

## Surface Mount Super Fast Recovery Rectifier

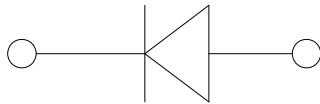


### Features

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- High forward surge capability
- Super Fast reverse recovery time
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C

### Typical Applications

For use in high frequency rectification of power supplies, inverters, converters, and freewheeling diodes for consumer, and telecommunication.



### Mechanical Data

- **Package:** DO-214AC (SMA)  
Molding compound meets UL 94 V-0 flammability rating, -compliant, halogen-free
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** Cathode line denotes the cathode end

### ■Maximum Ratings (T<sub>a</sub>=25°C Unless otherwise specified)

| PARAMETER                                                                                     | SYMBOL           | UNIT             | ES1AW      | ES1BW | ES1CW | ES1DW | ES1FW | ES1GW | ES1HW | ES1JW |
|-----------------------------------------------------------------------------------------------|------------------|------------------|------------|-------|-------|-------|-------|-------|-------|-------|
| Device marking code                                                                           |                  |                  | ES1AW      | ES1BW | ES1CW | ES1DW | ES1FW | ES1GW | ES1HW | ES1JW |
| Maximum Repetitive Peak Reverse Voltage                                                       | V <sub>RRM</sub> | V                | 50         | 100   | 150   | 200   | 300   | 400   | 500   | 600   |
| Maximum RMS Voltage                                                                           | V <sub>RMS</sub> | V                | 35         | 70    | 105   | 140   | 210   | 280   | 350   | 420   |
| Maximum DC blocking Voltage                                                                   | V <sub>DC</sub>  | V                | 50         | 100   | 150   | 200   | 300   | 400   | 500   | 600   |
| Average rectified output current<br>@60Hz sine wave, resistance load, TL (Fig.1)              | I <sub>O</sub>   | A                | 1.0        |       |       |       |       |       |       |       |
| Forward Surge Current (Non-repetitive)<br>@60Hz Half-sine wave, 1 cycle, T <sub>j</sub> =25°C | I <sub>FSM</sub> | A                | 30         |       |       |       |       |       |       |       |
| Forward Surge Current (Non-repetitive)<br>@1ms, square wave, 1 cycle, T <sub>j</sub> =25°C    |                  |                  | 60         |       |       |       |       |       |       |       |
| Current squared time<br>@1ms≤t≤8.3ms T <sub>j</sub> =25°C                                     | I <sup>2</sup> t | A <sup>2</sup> s | 3.735      |       |       |       |       |       |       |       |
| Storage temperature                                                                           | T <sub>stg</sub> | °C               | -55 ~ +150 |       |       |       |       |       |       |       |
| Junction temperature                                                                          | T <sub>j</sub>   | °C               | -55 ~ +150 |       |       |       |       |       |       |       |

### ■Electrical Characteristics (T<sub>a</sub>=25°C Unless otherwise specified)

| PARAMETER                                               | SYMBOL         | UNIT | TEST CONDITIONS                                                   | ES1AW | ES1BW | ES1CW | ES1DW | ES1FW | ES1GW | ES1HW | ES1JW |
|---------------------------------------------------------|----------------|------|-------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Maximum instantaneous forward voltage                   | V <sub>F</sub> | V    | I <sub>FM</sub> =1.0A                                             | 0.95  |       |       |       | 1.3   |       | 1.7   |       |
| Maximum reverse recovery time                           | t <sub>r</sub> | ns   | I <sub>F</sub> =0.5A, I <sub>R</sub> =1.0A, I <sub>R</sub> =0.25A | 35    |       |       |       |       |       |       |       |
| Maximum DC reverse current at rated DC blocking voltage | I <sub>R</sub> | μA   | T <sub>J</sub> =25°C                                              | 5     |       |       |       |       |       |       |       |
|                                                         |                |      | T <sub>J</sub> =125°C                                             | 100   |       |       |       |       |       |       |       |
| Typical junction capacitance                            | C <sub>J</sub> | pF   | Measured at 1MHz and Applied Reverse Voltage of 4.0 V.D.C         | 15    |       |       |       | 10    |       | 7     |       |

## ES1AW THRU ES1JW

### ■ Thermal Characteristics ( $T_a=25^{\circ}\text{C}$ Unless otherwise specified)

| PARAMETER                  | SYMBOL           | UNIT                 | ES1AW             | ES1BW | ES1CW | ES1DW | ES1FW | ES1GW | ES1HW | ES1JW | ES1KW |
|----------------------------|------------------|----------------------|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Typical Thermal Resistance | $R_{\theta J-A}$ | $^{\circ}\text{C/W}$ | 65 <sup>(1)</sup> |       |       |       |       |       |       |       |       |
|                            | $R_{\theta J-L}$ |                      | 25 <sup>(1)</sup> |       |       |       |       |       |       |       |       |
|                            | $R_{\theta J-C}$ |                      | 20 <sup>(1)</sup> |       |       |       |       |       |       |       |       |

Note

(1) Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pad areas

### ■ Characteristics (Typical)

FIG.1: Io-TL Curve

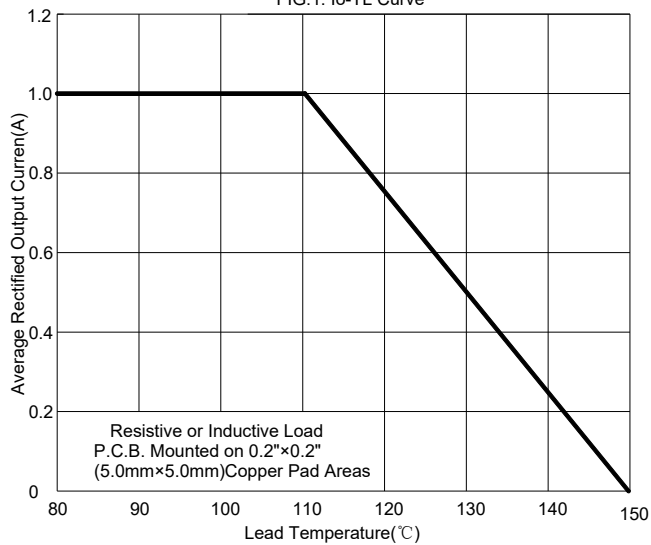


FIG2: Surge Forward Current Capability

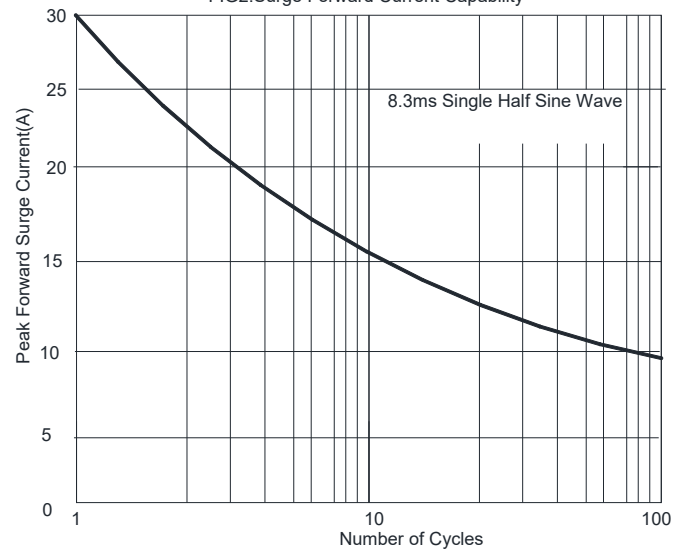


FIG3: Typical Forward Voltage

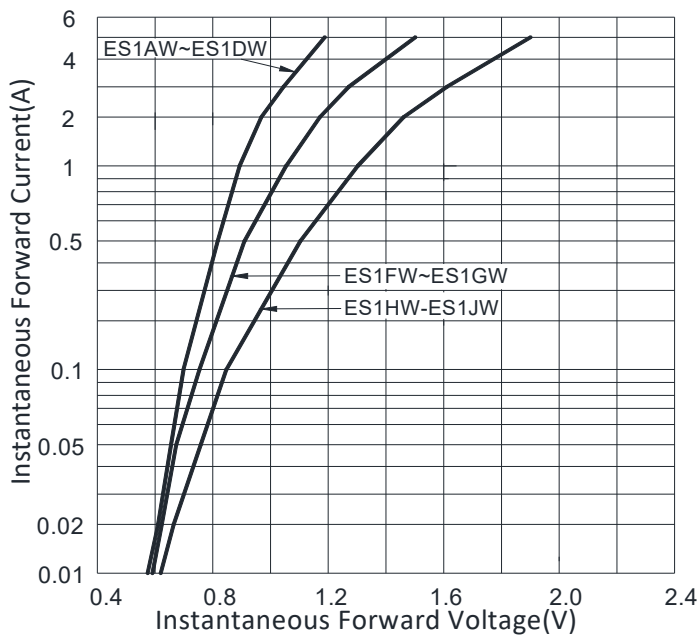
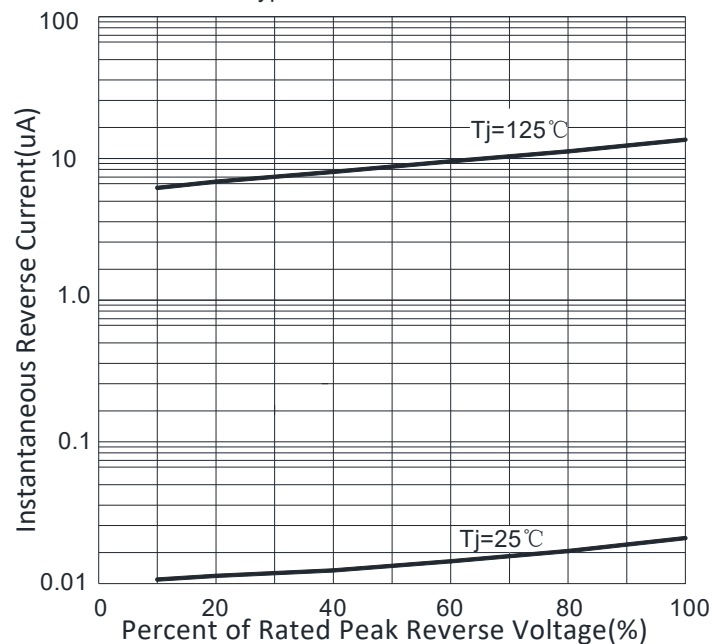
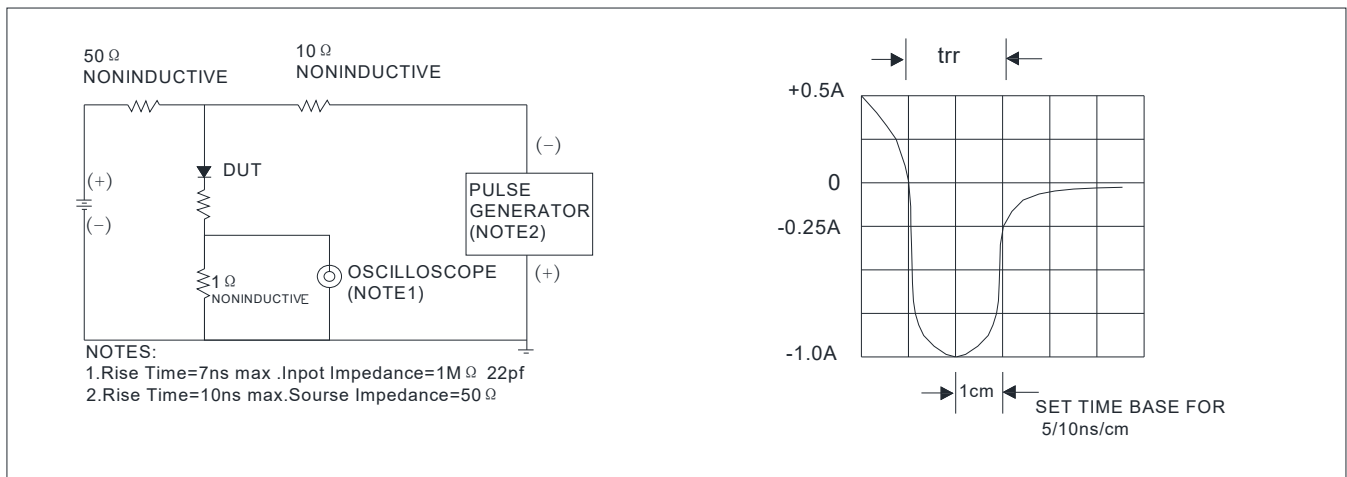


FIG4: Typical Reverse Characteristics



## ES1AW THRU ES1JW

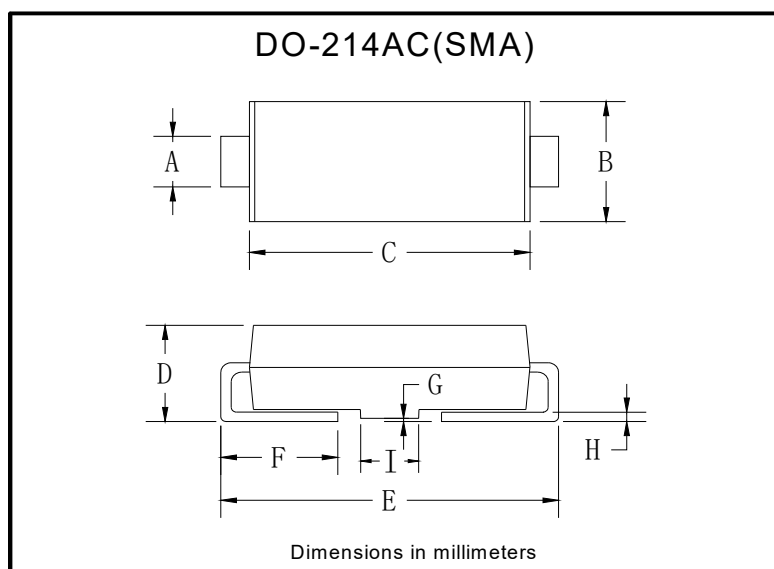
FIG.5: Diagram of circuit and Testing wave form of reverse recovery time



### ■ Ordering Information (Example)

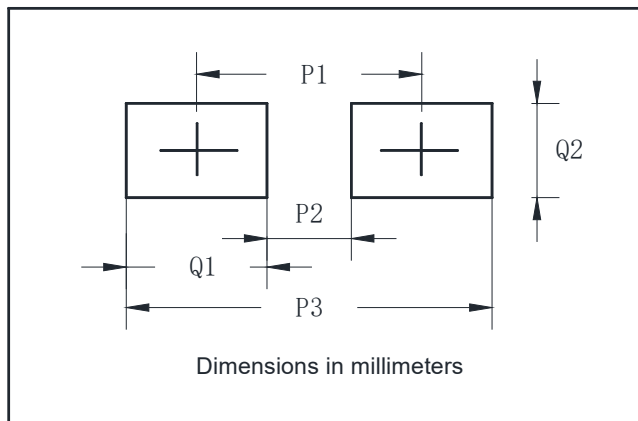
| PREFERRED P/N | PACKAGE CODE | UNIT WEIGHT(g)    | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---------------|--------------|-------------------|----------------------|-------------------------|----------------------------|---------------|
| ES1AW- ES1JW  | F1           | Approximate 0.059 | 5000                 | /                       | 80000                      | 13" reel      |
| ES1AW- ES1JW  | F2           | Approximate 0.059 | 7500                 | /                       | 120000                     | 13" reel      |
| ES1AW- ES1JW  | F3           | Approximate 0.059 | 7500                 | /                       | 60000                      | 13" reel      |
| ES1AW- ES1JW  | F4           | Approximate 0.059 | 1800                 | 14400                   | 57600                      | 7" reel       |
| ES1AW- ES1JW  | F5           | Approximate 0.059 | 2000                 | 16000                   | 64000                      | 7" reel       |
| ES1AW- ES1JW  | F6           | Approximate 0.059 | 5000                 | /                       | 100000                     | 13" reel      |

### ■ Outline Dimensions



| DO-214AC(SMA) |      |      |
|---------------|------|------|
| Dim           | Min  | Max  |
| A             | 1.25 | 1.58 |
| B             | 2.40 | 2.83 |
| C             | 4.00 | 4.75 |
| D             | 1.90 | 2.30 |
| E             | 4.93 | 5.28 |
| F             | 0.76 | 1.41 |
| G             | 0.05 | 0.20 |
| H             | 0.15 | 0.31 |
| I             | 1.70 | 2.10 |

## ■Suggested Pad Layout



| DO-214AC(SMA) |             |
|---------------|-------------|
| Dim           | Millimeters |
| P1            | 4.00        |
| P2            | 1.50        |
| P3            | 6.50        |
| Q1            | 2.50        |
| Q2            | 1.70        |

### Disclaimer

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