

## HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

|                            |                 |
|----------------------------|-----------------|
| <b>I<sub>F(AV)</sub></b>   | <b>2 x 15 A</b> |
| <b>V<sub>RRM</sub></b>     | <b>60 V</b>     |
| <b>T<sub>j</sub> (max)</b> | <b>150°C</b>    |
| <b>V<sub>F</sub> (max)</b> | <b>0.75 V</b>   |

### FEATURES AND BENEFITS

- Negligible switching losses
- Low forward voltage drop
- Low capacitance
- High reverse avalanche surge capability.

### DESCRIPTION

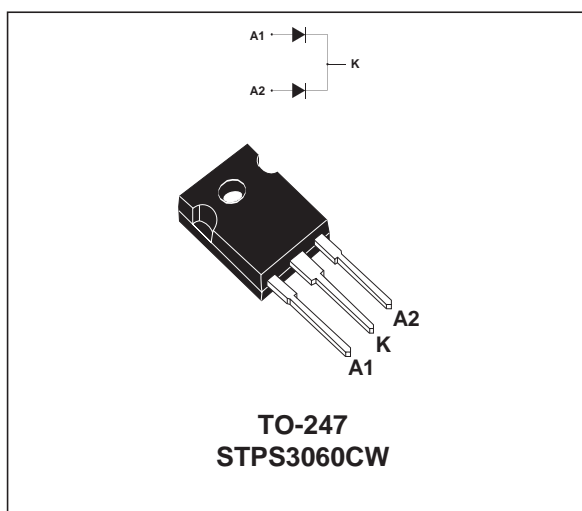
High voltage dual Schottky rectifier suited for switchmode power supplies and other power converters.

Packaged in TO-247, this device is intended for use in medium voltage operation, and particularly, in high frequency circuitries where low switching losses and low noise are required.

### ABSOLUTE RATINGS (limiting values, per diode)

| Symbol              | Parameter                                |                                      | Value         | Unit |
|---------------------|--|--------------------------------------|---------------|------|
| V <sub>RRM</sub>    | Repetitive peak reverse voltage          |                                      | 60            | V    |
| I <sub>F(RMS)</sub> | RMS forward current                      |                                      | 30            | A    |
| I <sub>F(AV)</sub>  | Average forward current                  | δ = 0.5                              | 15            | A    |
|                     |  | T <sub>c</sub> = 130°C               | 30            | A    |
| I <sub>FSM</sub>    | Surge non repetitive forward current     | t <sub>p</sub> = 10 ms<br>Sinusoidal | 200           | A    |
| I <sub>RRM</sub>    | Repetitive peak reverse current          | t <sub>p</sub> = 2 μs<br>F = 1kHz    | 1             | A    |
| I <sub>RSM</sub>    | Non repetitive peak reverse current      | t <sub>p</sub> = 100 μs              | 1             | A    |
| T <sub>stg</sub>    | Storage temperature range                |                                      | - 65 to + 150 | °C   |
| T <sub>j</sub>      | Maximum operating junction temperature * |                                      | 150           | °C   |
| dV/dt               | Critical rate of rise of reverse voltage |                                      | 1000          | V/μs |

\* :  $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th}(j-a)}$  thermal runaway condition for a diode on its own heatsink



**THERMAL RESISTANCES**

| Symbol               | Parameter        |  | Value     | Unit |
|----------------------|------------------|--|-----------|------|
| R <sub>th(j-c)</sub> | Junction to case |  | Per diode | 1.5  |
|                      |                  |  | Total     | 0.8  |
| R <sub>th(c)</sub>   | Coupling         |  | 0.1       | °C/W |

When the diodes 1 and 2 are used simultaneously :  
 $\Delta T_j(\text{diode 1}) = P(\text{diode 1}) \times R_{th(j-c)}(\text{Per diode}) + P(\text{diode 2}) \times R_{th(c)}$

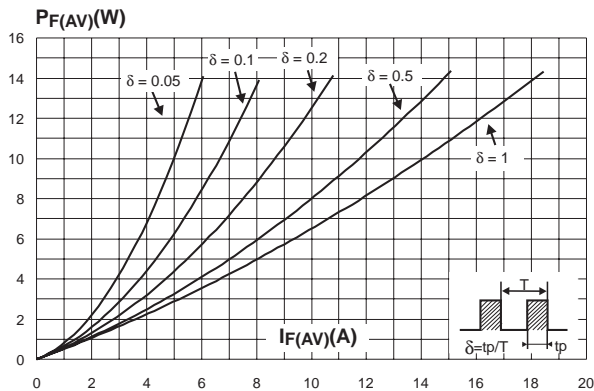
**STATIC ELECTRICAL CHARACTERISTICS (per diode)**

| Symbol           | Parameter               | Tests Conditions       |                                   | Min. | Typ. | Max. | Unit |
|------------------|-------------------------|------------------------|-----------------------------------|------|------|------|------|
| I <sub>R</sub> * | Reverse leakage current | T <sub>J</sub> = 25°C  | V <sub>R</sub> = V <sub>RRM</sub> |      |      | 150  | μA   |
|                  |                         | T <sub>J</sub> = 125°C |                                   |      |      | 100  | mA   |
| V <sub>F</sub> * | Forward voltage drop    | T <sub>J</sub> = 25°C  | I <sub>F</sub> = 15 A             |      |      | 0.85 | V    |
|                  |                         | T <sub>J</sub> = 125°C | I <sub>F</sub> = 15 A             |      | 0.65 | 0.75 |      |
|                  |                         | T <sub>J</sub> = 25°C  | I <sub>F</sub> = 30 A             |      |      | 1.05 |      |
|                  |                         | T <sub>J</sub> = 125°C | I <sub>F</sub> = 30 A             |      | 0.80 | 0.90 |      |

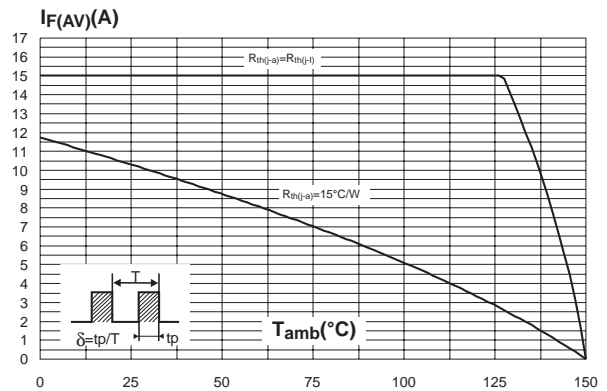
Pulse test: \* tp = 5ms, δ < 2%  
 \*\*tp = 380μs, δ < 2%

To evaluate the maximum conduction losses use the following equation :  
 $P = 0.6 \times I_{F(AV)} + 0.01 I_{F(RMS)}^2$

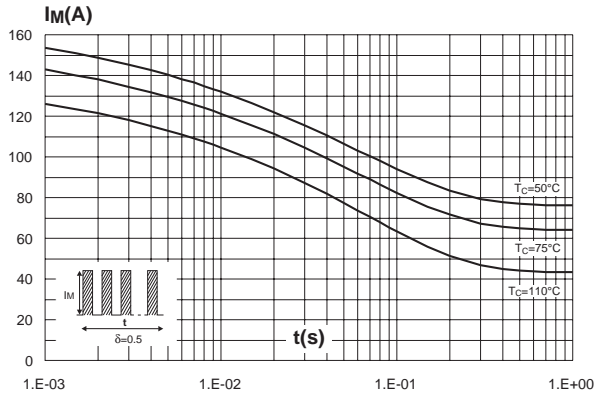
**Fig. 1:** Conduction losses versus average current (per diode).



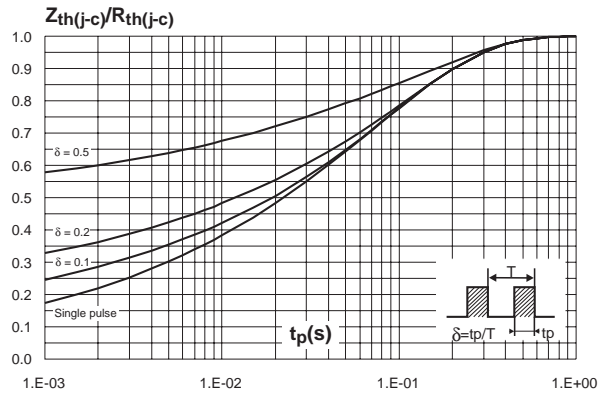
**Fig. 2:** Average forward current versus ambient temperature (δ=0.5, per diode).



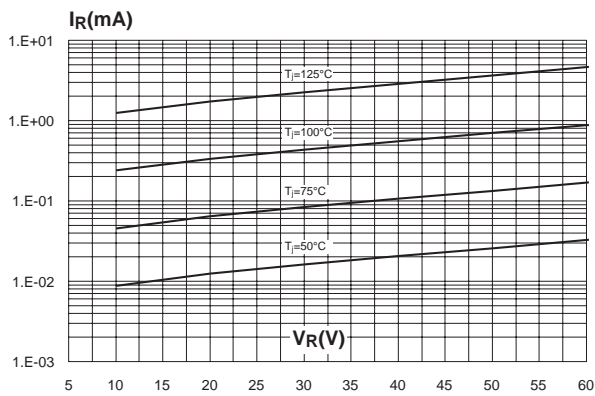
**Fig. 3:** Non repetitive surge peak forward current versus overload duration (maximum values, per diode).



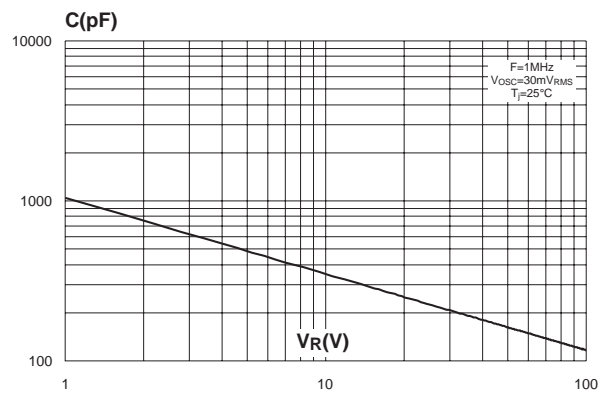
**Fig. 4:** Relative variation of thermal impedance junction to case versus pulse duration.



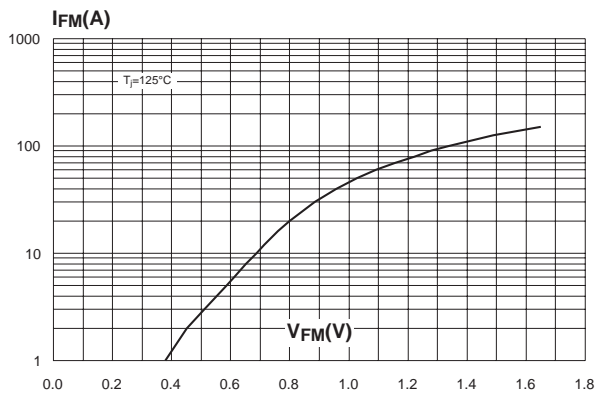
**Fig. 5:** Reverse leakage current versus reverse voltage applied (typical values, per diode).



**Fig. 6:** Junction capacitance versus reverse voltage applied (typical values, per diode).



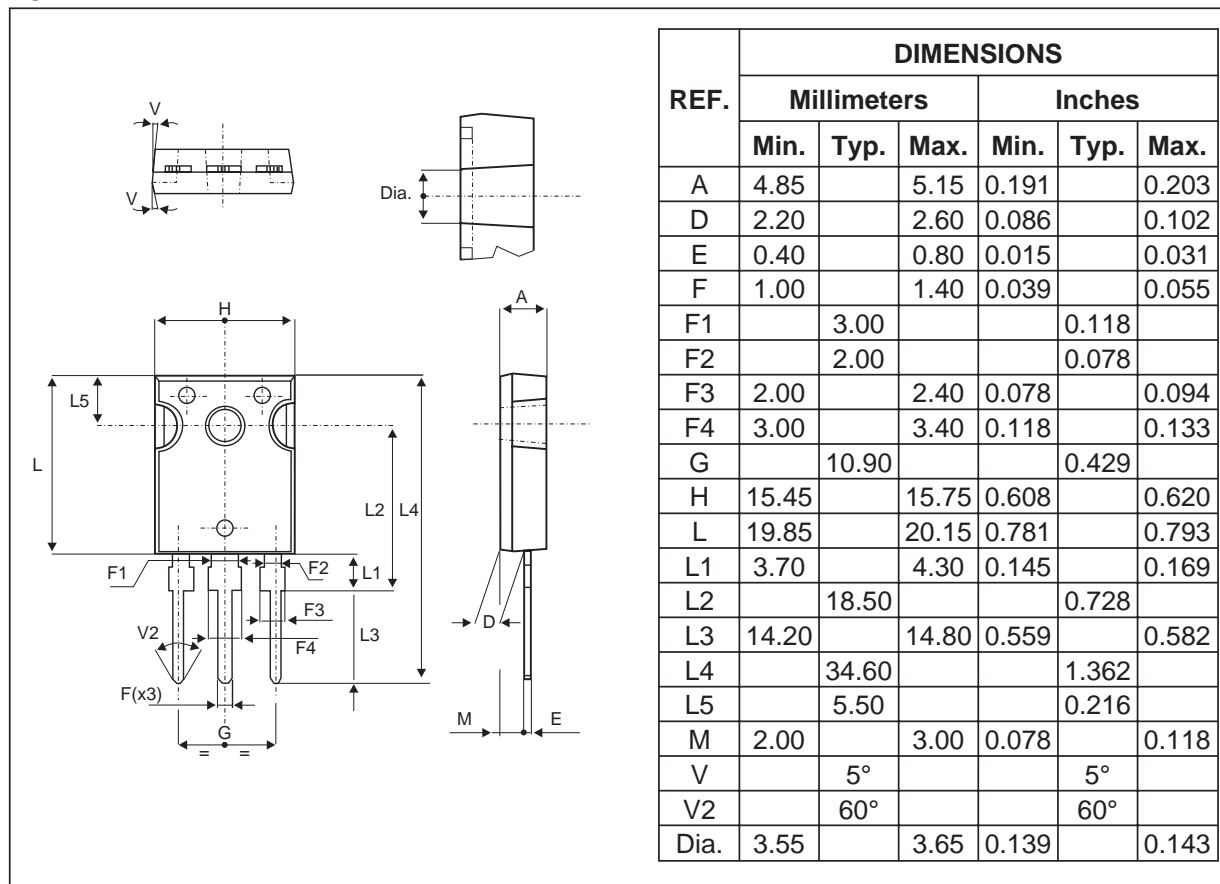
**Fig. 7:** Forward voltage drop versus forward current (maximum values, per diode).



# STPS3060CW

## PACKAGE MECHANICAL DATA

TO-247



- Cooling method : C
- Recommended torque value : 0.8m.N
- Maximum torque value : 1.0m.N

| Ordering type | Marking    | Package | Weight | Base qty | Delivery mode |
|---------------|------------|---------|--------|----------|---------------|
| STPS3060CW    | STPS3060CW | TO-247  | 4.4 g  | 50       | Tube          |

- Epoxy meets UL94,V0

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