



## STPS3L60S

### POWER SCHOTTKY RECTIFIER

#### MAIN PRODUCT CHARACTERISTICS

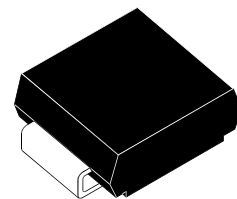
|             |        |
|-------------|--------|
| $I_{F(AV)}$ | 3 A    |
| $V_{RRM}$   | 60 V   |
| $T_j$ (max) | 150°C  |
| $V_F$ (max) | 0.65 V |

#### FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- LOW THERMAL RESISTANCE

#### DESCRIPTION

Schottky rectifier suited for Switched Mode Power Supplies and high frequency DC to DC converters. Packaged in SMC, this device is intended for use in DC/DC chargers.



SMC  
(JEDEC DO-214AB)

#### ABSOLUTE RATINGS (limiting values)

| Symbol       | Parameter                                |                                                | Value         | Unit             |
|--------------|------------------------------------------|------------------------------------------------|---------------|------------------|
| $V_{RRM}$    | Repetitive peak reverse voltage          |                                                | 60            | V                |
| $I_{F(RMS)}$ | RMS forward current                      |                                                | 10            | A                |
| $I_{F(AV)}$  | Average forward current                  | $T_c = 100^\circ\text{C} \quad \delta = 0.5$   | 3             | A                |
| $I_{FSM}$    | Surge non repetitive forward current     | $t_p = 10 \text{ ms}$ Sinusoidal               | 75            | A                |
| $I_{RRM}$    | Repetitive peak reverse current          | $t_p = 2 \mu\text{s}$ square $F = 1\text{kHz}$ | 1             | A                |
| $T_{stg}$    | Storage temperature range                |                                                | - 65 to + 175 | °C               |
| $T_j$        | Maximum operating junction temperature * |                                                | 150           | °C               |
| $dV/dt$      | Critical rate of rise of reverse voltage |                                                | 10000         | V/ $\mu\text{s}$ |

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

## STPS3L60S

### THERMAL RESISTANCES

| Symbol        | Parameter         | Value | Unit                 |
|---------------|-------------------|-------|----------------------|
| $R_{th(j-l)}$ | Junction to leads | 20    | $^{\circ}\text{C/W}$ |

### STATIC ELECTRICAL CHARACTERISTICS

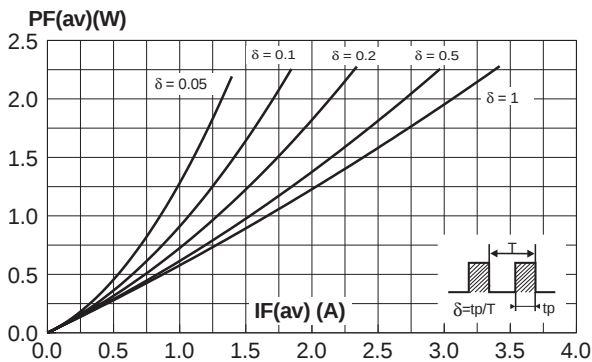
| Symbol  | Parameter               | Tests conditions            | Min.               | Typ. | Max. | Unit          |
|---------|-------------------------|-----------------------------|--------------------|------|------|---------------|
| $I_R^*$ | Reverse leakage current | $T_j = 25^{\circ}\text{C}$  | $V_R = V_{RRM}$    |      | 55   | $\mu\text{A}$ |
|         |                         | $T_j = 125^{\circ}\text{C}$ |                    | 10   | 15   | mA            |
| $V_F^*$ | Forward voltage drop    | $T_j = 25^{\circ}\text{C}$  | $I_F = 3\text{ A}$ |      | 0.7  | V             |
|         |                         | $T_j = 125^{\circ}\text{C}$ | $I_F = 3\text{ A}$ | 0.56 | 0.65 |               |
|         |                         | $T_j = 25^{\circ}\text{C}$  | $I_F = 6\text{ A}$ |      | 0.94 |               |
|         |                         | $T_j = 125^{\circ}\text{C}$ | $I_F = 6\text{ A}$ | 0.67 | 0.76 |               |

Pulse test :  $* t_p = 380\text{ }\mu\text{s}$ ,  $\delta < 2\%$

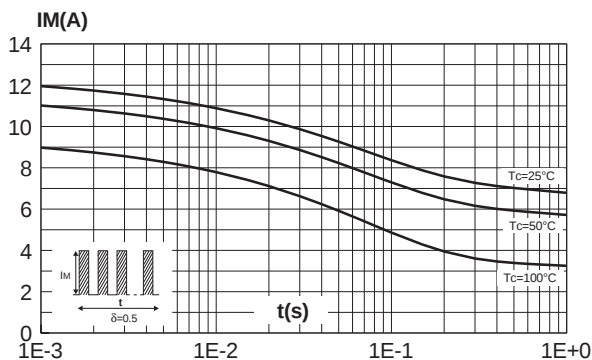
To evaluate the conduction losses use the following equation :

$$P = 0.54 \times I_{F(AV)} + 0.037 I_{F(RMS)}^2$$

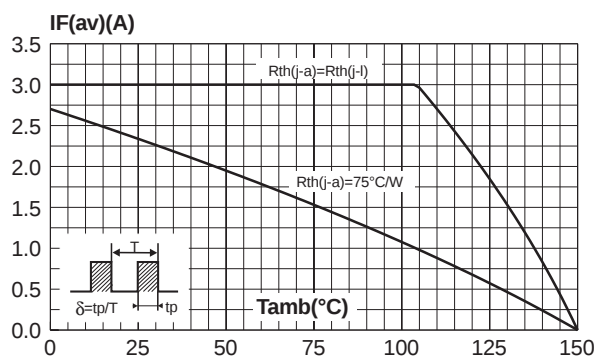
**Fig. 1:** Average forward power dissipation versus average forward current.



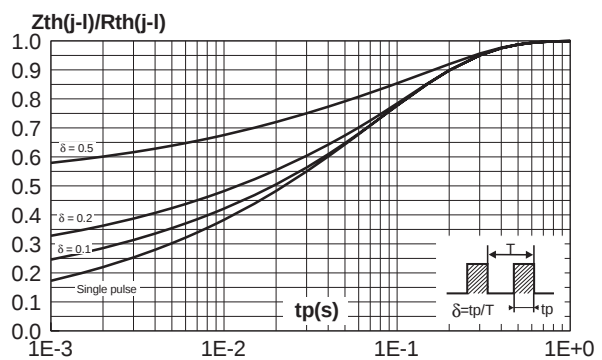
**Fig. 3:** Non repetitive surge peak forward current versus overload duration (maximum values).



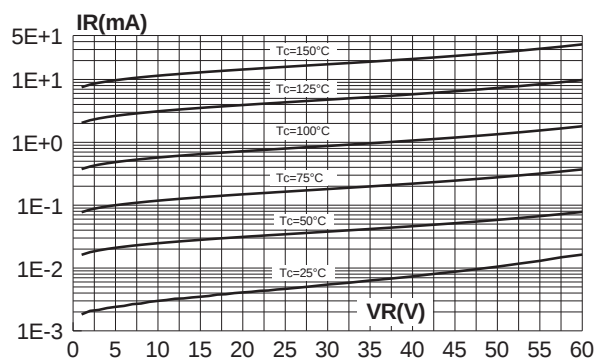
**Fig. 2:** Average forward current versus ambient temperature ( $\delta = 0.5$ ).



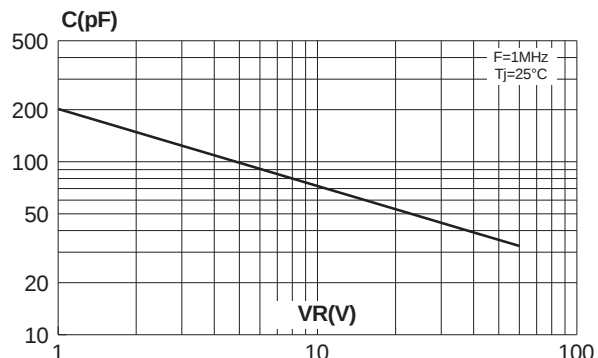
**Fig. 4:** Relative variation of thermal impedance junction to lead versus pulse duration.



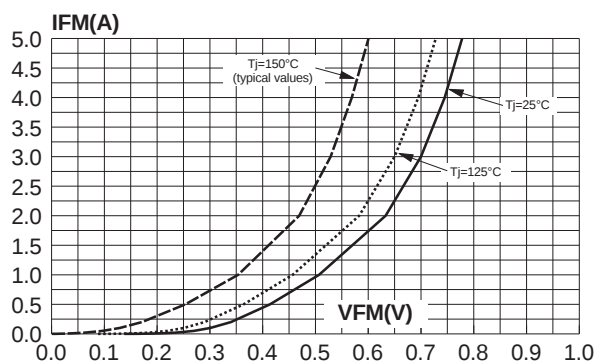
**Fig. 5:** Reverse leakage current versus reverse voltage applied (typical values).



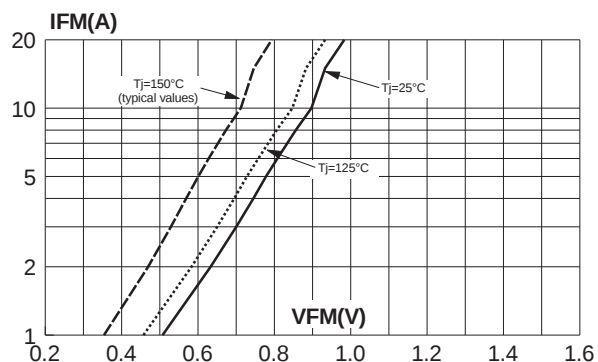
**Fig. 6:** Junction capacitance versus reverse voltage applied (typical values).



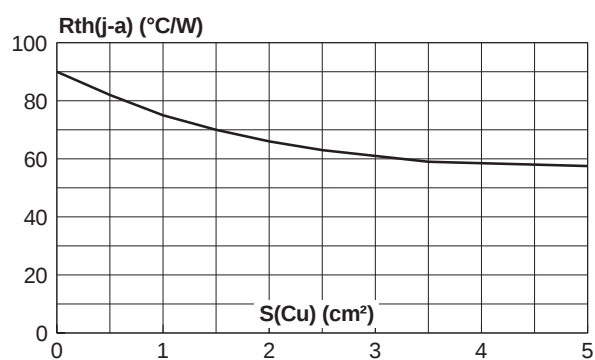
**Fig. 7-1:** Forward voltage drop versus forward current (low level, maximum values).



**Fig. 7-2:** Forward voltage drop versus forward current (high level, maximum values).



**Fig. 8:** Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness: 35mm)



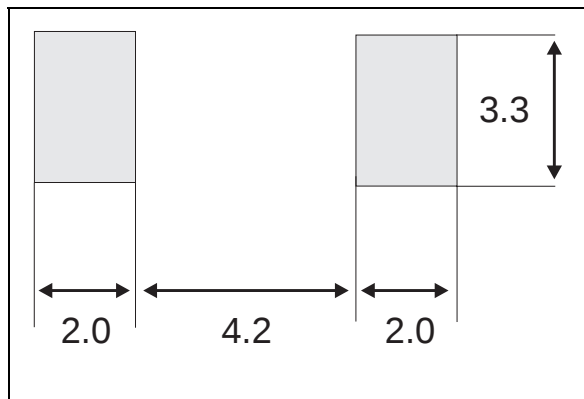
## STPS3L60S

### PACKAGE MECHANICAL DATA

SMC

| REF. | DIMENSIONS  |      |        |       |
|------|-------------|------|--------|-------|
|      | Millimeters |      | Inches |       |
|      | Min.        | Max. | Min.   | Max.  |
| A1   | 1.90        | 2.45 | 0.075  | 0.096 |
| A2   | 0.05        | 0.20 | 0.002  | 0.008 |
| b    | 2.90        | 3.2  | 0.114  | 0.126 |
| c    | 0.15        | 0.41 | 0.006  | 0.016 |
| E    | 7.75        | 8.15 | 0.305  | 0.321 |
| E1   | 6.60        | 7.15 | 0.260  | 0.281 |
| E2   | 4.40        | 4.70 | 0.173  | 0.185 |
| D    | 5.55        | 6.25 | 0.218  | 0.246 |
| L    | 0.75        | 1.60 | 0.030  | 0.063 |

### FOOT PRINT ( in millimeters)



| Ordering type | Marking | Package | Weight | Base qty | Delivery mode |
|---------------|---------|---------|--------|----------|---------------|
| STPS3L60S     | S36     | SMC     | 0.24g  | 2500     | Tape and reel |

■ Epoxy meets UL94,V0

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