

## 3A, 50V - 600V Surface Mount Super Fast Rectifier

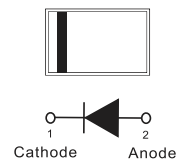
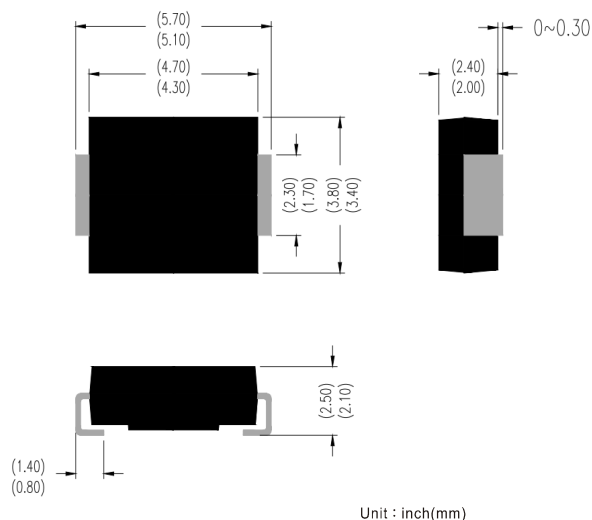
### Features

- Glass passivated junction chip
- Ideal for automated placement
- Super fast recovery time for high efficiency
- Built-in strain relief
- Comply with RoHS standard, halogen-free

### Mechanical Data

- Case: SMB/DO-214AA
- Polarity: Indicated by cathode band
- Epoxy: UL 94V-0 rate flame retardant
- Mounting Position : Any

SMB/DO-214AA



### Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

| Parameter                                                                                     | Symbol       | ES 3AB       | ES 3BB | ES 3CB | ES 3DB | ES 3FB | ES 3GB | ES 3HB | ES 3JB | Unit               |
|-----------------------------------------------------------------------------------------------|--------------|--------------|--------|--------|--------|--------|--------|--------|--------|--------------------|
| Repetitive peak reverse voltage                                                               | $V_{RRM}$    | 50           | 100    | 150    | 200    | 300    | 400    | 500    | 600    | V                  |
| Reverse voltage, total rms value                                                              | $V_{R(RMS)}$ | 30           | 70     | 105    | 140    | 210    | 280    | 350    | 420    | V                  |
| Forward current                                                                               | $I_{F(AV)}$  | 3            |        |        |        |        |        |        |        | A                  |
| Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode | $I_{FSM}$    | 100          |        |        |        |        |        |        |        | A                  |
| Junction temperature                                                                          | $T_J$        | - 55 to +150 |        |        |        |        |        |        |        | $^{\circ}\text{C}$ |
| Storage temperature                                                                           | $T_{STG}$    | - 55 to +150 |        |        |        |        |        |        |        | $^{\circ}\text{C}$ |

## Thermal Performance

| Parameter                              | Symbol          | Limit | Unit                 |
|----------------------------------------|-----------------|-------|----------------------|
| Junction-to-lead thermal resistance    | $R_{\theta JL}$ | 24    | $^{\circ}\text{C/W}$ |
| Junction-to-ambient thermal resistance | $R_{\theta JA}$ | 84    | $^{\circ}\text{C/W}$ |
| Junction-to-case thermal resistance    | $R_{\theta JC}$ | 26    | $^{\circ}\text{C/W}$ |

**Thermal Performance Note:** Units mounted on recommended PCB (10mm x 10mm Cu pad test board)

## Electrical Specifications ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

| Parameter                                              |                                  | Conditions                                                  | Symbol   | TYP  | MAX  | Unit          |
|--------------------------------------------------------|----------------------------------|-------------------------------------------------------------|----------|------|------|---------------|
| Forward voltage per diode <sup>(1)</sup>               | ES3AB<br>ES3BB<br>ES3CB<br>ES3DB | $I_F = 1.5\text{A}, T_J = 25^{\circ}\text{C}$               | $V_F$    | 0.80 | 0.92 | V             |
|                                                        | ES3FB<br>ES3GB                   |                                                             |          | 0.90 | 1.04 | V             |
|                                                        | ES3HB<br>ES3JB                   |                                                             |          | 1.11 | 1.30 | V             |
|                                                        | ES3AB<br>ES3BB<br>ES3CB<br>ES3DB | $I_F = 3.0\text{A}, T_J = 25^{\circ}\text{C}$               | $V_F$    | 0.86 | 1.00 | V             |
|                                                        | ES3FB<br>ES3GB                   |                                                             |          | 0.98 | 1.13 | V             |
|                                                        | ES3HB<br>ES3JB                   |                                                             |          | 1.24 | 1.45 | V             |
|                                                        | ES3AB<br>ES3BB<br>ES3CB<br>ES3DB | $I_F = 1.5\text{A}, T_J = 125^{\circ}\text{C}$              | $V_F$    | 0.66 | 0.75 | V             |
|                                                        | ES3FB<br>ES3GB                   |                                                             |          | 0.73 | 0.85 | V             |
|                                                        | ES3HB<br>ES3JB                   |                                                             |          | 0.85 | 0.98 | V             |
|                                                        | ES3AB<br>ES3BB<br>ES3CB<br>ES3DB | $I_F = 3.0\text{A}, T_J = 125^{\circ}\text{C}$              | $V_F$    | 0.73 | 0.84 | V             |
|                                                        | ES3FB<br>ES3GB                   |                                                             |          | 0.83 | 0.95 | V             |
|                                                        | ES3HB<br>ES3JB                   |                                                             |          | 0.99 | 1.13 | V             |
| Reverse current @ rated $V_R$ per diode <sup>(2)</sup> |                                  | $T_J = 25^{\circ}\text{C}$                                  | $I_R$    | -    | 10   | $\mu\text{A}$ |
|                                                        |                                  | $T_J = 125^{\circ}\text{C}$                                 |          | -    | 100  | $\mu\text{A}$ |
| Junction capacitance                                   | ES3AB<br>ES3BB<br>ES3CB<br>ES3DB | 1 MHz, $V_R=4.0\text{V}$                                    | $C_J$    | 46   | -    | pF            |
|                                                        | ES3FB<br>ES3GB                   |                                                             |          | 41   | -    | pF            |
|                                                        | ES3HB<br>ES3JB                   |                                                             |          | 34   | -    | pF            |
| Reverse recovery time                                  |                                  | $I_F=0.5\text{A}, I_R=1.0\text{A}$<br>$I_{RR}=0.25\text{A}$ | $t_{rr}$ | -    | 35   | ns            |

### Notes:

1. Pulse test with  $PW=0.3\text{ ms}$
2. Pulse test with  $PW=30\text{ ms}$



Characteristics Curves ( $T_A=25^\circ\text{C}$  unless otherwise noted)

Fig.1 Forward Current Derating Curve

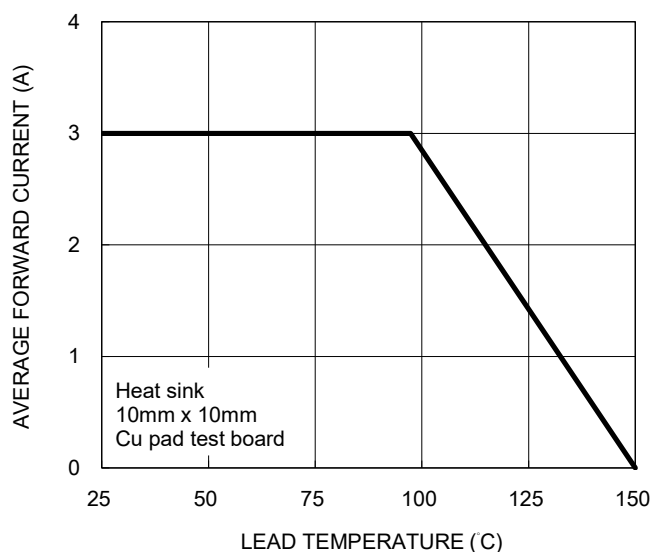


Fig.2 Typical Junction Capacitance

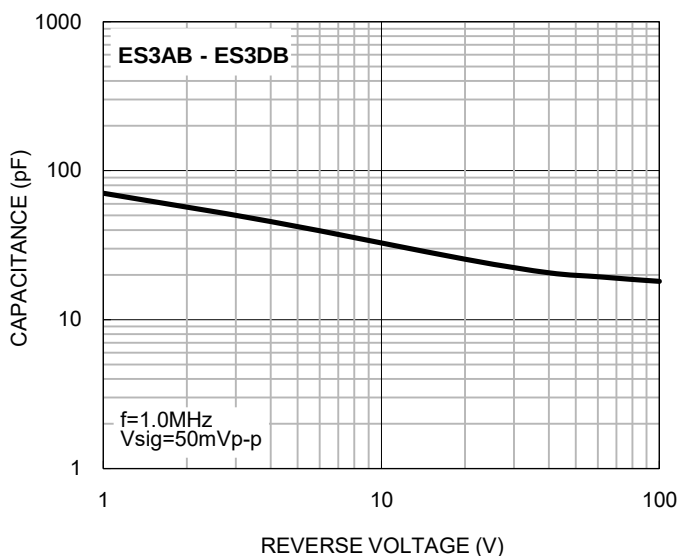


Fig.3 Typical Reverse Characteristics

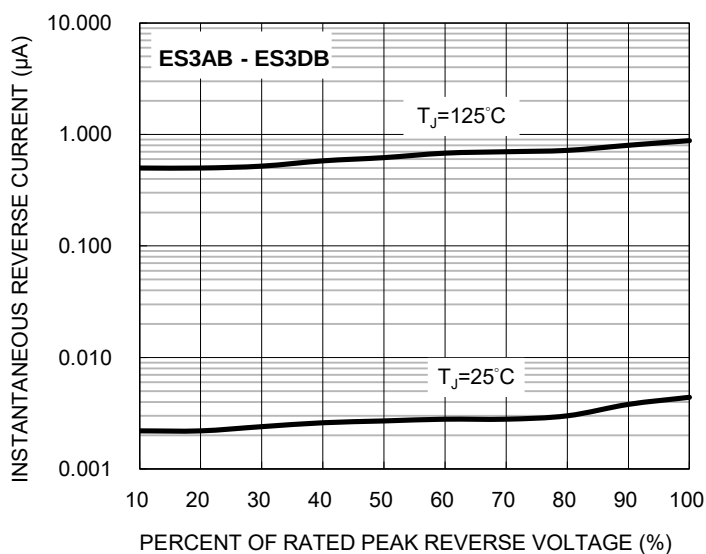


Fig.4 Typical Forward Characteristics

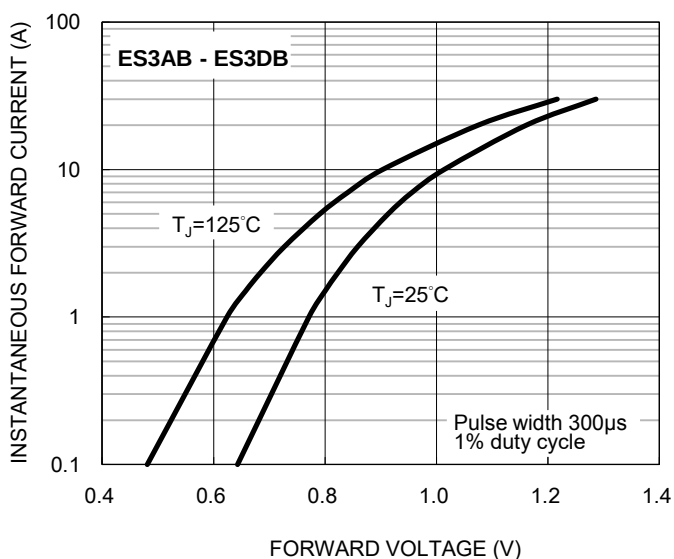


Fig.5 Typical Junction Capacitance

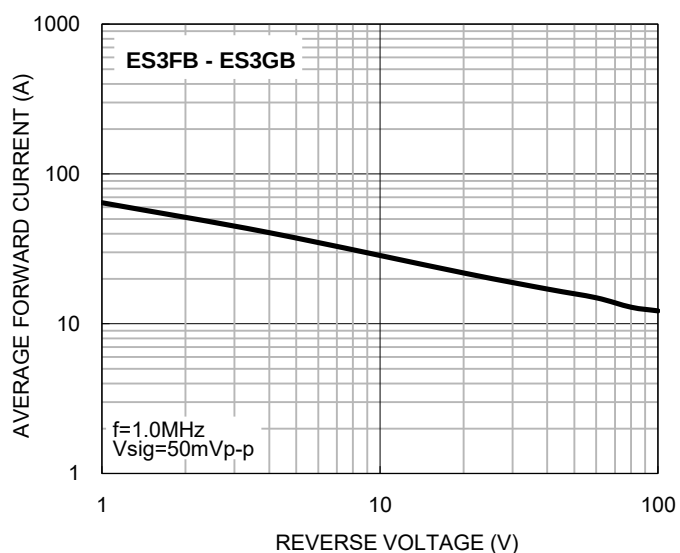
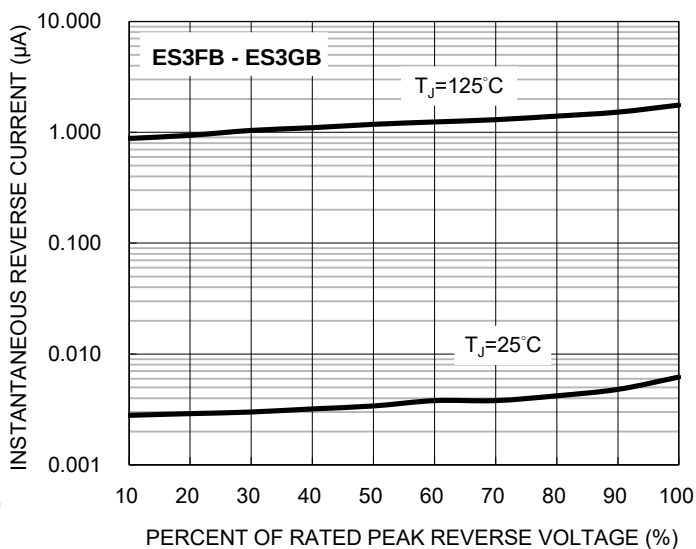


Fig.6 Typical Reverse Characteristics



Characteristics Curves ( $T_A=25^\circ\text{C}$  unless otherwise noted)

Fig.7 Typical Forward Characteristics

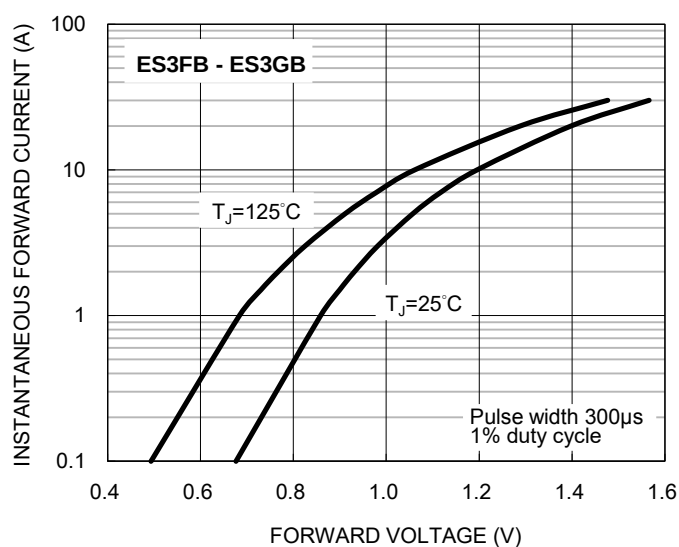


Fig.8 Typical Junction Capacitance

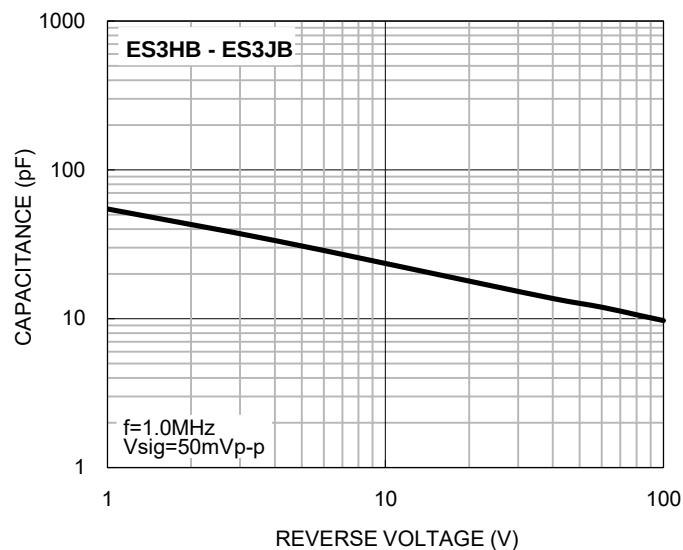


Fig.9 Typical Reverse Characteristics

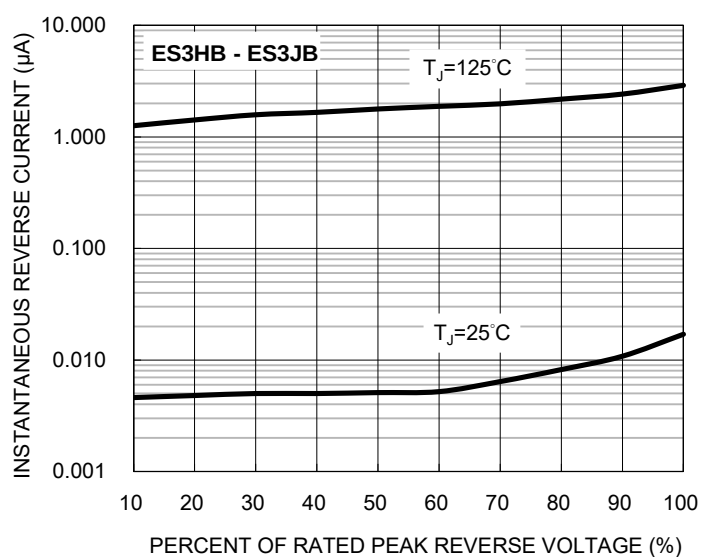


Fig.10 Typical Forward Characteristics

