



STPS15L60CB

POWER SCHOTTKY RECTIFIER

MAIN PRODUCTS CHARACTERISTICS

| | |
|-------------|-----------|
| $I_{F(AV)}$ | 2 x 7.5 A |
| V_{RRM} | 60 V |
| $T_j(max)$ | 150 °C |
| $V_F(max)$ | 0.52 V |

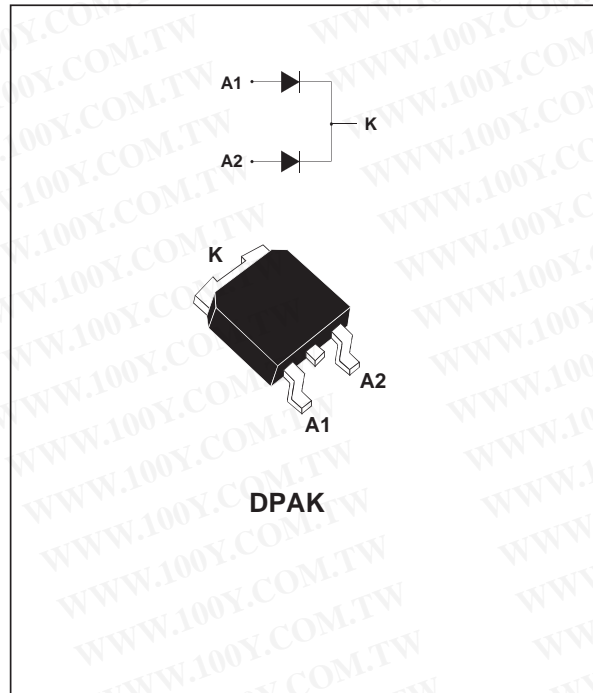
FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP
- LOW THERMAL RESISTANCE
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

Dual center tab Schottky rectifier suited for Switch Mode Power Supply and high frequency DC to DC converters.

Package in DPAK, this device is intended for use in low voltage, high frequency inverters, free-wheeling and polarity protection applications.



ABSOLUTE RATINGS (limiting values, per diode)

| 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 | $T_c = 135^\circ\text{C}$ $\delta = 0.5$ | Per diode 7.5 | A |
| | | | Per device 15 | |
| I_{FSM} | Surge non repetitive forward current | $t_p = 10$ ms sinusoidal | 75 | A |
| I_{RRM} | Peak repetitive reverse current | $t_p = 2 \mu\text{s}$ square $F = 1\text{kHz}$ | 1 | A |
| P_{ARM} | Repetitive peak avalanche power | $t_p = 1 \mu\text{s}$ $T_j = 25^\circ\text{C}$ | 3700 | W |
| T_{stg} | Storage temperature range | | - 65 to + 175 | °C |
| T_j | Maximum operating junction temperature * | | 150 | °C |
| dV/dt | Critical rate of rise 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

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THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|----------------------|------------------|-----------|------|
| R _{th(j-c)} | Junction to case | Per diode | 4 |
| | | Total | 2.4 |
| R _{th(c)} | Coupling | 0.7 | °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 _R * | Reverse leakage current | T _j = 25°C | V _R = V _{RRM} | | 200 | μA |
| | | T _j = 125°C | | 45 | 60 | mA |
| V _F * | Forward voltage drop | T _j = 25°C | I _F = 7.5 A | | 0.62 | V |
| | | T _j = 125°C | I _F = 7.5 A | 0.52 | 0.57 | |
| | | T _j = 25°C | I _F = 12 A | | 0.76 | |
| | | T _j = 125°C | I _F = 12 A | 0.62 | 0.68 | |
| | | T _j = 25°C | I _F = 15 A | | 0.82 | |
| | | T _j = 125°C | I _F = 15 A | 0.66 | 0.72 | |

Pulse test : * t_p = 380 μs, δ < 2%

To evaluate the conduction losses use the following equation :

$$P = 0.32 \times I_{F(AV)} + 0.027 I_{F(RMS)}^2$$

Fig. 1: Conduction losses versus average current.

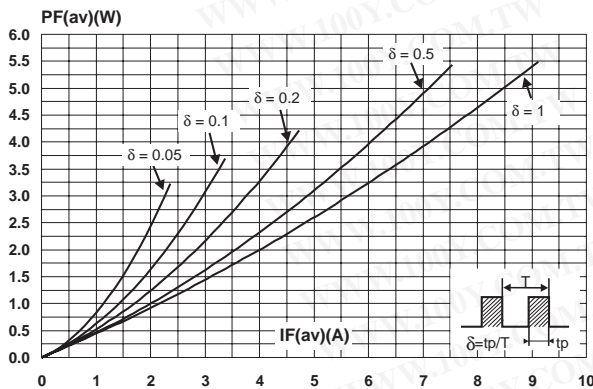


Fig. 3: Normalized avalanche power derating versus pulse duration.

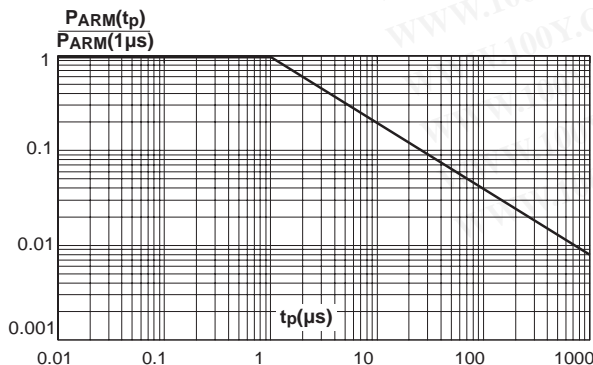


Fig. 2: Average forward current versus ambient temperature (δ = 0.5).

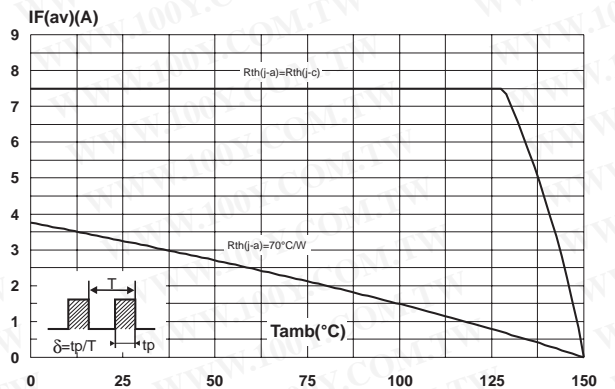


Fig. 4: Normalized avalanche power derating versus junction temperature.

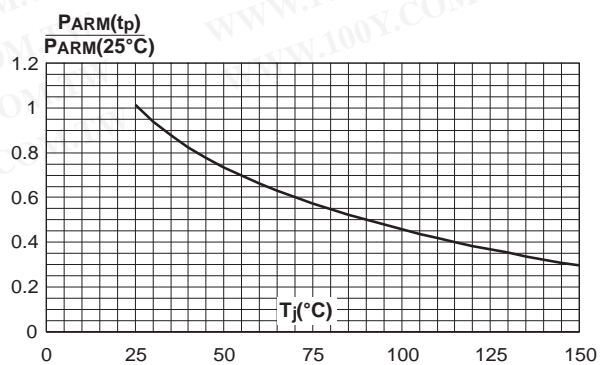


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values).

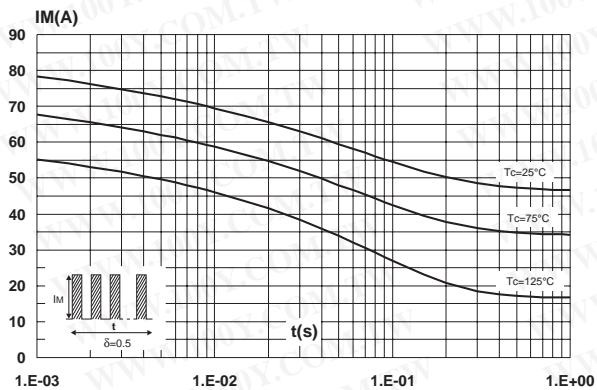


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

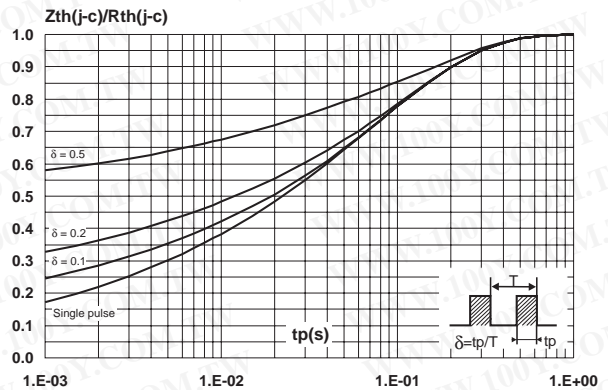


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

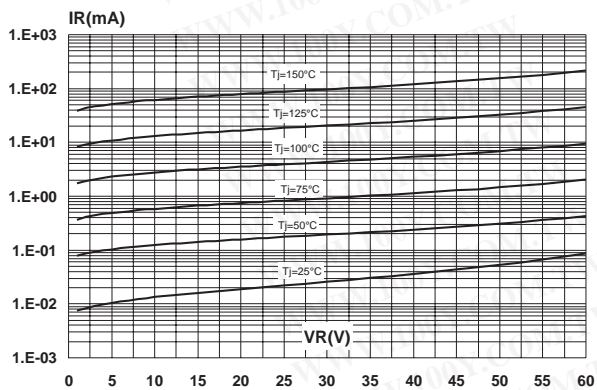


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

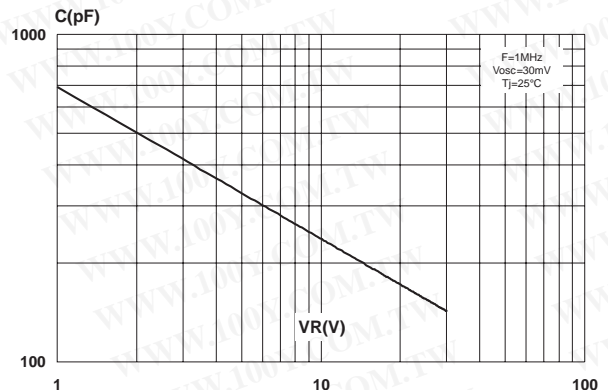


Fig. 9: Forward voltage drop versus forward current.

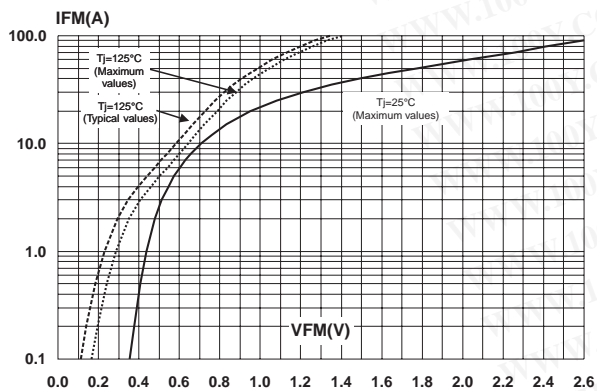
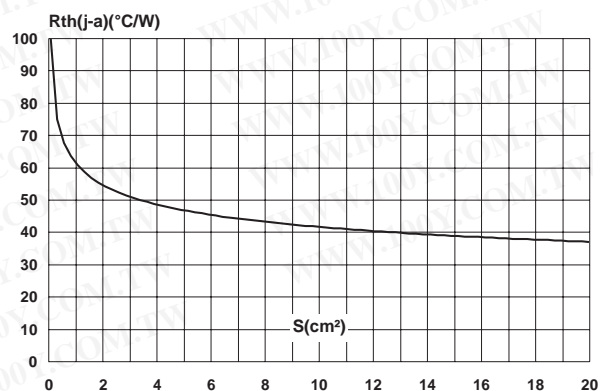


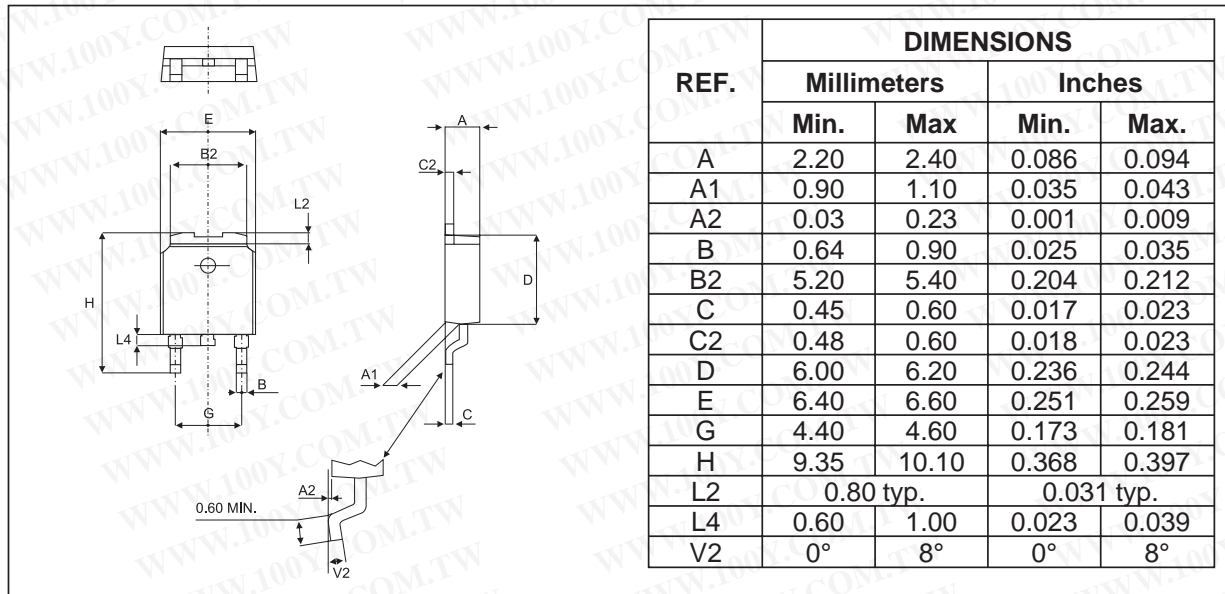
Fig. 10: Thermal resistance junction to ambient versus copper surface under tab (epoxy printed board FR4, Cu = 35μm).



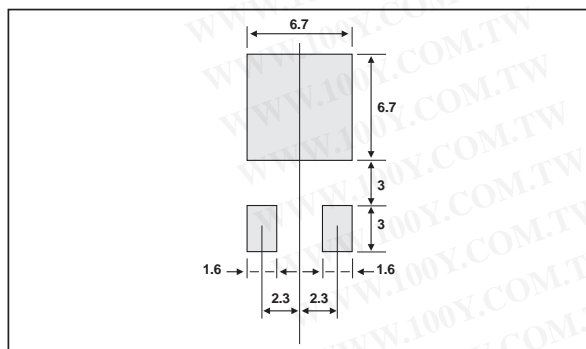
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PACKAGE MECHANICAL DATA DPAK



FOOTPRINT (dimensions in mm)



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| Ordering type | Marking | Package | Weight | Base qty | Delivery mode |
|----------------|---------|---------|--------|----------|---------------|
| STPS15L60CB | S15L60C | DPAK | 0.30 g | 75 | Tube |
| STPS15L60CB-TR | S15L60C | DPAK | 0.30 g | 2500 | Tape & reel |

■ EPOXY MEETS UL94,V0

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