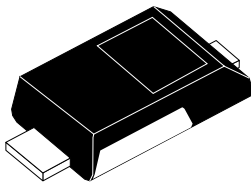


## High voltage power Schottky rectifier



**STmite Flat**

### Features

- Negligible switching losses
- High junction temperature capability
- Low leakage current
- Good trade-off between leakage current and forward voltage drop
- Avalanche capability specified

### Description

The **STPS1H100MF** is a Schottky rectifier designed for high frequency miniature switch mode power supplies such as adaptors and on-board DC/DC convertors. This device is housed in STmite flat package.

It is ideal for lighting and telecom power applications.

Product status link	
<a href="#">STPS1H100MF</a>	
Product summary	
Symbol	Value
$I_{F(AV)}$	1 A
$V_{RRM}$	100 V
$T_j$ (max.)	175 °C
$V_F$ (max.)	0.62 V

# 1 Characteristics

**Table 1. Absolute ratings (limiting values at 25 °C, unless otherwise specified)**

Symbol	Parameter		Value	Unit
V <sub>RRM</sub>	Repetitive peak reverse voltage		100	V
I <sub>F(RMS)</sub>	Forward rms current		2	A
I <sub>F(AV)</sub>	Average forward current	T <sub>c</sub> = 160 °C, δ = 0.5	1	A
I <sub>FSM</sub>	Surge non repetitive forward current	t <sub>p</sub> = 10 ms sinusoidal	50	A
P <sub>ARM</sub>	Repetitive peak avalanche power	t <sub>p</sub> = 10 μs, T <sub>j</sub> = 125 °C	108	W
T <sub>stg</sub>	Storage temperature range		-65 to +175	°C
T <sub>j</sub>	Operating junction temperature range <sup>(1)</sup>		175	°C

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

**Table 2. Thermal parameters**

Symbol	Parameter	Max. value	Unit
R <sub>th(j-c)</sub>	Junction to case	20	°C/W

**Table 3. Static electrical characteristics**

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
I <sub>R</sub> <sup>(1)</sup>	Reverse leakage current	T <sub>j</sub> = 25 °C	V <sub>R</sub> = V <sub>RRM</sub>	-		4	μA
		T <sub>j</sub> = 125 °C		-	0.2	0.5	mA
V <sub>F</sub> <sup>(2)</sup>	Forward voltage drop	T <sub>j</sub> = 25 °C	I <sub>F</sub> = 1 A	-		0.77	V
		T <sub>j</sub> = 125 °C		-	0.58	0.62	
		T <sub>j</sub> = 25 °C	I <sub>F</sub> = 2 A	-		0.86	
		T <sub>j</sub> = 125 °C		-	0.65	0.7	

1. Pulse test: t<sub>p</sub> = 5 ms, δ < 2%

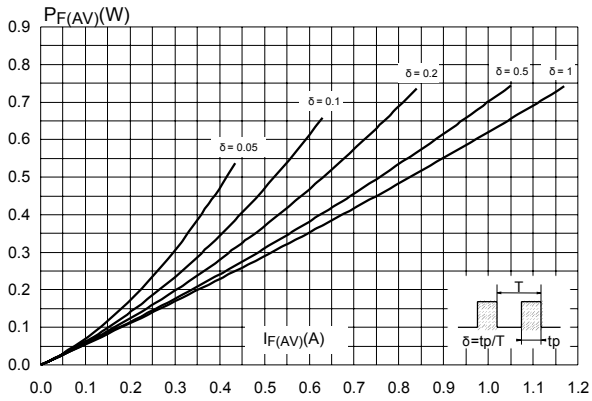
2. Pulse test: t<sub>p</sub> = 380 μs, δ < 2%

To evaluate the conduction losses, use the following equation:

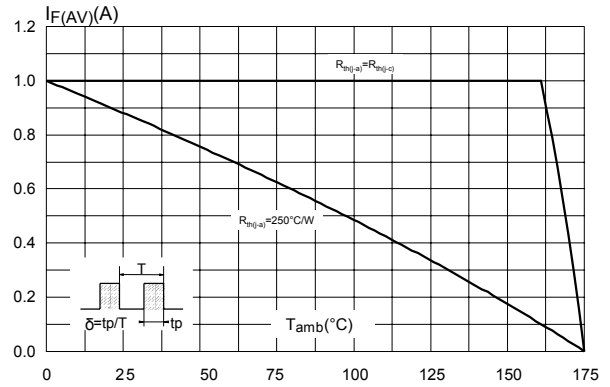
$$P = 0.54 \times I_{F(AV)} + 0.08 \times I_{F(RMS)}^2$$

### 1.1 Characteristics (curves)

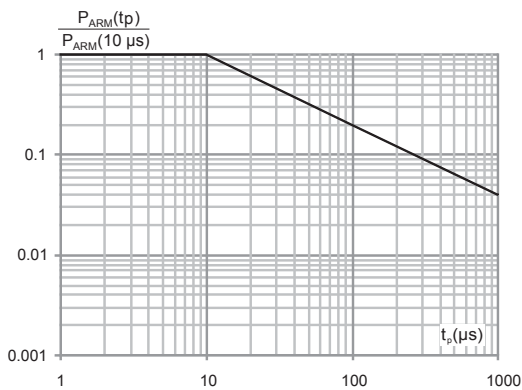
**Figure 1. Average forward power dissipation versus average forward current**



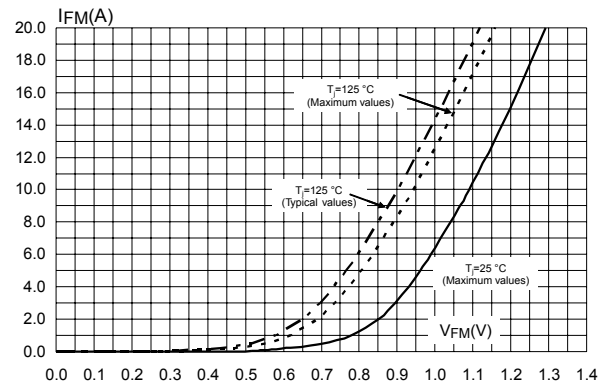
**Figure 2. Average forward current versus ambient temperature ( $\delta = 0.5$ )**



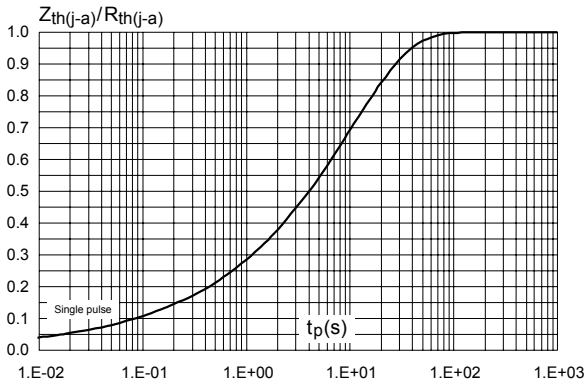
**Figure 3. Normalized avalanche power derating versus junction temperature ( $T_j = 125^\circ\text{C}$ )**



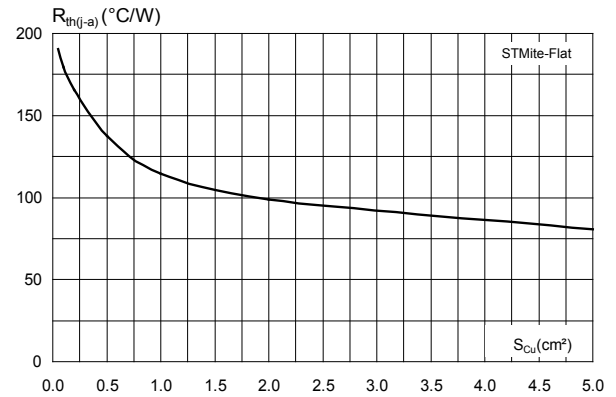
**Figure 4. Forward voltage drop versus forward current**



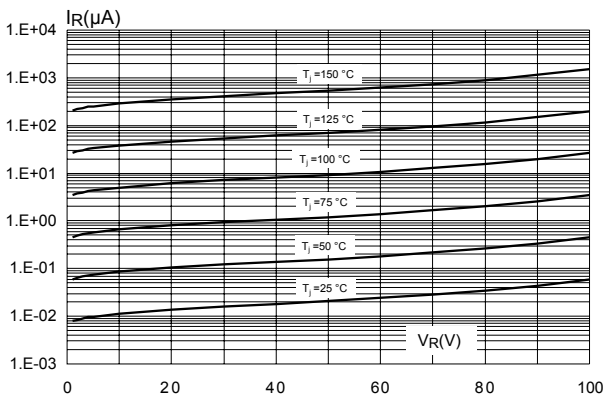
**Figure 5. Relative variation of thermal impedance, junction to ambient, versus pulse duration (epoxy printed circuit board, copper thickness = 35 μm, recommended pad layout)**



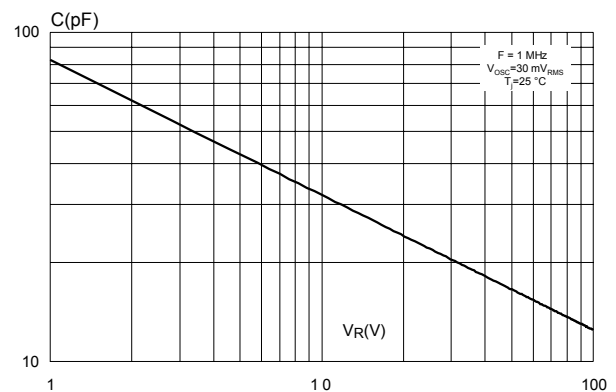
**Figure 6. Thermal resistance, junction to ambient, versus copper surface under tab (epoxy printed board FR4, copper thickness = 35 μm)**



**Figure 7. Reverse leakage current versus voltage applied (typical values)**



**Figure 8. Junction capacitance versus reverse voltage applied (typical values)**



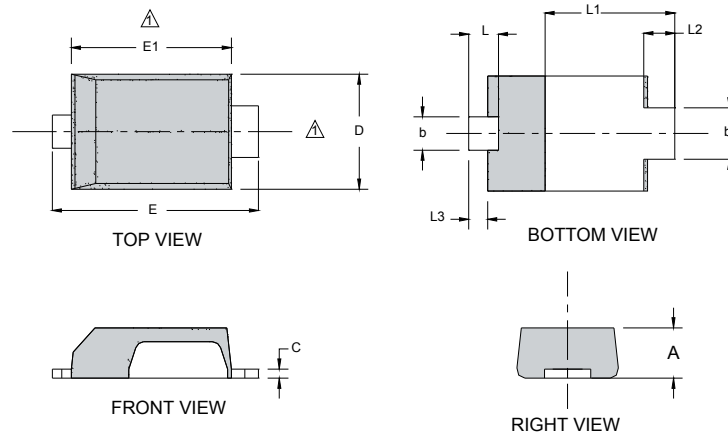
## 2 Package information

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](http://www.st.com). ECOPACK® is an ST trademark.

### 2.1 STmite Flat package information

- Epoxy meets UL 94,V0

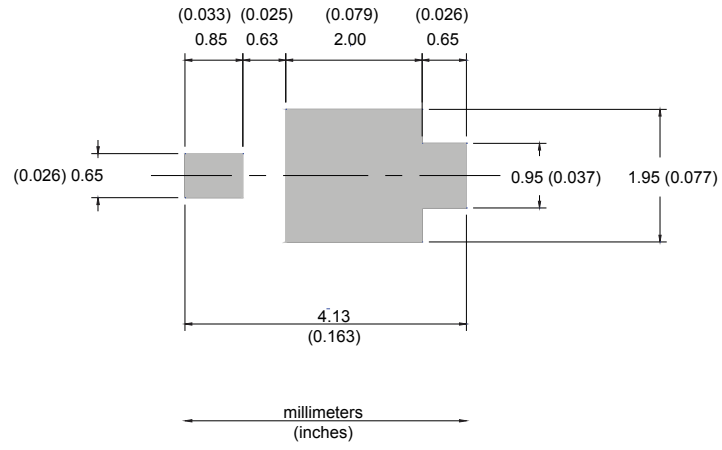
**Figure 9. STmite Flat package outline**



**Table 4. STmite Flat package mechanical data**

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.80	0.85	0.95	0.031	0.033	0.037
b	0.40	0.55	0.65	0.016	0.022	0.026
b2	0.70	0.85	1.00	0.027	0.033	0.039
c	0.10	0.15	0.25	0.004	0.006	0.009
D	1.75	1.90	2.05	0.069	0.075	0.081
E	3.60	3.80	3.90	0.142	0.150	0.154
E1	2.80	2.95	3.10	0.110	0.116	0.122
L	0.50	0.55	0.80	0.020	0.022	0.031
L1	2.10	2.40	2.60	0.083	0.094	0.102
L2	0.45	0.60	0.75	0.018	0.024	0.030
L3	0.20	0.35	0.50	0.008	0.014	0.020

**Figure 10. STmite Flat Recommended footprint**



### 3 Ordering information

**Table 5. Ordering information**

Order code	Marking	Package	Weight	Base qty.	Delivery mode
STPS1H100MF	M11	STmite flat	16 mg	12000	Tape and reel

## Revision history

**Table 6. Document revision history**

Date	Version	Changes
15-May-2008	1	First issue.
10-Apr-2018	2	Removed figure 4 and figure 5. Updated <a href="#">Section • Description, Table 1. Absolute ratings (limiting values at 25 °C, unless otherwise specified)</a> and <a href="#">Figure 3. Normalized avalanche power derating versus junction temperature (T<sub>j</sub> = 125 °C)</a> . Minor text changes to improve readability.



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