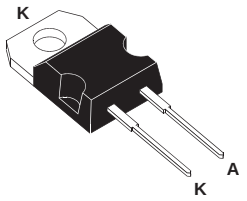
STPS20L15D/G

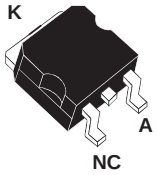
LOW DROP OR-ing POWER SCHOTTKY DIODE

MAIN PRODUCT CHARACTERISTICS

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



TO-220AC
STPS20L15D



D²PAK
STPS20L15G

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	Tc = 115°C δ = 1	20	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal	310	A
I_{RRM}	Repetitive peak reverse current	tp = 2 µs F = 1kHz	2	A
I_{RSM}	Non repetitive peak reverse current	tp = 100 µs	3	A
P_{ARM}	Repetitive peak avalanche power	tp = 1µs Tj = 25°C	13500	W
T_{stg}	Storage temperature range		- 65 to + 150	°C
Tj	Maximum operating junction temperature *		125	°C
dV/dt	Critical rate of rise of 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	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	Tj = 25°C	V_R = 15V			6	mA
		Tj = 100°C	V_R = 15V		200	500	
V_F *	Forward voltage drop	Tj = 25°C	I_F = 19 A			0.41	V
		Tj = 25°C	I_F = 40 A			0.52	
		Tj = 125°C	I_F = 19 A		0.28	0.33	
		Tj = 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 :
$P = 0.18 \times I_{F(AV)} + 8.10^{-3} \times I_F{}^2{}_{(RMS)}$

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

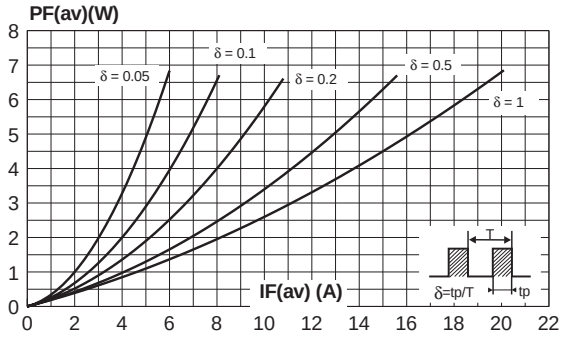

Fig. 2: Average forward current versus ambient temperature (δ = 1).

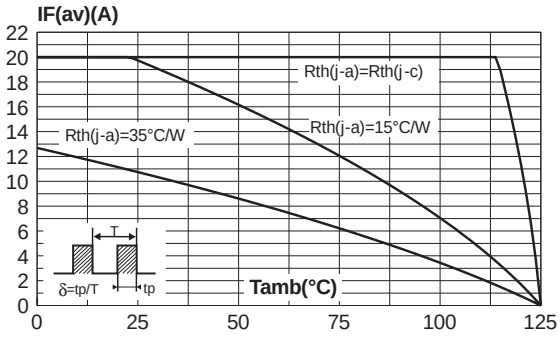

Fig. 3: Normalized avalanche power derating versus pulse duration.

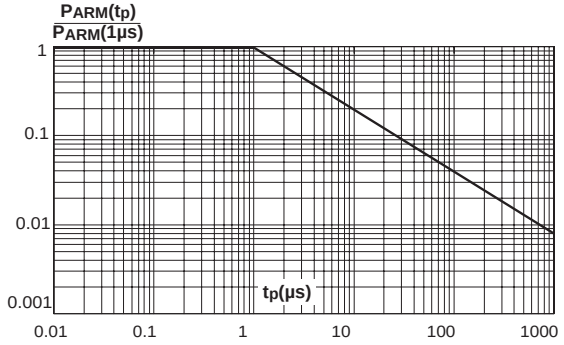

Fig. 4: Normalized avalanche power derating versus junction temperature.

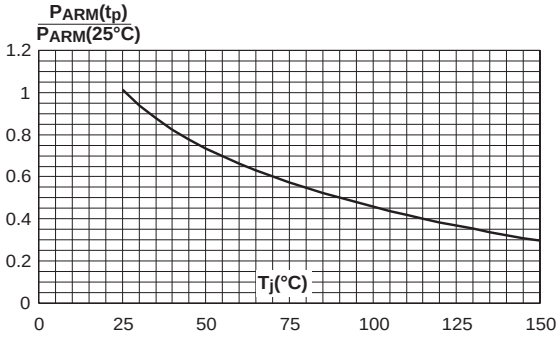

Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values).

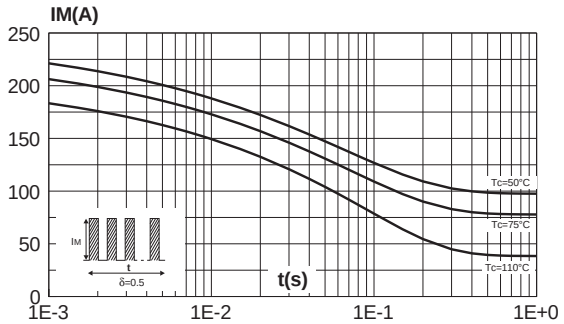

Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

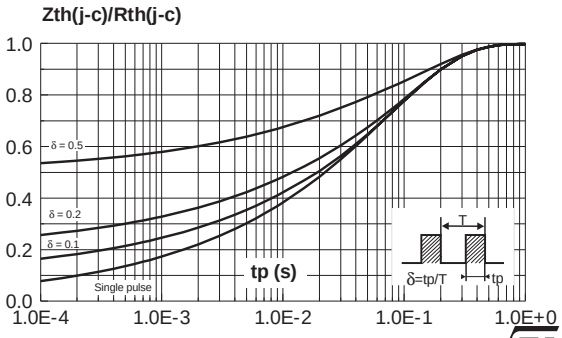

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Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

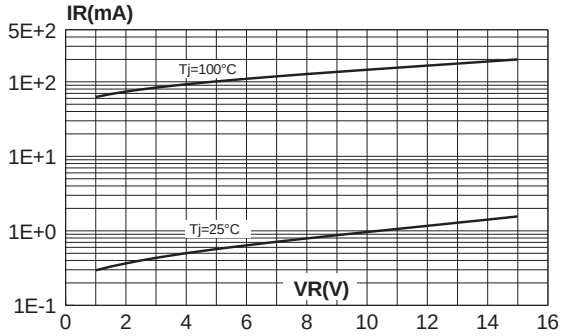


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

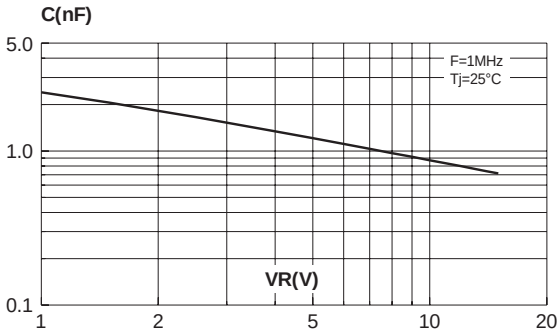


Fig. 9: Forward voltage drop versus forward current (typical values).

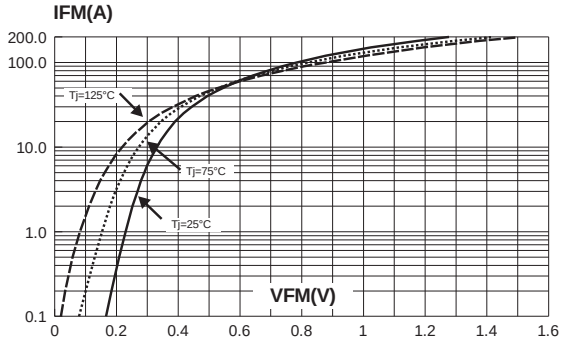


Fig. 10: Forward voltage drop versus forward current (maximum values).

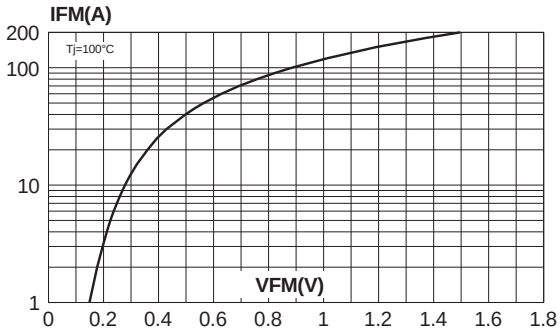
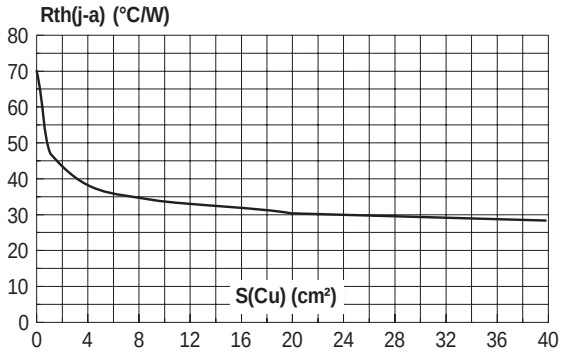


Fig. 11: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness : 35 µm). (STPS20L15G only)



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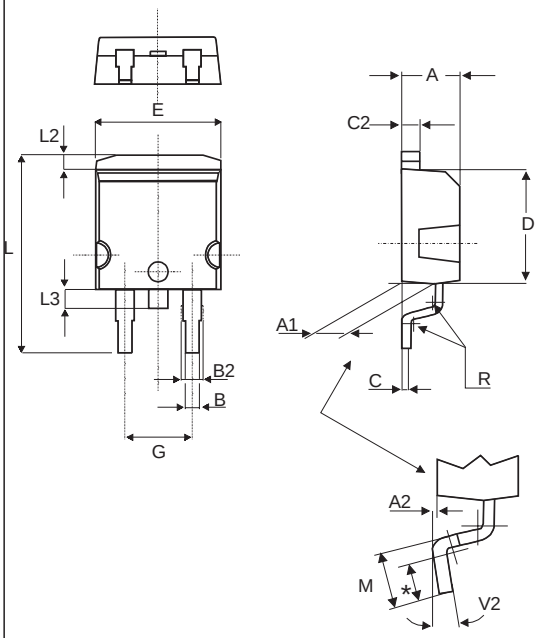
PACKAGE MECHANICAL DATA

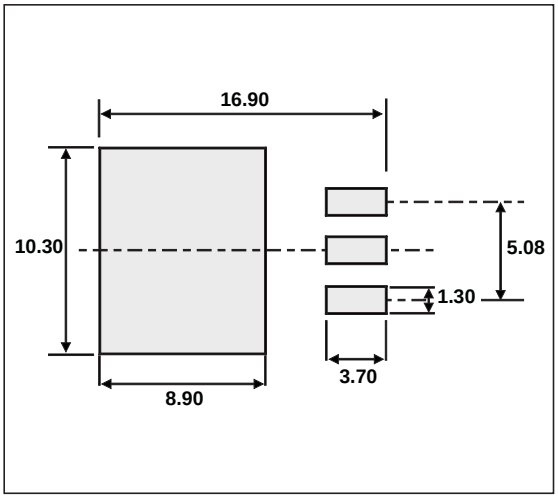
D^2PAK



* FLAT ZONE NO LESS THAN 2mm

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
A1	2.49	2.69	0.098	0.106
A2	0.03	0.23	0.001	0.009
B	0.70	0.93	0.027	0.037
B2	1.14	1.70	0.045	0.067
C	0.45	0.60	0.017	0.024
C2	1.23	1.36	0.048	0.054
D	8.95	9.35	0.352	0.368
E	10.00	10.40	0.393	0.409
G	4.88	5.28	0.192	0.208
L	15.00	15.85	0.590	0.624
L2	1.27	1.40	0.050	0.055
L3	1.40	1.75	0.055	0.069
M	2.40	3.20	0.094	0.126
R	0.40 typ.		0.016 typ.	
V2	0°	8°	0°	8°

FOOT PRINT DIMENSIONS (in millimeters)



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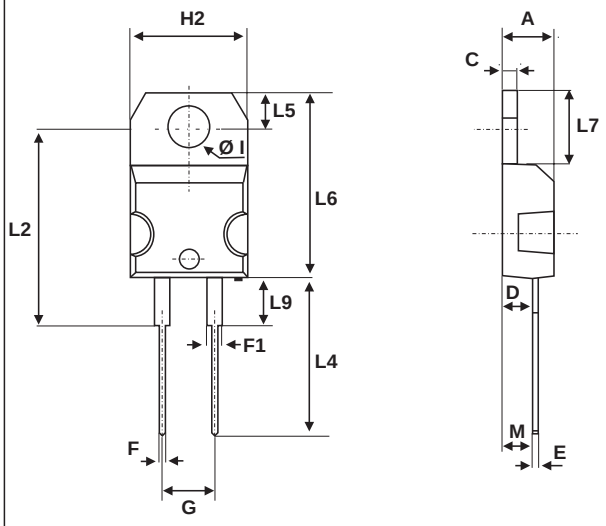
PACKAGE MECHANICAL DATA

TO-220AC



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
C	1.23	1.32	0.048	0.051
D	2.40	2.72	0.094	0.107
E	0.49	0.70	0.019	0.027
F	0.61	0.88	0.024	0.034
F1	1.14	1.70	0.044	0.066
G	4.95	5.15	0.194	0.202
H2	10.00	10.40	0.393	0.409
L2	16.40 typ.		0.645 typ.	
L4	13.00	14.00	0.511	0.551
L5	2.65	2.95	0.104	0.116
L6	15.25	15.75	0.600	0.620
L7	6.20	6.60	0.244	0.259
L9	3.50	3.93	0.137	0.154
M	2.6 typ.		0.102 typ.	
Diam. I	3.75	3.85	0.147	0.151

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