SGS-THOMSON MICROELECTRONICS

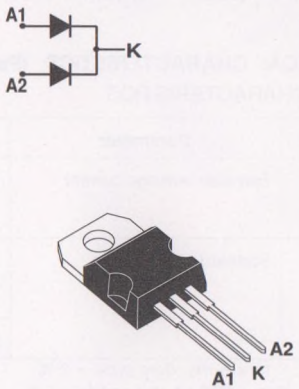
STPS20100CT

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

PRELIMINARY DATASHEET

$I_{F(AV)}$	2 x 10A
V_{RRM}	100V
V_F (typ)	0.60V



TO220AB

(Plastic)

FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP
- LOW CAPACITANCE
- HIGH REVERSE AVALANCHE SURGE CAPABILITY

DESCRIPTION

High voltage dual Schottky rectifier suited for switchmode power supplies and other power converters.
Packaged in TO220AC, this device is intended for use in medium voltage operation, and particularly, in high frequency circuitries where low switching losses and low noise are required.

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			100	V
$I_{F(RMS)}$	RMS forward current		Per diode	30	A
$I_{F(AV)}$	Average forward current	Tc=110°C V_R = 60V δ = 0.5	Per diode Per device	10 20	A A
I_{FSM}	Surge non repetitive forward current	tp=10ms sinusoidal	Per diode	200	A
I_{RRM}	Repetitive peak reverse current	tp=2µs F=1KHz	Per diode	1	A
I_{RSM}	Non repetitive peak reverse current	tp=100µs	Per diode	1	A
Tstg	Junction temperature range			- 65 to + 150	°C
Tj	Max. Junction temperature			125	°C
dV/dt	Critical rate of rise of reverse voltage			1000	V/µs

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case	Per diode	1.6	°C/W
		Total	0.9	
Rth (c)	Coupling		0.15	°C/W

When the diodes 1 and 2 are used simultaneously :
Tj-Tc(diode 1)=P(diode1) x Rth(j-c)(Per diode) + P(diode 2) x Rth(c)

ELECTRICAL CHARACTERISTICS (Per diode)

STATIC CHARACTERISTICS

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	$V_R = V_{RRM}$	T_j = 25°C			150	µA
			T_j = 125°C			100	mA
V_F **	Forward voltage drop	I_F = 20 A	T_j = 125°C			0.85	V
		I_F = 10 A	T_j = 125°C		0.60	0.70	
		I_F = 20 A	T_j = 25°C			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 :
$P = 0.55 \times I_{F(AV)} + 0.015 \times I_F^2{}_{(RMS)}$

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

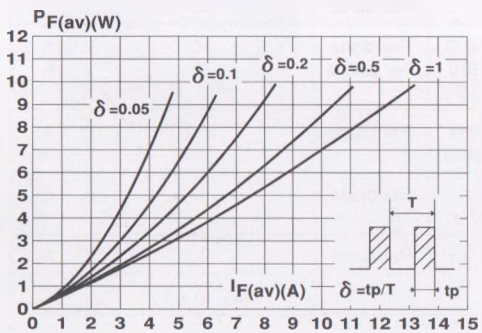


Fig. 2 : Average current versus ambient temperature. (duty cycle : 0.5) (Per diode)

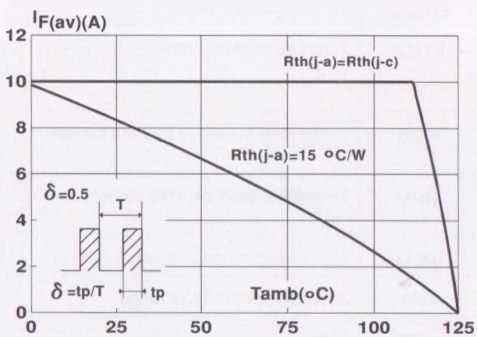


Fig. 3 : Non repetitive surge peak forward current versus overload duration.
(Maximum values) (Per diode)

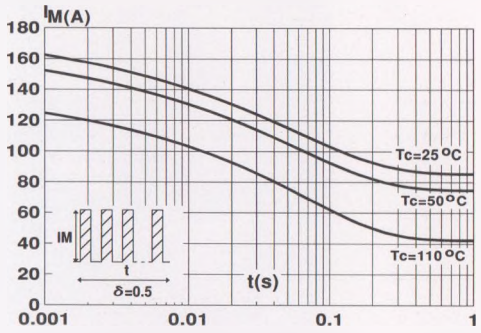


Fig. 4 : Relative variation of thermal transient impedance junction to case versus pulse duration.

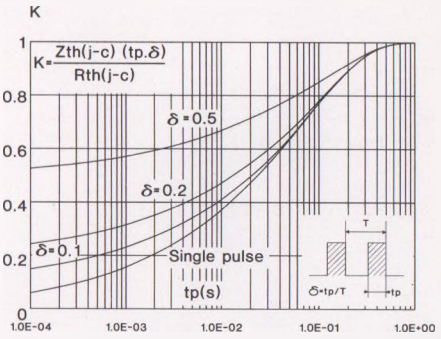


Fig. 5 : Reverse leakage current versus reverse voltage applied. (Typical values) (Per diode)

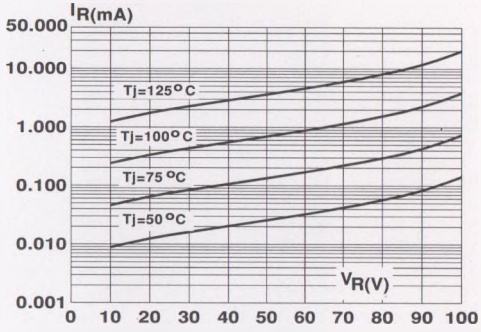


Fig. 6 : Junction capacitance versus reverse voltage applied. (Typical values) (Per diode)

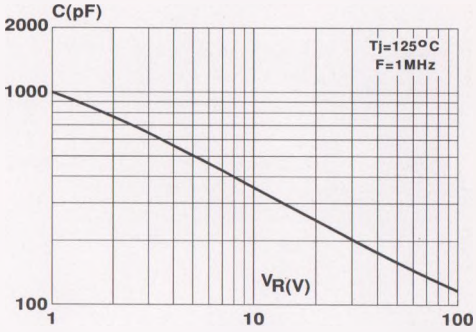


Fig. 7 : Forward voltage drop versus forward current. (Maximum values) (Per diode)