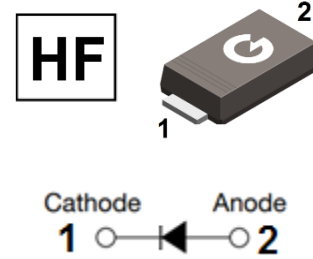


# Schottky Barrier Rectifier

## TSH52F - TSH54F

### Features

- Metal silicon junction, majority carrier conduction
- High forward surge current capability
- Low forward voltage drop
- High temperature soldering guaranteed: 260°C @ 10s
- Robust guarding for over voltage protection
- RoHS compliant with Halogen-free
- Qualified to AEC-Q101 Standards



### Mechanical Data

- Case: SMAF molded plastic
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Matte tin plated leads; solderable per J-STD-002 and JESD22-B102
- Polarity: Color band denotes cathode end

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

| Parameter                                                  | Symbol            | TSH52F | TSH53F | TSH54F | Unit |
|------------------------------------------------------------|-------------------|--------|--------|--------|------|
| Peak Repetitive Reverse Voltage                            | V <sub>RRM</sub>  | 20     | 30     | 40     | V    |
| RMS Reverse Voltage                                        | V <sub>RMS</sub>  | 14     | 21     | 28     | V    |
| DC Blocking Voltage                                        | V <sub>DC</sub>   | 20     | 30     | 40     | V    |
| Average Forward Output Current                             | I <sub>F_AV</sub> | 5.0    |        |        | A    |
| Peak Forward Surge Current,<br>8.3ms Single Half Sine wave | I <sub>FSM</sub>  | 150    |        |        | A    |

### Thermal Characteristics

| Parameter                            | Symbol           | TSH52F     | TSH53F | TSH54F | Unit |
|--------------------------------------|------------------|------------|--------|--------|------|
| Typical Thermal Resistance *1        | R <sub>θJA</sub> | 78         |        |        | °C/W |
|                                      | R <sub>θJC</sub> | 18         |        |        |      |
|                                      | R <sub>θJL</sub> | 20         |        |        |      |
| Operating Junction Temperature Range | T <sub>J</sub>   | -55 ~ +150 |        |        | °C   |
| Storage Temperature Range            | T <sub>STG</sub> | -55 ~ +150 |        |        | °C   |

Note 1: Device mounted on p.c.b. with 10 mm x 20 mm x 0.1 mm copper pad area

## Schottky Barrier Rectifier

## TSH52F - TSH54F

### Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

| Parameter                                   | Symbol     | Test Conditions                                                   |                             | Min. | Typ. | Max. | Unit          |
|---------------------------------------------|------------|-------------------------------------------------------------------|-----------------------------|------|------|------|---------------|
| Reverse Breakdown Voltage                   | $V_{(BR)}$ | $I_R = 100\mu\text{A}$ , TSH52F                                   |                             | 20   | -    | -    | V             |
|                                             |            | $I_R = 100\mu\text{A}$ , TSH53F                                   |                             | 30   | -    | -    | V             |
|                                             |            | $I_R = 100\mu\text{A}$ , TSH54F                                   |                             | 40   | -    | -    | V             |
| Instantaneous Forward Voltage* <sup>1</sup> | $V_F$      | $I_F = 5.0\text{A}$                                               | @ $T_A = 25^\circ\text{C}$  | -    | -    | 0.55 | V             |
| Reverse Current* <sup>2</sup>               | $I_R$      | Rated $V_R$                                                       | @ $T_J = 25^\circ\text{C}$  | -    | -    | 100  | $\mu\text{A}$ |
|                                             |            |                                                                   | @ $T_J = 100^\circ\text{C}$ | -    | -    | 10   | mA            |
| Diode capacitance                           | $C_J$      | $V_R = 4\text{V}$ , $f = 1\text{MHz}$                             |                             | -    | 300  | -    | pF            |
| Reverse Recovery Time                       | $t_{rr}$   | $I_F = 0.5\text{A}$ , $I_{rr} = 0.25\text{A}$ , $I_R = 1\text{A}$ |                             | -    | 17   | -    | ns            |

Note 1: Pulse test: 300us pulse width, 1 % duty cycle

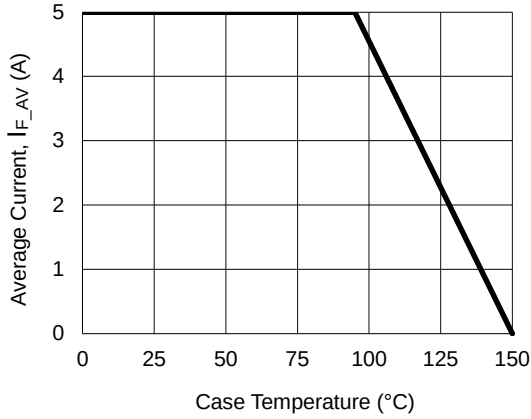
Note 2: Pulse test: Pulse width 40ms

# Schottky Barrier Rectifier

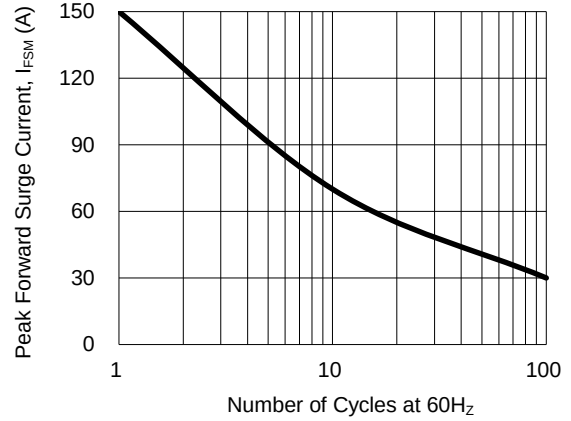
## TSH52F - TSH54F

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

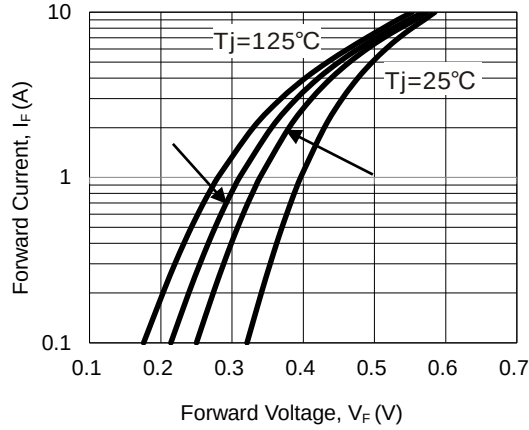
**Fig. 1 Forward Current Derating Curve**



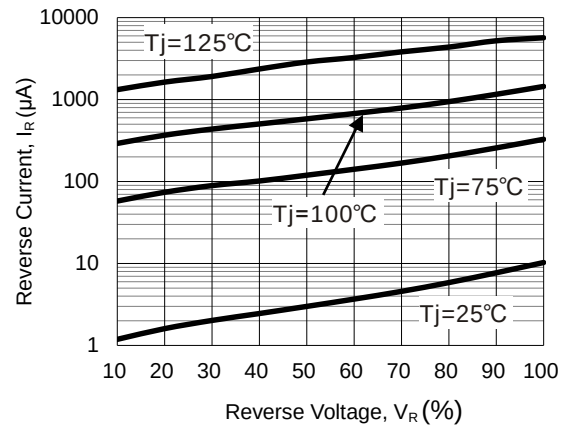
**Fig. 2 Surge Current Derating Curve**



**Fig. 3 Typical Forward Voltage Characteristics**



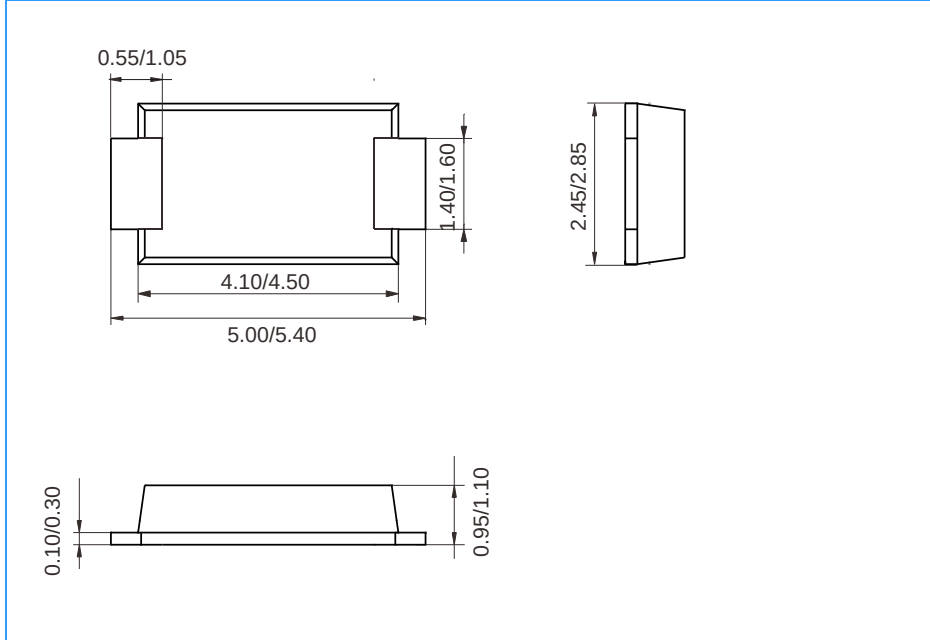
**Fig. 4 Typical Reverse Characteristics**



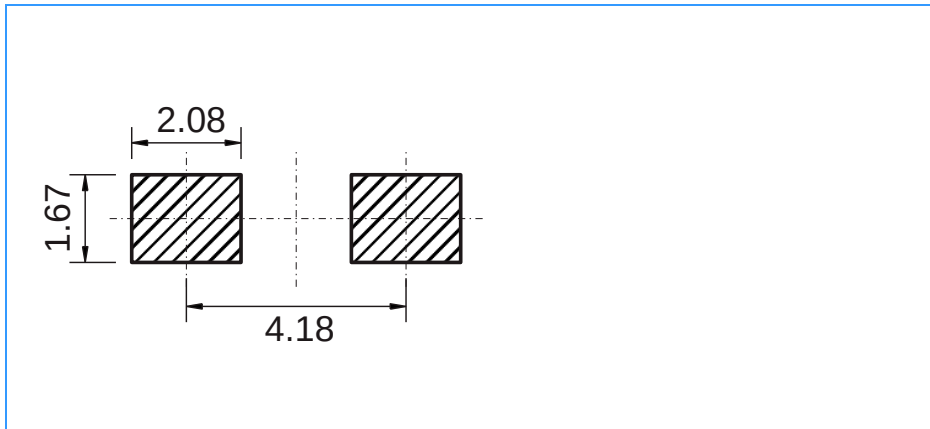
# Schottky Barrier Rectifier

TSH52F - TSH54F

## Package Outline Dimensions (Unit: mm)



## Mounting Pad Layout (Unit: mm)



## Ordering Information

| Part Number | Marking | Package | Shipping Quantity     |
|-------------|---------|---------|-----------------------|
| TSH52F      | SH52F   | SMAF    | 10 kpcs / Tape & Reel |
| TSH53F      | SH53F   | SMAF    | 10 kpcs / Tape & Reel |
| TSH54F      | SH54F   | SMAF    | 10 kpcs / Tape & Reel |