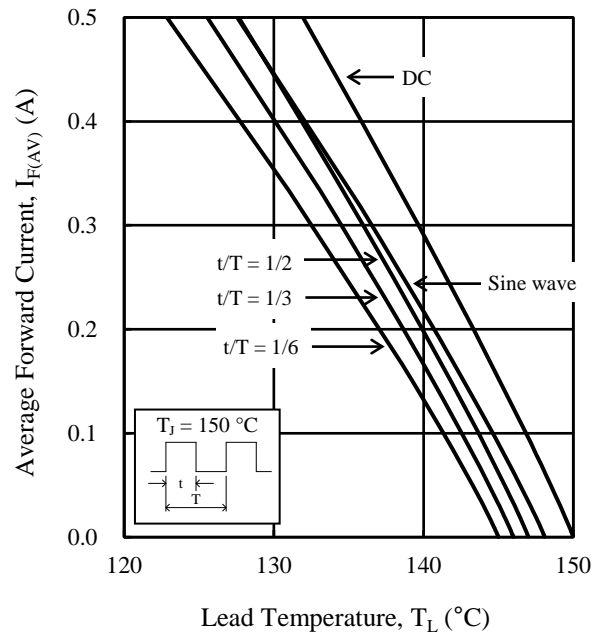


Figure 3.  $I_{F(AV)}$  vs.  $T_L$  Typical Characteristics<sup>(2)</sup>  
( $V_R = 1500\text{ V}$ )

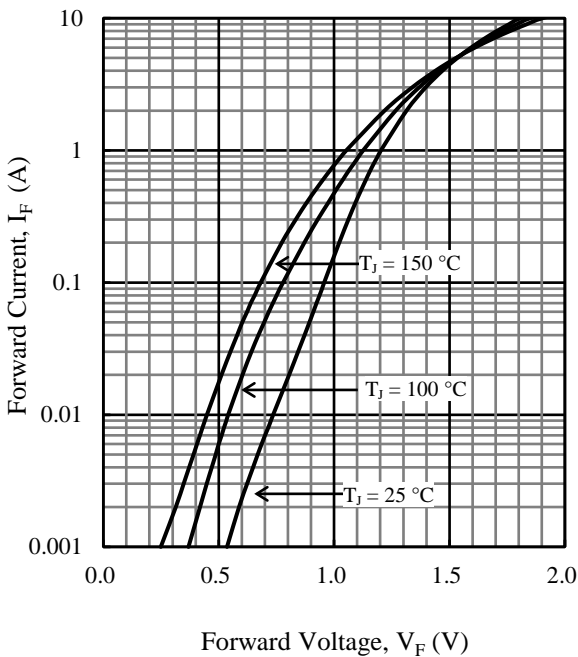


Figure 4.  $V_F$  vs.  $I_F$  Typical Characteristics

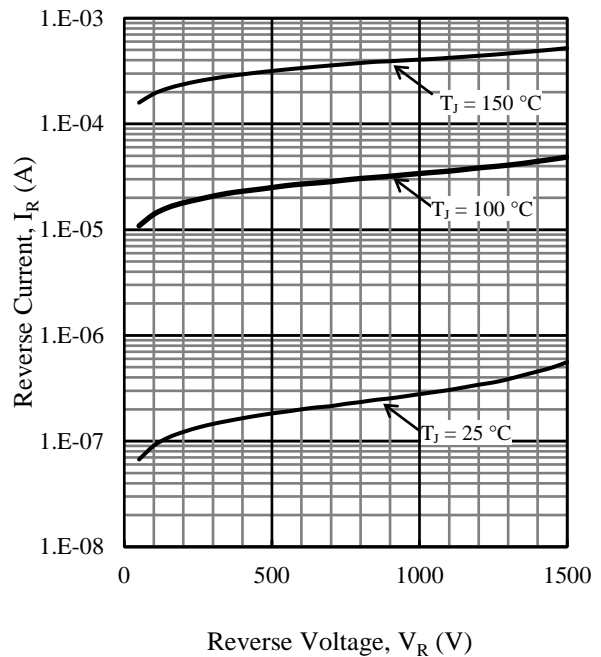


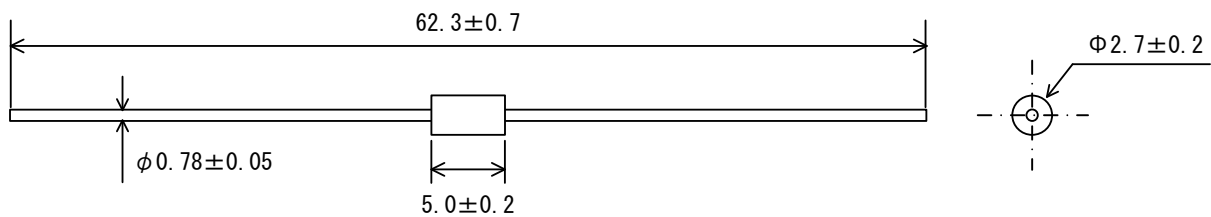
Figure 5.  $V_R$  vs.  $I_R$  Typical Characteristics

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

# ES1F

## Physical Dimensions

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



### 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

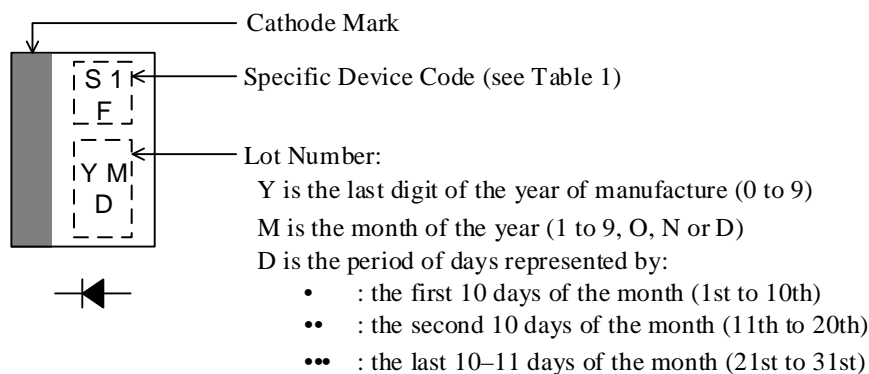


Table 1. Specific Device Code

Specific Device Code	Part Number
S1F	ES1F

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