

LOW DROP POWER SCHOTTKY RECTIFIER

MAIN PRODUCTS CHARACTERISTICS

$I_F(AV)$	2 x 7.5 A
V_{RRM}	30 V
$T_j(max)$	150 °C
$V_F(max)$	0.39 V

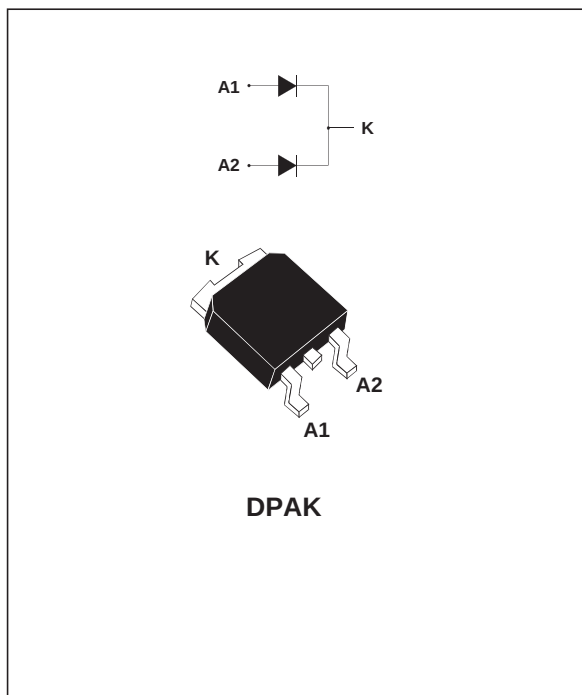
FEATURES AND BENEFITS

- Very small conduction losses
- Negligible switching losses
- Extremely fast switching
- Low forward voltage drop
- High avalanche capability
- Low thermal resistance

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 _{RRM}	Repetitive peak reverse voltage			30	V
I _{F(RMS)}	RMS forward current			10	A
I _{F(AV)}	Average forward current	T _c = 140°C δ = 0.5	Per diode Per device	7.5 15	A
I _{FSM}	Surge non repetitive forward current	tp = 10 ms sinusoidal		75	A
I _{RRM}	Peak repetitive reverse current	tp=2 μs square F=1kHz		1	A
T _{stg}	Storage temperature range			- 65 to + 175	°C
T _j	Maximum operating junction temperature *			150	°C
dV/dt	Critical rate of rise reverse voltage			10000	V/μs

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

STPS15L30CB

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode Total	4 2.4	$^{\circ}\text{C/W}$
$R_{th(c)}$	Coupling		0.7	

When the diodes 1 and 2 are used simultaneously :

$$\Delta T_j(\text{diode 1}) = P(\text{diode 1}) \times R_{th(j-c)}(\text{Per diode}) + P(\text{diode 2}) \times R_{th(c)}$$

STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$T_j = 25^{\circ}\text{C}$	$V_R = V_{RRM}$			1	mA
		$T_j = 125^{\circ}\text{C}$			70	140	mA
V_F^*	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 7.5 \text{ A}$			0.48	V
		$T_j = 125^{\circ}\text{C}$	$I_F = 7.5 \text{ A}$		0.34	0.39	
		$T_j = 25^{\circ}\text{C}$	$I_F = 12 \text{ A}$			0.53	
		$T_j = 125^{\circ}\text{C}$	$I_F = 12 \text{ A}$		0.40	0.47	
		$T_j = 25^{\circ}\text{C}$	$I_F = 15 \text{ A}$			0.57	
		$T_j = 125^{\circ}\text{C}$	$I_F = 15 \text{ A}$		0.44	0.51	

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

To evaluate the conduction losses use the following equation :

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

Fig. 1: Conduction losses versus average current.

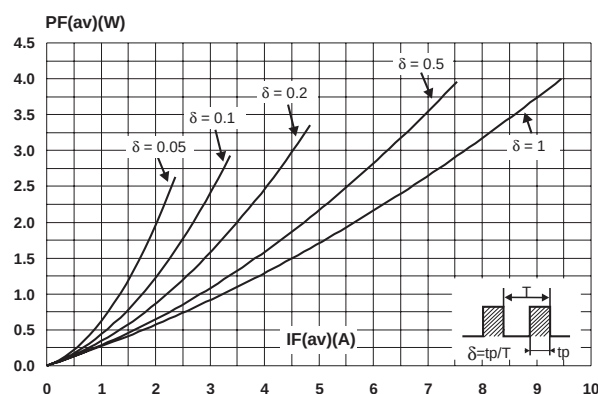


Fig. 2: Average forward current versus ambient temperature ($\delta = 0.5$).

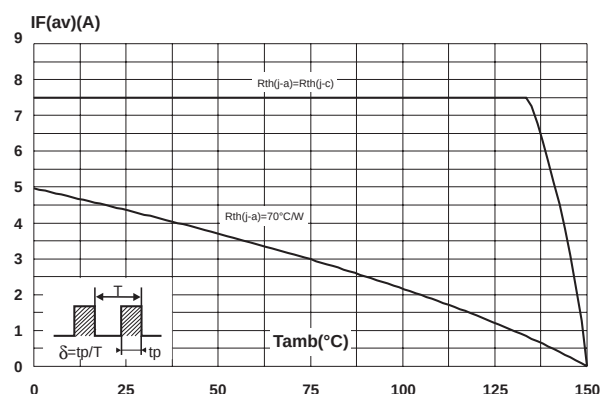


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values).

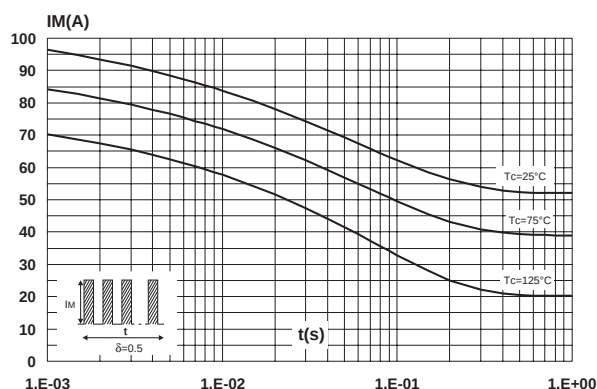


Fig. 4: Relative variation of thermal impedance junction to case versus pulse duration.

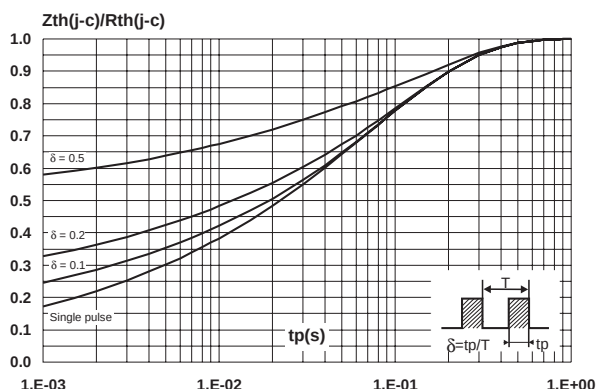


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values).

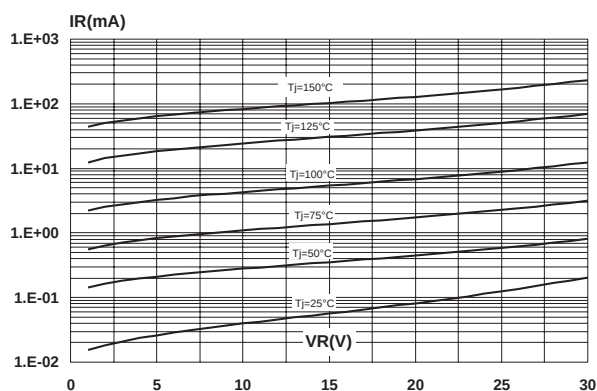


Fig. 6: Junction capacitance versus reverse voltage applied (typical values).

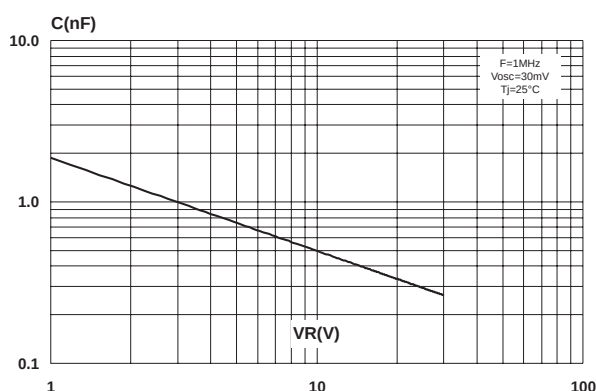


Fig. 7: Forward voltage drop versus forward current.

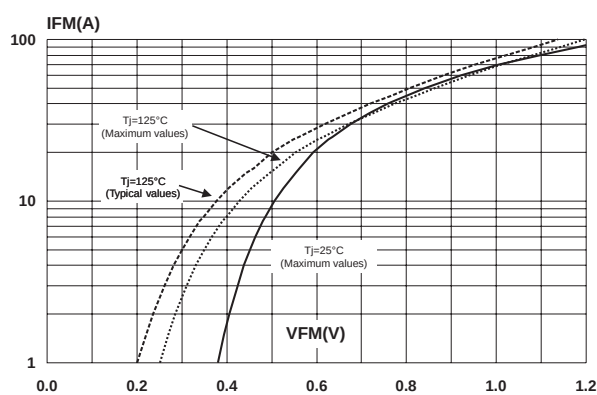
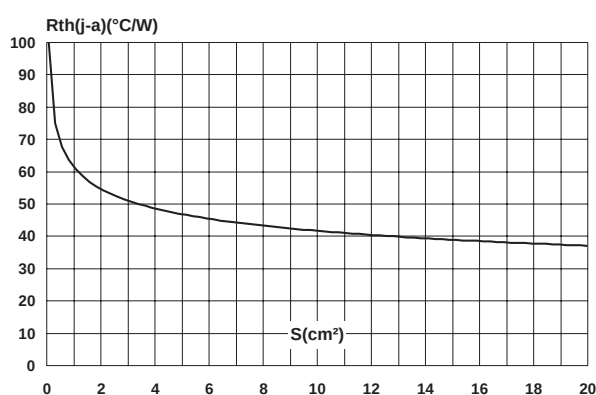
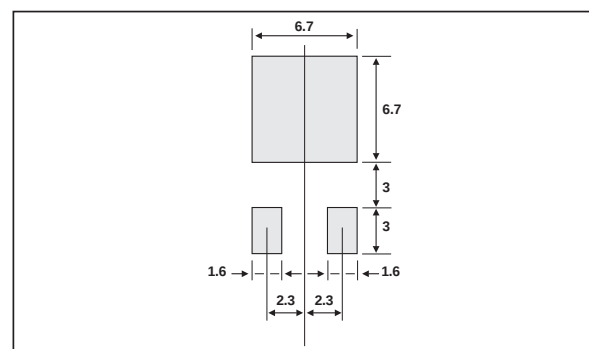


Fig. 8: Thermal resistance junction to ambient versus copper surface under tab (epoxy printed board FR4, $\text{Cu} = 35\mu\text{m}$).



PACKAGE MECHANICAL DATA
DPAK

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max	Min.	Max.
A	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
B	0.64	0.90	0.025	0.035
B2	5.20	5.40	0.204	0.212
C	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
H	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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