

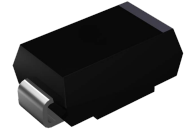
# HS2A thru HS2M

Ultrafast Recovery Rectifier

Reverse Voltage 50V-1000V Forward Current 1.5 A

## Features

- Glass passivated junction chip
- For surface mount applications
- Low forward voltage drop
- Low profile package
- Built-in stain relief, ideal for automated placement
- Fast switching for high efficiency
- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- Weight: 0.003 ounce, 0.093 gram



DO-214AA (SMB)

## Applications

For use of general purpose rectifications in lighting, cellular phones, portable devices, power supplies and other consumer applications.

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

| Parameter                                                                            | Symbol                            | HS2A        | HS2B | HS2D | HS2F | HS2G | HS2J | HS2K | HS2M | Unit               |
|--------------------------------------------------------------------------------------|-----------------------------------|-------------|------|------|------|------|------|------|------|--------------------|
| Maximum Repetitive Peak Reverse Voltage                                              | V <sub>RRM</sub>                  | 50          | 100  | 200  | 300  | 400  | 600  | 800  | 1000 | V                  |
| Maximum RMS Voltage                                                                  | V <sub>RMS</sub>                  | 35          | 70   | 140  | 210  | 280  | 420  | 560  | 700  | V                  |
| Maximum DC Blocking Voltage                                                          | V <sub>DC</sub>                   | 50          | 100  | 200  | 300  | 400  | 600  | 800  | 1000 | V                  |
| Maximum Average Output 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>                  | 50          |      |      |      |      |      |      |      | A                  |
| Rating for Fusing (t<8.3ms)                                                          | I <sup>2</sup> t                  | 10          |      |      |      |      |      |      |      | A <sup>2</sup> sec |
| Operating Junction and Storage Temperature Range                                     | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 |      |      |      |      |      |      |      | °C                 |

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

| Parameter                                               | Test Conditions                                                    | Symbol          | HS2A       | HS2B | HS2D | HS2F | HS2G | HS2J | HS2K | HS2M | Unit |
|---------------------------------------------------------|--------------------------------------------------------------------|-----------------|------------|------|------|------|------|------|------|------|------|
| Maximum Instantaneous Forward Voltage                   | I <sub>F</sub> =1.5A                                               | V <sub>F</sub>  | 1.0        |      |      |      | 1.3  | 1.7  |      |      | V    |
| Maximum DC Reverse Current at Rated DC Blocking Voltage | T <sub>A</sub> =25°C<br>T <sub>A</sub> =125°C                      | I <sub>R</sub>  | 5.0<br>100 |      |      |      |      |      |      |      | μA   |
| Maximum Reverse Recovery Time                           | I <sub>F</sub> =0.5A, I <sub>R</sub> =1.0A, I <sub>RR</sub> =0.25A | t <sub>rr</sub> | 50         |      |      |      |      | 75   |      |      | ns   |
| Typical Junction Capacitance                            | 4.0 V, 1 MHz                                                       | C <sub>J</sub>  | 50         |      |      |      |      | 30   |      |      | pF   |

## Thermal Characteristics

| Parameter                                 | Symbol           | HS2A | HS2B | HS2D | HS2F | HS2G | HS2J | HS2K | HS2M | Unit |
|-------------------------------------------|------------------|------|------|------|------|------|------|------|------|------|
| Typical thermal resistance <sup>(1)</sup> | R <sub>θJA</sub> | 54   |      |      |      |      |      |      |      | °C/W |
|                                           | R <sub>θJC</sub> | 16   |      |      |      |      |      |      |      |      |
|                                           | R <sub>θJI</sub> | 7    |      |      |      |      |      |      |      |      |

Notes: 1. The thermal resistance from junction to ambient, case or mount, mounted on P.C.B with 8×8mm copper pads, 2 OZ, FR4 PCB

## Ratings and Characteristics Curves ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

FIG.1- REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT DIAGRAM

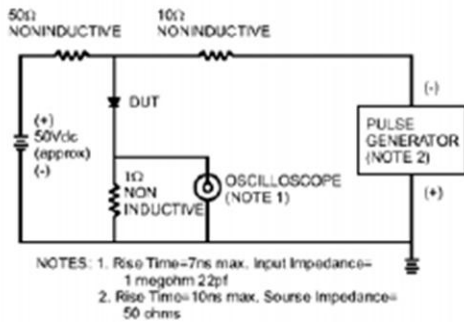


FIG.2- MAXIMUM FORWARD CURRENT DERATING CURVE

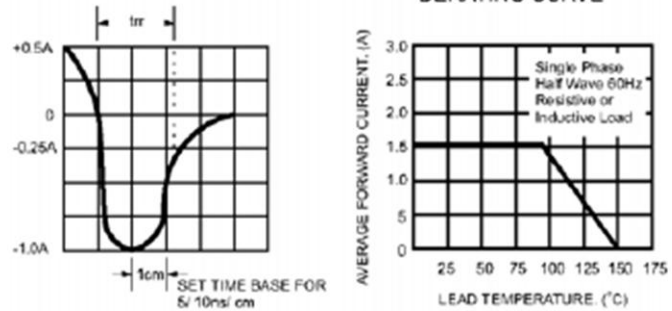


FIG.3- TYPICAL REVERSE CHARACTERISTICS

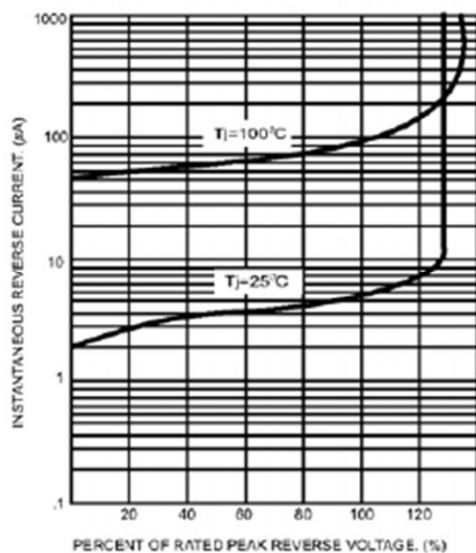


FIG.4- TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

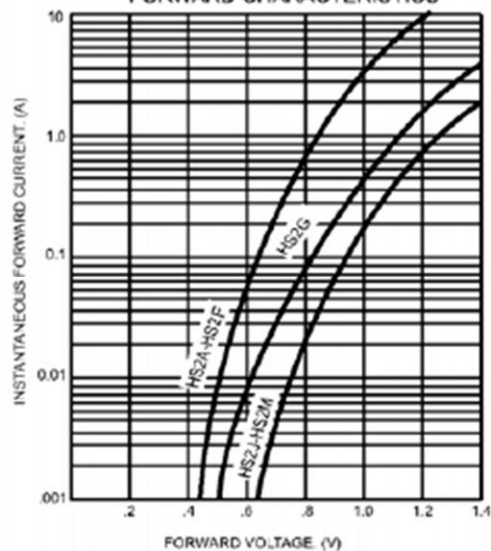


FIG.5- MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

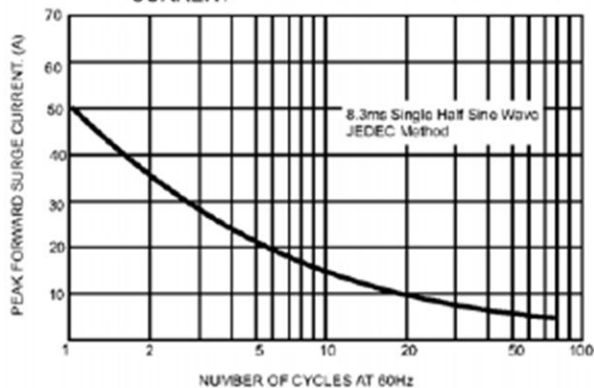
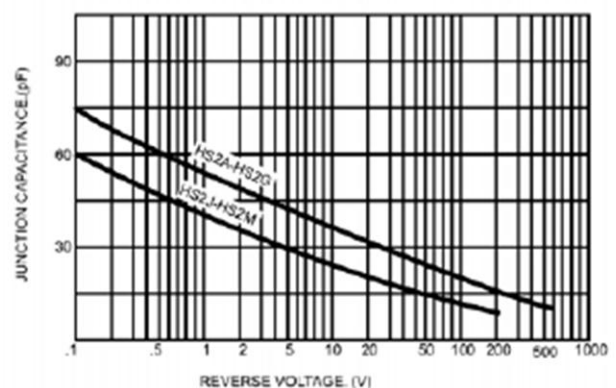


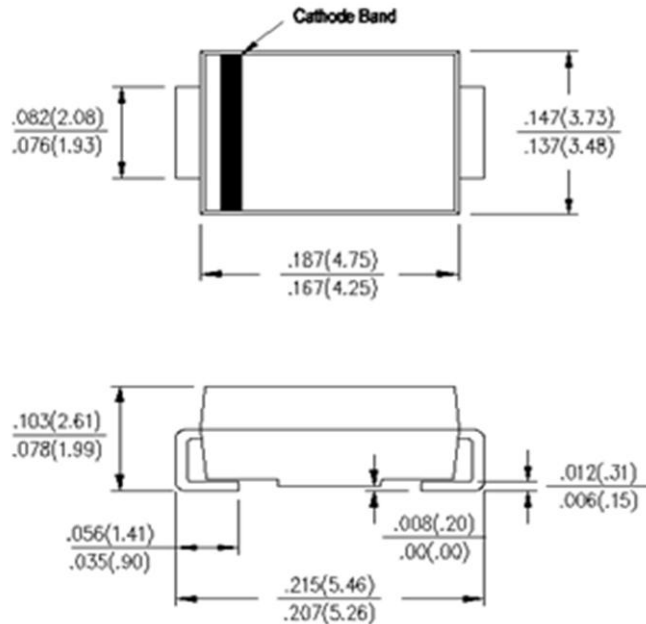
FIG.6- TYPICAL JUNCTION CAPACITANCE



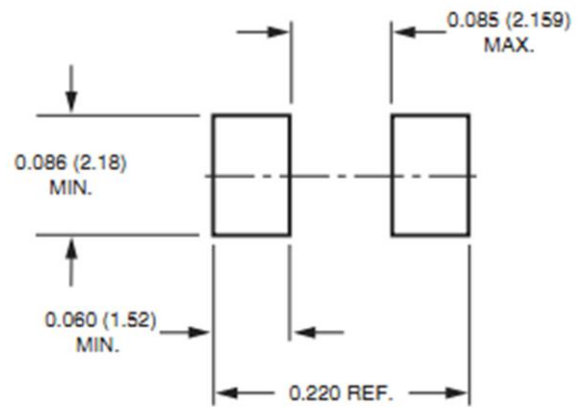
## Package Outline Dimensions

in inches (millimeters)

**SMB (DO-214AA)**



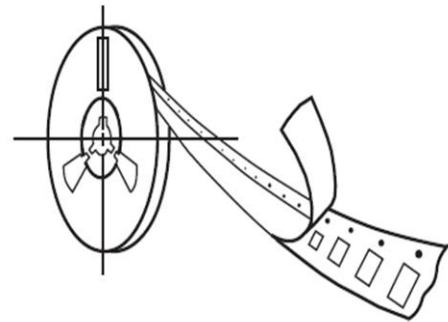
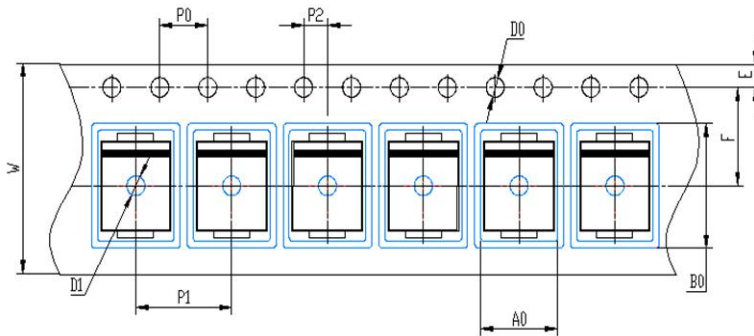
## Mounting Pad Layout



## Packing Information

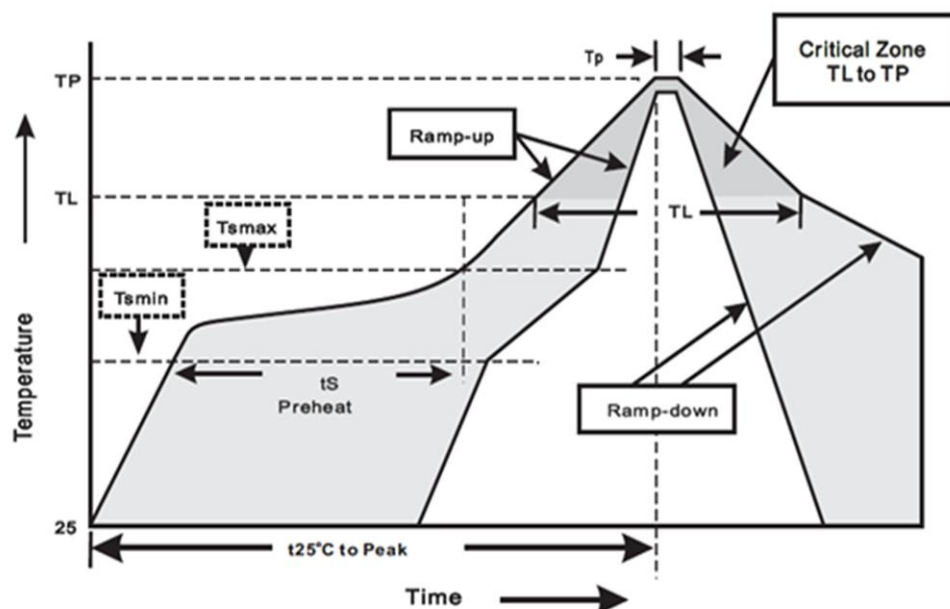
3000 pcs/Reel, 18 Reels/Box; 12mm Tape, 13" Reel

## Tape & Reel Specification



| Symbol | SMB(mm)      |
|--------|--------------|
| W      | 12±0.2       |
| E      | 1.75±0.1     |
| F      | 5.5±0.05     |
| D0     | 1.5±0.1      |
| D1     | 1.50 +0.1/-0 |
| P0     | 4.0±0.1      |
| P1     | 8.0±0.1      |
| P2     | 2.0±0.05     |
| A0     | 3.95±0.1     |
| B0     | 5.74±0.1     |

## Soldering Parameters



| Reflow Condition                                 |                               | Lead-free assembly |
|--------------------------------------------------|-------------------------------|--------------------|
| Pre Heat                                         | - Temperature Min (Ts(min))   | 150°C              |
|                                                  | - Temperature Max (Ts(max))   | 200°C              |
|                                                  | - Time (min to max) (ts)      | 60 – 180 secs      |
| Average ramp up rate (Liquidus Temp (TL) to peak |                               | 3°C/second max     |
| TS(max) to TL - Ramp-up Rate                     |                               | 3°C/second max     |
| Reflow                                           | - Temperature (TL) (Liquidus) | 217°C              |
|                                                  | - Time (min to max) (ts)      | 60 – 150 seconds   |
| Peak Temperature (TP)                            |                               | 260+0/-5 °C        |
| Time within 5°C of actual peak Temperature (tp)  |                               | 20 – 40 seconds    |
| Ramp-down Rate                                   |                               | 6°C/second max     |
| Time 25°C to peak Temperature (TP)               |                               | 8 minutes Max.     |
| Do not exceed                                    |                               | 280°C              |