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STPS20L15D/G

LOW DROP OR-ing POWER SCHOTTKY DIODE

MAIN PRODUCT CHARACTERISTICS

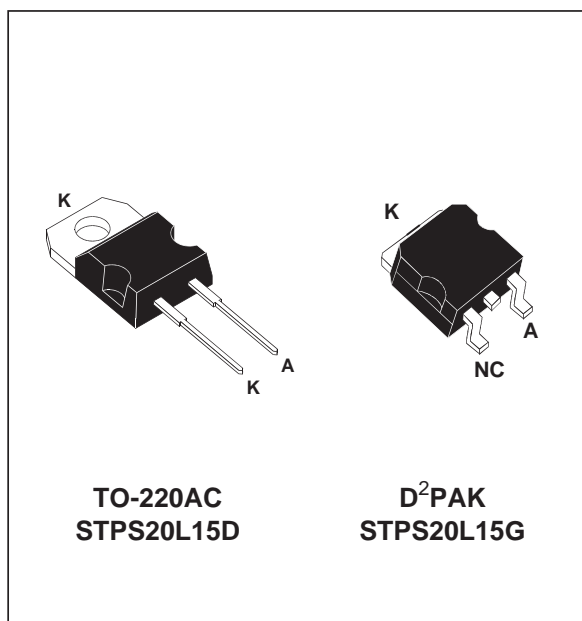
I_{F(AV)}	20 A
V_{RRM}	15 V
T_{j (max)}	125°C
V_{F (max)}	0.33 V

FEATURES AND BENEFITS

- VERY LOW FORWARD VOLTAGE DROP FOR LESS POWER DISSIPATION AND REDUCED HEATSINK SIZE
- REVERSE VOLTAGE SUITED TO OR-ing OF 3V, 5V and 12V RAILS
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

Packaged in TO-220AC or D²PAK, this device is especially intended for use as an OR-ing diode in fault tolerant power supply equipments.



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter	Value	Unit	
V _{RRM}	Repetitive peak reverse voltage	15	V	
I _{F(RMS)}	RMS forward current	30	A	
I _{F(AV)}	Average forward current	T _c = 115°C δ = 1	20	A
I _{FSM}	Surge non repetitive forward current	t _p = 10 ms Sinusoidal	310	A
I _{RRM}	Repetitive peak reverse current	t _p = 2 μs F = 1kHz	2	A
I _{RSM}	Non repetitive peak reverse current	t _p = 100 μs	3	A
P _{ARM}	Repetitive peak avalanche power	t _p = 1μs T _j = 25°C	13500	W
T _{stg}	Storage temperature range	- 65 to + 150	°C	
T _j	Maximum operating junction temperature *	125	°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

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R _{th(j-c)}	Junction to case	1.6	°C/W

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STATIC ELECTRICAL CHARACTERISTICS

Symbol	Tests Conditions	Tests Conditions	Min.	Typ.	Max.	Unit	
I _R *	Reverse leakage current	T _j = 25°C	V _R = 15V			6	mA
		T _j = 100°C	V _R = 15V		200	500	
V _F *	Forward voltage drop	T _j = 25°C	I _F = 19 A			0.41	V
		T _j = 25°C	I _F = 40 A			0.52	
		T _j = 125°C	I _F = 19 A		0.28	0.33	
		T _j = 125°C	I _F = 40 A		0.42	0.50	

Pulse test : * tp = 380 μs, δ < 2%

To evaluate the maximum conduction losses use the following equation :

$$P = 0.18 \times I_{F(AV)} + 8.10^{-3} \times I_{F(RMS)}^2$$

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

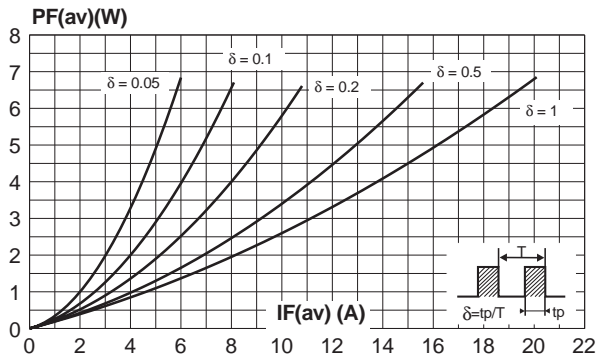


Fig. 3: Normalized avalanche power derating versus pulse duration.

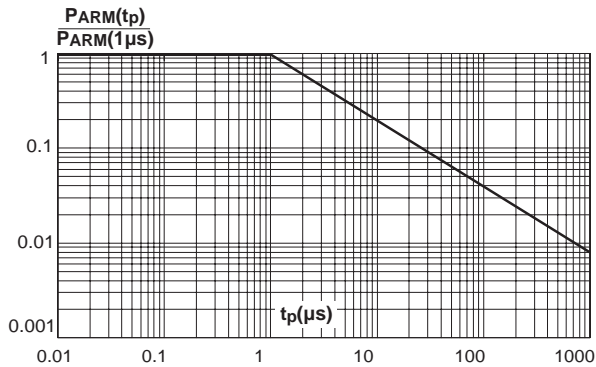


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values).

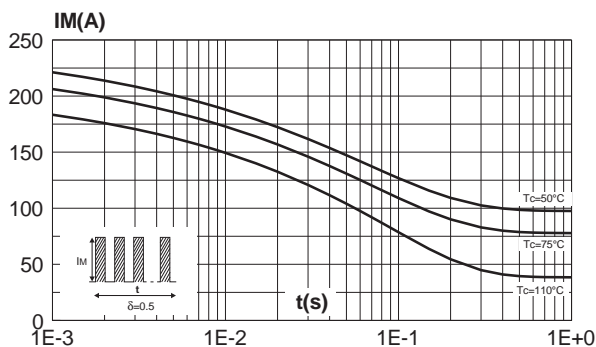


Fig. 2: Average forward current versus ambient temperature (δ = 1).

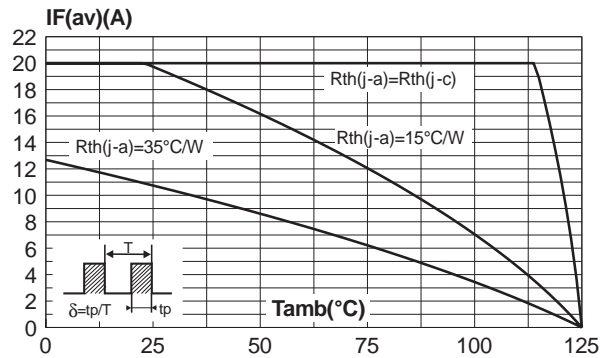


Fig. 4: Normalized avalanche power derating versus junction temperature.

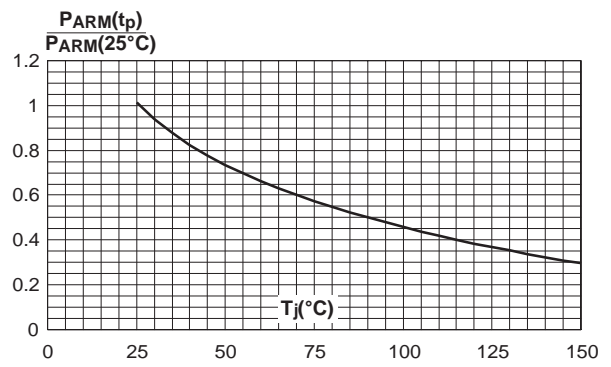
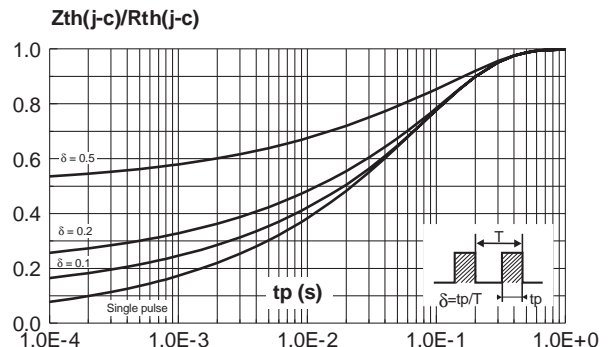


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.



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

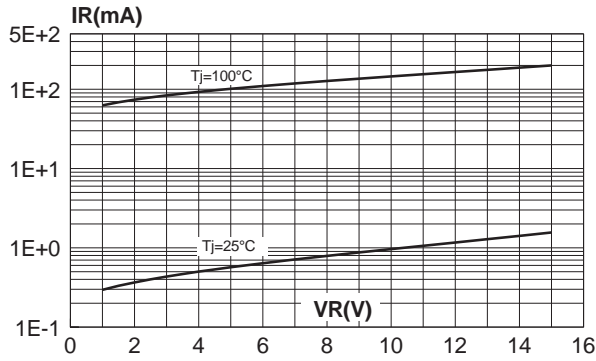


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

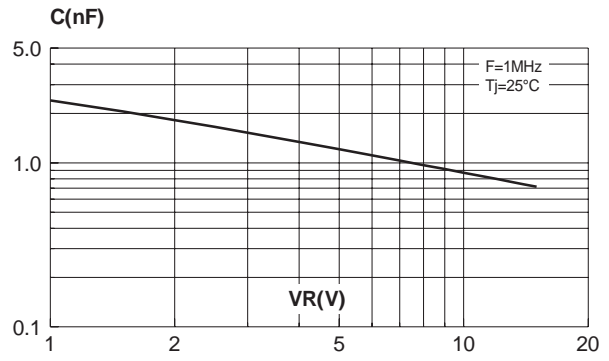


Fig. 9: Forward voltage drop versus forward current (typical values).

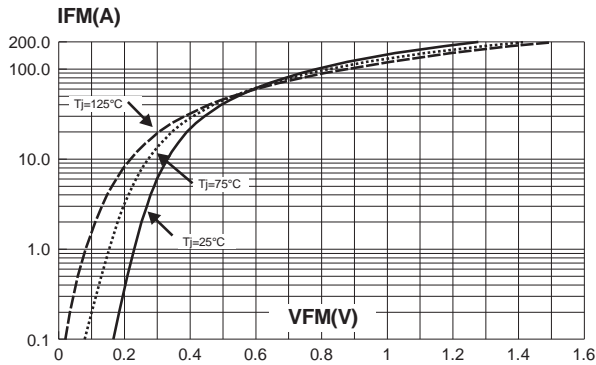


Fig. 10: Forward voltage drop versus forward current (maximum values).

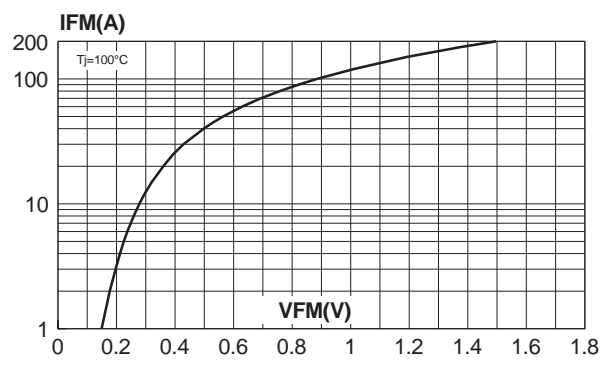
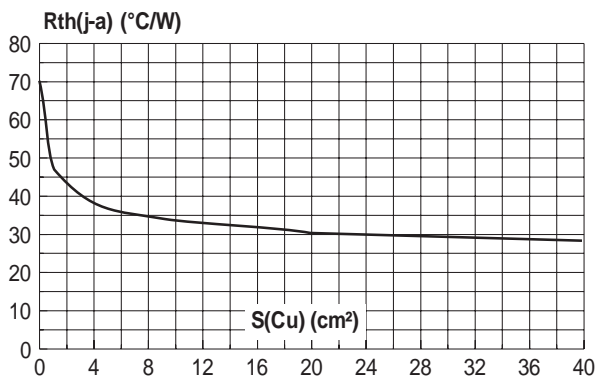


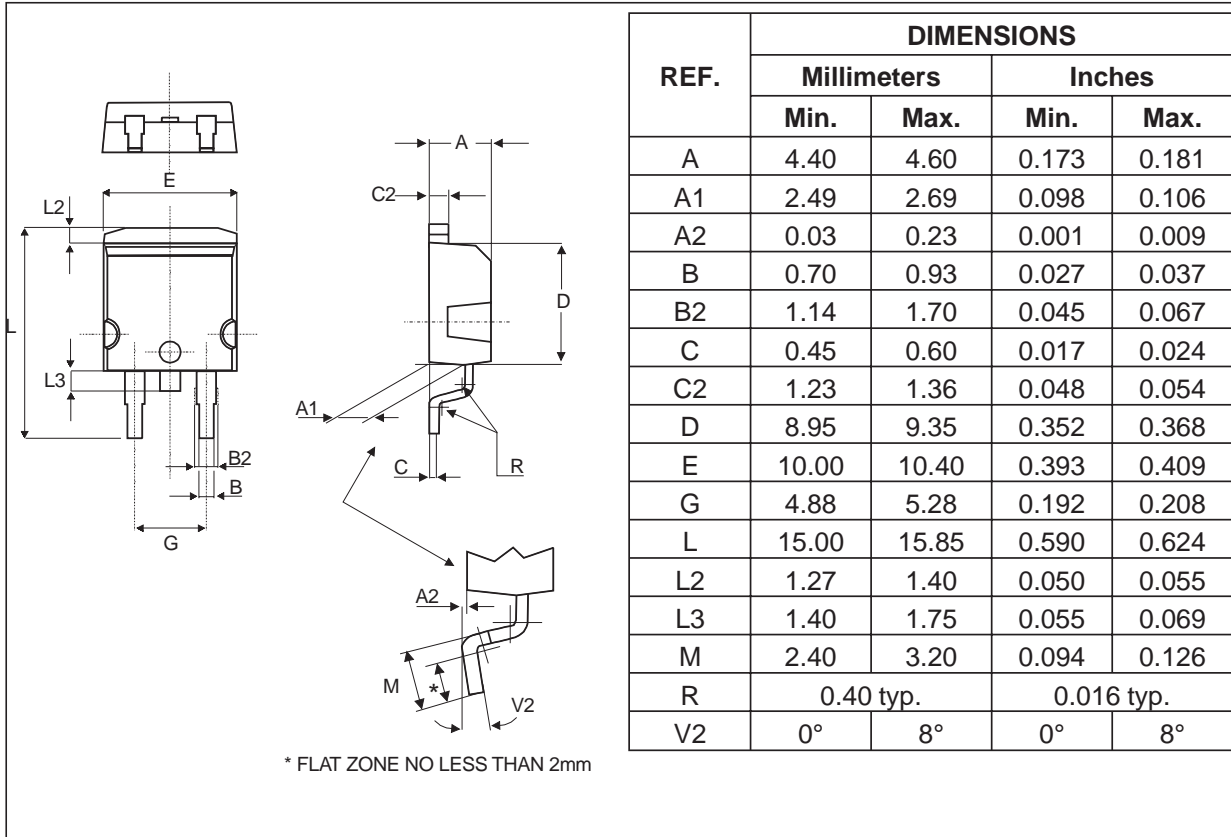
Fig. 11: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness : 35 μm). (STPS20L15G only)



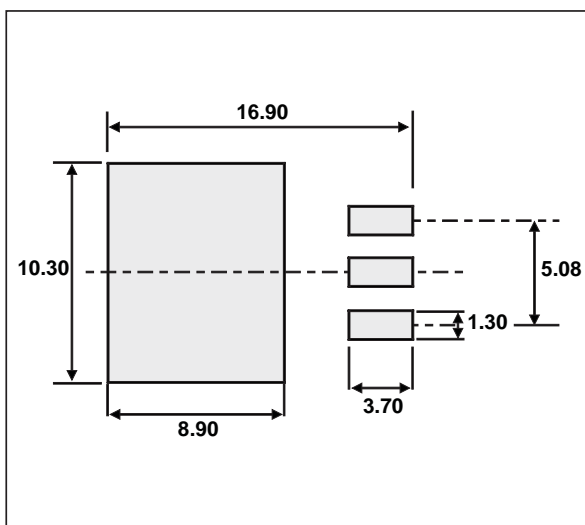
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PACKAGE MECHANICAL DATA

D²PAK



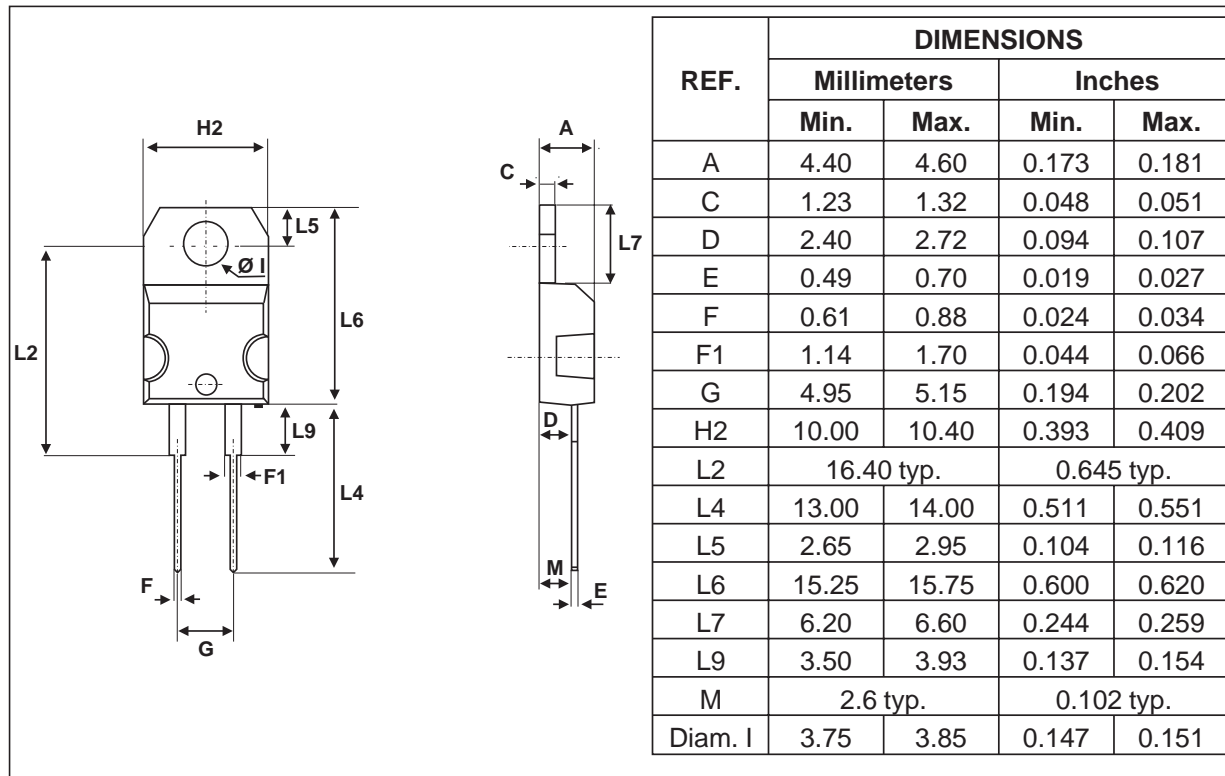
FOOT PRINT DIMENSIONS (in millimeters)



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PACKAGE MECHANICAL DATA

TO-220AC



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS20L15D	STPS20L15D	TO-220AC	1.86 g.	50	Tube
STPS20L15G	STPS20L15G	D ² PAK	1.48g.	50	Tube
STPS20L15G-TR	STPS20L15G	D ² PAK	1.48 g.	1000	Tape and reel

- Cooling method: by conduction (C)
- Recommended torque value: 0.55 m.N
- Maximum torque value: 0.7 m.N
- Epoxy meets UL94,V0

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