

## 1A, 50V - 1000V Surface Mount Fast Recovery Rectifiers

### FEATURES

- Glass passivated chip junction
- Ideal for automated placement
- Fast switching for high efficiency
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition



**DO-214AC (SMA)**

### MECHANICAL DATA

**Case:** DO-214AC (SMA)

Molding compound, UL flammability classification rating 94V-0

Moisture sensitivity level: level 1, per J-STD-020

Part No. with suffix "H" means AEC-Q101 qualified

Packing code with suffix "G" means green compound (halogen-free)

**Terminal:** Matte tin plated leads, solderable per JESD22-B102

Meet JESD 201 class 2 whisker test

**Polarity:** Indicated by cathode band

**Weight:** 0.06 g (approximately)

| MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (T <sub>A</sub> =25°C unless otherwise noted) |                                      |   |          |          |          |          |          |          |      |      |
|--|--------------------------------------|---|----------|----------|----------|----------|----------|----------|------|------|
| PARAMETER  | SYMBOL                               | RS<br>1A                                      | RS<br>1B | RS<br>1D | RS<br>1G | RS<br>1J | RS<br>1K | RS<br>1M | UNIT |      |
| Maximum repetitive peak reverse voltage  | V <sub>RRM</sub>                     | 50  | 100      | 200      | 400      | 600      | 800      | 1000     | V    |      |
| Maximum RMS voltage  | V <sub>RMS</sub>                     | 35  | 70       | 140      | 280      | 420      | 560      | 700      | V    |      |
| Maximum DC blocking voltage  | V <sub>DC</sub>                      | 50  | 100      | 200      | 400      | 600      | 800      | 1000     | V    |      |
| Maximum average forward rectified current  | I <sub>F(AV)</sub>                   | 1   |          |          |          |          |          |          |      | A    |
| Peak forward surge current, 8.3 ms single half sine-wave superimposed on rated load          | I <sub>FSM</sub>                     | 30  |          |          |          |          |          |          |      | A    |
| Maximum instantaneous forward voltage (Note 1) @ 1 A   | V <sub>F</sub>                       | 1.3   |          |          |          |          |          |          |      | V    |
| Maximum reverse current @ rated V <sub>R</sub>   | I <sub>R</sub>                       | 5<br>50                                       |          |          |          |          |          |          |      | μA   |
|  |                                      | T <sub>J</sub> =25°C<br>T <sub>J</sub> =125°C |          |          |          |          |          |          |      |      |
| Maximum reverse recovery time (Note 2)   | t <sub>rr</sub>                      | 150   |          |          |          | 250      | 500      |          | ns   |      |
| Typical junction capacitance (Note 3)  | C <sub>J</sub>                       | 10  |          |          |          |          |          |          |      | pF   |
| Typical thermal resistance   | R <sub>θJC</sub><br>R <sub>θJA</sub> | 32<br>105                                     |          |          |          |          |          |          |      | °C/W |
| Operating junction temperature range   | T <sub>J</sub>                       | - 55 to +150                                  |          |          |          |          |          |          |      | °C   |
| Storage temperature range  | T <sub>STG</sub>                     | - 55 to +150                                  |          |          |          |          |          |          |      | °C   |

Note 1: Pulse test with PW=300μs, 1% duty cycle

Note 2: Reverse Recovery Test Conditions: I<sub>F</sub>=0.5A, I<sub>R</sub>=1.0A, I<sub>RR</sub>=0.25A

Note 3: Measured at 1 MHz and Applied Reverse Voltage of 4.0V D.C.

| ORDERING INFORMATION |                 |              |                    |            |                          |
|----------------------|-----------------|--------------|--------------------|------------|--------------------------|
| PART NO.             | PART NO. SUFFIX | PACKING CODE | PACING CODE SUFFIX | PACKAGE    | PACKING                  |
| RS1x<br>(Note 1)     | H               | R3           | G                  | SMA        | 1,800 / 7" Plastic reel  |
|                      |                 | R2           |                    | SMA        | 7,500 / 13" Paper reel   |
|                      |                 | M2           |                    | SMA        | 7,500 / 13" Plastic reel |
|                      |                 | F3           |                    | Folded SMA | 1,800 / 7" Plastic reel  |
|                      |                 | F2           |                    | Folded SMA | 7,500 / 13" Paper reel   |
|                      |                 | F4           |                    | Folded SMA | 7,500 / 13" Plastic reel |
|                      | N/A             | E3           |                    | Clip SMA   | 1,800 / 7" Plastic reel  |
|                      |                 | E2           |                    | Clip SMA   | 7,500 / 13" Plastic reel |

Note 1: "x" defines voltage from 50V (RS1A) to 1000V (RS1M)

| EXAMPLE            |          |                 |              |                    |                                      |
|--------------------|----------|-----------------|--------------|--------------------|--------------------------------------|
| PREFERRED PART NO. | PART NO. | PART NO. SUFFIX | PACKING CODE | PACING CODE SUFFIX | DESCRIPTION                          |
| RS1MHR3G           | RS1M     | H               | R3           | G                  | AEC-Q101 qualified<br>Green compound |

**RATINGS AND CHARACTERISTICS CURVES**

( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

FIG.1 FORWARD CURRENT DERATING CURVE

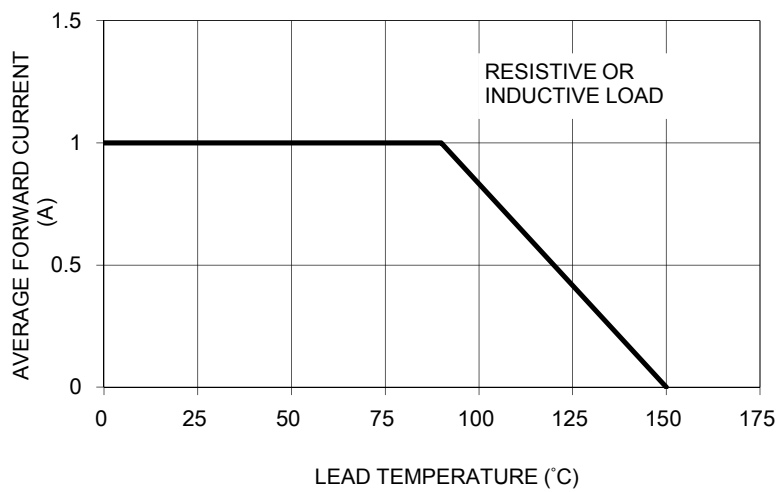


FIG. 2 TYPICAL REVERSE CHARACTERISTICS

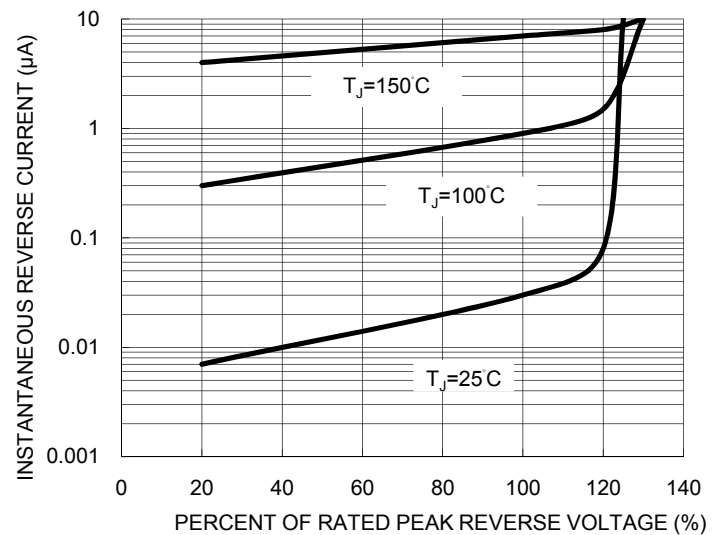


FIG. 3 MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

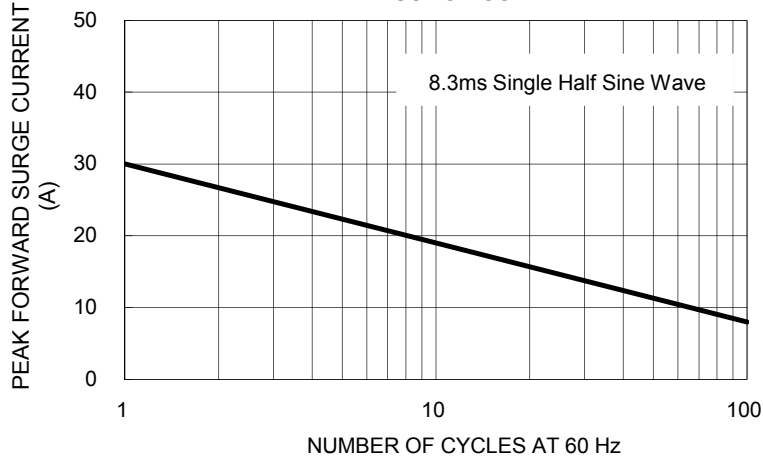


FIG. 4 TYPICAL FORWARD CHARACTERISTICS

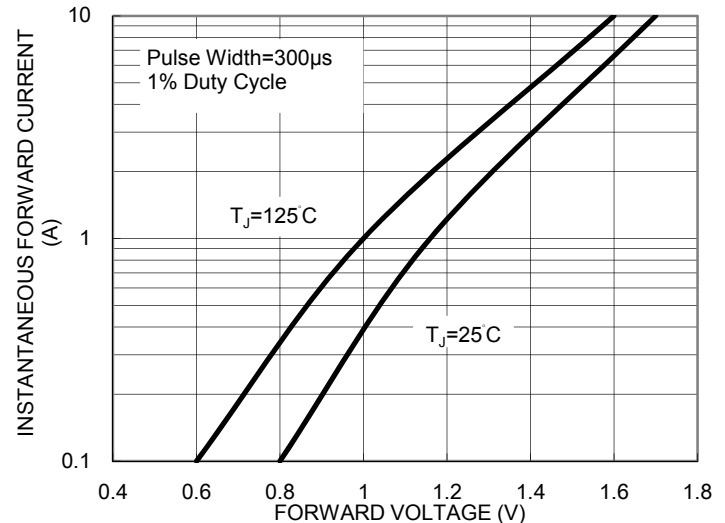


FIG. 5 TYPICAL JUNCTION CAPACITANCE

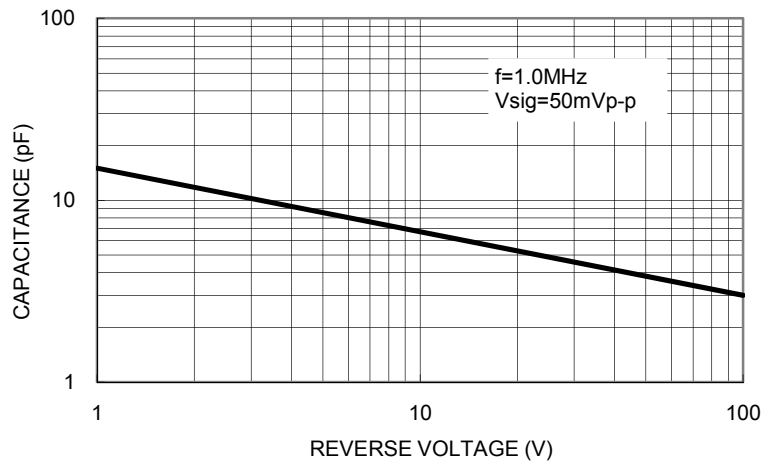
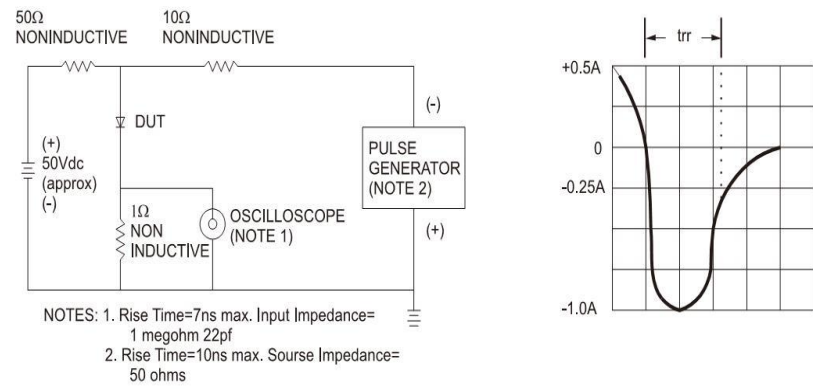
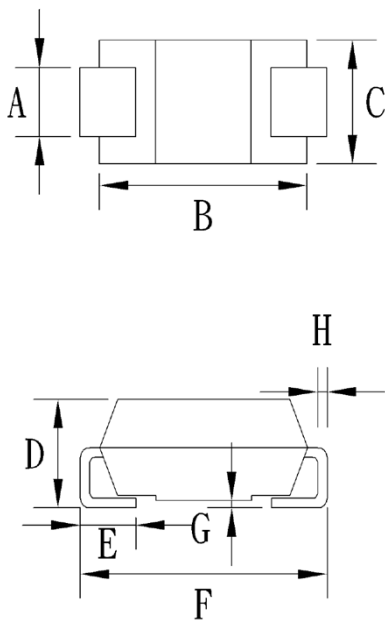


FIG.6- REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT DIAGRAM



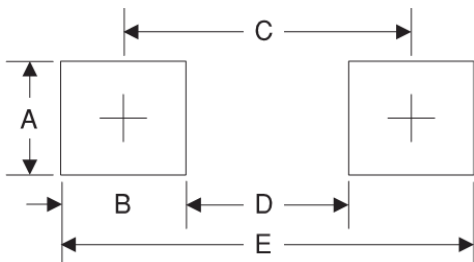
PACKAGE OUTLINE DIMENSIONS

DO-214AC (SMA)



| DIM. | Unit (mm) |      | Unit (inch) |       |
|------|-----------|------|-------------|-------|
|      | Min       | Max  | Min         | Max   |
| A    | 1.27      | 1.58 | 0.050       | 0.062 |
| B    | 4.06      | 4.60 | 0.160       | 0.181 |
| C    | 2.29      | 2.83 | 0.090       | 0.111 |
| D    | 1.99      | 2.50 | 0.078       | 0.098 |
| E    | 0.90      | 1.41 | 0.035       | 0.056 |
| F    | 4.95      | 5.33 | 0.195       | 0.210 |
| G    | 0.10      | 0.20 | 0.004       | 0.008 |
| H    | 0.15      | 0.31 | 0.006       | 0.012 |

SUGGESTED PAD LAYOUT



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A      | 1.68      | 0.066       |
| B      | 1.52      | 0.060       |
| C      | 3.93      | 0.155       |
| D      | 2.41      | 0.095       |
| E      | 5.45      | 0.215       |

MARKING DIAGRAM



- P/N = Specific Device Code
- G = Green Compound
- YW = Date Code
- F = Factory Code

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