

## SURFACE MOUNT SUPERFAST RECOVERY RECTIFIERS Reverse Voltage – 50 to 600 Volts Forward Current – 3.0 Ampere

### FEATURES

- Glass passivated junction chip
- For surface mounted application
- Low profile package
- Built-in strain relief
- Ideal for automated placement
- Glass passivated chip junction
- High temperature soldering: 260° C/10 seconds at terminals
- Laboratory Classification 94V-0
- AEC-Q101 qualified (Automotive grade with suffix "Q".)
- Expsemi electronics



### MECHANICAL DATA

- Cases: Molded plastic
- Terminals: Pure tin plated, lead free.
- Polarity: Indicated by cathode band
- Packing: 12mm tape per EIA STD RS-481

## Maximum Ratings and Electrical Characteristics

Rating 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%

| Type Number                                                                                             | Symbol            | ES<br>3A    | ES<br>3B | ES<br>3C | ES<br>3D | ES<br>3F | ES<br>3G | ES<br>3H | ES<br>3J | Units    |
|---------------------------------------------------------------------------------------------------------|-------------------|-------------|----------|----------|----------|----------|----------|----------|----------|----------|
| Maximum Recurrent Peak Reverse Voltage                                                                  | V <sub>RRM</sub>  | 50          | 100      | 150      | 200      | 300      | 400      | 500      | 600      | V        |
| Maximum RMS Voltage                                                                                     | V <sub>RMS</sub>  | 35          | 70       | 105      | 140      | 210      | 280      | 350      | 420      | V        |
| Maximum DC Blocking Voltage                                                                             | V <sub>DC</sub>   | 50          | 100      | 150      | 200      | 300      | 400      | 500      | 600      | V        |
| Maximum Average Forward Rectified Current See Fig. 1                                                    | I <sub>(AV)</sub> | 3.0         |          |          |          |          |          |          |          | A        |
| Peak Forward Surge Current, 8.3 ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method )     | I <sub>FSM</sub>  | 100         |          |          |          |          |          |          |          | A        |
| Maximum Instantaneous Forward Voltage @ 2.0A                                                            | V <sub>F</sub>    | 0.95        |          |          |          | 1.3      |          | 1.7      |          | V        |
| Maximum DC Reverse Current @ T <sub>A</sub> =25°C at Rated DC Blocking Voltage @ T <sub>A</sub> =100 °C | I <sub>R</sub>    | 5<br>350    |          |          |          |          |          |          |          | uA<br>uA |
| Maximum Reverse Recovery Time ( Note 1 )                                                                | T <sub>rr</sub>   | 35          |          |          |          |          |          |          |          | nS       |
| Typical Junction Capacitance ( Note 2 )                                                                 | C <sub>j</sub>    | 25          |          |          |          | 20       |          |          |          | pF       |
| Maximum Thermal Resistance (Note 3)                                                                     | R <sub>θJA</sub>  | 75          |          |          |          |          |          |          |          | °C /W    |
| Operating Temperature Range                                                                             | T <sub>J</sub>    | -55 to +150 |          |          |          |          |          |          |          | °C       |
| Storage Temperature Range                                                                               | T <sub>STG</sub>  | -55 to +150 |          |          |          |          |          |          |          | °C       |

Notes: 1. Reverse Recovery Test Conditions:  $I_F = 0.5A$ ,  $I_R = 1.0A$ ,  $I_{RR} = 0.25A$   
2. Measured at 1 MHz and Applied  $V_R = 4.0$  Volts  
3. Units Mounted on P.C.B. 0.4" x 0.4" (10mm x 10mm) Pad Areas

## RATING AND CHARACTERISTIC CURVES

FIG.1- MAXIMUM FORWARD CURRENT DERATING CURVE

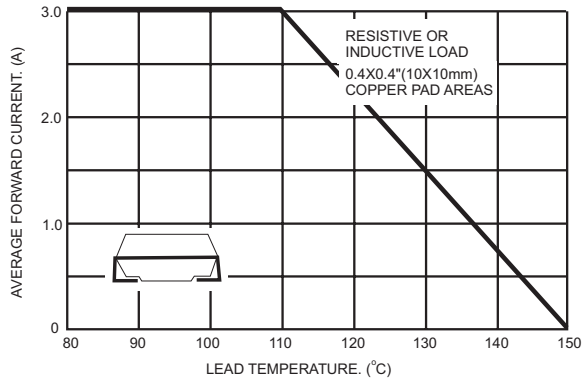


FIG.3- MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

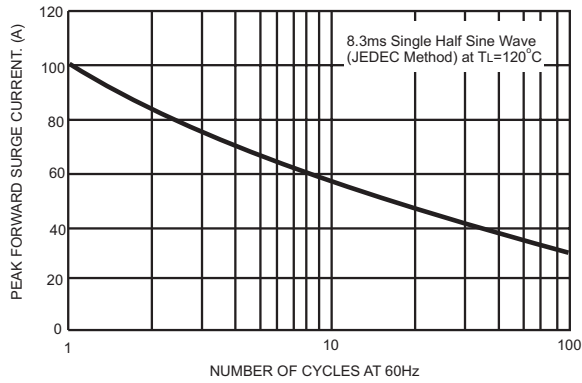


FIG.4- TYPICAL JUNCTION CAPACITANCE

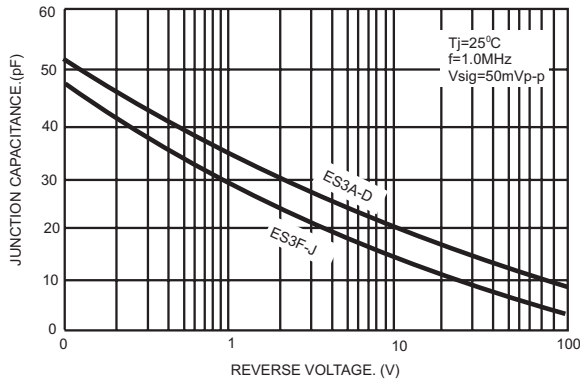


FIG.2- TYPICAL REVERSE CHARACTERISTICS

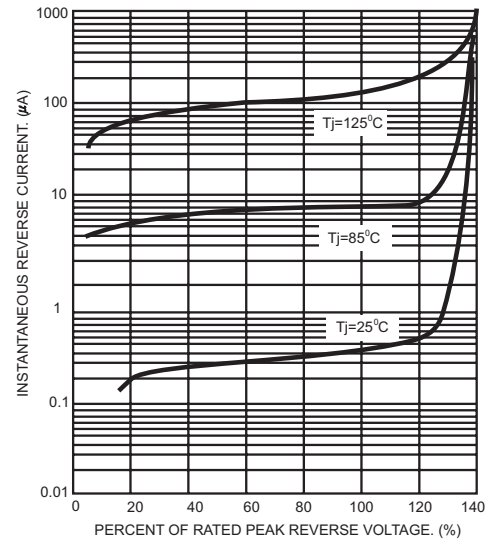


FIG.5- TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

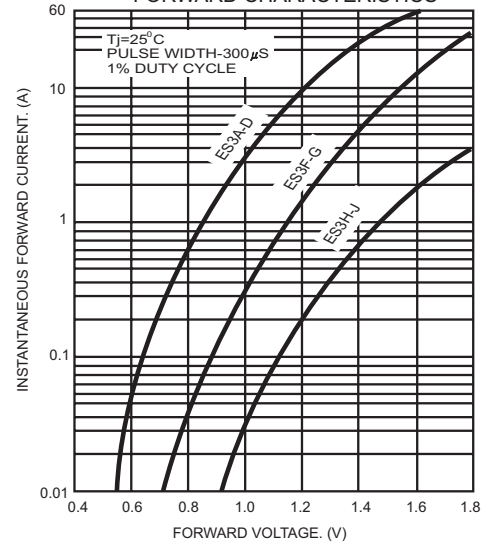
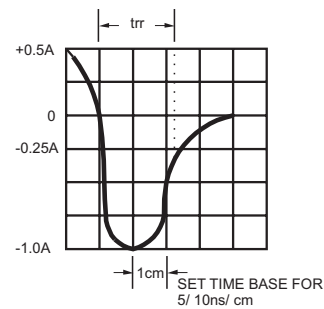
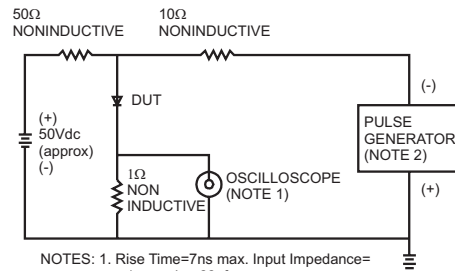
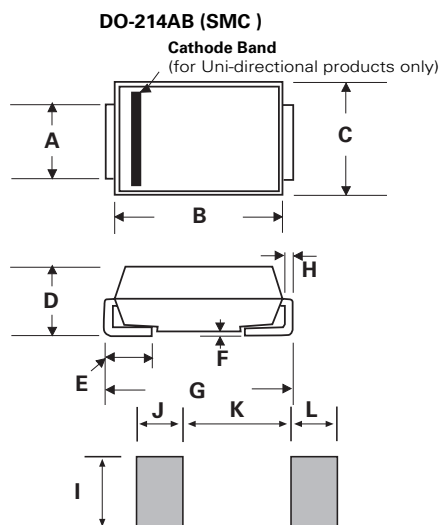


FIG.6- REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT DIAGRAM



## Dimensions

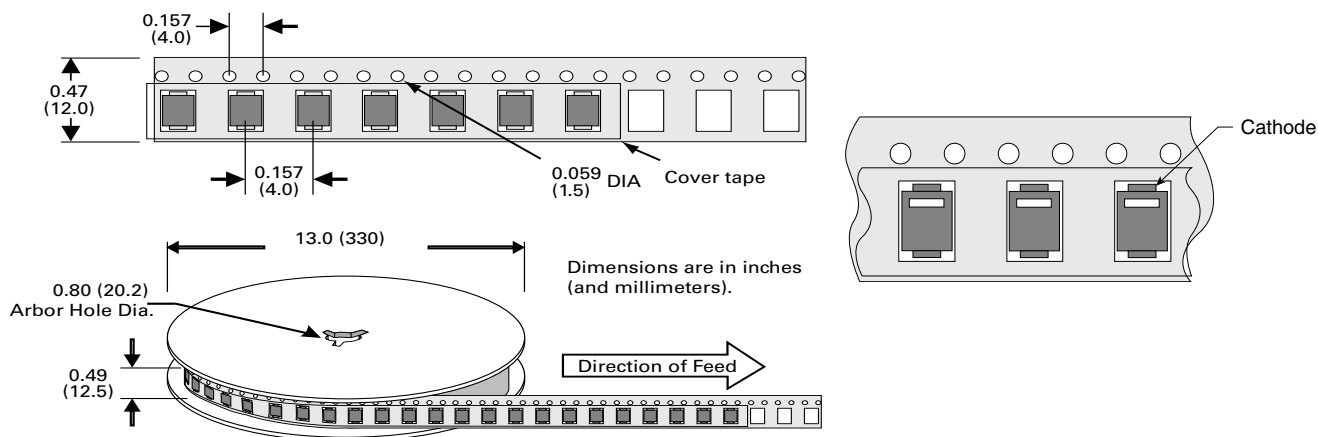


| Dimensions | Inches |       | Millimeters |       |
|------------|--------|-------|-------------|-------|
|            | Min    | Max   | Min         | Max   |
| A          | 0.108  | 0.128 | 2.750       | 3.250 |
| B          | 0.260  | 0.291 | 6.600       | 7.400 |
| C          | 0.220  | 0.246 | 5.590       | 6.250 |
| D          | 0.078  | 0.108 | 1.980       | 2.750 |
| E          | 0.030  | 0.060 | 0.760       | 1.520 |
| F          | 0.002  | 0.008 | 0.051       | 0.203 |
| G          | 0.303  | 0.323 | 7.700       | 8.200 |
| H          | 0.006  | 0.012 | 0.152       | 0.305 |
| I          | 0.129  | -     | 3.300       | -     |
| J          | 0.094  | -     | 2.400       | -     |
| K          | -      | 0.165 | -           | 4.200 |
| L          | 0.094  | -     | 2.400       | -     |

## Packaging Options

| Part number | Component Package | Quantity | Packaging Option                 | Packaging Specification |
|-------------|-------------------|----------|----------------------------------|-------------------------|
| ES3X        | DO-214AB          | 3000     | Tape & Reel - 16mm tape/13" reel | EIA STD RS-481          |

## Tape and Reel Specication



**Note:** Devices are packde in accordance with EIA standard RS-481-Aand specification given above.