STPS15L60CB

POWER SCHOTTKY RECTIFIER

MAIN PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	2 x 7.5 A
V_{RRM}	60 V
Tj (max)	150 °C
V_F (max)	0.52 V

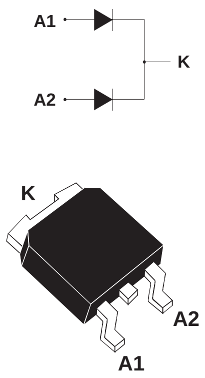
FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP
- 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.



DPAK

ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			60	V
$I_{F(RMS)}$	RMS forward current			10	A
$I_{F(AV)}$	Average forward current	Tc = 135°C δ = 0.5	Per diode	7.5	A
			Per device	15	
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
P_{ARM}	Repetitive peak avalanche power	tp = 1µs Tj = 25°C		3700	W
T_{stg}	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

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

THERMAL RESISTANCES

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

When the diodes 1 and 2 are used simultaneously :
Δ Tj(diode 1) = P(diode1) x $R_{th(j-c)}$(Per diode) + P(diode 2) x $R_{th(c)}$

STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	Tj = 25°C	$V_R = V_{RRM}$			200	µA
		Tj = 125°C			45	60	mA
V_F *	Forward voltage drop	Tj = 25°C	I_F = 7.5 A			0.62	V
		Tj = 125°C	I_F = 7.5 A		0.52	0.57	
		Tj = 25°C	I_F = 12 A			0.76	
		Tj = 125°C	I_F = 12 A		0.62	0.68	
		Tj = 25°C	I_F = 15 A			0.82	
		Tj = 125°C	I_F = 15 A		0.66	0.72	

Pulse test : * tp = 380 µs, δ < 2%

To evaluate the conduction losses use the following equation :
$P = 0.32 \times I_{F(AV)} + 0.027\ I_{F}^{2}{}_{(RMS)}$

Fig. 1: Conduction losses versus average current.

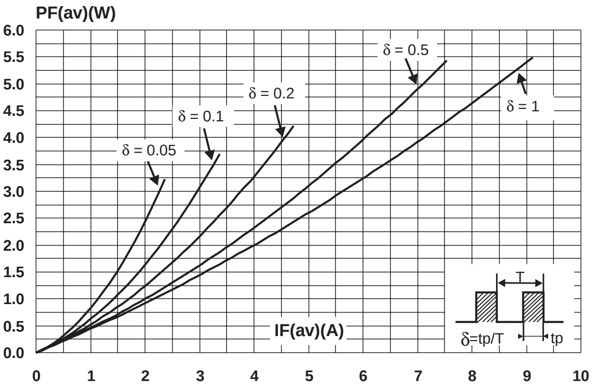


Fig. 2: Average forward current versus ambient temperature (δ = 0.5).

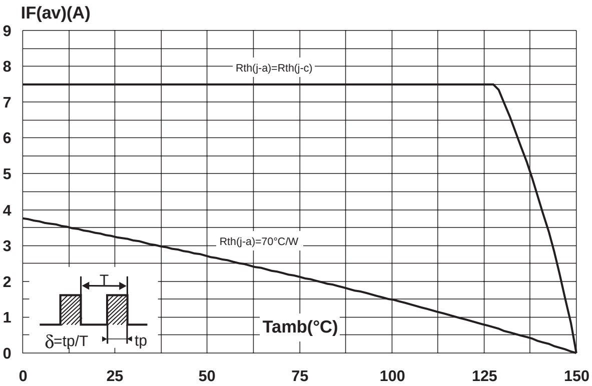


Fig. 3: Normalized avalanche power derating versus pulse duration.

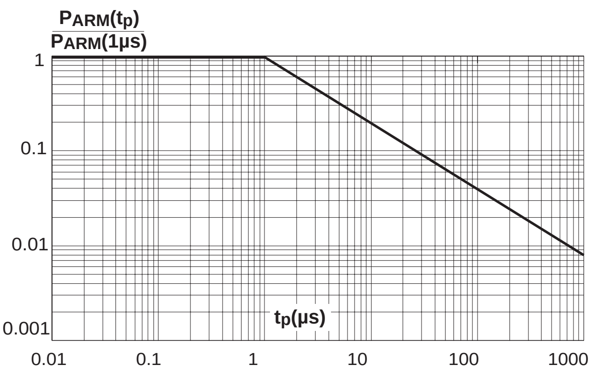


Fig. 4: Normalized avalanche power derating versus junction temperature.

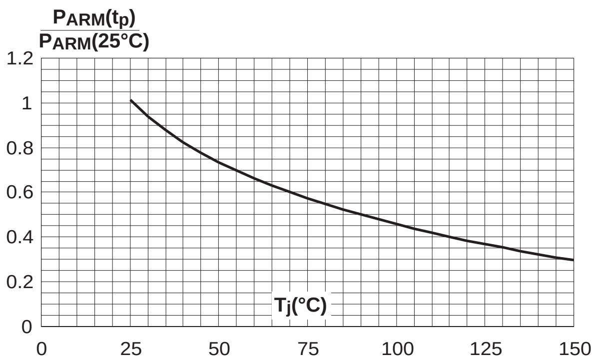


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values).

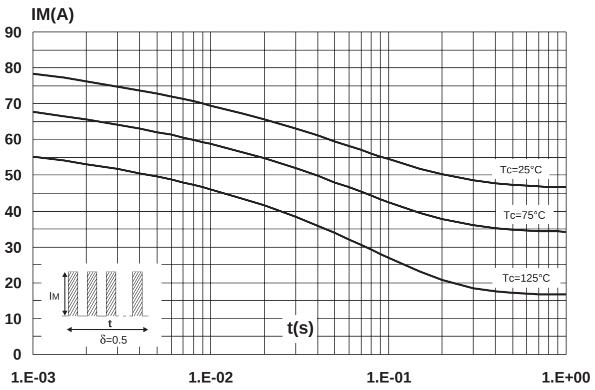


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

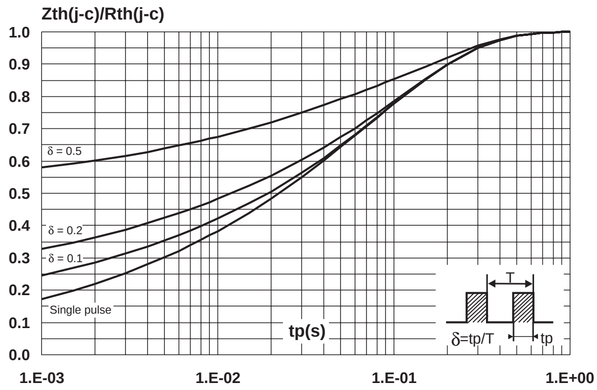


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

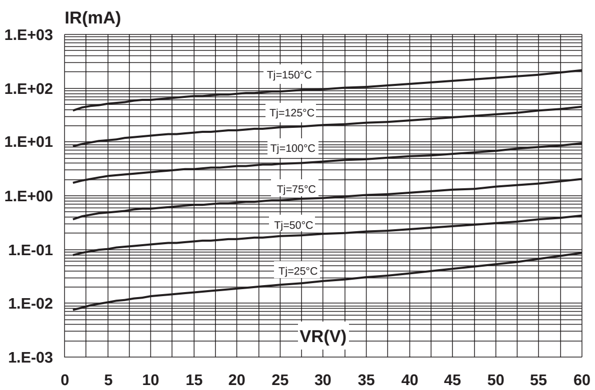


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

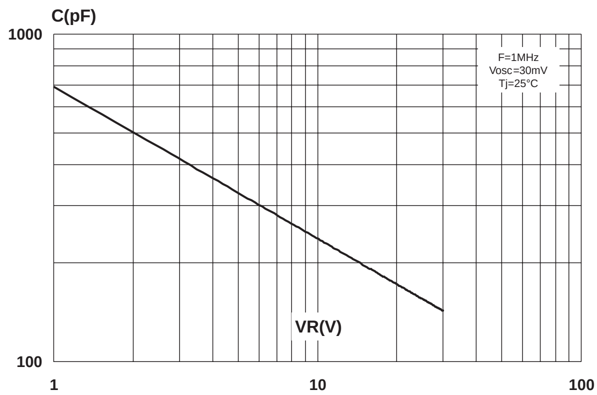


Fig. 9: Forward voltage drop versus forward current.

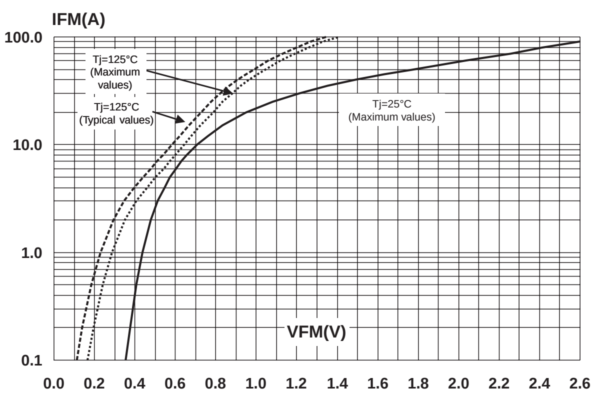
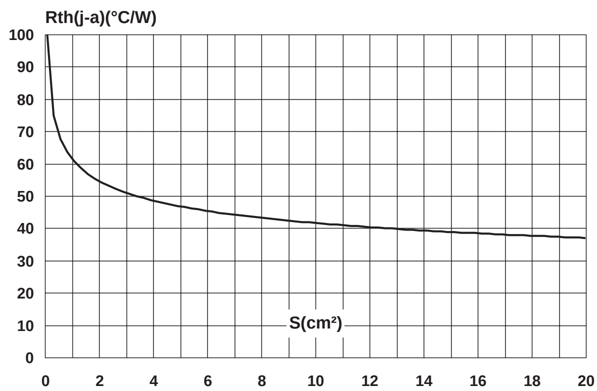
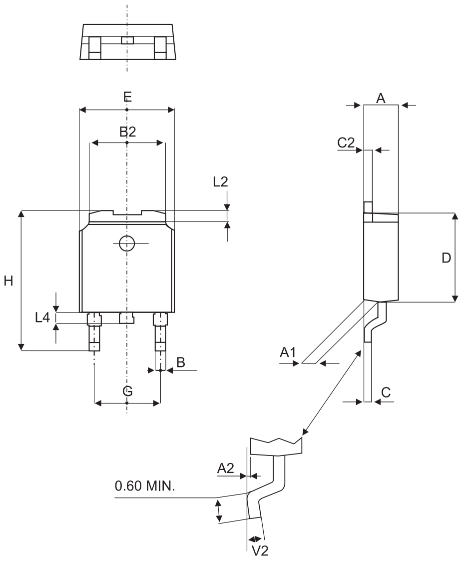


Fig. 10: Thermal resistance junction to ambient versus copper surface under tab (epoxy printed board FR4, Cu = 35µm).



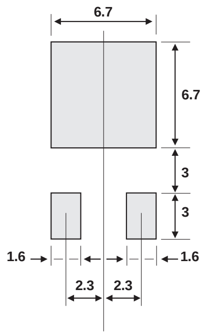
PACKAGE MECHANICAL DATA

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
STPS15L60CB	S15L60C	DPAK	0.30 g	75	Tube
STPS15L60CB-TR	S15L60C	DPAK	0.30 g	2500	Tape & reel

- EPOXY MEETS UL94,V0