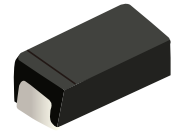


## FEATURES

- | Glass passivated chip junction
- | High forward surge capability
- | Super Fast reverse recovery time
- | Meet AEC-Q101 Requirements



DO-214AC(SMA)



Schematic Symbol

## MECHANICAL DATA

- | Molding compound meets UL 94 V-0 flammability rating
- | Polarity: Cathode line denotes the cathode end

## APPROVALS

|             |                                    |
|-------------|------------------------------------|
| <b>RoHS</b> | Compliance with 2011/65/EU         |
| <b>HF</b>   | Compliance with IEC61249-2-21:2003 |

## MAXIMUM RATINGS AND CHARACTERISTICS (T<sub>A</sub>=25°C)

| Parameter   | Symbol                            | ES2A<br>AQ  | ES2B<br>AQ | ES2C<br>AQ | ES2D<br>AQ | ES2F<br>AQ | ES2G<br>AQ | ES2H<br>AQ | ES2J<br>AQ | ES2K<br>AQ | Unit |                  |
|---|-----------------------------------|-------------|------------|------------|------------|------------|------------|------------|------------|------------|------|------------------|
| Marking   |                                   | ES2AQ       | ES2BQ      | ES2CQ      | ES2DQ      | ES2FQ      | ES2GQ      | ES2HQ      | ES2JQ      | ES2KQ      |      |                  |
| Maximum repetitive peak reverse voltage   | V <sub>RRM</sub>                  | 50          | 100        | 150        | 200        | 300        | 400        | 500        | 600        | 800        | V    |                  |
| Maximum RMS voltage   | V <sub>RMS</sub>                  | 35          | 70         | 105        | 140        | 210        | 280        | 350        | 420        | 560        |      |                  |
| Maximum DC blocking voltage   | V <sub>DC</sub>                   | 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>                    | 2.0         |            |            |            |            |            |            |            |            |      | A                |
| Forward Surge Current (Non-repetitive)<br>@60Hz Half-sine wave, 1 cycle, T <sub>J</sub> =25°C       | I <sub>FSM</sub>                  | 50          |            |            |            |            |            |            |            |            |      |                  |
| Forward Surge Current (Non-repetitive)<br>@1ms, square wave, 1 cycle, T <sub>J</sub> =25°C          |                                   | 100         |            |            |            |            |            |            |            |            |      |                  |
| Maximum instantaneous forward voltage I <sub>FM</sub> =2.0A   | V <sub>F</sub>                    | 0.95        |            |            | 1.3        |            | 1.7        |            | 1.85       |            | V    |                  |
| Maximum DC reverse current at<br>rated DC blocking voltage  | I <sub>R</sub>                    | 5           |            |            |            |            |            |            |            |            |      | μA               |
|   |                                   | 100         |            |            |            |            |            |            |            |            |      |                  |
| Current squared time @1ms≤t≤8.3ms T <sub>J</sub> =25°C  | I <sup>2</sup> t                  | 10.375      |            |            |            |            |            |            |            |            |      | A <sup>2</sup> s |
| Maximum reverse recovery time I <sub>F</sub> =0.5A, I <sub>R</sub> =1.0A,<br>I <sub>rr</sub> =0.25A | T <sub>rr</sub>                   | 35          |            |            |            |            |            |            |            |            |      | ns               |
| Typical junction capacitance Measured at 1MHz<br>and Applied Reverse Voltage of 4.0 V.D.C           | C <sub>J</sub>                    | 31          |            |            | 17         |            | 12         |            |            |            |      | pF               |
| Typical Thermal Resistance  | R <sub>θJA</sub> <sup>(1)</sup>   | 65          |            |            |            |            |            |            |            |            |      | °C/W             |
|   | R <sub>θJL</sub> <sup>(1)</sup>   | 20          |            |            |            |            |            |            |            |            |      | °C/W             |
|   | R <sub>θJC</sub> <sup>(1)</sup>   | 18          |            |            |            |            |            |            |            |            |      | °C/W             |
| Operating junction and storage temperature range  | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 |            |            |            |            |            |            |            |            |      | °C               |

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

# CHARACTERISTIC CURVES

Fig.1 - FIG.1: I<sub>o</sub>-T<sub>L</sub> Curve

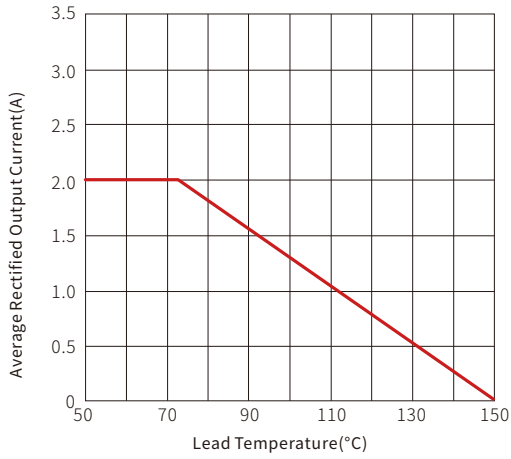


Fig.2 - Surge Forward Current Capability

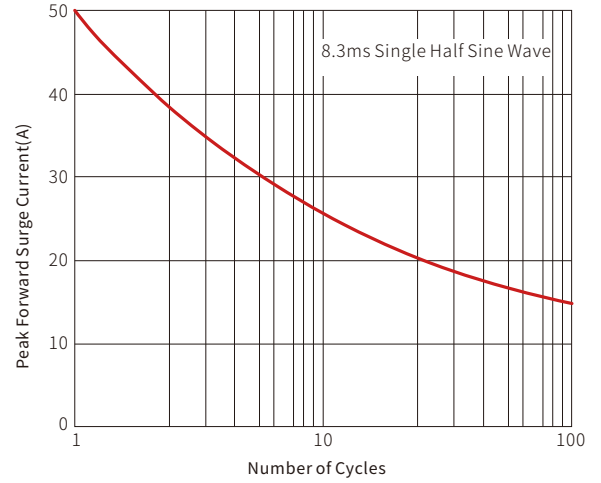


Fig.3 - Typical Forward Voltage

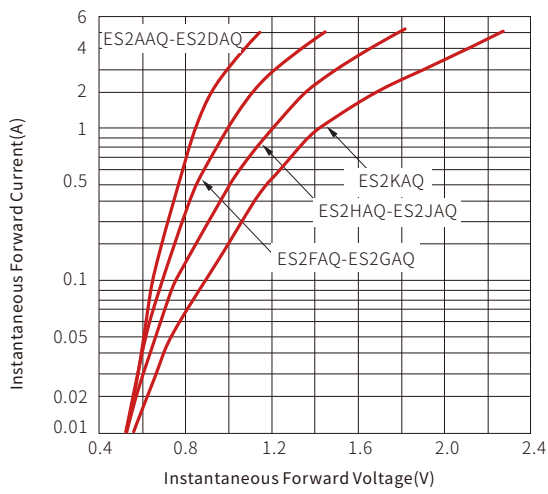
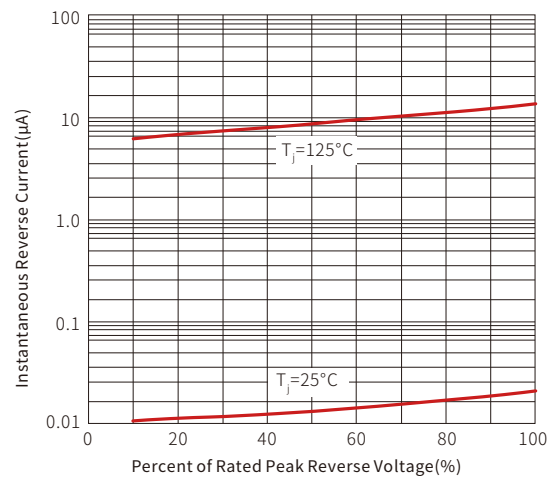
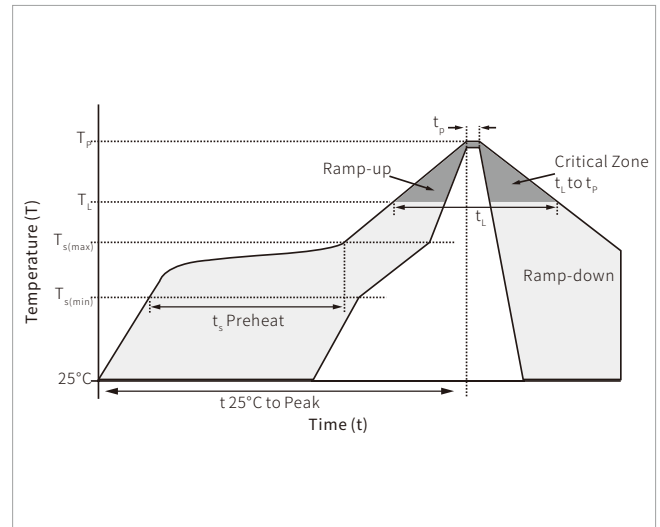


Fig.4 - Typical Reverse Characteristics

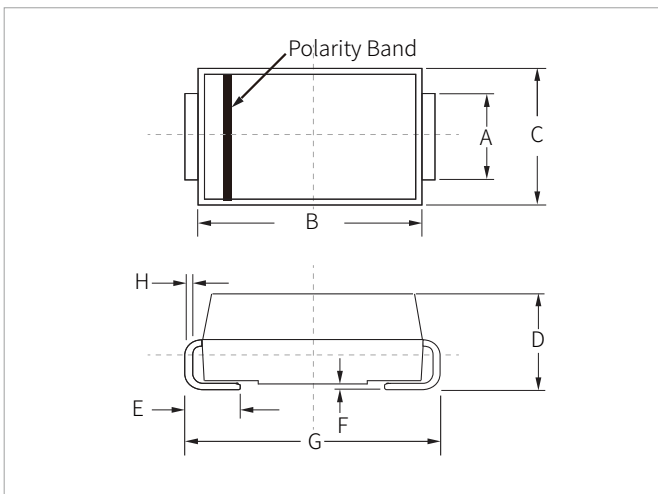


## SOLDERING PARAMETERS

| Reflow Condition                                       |                                  | Lead-free assembly |
|--|----------------------------------|--------------------|
| Pre Heat   | Temperature Max ( $T_{s(min)}$ ) | 150°C              |
|  | Temperature Max ( $T_{s(max)}$ ) | 200°C              |
|  | Time (min to max) ( $t_s$ )      | 60 – 180 secs      |
| Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak) |                                  | 3°C/second max     |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate                   |                                  | 3°C/second max     |
| Reflow   | Temperature ( $T_L$ ) (Liquidus) | 217°C              |
|  | Time (min to max) ( $t_L$ )      | 60 – 150 seconds   |
| Peak Temperature ( $T_p$ )                             |                                  | 260°C              |
| Time within 5°C of actual peak Temperature ( $t_p$ )   |                                  | 20 – 40 seconds    |
| Ramp-down Rate   |                                  | 6°C/second max     |
| Time 25°C to peak Temperature ( $T_p$ )                |                                  | 8 minutes max.     |
| Do not exceed  |                                  | 260°C              |

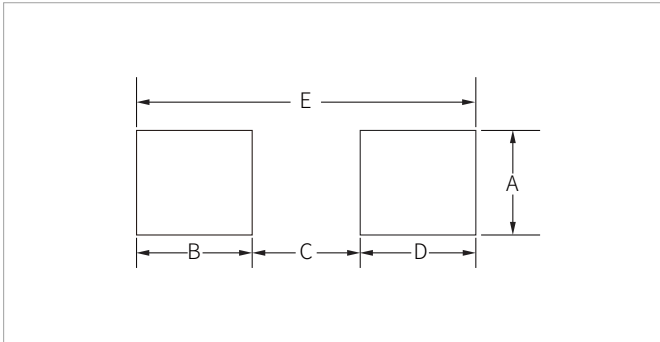


## DO-214AC(SMA) PACKAGE INFORMATION



| Ref. | Millimeters |      | Inches |       |
|------|-------------|------|--------|-------|
|      | Min.        | Max. | Min.   | Max.  |
| A    | 1.20        | 1.60 | 0.047  | 0.063 |
| B    | 4.20        | 4.60 | 0.165  | 0.181 |
| C    | 2.40        | 2.80 | 0.094  | 0.110 |
| D    | 2.00        | 2.40 | 0.079  | 0.094 |
| E    | 0.76        | 1.52 | 0.030  | 0.060 |
| F    | 0.02        | 0.20 | 0.001  | 0.008 |
| G    | 4.85        | 5.25 | 0.191  | 0.207 |
| H    | 0.15        | 0.30 | 0.006  | 0.012 |

## RECOMMENDED PAD LAYOUT DIMENSIONS



| Ref. | Millimeters |      | Inches   |       |
|------|-------------|------|----------|-------|
|      | Min.        | Max. | Min.     | Max.  |
| A    | 1.63        | -    | 0.064    | -     |
| B    | 1.45        | -    | 0.057    | -     |
| C    | -           | 2.80 | -        | 0.090 |
| D    | 1.45        | -    | 0.057    | -     |
| E    | 5.28REF     |      | 0.208REF |       |

## ORDERING INFORMATION

| Part Number   | Component Package | QTY/Reel | Reel Size |
|---------------|-------------------|----------|-----------|
| ES2AAQ-ES2KAQ | DO-214AC(SMA)     | 5000PCS  | 13"       |

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