

# MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

## STTH310S-MS

Product specification

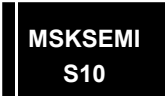
Description

The STTH310S-MS, which uses ultrafast high voltage planar technology, is specially suited for free-wheeling, clamping, snubbing, demagnetization in power supplies and other power switching applications.

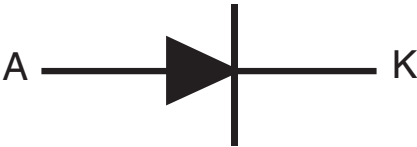
Features

- Low forward voltage drop
- High reliability
- High surge current capability
- Soft switching for reduced EMI disturbances
- Planar technology

Reference News

| STTH310S-MS                                                                                        | MARKING                                                                           |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <br>DO-214AB(SMC) |  |

| Device summary |         |
|----------------|---------|
| Symbol         | Value   |
| $I_{F(AV)}$    | 3 A     |
| $V_{RRM}$      | 1000 V  |
| $T_{j(max)}$   | +175 °C |
| $V_F (max)$    | 1.42 V  |
| $t_{rr} (max)$ | 75 ns   |



Absolute ratings (limiting values)

| Symbol      | Parameter                               |                                       |     | Value        | Unit |
|-------------|-----------------------------------------|---------------------------------------|-----|--------------|------|
| $V_{RRM}$   | Repetitive peak reverse voltage         |                                       |     | 1000         | V    |
| $I_{F(AV)}$ | Average forward current, $\delta = 0.5$ | $T_L = 75\text{ °C}$ , $\delta = 0.5$ | SMC | 3            | A    |
| $I_{FSM}$   | Forward surge current                   | $t_p = 8.3\text{ ms}$ sinusoidal      | SMC | 45           | A    |
| $T_{stg}$   | Storage temperature range               |                                       |     | - 65 to +175 | °C   |
| $T_j$       | Operating junction temperature range    |                                       |     | -40 to +175  | °C   |

## Thermal resistance

| Symbol        | Parameter        |     | Value | Unit |
|---------------|------------------|-----|-------|------|
| $R_{th(j-l)}$ | Junction to lead | SMC | 20    | °C/W |

## Static Electrical Characteristics

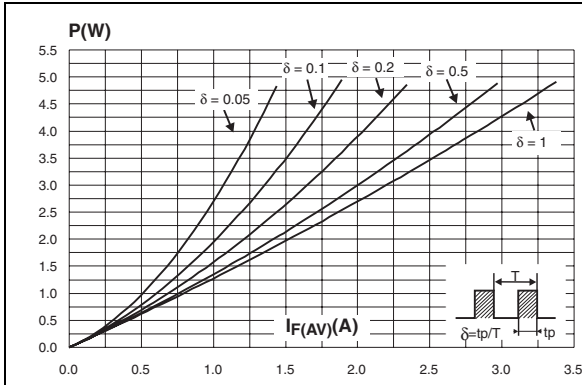
| Symbol | Parameter               | Test conditions       |                    | Min. | Typ. | Max. | Unit          |
|--------|-------------------------|-----------------------|--------------------|------|------|------|---------------|
| $I_R$  | Reverse leakage current | $T_j = 25\text{ °C}$  | $V_R = V_{RRM}$    | -    | -    | 10   | $\mu\text{A}$ |
|        |                         | $T_j = 125\text{ °C}$ |                    | -    | -    | 50   |               |
| $V_F$  | Forward voltage drop    | $T_j = 25\text{ °C}$  | $I_F = 3\text{ A}$ | -    | -    | 1.7  | V             |
|        |                         | $T_j = 150\text{ °C}$ |                    | -    | 0.98 | 1.42 |               |

To evaluate the conduction losses use the following equation:  $P = 1.20 \times I_{F(AV)} + 0.075 I_F^2 (RMS)$

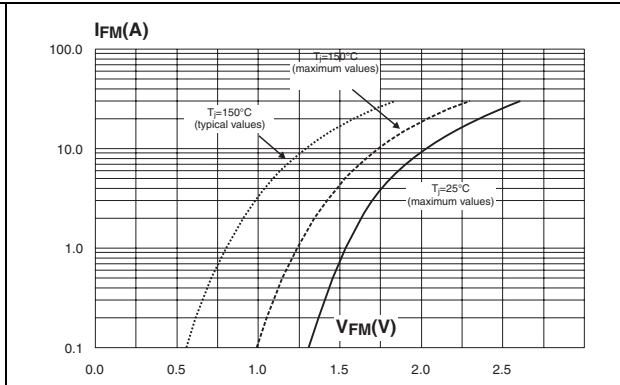
## Dynamic Characteristics

| Symbol   | Parameter                | Test conditions                                                                           | Min. | Typ. | Max. | Unit |
|----------|--------------------------|-------------------------------------------------------------------------------------------|------|------|------|------|
| $t_{rr}$ | Reverse recovery time    | $I_F = 0.5\text{ A}$ , $I_{rr} = 0.25\text{ A}$ $I_R = 1\text{ A}$ , $T_j = 25\text{ °C}$ | -    | -    | 75   | ns   |
| $t_{fr}$ | Forward recovery time    | $I_F = 3\text{ A}$ , $dI_F/dt = 50\text{ A}/\mu\text{s}$                                  | -    | -    | 300  | ns   |
| $V_{FP}$ | Forward recovery voltage | $V_{FR} = 1.1 \times V_{Fmax}$ , $T_j = 25\text{ °C}$                                     | -    | -    | 12   | V    |

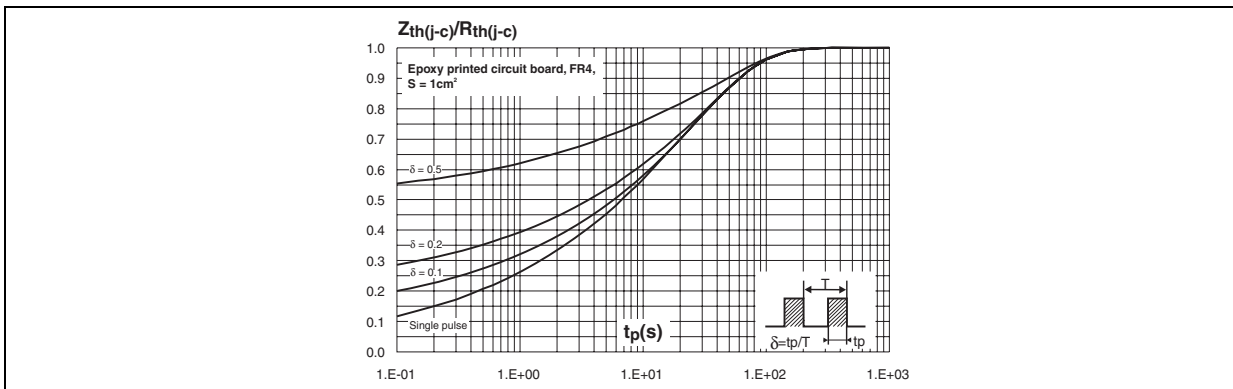
**Figure 1. Conduction losses versus average current**



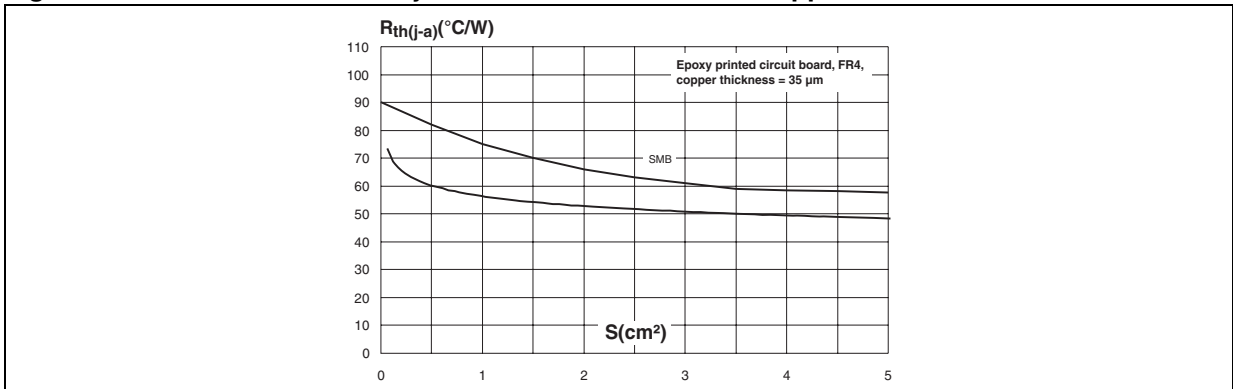
**Figure 2. Forward voltage drop versus forward current**



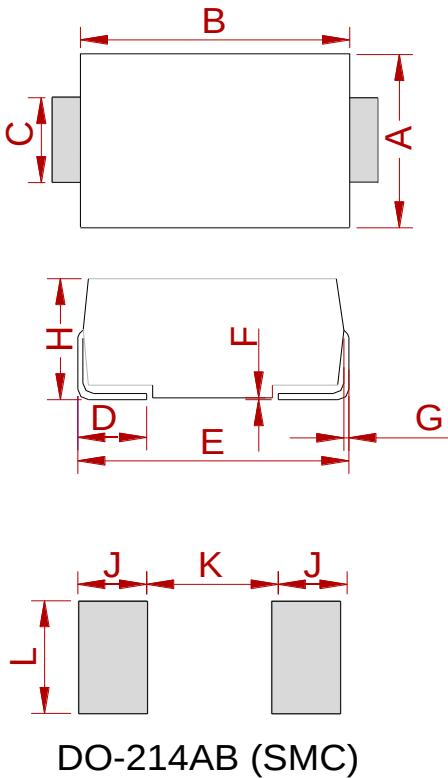
**Figure 3. Relative variation of thermal impedance junction ambient versus pulse duration (SMC)**



**Figure 4. Thermal resistance junction to ambient versus copper surface under each lead**



PACKAGE MECHANICAL DATA



| Ref. | Dimensions  |       |        |       |
|------|-------------|-------|--------|-------|
|      | Millimeters |       | Inches |       |
|      | Min.        | Max.  | Min.   | Max.  |
| A    | 5.75        | 6.25  | 0.226  | 0.246 |
| B    | 6.90        | 7.40  | 0.272  | 0.291 |
| C    | 2.75        | 3.25  | 0.108  | 0.128 |
| D    | 0.95        | 1.52  | 0.037  | 0.060 |
| E    | 7.70        | 8.20  | 0.303  | 0.323 |
| F    | 0.051       | 0.203 | 0.002  | 0.008 |
| G    | 0.15        | 0.31  | 0.006  | 0.012 |
| H    | 2.15        | 2.62  | 0.085  | 0.103 |
| J    | 2.40        |       | 0.094  |       |
| K    |             | 4.20  |        | 0.165 |
| L    | 3.30        |       | 0.130  |       |

REEL SPECIFICATION

| P/N         | PKG            | QTY  |
|-------------|----------------|------|
| STTH310S-MS | DO-214AB (SMC) | 2500 |

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