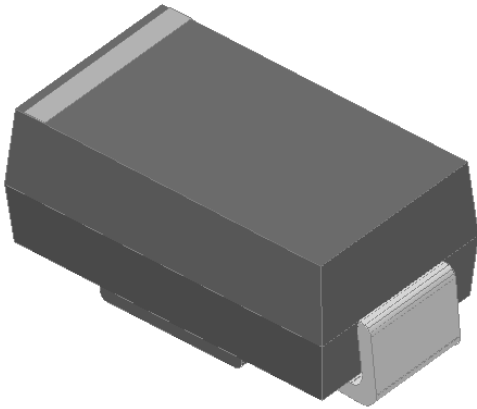


## Surface Mount Super Fast Recovery Rectifier

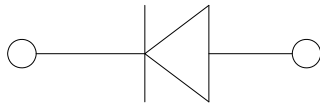


### Features

- 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, RoHS-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             | ES1A       | ES1B | ES1C | ES1D | ES1F | ES1G | ES1H | ES1J | ES1K |
|-----------------------------------------------------------------------------------------------|------------------|------------------|------------|------|------|------|------|------|------|------|------|
| Device marking code                                                                           |                  |                  | ES1A       | ES1B | ES1C | ES1D | ES1F | ES1G | ES1H | ES1J | ES1K |
| Maximum Repetitive Peak Reverse Voltage                                                       | V <sub>RRM</sub> | V                | 50         | 100  | 150  | 200  | 300  | 400  | 500  | 600  | 800  |
| Maximum RMS Voltage                                                                           | V <sub>RMS</sub> | V                | 35         | 70   | 105  | 140  | 210  | 280  | 350  | 420  | 560  |
| Maximum DC blocking Voltage                                                                   | V <sub>DC</sub>  | V                | 50         | 100  | 150  | 200  | 300  | 400  | 500  | 600  | 800  |
| 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                                                    | ES1A | ES1B | ES1C | ES1D | ES1F | ES1G | ES1H | ES1J | ES1K |
|---------------------------------------------------------|-----------------|------|--------------------------------------------------------------------|------|------|------|------|------|------|------|------|------|
| Maximum instantaneous forward voltage                   | V <sub>F</sub>  | V    | I <sub>FM</sub> =1.0A                                              | 0.95 |      |      |      | 1.3  |      | 1.7  |      | 1.85 |
| Maximum reverse recovery time                           | t <sub>rr</sub> | ns   | I <sub>F</sub> =0.5A, I <sub>R</sub> =1.0A, I <sub>rr</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          | 18   |      |      |      | 12   |      | 8    |      | 10   |



# ES1A THRU ES1K

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

| PARAMETER                  | SYMBOL                | UNIT                 | ES1A | ES1B | ES1C | ES1D | ES1F | ES1G | ES1H | ES1J | ES1K |
|----------------------------|-----------------------|----------------------|------|------|------|------|------|------|------|------|------|
| Typical Thermal Resistance | $R_{\theta JA}^{(1)}$ | $^{\circ}\text{C/W}$ | 65   |      |      |      |      |      |      |      |      |
|                            | $R_{\theta JL}^{(1)}$ |                      | 25   |      |      |      |      |      |      |      |      |
|                            | $R_{\theta JC}^{(1)}$ |                      | 20   |      |      |      |      |      |      |      |      |

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

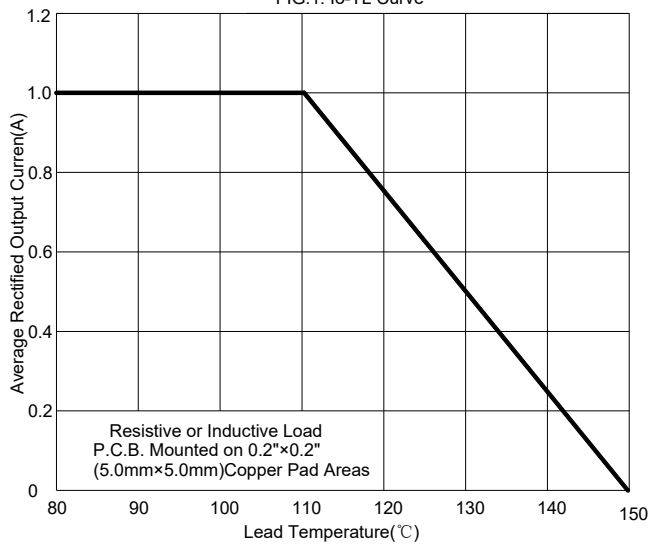


FIG2: Surge Forward Current Capability

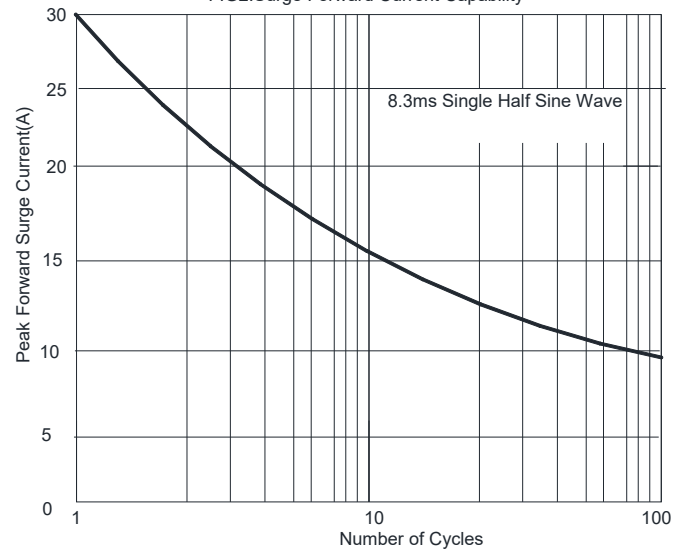


FIG3: Typical Forward Voltage

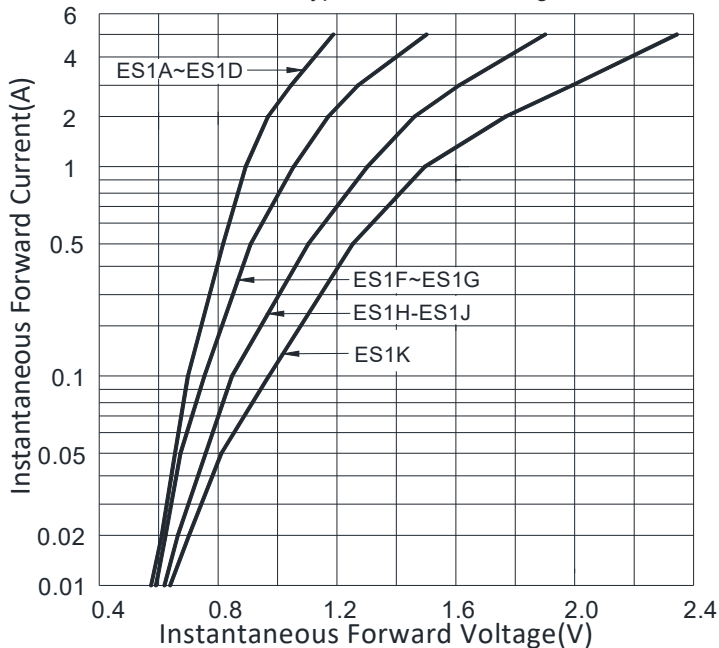


FIG4: Typical Reverse Characteristics

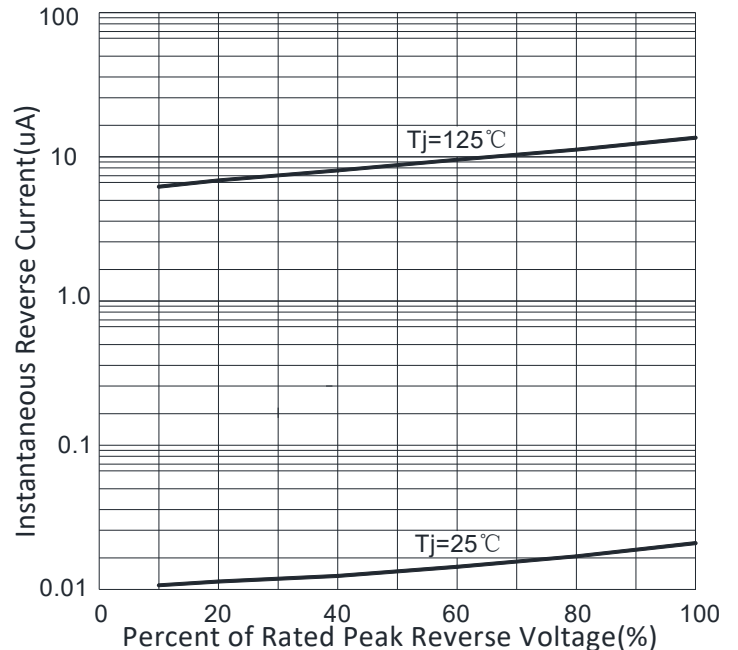
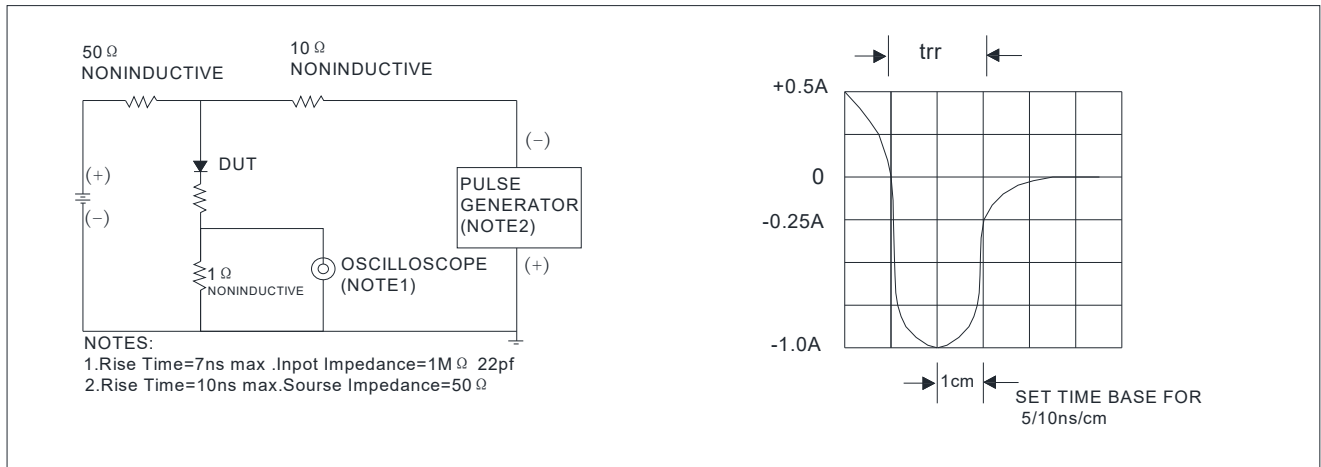


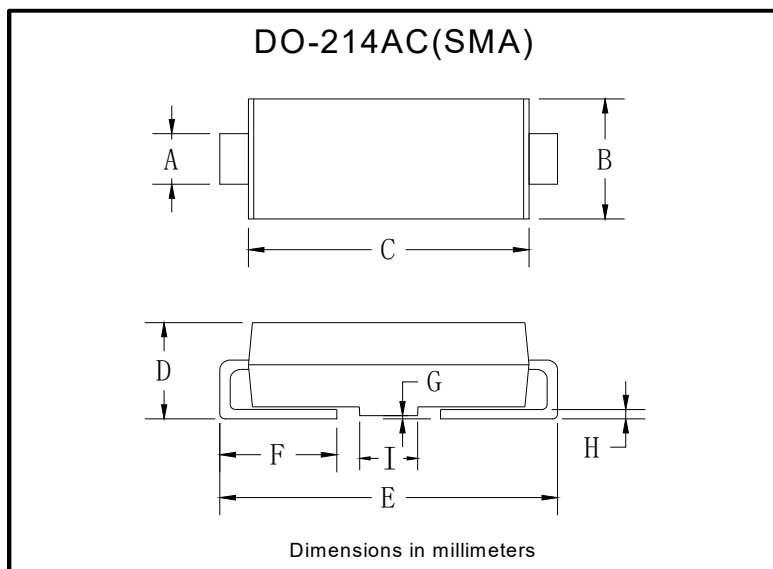
FIG.5: Diagram of circuit and Testing wave form of reverse recovery time



## Ordering Information (Example)

| PREFERRED P/N | PACKAGE CODE | UNIT WEIGHT(g)    | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---------------|--------------|-------------------|----------------------|-------------------------|----------------------------|---------------|
| ES1A- ES1K    | F1           | Approximate 0.059 | 5000                 | /                       | 80000                      | 13" reel      |
| ES1A- ES1K    | F2           | Approximate 0.059 | 7500                 | /                       | 120000                     | 13" reel      |
| ES1A- ES1K    | F3           | Approximate 0.059 | 7500                 | /                       | 60000                      | 13" reel      |
| ES1A- ES1K    | F4           | Approximate 0.059 | 1800                 | 14400                   | 57600                      | 7" reel       |
| ES1A- ES1K    | F5           | Approximate 0.059 | 2000                 | 16000                   | 64000                      | 7" reel       |
| ES1A- ES1K    | F6           | Approximate 0.059 | 5000                 | /                       | 100000                     | 13" reel      |

## Outline Dimensions

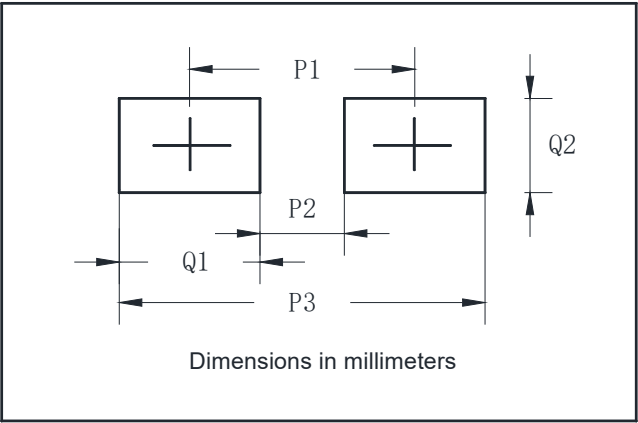


| DO-214AC(SMA) |      |      |
|---------------|------|------|
| Dim           | Min  | Max  |
| A             | 1.25 | 1.58 |
| B             | 2.40 | 2.83 |
| C             | 4.00 | 4.75 |
| D             | 1.90 | 2.30 |
| E             | 4.93 | 5.28 |
| F             | 0.76 | 1.41 |
| G         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



## ES1A THRU ES1K

### ■Suggested Pad Layout



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



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