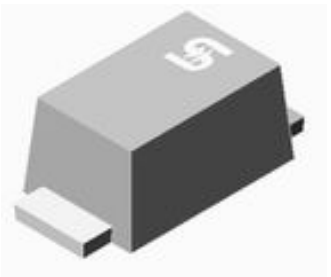
# High Efficient Surface Mount Rectifiers

## FEATURES

- Glass passivated junction chip
- Ideal for automated placement
- Low profile package
- Low power loss, high efficiency
- Fast switching for 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**

Pb-Free

RoHS COMPLIANT

## 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 ($T_A$=25℃ unless otherwise noted)

| PARAMETER | SYMBOL | HS 1AL | HS 1BL | HS 1DL | HS 1FL | HS 1GL | HS 1JL | HS 1KL | HS 1ML | UNIT |
|---|---|---|---|---|---|---|---|---|---|---|
| Marking code | | HAL | HBL | HDL | HFL | HGL | HJL | HKL | HML | |
| Maximum repetitive peak reverse voltage | $V_{RRM}$ | 50 | 100 | 200 | 300 | 400 | 600 | 800 | 1000 | V |
| Maximum RMS voltage | $V_{RMS}$ | 35 | 70 | 140 | 210 | 280 | 420 | 560 | 700 | V |
| Maximum DC blocking voltage | $V_{DC}$ | 50 | 100 | 200 | 300 | 400 | 600 | 800 | 1000 | V |
| Maximum average forward rectified current | $I_{F(AV)}$ | 1 | | | | | | | | A |
| Peak forward surge current, 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$ | 30 | | | | | | | | A |
| Maximum instantaneous forward voltage (Note 1) @ 1 A | $V_F$ | 0.95 | | | | 1.3 | 1.7 | | | V |
| Maximum reverse current @ rated VR $T_J$=25 ℃<br>$T_J$=125 ℃ | $I_R$ | 5<br>150 | | | | | | | | μA |
| Typical junction capacitance (Note 2) | Cj | 20 | | | | | 15 | | | pF |
| Maximum reverse recovery time (Note 3) | Trr | 50 | | | | | 75 | | | ns |
| Typical thermal resistance | $R_{\theta jA}$ | 100 | | | | | | | | $^{O}$C/W |
| Operating junction temperature range | $T_J$ | - 55 to +150 | | | | | | | | $^{O}$C |
| Storage temperature range | $T_{STG}$ | - 55 to +150 | | | | | | | | $^{O}$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: $I_F$=0.5A, $I_R$=1.0A, $I_{RR}$=0.25A

| ORDERING INFORMATION | | | | | |
|---|---|---|---|---|---|
| PART NO. | AEC-Q101 QUALIFIED | PACKING CODE | GREEN COMPOUND CODE | PACKAGE | PACKING |
| HS1xL (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 (HS1AL) to 1000V (HS1ML)

| EXAMPLE | | | | | |
|---|---|---|---|---|---|
| PREFERRED P/N | PART NO. | AEC-Q101 QUALIFIED | PACKING CODE | GREEN COMPOUND CODE | DESCRIPTION |
| HS1JL RU | HS1JL | | RU | | |
| HS1JL RUG | HS1JL | | RU | G | Green compound |
| HS1JLHRU | HS1JL | H | RU | | AEC-Q101 qualified |

## RATINGS AND CHARACTERISTICS CURVES

(TA=25℃ unless otherwise noted)

FIG.1- MAXIMUM AVERAGE FORWARD CURRENT DERATING

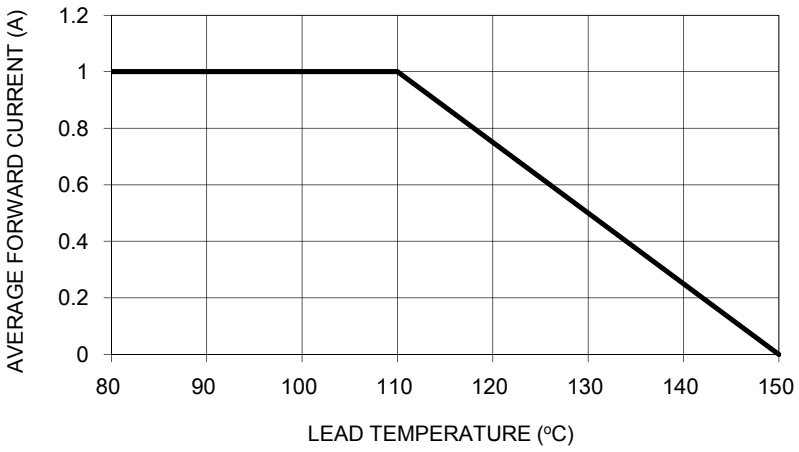



FIG. 2- TYPICAL REVERSE CHARACTERISTICS

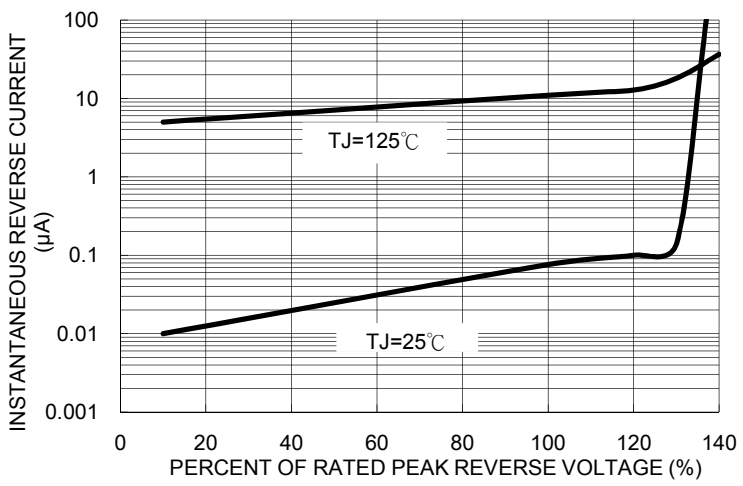



FIG. 3- MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

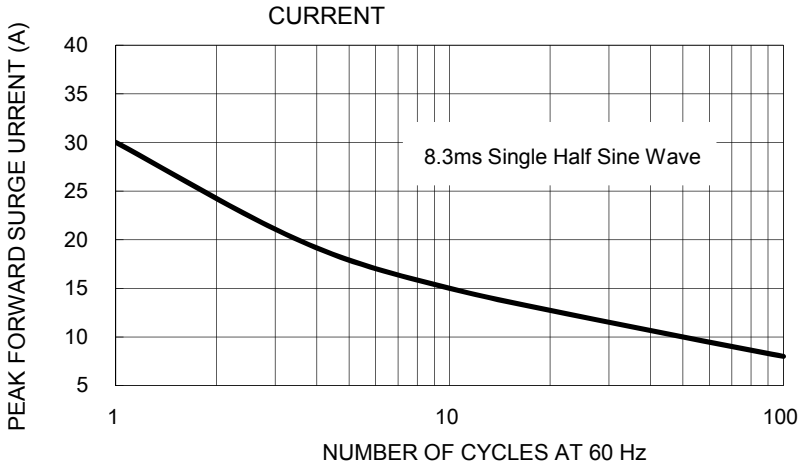



FIG. 4- TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

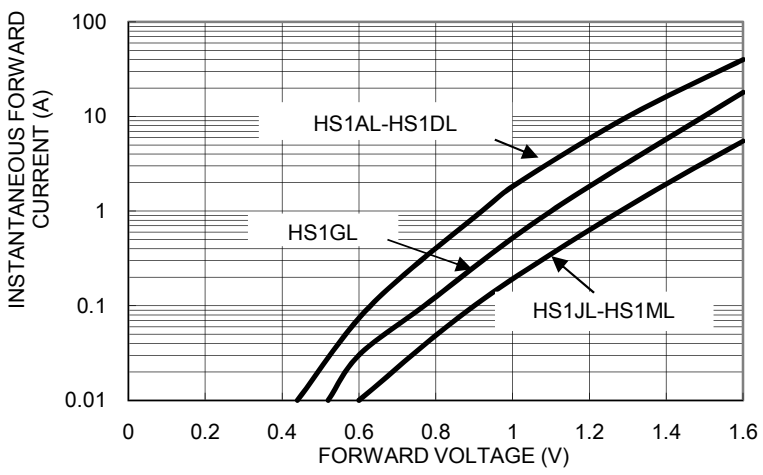


FIG. 5- TYPICAL JUNCTION CAPACITANCE

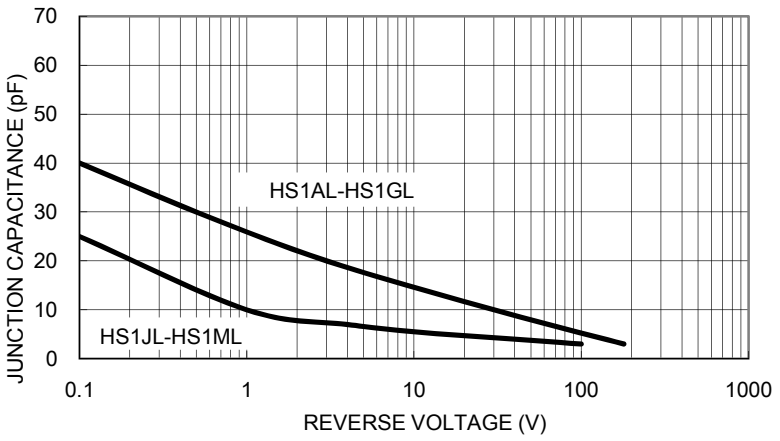
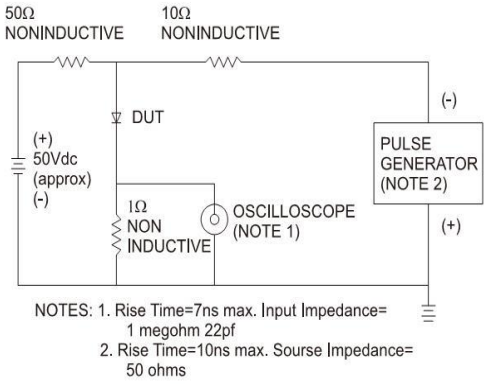
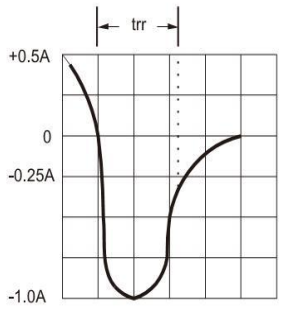
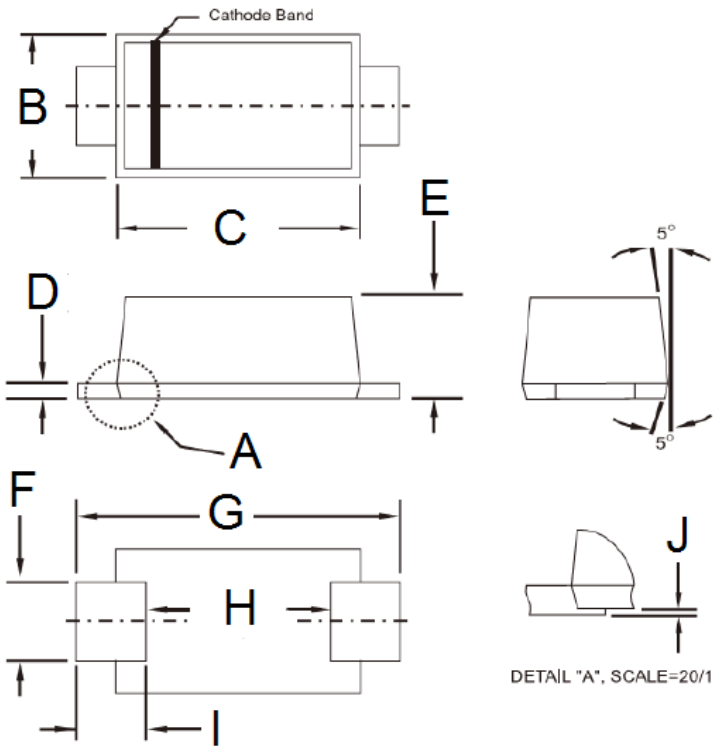



FIG.6- REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT DIAGRAM



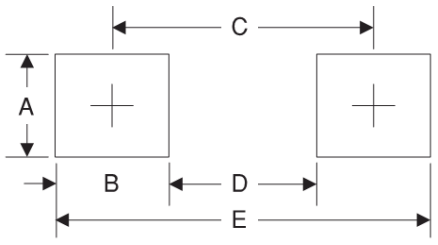




## PACKAGE OUTLINE DIMENSIONS




| 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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