

## POWER SCHOTTKY RECTIFIER

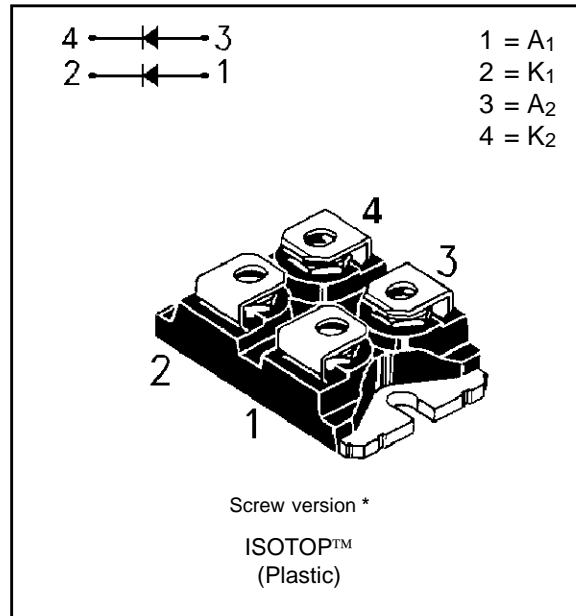
### FEATURES

- 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 <sub>F(RMS)</sub>	RMS forward current	Per diode	170	A
I <sub>F(AV)</sub>	Average forward current	T <sub>c</sub> =105°C δ = 0.5 Per diode Per device	120 240	A A
I <sub>FSM</sub>	Surge non repetitive forward current	tp=10ms sinusoidal Per diode	1500	A
I <sub>RRM</sub>	Peak repetitive reverse current	tp=2μs F=1KHz Per diode	2	A
T <sub>stg</sub> T <sub>j</sub>	Storage and junction temperature range		- 65 to + 150 - 65 to + 150	°C °C
dV/dt	Critical rate of rise of reverse voltage		1000	V/μs

Symbol	Parameter	STPS		Unit
		24035TV	24045TV	
V <sub>RRM</sub>	Repetitive peak reverse voltage	35	45	V

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

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# STPS24035T(V) / STPS24045T(V)

## THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case	Per diode	0.45	°C/W
		Total	0.28	
Rth (c)	Coupling		0.10	°C/W

When the diodes 1 and 2 are used simultaneously :

$$\Delta T_j(\text{diode } 1) = P(\text{diode}) \times R_{th}(\text{Per diode}) + P(\text{diode } 2) \times R_{th}(c)$$

## ELECTRICAL CHARACTERISTICS (Per diode)

### STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I <sub>R</sub> *	T <sub>j</sub> = 25°C	V <sub>R</sub> = V <sub>R</sub> RM			2	mA
	T <sub>j</sub> = 125°C				300	mA
V <sub>F</sub> **	T <sub>j</sub> = 125°C	I <sub>F</sub> = 240 A			0.87	V
	T <sub>j</sub> = 125°C	I <sub>F</sub> = 120 A			0.67	
	T <sub>j</sub> = 25°C	I <sub>F</sub> = 240 A			0.91	

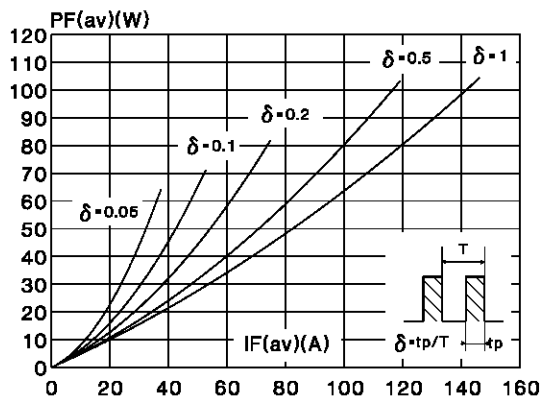
Pulse test : \* t<sub>p</sub> = 5 ms, duty cycle < 2 %

\*\* t<sub>p</sub> = 380 μs, duty cycle < 2 %

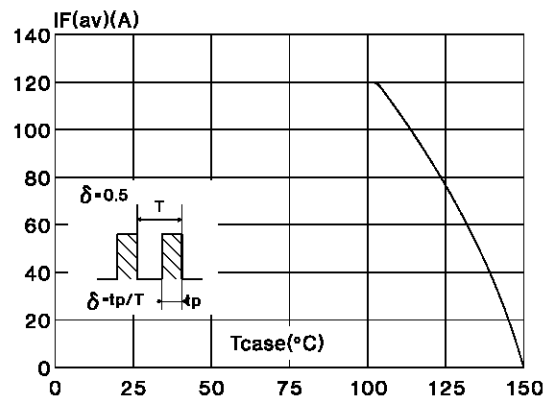
To evaluate the conduction losses use the following equation :

$$P = 0.47 \times I_F(\text{AV}) + 0.00167 \times I_F^2(\text{RMS})$$

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

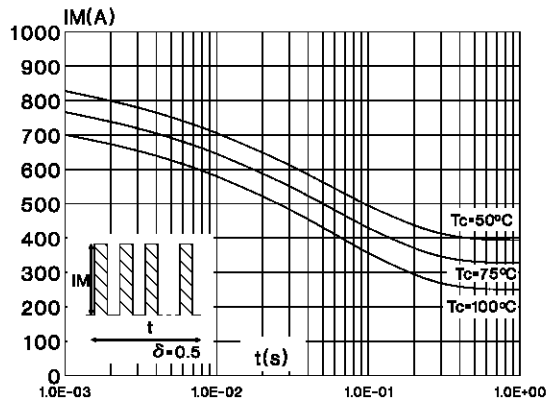


**Fig.2** : Average current versus case temperature. (duty cycle : 0.5) (Per diode)

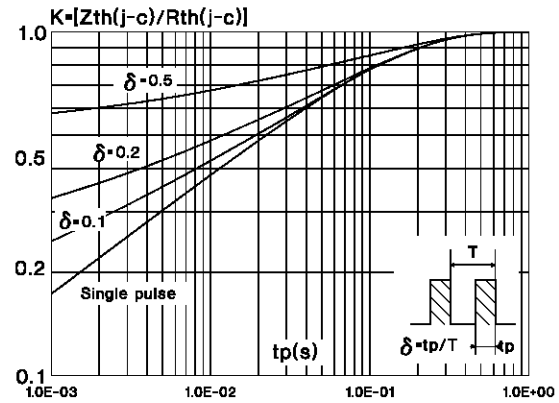


## STPS24035T(V) / STPS24045T(V)

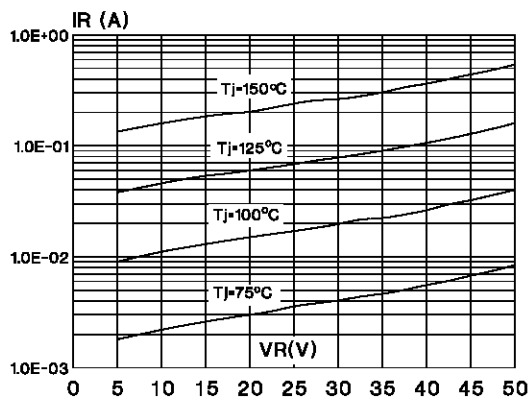
**Fig.3 :** Non repetitive surge peak forward current versus overload duration. (Maximum values) (Per diode)



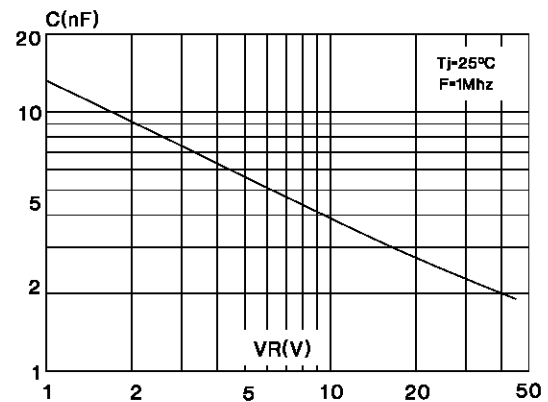
**Fig.4 :** Relative variation of thermal transient impedance junction to case versus pulse duration.



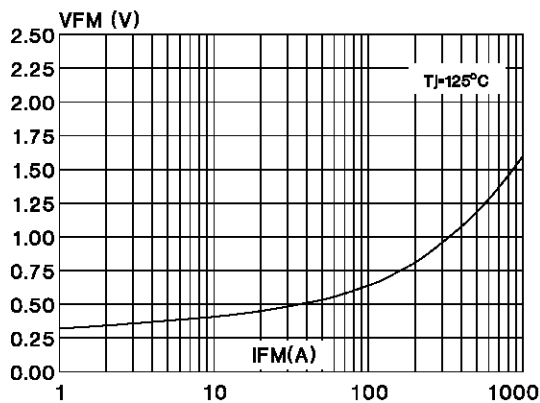
**Fig.5 :** Reverse leakage current versus reverse voltage applied. (Typical values) (Per diode)



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



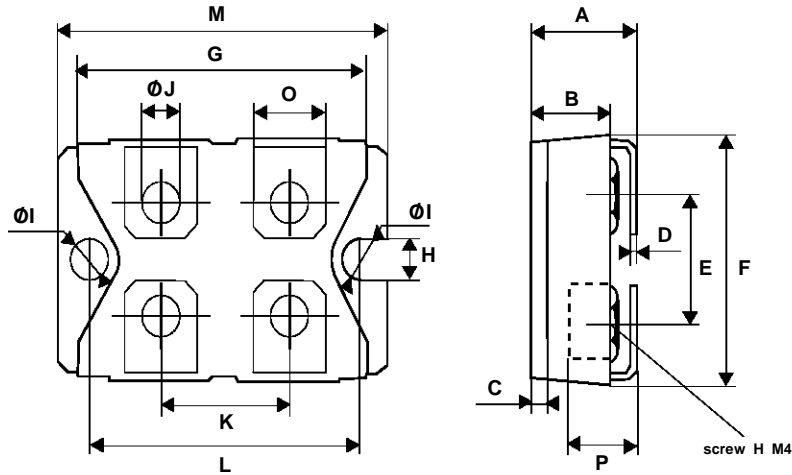
**Fig.7 :** Forward voltage drop versus forward current. (Maximum values) (Per diode)



# STPS24035T(V) / STPS24045T(V)

## PACKAGE MECHANICAL DATA

ISOTOP



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	11.80	12.20	0.465	0.480
B	8.90	9.10	0.350	0.358
C	1.95	2.05	0.077	0.081
D	0.75	0.85	0.029	0.034
E	12.60	12.80	0.496	0.504
F	25.10	25.50	0.988	1.004
G	31.50	31.70	1.240	1.248
H	4.00		0.157	
I	4.10	4.30	0.161	0.169
J	4.10	4.30	0.161	0.169
K	14.90	15.10	0.586	0.595
L	30.10	30.30	1.185	1.193
M	37.80	38.20	1.488	1.504
O	7.80	8.20	0.307	0.323
P	5.50		0.216	

Cooling method : C

Marking : Type number

Weight : 28 g (without screw)

Electrical isolation: 2500V (RMS)

Capacitance: < 45 pF

Inductance : < 5 nH

Recommended torque value: 1.3 N.m (MAX 1.6N.m) for the 6 x M4 screws. (2 x M4 screws recommended for mounting the package on the heatsink and the 4 screws given with the screw version).

The screws supplied with the package are adapted for mounting on a board (or other types of terminals) with a thickness of 0.6 mm min and 2..2 max.

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