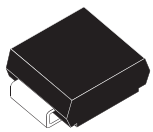
STPS130A/U

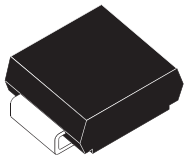
SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	1 A
V_{RRM}	30 V
Tj (max)	150 °C
V_F (max)	0.46 V



SMA
STPS130A



SMB
STPS130U

FEATURES AND BENEFITS

- VERY LOW DROP FORWARD VOLTAGE FOR LESS POWER DISSIPATION
- OPTIMIZED CONDUCTION / REVERSE LOSSES TRADE-OFF ALLOWING THE HIGHEST EFFICIENCY IN APPLICATION
- SURFACE MOUNT MINIATURE PACKAGE
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

Single Schottky rectifier suited to Switched Mode Power Supplies and high frequency DC/DC converters.

Packaged in SMA or SMB(*), this device is especially intended for use in parallel with MOSFETs in synchronous rectification and low voltage secondary rectification.

(*) in accordance with DO214AA and DO214AC JEDEC

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		30	V
$I_{F(RMS)}$	RMS Forward current		7	A
$I_{F(AV)}$	Average forward current	T_{Lead} = 130°C δ = 0.5	1	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal	45	A
I_{RRM}	Repetitive peak reverse current	tp = 2 µs F = 1KHz	1	A
I_{RSM}	Non repetitive peak reverse current	tp = 100 µs	1	A
P_{ARM}	Repetitive peak avalanche power	tp = 1µs Tj = 25°C	1200	W
T_{stg}	Storage temperature range		- 65 to + 150	°C
Tj	Maximum junction temperature		150	°C
dV/dt	Critical rate of rise of reverse voltage		10000	V/µs

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th\ (j-l)}$	Junction to lead	SMA	30	°C/W
		SMB	23	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Tests Conditions	Tests Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse Leakage Current	Tj = 25°C	V_R = 30V			10	µA
		Tj = 125°C			1.5	10	mA
V_F **	Forward Voltage drop	Tj = 25°C	I_F = 1 A			0.55	V
		Tj = 125°C	I_F = 1 A		0.37	0.46	
		Tj = 25°C	I_F = 2 A			0.63	
		Tj = 125°C	I_F = 2 A		0.45	0.55	

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

To evaluate the maximum conduction losses use the following equation :
$P = 0.37 \times I_{F(AV)} + 0.090 \times I_F{}^2{}_{(RMS)}$

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

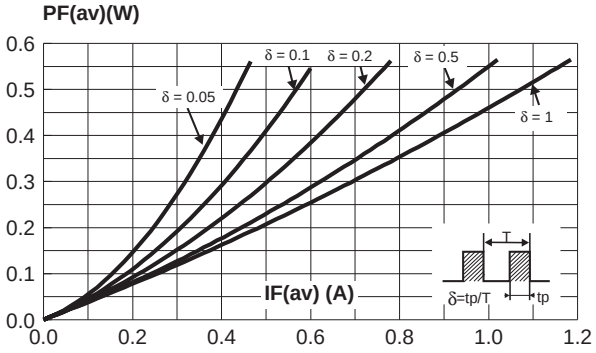


Fig. 2: Average forward current versus ambient temperature (δ=0.5) .

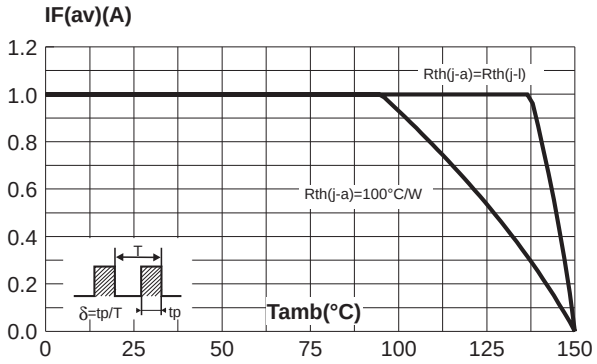


Fig. 3: Normalized avalanche power derating versus pulse duration.

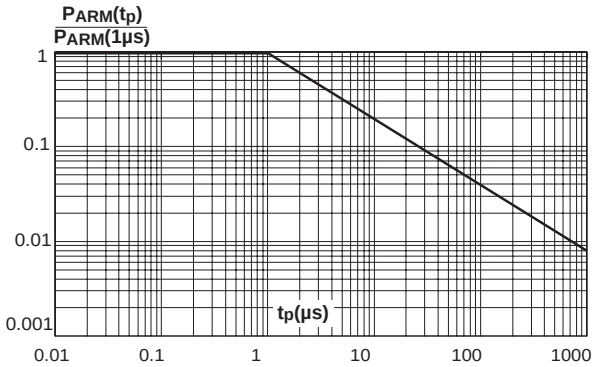


Fig. 4: Normalized avalanche power derating versus junction temperature.

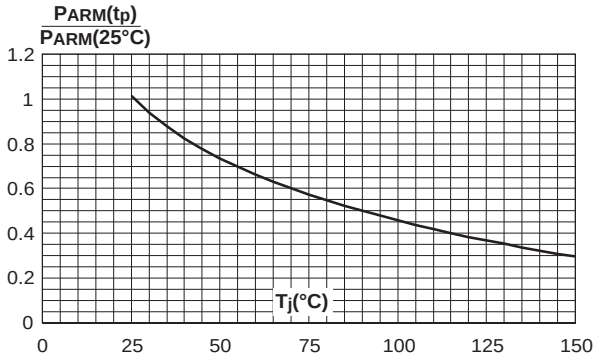


Fig. 5-1: Non repetitive surge peak forward current versus overload duration (maximum values).

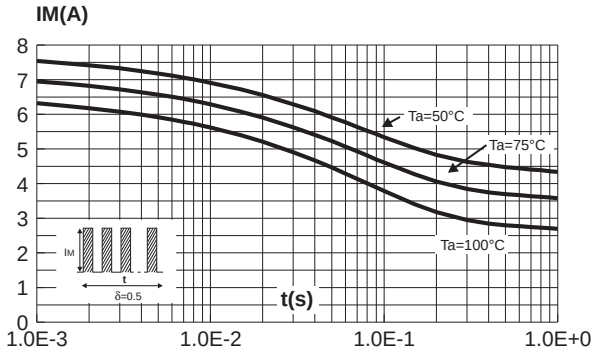


Fig. 5-2: Non repetitive surge peak forward current versus overload duration (maximum values).

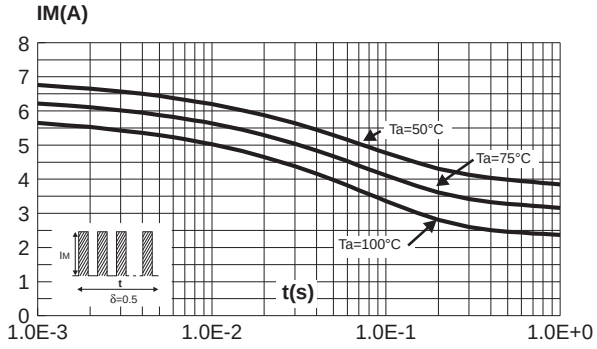


Fig. 6-1: Relative variation of thermal impedance junction to ambient versus pulse duration (epoxy printed circuit board, S(Cu)=35mm, recommended pad layout).(SMB)

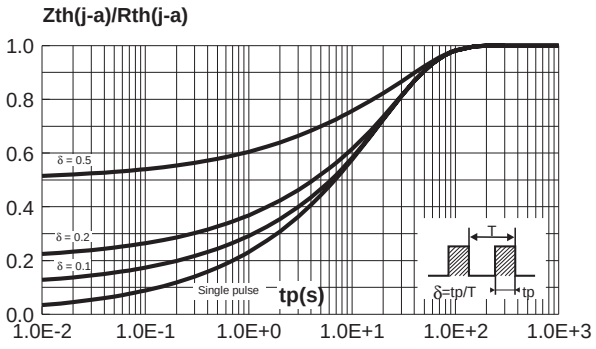


Fig. 6-2: Relative variation of thermal impedance junction to ambient versus pulse duration (epoxy printed circuit board, S(Cu)=35mm, recommended pad layout).(SMA)

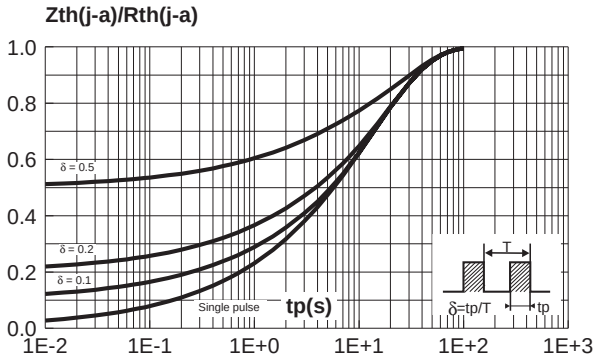


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

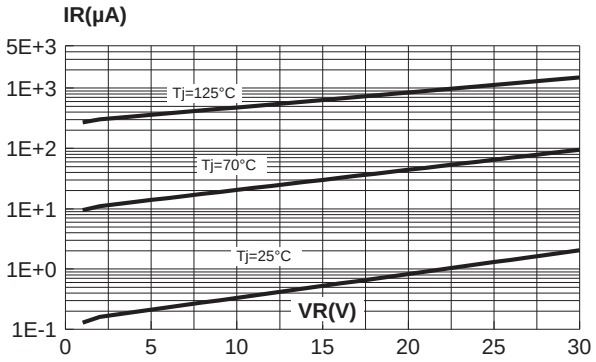


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

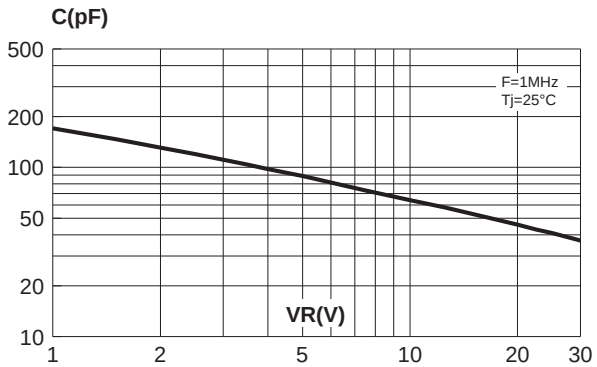


Fig. 9: Forward voltage drop versus forward current (maximum values).

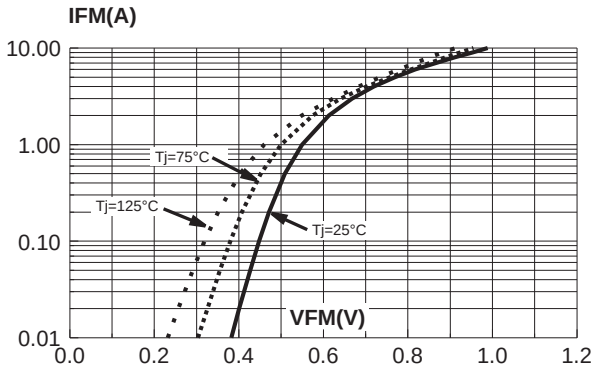


Fig. 10-1: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board, copper thickness: 35µm).(SMB)

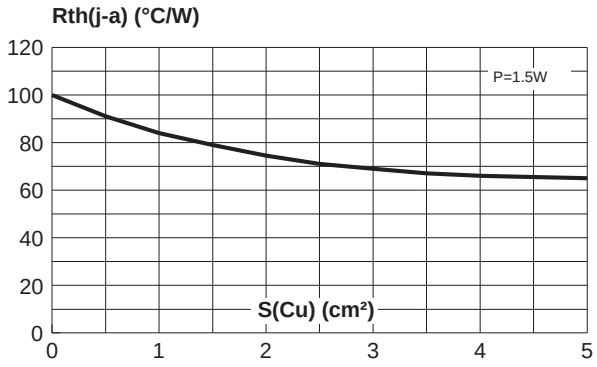
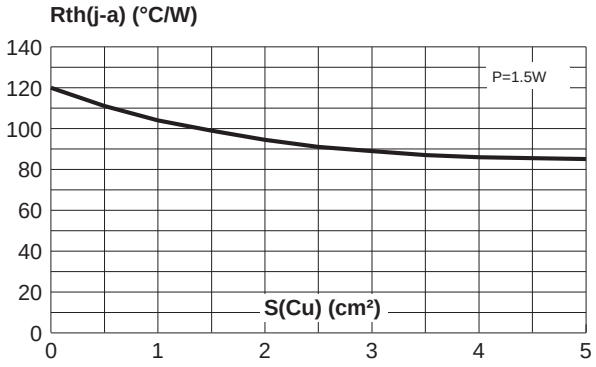
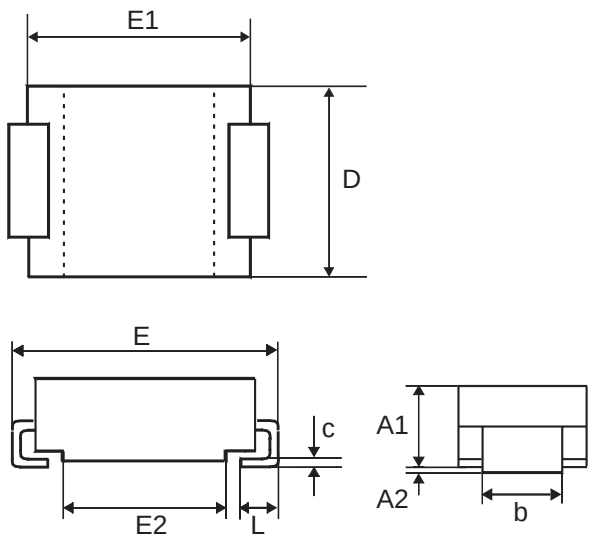


Fig. 10-2: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board, copper thickness: 35µm).(SMA)

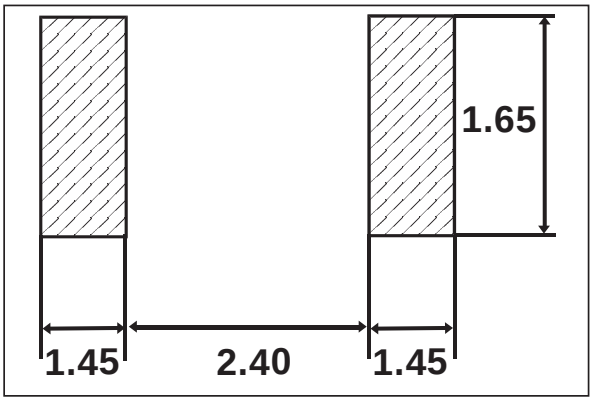


PACKAGE MECHANICAL DATA
SMA



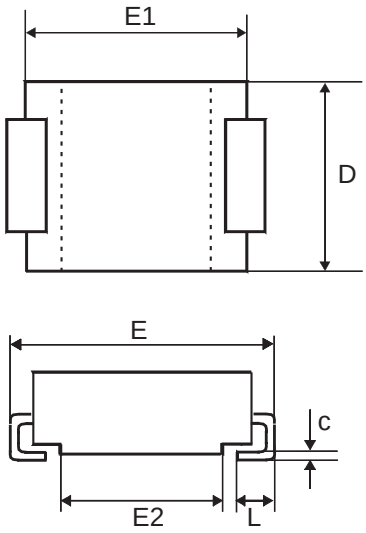
REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A1	1.90	2.30	2.70	0.075	0.091	0.106
A2	0.05	0.15	0.20	0.002	0.006	0.008
b	1.25		1.65	0.049		0.065
c	0.15		0.41	0.006		0.016
E	4.80	5.20	5.60	0.189	0.205	0.220
E1	3.95	4.30	4.60	0.156	0.169	0.181
E2	1.40	1.65	1.90	0.055	0.065	0.075
D	2.25	2.60	2.95	0.089	0.102	0.116
L	0.75	1.15	1.60	0.030	0.045	0.063

FOOT PRINT (in millimeters)



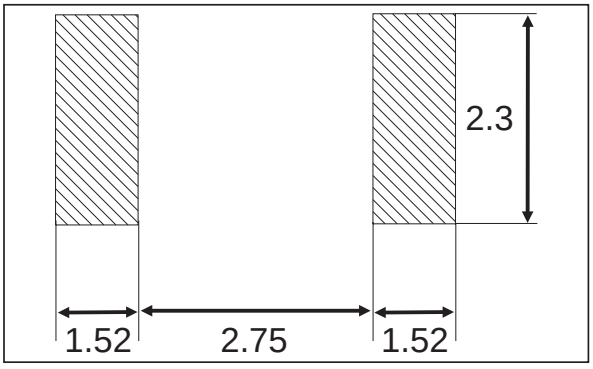
PACKAGE MECHANICAL DATA

SMB



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A1	1.90	2.15	2.45	0.075	0.085	0.096
A2	0.05	0.15	0.20	0.002	0.006	0.008
b	1.95		2.20	0.077		0.087
c	0.15		0.41	0.006		0.016
E	5.10	5.40	5.60	0.201	0.213	0.220
E1	4.05	4.30	4.60	0.159	0.169	0.181
E2	1.65	1.90	2.15	0.065	0.075	0.085
D	3.30	3.60	3.95	0.130	0.142	0.156
L	0.75	1.15	1.60	0.030	0.045	0.063

FOOT PRINT (in millimeters)



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS130U	G12	SMB	0.107g	2500	Tape & reel
STPS130A	S130	SMA	0.068g	5000	Tape & reel

- Band indicates cathode
- Epoxy meets UL94,V0

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