

## Surface Mount Super Fast Rectifiers

### FEATURES

- Glass passivated junction chip
- Ideal for automated placement
- Low profile package
- Low power loss, high efficiency
- Moisture sensitivity level: level 1, per J-STD-020
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition



Sub SMA

### MECHANICAL DATA

**Case:** Sub SMA

Molding compound, UL flammability classification rating 94V-0

Base P/N with suffix "G" on packing code - green compound (halogen-free)

Base P/N with prefix "H" on packing code - AEC-Q101 qualified

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

Meet JESD 201 class 1A whisker test

with prefix "H" on packing code meet JESD 201 class 2 whisker test

**Polarity:** Indicated by cathode band

**Weight:** 0.019 g (approximately)

| MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (T <sub>A</sub> =25℃ unless otherwise noted) |                                      |              |           |           |           |           |           |           |           |      |
|---------------------------------------------------------------------------------------------|--------------------------------------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------|
| PARAMETER                                                                                   | SYMBOL                               | ES<br>1AL    | ES<br>1BL | ES<br>1CL | ES<br>1DL | ES<br>1FL | ES<br>1GL | ES<br>1HL | ES<br>1JL | UNIT |
| Marking code                                                                                |                                      | EAL          | EBL       | ECL       | EDL       | EFL       | EGL       | EHL       | EJL       |      |
| Maximum repetitive peak reverse voltage                                                     | V <sub>RRM</sub>                     | 50           | 100       | 150       | 200       | 300       | 400       | 500       | 600       | V    |
| Maximum RMS voltage                                                                         | V <sub>RMS</sub>                     | 35           | 70        | 105       | 140       | 210       | 280       | 350       | 420       | V    |
| Maximum DC blocking voltage                                                                 | V <sub>DC</sub>                      | 50           | 100       | 150       | 200       | 300       | 400       | 500       | 600       | 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)<br>@ 1 A                                     | V <sub>F</sub>                       | 0.95         |           |           |           | 1.3       |           | 1.7       |           | V    |
| Maximum reverse current @ rated VR   T <sub>J</sub> =25 ℃<br>T <sub>J</sub> =125 ℃          | I <sub>R</sub>                       | 5<br>100     |           |           |           |           |           |           |           | μA   |
| Typical junction capacitance (Note 2)                                                       | C <sub>j</sub>                       | 10           |           |           |           | 8         |           |           |           | pF   |
| Maximum reverse recovery time (Note 3)                                                      | T <sub>rr</sub>                      | 35           |           |           |           |           |           |           |           | ns   |
| Typical thermal resistance                                                                  | R <sub>θJL</sub><br>R <sub>θJA</sub> | 35<br>85     |           |           |           |           |           |           |           | °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: Measured at 1 MHz and Applied VR=4.0 Volts.

Note 3: Reverse Recovery Test Conditions: I<sub>F</sub>=0.5A, I<sub>R</sub>=1.0A, I<sub>RR</sub>=0.25A

**ORDERING INFORMATION**

| PART NO.          | AEC-Q101 QUALIFIED | PACKING CODE | GREEN COMPOUND CODE | PACKAGE | PACKING                               |
|-------------------|--------------------|--------------|---------------------|---------|---------------------------------------|
| ES1xL<br>(Note 1) | Prefix "H"         | RU           | Suffix "G"          | Sub SMA | 1,800 / 7" Plastic reel (8mm tape)    |
|                   |                    | RV           |                     | Sub SMA | 3,000 / 7" Plastic reel (8mm tape)    |
|                   |                    | RT           |                     | Sub SMA | 7,500 / 13" Paper reel (8mm tape)     |
|                   |                    | MT           |                     | Sub SMA | 7,500 / 13" Plastic reel (8mm tape)   |
|                   |                    | RQ           |                     | Sub SMA | 10,000 / 13" Paper reel (8mm tape)    |
|                   |                    | MQ           |                     | Sub SMA | 10,000 / 13" Plastic reel (8mm tape)  |
|                   |                    | R3           |                     | Sub SMA | 1,800 / 7" Plastic reel (12mm tape)   |
|                   |                    | RF           |                     | Sub SMA | 3,000 / 7" Plastic reel (12mm tape)   |
|                   |                    | R2           |                     | Sub SMA | 7,500 / 13" Paper reel (12mm tape)    |
|                   |                    | M2           |                     | Sub SMA | 7,500 / 13" Plastic reel (12mm tape)  |
|                   |                    | RH           |                     | Sub SMA | 10,000 / 13" Paper reel (12mm tape)   |
|                   |                    | MH           |                     | Sub SMA | 10,000 / 13" Plastic reel (12mm tape) |

Note 1: "x" defines voltage from 50V (ES1AL) to 600V (ES1JL)

**EXAMPLE**

| PREFERRED P/N | PART NO. | AEC-Q101 QUALIFIED | PACKING CODE | GREEN COMPOUND CODE | DESCRIPTION        |
|---------------|----------|--------------------|--------------|---------------------|--------------------|
| ES1JL RU      | ES1JL    |                    | RU           |                     |                    |
| ES1JL RUG     | ES1JL    |                    | RU           | G                   | Green compound     |
| ES1JLHRU      | ES1JL    | H                  | RU           |                     | AEC-Q101 qualified |

**RATINGS AND CHARACTERISTICS CURVES**

(TA=25°C unless otherwise noted)

FIG.1 FORWARD CURRENT DERATING CURVE

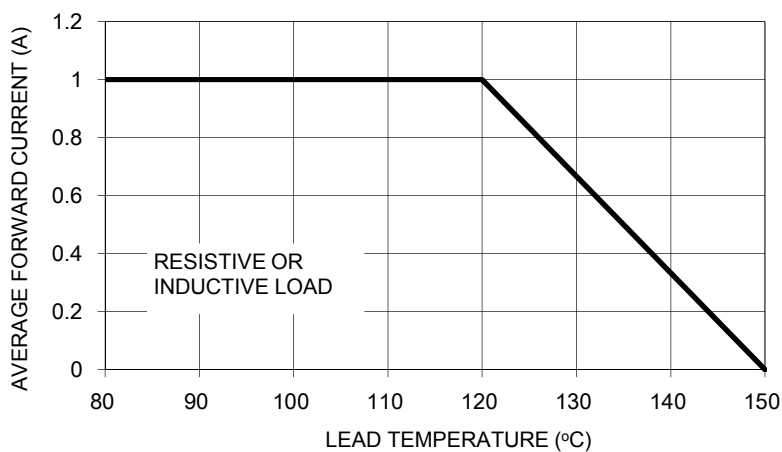


FIG. 2 TYPICAL FORWARD CHARACTERISTICS

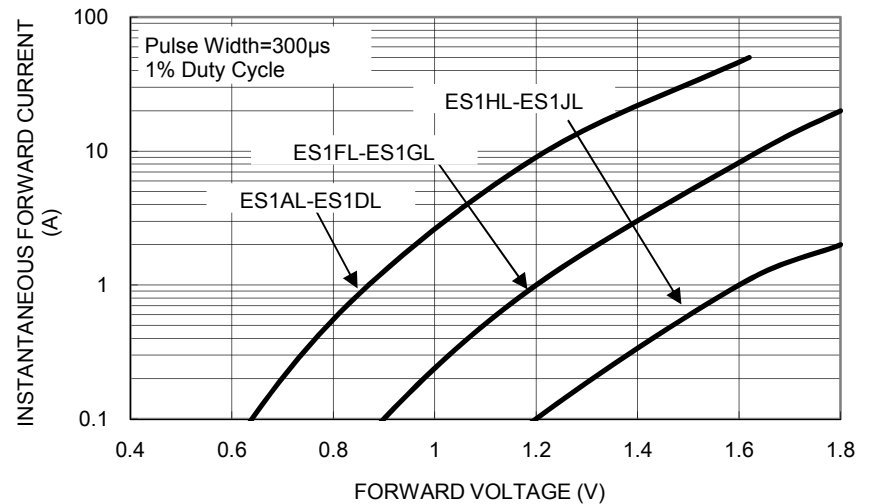


FIG. 3 MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

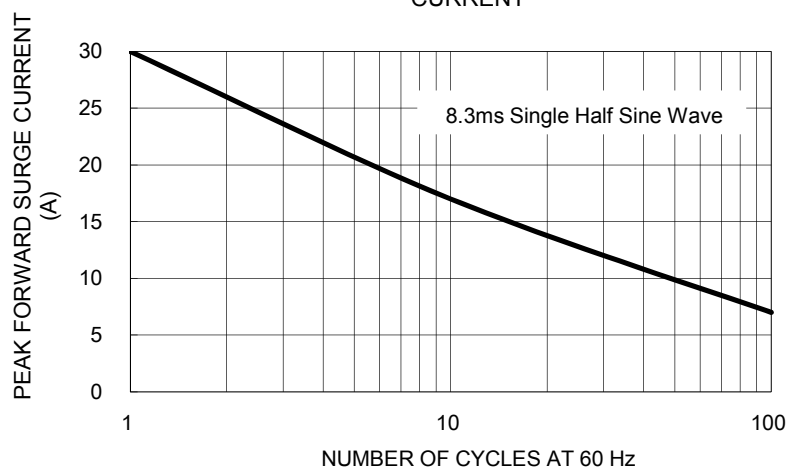


FIG. 4 TYPICAL REVERSE CHARACTERISTICS

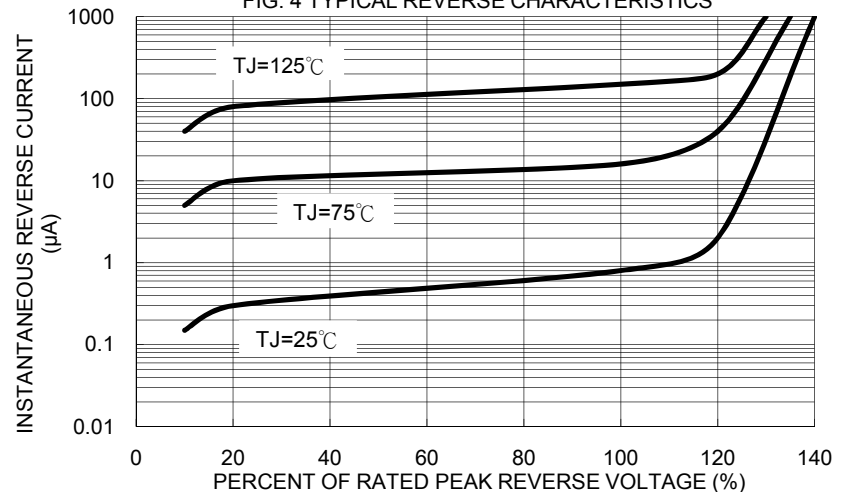


FIG. 5 TYPICAL JUNCTION CAPACITANCE

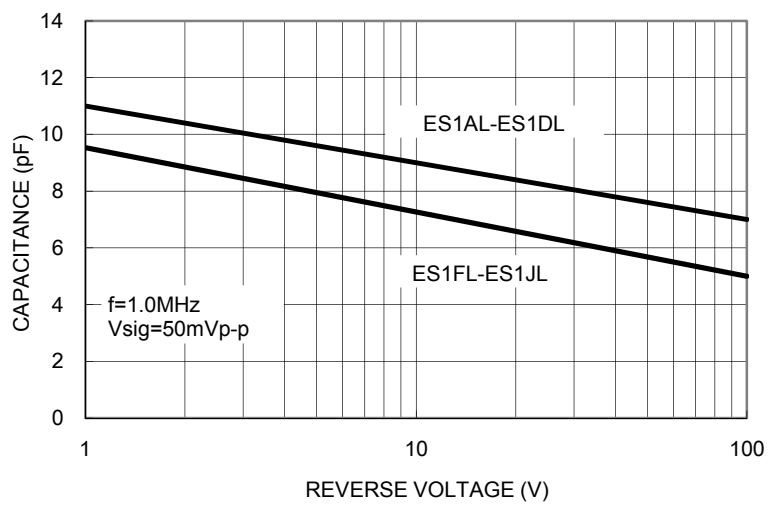
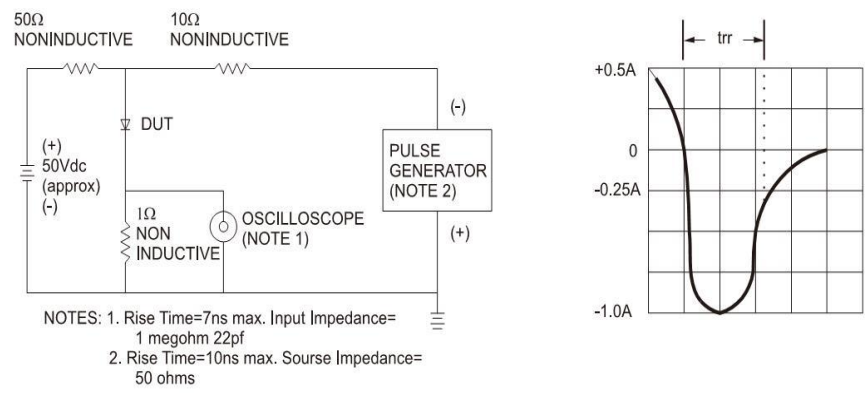
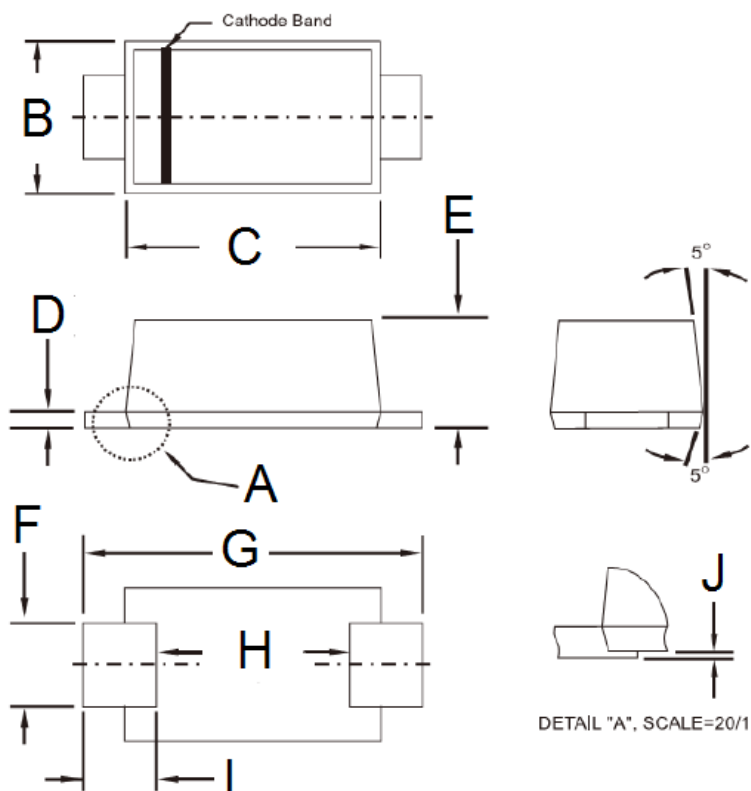


FIG.6- REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT DIAGRAM

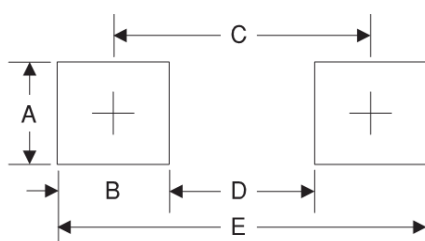


## PACKAGE OUTLINE DIMENSIONS



| DIM. | Unit (mm) |      | Unit (inch) |       |
|------|-----------|------|-------------|-------|
|      | Min       | Max  | Min         | Max   |
| B    | 1.70      | 1.90 | 0.067       | 0.075 |
| C    | 2.70      | 2.90 | 0.106       | 0.114 |
| D    | 0.16      | 0.30 | 0.006       | 0.012 |
| E    | 1.23      | 1.43 | 0.048       | 0.056 |
| F    | 0.80      | 1.20 | 0.031       | 0.047 |
| G    | 3.40      | 3.80 | 0.134       | 0.150 |
| H    | 2.45      | 2.60 | 0.096       | 0.102 |
| I    | 0.35      | 0.85 | 0.014       | 0.033 |
| J    | 0.00      | 0.10 | 0.000       | 0.004 |

## SUGGESTED PAD LAYOUT



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A      | 1.4       | 0.055       |
| B      | 1.2       | 0.047       |
| C      | 3.1       | 0.122       |
| D      | 1.9       | 0.075       |
| E      | 4.3       | 0.169       |

## MARKING DIAGRAM



P/N = Marking Code  
G = Green Compound  
YW = Date Code  
F = Factory Code

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