

POWER SCHOTTKY RECTIFIER

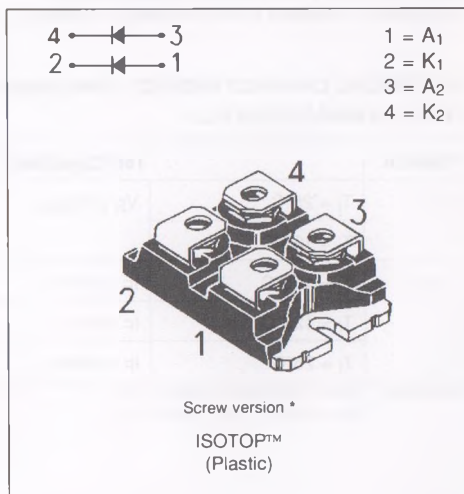
FEATURES

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP
- LOW THERMAL RESISTANCE
- EXTREMELY FAST SWITCHING
- INSULATED PACKAGE :
 Insulating voltage = 2500 V(RMS)

DESCRIPTION

Dual power schottky rectifier suited for switchmode power supply and high frequency DC to DC converters.

Packaged in ISOTOP™, this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.



ABSOLUTE RATINGS (limiting values)

| Symbol | Parameter | | Value | Unit | |
|--------------------|--|---|---------------|------------------|---|
| $I_{F(RMS)}$ | RMS forward current | | Per diode | 125 | A |
| $I_{F(AV)}$ | Average forward current | $T_c=100^\circ\text{C}$ $\delta = 0.5$ | Per diode | 60 | A |
| | | | Per device | 120 | A |
| I_{FSM} | Surge non repetitive forward current | $t_p=10\text{ms}$ sinusoidal | Per diode | 700 | A |
| I_{RRM} | Peak repetitive reverse current | $t_p=2\mu\text{s}$ $F=1\text{KHz}$ | Per diode | 2 | A |
| T_{stg} T_j | Storage and junction temperature range | | - 65 to + 150 | $^\circ\text{C}$ | |
| | | | - 65 to + 150 | $^\circ\text{C}$ | |
| dV/dt | Critical rate of rise of reverse voltage | | 1000 | V/ μs | |

| Symbol | Parameter | STPS | | Unit |
|-----------|---------------------------------|---------|---------|------|
| | | 12035TV | 12045TV | |
| V_{RRM} | Repetitive peak reverse voltage | 35 | 45 | V |

* : Tin plated Fast-on version is also available (without V suffix).

TM : ISOTOP is a trademark of SGS-THOMSON Microelectronics.

THERMAL RESISTANCES

| Symbol | Parameter | | Value | Unit |
|-----------|------------------|-----------|-------|------|
| Rth (j-c) | Junction to case | Per diode | 1.0 | °C/W |
| | | Total | 0.55 | |
| Rth (c) | Coupling | | 0.1 | °C/W |

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

ELECTRICAL CHARACTERISTICS (Per diode)

STATIC CHARACTERISTICS

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|-------------------|------------------------|-----------------------------------|------|------|------|------|
| I _R * | T _j = 25°C | V _R = V _{RRM} | | | 1 | mA |
| | T _j = 125°C | | | | 150 | |
| V _F ** | T _j = 125°C | I _F = 120 A | | | 0.87 | V |
| | T _j = 125°C | I _F = 60 A | | | 0.67 | |
| | T _j = 25°C | I _F = 120 A | | | 0.91 | |

Pulse test : * tp = 5 ms, duty cycle < 2 %
 ** tp = 380 μs, duty cycle < 2 %

To evaluate the conduction losses use the following equation :

$$P = 0.47 \times I_{F(AV)} + 0.00333 \times I_{F(RMS)}^2$$

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

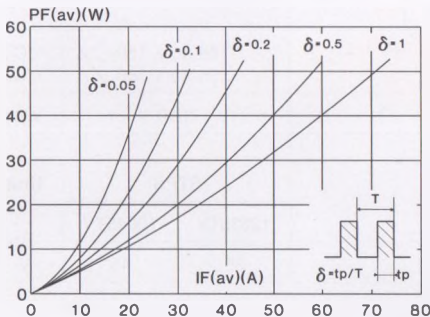


Fig.2 : Average current versus case temperature. (duty cycle : 0.5) (Per diode)

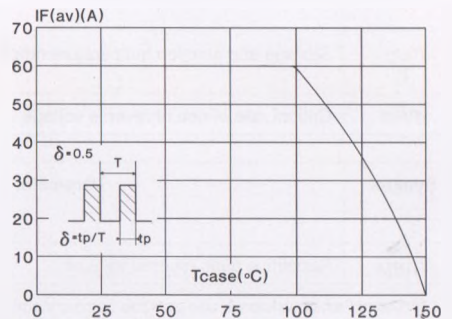


Fig.3 : Non repetitive surge peak forward current versus overload duration. (Maximum values) (Per diode)

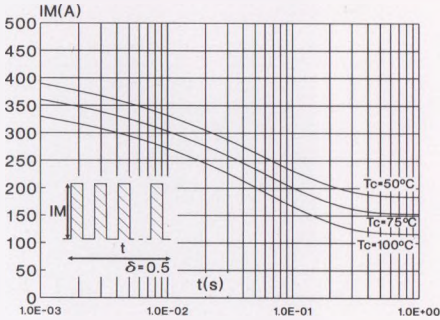


Fig.4 : Relative variation of thermal transient impedance junction to case versus pulse duration.

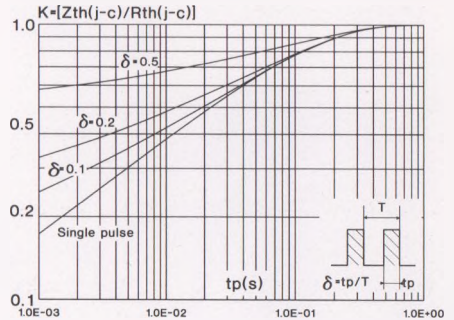


Fig.5 : Reverse leakage current versus reverse voltage applied. (Typical values) (Per diode)

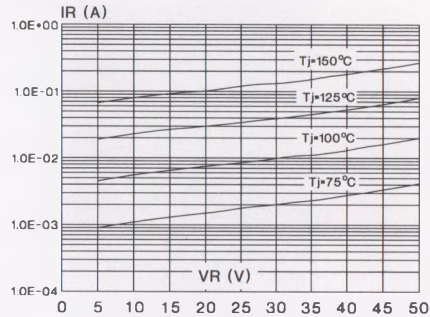


Fig.6 : Junction capacitance versus reverse voltage applied. (Typical values) (Per diode)

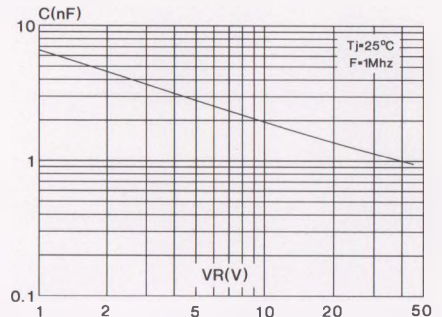


Fig.7 : Forward voltage drop versus forward current. (Maximum values) (Per diode)

