



### Features

- Glass passivated chip junctions
- Ideal for automated placement
- Ultrafast reverse recovery time
- Low profile package
- High forward surge capability
- High temperature soldering:  
260°C/10 seconds at terminals
- Component in accordance to  
RoHS 2002/95/1 and WEEE 2002/96/EC



SMB (DO - 214AA)

### Mechanical Date

- **Case:** JEDEC DO-214AA molded plastic body over glass passivated chip
- **Terminals:** Solder plated, solderable per J-STD-002B and JESD22-B102D
- **Polarity:** Laser band denotes cathode end

### Major Ratings and Characteristics

|                    |                       |
|--------------------|-----------------------|
| $I_{F(AV)}$        | 3.0 A                 |
| $V_{RRM}$          | 50 V to 600 V         |
| $I_{FSM}$          | 100 A                 |
| $t_{rr}$           | 35 nS                 |
| $V_F$              | 0.95 V, 1.25 V, 1.7 V |
| $T_j \text{ max.}$ | 150 °C                |

### Maximum Ratings & Thermal Characteristics ( $T_A = 25\text{ °C}$ unless otherwise noted)

| Items  | Symbol          | ES3A        | ES3B | ES3C | ES3D | ES3E | ES3G | ES3H | ES3J | UNIT |
|--|-----------------|-------------|------|------|------|------|------|------|------|------|
| Maximum repetitive peak reverse voltage  | $V_{RRM}$       | 50          | 100  | 150  | 200  | 300  | 400  | 500  | 600  | V    |
| Maximum RMS voltage  | $V_{RMS}$       | 35          | 70   | 105  | 140  | 210  | 280  | 350  | 420  | V    |
| Maximum DC blocking voltage  | $V_{DC}$        | 50          | 100  | 150  | 200  | 300  | 400  | 500  | 600  | V    |
| Maximum average forward rectified current  | $I_{F(AV)}$     | 3           |      |      |      |      |      |      |      | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$       | 100         |      |      |      |      |      |      |      | A    |
| Thermal resistance from junction to lead <sup>(1)</sup>                            | $R_{\theta JL}$ | 25          |      |      |      |      |      |      |      | °C/W |
| Operating junction and storage temperature range                                   | $T_J, T_{STG}$  | -55 to +150 |      |      |      |      |      |      |      | °C   |

Note 1: Mounted on P.C.B. with 0.28 x 0.28" (7.0 x 7.0mm) copper pad areas.

### Electrical Characteristics ( $T_A = 25\text{ °C}$ unless otherwise noted)

| Items                                 | Test conditions                       | Symbol   | ES3A~D              | ES3E~G | ES3H~J | UNIT |         |
|---------------------------------------|---------------------------------------|----------|---------------------|--------|--------|------|---------|
| Maximum Instantaneous forward voltage | $I_F=3A^{(2)}$                        | $V_F$    | 0.95                | 1.25   | 1.70   | V    |         |
| Maximum reverse current               | $V_R=V_{DC}$                          | $I_R$    | $T_A=25\text{ °C}$  |        |        | 5    | $\mu A$ |
|                                       |                                       |          | $T_A=100\text{ °C}$ |        |        | 50   |         |
| Reverse recovery time                 | $I_F=0.5A$ $I_R=1A$<br>$I_{tr}=0.25A$ | $t_{rr}$ | 35                  |        |        | nS   |         |
| Typical junction capacitance          | 4.0 V, 1MHz                           | $C_J$    | 45                  |        |        | pF   |         |

Note 2: Pulse test:300μs pulse width,1% duty cycle.

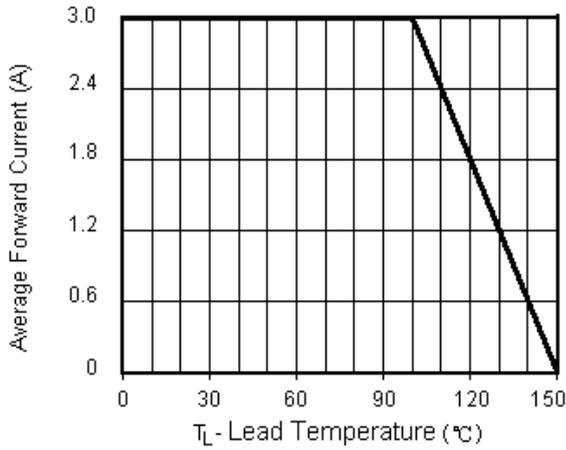


# ES3A-ES3J

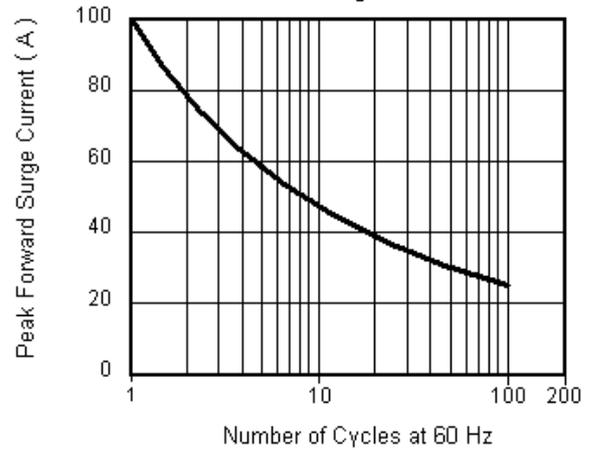
## Surface Mount Superfast Rectifiers

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

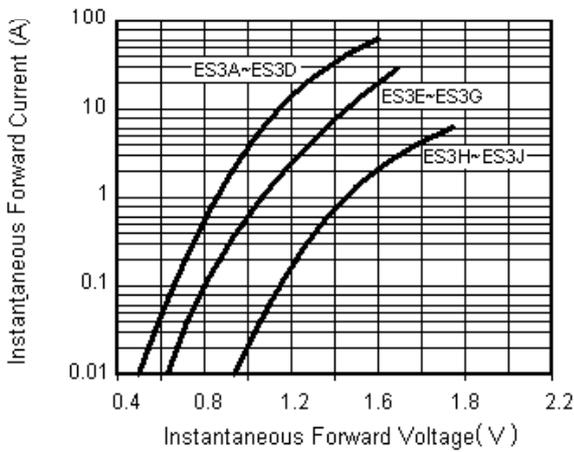
**Fig.1 Forward Current Derating Curve**



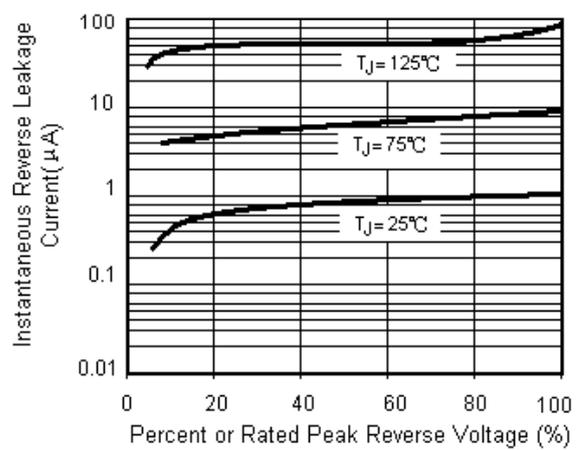
**Fig.2 Maximum Non-Repetitive Peak Forward Surge Current**



**Fig.3 Typical Instantaneous Forward Characteristics**

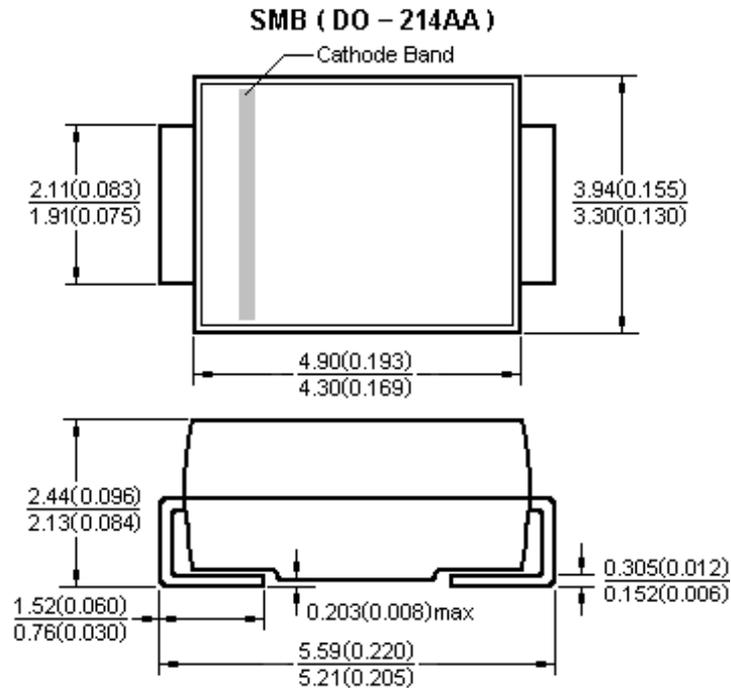


**Fig.4 Typical Reverse Leakage Characteristics**





### Package Outline



Dimensions in millimeters and (inches)

### Notice

- Product is intended for use in general electronics applications.
- Product should be worked less than the ratings; if exceeded, may cause permanent damage. or introduce latent failure mechanisms.
- The absolute maximum ratings are rated values and must not be exceeded during operation. The following are the general derating methods you design a circuit with a device.

$I_{F(AV)}$  : We recommend that the worst case current be no greater than 80% .

$I_{FSM}$  : This rating specifies the non-repetitive peak current. This is only applied for an abnormal operation, which the general during the lifespan of the device.

$T_J$  : Derate this rating when using a device in order to ensure high reliability. We recommend that the device be used at a  $T_J$  of below 125°C.

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