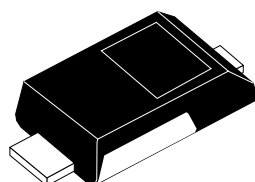


High voltage power Schottky rectifier



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	
STPS1H100MF	
Product summary	
Symbol	Value
$I_{F(AV)}$	1 A
V_{RRM}	100 V
$T_j \text{ (max.)}$	175 °C
$V_F \text{ (max.)}$	0.62 V

1 Characteristics

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

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		100	V
$I_{F(RMS)}$	Forward rms current		2	A
$I_{F(AV)}$	Average forward current	$T_c = 160\text{ °C}, \delta = 0.5$	1	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10\text{ ms sinusoidal}$	50	A
P_{ARM}	Repetitive peak avalanche power	$t_p = 10\text{ }\mu\text{s}, T_j = 125\text{ °C}$	108	W
T_{stg}	Storage temperature range		-65 to +175	°C
T_j	Operating junction temperature range ⁽¹⁾		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
$R_{th(j-c)}$	Junction to case	20	°C/W

Table 3. Static electrical characteristics

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

1. Pulse test: $t_p = 5\text{ ms}, \delta < 2\%$

2. Pulse test: $t_p = 380\text{ }\mu\text{s}, \delta < 2\%$

To evaluate the conduction losses, use the following equation:

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

1.1 Characteristics (curves)

Figure 1. Average forward power dissipation versus average forward current

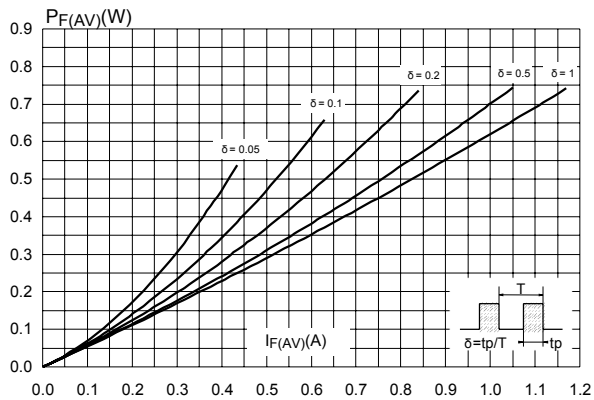


Figure 2. Average forward current versus ambient temperature ($\delta = 0.5$)

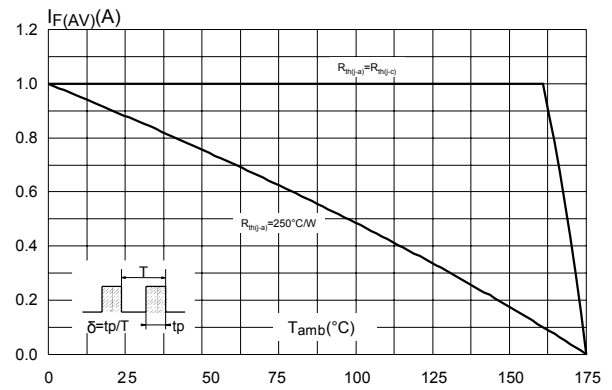


Figure 3. Normalized avalanche power derating versus junction temperature ($T_j = 125^\circ\text{C}$)

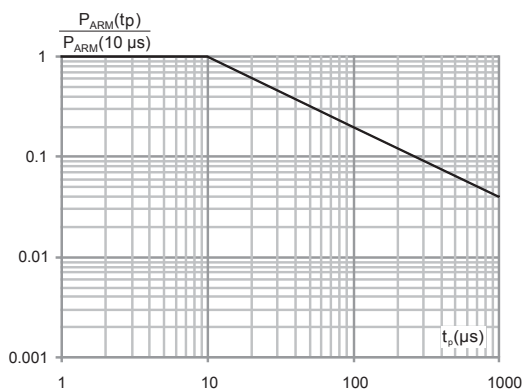


Figure 4. Forward voltage drop versus forward current

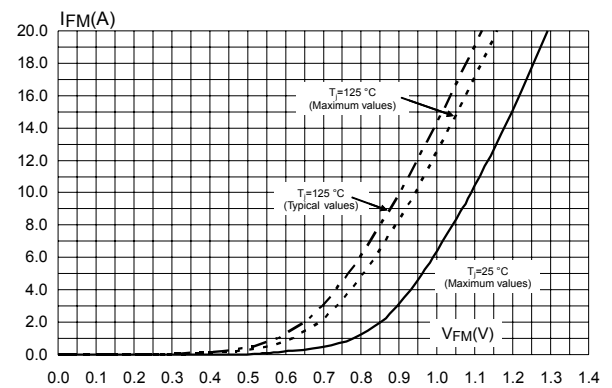


Figure 5. Relative variation of thermal impedance, junction to ambient, versus pulse duration (epoxy printed circuit board, copper thickness = 35 μm , recommended pad layout)

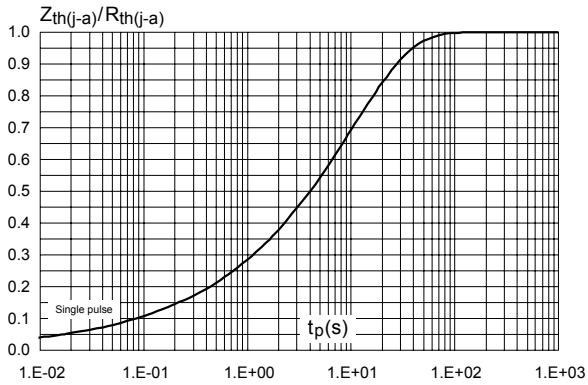


Figure 6. Thermal resistance, junction to ambient, versus copper surface under tab (epoxy printed board FR4, copper thickness = 35 μm)

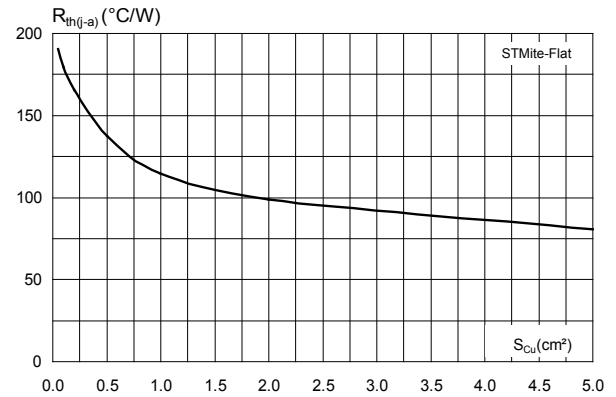


Figure 7. Reverse leakage current versus voltage applied (typical values)

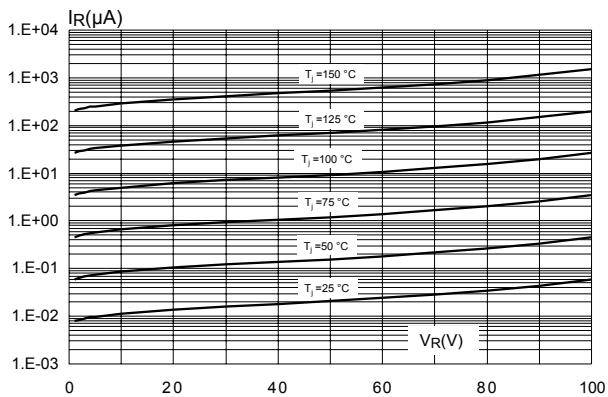
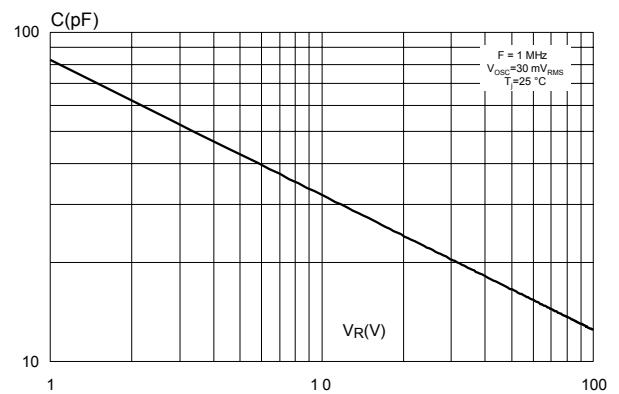


Figure 8. Junction capacitance versus reverse voltage applied (typical values)



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. ECOPACK® is an ST trademark.

2.1 STmite Flat package information

- Epoxy meets UL 94,V0

Figure 9. STmite Flat package outline

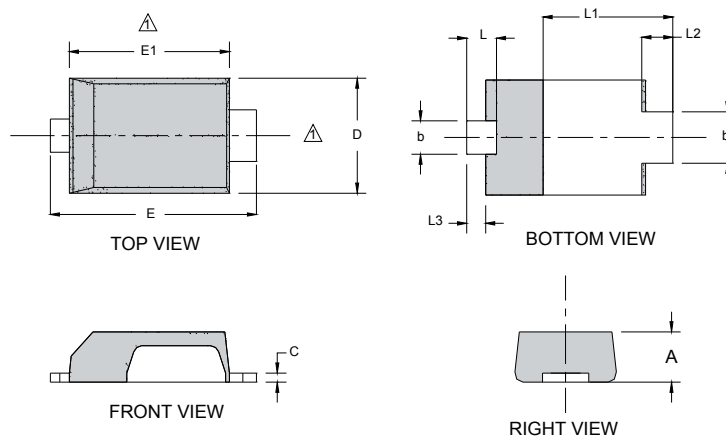
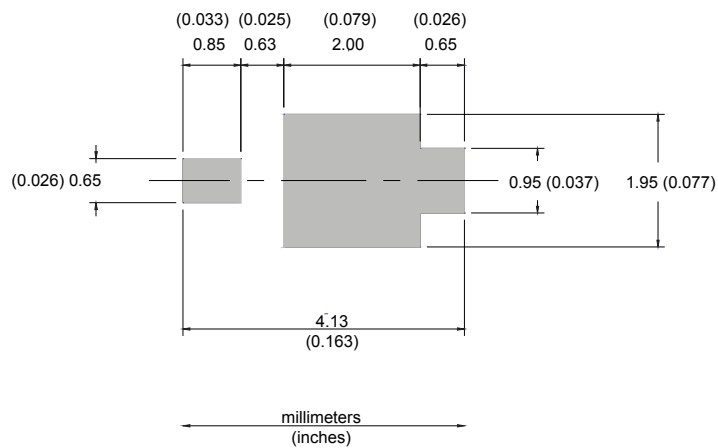


Table 4. STmite Flat package mechanical data

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 Section • Description, Table 1. Absolute ratings (limiting values at 25 °C, unless otherwise specified) and Figure 3. Normalized avalanche power derating versus junction temperature ($T_j = 125\text{ °C}$). Minor text changes to improve readability.

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Наши контакты:

Телефон: +7 812 627 14 35

Электронная почта: sales@st-electron.ru

Адрес: 198099, Санкт-Петербург,
Промышленная ул, дом № 19, литера Н,
помещение 100-Н Офис 331