

LOW DROP OR-ing POWER SCHOTTKY DIODE

MAIN PRODUCT CHARACTERISTICS

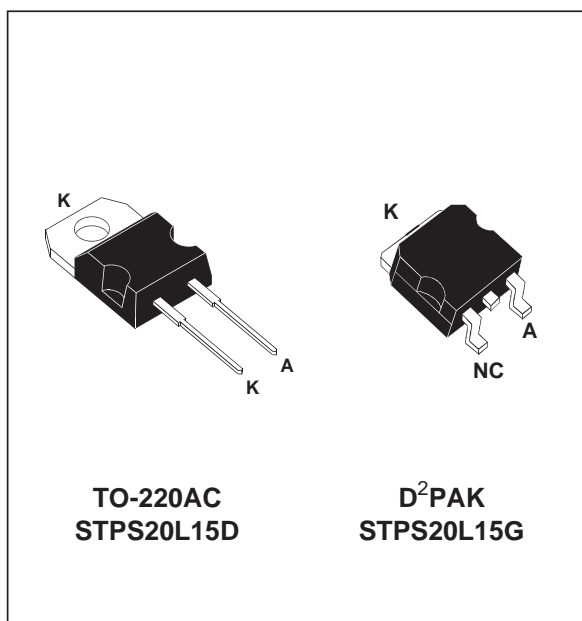
$I_{F(AV)}$	20 A
V_{RRM}	15 V
$T_j(\text{max})$	125°C
$V_F(\text{max})$	0.33 V

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	$T_c = 115^\circ\text{C} \quad \delta = 1$	20	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ Sinusoidal	310	A
I_{RRM}	Repetitive peak reverse current	$t_p = 2 \mu\text{s}$ $F = 1 \text{ kHz}$	2	A
I_{RSM}	Non repetitive peak reverse current	$t_p = 100 \mu\text{s}$	3	A
P_{ARM}	Repetitive peak avalanche power	$t_p = 1 \mu\text{s}$ $T_j = 25^\circ\text{C}$	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

STPS20L15D/G

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Tests Conditions	Tests Conditions	Min.	Typ.	Max.	Unit	
I_R^*	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = 15\text{V}$			6	mA
		$T_j = 100^\circ\text{C}$	$V_R = 15\text{V}$		200	500	
V_F^*	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 19\text{A}$			0.41	V
		$T_j = 25^\circ\text{C}$	$I_F = 40\text{A}$			0.52	
		$T_j = 125^\circ\text{C}$	$I_F = 19\text{A}$		0.28	0.33	
		$T_j = 125^\circ\text{C}$	$I_F = 40\text{A}$		0.42	0.50	

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

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.

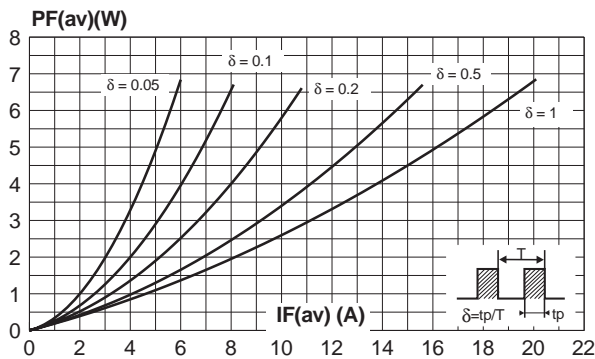


Fig. 3: Normalized avalanche power derating versus pulse duration.

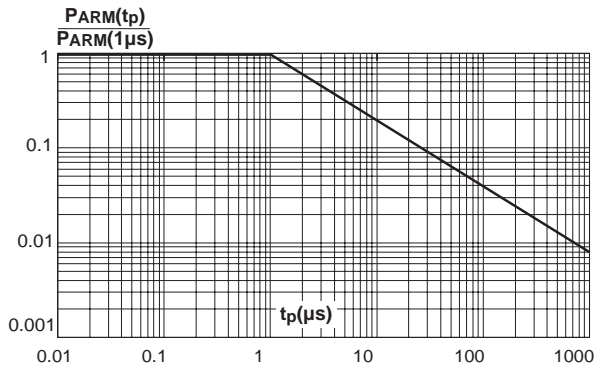


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values).

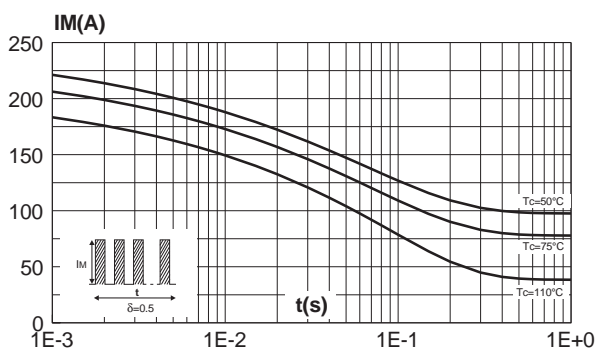


Fig. 2: Average forward current versus ambient temperature ($\delta = 1$).

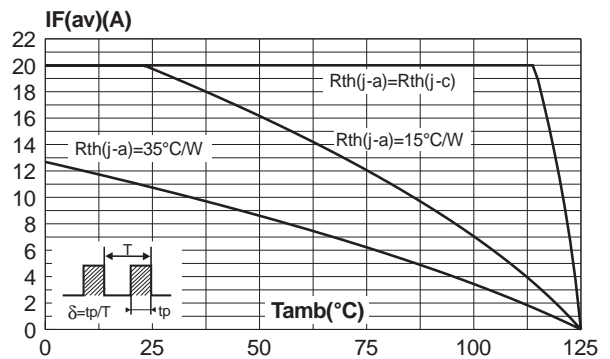


Fig. 4: Normalized avalanche power derating versus junction temperature.

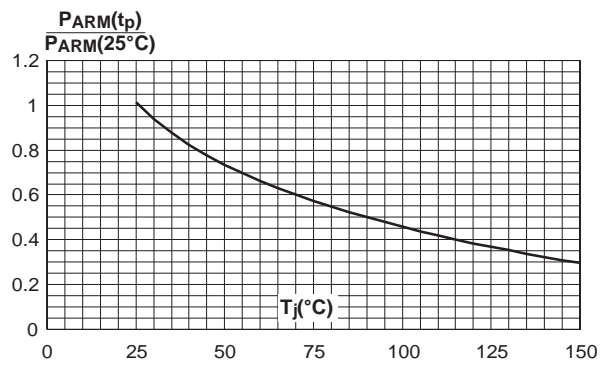


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

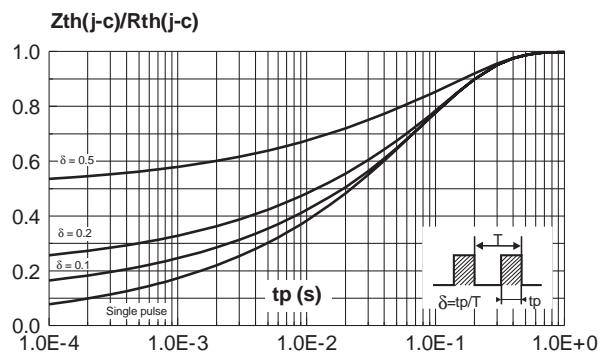


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

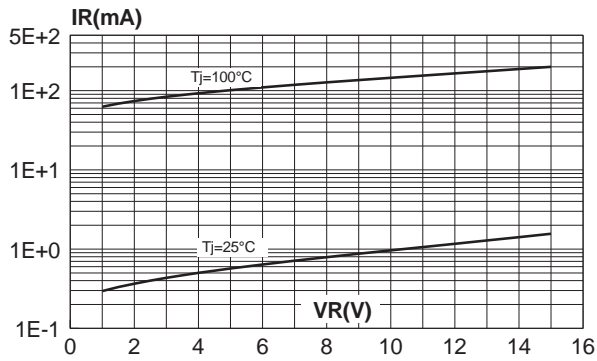


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

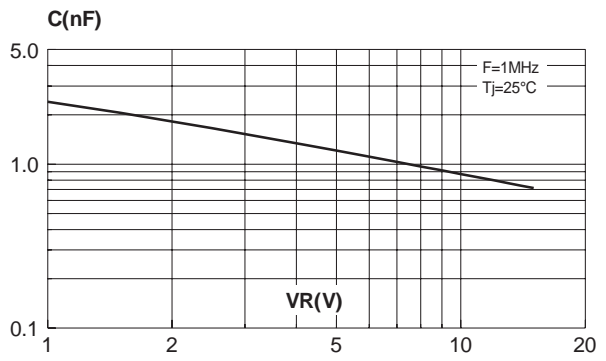


Fig. 9: Forward voltage drop versus forward current (typical values).

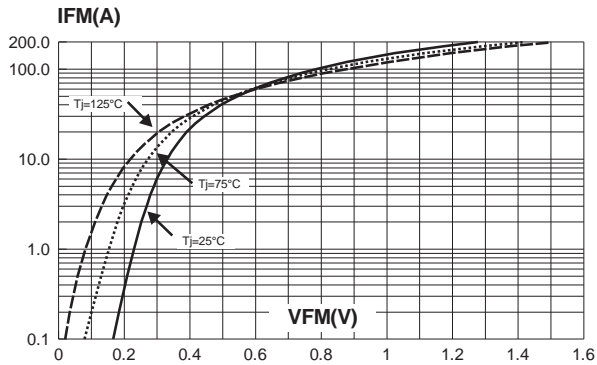


Fig. 10: Forward voltage drop versus forward current (maximum values).

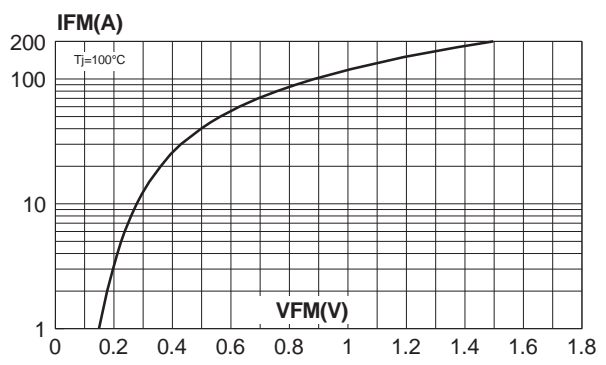
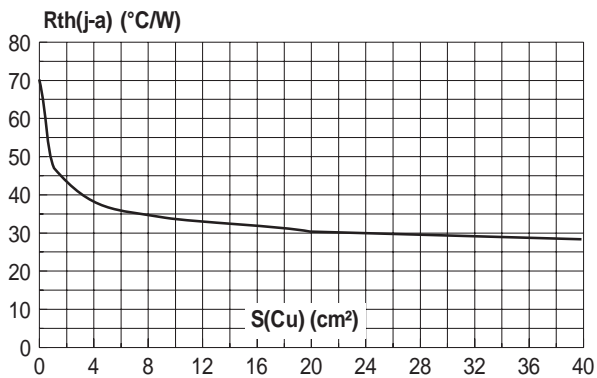
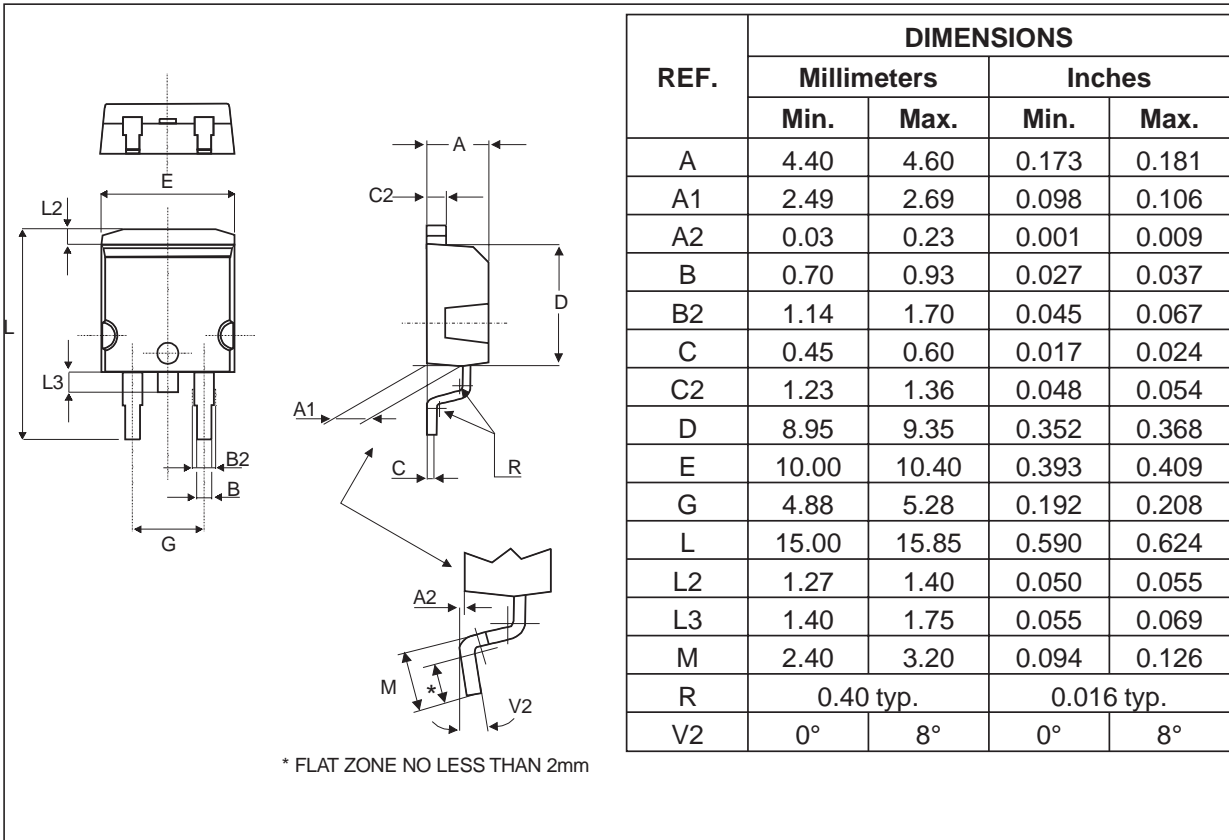


Fig. 11: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness : 35 μm). (STPS20L15G only)

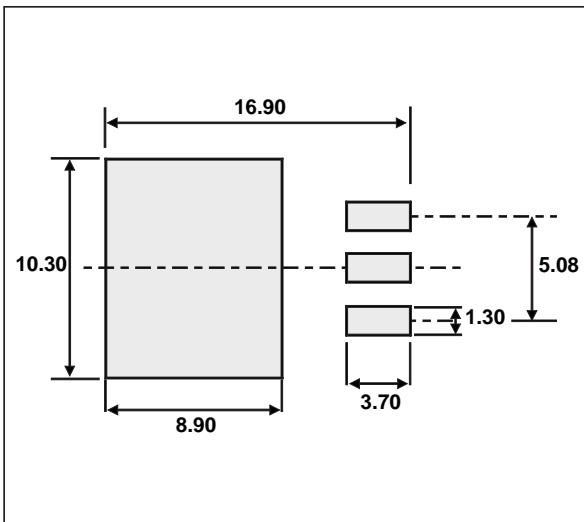


STPS20L15D/G

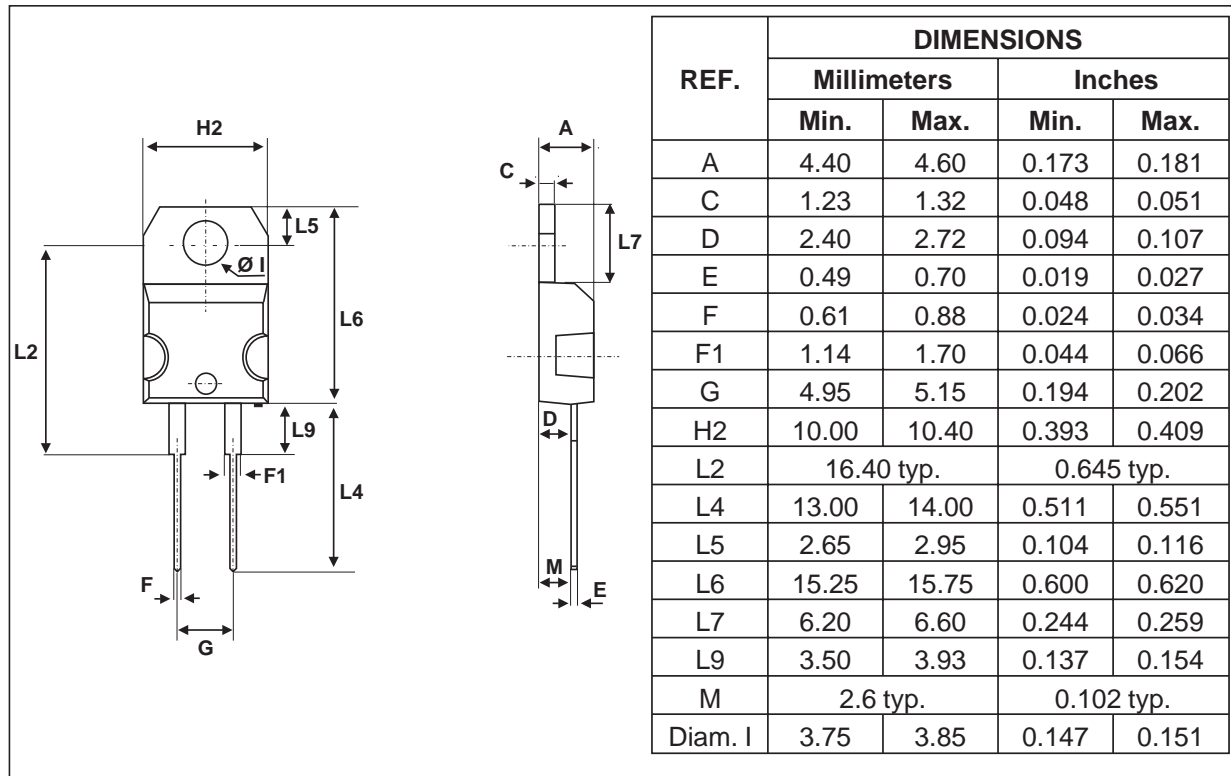
PACKAGE MECHANICAL DATA
D²PAK



FOOT PRINT DIMENSIONS (in millimeters)



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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