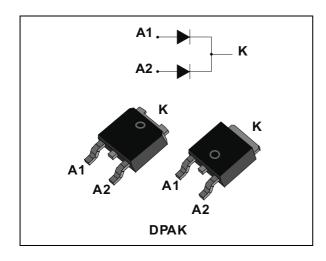
STPS15L30C



Low drop power Schottky rectifier

Datasheet - production data



Features

- Very small conduction losses
- · Negligible switching losses
- Extremely fast switching
- Low forward voltage drop
- Low capacitance
- Low thermal resistance
- Avalanche specification
- ECOPACK[®]2 compliant component for DPAK on demand

Description

Dual center tab Schottky rectifier suited for switched mode power supply and high frequency DC to DC converters.

Packaged in DPAK, this device is intended for use in low voltage, high frequency inverters, freewheeling and polarity protection applications.

Table 1. Device summary

Symbol	Value
I _{F(AV)}	2 x 7.5 A
V_{RRM}	30 V
Tj	150 °C
V _F (typ)	0.34 V

Characteristics STPS15L30C

1 Characteristics

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

Symbol	Parameter	Value	Unit			
V_{RRM}	Repetitive peak reverse voltage	Repetitive peak reverse voltage				
I _{F(RMS)}	Forward rms current	Forward rms current				
1	Average forward current, $\delta = 0.5$, square	$T_c = 140 ^{\circ}C^{(1)}$	Per diode	7.5	Α	
I _{F(AV)}	wave		Per device	15	^	
I _{FSM}	Surge non repetitive forward current t _p = 10 ms sinusoidal			75	Α	
P _{ARM}	Repetitive peak avalanche power $t_p = 10 \mu s$, $T_j = 125 °C$			200	W	
T _{stg}	Storage temperature range	-65 to +175	°C			
T _j	Maximum operating junction temperature ⁽²⁾			150	°C	

^{1.} Value based on $R_{th(j-c)}$ max (per diode)

Table 3. Thermal resistances

Symbol	Parameter	Value	Unit	
D	Junction to case	Per diode	4	
R _{th(j-c)}	Sunction to case	Total		°C/W
R _{th(c)}	Coupling		0.7	

When the diodes 1 and 2 are used simultaneously:

 $\Delta \; T_{j}(\text{diode 1}) = P(\text{diode1}) \; x \; R_{th(j-c)}(\text{Per diode}) \; + \; P(\text{diode 2}) \; x \; R_{th(c)}$

Table 4. Static electrical characteristics (per diode)

Symbol	Parameter	Test Conditions		Min.	Тур.	Max.	Unit
. (1)	I _R ⁽¹⁾ Reverse leakage current	T _j = 25 °C	\/ - \/			1	mA
'R`'		T _j = 125 °C	$V_R = V_{RRM}$		70	140	mA
		T _j = 25 °C	I _F = 7.5 A			0.48	
		T _j = 125 °C	I _F = 7.5 A		0.34	0.39	
V (2)	V _F ⁽²⁾ Forward voltage drop	T _j = 25 °C	I _F = 12 A			0.53	V
VF, ,		T _j = 125 °C	I _F = 12 A		0.40	0.47	V
		T _j = 25 °C	I _F = 15 A			0.57	
		T _j = 125 °C	I _F = 15 A		0.44	0.51	

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

To evaluate the conduction losses use the following equation:

$$P = 0.27 \times I_{F(AV)} + 0.016 I_{F}^{2}_{(RMS)}$$



^{2.} $\frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$ condition to avoid thermal runaway for a diode on its own heatsink

^{2.} Pulse test: t_p = 380 μ s, δ < 2%

STPS15L30C Characteristics

Figure 1. Average forward power dissipation versus average forward current (per diode)

PF(av)(W)

4.5

4.0

3.5

3.0

δ = 0.05

3.0

1.5

1.0

0.5

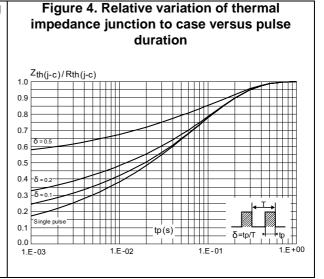
Figure 3. Normalized avalanche power derating versus pulse duration at T_j = 125 °C

PARM(tp)
PARM(10 µs)

0.01

0.01

1 10 100 1000



Characteristics STPS15L30C

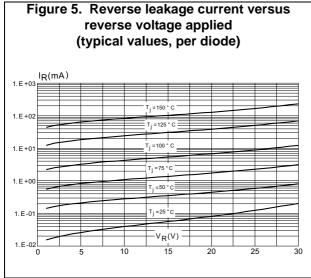


Figure 6. Junction capacitance versus reverse voltage applied (typical values, per diode)

10.0 C(nF)

1.0 VR(V)
1.1 10 100

Figure 7. Forward voltage drop versus forward current (per diode)

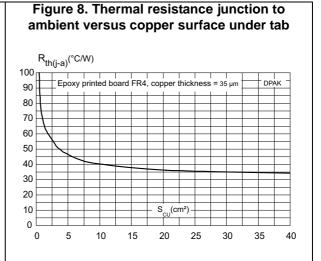
IFM(A)

T_j=125°C
(Maximum values)

T_j=25°C
(Maximum values)

VFM(V)

10.0 0.2 0.4 0.6 0.8 1.0 1.2

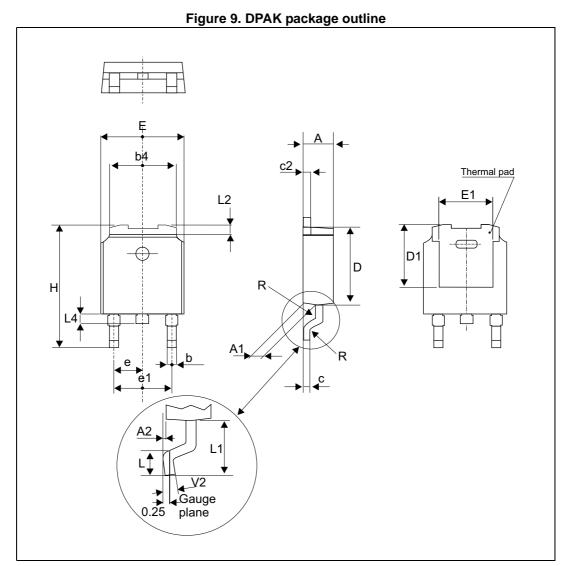


2 Package Information

- Epoxy meets UL94,V0
- Cooling method: by conduction (C)

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 DPAK package information



Note:

This package drawing may slightly differ from the physical package. However, all the specified dimensions are guaranteed.

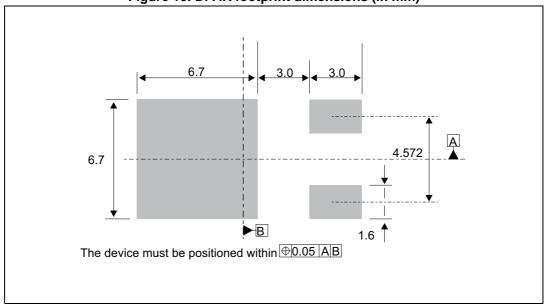


Package Information STPS15L30C

Table 5. DPAK package mechanical data

				Dimensions		
Ref.	Millimeters			Inches		
	Min.	Тур.	Max.	Min.	Тур.	Max.
А	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
С	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
е		2.28			0.090	
e1	4.40		4.70	0.173		0.185
Н	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
STPS15L30CB	S15L30C	DPAK	0.30 g	75	Tube
STPS15L30CB-TR	S15L30C	DPAK	0.30 g	2500	Tape and reel

4 Revision history

Table 7. Document revision history

Date	Revision	Description of Changes	
14-Jun-2012	2 Automatic revalidation date workflow started.		
21-Oct-2014	3	Updated DPAK package information and reformatted to current standard. Removed IPAK.	
18-Dec-2015	4	Updated DPAK package information and reformatted to current standard.	

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