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STPS10L25D/G

LOW DROP POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

I_{F(AV)}	10 A
V_{RRM}	25 V
T_{j (max)}	150 °C
V_{F (max)}	0.35 V

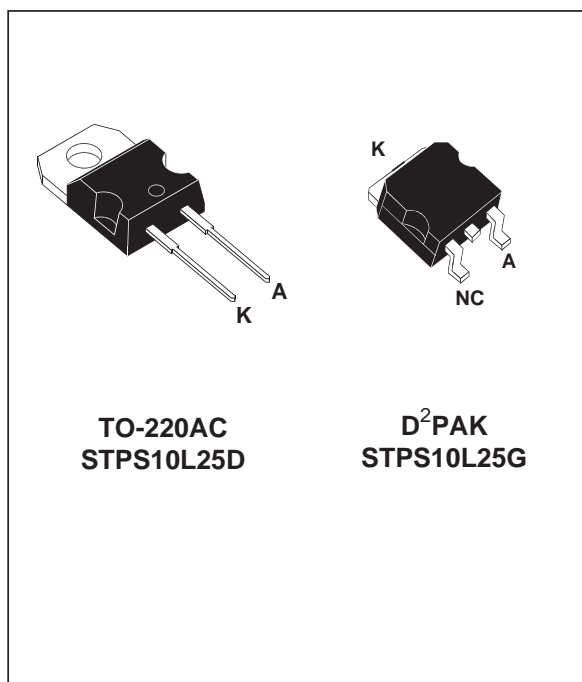
FEATURES AND BENEFITS

- VERY LOW FORWARD VOLTAGE DROP FOR LESS POWER DISSIPATION
- OPTIMIZED CONDUCTION / REVERSE LOSSES TRADE-OFF WHICH MEANS THE HIGHEST EFFICIENCY IN THE APPLICATIONS
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

Single Schottky rectifier suited to Switched Mode Power Supplies and high frequency DC to DC converters.

This device is especially intended for use as a rectifier at the secondary of 3.3V SMPS units.



TO-220AC
STPS10L25D

D²PAK
STPS10L25G

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V _{RRM}	Repetitive peak reverse voltage		25	V
I _{F(RMS)}	RMS forward current		30	A
I _{F(AV)}	Average forward current	T _c = 140°C δ = 0.5	10	A
I _{FSM}	Surge non repetitive forward current	t _p = 10 ms Sinusoidal	200	A
I _{RRM}	Repetitive peak reverse current	t _p = 2 μs square F = 1kHz	1	A
I _{RSM}	Non repetitive peak reverse current	t _p = 100 μs square	3	A
P _{ARM}	Repetitive peak avalanche power	t _p = 1 μs T _j = 25°C	5500	W
T _{stg}	Storage temperature range		- 65 to + 150	°C
T _j	Maximum operating junction temperature *		150	°C
dV/dt	Critical rate of rise of 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

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THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case	1.5	°C/W

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Tests Conditions	Tests Conditions	Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$		800	μA
		$T_j = 125^\circ\text{C}$		135	260	mA
V_F^*	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 10\text{ A}$		0.46	V
		$T_j = 125^\circ\text{C}$	$I_F = 10\text{ A}$	0.30	0.35	
		$T_j = 25^\circ\text{C}$	$I_F = 20\text{ A}$		0.55	
		$T_j = 125^\circ\text{C}$	$I_F = 20\text{ A}$	0.41	0.48	

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

To evaluate the maximum conduction losses use the following equation :

$$P = 0.22 \times I_{F(AV)} + 0.013 I_{F(RMS)}^2$$

Fig. 1: Average forward power dissipation versus average forward current.

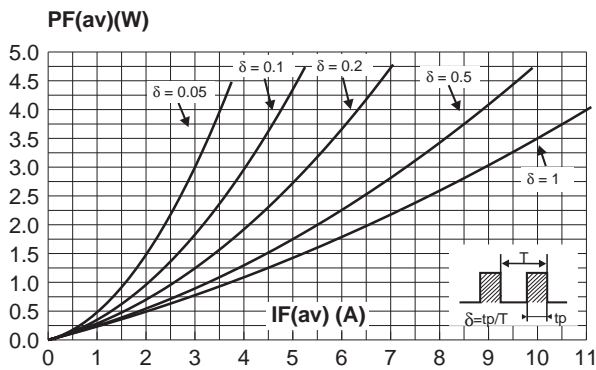


Fig. 3: Normalized avalanche power derating versus pulse duration.

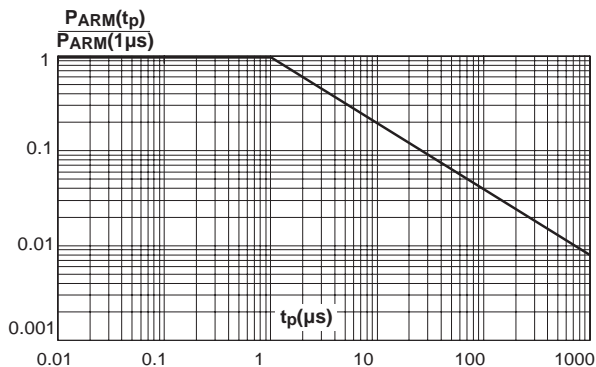


Fig. 2: Average forward current versus ambient temperature ($\delta = 0.5$).

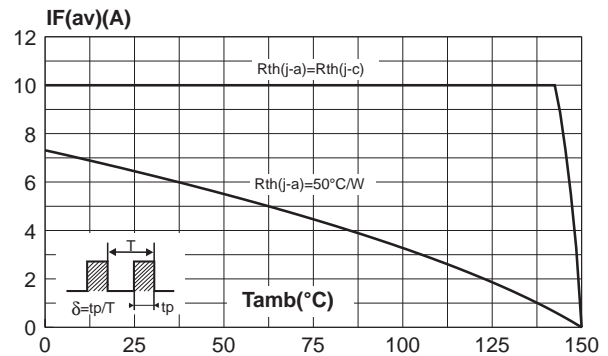
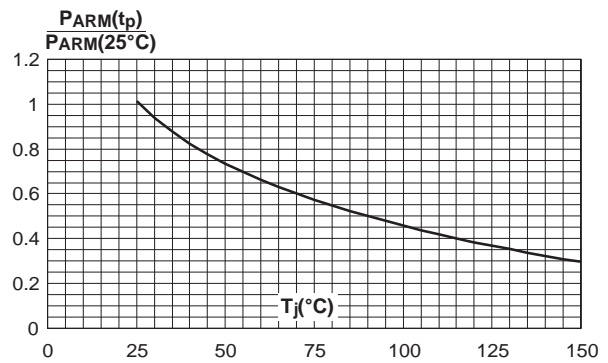


Fig. 4: Normalized avalanche power derating versus junction temperature.



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

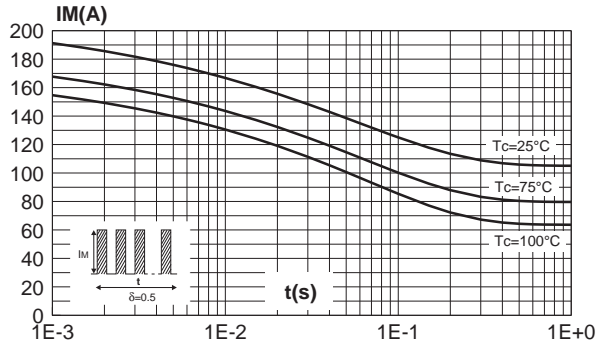


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

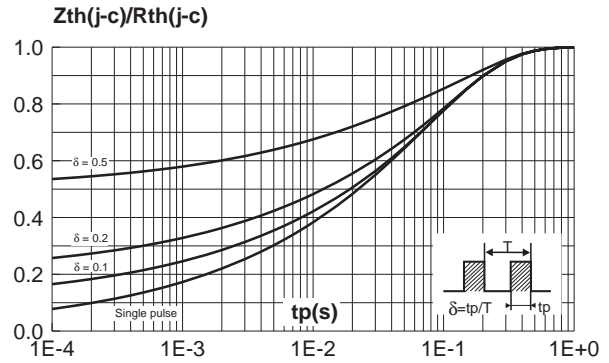


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

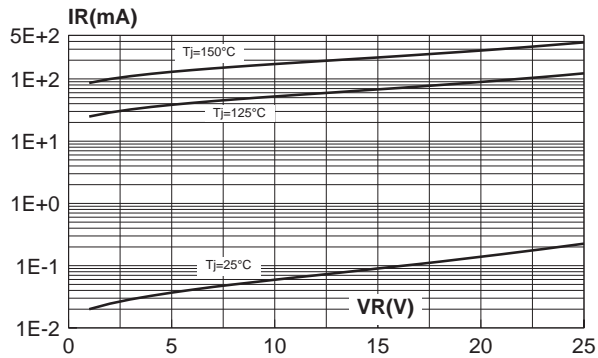


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

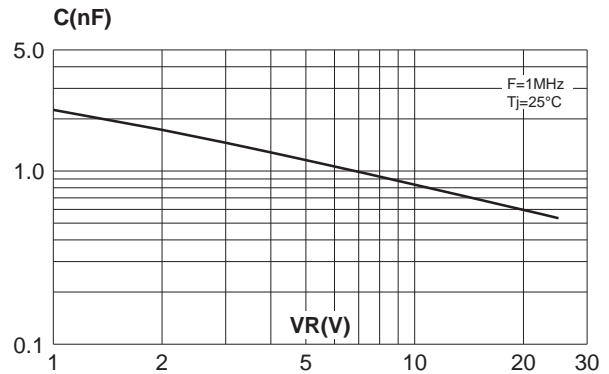


Fig. 9: Forward voltage drop versus forward current (maximum values).

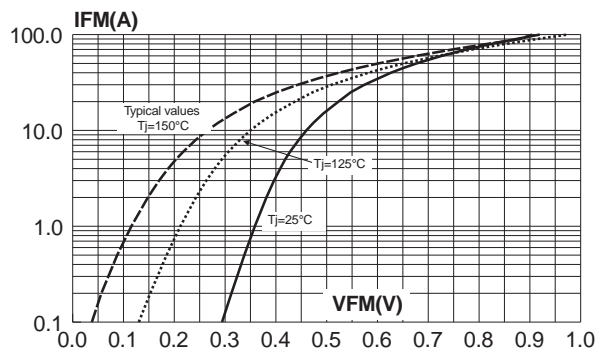
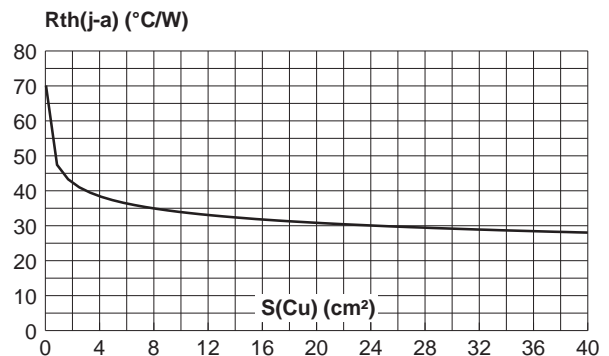


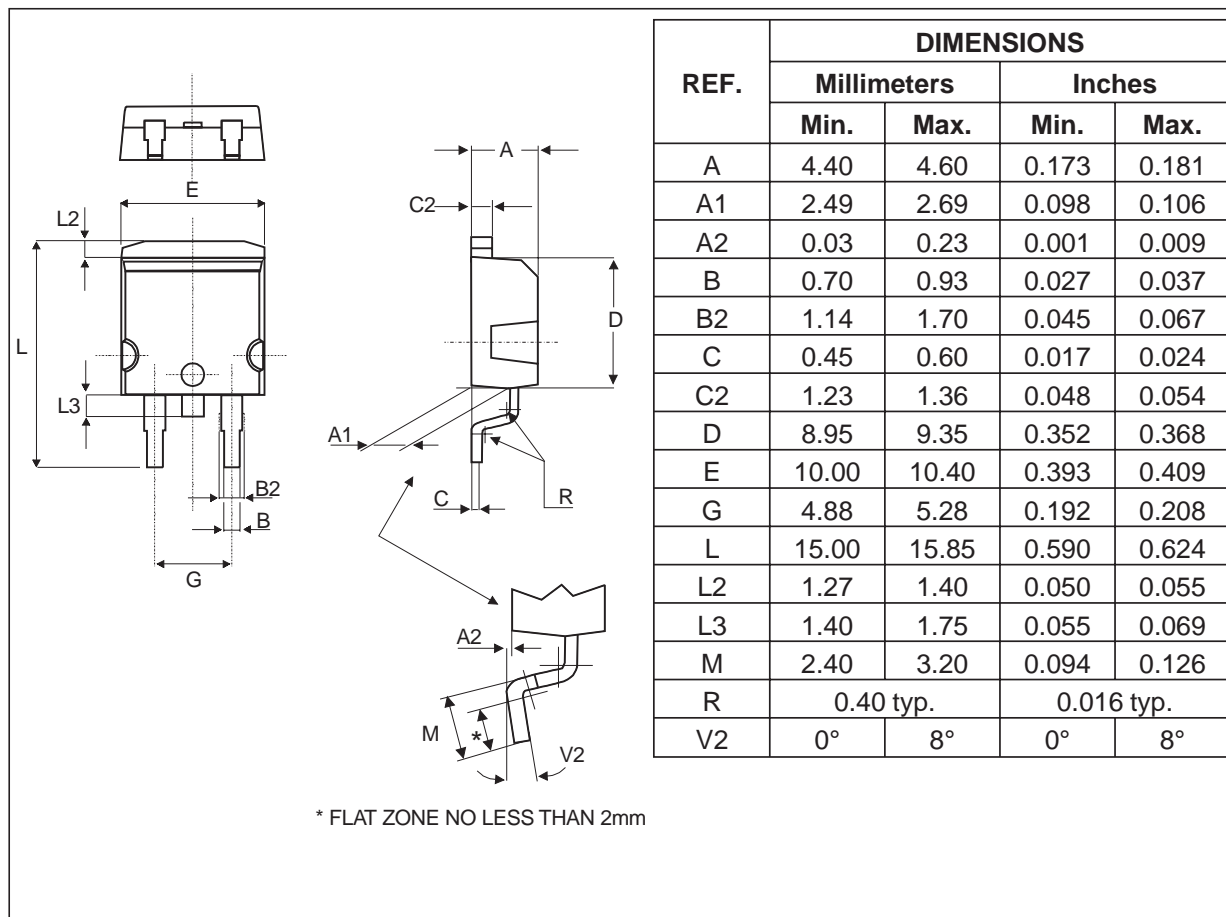
Fig. 10: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness : 35 μm). (STPS10L25G only)



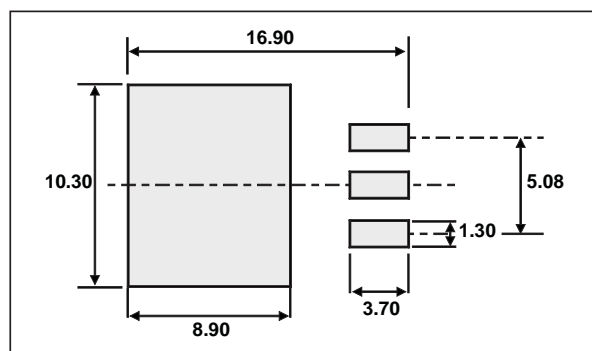
STPS10L25D/G

PACKAGE MECHANICAL DATA

D²PAK



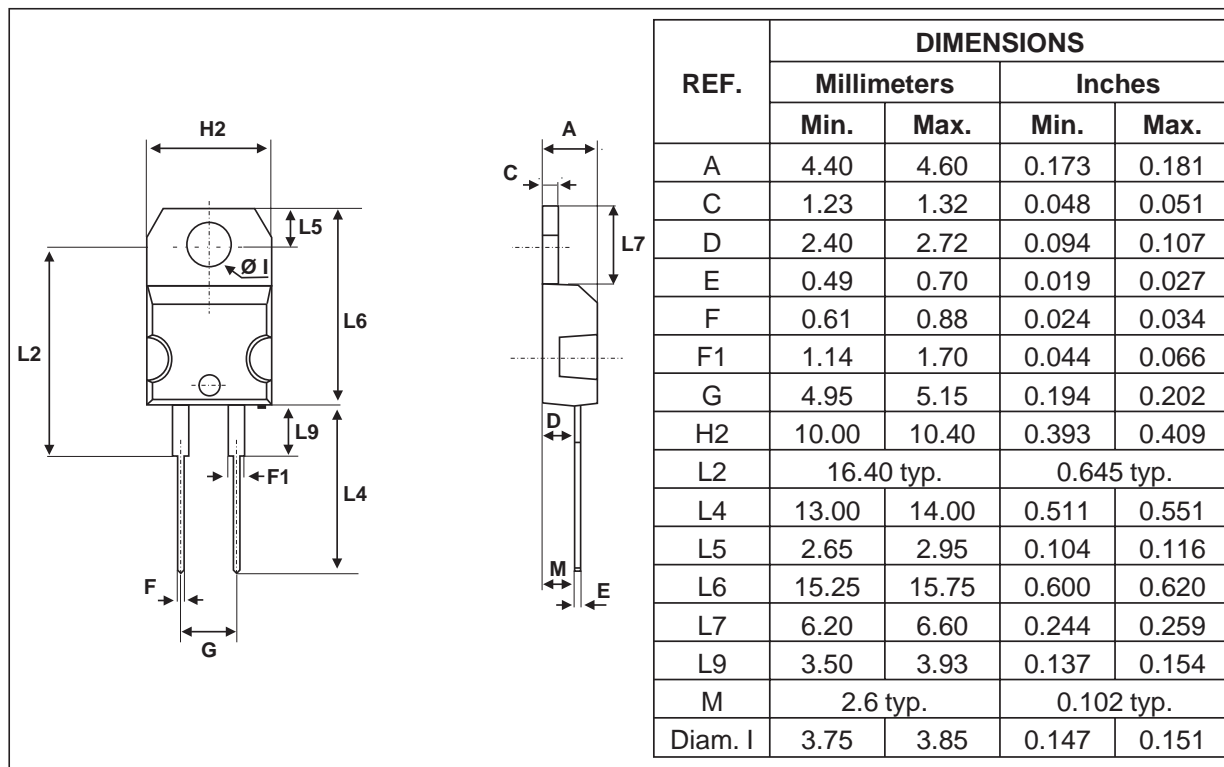
FOOT PRINT DIMENSIONS (in millimeters)



- Cooling method: by conduction (method C)

STPS10L25D/G

PACKAGE MECHANICAL DATA TO-220AC



- Cooling method : C
- Recommended torque value : 0.55 m.N
- Maximum torque value : 0.70 m.N

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS10L25D	STPS10L25D	TO-220AC	1.86g	50	Tube
STPS10L25G	STPS10L25G	D ² PAK	1.48g	50	Tube
STPS10L25G-TR	STPS10L25G	D ² PAK	1.48g	1000	Tape & reel

- Epoxy meets UL94,V0

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