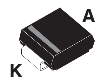
STPS1H100-Y

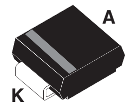
Automotive high voltage power Schottky rectifier

Features

- Negligible switching losses
- High junction temperature capability
- Low leakage current
- Good trade-off between leakage current and forward voltage drop
- Avalanche capability specified
- ECOPACK®2 compliant component
- AEC-Q101 qualified



SMA
(JEDEC DO-214AC)
STPS1H100AY



SMB
(JEDEC DO-214AA)
STPS1H100UY

Table 1. Device summary

Symbol	Value
$I_{F(AV)}$	1 A
V_{RRM}	100 V
T_j (max)	175 °C
V_F(max)	0.62 V

Description

Schottky rectifiers packaged in SMA or SMB, and designed for high frequency miniature switched mode power supplies as DC/DC converters for automotive applications.

1 Characteristics

Table 2. Absolute ratings (limiting values)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		100	V
$I_{F(RMS)}$	Forward rms voltage		10	A
$I_{F(AV)}$	Average forward current	T_L = 160 °C δ = 0.5	1	A
I_{FSM}	Surge non repetitive forward current	t_p =10 ms sinusoidal	50	A
I_{RRM}	Repetitive peak reverse current	t_p = 2 µs F = 1 kHz square	1	A
I_{RSM}	Non repetitive peak reverse current	t_p = 100 µs square	1	A
P_{ARM}	Repetitive peak avalanche power	t_p = 1 µs T_j = 25 °C	1500	W
T_{stg}	Storage temperature range		- 65 to + 175	°C
T_j	Operating junction temperature (1)		- 40 to + 175	°C
dV/dt	Critical rate of rise of reverse voltage		10000	V/µs

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

Table 3. Thermal resistance

Symbol	Parameter		Value	Unit
$R_{th(j-l)}$	Junction to lead	SMA	30	°C/W
		SMB	25	

Table 4. Static electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
I_R (1)	Reverse leakage current	T_j = 25 °C	$V_R = V_{RRM}$			4	µA
		T_j = 125 °C			0.2	0.5	mA
V_F (2)	Forward voltage drop	T_j = 25 °C	I_F = 1 A			0.77	V
		T_j = 125 °C			0.58	0.62	
		T_j = 25 °C	I_F = 2 A			0.86	
		T_j = 125 °C			0.65	0.7	

1. Pulse test: t_p = 5 ms, δ < 2%
2. Pulse test: t_p = 380 µs, δ < 2%

To evaluate the conduction losses use the following equation:

$$P = 0.54 \times I_{F(AV)} + 0.08\, I_{F}^{2}{}_{(RMS)}$$

Figure 1. Average forward power dissipation versus average forward current

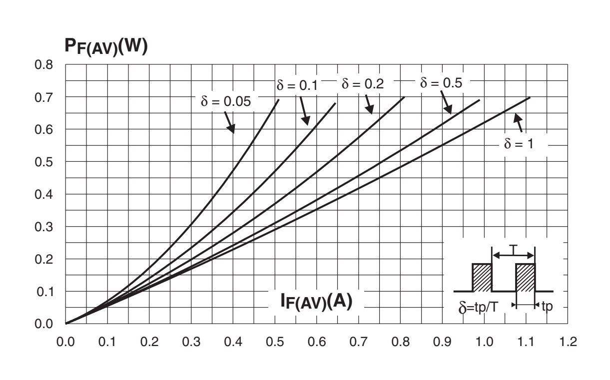


Figure 2. Average forward current versus ambient temperature (δ = 0.5)

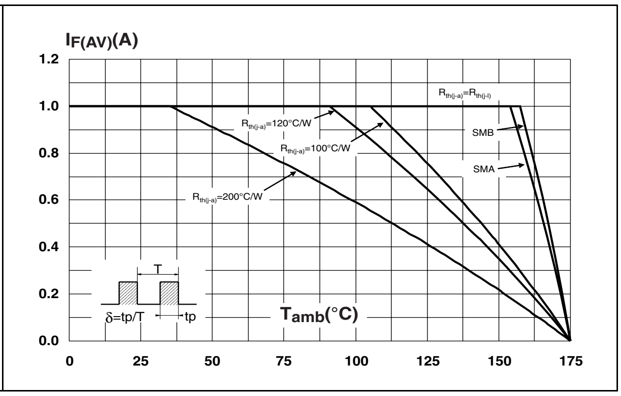


Figure 3. Normalized avalanche power derating versus pulse duration

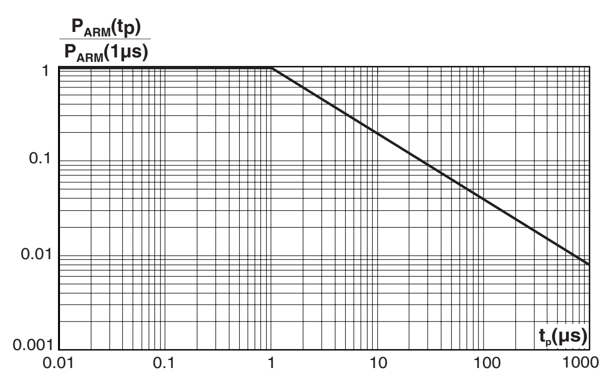


Figure 4. Normalized avalanche power derating versus junction temperature

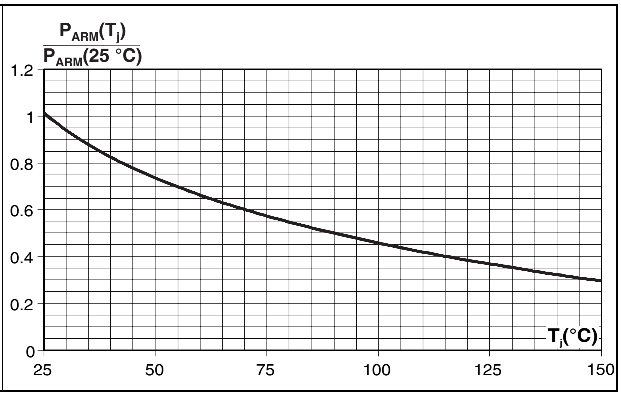


Figure 5. Non repetitive surge peak forward current versus overload duration (maximum values) (SMB)

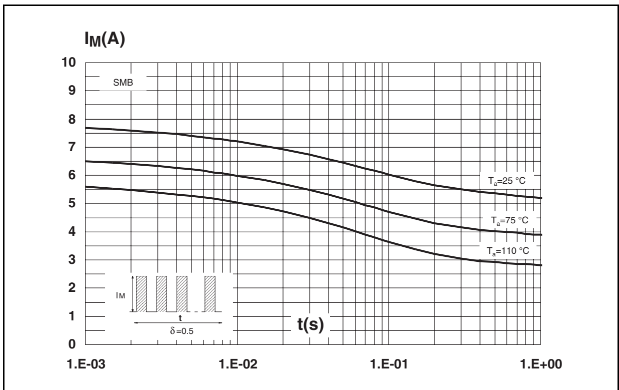


Figure 6. Non repetitive surge peak forward current versus overload duration (maximum values) (SMA)

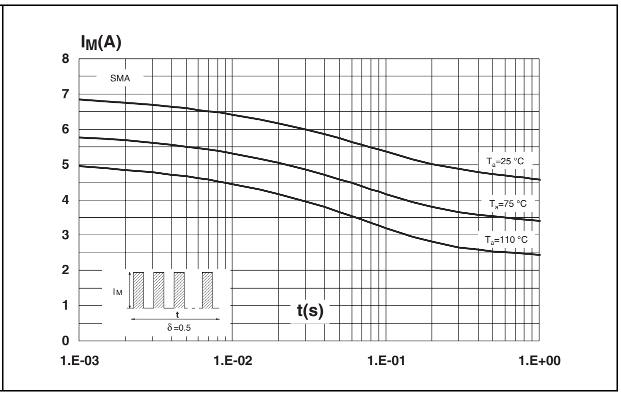


Figure 7. Relative variation of thermal impedance junction to ambient versus pulse duration (SMB)

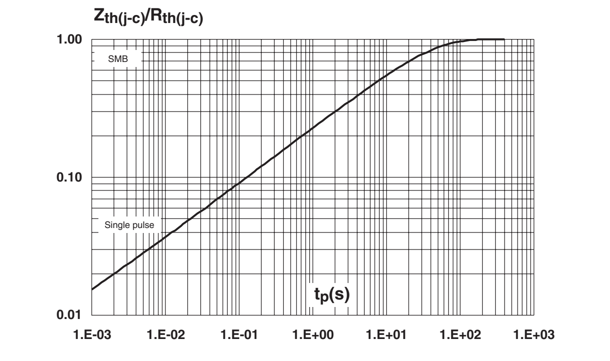


Figure 8. Relative variation of thermal impedance junction to ambient versus pulse duration (SMA)

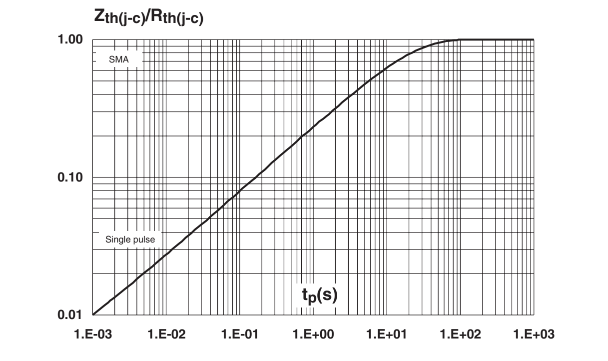


Figure 9. Reverse leakage current versus reverse voltage applied (typical values)

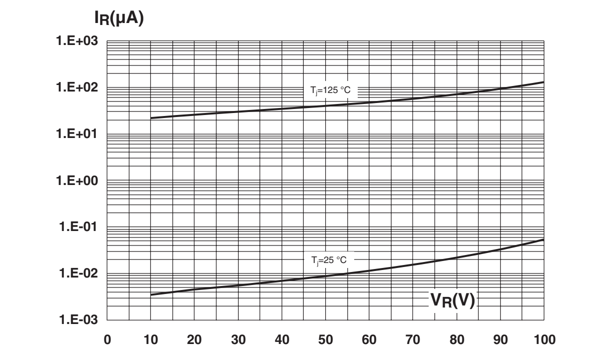


Figure 10. Junction capacitance versus reverse voltage applied (typical values)

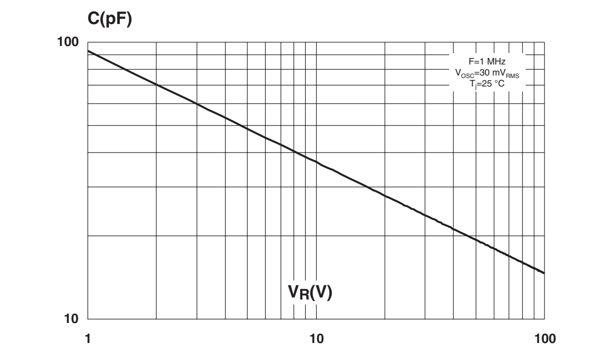


Figure 11. Forward voltage drop versus forward current (maximum values)

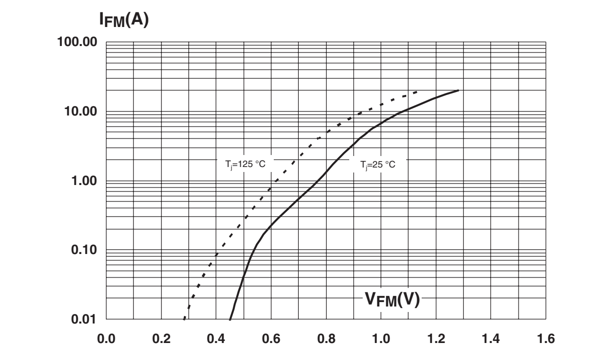


Figure 12. Thermal resistance junction to ambient versus copper surface under each lead (SMB)

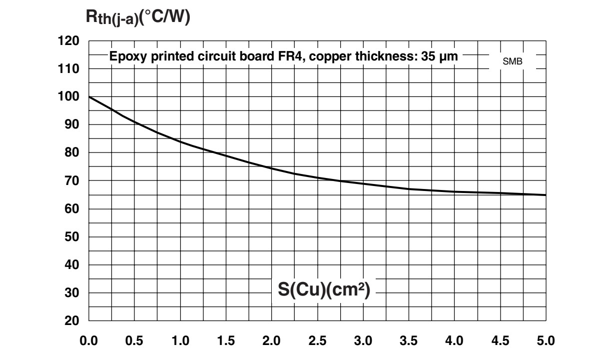
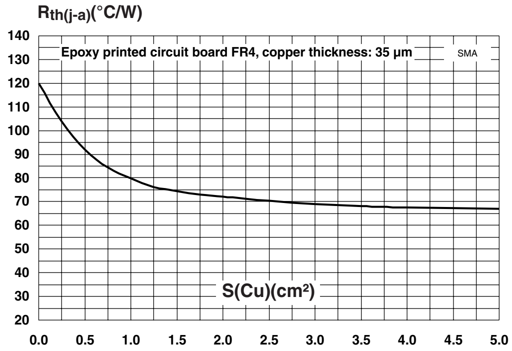


Figure 13. Thermal resistance junction to ambient versus copper surface under each lead (SMA)

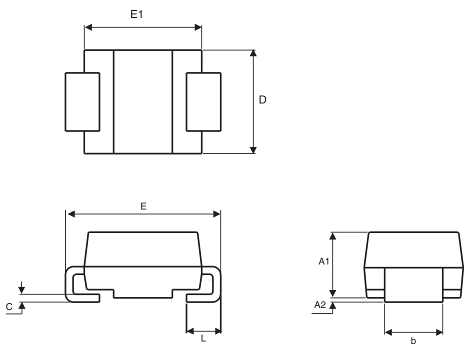


2 Package information

- Epoxy meets UL94, V0
- Lead-free package

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: www.st.com. ECOPACK® is an ST trademark.

Figure 14. SMA package dimensions



Ref	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.45	0.075	0.094
A2	0.05	0.20	0.002	0.008
b	1.25	1.65	0.049	0.065
c	0.15	0.40	0.006	0.016
D	2.25	2.90	0.089	0.114
E	4.80	5.35	0.189	0.211
E1	3.95	4.60	0.156	0.181
L	0.75	1.50	0.030	0.059

Figure 15. SMA footprint dimensions in millimeters (inches)

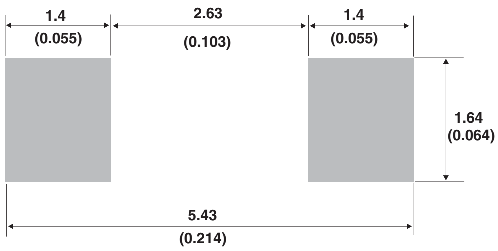
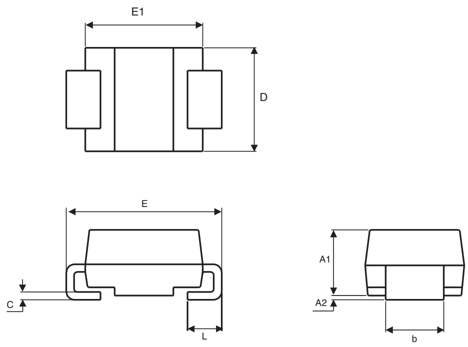
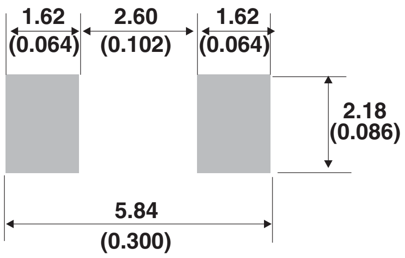


Figure 16. SMB package dimensions



Ref	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.45	0.075	0.096
A2	0.05	0.20	0.002	0.008
b	1.95	2.20	0.077	0.087
c	0.15	0.40	0.006	0.016
D	3.30	3.95	0.130	0.156
E	5.10	5.60	0.201	0.220
E1	4.05	4.60	0.159	0.181
L	0.75	1.50	0.030	0.059

Figure 17. SMB footprint dimensions in millimeters (inches)



3 Ordering information

Table 5. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
STPS1H100AY	S11Y	SMA	0.068 g	5000	Tape and reel
STPS1H100UY	G11Y	SMB	0.107 g	2500	Tape and reel

4 Revision history

Table 6. Document revision history

Date	Revision	Changes
03-Dec-2010	1	First issue.

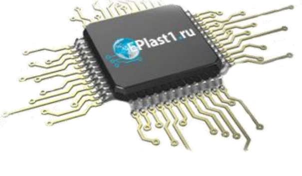
Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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