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STMicroelectronics
STPS10L60D

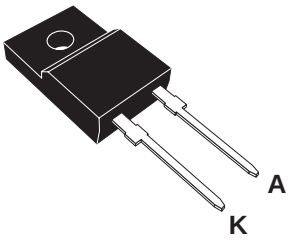
For any questions, you can email us directly:
sales@integrated-circuit.com

STPS10L60D/FP

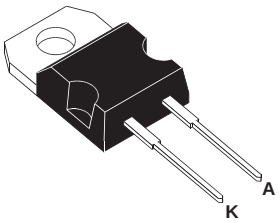
POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	10 A
V_{RRM}	60 V
Tj (max)	150°C
V_F (max)	0.56 V



TO-220FPAC
STPS10L60FP



TO-220AC
STPS10L60D

FEATURES AND BENEFITS

- LOW FORWARD VOLTAGE DROP
- NEGLIGIBLE SWITCHING LOSSES
- LOW THERMAL RESISTANCE
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

Schottky rectifier suited for Switched Mode Power Supplies and high frequency DC to DC converters. Packaged in TO-220AC,TO-220FPAC this device is intended for use in DC/DC chargers.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			60	V
$I_{F(RMS)}$	RMS forward current			30	A
$I_{F(AV)}$	Average forward current	TO-220AC	Tc = 140°C δ = 0.5	10	A
		TO-220FPAC	Tc = 120°C δ = 0.5		
I_{FSM}	Surge non repetitive forward current		tp = 10 ms Sinusoidal	220	A
I_{RRM}	Repetitive peak reverse current		tp = 2 µs square F=1kHz	1	A
P_{ARM}	Repetitive peak avalanche power		tp = 1µs Tj = 25°C	5800	W
T_{stg}	Storage temperature range			- 65 to + 175	°C
Tj	Maximum operating junction temperature *			150	°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	TO-220AC	1.6	°C/W
		TO-220FPAC	4	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	Tj = 25°C	$V_R = V_{RRM}$			350	µA
		Tj = 125°C			65	95	mA
V_F *	Forward voltage drop	Tj = 25°C	I_F = 10 A			0.6	V
		Tj = 125°C	I_F = 10 A		0.48	0.56	
		Tj = 25°C	I_F = 20 A			0.74	
		Tj = 125°C	I_F = 20 A		0.62	0.7	

Pulse test : * tp = 380 µs, δ < 2%

To evaluate the conduction losses use the following equation :
$P = 0.42 \times I_{F(AV)} + 0.014\ I_F{}^2{}_{(RMS)}$

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

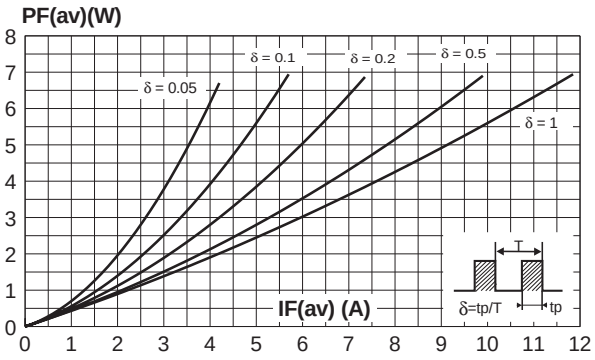


Fig. 2: Average forward current versus ambient temperature(δ = 0.5).

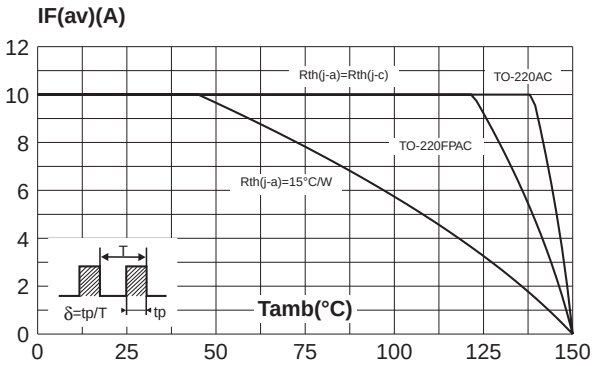


Fig. 3: Normalized avalanche power derating versus pulse duration.

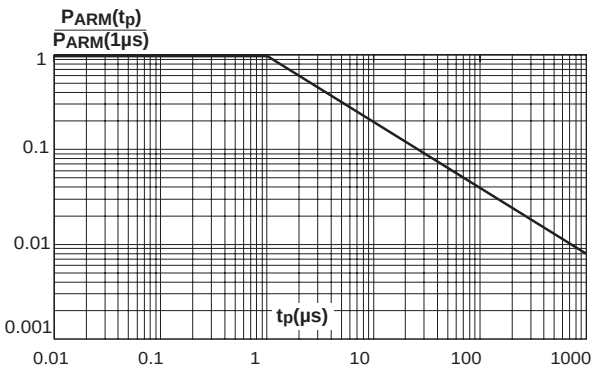


Fig. 4: Normalized avalanche power derating versus junction temperature.

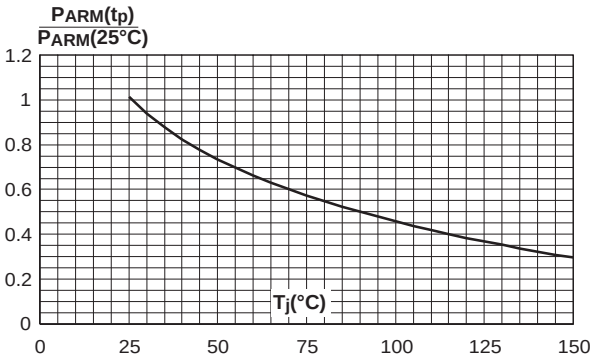


Fig. 5-1: Non repetitive surge peak forward current versus overload duration (maximum values) (TO-220AC).

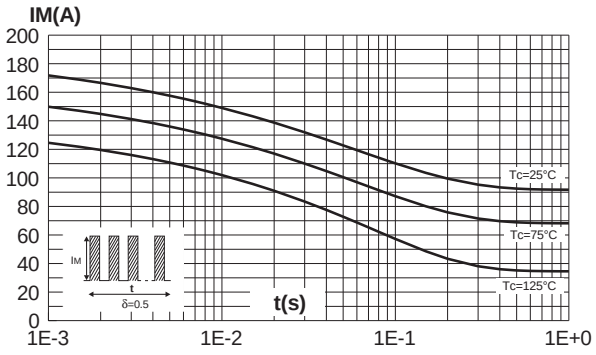


Fig. 5-2: Non repetitive surge peak forward current versus overload duration (maximum values) (TO-220FPAC).

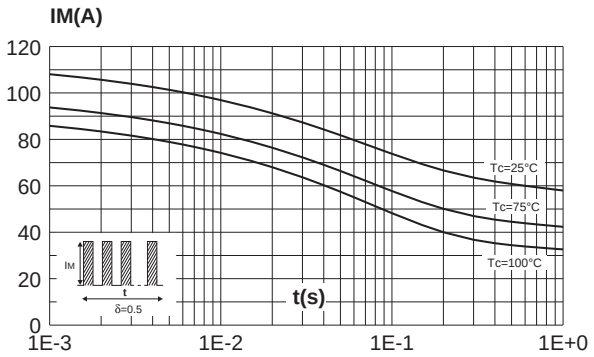


Fig. 6-1: Relative variation of thermal impedance junction to lead versus pulse duration (TO-220AC).

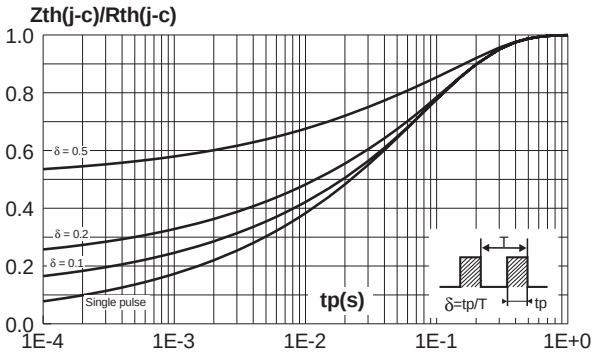


Fig. 6-2: Relative variation of thermal impedance junction to lead versus pulse duration (TO-220FPAC).

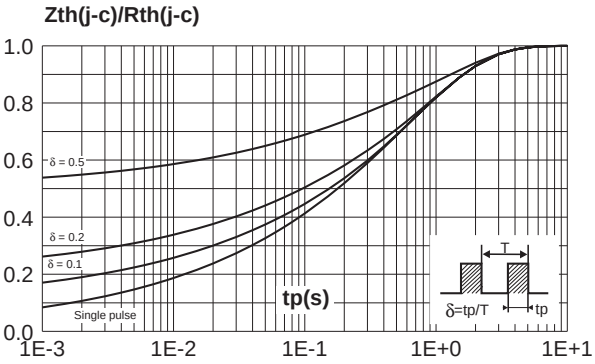


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

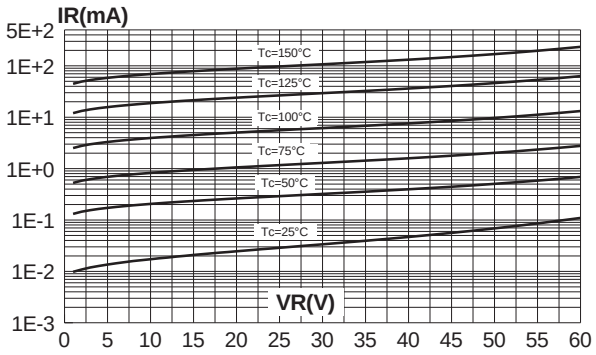


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

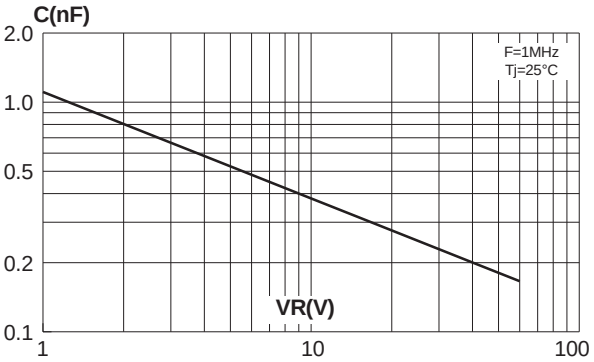
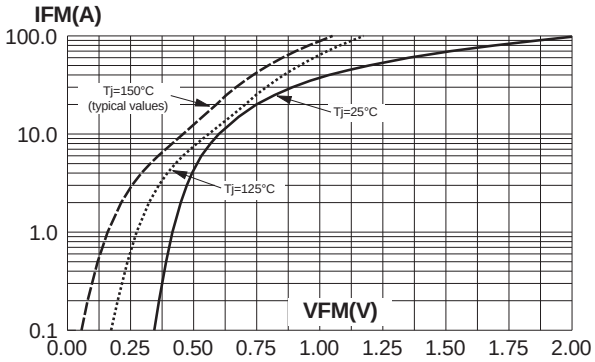
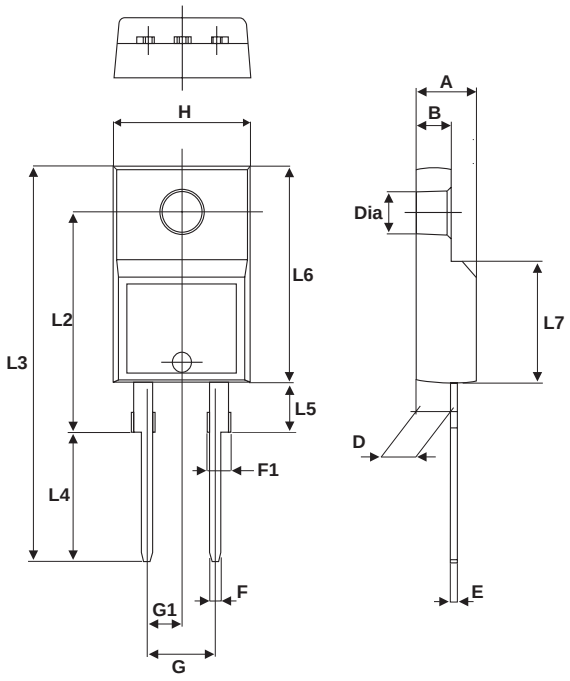


Fig. 9: Forward voltage drop versus forward current (low level, maximum values).



PACKAGE MECHANICAL DATA

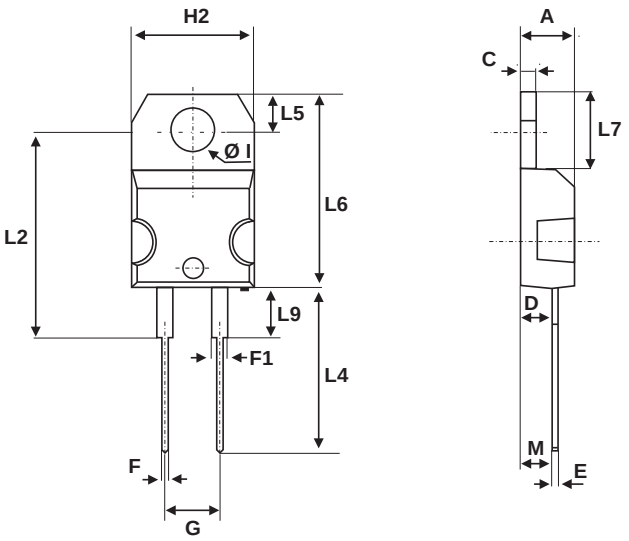
TO-220FPAC



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.4	4.6	0.173	0.181
B	2.5	2.7	0.098	0.106
D	2.5	2.75	0.098	0.108
E	0.45	0.70	0.018	0.027
F	0.75	1	0.030	0.039
F1	1.15	1.70	0.045	0.067
G	4.95	5.20	0.195	0.205
G1	2.4	2.7	0.094	0.106
H	10	10.4	0.393	0.409
L2	16 Typ.		0.63 Typ.	
L3	28.6	30.6	1.126	1.205
L4	9.8	10.6	0.386	0.417
L5	2.9	3.6	0.114	0.142
L6	15.9	16.4	0.626	0.646
L7	9.00	9.30	0.354	0.366
Dia.	3.00	3.20	0.118	0.126

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

- COOLING METHOD : C
- RECOMMENDED TORQUE VALUE : 0.8M.N
- MAXIMUM TORQUE VALUE : 1.0M.N

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS10L60D	STPS10L60D	TO-220AC	1.86g	50	Tube
STPS10L60FP	STPS10L60FP	TO-220FPAC	1.9g	50	Tube

- EPOXY MEETS UL94,V0