

# ES1A-AT THRU ES1J-AT

## Surface Mount Superfast Recovery Rectifier

Forward Current: 1A

Reverse Voltage: 50V to 600V

### FEATURES

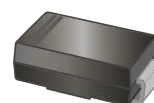
- ◆ For surface mount applications
- ◆ Glass passivated chip junction
- ◆ Low profile package
- ◆ Superfast reverse recovery time
- ◆ Lead free in comply with EU RoHS 2011/65/EU directives

### PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | Cathode     |
| 2   | Anode       |

### MECHANICAL DATA

- ◆ Case: SMA molded plastic body
- ◆ Terminals: Solderable per MIL-STD- 750, Method 2026
- ◆ Weight: Approximated 0.055 grams



Top View  
Simplified outline SMA and symbol

### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

Single phase half-wave 60 Hz, resistive or inductive load, for capacitive load current derating by 20 %.

| PARAMETER                                                                                       | SYMBOL          | ES1A<br>-AT | ES1B<br>-AT | ES1C<br>-AT | ES1D<br>-AT | ES1E<br>-AT | ES1G<br>-AT | ES1J<br>-AT | UNIT          |
|-------------------------------------------------------------------------------------------------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------|
| Maximum Repetitive Peak Reverse Voltage                                                         | $V_{RRM}$       | 50          | 100         | 150         | 200         | 300         | 400         | 600         | V             |
| Maximum RMS Voltage                                                                             | $V_{RMS}$       | 35          | 70          | 105         | 140         | 210         | 280         | 420         | V             |
| Maximum DC Blocking Voltage                                                                     | $V_{DC}$        | 50          | 100         | 150         | 200         | 300         | 400         | 600         | V             |
| Maximum Average Forward Rectified Current at $T_C=100^{\circ}C$                                 | $I_{F(AV)}$     | 1           |             |             |             |             |             |             | A             |
| Peak Forward Surge Current (Note1)                                                              | $I_{FSM}$       | 30          |             |             |             |             |             |             | A             |
| Maximum Forward Voltage at 1.0 A                                                                | $V_F$           | 1           |             |             |             | 1.25        | 1.70        |             | V             |
| Maximum DC Reverse Current at Rated DC Blocking Voltage $T_A=25^{\circ}C$<br>$T_A=125^{\circ}C$ | $I_R$           | 5<br>100    |             |             |             |             |             |             | $\mu A$       |
| Typical Junction Capacitance at $V_R=4V, f=1MHz$                                                | $C_J$           | 15          |             |             |             |             |             |             | pF            |
| Maximum Reverse Recovery Time (Note2)                                                           | $T_{rr}$        | 35          |             |             |             |             |             |             | nS            |
| Typical Thermal Resistance (Note3)                                                              | $R_{\theta JA}$ | 110         |             |             |             |             |             |             | $^{\circ}C/W$ |
| Operating and Storage Temperature Range                                                         | $T_J, T_{STG}$  | -55 to +150 |             |             |             |             |             |             | $^{\circ}C$   |

Notes: 1. Measured at 8.3 ms single half sine wave superimposed on rated load (JEDEC Method).

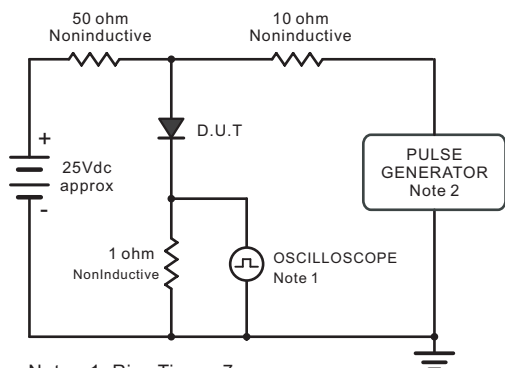
2. Measured at with  $I_F=0.5A$ ,  $I_R=1A$ ,  $I_{rr}=0.25A$ .

3. P.C.B. mounted with 2.0" X 2.0" (5 X 5 cm) copper pad areas.

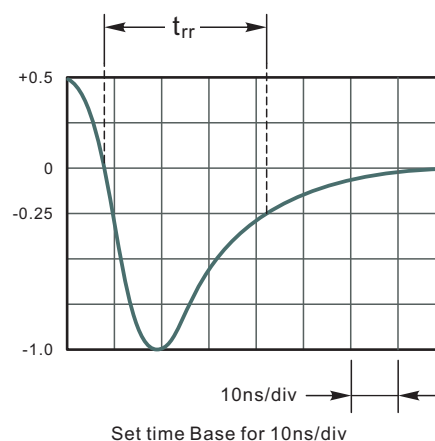
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## RATINGS AND CHARACTERISTIC CURVES

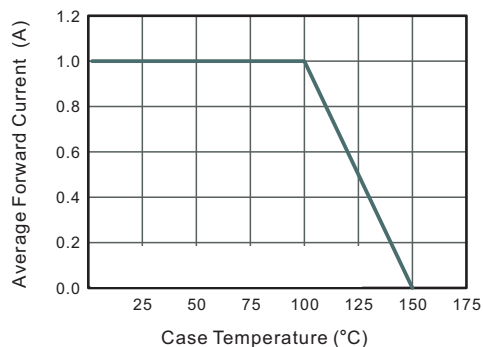
**Fig.1 Reverse Recovery Time Characteristic And Test Circuit Diagram**



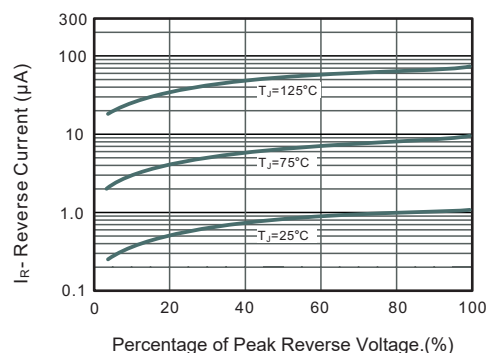
Note: 1. Rise Time = 7ns, max.  
Input Impedance = 1megohm, 22pF.  
2. Rise Time = 10ns, max.  
Source Impedance = 50 ohms.



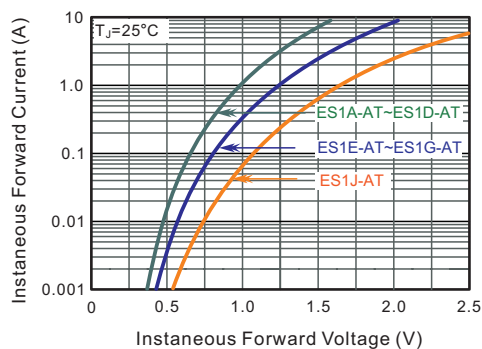
**Fig.2 Maximum Average Forward Current Rating**



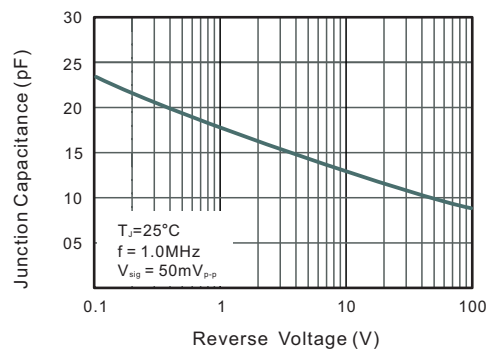
**Fig.3 Typical Reverse Characteristics**



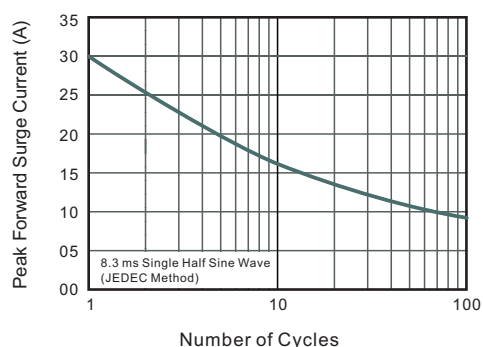
**Fig.4 Typical Forward Characteristics**



**Fig.5 Typical Junction Capacitance**



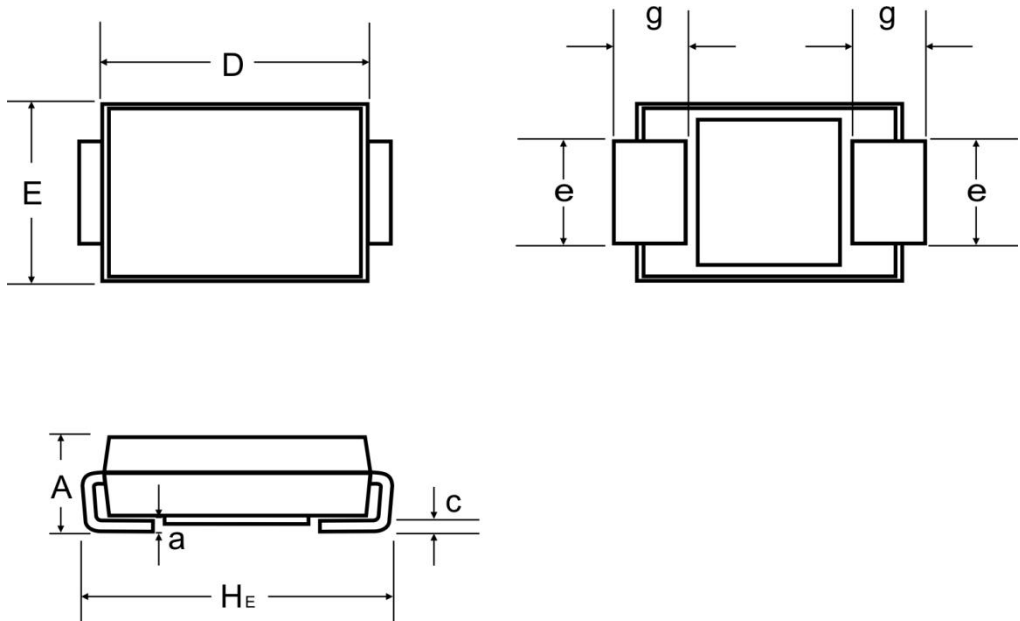
**Fig.6 Maximum Non-Repetitive Peak Forward Surge Current**



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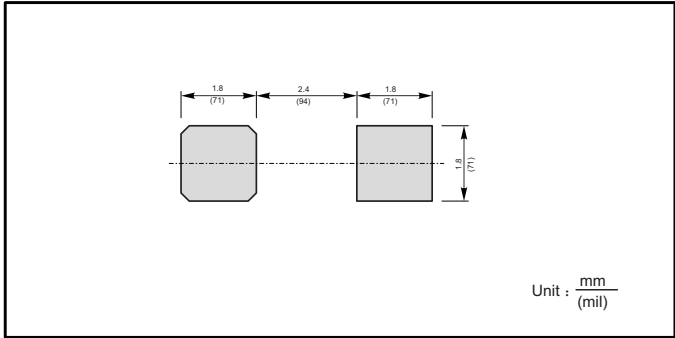
## PACKAGE OUTLINE

SMA



| NUIT |     | A   | D   | E   | H <sub>E</sub> | C    | e   | g   | a   |
|------|-----|-----|-----|-----|----------------|------|-----|-----|-----|
| mm   | max | 2.2 | 4.5 | 2.7 | 5.2            | 0.31 | 1.6 | 1.5 | 0.3 |
|      | min | 1.9 | 4.0 | 2.3 | 4.7            | 0.15 | 1.3 | 0.9 |     |

### The recommended mounting pad size



### ORDER INFORMATION

| Device               | Package | Shipping                  |
|----------------------|---------|---------------------------|
| ES1A-AT THRU ES1J-AT | SMA     | 5000PCS/Reel&Tape(13inch) |