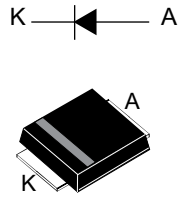
STPS3H100-Y

Automotive power Schottky rectifier

Datasheet - production data



SMBFlat

Features

- AEC-Q101 qualified
- 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
- PPAP capable
- V_{RRM} guaranteed from -40 to +175 °C

Description

This Schottky rectifier is packaged in SMBFlat and designed for high frequency miniature switched mode power supplies such as adaptors and on board DC to DC converters for automotive applications.

Table 1. Device summary

Symbol	Value
$I_{F(AV)}$	3 A
V_{RRM}	100 V
T_j (max.)	175 °C
V_F (typ.)	0.63 V

1 Characteristics

Table 2. Absolute ratings (limiting values)

Symbol	Parameter		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 = 125 °C, δ = 0.5 square wave	3	A
I_{FSM}	Surge non repetitive forward current	t_p = 10 ms sinusoidal	25	A
		t_p = 8.3 ms sinusoidal	26.4	
P_{ARM}	Repetitive peak avalanche power	t_p = 10 µs T_j = 125 °C	170	W
T_{stg}	Storage temperature range		-65 to +175	°C
T_j	Maximum operating junction temperature		-40 to +175	°C

Table 3. Thermal resistance

Symbol	Parameter	Typ.	Max.	Unit
$R_{th(j-l)}$	Junction to lead	15	20	°C/W

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 = 100 V	-		1	µA
		T_j = 125 °C		-	0.4	1	mA
		T_j = 150 °C		-		3.3	
V_F (2)	Forward voltage drop	T_j = 25 °C	I_F = 3 A	-		0.84	V
		T_j = 125 °C		-	0.63	0.68	
		T_j = 25 °C	I_F = 6 A	-		0.94	
		T_j = 125 °C		-	0.71	0.80	

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

To evaluate the conduction losses, use the following equation:
$P = 0.56 \times I_{F(AV)} + 0.04 \times I_F{}^2{}_{(RMS)}$

Figure 1. Average forward power dissipation versus average forward current

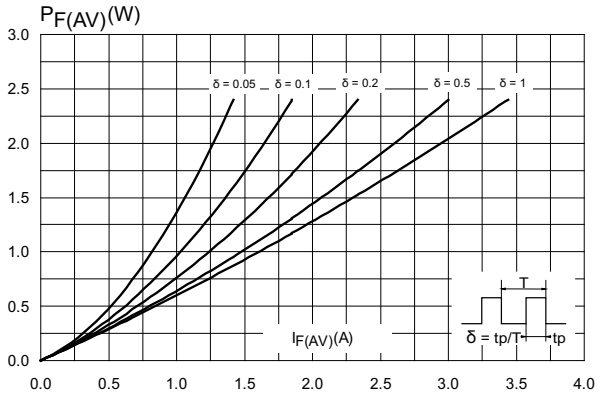


Figure 2. Average forward current versus ambient temperature (δ = 0.5)

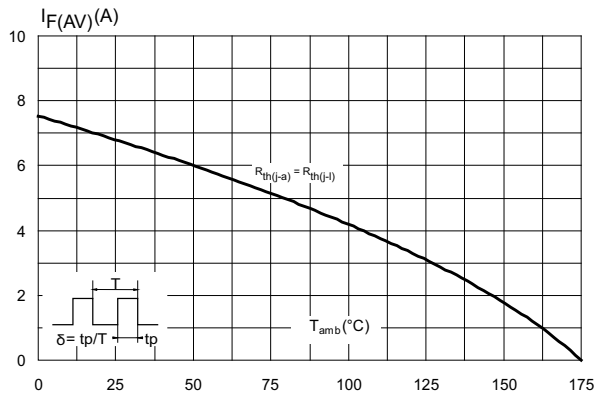


Figure 3. Relative variation of thermal impedance junction to lead versus pulse duration

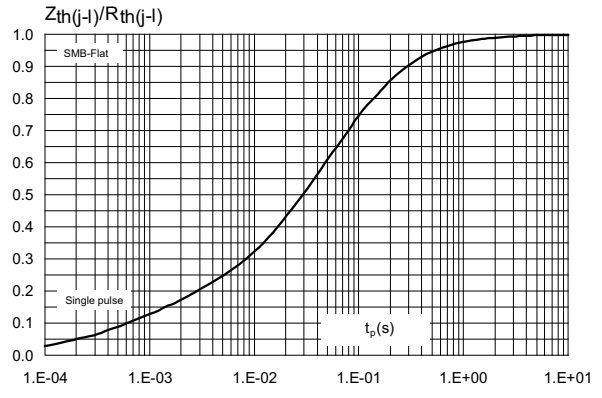


Figure 4. Reverse leakage current versus reverse voltage applied (typical values)

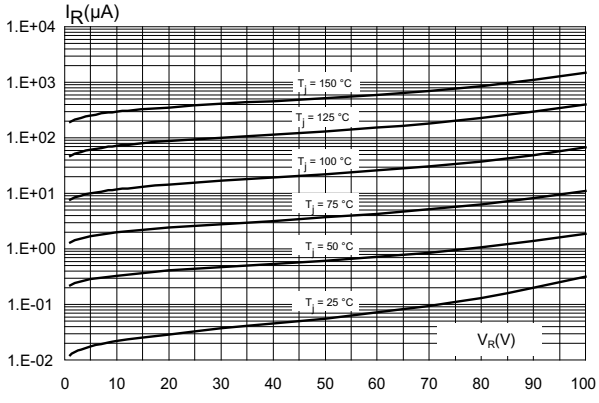


Figure 5. Junction capacitance versus reverse voltage applied (typical values)

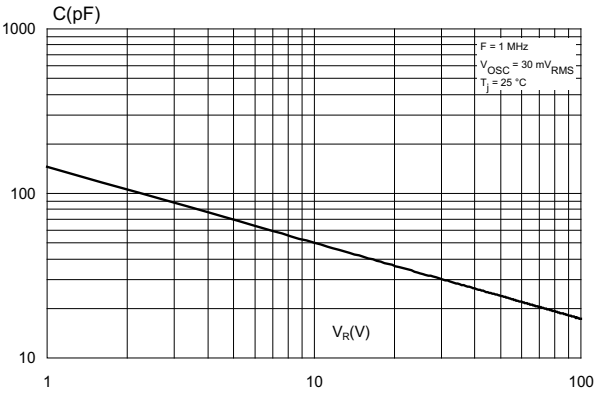


Figure 6. Forward voltage drop versus forward current (typical values)

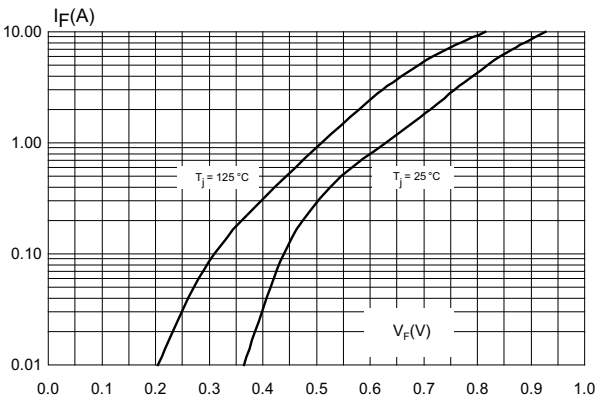


Figure 7. Forward voltage drop versus forward current (maximum values)

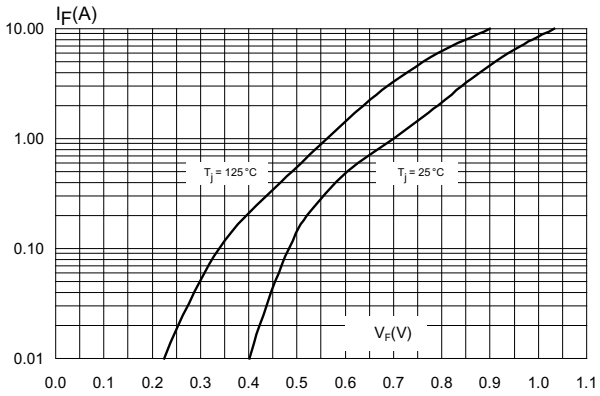
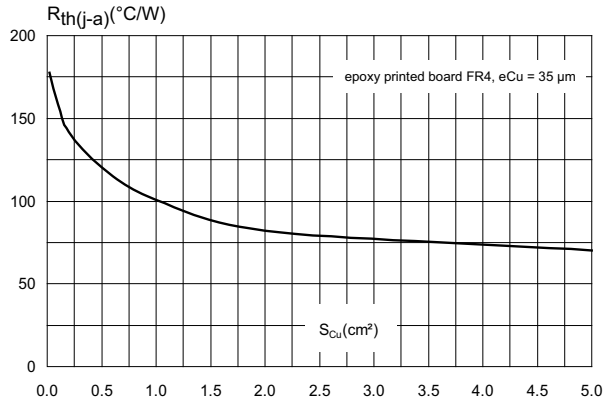


Figure 8. Thermal resistance junction to ambient versus copper surface under each lead (typical values)



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.

2.1 SMBFlat package information

Figure 9. SMBFlat package outline

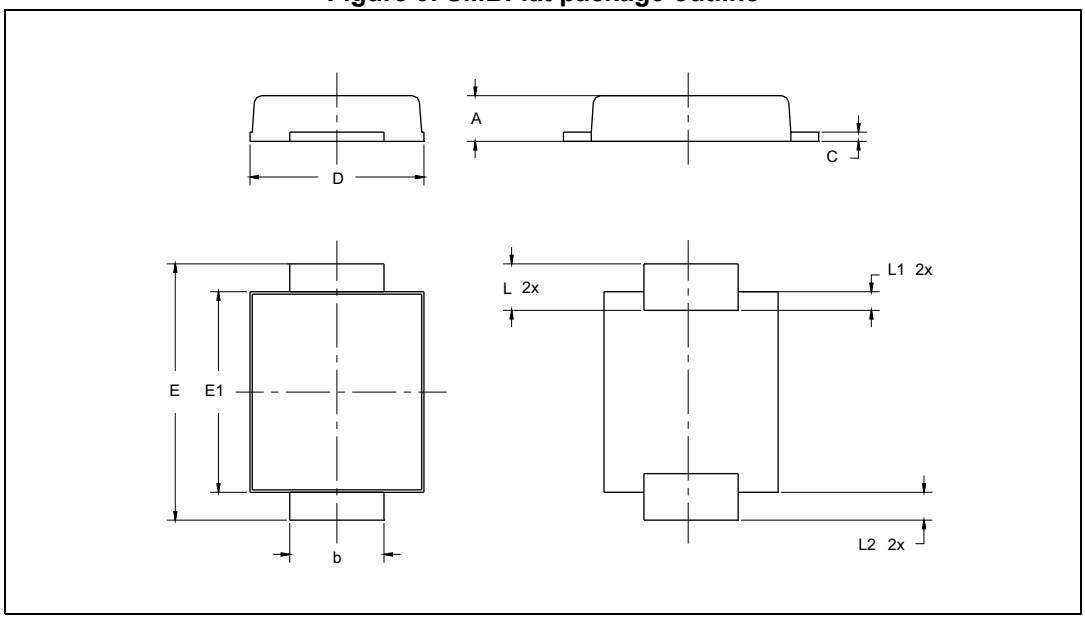
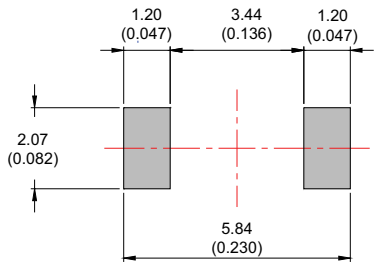


Table 5. SMBFlat package mechanical data

Ref.	Dimensions					
	Millimeters			Inches[1]		
	Typ.	Min.	Max.	Typ.	Min.	Max.
A		0.90	1.10		0.035	0.043
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
L1	0.40			0.016		
L2	0.60			0.024		

1. Values in inches are converted from mm and rounded to 3 decimal digits.

Figure 10. SMBFlat footprint in mm (inches)



3 Ordering information

Table 6. Ordering information

Ordering code	Marking	Package	Weight	Base qty.	Delivery mode
STPS3H100UFY	3H10Y	SMBFlat	50 mg	5000	Tape and reel

4 Revision history

Table 7. Document revision history

Date	Revision	Changes
07-Nov-2016	1	Initial release.