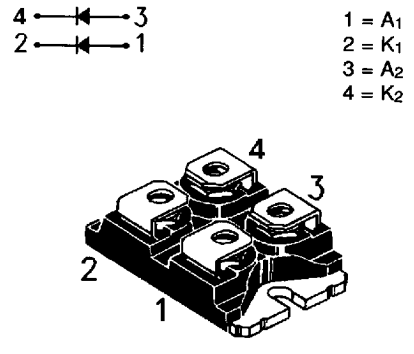
SGS-THOMSON MICROELECTRONICS

# STPS16035T(V)
# STPS16045T(V)

## 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 $V_{(RMS)}$




Screw version *

ISOTOP™
(Plastic)

### 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 | Tc=85°C<br>δ = 0.5 | Per diode<br>Per device | 80<br>160 | A<br>A |
| $I_{FSM}$ | Surge non repetitive forward current | tp=10ms<br>sinusoidal | Per diode | 900 | A |
| $I_{RRM}$ | Peak repetitive reverse current | tp=2µs<br>F=1KHz | Per diode | 2 | A |
| Tstg<br>Tj | Storage and junction temperature range | | | - 65 to + 150<br>- 65 to + 150 | °C<br>°C |
| dV/dt | Critical rate of rise of reverse voltage | | | 1000 | V/µs |

| Symbol | Parameter | STPS | | Unit |
|---|---|---|---|---|
| | | 16035TV | 16045TV | |
| $V_{RRM}$ | 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 | 0.9 | °C/W |
| | | Total | 0.5 | |
| Rth (c) | Coupling | | 0.1 | °C/W |

When the diodes 1 and 2 are used simultaneously :
$\Delta$ Tj(diode 1) = P(diode) x Rth(Per diode) + P(diode 2) x Rth(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 | mA |
| $V_F$ ** | $T_j$ = 125°C | $I_F$ = 160 A | | | 0.90 | V |
| | $T_j$ = 125°C | $I_F$ = 80 A | | | 0.69 | |
| | $T_j$ = 25°C | $I_F$ = 160 A | | | 0.95 | |

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

To evaluate the conduction losses use the following equation :
$P = 0.48 \times I_{F(AV)} + 0.00262 \times I_F^2(RMS)$

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

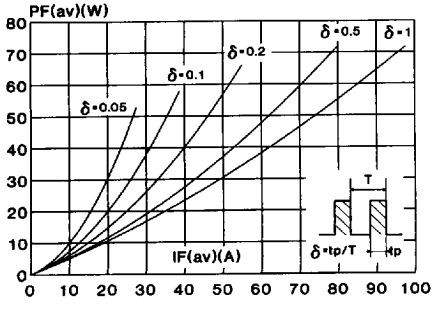



**Fig.2** : Average current versus case temperature. (duty cycle : 0.5) (Per diode)

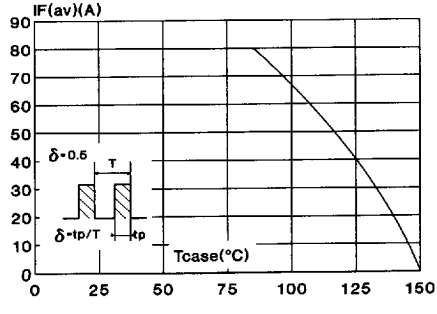


**Fig.3 :** Non repetitive surge peak forward current versus overload duration. (Maximum values) (Per diode)

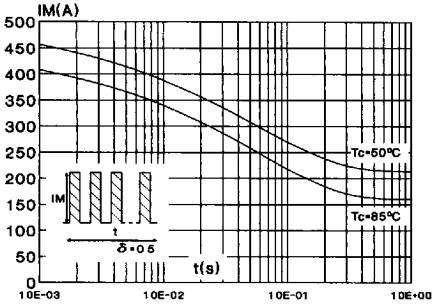



**Fig.4 :** Relative variation of thermal transient impedance junction to case versus pulse duration.

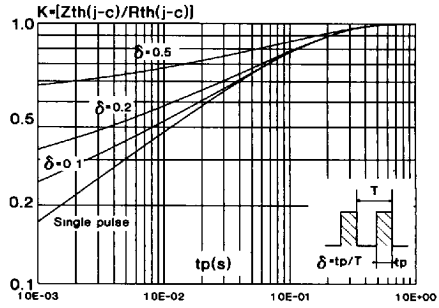



**Fig.5 :** Reverse leakage current versus reverse voltage applied. (Typical values) (Per diode)

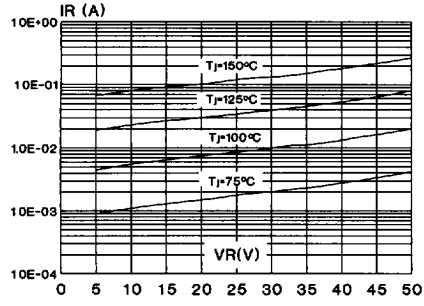



**Fig.6 :** Junction capacitance versus reverse voltage applied. (Typical values) (Per diode)

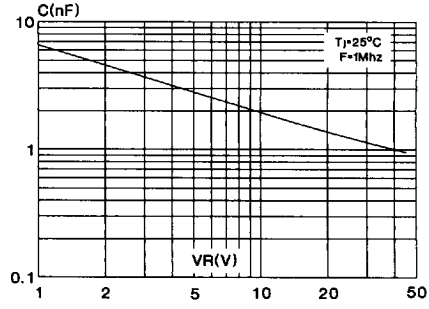



**Fig.7 :** Forward voltage drop versus forward current. (Maximum values) (Per diode)