

LOW DROP OR-ing POWER SCHOTTKY DIODE

MAIN PRODUCT CHARACTERISTICS

| | |
|-------------|-----------------|
| $I_{F(AV)}$ | 2 x 60 A |
| V_{RRM} | 15 V |
| T_j (max) | 125 °C |
| V_F (max) | 0.31 V |

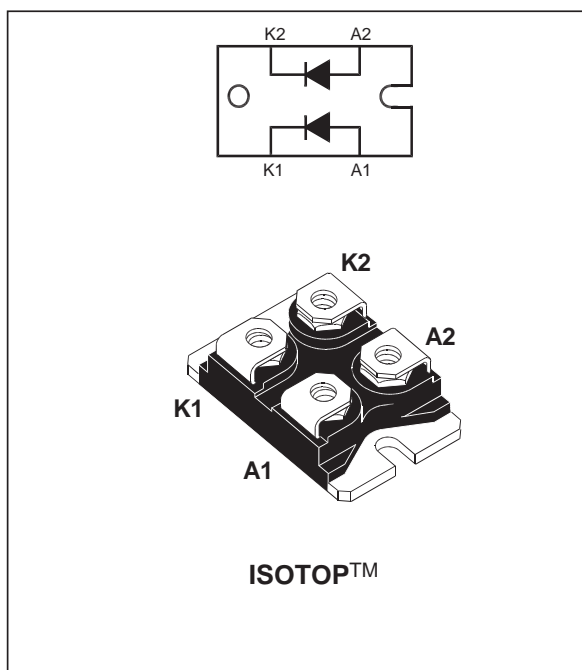
FEATURES AND BENEFITS

- VERY LOW DROP FORWARD VOLTAGE FOR LESS POWER DISSIPATION AND REDUCED HEATSINK
- INSULATED PACKAGE:
Insulated voltage = 2500 V_(RMS)
Capacitance = 45 pF
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

Dual Schottky rectifier suited for Switched Mode Power Supplies and DC to DC power converters.

Packaged in ISOTOP™, this device is especially intended for use as an OR-ing diode in fault tolerant power supply equipments.



ABSOLUTE RATINGS (limiting values, per diode)

| Symbol | Parameter | Value | Unit |
|--------------|--|--|------------------|
| V_{RRM} | Repetitive peak reverse voltage | 15 | V |
| $I_{F(RMS)}$ | RMS forward current | 160 | A |
| $I_{F(AV)}$ | Average forward current | $T_c = 115^\circ\text{C}$ $\delta = 1$ | 60 A |
| I_{FSM} | Surge non repetitive forward current | $t_p = 10 \text{ ms}$ Sinusoidal | 1200 A |
| I_{RRM} | Repetitive peak reverse current | $t_p = 2 \mu\text{s}$ $F = 1 \text{ kHz}$ | 2 A |
| P_{ARM} | Repetitive peak avalanche power | $t_p = 1 \mu\text{s}$ $T_j = 25^\circ\text{C}$ | 72030 W |
| T_{stg} | Storage temperature range | - 65 to + 150 | °C |
| T_j | Maximum operating junction temperature | 125 | °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

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STPS120L15TV

THERMAL RESISTANCES

| Symbol | Parameter | | Value | Unit |
|---------------|------------------|-----------|-------|-----------------------------|
| $R_{th(j-c)}$ | Junction to case | Per diode | 0.45 | $^{\circ}\text{C}/\text{W}$ |
| | | Total | 0.28 | |
| $R_{th(c)}$ | | Coupling | 0.1 | |

STATIC ELECTRICAL CHARACTERISTICS (per diode)

| Symbol | Parameter | Tests conditions | | Min. | Typ. | Max. | Unit |
|---------|-------------------------|-----------------------------|--------------------|------|------|------|------|
| I_R^* | Reverse leakage current | $T_j = 100^{\circ}\text{C}$ | $V_R = 5\text{V}$ | | 450 | | mA |
| | | $T_j = 25^{\circ}\text{C}$ | $V_R = 12\text{V}$ | | | 22 | mA |
| | | $T_j = 100^{\circ}\text{C}$ | | | 0.7 | 2.2 | A |
| V_F^* | Forward voltage drop | $T_j = 25^{\circ}\text{C}$ | $I_F = 60\text{A}$ | | | 0.43 | V |
| | | $T_j = 125^{\circ}\text{C}$ | $I_F = 60\text{A}$ | | 0.27 | 0.31 | |

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

To evaluate the conduction losses use the following equation :

$$P = 0.18 \times I_{F(AV)} + 2.2 \cdot 10^{-3} \times I_{F(RMS)}^2$$

Fig. 1: Average forward power dissipation versus average forward current (per diode).

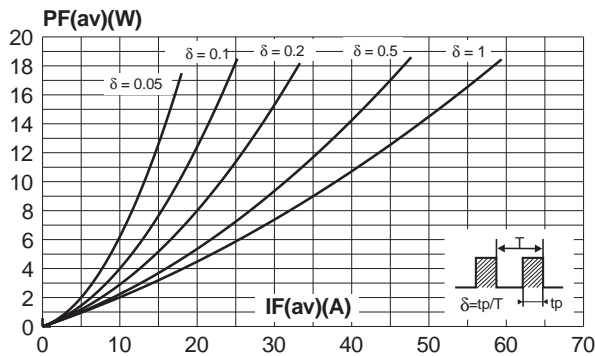


Fig. 3: Normalized avalanche power derating versus pulse duration.

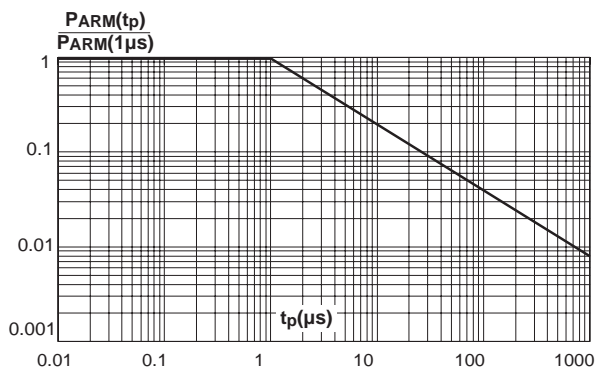


Fig. 2: Average forward current versus ambient temperature ($\delta = 1$) (per diode).

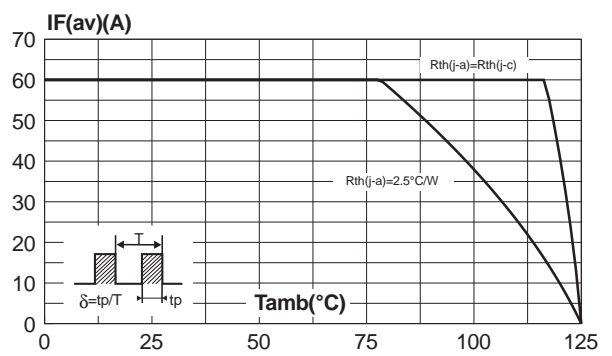


Fig. 4: Normalized avalanche power derating versus junction temperature.

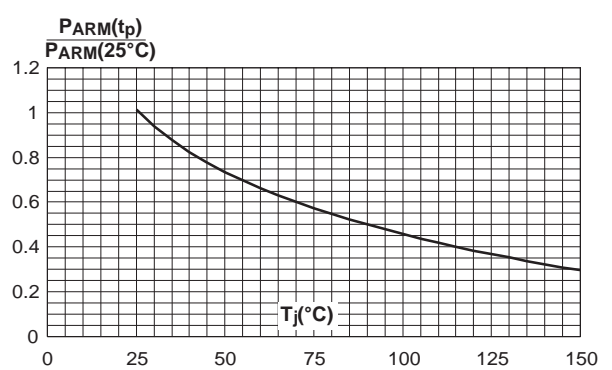


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values per diode).

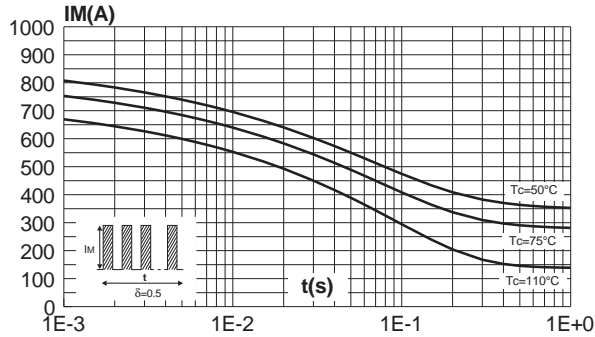


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

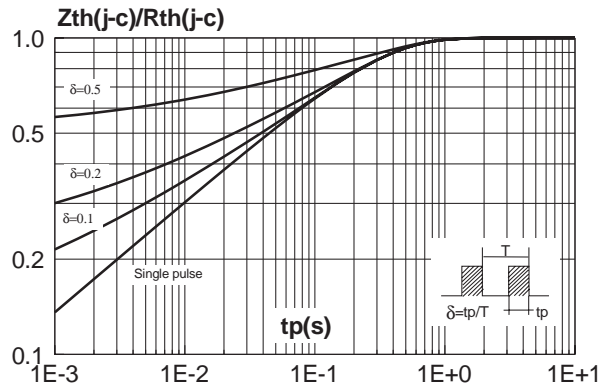


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values per diode).

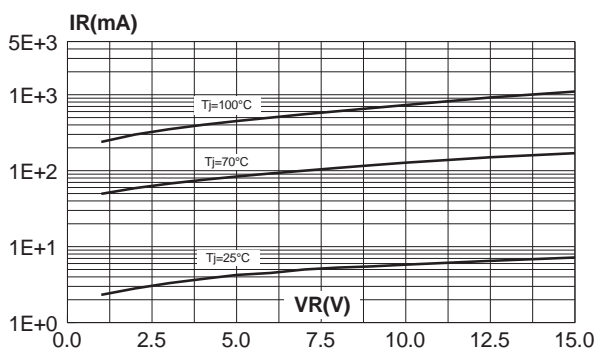


Fig. 8: Junction capacitance versus reverse voltage applied (typical values per diode).

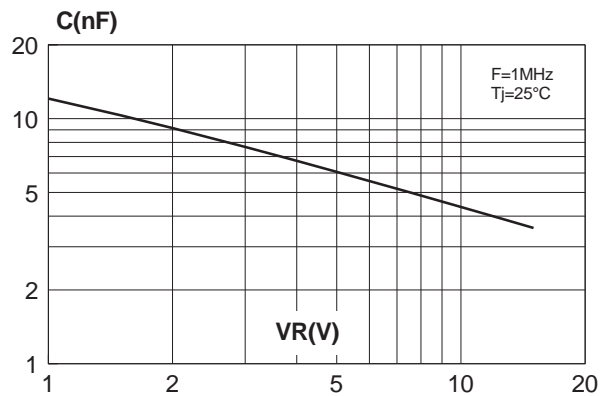
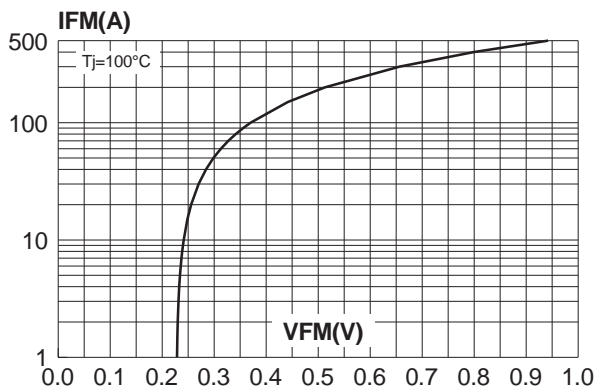
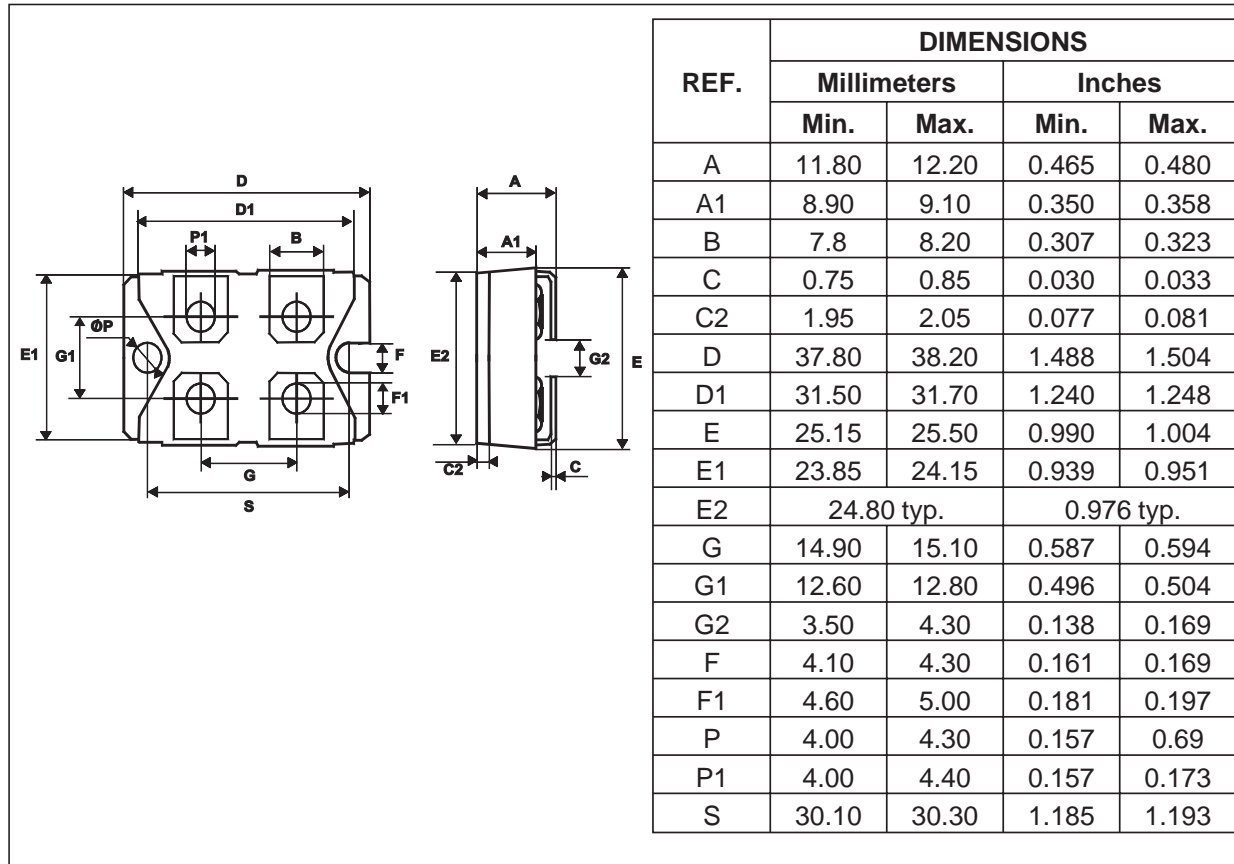


Fig. 9: Forward voltage drop versus forward current (maximum values per diode).



STPS120L15TV

PACKAGE MECHANICAL DATA ISOTOP



| Ordering type | Marking | Package | Weight | Base qty | Delivery mode |
|---------------|--------------|---------|-------------------------|----------|---------------|
| STPS120L15TV | STPS120L15TV | ISOTOP | 28g (without screws) | 10 | Tube |

- Cooling method: by conduction (C)
- Recommended torque value : 1.3 N.m.
- Maximum torque value: 1.5 N.m.
- Epoxy meets UL94,V0

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