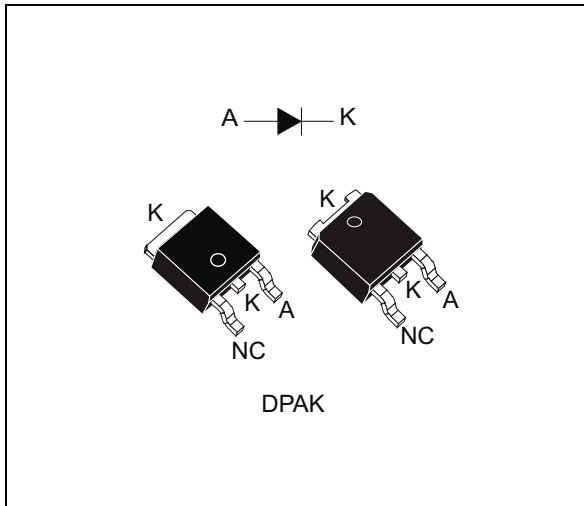


## Low drop power Schottky rectifier

Datasheet – production data


**Description**

Single Schottky rectifier suited for switch mode power supply and high frequency DC to DC converters.

Packaged in DPAK, this device is intended for use as a rectifier at the secondary of 3.3 V SMPS units.

**Table 1. Device summary**

Symbol	Value
$I_{F(AV)}$	5 A
$V_{RRM}$	25 V
$T_j(max)$	150 °C
$V_{F(typ)}$	0.31 V

**Features**

- Very low forward voltage drop for less power dissipation and reduced heatsink
- Optimized conduction/reverse losses trade-off which means the highest efficiency in the applications
- High power surface mount miniature package
- Avalanche specification
- ECOPACK<sup>®2</sup> compliant component for DPAK on demand

# 1 Characteristics

**Table 2. Absolute ratings (limiting values, at 25 °C unless otherwise stated)**

Symbol	Parameter	Value	Unit	
V <sub>RRM</sub>	Repetitive peak reverse voltage	25	V	
I <sub>F(RMS)</sub>	Forward rms current	7	A	
I <sub>F(AV)</sub>	Average forward current, $\bar{\delta} = 0.5$ square wave	T <sub>c</sub> = 140 °C,	5	A
I <sub>FSM</sub>	Surge non repetitive forward current	t <sub>p</sub> = 10 ms sinusoidal	75	A
P <sub>ARM</sub>	Repetitive peak avalanche power	t <sub>p</sub> = 10 μs, T <sub>j</sub> = 125 °C	215	W
T <sub>stg</sub>	Storage temperature range	-65 to +150	°C	
T <sub>j</sub>	Maximum operating junction temperature <sup>(1)</sup>	150	°C	

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

**Table 3. Thermal resistance**

Symbol	Parameter	Max. value	Unit
R <sub>th(j-c)</sub>	Junction to case	2.5	°C/W

**Table 4. Static electrical characteristics**

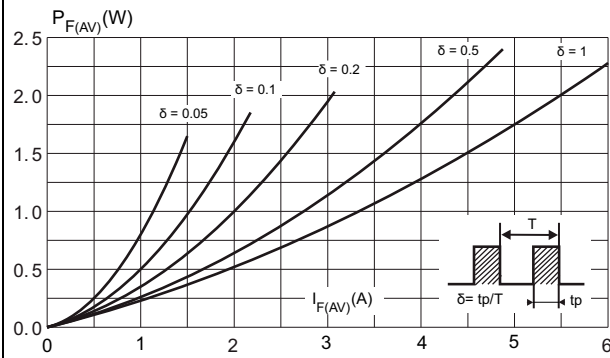
Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit	
I <sub>R</sub> <sup>(1)</sup>	Reverse leakage current	T <sub>j</sub> = 25 °C	V <sub>R</sub> = V <sub>RRM</sub>	-	-	350	μA
		T <sub>j</sub> = 125 °C		-	55	115	mA
V <sub>F</sub> <sup>(1)</sup>	Forward voltage drop	T <sub>j</sub> = 25 °C	I <sub>F</sub> = 5 A	-	-	0.47	V
		T <sub>j</sub> = 125 °C		-	0.31	0.35	
		T <sub>j</sub> = 25 °C	I <sub>F</sub> = 10 A	-	-	0.59	
		T <sub>j</sub> = 125 °C		-	0.41	0.50	

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

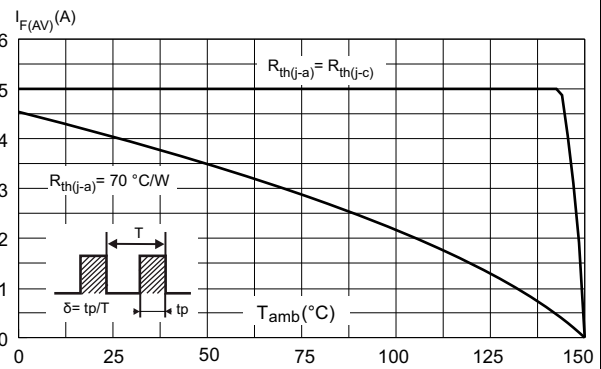
To evaluate the conduction losses use the following equation:

$$P = 0.2 \times I_{F(AV)} + 0.03 \times I_{F(RMS)}^2$$

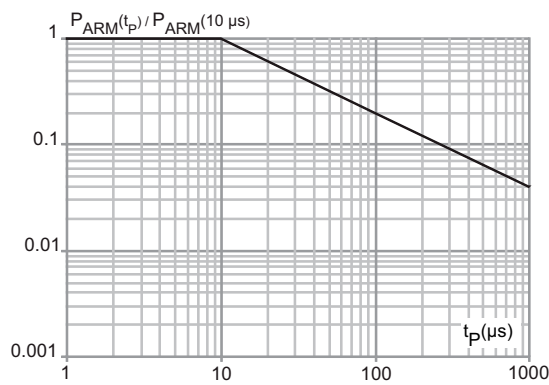
**Figure 1. Average forward power dissipation versus average forward current**



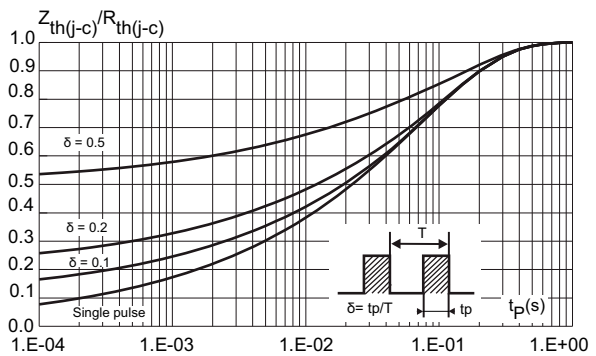
**Figure 2. Average forward current versus ambient temperature ( $\delta = 0.5$ )**



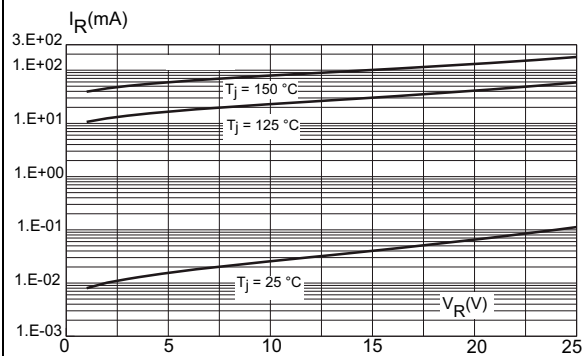
**Figure 3. Normalized avalanche power derating versus pulse duration at  $T_j = 125$  °C**



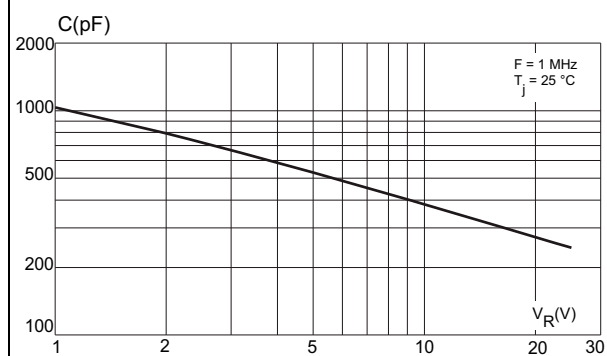
**Figure 4. Relative variation of thermal impedance junction to case versus pulse duration**



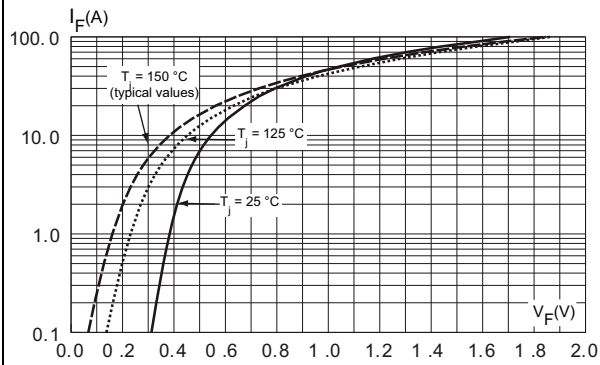
**Figure 5. Reverse leakage current versus reverse reverse voltage applied (typical values)**



**Figure 6. Junction capacitance versus reverse voltage applied (typical values)**



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



**Figure 8. Thermal resistance junction to ambient versus copper surface under tab**

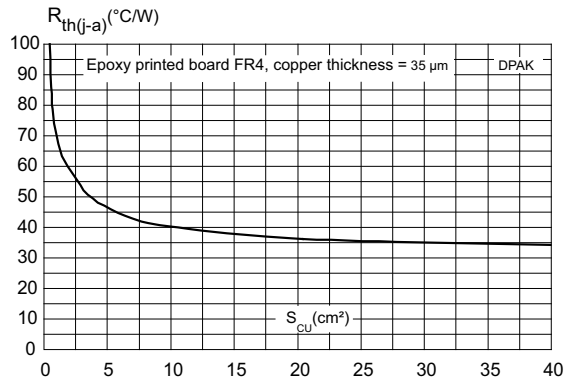
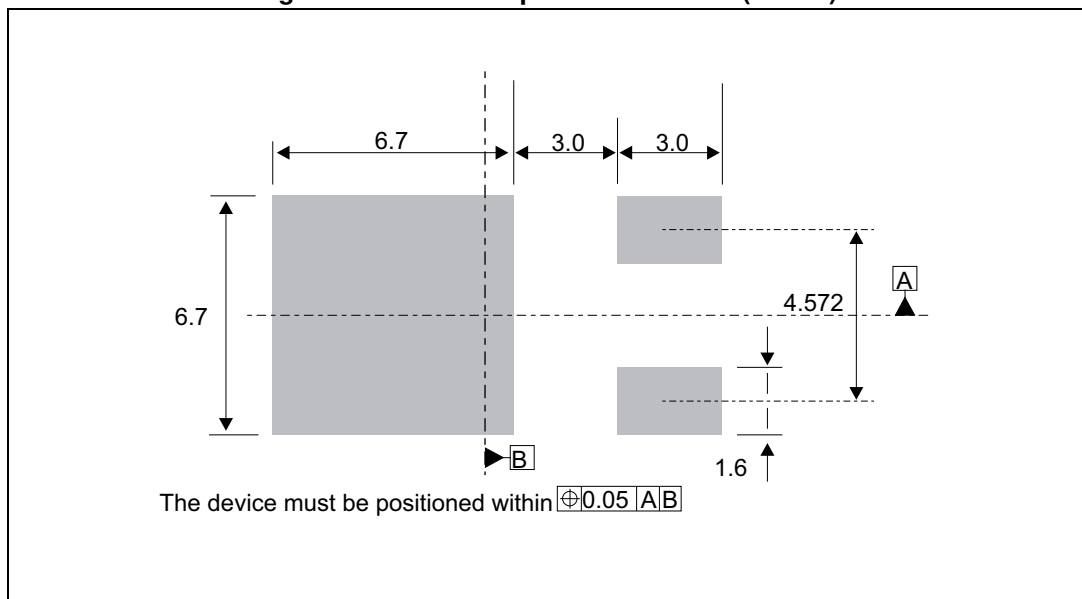




Table 5. DPAK package mechanical data

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.18		2.40	0.085		0.094
A1	0.90		1.10	0.035		0.043
A2	0.03		0.23	0.001		0.009
b	0.64		0.90	0.025		0.035
b4	4.95		5.46	0.194		0.214
c	0.46		0.61	0.018		0.024
c2	0.46		0.60	0.018		0.023
D	5.97		6.22	0.235		0.244
D1	4.95		5.60	0.194		0.220
E	6.35		6.73	0.250		0.264
E1	4.32		5.50	0.170		0.216
e		2.28			0.090	
e1	4.40		4.70	0.173		0.185
H	9.35		10.40	0.368		0.409
L	1.00		1.78	0.039		0.070
L2			1.27			0.050
L4	0.60		1.02	0.023		0.040
V2	-8°		+8°	-8°		8°

Figure 10. DPAK footprint dimensions (in mm)



### 3 Ordering information

**Table 6. Ordering information**

Order code	Marking	Package	Weight	Base qty	Delivery mode
STPS5L25B-TR	STPS5 L25B	DPAK	0.32 g	2500	Tape and reel

### 4 Revision history

**Table 7. Document revision history**

Date	Revision	Changes
Jul-2003	5A	Previous release.
15-Apr-2008	6	Reformatted to current standard. Corrected order code in <a href="#">Table 5</a> .
08-Jan-2015	7	Updated package information and reformatted to current standard.
15-May-2017	8	Updated DPAK package information and reformatted to current standard.

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