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STPS5H100UFN-MS

Product specification

Description

This high voltage Schottky barrier rectifier has been optimized for use in high frequency miniature DC/DC converters, reverse battery protection, battery chargers and adaptors.

Packaged in SMBF, the STPS5H100UFN-MS provides a high level of performance in a compact and flat package which can withstand very high operating junction temperature.

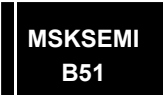
Features

- Low profile design – package height of 1.1 mm
- Wettable flanks for automatic visual inspection
- Low forward voltage drop
- Avalanche capability

Applications

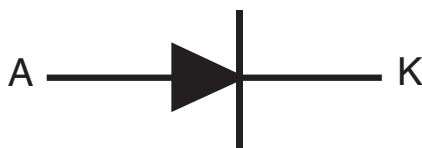
- Switching diode
- Notebook adapter
- LED lighting
- DC/DC converter

Reference News

STPS5H100UFN-MS	MARKING
 A K SMBF	

Device summary

Symbol	Value
$I_F(AV)$	5 A
V_{RRM}	100 V
$T_J (max.)$	175 °C
$V_F (typ.)$	0.545 V



Characteristics

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

Symbol	Parameter		Value	Unit
V _{RRM}	Repetitive peak reverse voltage		100	V
I _{F(AV)}	Average forward current, $\delta = 0.5$ square wave	T _L = 115 °C	5	A
I _{FSM}	Surge non repetitive forward current	t _p = 10 ms sinusoidal	190	A
P _{ARM}	Repetitive peak avalanche power	t _p = 10 μ s, T _j = 125 °C	518	W
T _{stg}	Storage temperature range		-65 to +175	°C
T _j	Maximum operating junction temperature ⁽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.

Thermal resistance parameters

Symbol	Parameter	Typ.	Unit
R _{th(j-l)}	Junction to lead	6.6	°C/W

For more information, please refer to the following application note:

- AN5088: Rectifiers thermal management, handling and mounting recommendations

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}	-		8	μ A
		T _j = 125 °C		-	1.5	5	mA
V _F ⁽²⁾	Forward voltage drop	T _j = 25 °C	I _F = 2.5 A	-		0.640	V
		T _j = 125 °C		-	0.480	0.540	
		T _j = 25 °C	I _F = 5 A	-		0.745	
		T _j = 125 °C		-	0.545	0.610	

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

2. Pulse test: t_p = 380 μ s, $\delta < 2\%$

To evaluate the conduction losses, use the following equation: $P = 0.470 \times$

$$I_{F(AV)} + 0.028 \times I_{F(RMS)}^2$$

For more information, please refer to the following application notes related to the power losses:

- AN604: Calculation of conduction losses in a power rectifier
- AN4021: Calculation of reverse losses in a power diode

Characteristics (curves)

Figure 1. Reverse leakage current versus reverse voltage applied (typical values)

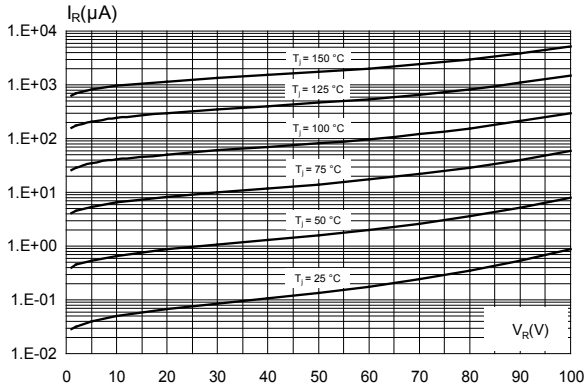


Figure 2. Junction capacitance versus reverse voltage applied (typical values)

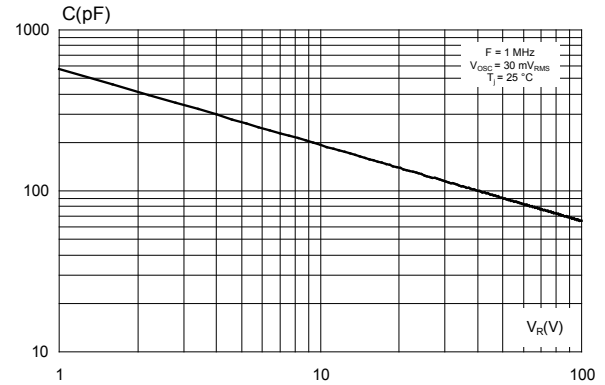


Figure 3. Forward voltage drop versus forward current (typical values)

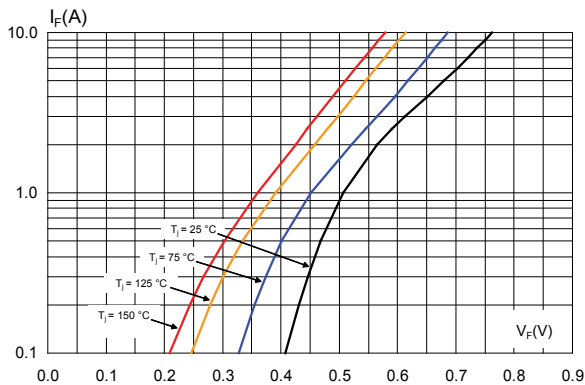


Figure 4. Normalized avalanche power derating versus pulse duration ($T_J = 125\text{ °C}$)

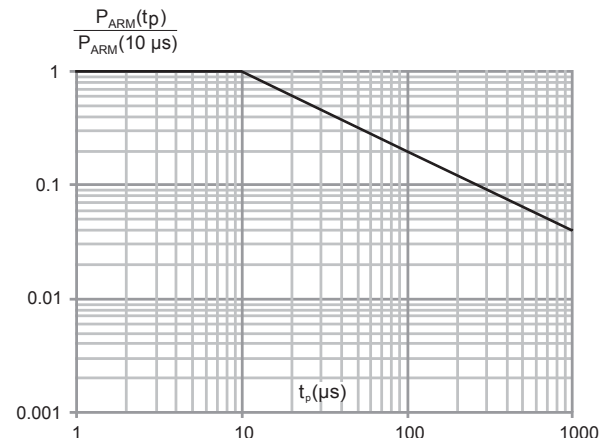
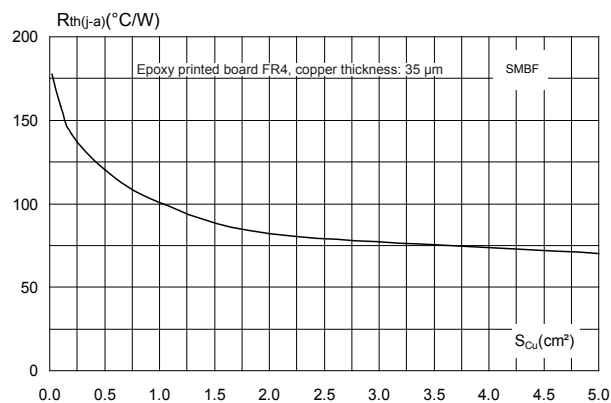
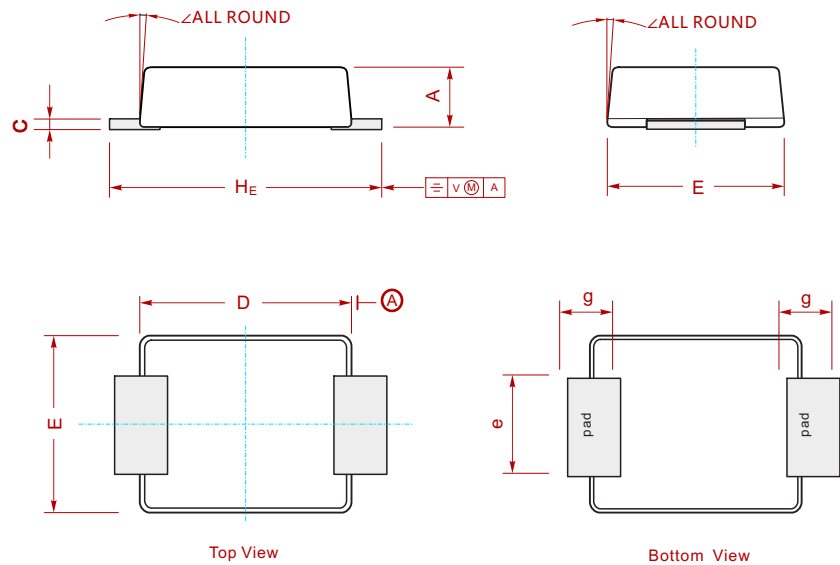


Figure 5. Thermal resistance junction to ambient versus copper surface under each lead (SMB Flat Notch)



PACKAGEECHANICALDATA



UNIT		A	C	D	E	H _E	e	g	∠
mm	max	1.3	0.26	4.4	3.7	5.5	2.2	1.0	9°
	min	1.1	0.18	4.2	3.5	5.1	1.9		
mil	max	51	10	173	146	216	86	40	
	min	43	7	165	138	200	75		

Order information

P/N	PKG	QTY
STPS5H100UFN-MS	SMBF	5000

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