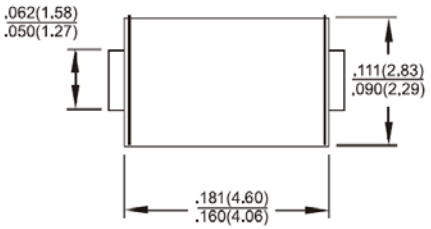
TAIWAN SEMICONDUCTOR

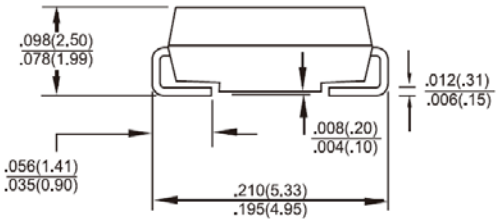
# HS1A - HS1M

1.0AMP High Efficient Surface Mount Rectifiers

**SMA/DO-214AC**

RoHS COMPLIANCE




## Features

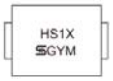
- ✧ Glass passivated junction chip.
- ✧ For surface mounted application
- ✧ Low forward voltage drop
- ✧ Low profile package
- ✧ Built-in stain relief, ideal for automatic placement
- ✧ Fast switching for high efficiency
- ✧ High temperature soldering: 260℃/10 seconds at terminals
- ✧ Plastic material 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
- ✧ Packing: 12mm tape per EIA STD RS-481
- ✧ Weight: 0.064 grams

**Dimensions in inches and (millimeters)**

**Marking Diagram**




HS1X = Specific Device Code
G = Green Compound
Y = Year
M = Work Month

## Maximum Ratings and Electrical Characteristics

Rating at 25 ℃ 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 1A | HS 1B | HS 1D | HS 1F | HS 1G | HS 1J | HS 1K | HS 1M | 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 |
| Maximum Average Forward Rectified Current See Fig. 1 | $I_{F(AV)}$ | 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 @ $T_A$=25 ℃<br>Current at Rated DC @ $T_A$=100 ℃<br>Blocking Voltage @ $T_A$=125 ℃ | $I_R$ | 5<br>50<br>150 | | | | | | | | uA |
| Maximum Reverse Recovery Time (Note 2) | Trr | 50 | | | | | 75 | | | nS |
| Typical Junction Capacitance (Note 3) | Cj | 20 | | | | | 15 | | | pF |
| Typical Thermal Resistance | $R_{\theta JA}$ | 70 | | | | | | | | $^{O}$C/W |
| Operating 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=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 (HS1A THRU HS1M)

FIG.1- MAXIMUM AVERAGE FORWARD CURRENT DERATING

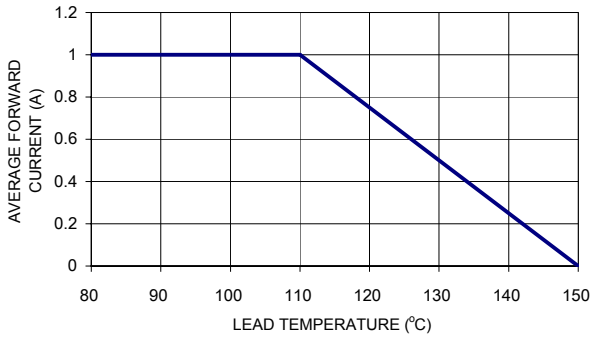



FIG. 2- TYPICAL REVERSE CHARACTERISTICS

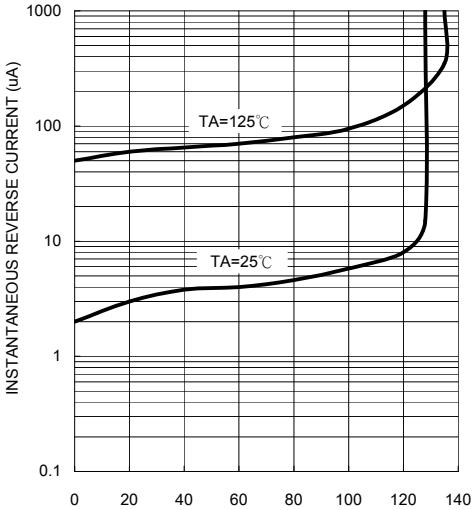



FIG. 3- MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

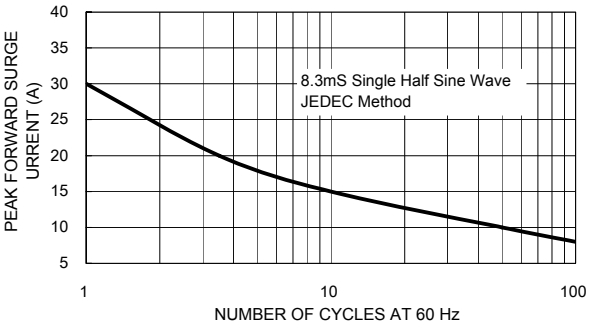



FIG. 5- TYPICAL INSTANTANEOUS FORWARD CHARACTERISRICS

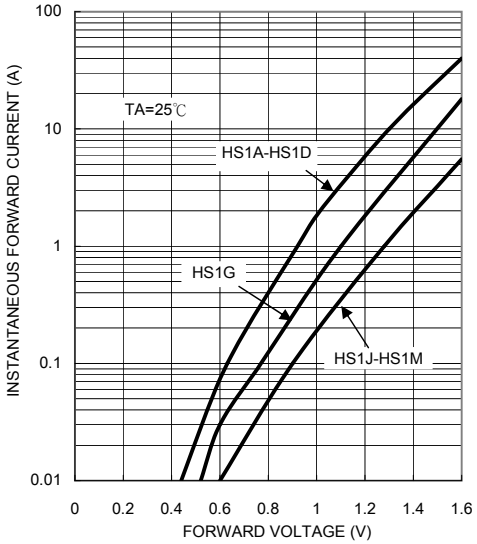



FIG. 4- TYPICAL JUNCTION CAPACITANCE

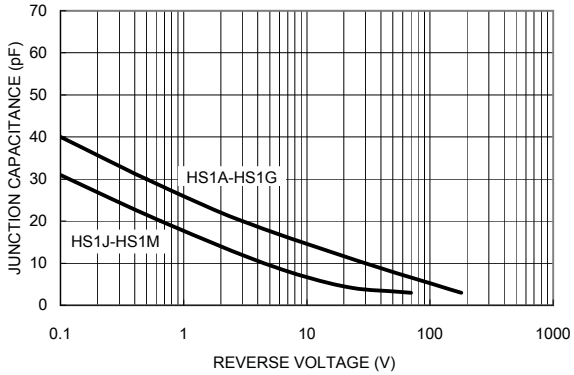



FIG.6- REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT DIAGRAM