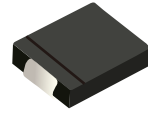
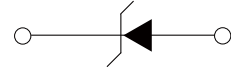


## FEATURES

- | Guardring For Overvoltage Protection
- | Low Power Losses
- | Extremely Fast Switching
- | High Forward Surge Capability
- | High Frequency Operation
- | Meet AEC-Q101 Requirements



DO-214AB(SMC)



Schematic Symbol

## MECHANICAL DATA

- | Case : Molded Plastic Body
- | Polarity : Polarity Symbol Marking on Body
- | Mounting Position : Any

## APPROVALS

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

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

| Parameter  | Symbol           | SS52CQ                | SS54CQ | SS56CQ | SS510CQ     | SS515CQ | SS520CQ | Unit |
|--|------------------|-----------------------|--------|--------|-------------|---------|---------|------|
| Marking  |                  | SS52                  | SS54   | SS56   | SS510       | SS515   | SS520   |      |
| Maximum Repetitive Peak Reverse Voltage  | V <sub>RRM</sub> | 20                    | 40     | 60     | 100         | 150     | 200     | V    |
| Maximum RMS Voltage  | V <sub>RMS</sub> | 14                    | 28     | 42     | 70          | 105     | 140     | V    |
| Maximum DC Blocking Voltage  | V <sub>DC</sub>  | 20                    | 40     | 60     | 100         | 150     | 200     | V    |
| Average Rectified Output Current<br>@60Hz Sine Wave, Resistance Load, Ta (Fig.1)           | I <sub>O</sub>   | 5.0                   |        |        |             |         |         | A    |
| Forward Surge Current (Non-Repetitive)<br>@60Hz Half-sine Wave, 1 Cycle, Ta=25°C           | I <sub>FSM</sub> | 100                   |        |        |             |         |         | A    |
| Maximum Instantaneous Forward<br>Voltage Drop Per Diode I <sub>FM</sub> =5.0A              | V <sub>F</sub>   | 0.55                  | 0.70   | 0.85   | 0.95        |         | V       |      |
| Maximum DC Reverse Current   | I <sub>R</sub>   | T <sub>A</sub> =25°C  |        | 0.1    |             | mA      |         |      |
|  |                  | T <sub>A</sub> =100°C |        | 5      |             | mA      |         |      |
| Typical Junction Capacitance Measured At 1MHz<br>And Applied Reverse Voltage Of 4.0 V.D.C. | C <sub>j</sub>   | 280                   | 220    | 180    | 100         |         | pF      |      |
| Thermal Resistance Junction to Ambient   | R <sub>θJA</sub> | 47 <sup>1)</sup>      |        |        |             |         |         | °C/W |
| Thermal Resistance Junction to Lead  | R <sub>θJL</sub> | 13 <sup>1)</sup>      |        |        |             |         |         | °C/W |
| Operating Junction Temperature Range   | T <sub>J</sub>   | -55 to +150           |        |        | -55 to +175 |         |         | °C   |
| Storage Temperature Range  | 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 0.6" x 0.6" (16 mm x 16 mm) copper pad areas

# CHARACTERISTIC CURVES

Fig. 1- I<sub>o</sub>-T<sub>a</sub> Curve

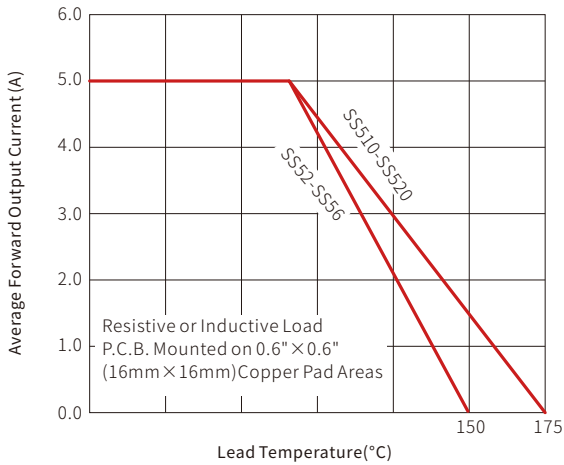


Fig. 2- Forward Surge Current Capability

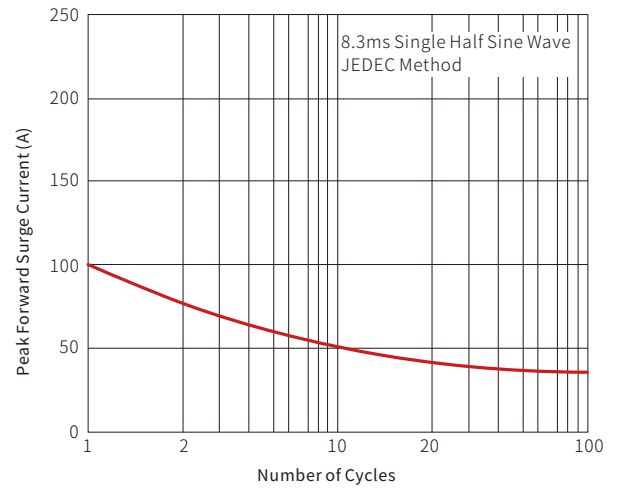


Fig. 3- Forward Voltage

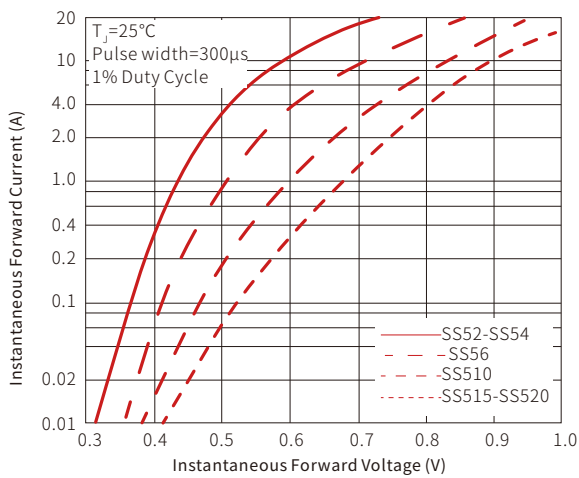
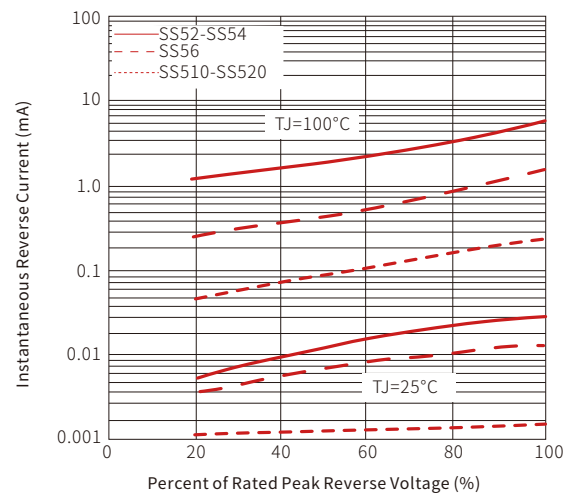
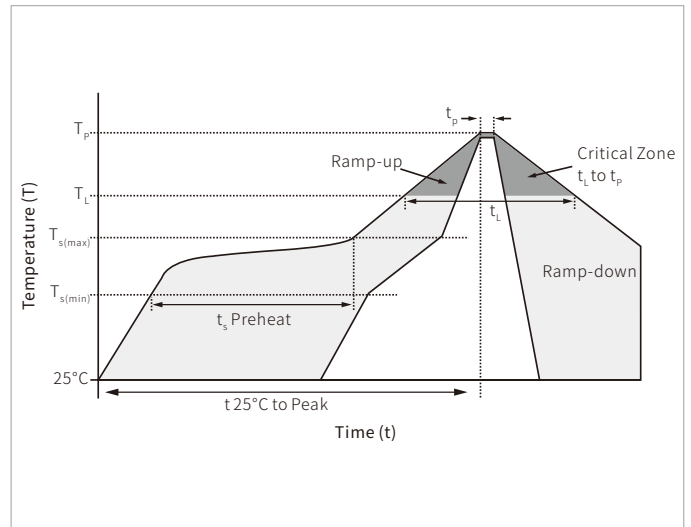


Fig. 4- typical Reverse Leakage Characteristics

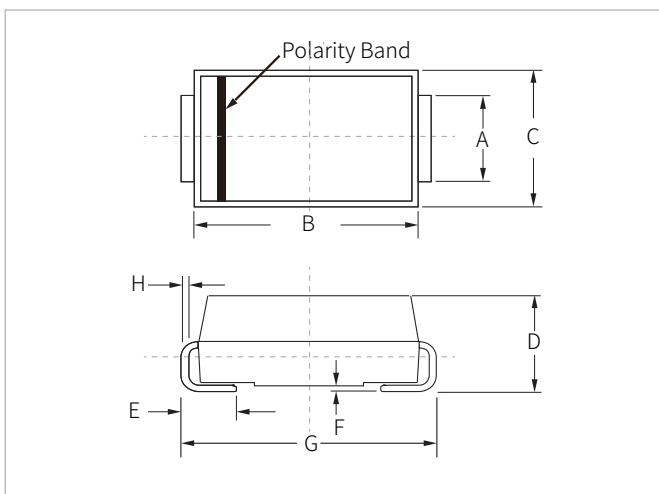


## SOLDERING PARAMETERS

| 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              |

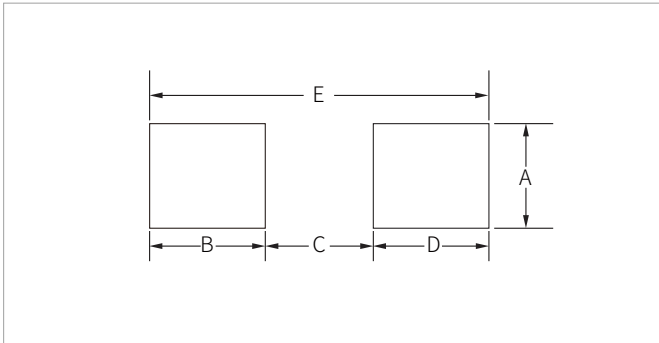


## DO-214AB(SMC) PACKAGE INFORMATION



| Ref. | Millimeters |      | Inches |       |
|------|-------------|------|--------|-------|
|      | Min.        | Max. | Min.   | Max.  |
| A    | 2.80        | 3.20 | 0.110  | 0.126 |
| B    | 6.60        | 7.20 | 0.260  | 0.283 |
| C    | 5.70        | 6.10 | 0.224  | 0.240 |
| D    | 2.15        | 2.75 | 0.085  | 0.108 |
| E    | 1.00        | 1.60 | 0.039  | 0.063 |
| F    | 0.02        | 0.20 | 0.000  | 0.008 |
| G    | 7.60        | 8.00 | 0.299  | 0.315 |
| H    | 0.15        | 0.30 | 0.006  | 0.012 |

## RECOMMENDED PAD LAYOUT DIMENSIONS



| Ref. | Millimeters |      | Inches   |       |
|------|-------------|------|----------|-------|
|      | Min.        | Max. | Min.     | Max.  |
| A    | 3.30        | -    | 0.129    | -     |
| B    | 2.40        | -    | 0.094    | -     |
| C    | -           | 4.20 | -        | 0.165 |
| D    | 2.40        | -    | 0.094    | -     |
| E    | 8.20REF     |      | 0.323REF |       |

## ORDERING INFORMATION

| Part Number    | Component Package | QTY/Reel | Reel Size |
|----------------|-------------------|----------|-----------|
| SS52CQ-SS520CQ | DO-214AB(SMC)     | 3000PCS  | 13"       |

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