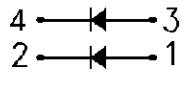
SGS-THOMSON MICROELECTRONICS

STPS12035T(V)
STPS12045T(V)

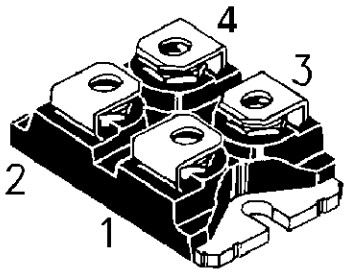
POWER SCHOTTKY RECTIFIER

FEATURES

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



1 = A_1
2 = K_1
3 = A_2
4 = K_2



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=100°C δ = 0.5	Per diode Per device	60 120	A A
I_{FSM}	Surge non repetitive forward current	tp=10ms sinusoidal	Per diode	700	A
I_{RRM}	Peak repetitive reverse current	tp=2µs F=1KHz	Per diode	2	A
Tstg Tj	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
		12035TV	12045TV	
V_{RRM}	Repetitive peak reverse voltage	35	45	V

***** : Tin plated Fast-on version is also available (without V suffix).
™: 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 :
Δ 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 = 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 :
$P = 0.47 \times I_{F(AV)} + 0.00333 \times I_F{}^2{}_{(RMS)}$

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

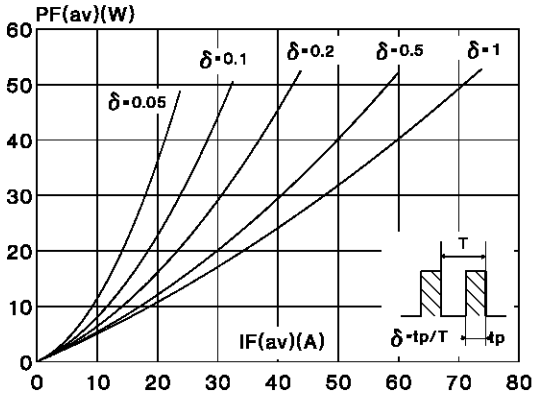


Fig.2 : Average current versus case temperature. (duty cycle : 0.5) (Per diode)

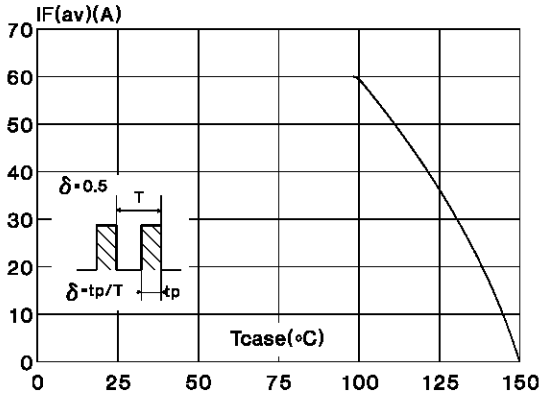


Fig.3 : Non repetitive surge peak forward current versus overload duration. (Maximum values) (Per diode)

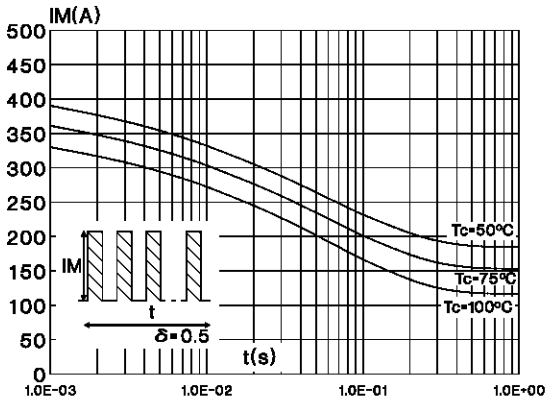


Fig.4 : Relative variation of thermal transient impedance junction to case versus pulse duration.

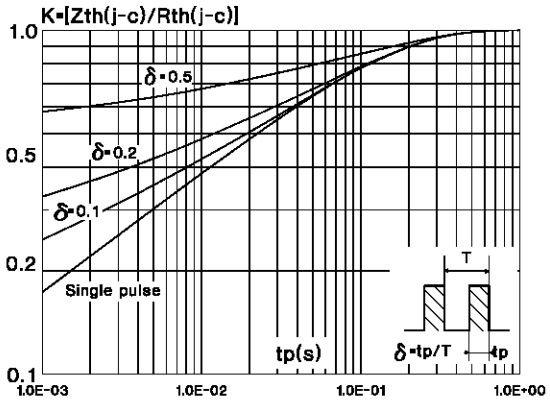


Fig.5 : Reverse leakage current versus reverse voltage applied. (Typical values) (Per diode)

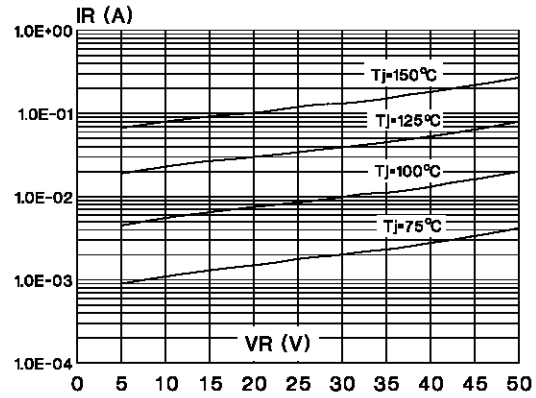


Fig.6 : Junction capacitance versus reverse voltage applied. (Typical values) (Per diode)

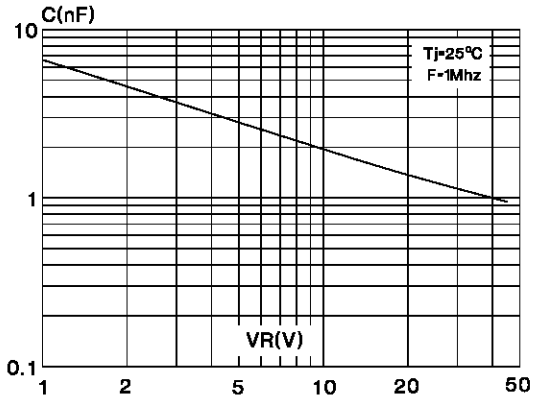
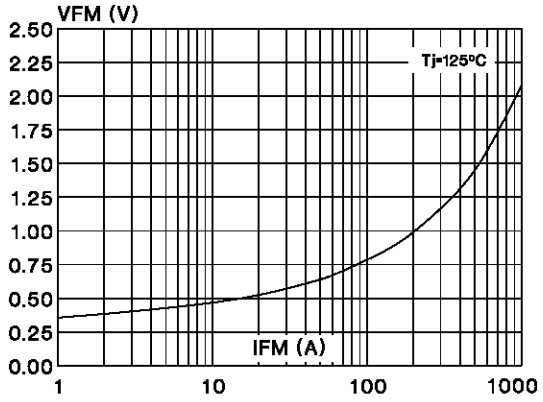
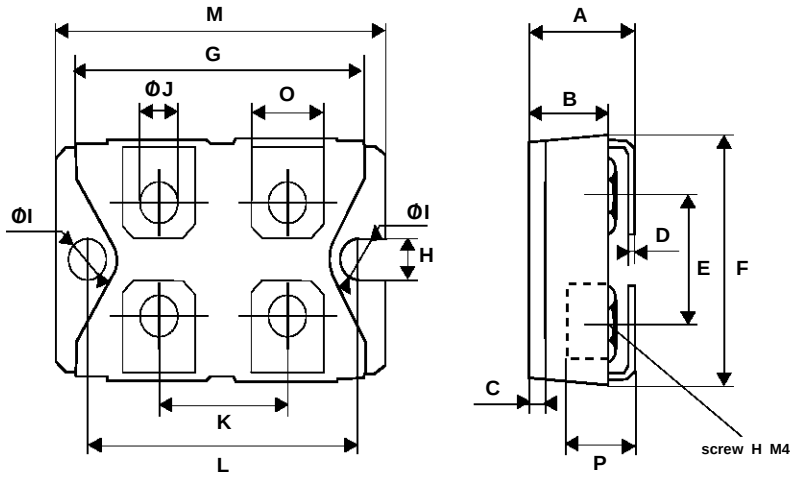


Fig.7 : Forward voltage drop versus forward current. (Maximum values) (Per diode)



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)
Capacuitance: < 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 ant 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.