

## 1.5A, 200V - 600V High Efficient Surface Mount Rectifiers

### FEATURES

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



DO-214AC (SMA)

### MECHANICAL DATA

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

Molding compound: UL flammability classification rating 94V-0

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

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

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

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

Meet JESD 201 class 2 whisker test

**Polarity:** Indicated by cathode band

**Weight:** 0.064 g (approximately)

| MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (T <sub>A</sub> =25°C unless otherwise noted) |                                                                 |              |        |        |      |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------|--------------|--------|--------|------|
| PARAMETER                                                                                    | SYMBOL                                                          | BYG20D       | BYG20G | BYG20J | UNIT |
| Maximum repetitive peak reverse voltage                                                      | V <sub>RRM</sub>                                                | 200          | 400    | 600    | V    |
| Maximum RMS voltage                                                                          | V <sub>RMS</sub>                                                | 140          | 280    | 420    | V    |
| Maximum DC blocking voltage                                                                  | V <sub>DC</sub>                                                 | 200          | 400    | 600    | V    |
| Maximum average forward rectified current                                                    | I <sub>F(AV)</sub>                                              | 1.5          |        |        | 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<br>(Note 1)                                            | I <sub>F</sub> =1.0A<br>I <sub>F</sub> =1.5A<br>V <sub>F</sub>  | 1.3<br>1.4   |        |        | V    |
| Maximum reverse current @ rated V <sub>R</sub>                                               | T <sub>J</sub> =25°C<br>T <sub>J</sub> =100°C<br>I <sub>R</sub> | 1<br>10      |        |        | μA   |
| Pulse energy in avalanche mode, non repetitive<br>(Inductive load switch off ), L=120mH      | E <sub>RSM</sub>                                                | 20           |        |        | mJ   |
| Maximum reverse recovery time (Note 2)                                                       | t <sub>rr</sub>                                                 | 75           |        |        | ns   |
| Typical thermal resistance (Note 3)                                                          | R <sub>θJL</sub>                                                | 25           |        |        | °C/W |
|                                                                                              | R <sub>θJA</sub>                                                | 100          |        |        |      |
| 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: Mount on PC board with 5mm x 5mm copper pads as heatsink.

| ORDERING INFORMATION |                 |              |                     |            |                          |
|----------------------|-----------------|--------------|---------------------|------------|--------------------------|
| PART NO.             | PART NO. SUFFIX | PACKING CODE | PACKING CODE SUFFIX | PACKAGE    | PACKING                  |
| BYG20x<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 |

Note 1: "x" defines voltage from 200V (BYG20D) to 600V (BYG20J)

| EXAMPLE          |          |                 |              |                     |                                      |
|------------------|----------|-----------------|--------------|---------------------|--------------------------------------|
| EXAMPLE PART NO. | PART NO. | PART NO. SUFFIX | PACKING CODE | PACKING CODE SUFFIX | DESCRIPTION                          |
| BYG20DHR3G       | BYG20D   | H               | R3           | G                   | AEC-Q101 qualified<br>Green compound |

## RATINGS AND CHARACTERISTICS CURVES

(T<sub>A</sub>=25°C unless otherwise noted)

FIG.1 FORWARD CURRENT DERATING CURVE

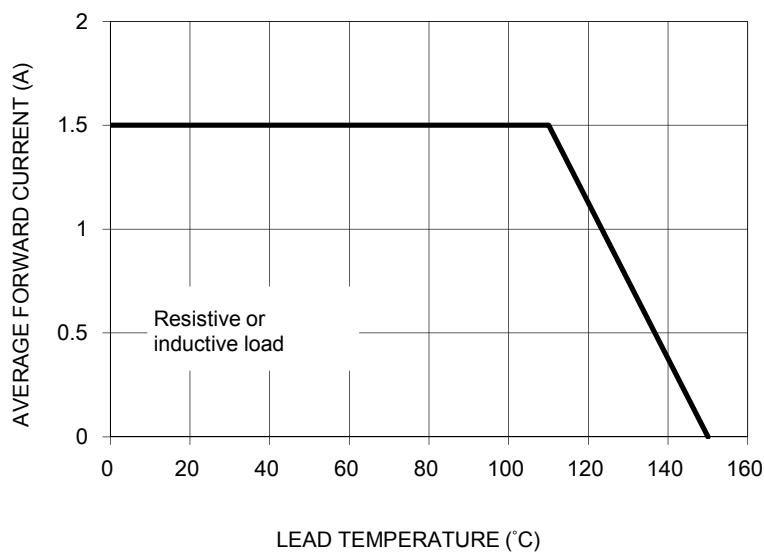


FIG. 2 TYPICAL REVERSE CHARACTERISTICS

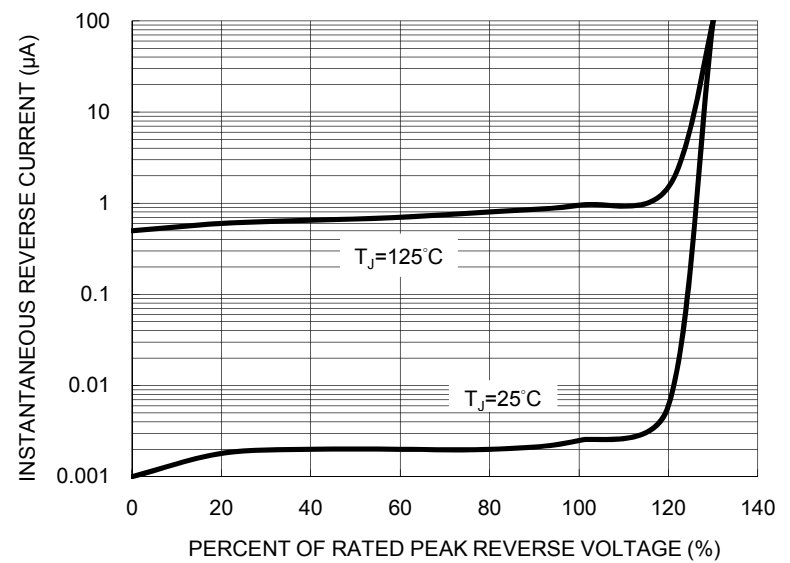


FIG. 3 MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

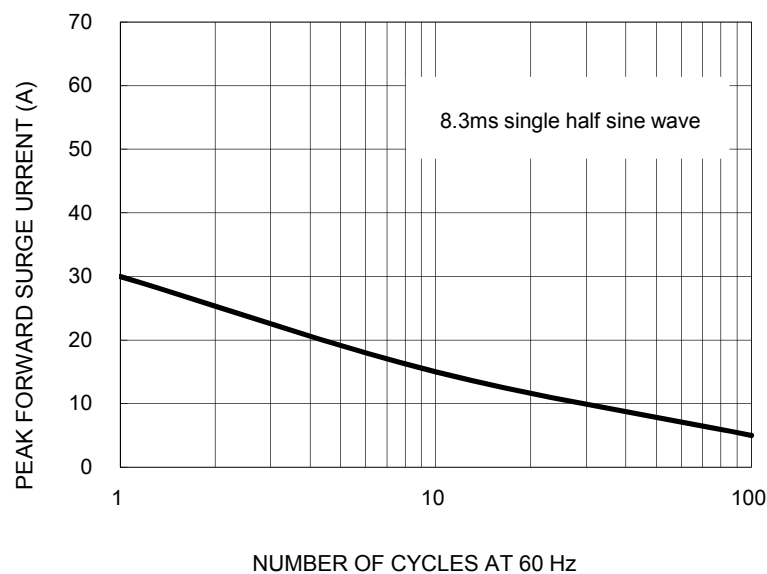


FIG. 4 TYPICAL FORWARD CHARACTERISTICS

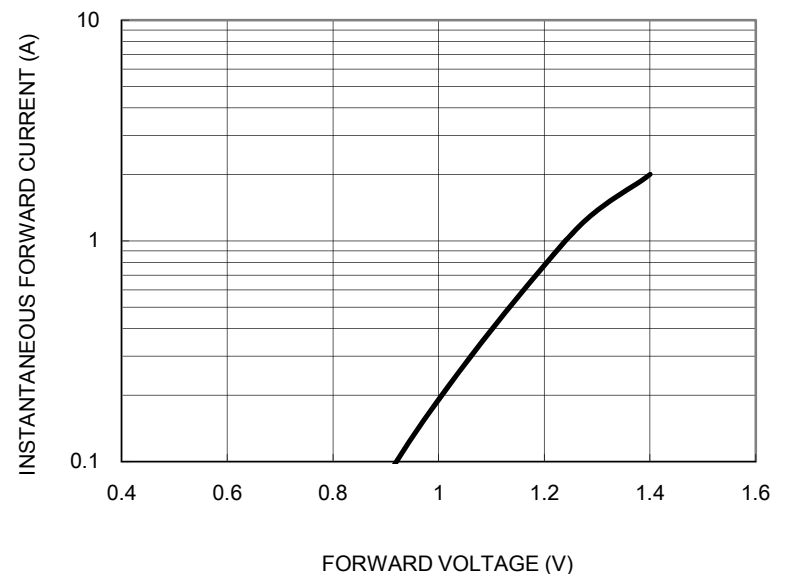


FIG. 5 TYPICAL JUNCTION CAPACITANCE

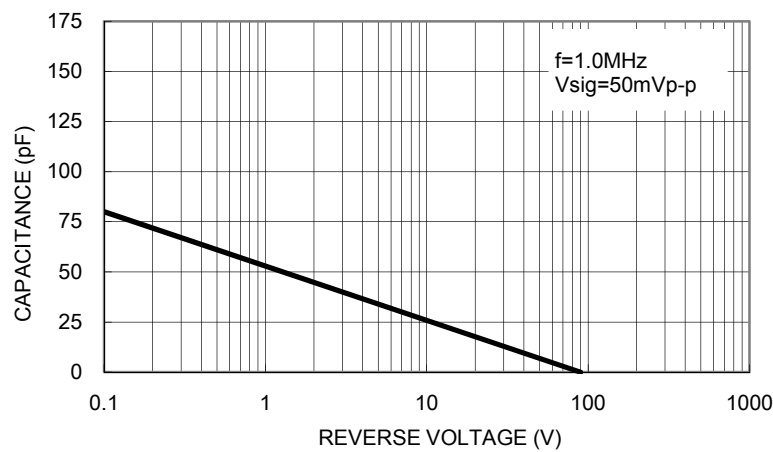
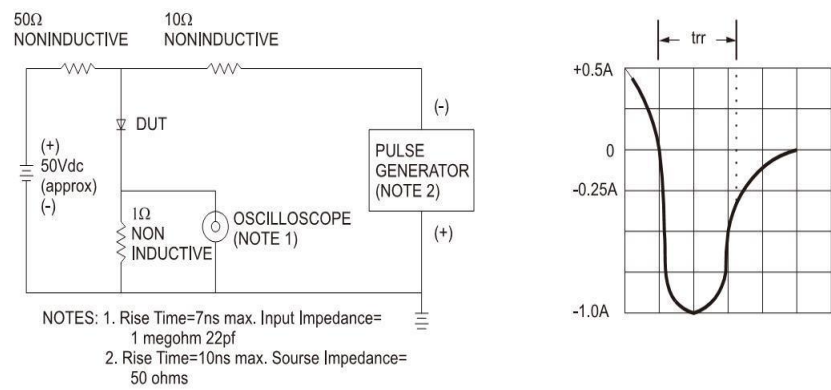
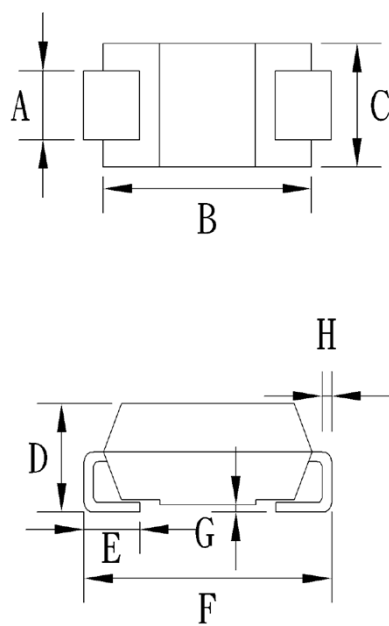


FIG.6 REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT DIAGRAM

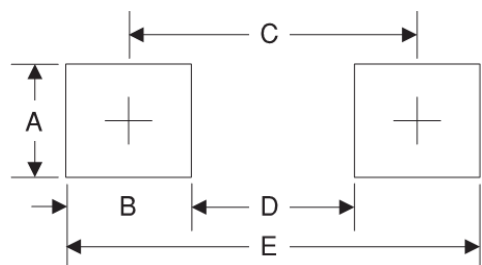


**PACKAGE OUTLINE DIMENSIONS**  
**DO-214AC (SMA)**



| 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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