

## Surface Mount Superfast Recovery Rectifier

Reverse Voltage – 50 to 600 V Forward Current –3 A

### FEATURES

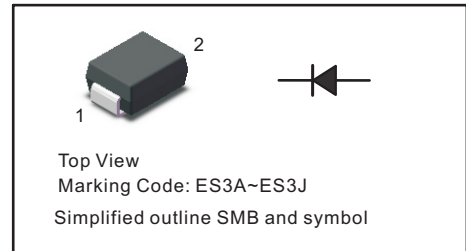
- For surface mounted applications
- Low profile package
- Glass Passivated Chip Junction
- Superfast reverse recovery time
- Lead free in comply with EU RoHS 2011/65/EU directives

### MECHANICAL DATA

- Case : SMB
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.055g / 0.002oz

### PINNING

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



### Absolute Maximum Ratings and Characteristics

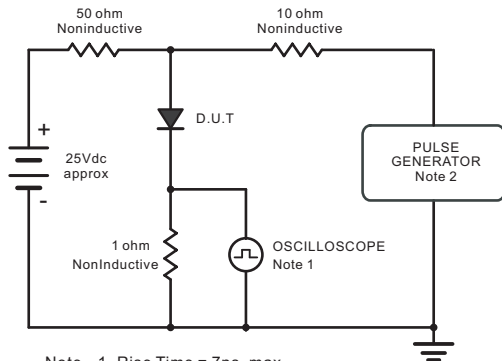
Ratings at 25 °C ambient temperature unless otherwise specified. Single phase, half wave, 60 Hz, resistive or inductive load. For capacitive load, derate current by 20%.

| Parameter  | Symbols                            | ES3AB<br>G | ES3BB<br>G | ES3CB<br>G | ES3DB<br>G | ES3EB<br>G | ES3GB<br>G | ES3JB<br>G | Units              |
|--|------------------------------------|------------|------------|------------|------------|------------|------------|------------|--------------------|
| 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 $T_c = 100\text{ }^\circ\text{C}$   | $I_{F(AV)}$                        | 3          |            |            |            |            |            |            | A                  |
| Peak Forward Surge Current 8.3 ms Single Half Sine Wave Superimposed on Rated Load   | $I_{FSM}$                          | 90         |            |            |            |            |            |            | A                  |
| Maximum Forward Voltage at 3 A   | $V_F$                              | 1          |            |            |            | 1.25       |            | 1.68       | V                  |
| Maximum DC Reverse Current at Rated DC Blocking Voltage<br>$T_a = 25\text{ }^\circ\text{C}$<br>$T_a = 125\text{ }^\circ\text{C}$ | $I_R$                              | 5<br>100   |            |            |            |            |            |            | $\mu\text{A}$      |
| Typical Junction Capacitance at $V_R=4\text{V}$ , $f=1\text{MHz}$  | $C_j$                              | 45         |            |            |            |            |            |            | pF                 |
| Maximum Reverse Recovery Time <sup>(1)</sup>   | $t_{rr}$                           | 35         |            |            |            |            |            |            | ns                 |
| Typical Thermal Resistance <sup>(2)</sup>  | $R_{\theta JA}$<br>$R_{\theta JC}$ | 50<br>16   |            |            |            |            |            |            | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range  | $T_j, T_{stg}$                     | -55 ~ +150 |            |            |            |            |            |            | $^\circ\text{C}$   |

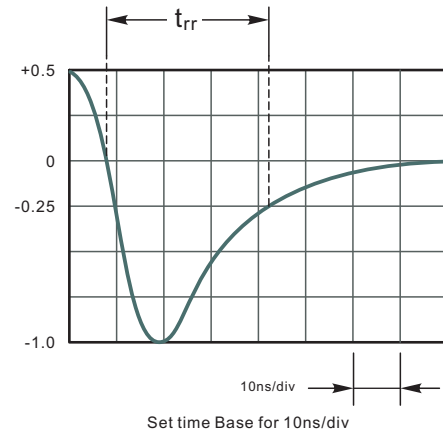
(1) Measured with  $I_F = 0.5\text{ A}$ ,  $I_R = 1\text{ A}$ ,  $I_{rr} = 0.25\text{ A}$ .

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

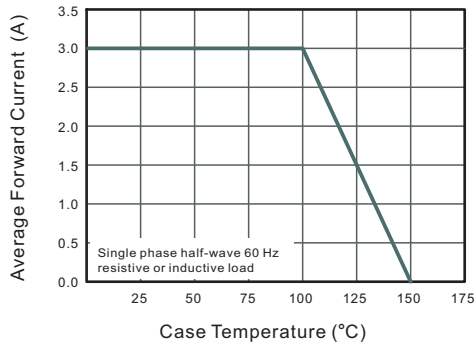
**Fig.1 Reverse Recovery Time Characteristic And Test Circuit Diagram**



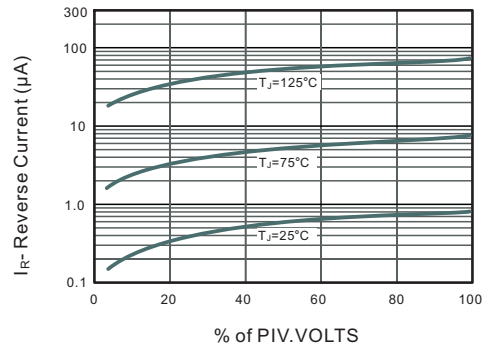
Note: 1. Rise Time = 7ns, max.  
Input Impedance = 1megohm, 22pF.  
2. Rise Time = 10ns, max.  
Source Impedance = 50 ohms.



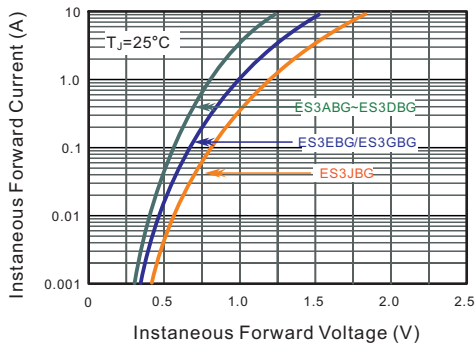
**Fig.2 Maximum Average Forward Current Rating**



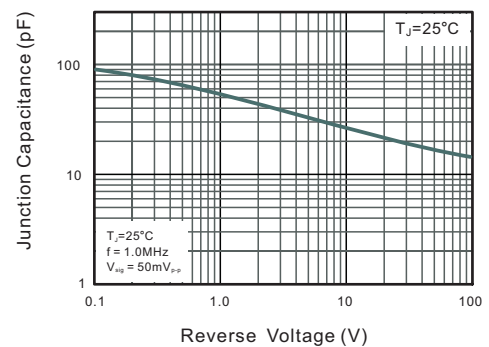
**Fig.3 Typical Reverse Characteristics**



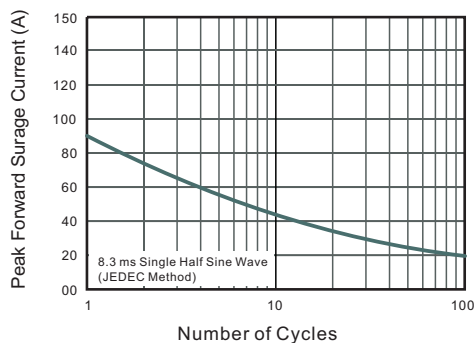
**Fig.4 Typical Forward Characteristics**



**Fig.5 Typical Junction Capacitance**



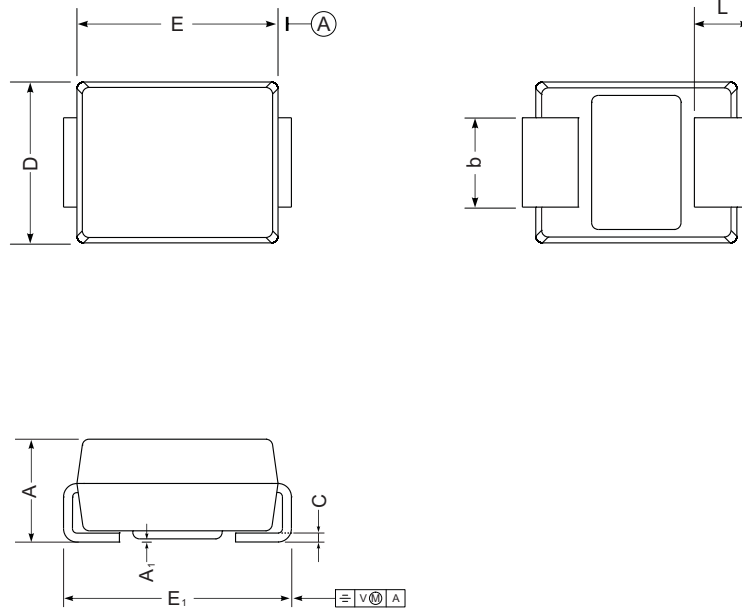
**Fig.6 Maximum Non-Repetitive Peak Forward Surge Current**



## PACKAGE OUTLINE

Plastic surface mounted package; 2 leads

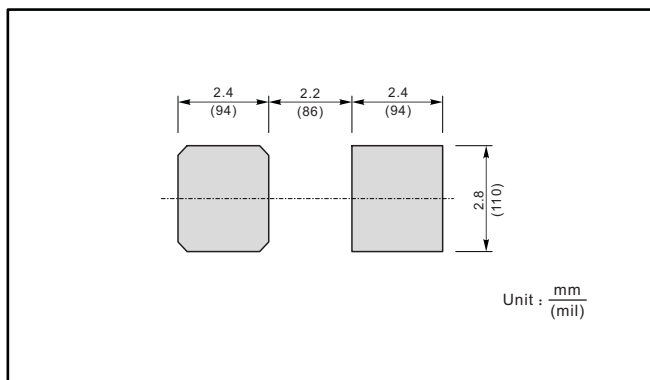
SMB



SMB mechanical data

| UNIT |     | A    | E    | D    | E <sub>1</sub> | A <sub>1</sub> | L   | C     | b   |
|------|-----|------|------|------|----------------|----------------|-----|-------|-----|
| mm   | max | 2.44 | 4.70 | 3.94 | 5.59           | 0.20           | 1.5 | 0.305 | 2.2 |
|      | min | 2.13 | 4.06 | 3.3  | 5.08           | 0.05           | 0.8 | 0.152 | 1.9 |
| mil  | max | 96   | 185  | 155  | 220            | 7.9            | 59  | 12    | 87  |
|      | min | 84   | 160  | 130  | 200            | 2.0            | 32  | 6     | 75  |

## The recommended mounting pad size



## Marking

| Type number | Marking code |
|-------------|--------------|
| ES3ABG      | ES3A         |
| ES3BBG      | ES3B         |
| ES3CBG      | ES3C         |
| ES3DBG      | ES3D         |
| ES3EBG      | ES3E         |
| ES3GBG      | ES3G         |
| ES3JBG      | ES3J         |

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