

# STPS15L30CB

## LOW DROP POWER SCHOTTKY RECTIFIER

## MAIN PRODUCTS CHARACTERISTICS

I <sub>F(AV)</sub>	2 x 7.5 A
V <sub>RRM</sub>	30 V
Tj (max)	150 °C
V <sub>F</sub> (max)	0.39 V

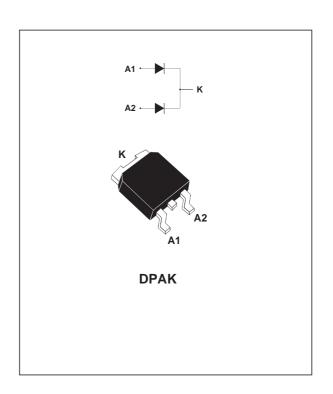
#### **FEATURES AND BENEFITS**

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- EXTREMELY FAST SWITCHING
- LOW FORWARD VOLTAGE DROP
- HIGH AVALANCHE CAPABILITY
- LOW THERMAL RESISTANCE
- AVALANCHE CAPABILITY SPECIFIED

#### **DESCRIPTION**

Dual center tab Schottky rectifier suited for switch Mode Power Supply and high frequency DC to DC converters.

Package in DPAK, this device is intended for use in low voltage, high frequency inverters, free-wheeling and polarity protection applications.



## ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter	Value	Unit		
V <sub>RRM</sub>	Repetitive peak reverse voltage			30	V
I <sub>F(RMS)</sub>	RMS forward current			10	Α
I <sub>F(AV)</sub>	Average forward current	Tc = 140°C	Per diode	7.5	
		$\delta = 0.5$ Per device		15	A
I <sub>FSM</sub>	Surge non repetitive forward current	tp = 10 ms sin	usoidal	75	Α
I <sub>RRM</sub>	Peak repetitive reverse current	tp=2 µs squa	re F=1kHz	1	Α
P <sub>ARM</sub>	Repetitive peak avalanche power tp = 1µs Tj = 25°C			2800	W
T <sub>stg</sub>	Storage temperature range			- 65 to + 175	°C
Tj	Maximum operating junction temperature *			150	°C
dV/dt	Critical rate of rise reverse voltage			10000	V/µs

 $<sup>\</sup>frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$  thermal runaway condition for a diode on its own heatsink

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### THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
R <sub>th(j-c)</sub>	Junction to case	Per diode Total	4 2.4	°C/W
R <sub>th(c)</sub>	Coupling		0.7	

When the diodes 1 and 2 are used simultaneously :  $\Delta$  Tj(diode 1) = P(diode1) x R<sub>th(j-c)</sub>(Per diode) + P(diode 2) x R<sub>th(c)</sub>

## STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests Conditions		Min.	Тур.	Max.	Unit
I <sub>R</sub> *	Reverse leakage current	Tj = 25°C	$V_R = V_{RRM}$			1	mA
		Tj = 125°C			70	140	mA
V <sub>F</sub> *	Forward voltage drop	Tj = 25°C	I <sub>F</sub> = 7.5 A			0.48	V
		Tj = 125°C	I <sub>F</sub> = 7.5 A		0.34	0.39	
		Tj = 25°C	I <sub>F</sub> = 12 A			0.53	
		Tj = 125°C	I <sub>F</sub> = 12 A		0.40	0.47	
		Tj = 25°C	I <sub>F</sub> = 15 A			0.57	
		Tj = 125°C	I <sub>F</sub> = 15 A		0.44	0.51	

Pulse test : \* tp = 380  $\mu$ s,  $\delta$  < 2%

To evaluate the conduction losses use the following equation : P = 0.27 x  $I_{F(AV)}$  + 0.016  $I_F^2_{(RMS)}$ 

Fig. 1: Conduction losses versus average current.

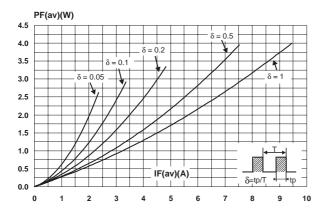


Fig. 3: Normalized avalanche power derating

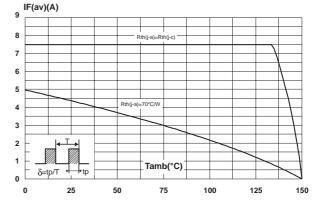


Fig. 2: Average forward current versus ambient

temperature ( $\delta = 0.5$ ).

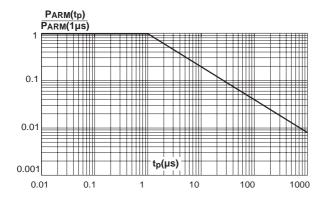


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values).

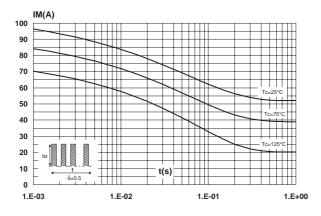


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

Tj(°C)

75

100

125

150

50

25

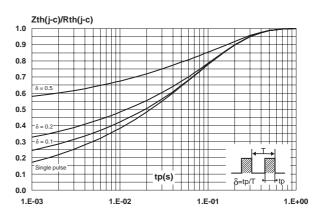


Fig. 4: Normalized avalanche power derating versus pulse duration. versus junction temperature.

> 0.8 0.6

0.4 0.2

0

0

PARM(tp) PARM(25°C)

**Fig. 7:** Reverse leakage current versus reverse voltage applied (typical values).

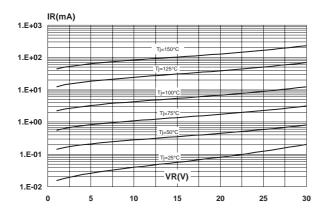
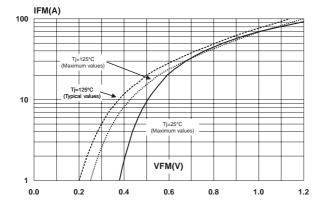
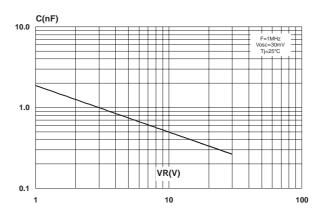


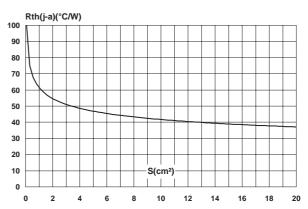
Fig. 9: Forward voltage drop versus forward current.



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

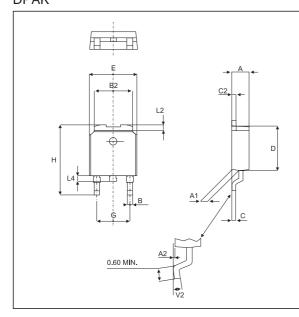


**Fig. 10:** Thermal resistance junction to ambient versus copper surface under tab (epoxy printed board FR4,  $Cu = 35\mu m$ ).



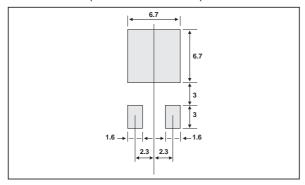
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#### PACKAGE MECHANICAL DATA DPAK



	DIMENSIONS				
REF.	Millin	neters	Inches		
	Min.	Max	Min.	Max.	
А	2.20	2.40	0.086	0.094	
A1	0.90	1.10	0.035	0.043	
A2	0.03	0.23	0.001	0.009	
В	0.64	0.90	0.025	0.035	
B2	5.20	5.40	0.204	0.212	
С	0.45	0.60	0.017	0.023	
C2	0.48	0.60	0.018	0.023	
D	6.00	6.20	0.236	0.244	
E	6.40	6.60	0.251	0.259	
G	4.40	4.60	0.173	0.181	
Н	9.35	10.10	0.368	0.397	
L2	0.80 typ.		0.031 typ.		
L4	0.60	1.00	0.023	0.039	
V2	0°	8°	0°	8°	

### FOOTPRINT (dimensions in mm)



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS15L30CB	S15L30C	DPAK	0.30 g	75	Tube
STPS15L30CB-TR	S15L30C	DPAK	0.30 g	2500	Tape & reel

## ■ EPOXY MEETS UL94,V0

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