

Features

- ✧ Glass passivated junction chip.
- ✧ For surface mounted application
- ✧ Low forward voltage drop
- ✧ Low profile package
- ✧ Built-in stain relief, ideal for automatic placement
- ✧ Fast switching for high efficiency
- ✧ High temperature soldering:
260°C/10 seconds at terminals
- ✧ Meet MSL level 1, per J-STD-020D,
lead free maximum peak of 260°C
- ✧ Plastic material used carries Underwriters
Laboratory Classification 94V-0
- ✧ Green compound with suffix "G" on packing
code & prefix "G" on datecode



Mechanical Data

- ✧ Cases: Molded plastic
- ✧ Terminal: Pure tin plated, lead free
- ✧ Polarity: Indicated by cathode band
- ✧ Weight: 0.0196 grams

Ordering Information (example)

| Part No. | Package | Packing | Packing code | Green Compound Packing code |
|----------|---------|--------------|--------------|-----------------------------|
| HS1AL | Sub-SMA | 3K / 7" REEL | RV | RVG |

Maximum Ratings and Electrical Characteristics

Rating at 25 °C ambient temperature unless otherwise specified.

Single phase, half wave, 60 Hz, resistive or inductive load.

For capacitive load, derate current by 20%

| Type Number | Symbol | HS 1AL | HS 1BL | HS 1DL | HS 1FL | HS 1GL | HS 1JL | HS 1KL | HS 1ML | Units | |
|---|-----------------|---------------|--------|--------|--------|--------|--------|--------|--------|--------------------|----|
| Maximum Recurrent 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 | |
| Marking Code | | HAL | HBL | HDL | HFL | HGL | HJL | HKL | HML | | |
| 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 (JEDEC method) | I_{FSM} | 30 | | | | | | | | A | |
| Maximum Instantaneous Forward Voltage (Note 1) @ 1 A | V_F | 1.0 | | | 1.3 | | 1.7 | | | V | |
| Maximum DC Reverse Current @ $T_A=25\text{ }^\circ\text{C}$ at Rated DC Blocking Voltage @ $T_A=125\text{ }^\circ\text{C}$ | I_R | 5 150 | | | | | | | | uA | |
| Maximum Reverse Recovery Time (Note 2) | T_{rr} | 50 | | | | | 75 | | | | nS |
| Typical Junction Capacitance (Note 3) | C_j | 20 | | | | | 15 | | | | pF |
| Typical Thermal Resistance | $R_{\theta JA}$ | 100 | | | | | | | | $^\circ\text{C/W}$ | |
| Operating Junction Temperature Range | T_J | - 55 to + 150 | | | | | | | | $^\circ\text{C}$ | |
| Storage Temperature Range | T_{STG} | - 55 to + 150 | | | | | | | | $^\circ\text{C}$ | |

Note 1: Pulse Test with PW=300 usec, 1% Duty Cycle

Note 2: Reverse Recovery Test Conditions: $I_F=0.5A$, $I_R=1.0A$, $I_{RR}=0.25A$

Note 3: Measured at 1 MHz and Applied Reverse Voltage of 4.0Volts.

RATINGS AND CHARACTERISTIC CURVES (HS1AL THRU HS1ML)

FIG. 1- MAXIMUM AVERAGE FORWARD CURRENT DERATING

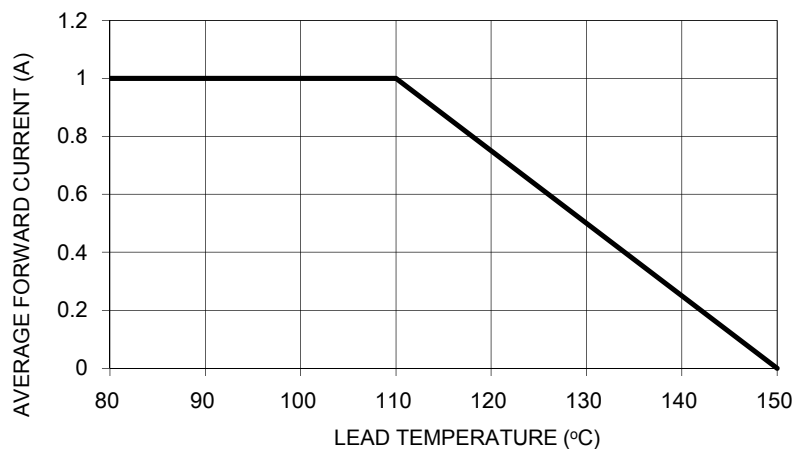


FIG. 2- TYPICAL REVERSE CHARACTERISTICS

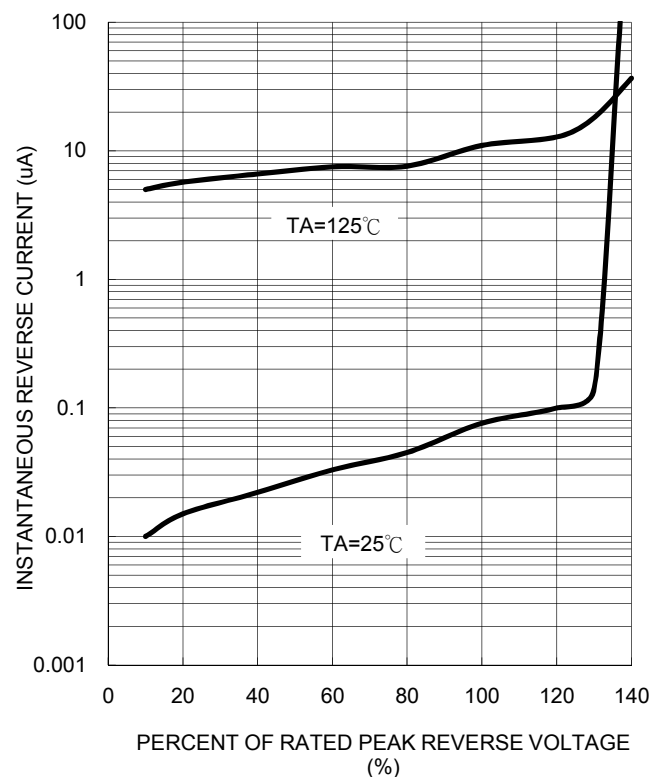


FIG. 3- MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

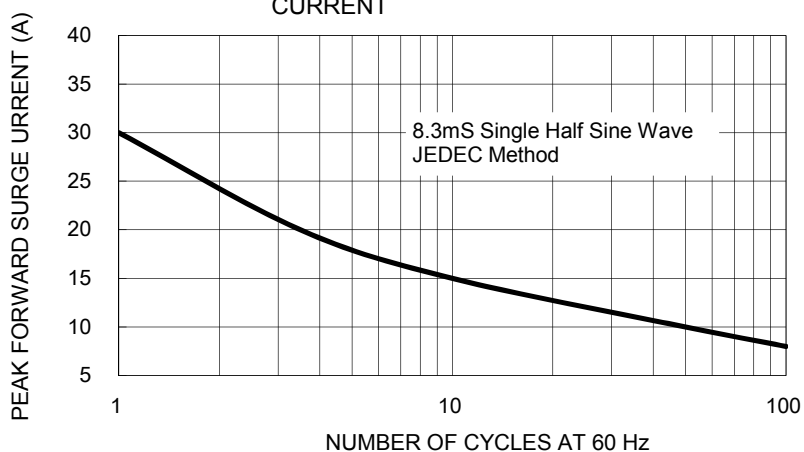


FIG. 5- TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

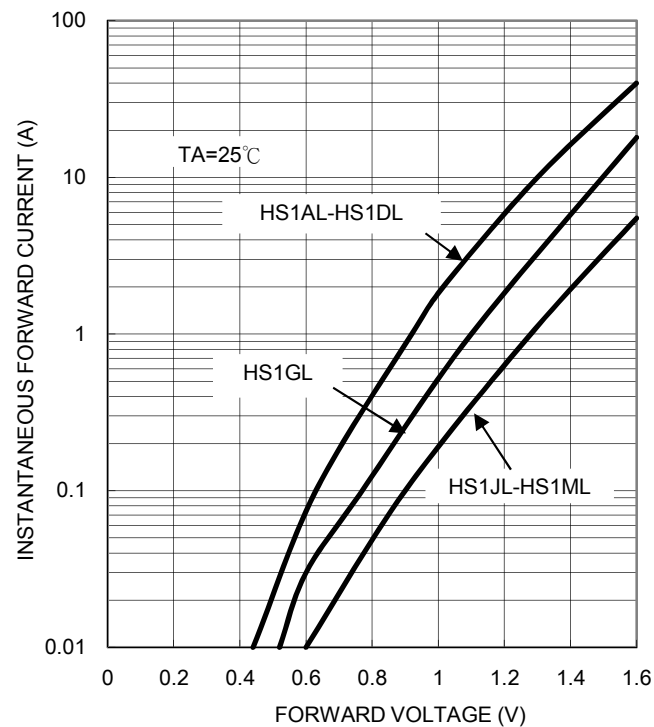


FIG. 4- TYPICAL JUNCTION CAPACITANCE

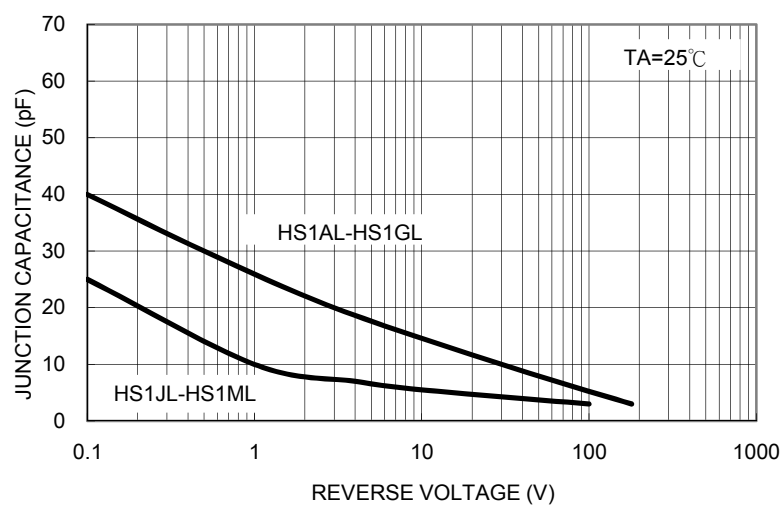
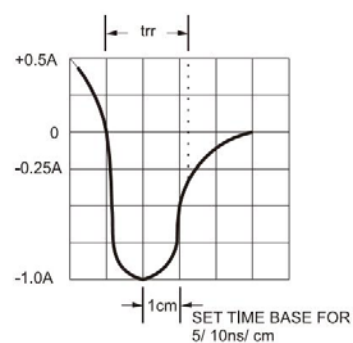
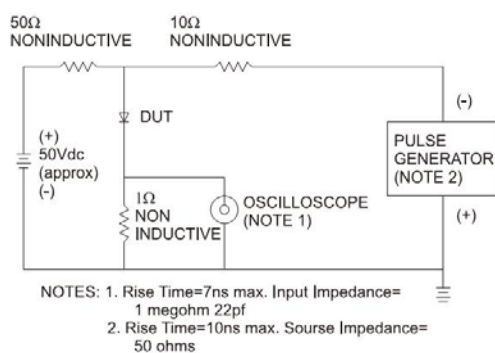


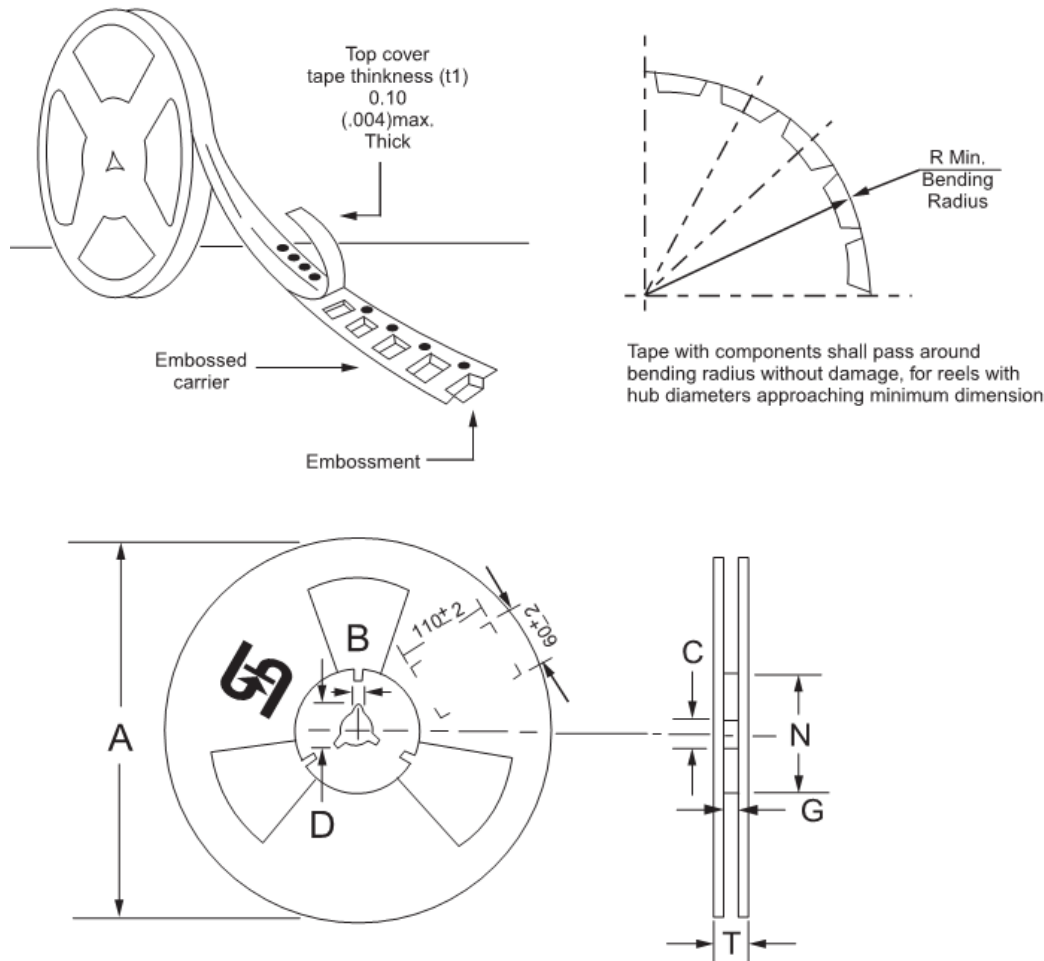
FIG. 6- REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT DIAGRAM



Ordering information

| Part No. | Package | Packing | Tape Size | Packing code | Green Compound Packing code |
|-----------------|---------|-----------------|-----------|--------------|-----------------------------|
| HS1XL (Note) | Sub-SMA | 1.8K / 7" REEL | 8mm | RU | RUG |
| | Sub-SMA | 3K / 7" REEL | 8mm | RV | RVG |
| | Sub-SMA | 7.5K / 13" REEL | 8mm | RT | RTG |
| | Sub-SMA | 7.5K / 13" REEL | 8mm | MT | MTG |
| | Sub-SMA | 10K / 13" REEL | 8mm | RQ | RQG |
| | Sub-SMA | 10K / 13" REEL | 8mm | MQ | MQG |
| | Sub-SMA | 1.8K / 7" REEL | 12mm | R3 | R3G |
| | Sub-SMA | 3K / 7" REEL | 12mm | RF | RFG |
| | Sub-SMA | 7.5K / 13" REEL | 12mm | R2 | R2G |
| | Sub-SMA | 7.5K / 13" REEL | 12mm | M2 | M2G |
| | Sub-SMA | 10K / 13" REEL | 12mm | RH | RHG |
| | Sub-SMA | 10K / 13" REEL | 12mm | MH | MHG |

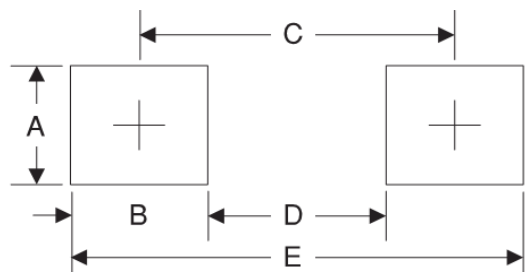
Note: "x" is Device Code from "A" thru "M".

Tape & Reel specification


| Reel Size | Tape Size | A | B | C | D | N | G | T |
|-----------|-----------|------|------|-----------|------|------|---------|------|
| | | ±2.0 | ±0.4 | +0.5;-0.2 | min | ±1.0 | +0.8;-0 | max |
| 7" | 8mm | 178 | 1.9 | 13 | 21 | 62 | 8.2 | 10.6 |
| | 12mm | | | | | | 12.2 | 14.6 |
| | | A | B | C | D | N | G | T |
| | | max | ±0.5 | ±0.5 | min | ±0.5 | +2.0;-0 | max |
| 13" | 8mm | 330 | 2 | 13 | 20.2 | 75 | 8.5 | 14.5 |
| | 12mm | | | | | | 12.4 | 18.4 |

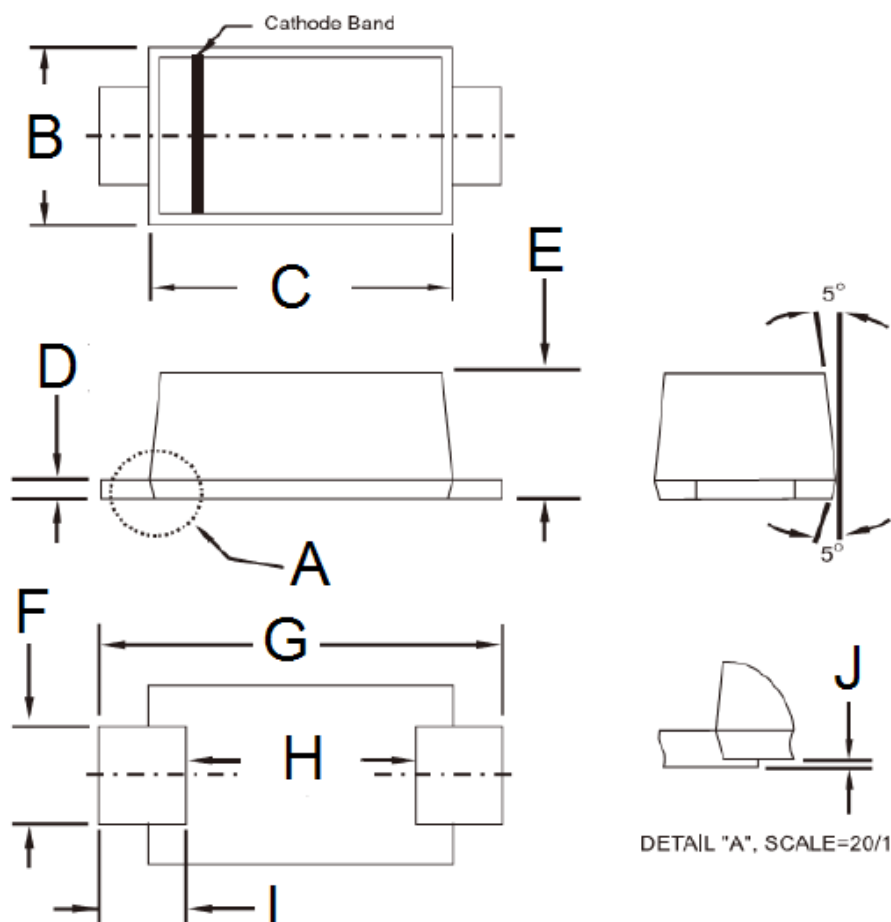
Unit (mm)

Suggested PAD Layout



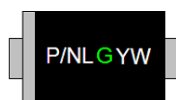
| Symbol | Unit(mm) |
|--------|----------|
| A | 1.4 |
| B | 1.2 |
| C | 3.1 |
| D | 1.9 |
| E | 4.3 |

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 |

Marking Diagram



P/NL = Specific Device Code
 G = Green Compound
 YW = Date Code