STPS0520Z

SCHOTTKY RECTIFIERS

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	0.5 A
V_{RRM}	20 V
V_F (max)	0.32 V

SOD-123

FEATURES AND BENEFITS

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- EXTREMELY FAST SWITCHING

DESCRIPTION

Single Schottky rectifier suited for switch mode power supplies and high frequency DC to DC converters.

Packaged in SOD-123, this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications. Due to the small size of the package this device fits GSM and PCMCIA requirements.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		20	V
$I_{F(RMS)}$	RMS forward current		2	A
$I_{F(AV)}$	Average forward current δ=0.5	Ta=25°C	0.5	A
I_{FSM}	Surge non repetitive forward current	tp=10ms sinusoidal	5.5	A
dV/dt	Critical rate of rise of reverse voltage		10000	V/µs
T_{stg}	Storage temperature range		- 65 to + 125	°C
Tj	Maximum operating junction temperature *		125	°C
TL	Maximum temperature for soldering during 10s		260	°C

* : $\frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$ thermal runaway condition for a diode on its own heatsink

THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th\ (j-a)}$	Junction to ambient	430 (*) 210 (**)	°C/W

(*) Mounted on epoxy board with recommended Pad Layout.

(**) Mounted on epoxy board with 50mm2 copper area.

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Value		Unit
				STPS0520Z		
				typ.	max.	
I_R *	Reverse leakage current	Tj = 25°C	V_R = 10 V		60	µA
		Tj = 100°C		2.5	5	mA
		Tj = 25°C	$V_R = V_{RRM}$		150	µA
		Tj = 100°C		4.3	8	mA
V_F **	Forward voltage drop	Tj = 25°C	I_F = 0.1 A		0.3	V
		Tj = 100°C		0.18	0.22	
		Tj = 25°C	I_F = 0.5 A		0.385	
		Tj=100°C		0.29	0.32	

Pulse test : * tp = 5 ms, δ < 2%

** tp = 380 µs, δ < 2%

To evaluate the maximum conduction losses use the following equation :

$P = 0.23 \times I_{F(AV)} + 0.18 \times I_{F}{}^{2}{}_{(RMS)}$

Fig. 1: Average forward power dissipation versus average forward current

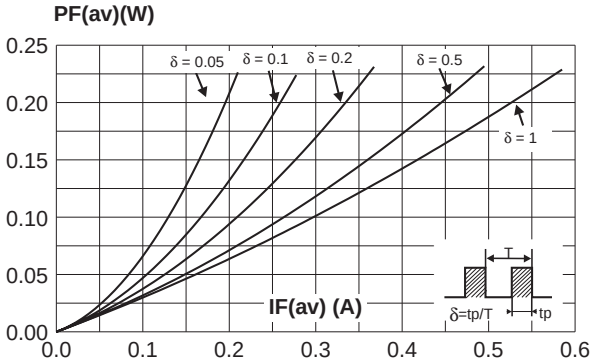


Fig. 2: Average forward current versus ambient temperature (δ = 0.5)

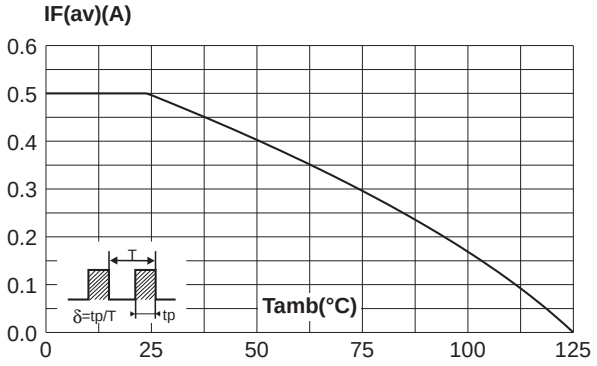


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values).

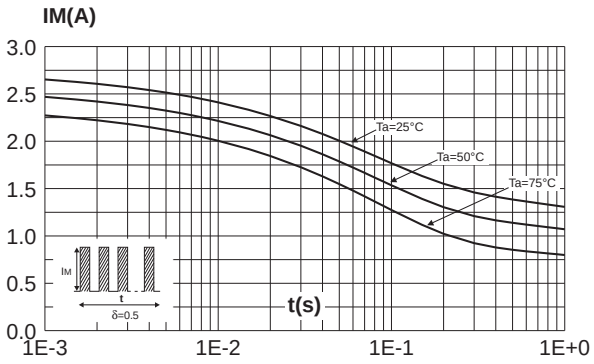


Fig. 4: Relative variation of thermal impedance junction to ambient versus pulse duration (Epoxy printed circuit board FR4 with recommended pad layout).

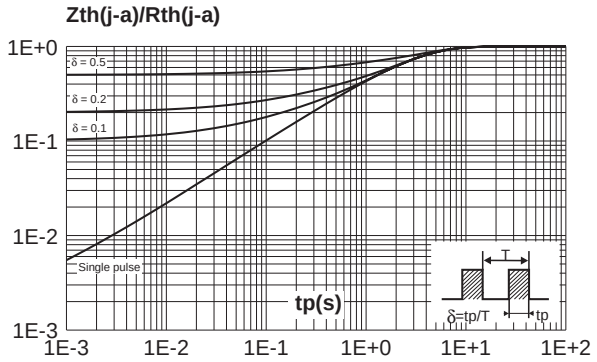


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values).

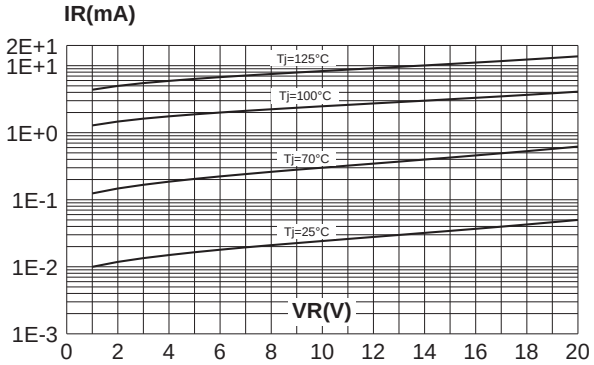


Fig. 6: Relative variation of reverse leakage current versus junction temperature (typical values).

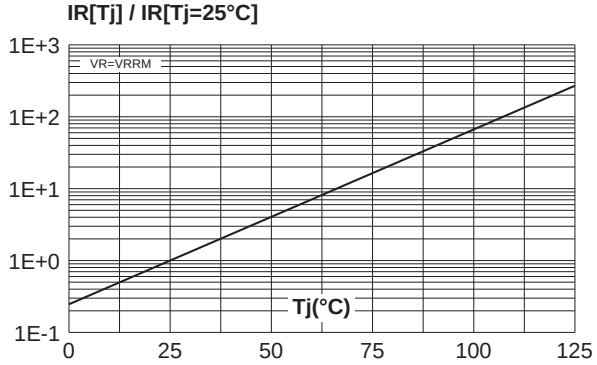


Fig. 7: Junction capacitance versus reverse voltage applied (typical values).

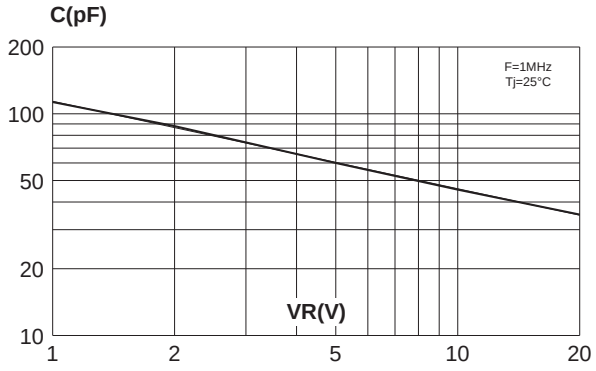


Fig. 8-1: Forward voltage drop versus forward current (maximum values, low level)

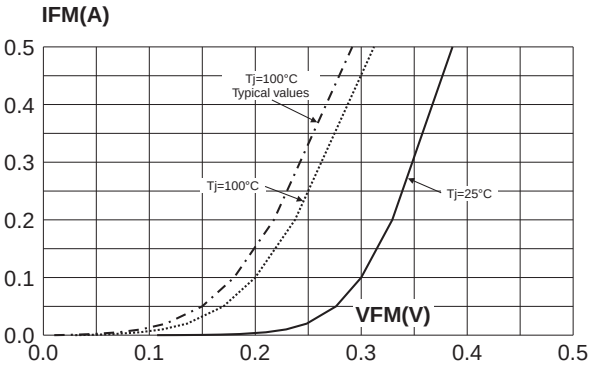


Fig. 8-2: Forward voltage drop versus forward current (maximum values, high level)

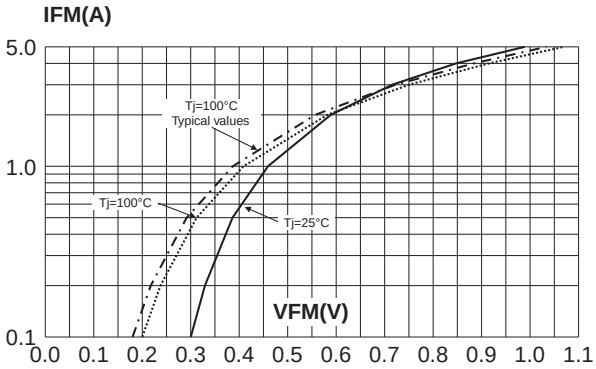
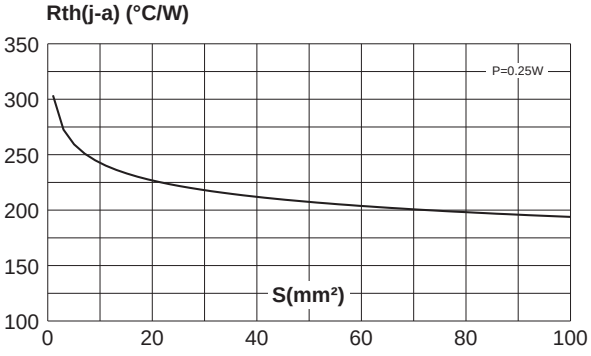
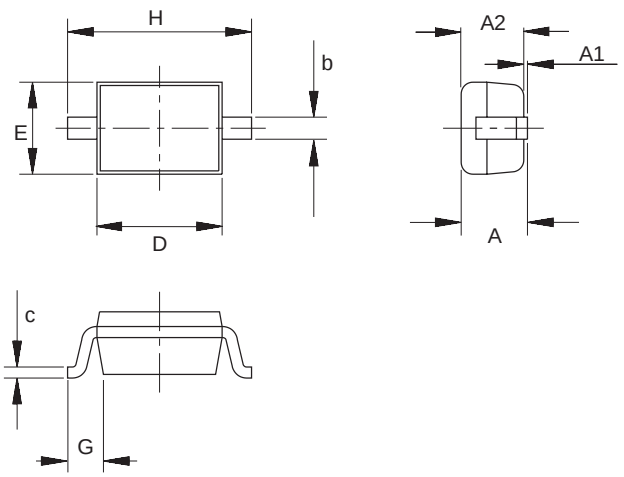


Fig. 9: Variation of thermal resistance junction to ambient versus copper surface under each lead (Printed circuit board FR4, e(Cu) = 35µm).



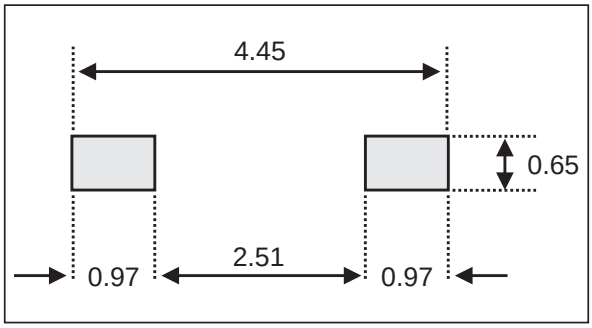
PACKAGE MECHANICAL DATA

SOD-123



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A		1.45		0.057
A1	0	0.1	0	0.004
A2	0.85	1.35	0.033	0.053
b	0.55 Typ.		0.022 Typ.	
c	0.15 Typ.		0.039 Typ.	
D	2.55	2.85	0.1	0.112
E	1.4	1.7	0.055	0.067
G	0.25		0.01	
H	3.55	3.95	0.14	0.156

FOOTPRINT (in millimeters)



MARKING

Type	Marking	Package	Weight	Base qty	Delivery mode
STPS0520Z	Z52	SOD-123	0.01g.	3000	Tape & reel
STPS0520Z10K	Z52	SOD-123	0.01 g	10000	Tape & reel

- Epoxy meets UL94, V0.
- Band indicates cathode.

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