

## LOW DROP POWER SCHOTTKY RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

|                            |               |
|----------------------------|---------------|
| <b>I<sub>F(AV)</sub></b>   | <b>8 A</b>    |
| <b>V<sub>RRM</sub></b>     | <b>30 V</b>   |
| <b>T<sub>j</sub> (max)</b> | <b>150 °C</b> |
| <b>V<sub>F</sub> (max)</b> | <b>0.40 V</b> |

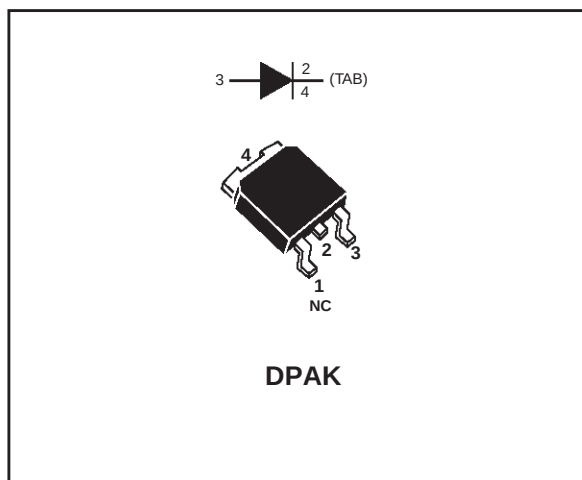
### FEATURES AND BENEFITS

- LOW COST DEVICE WITH LOW DROP FORWARD VOLTAGE FOR LESS POWER DISSIPATION AND REDUCED HEATSINK
- OPTIMIZED CONDUCTION/REVERSE LOSSES TRADE-OFF WHICH LEADS TO THE HIGHEST YIELD IN THE APPLICATIONS
- HIGH POWER SURFACE MOUNT MINIATURE PACKAGE

### DESCRIPTION

Single Schottky rectifier suited to Switched Mode Power Supplies and high frequency DC to DC converters.

Packaged in DPAK, this device is especially intended for use as a Rectifier at the secondary of 3.3V SMPS or DC/DC units.



### ABSOLUTE RATINGS (limiting values)

| Symbol              | Parameter                                |                                       | Value         | Unit |
|---------------------|------------------------------------------|---------------------------------------|---------------|------|
| V <sub>RRM</sub>    | Repetitive peak reverse voltage          |                                       | 30            | V    |
| I <sub>F(RMS)</sub> | RMS forward current                      |                                       | 7             | A    |
| I <sub>F(AV)</sub>  | Average forward current                  | T <sub>c</sub> = 135°C δ = 0.5        | 8             | A    |
| I <sub>FSM</sub>    | Surge non repetitive forward current     | t <sub>p</sub> = 10 ms Sinusoidal     | 75            | A    |
| I <sub>RRM</sub>    | Repetitive peak reverse current          | t <sub>p</sub> = 2 μs F = 1kHz square | 1             | A    |
| I <sub>RSM</sub>    | Non repetitive peak reverse current      | t <sub>p</sub> = 100μs square         | 2             | A    |
| T <sub>stg</sub>    | Storage temperature range                |                                       | - 65 to + 150 | °C   |
| T <sub>j</sub>      | Maximum junction temperature             |                                       | 150           | °C   |
| dV/dt               | Critical rate of rise of reverse voltage |                                       | 10000         | V/μs |

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

STPS8L30B

THERMAL RESISTANCES

| Symbol        | Parameter        | Value | Unit |
|---------------|------------------|-------|------|
| $R_{th(j-c)}$ | Junction to case | 2.5   | °C/W |

STATIC ELECTRICAL CHARACTERISTICS

| Symbol  | Tests Conditions        | Tests Conditions            | Min.                | Typ. | Max. | Unit |
|---------|-------------------------|-----------------------------|---------------------|------|------|------|
| $I_R$ * | Reverse leakage current | $T_j = 25^{\circ}\text{C}$  | $V_R = V_{RRM}$     |      | 1    | mA   |
|         |                         | $T_j = 100^{\circ}\text{C}$ |                     | 15   | 40   |      |
| $V_F$ * | Forward voltage drop    | $T_j = 25^{\circ}\text{C}$  | $I_F = 8\text{ A}$  |      | 0.49 | V    |
|         |                         | $T_j = 125^{\circ}\text{C}$ |                     | 0.35 | 0.4  |      |
|         |                         | $T_j = 25^{\circ}\text{C}$  | $I_F = 16\text{ A}$ |      | 0.63 |      |
|         |                         | $T_j = 125^{\circ}\text{C}$ |                     | 0.48 | 0.57 |      |

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

To evaluate the maximum conduction losses use the following equation :  
 $P = 0.23 \times I_{F(AV)} + 0.021 I_{F(RMS)}^2$

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

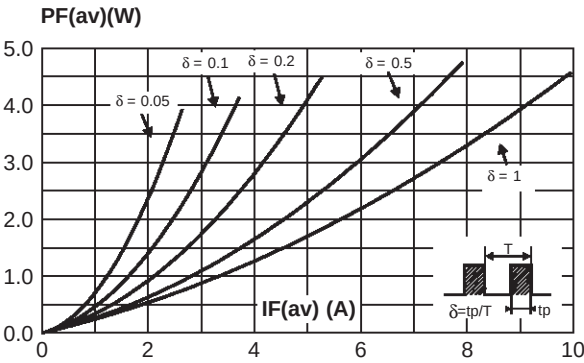
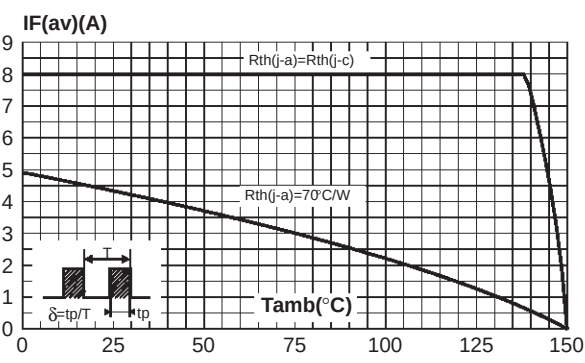
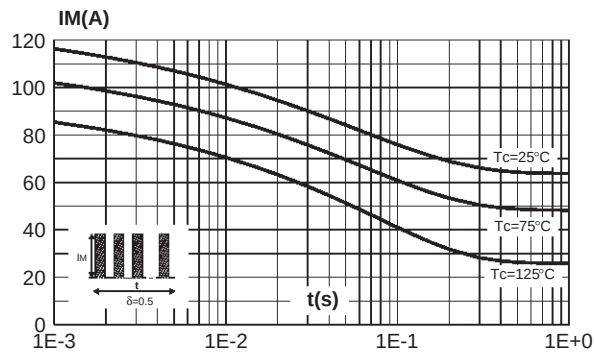


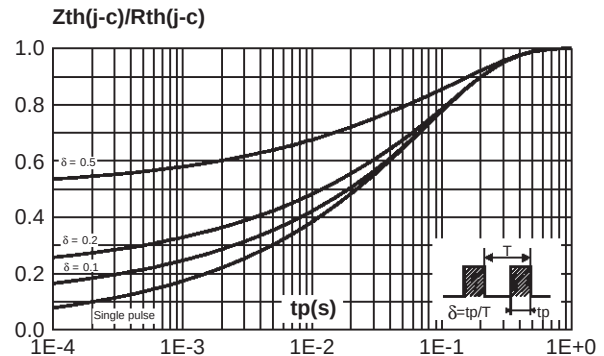
Fig. 2: Average forward current versus ambient temperature ( $\delta=0.5$ ).



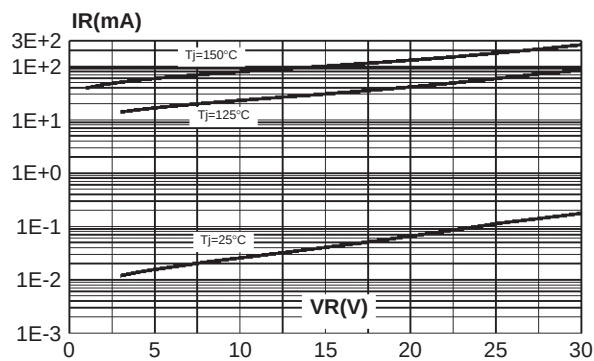
**Fig. 3:** Non repetitive surge peak forward current versus overload duration (maximum values).



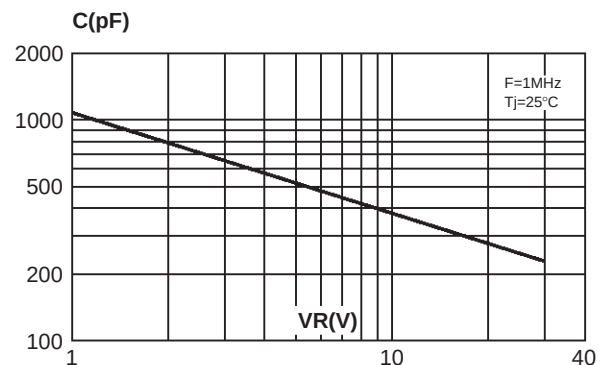
**Fig. 4:** Relative variation of thermal impedance junction to ambient versus pulse duration.



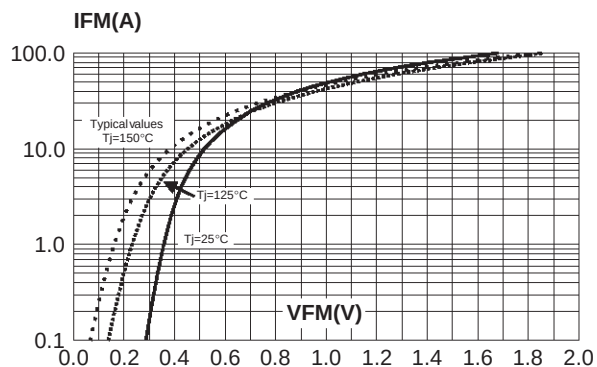
**Fig. 5:** Reverse leakage current versus reverse voltage applied (typical values).



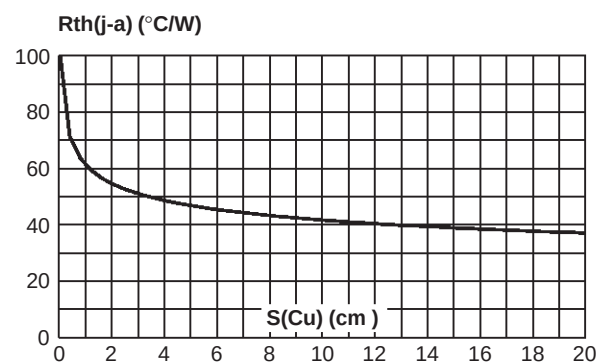
**Fig. 6:** Junction capacitance versus reverse voltage applied (typical values).



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



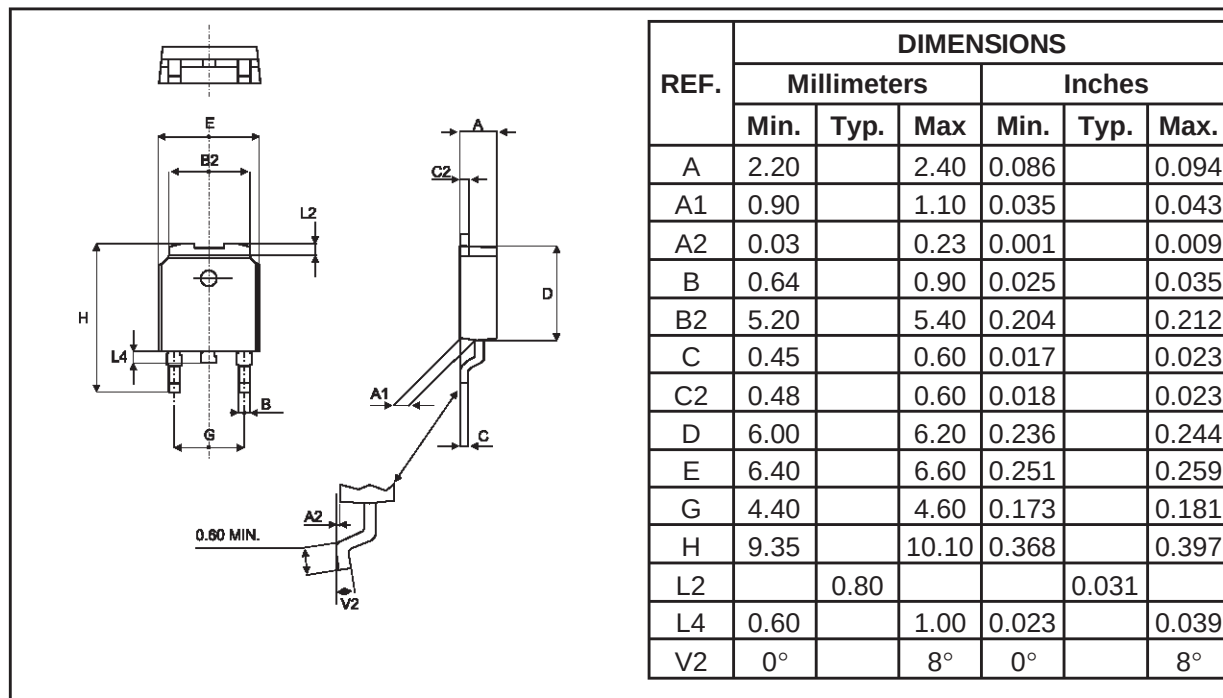
**Fig. 8:** Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness:  $35\mu\text{m}$ ).



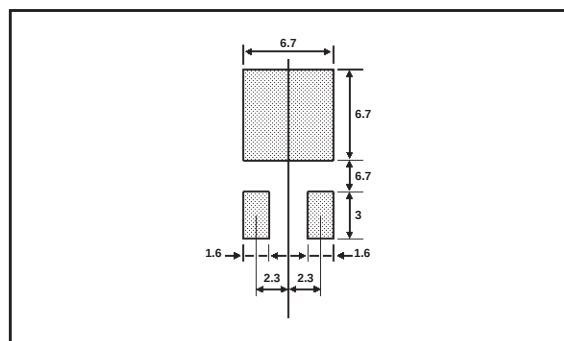
## STPS8L30B

### PACKAGE MECHANICAL DATA

#### DPAK



#### FOOT PRINT DIMENSIONS (in millimeters)



| Ordering type | Marking   | Package | Weight | Base qty | Delivery mode |
|---------------|-----------|---------|--------|----------|---------------|
| STPS8L30B     | STPS8L30B | DPAK    | 0.3g   | 75       | Tube          |
| STPS8L30B-TR  | STPS8L30B | DPAK    | 0.3g   | 2500     | Tape & reel   |

#### ■ Epoxy meets UL94,V0

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