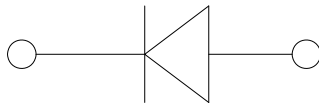
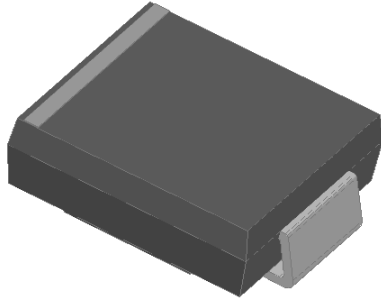


## Surface Mount Super Fast Recovery Rectifier



### Features

- Super fast reverse recovery time
- Low leakage current
- Low switching losses, high efficiency
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Part no. with suffix "Q" means AEC-Q101 qualified

### Typical Applications

For use in high frequency rectification and freewheeling application in switching mode converters and inverters for consumer, automotive and telecommunication.

### Mechanical Data

- **Package:** DO-214AB (SMC)  
Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** Color band denotes the cathode end

### ■Maximum Ratings (Ta=25°C Unless otherwise specified)

| PARAMETER                                                                           | SYMBOL    | UNIT | ES3AQ      | ES3BQ | ES3CQ | ES3DQ | ES3FQ | ES3GQ | ES3HQ | ES3JQ |
|-------------------------------------------------------------------------------------|-----------|------|------------|-------|-------|-------|-------|-------|-------|-------|
| Device marking code                                                                 |           |      | ES3A       | ES3B  | ES3C  | ES3D  | ES3F  | ES3G  | ES3H  | ES3J  |
| Repetitive Peak Reverse Voltage                                                     | $V_{RRM}$ | V    | 50         | 100   | 150   | 200   | 300   | 400   | 500   | 600   |
| Average Rectified Output Current<br>@60Hz sine wave, Resistance load, $T_L$ (Fig.1) | $I_O$     | A    | 3.0        |       |       |       |       |       |       |       |
| Forward Surge Current (Non-repetitive)<br>@60Hz Half-sine wave, 1 cycle, Ta=25°C    | $I_{FSM}$ | A    | 100        |       |       |       |       |       |       |       |
| Storage Temperature                                                                 | $T_{stg}$ | °C   | -55 ~ +175 |       |       |       |       |       |       |       |
| Junction Temperature                                                                | $T_J$     | °C   | -55 ~ +175 |       |       |       |       |       |       |       |

### ■Electrical Characteristics (Ta=25°C Unless otherwise specified)

| PARAMETER                                                                                             | SYMBOL          | UNIT | TEST CONDITIONS                                                    | ES3AQ | ES3BQ | ES3CQ | ES3DQ | ES3FQ | ES3GQ | ES3HQ | ES3JQ |
|-------------------------------------------------------------------------------------------------------|-----------------|------|--------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Maximum instantaneous forward voltage drop per diode                                                  | V <sub>F</sub>  | V    | I <sub>FM</sub> =3.0A                                              | 0.95  |       |       |       | 1.3   |       | 1.7   |       |
| 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 per diode @ V <sub>RM</sub> =V <sub>RRM</sub> | I <sub>R</sub>  | μA   | Ta=25°C                                                            | 5     |       |       |       |       |       |       |       |
|                                                                                                       |                 |      | Ta=125°C                                                           | 100   |       |       |       |       |       |       |       |
| Typical junction capacitance                                                                          | C <sub>J</sub>  | pF   | V <sub>R</sub> =4V, f=1 MHz                                        | 60    |       |       |       |       |       |       |       |



## ES3AQ THRU ES3JQ

### ■ Thermal Characteristics (Ta=25°C Unless otherwise specified)

| PARAMETER          | SYMBOL          | UNIT | ES3AQ            | ES3BQ | ES3CQ | ES3DQ | ES3FQ | ES3GQ | ES3HQ | ES3JQ |
|--------------------|-----------------|------|------------------|-------|-------|-------|-------|-------|-------|-------|
| Thermal Resistance | $R_{\theta JA}$ | °C/W | 75 <sup>1)</sup> |       |       |       |       |       |       |       |
|                    | $R_{\theta JL}$ |      | 15 <sup>1)</sup> |       |       |       |       |       |       |       |

Note (1)

Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 0.6" x 0.6" (16 mm x 16 mm) copper pad areas

### ■ Ordering Information (Example)

| PREFERRED P/N | PACKAGE CODE | UNIT WEIGHT(g)    | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---------------|--------------|-------------------|----------------------|-------------------------|----------------------------|---------------|
| ES3AQ-ES3JQ   | F1           | Approximate 0.248 | 3000                 | /                       | 42000                      | 13" reel      |

### ■ Characteristics (Typical)

Fig.1:  $I_O$ - $T_L$  Curve

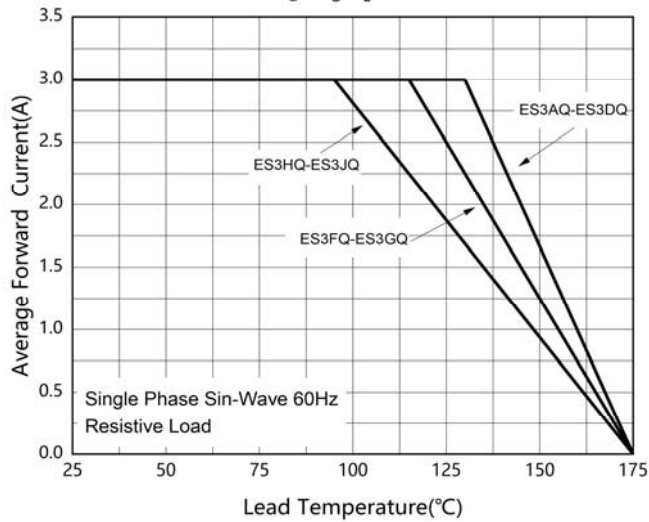


Fig.2: Surge Forward Current Capability

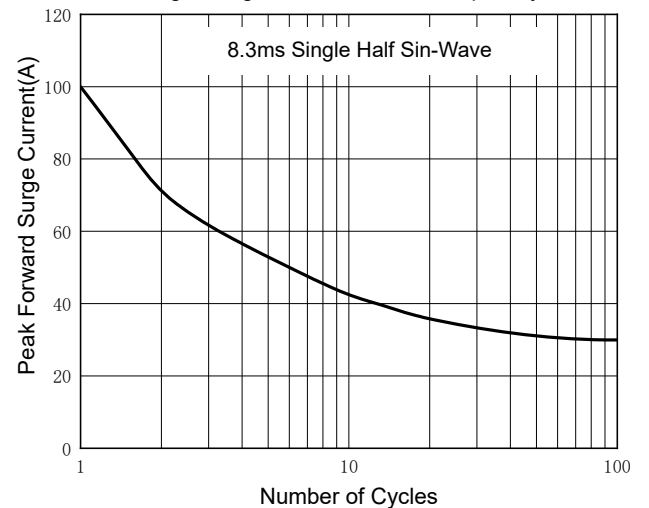


Fig.3: Forward Voltage

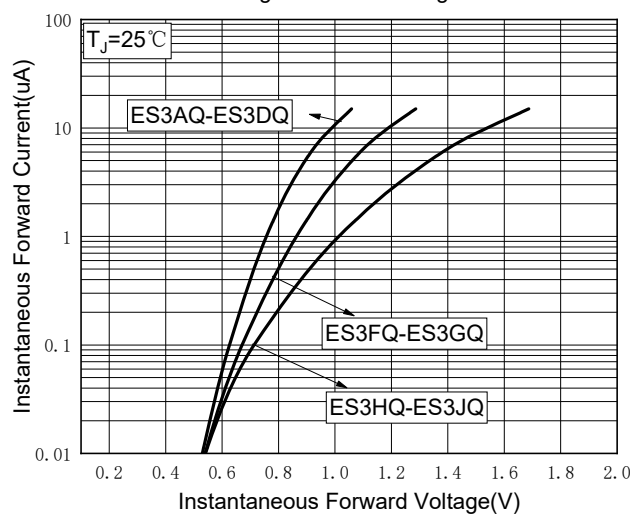
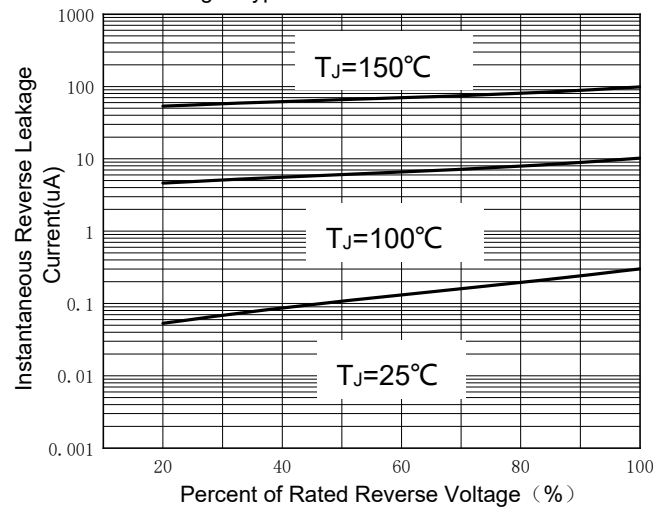


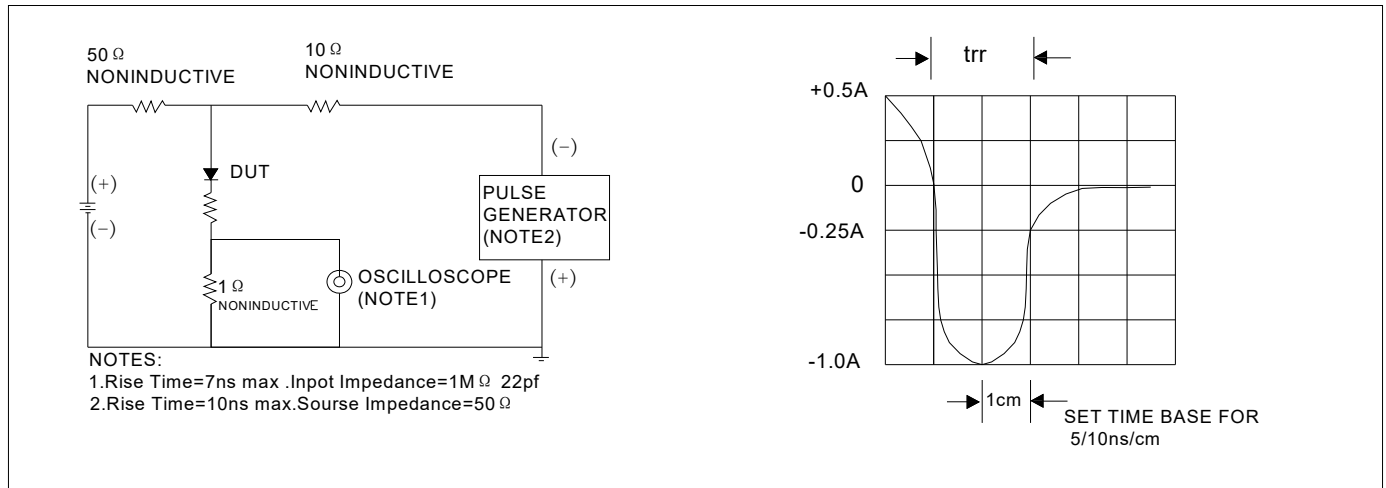
Fig.4: Typical Reverse Characteristics



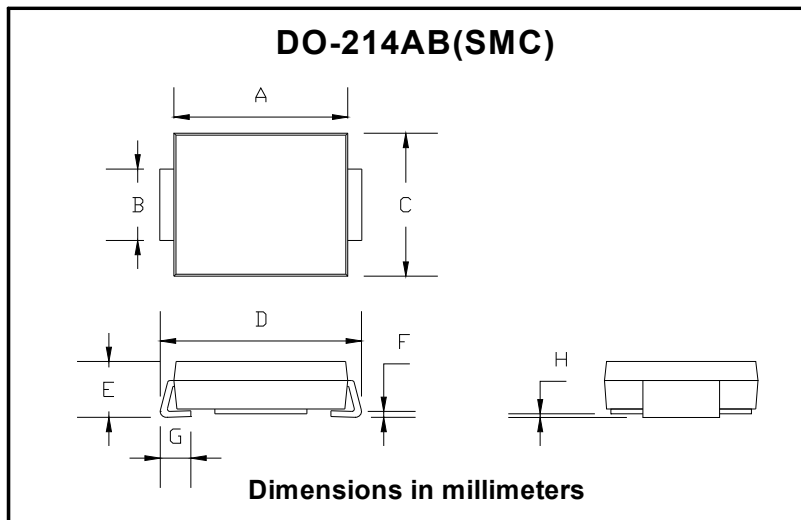


## ES3AQ THRU ES3JQ

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

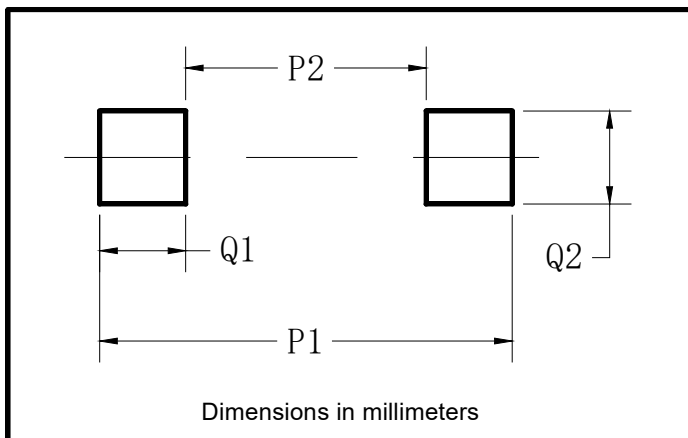


### ■ Outline Dimensions



| DO-214AB (SMC) |      |      |
|----------------|------|------|
| Dim            | Min  | Max  |
| A              | 6.60 | 7.11 |
| B              | 2.85 | 3.27 |
| C              | 5.59 | 6.22 |
| D              | 7.75 | 8.13 |
| E              | 1.99 | 2.61 |
| F              | 0.15 | 0.31 |
| G              | 0.76 | 1.52 |
| H              | 0.05 | 0.20 |

### ■ Suggested pad layout



| DO-214AB (SMC) |      |
|----------------|------|
| Dim            | Min  |
| P1             | 9.9  |
| P2             | 3.84 |
| Q1             | 3.03 |
| Q2             | 3.82 |



## ES3AQ THRU ES3JQ

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