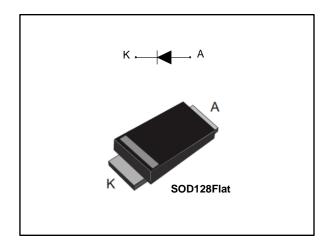


STPS3H100AFY

Automotive high voltage power Schottky rectifier

Datasheet - production data



Description

This high voltage Schottky barrier rectifier device is packaged in SOD128Flat and designed for high frequency miniature switched mode power supplies and for board DC to DC converters for automotive applications.

Table 1: Device summary

Symbol	Value
I _{F(AV)}	3 A
Vrrm	100 V
T _j (max.)	175 °C
V _F (typ.)	0.57 V

Features

- Negligible switching losses
- High junction temperature capability
- Low leakage current
- Good trade-off between leakage current and forward voltage drop
- Avalanche specification
- ECOPACK® compliant component
- AEC-Q101
- PPAP capable
- V_{RRM} guaranteed from -40 to +175 °C

Characteristics STPS3H100AFY

1 Characteristics

Table 2: Absolute ratings (limiting values at 25 °C, unless otherwise specified)

Symbol	Par	Value	Unit	
V _{RRM}	Repetitive peak reverse voltage (T _j = -40 °C to +175 °C)		100	V
I _{F(AV)}	Average forward current	T_L = 140 °C, δ = 0.5, square pulse		Α
I _{FSM}	Surge non repetitive forward current	tive forward $t_p = 10 \text{ ms sinusoidal}$		Α
P _{ARM}	Repetitive peak avalanche power $t_p = 10 \ \mu s, \ T_j = 125 \ ^{\circ}C$		172	W
T _{stg}	Storage temperature range		-65 to +175	ç
Tj	Operating junction temperature range ⁽¹⁾		-40 to +175	°C

Notes:

Table 3: Thermal parameters

Symbol	Parameter	Max. value	Unit
R _{th(j-l)}	Junction to lead	16	°C/W

Table 4: Static electrical characteristics

Symbol	Parameter	Test conditions		Min.	Тур.	Max.	Unit
L (1)	I _R ⁽¹⁾ Reverse leakage current	T _j = 25 °C	V _R = 100 V	-		1.5	μΑ
IR		T _j = 125 °C		-	0.6	1.7	mA
		T _j = 25 °C	I _F = 3 A	-		0.76	- V
V _F ⁽²⁾	Forward voltage drap	T _j = 125 °C		-	0.57	0.61	
V F ⁽²⁾	Forward voltage drop	T _j = 25 °C	I _F = 6 A	-		0.84	V
		T _j = 125 °C		-	0.64	0.68	

Notes:

 $^{(1)}\text{Pulse}$ 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:

 $P = 0.54 \text{ x } I_{F(AV)} + 0.023 \text{ x } I_{F^2(RMS)}$

 $^{^{(1)}(}dP_{tot}/dT_j) < (1/R_{th(j-a)}) \ condition \ to \ avoid \ thermal \ runaway \ for \ a \ diode \ on \ its \ own \ heatsink.$

STPS3H100AFY Characteristics

1.1 Characteristics (curves)

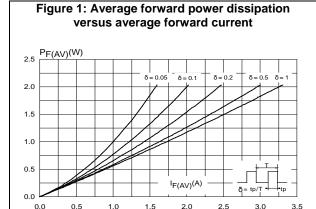


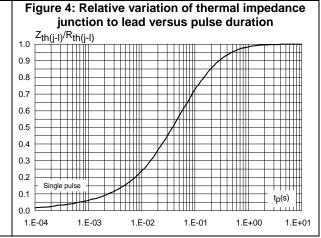
Figure 3: Normalized avalanche power derating versus pulse duration

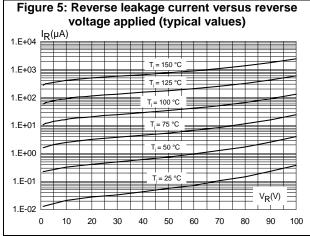
1 PARM(10 µS)

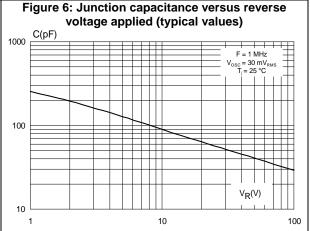
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Characteristics STPS3H100AFY

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Figure 7: Forward voltage drop versus forward

versus copper surface under each lead (typical values, epoxy printed board FR4, e_{Cu}=35 μm) R_{th(j-a)}(°C/W) 150 100 50 $S_{\text{Cu}}(\text{cm}^2)$ 0 0.5 3.5 0.0 1.0 1.5 2.0 2.5 3.0 4.0 4.5 5.0

Figure 8: Thermal resistance junction to ambient

STPS3H100AFY Package information

2 **Package information**

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.

- Epoxy meets UL94, V0
- Lead-free package

SOD128Flat package information 2.1

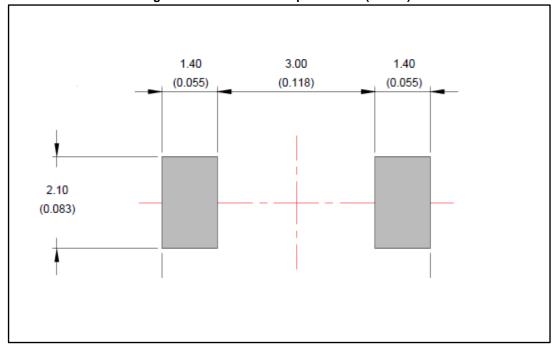
£ L1 2× L 2× L2 2× E1 b 2x

Figure 9: SOD128Flat package outline

Table 5: SOD128Flat package mechanical data

	Dimensions			
Ref.	Millimeters		Inc	hes
	Min.	Max.	Min.	Max.
А	0.93	1.03	0.037	0.041
b	1.69	1.81	0.067	0.071
С	0.10	0.22	0.004	0.009
D	2.30	2.50	0.091	0.098
E	4.60	4.80	0.181	0.189
E1	3.70	3.90	0.146	0.154
L	0.55	0.85	0.026	0.033
L1	0.30 typ.		0.012	2 typ.
L2	0.45 typ.		0.018	3 typ.

Figure 10: SOD128Flat footprint in mm (inches)



STPS3H100AFY Ordering information

3 Ordering information

Table 6: Ordering information

Order code	Marking	Package	Weight	Base qty.	Delivery mode
STPS3H100AFY	3H100Y	SOD128Flat	26.4 mg	3000	Tape and reel

4 Revision history

Table 7: Document revision history

Date	Revision	Changes
09-Jun-2016	1	Initial release.

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