STPS10L60C

Power Schottky rectifier

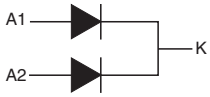
Features

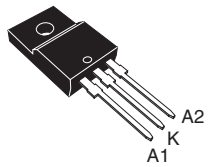
- Low forward voltage drop
- Negligible switching losses
- Insulated package:
  - Insulating voltage = 2000 V DC
  - Capacitance = 12 pF
- Avalanche capability specified

Description

Dual center tap Schottky rectifier suited for switch mode power supplies and high frequency DC to DC converters.

Packaged in TO-220FPAB, this device is intended for use in high frequency inverters.





TO-220FPAB
STPS10L60CFP

Table 1. Device summary

$I_{F(AV)}$	2 x 5 A
V_{RRM}	60 V
$T_{j\ (max)}$	150 °C
$V_{F\ (max)}$	0.52 V

1 Characteristics

Table 2. Absolute ratings (limiting values, per diode)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			60	V
$I_{F(RMS)}$	Forward rms current			30	A
$I_{F(AV)}$	Average forward current	T_C = 130 °C δ = 0.5	Per diode Per device	5 10	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal		180	A
I_{RRM}	Repetitive peak reverse current	tp = 2 µs square F=1 kHz		1	A
P_{ARM}	Repetitive peak avalanche power	tp = 1 µs T_j = 25 °C		4000	W
T_{stg}	Storage temperature range			-65 to + 175	°C
T_j	Maximum operating junction temperature(1)			150	°C
dV/dt	Critical rate of rise reverse voltage			10000	V/µs

1. $\frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$ thermal runaway condition for a diode on its own heatsink

Table 3. Thermal resistance

Symbol	Parameter		Value	Unit
$R_{th\ (j-c)}$	Junction to case	Per diode Total	4.5 3.5	° C/W
$R_{th\ (c)}$	Coupling		2.5	° C/W

When the diodes 1 and 2 are used simultaneously :
ΔTj(diode 1) = P(diode1) x $R_{th(j-c)}$(Per diode) + P(diode 2) x $R_{th(c)}$

Table 4. Static electrical characteristics (per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R (1)	Reverse leakage current	T_j = 25 °C	$V_R = V_{RRM}$			220	µA
		T_j = 125 °C			45	60	mA
V_F (1)	Forward voltage drop	T_j = 25 °C	I_F = 5 A			0.55	V
		T_j = 125 °C	I_F = 5 A		0.43	0.52	
		T_j = 25 °C	I_F = 10 A			0.67	
		T_j = 125 °C	I_F = 10 A		0.55	0.64	

1. Pulse test : tp = 380 µs, δ < 2%

To evaluate the conduction losses use the following equation:
$P = 0.44 \times I_{F(AV)} + 0.0091 \times I_{F}^{2}{}_{(RMS)}$

Figure 1. Average forward power dissipation versus average forward current (per diode)

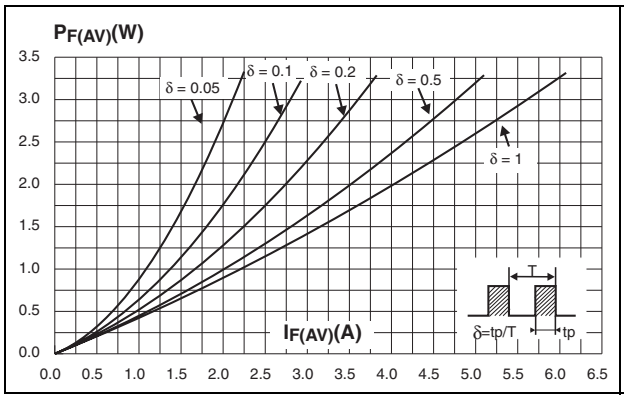


Figure 2. Average forward current versus ambient temperature (δ = 0.5) (per diode)

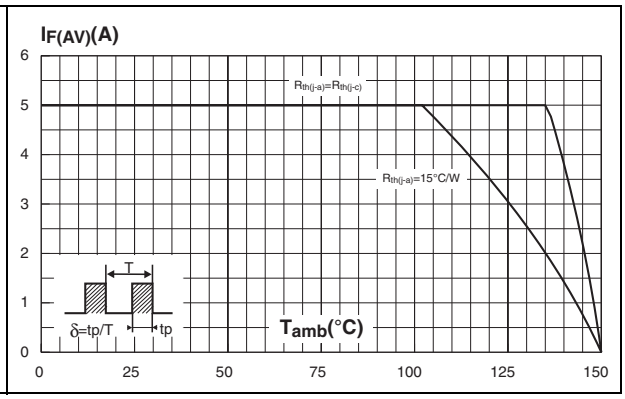


Figure 3. Normalized avalanche power derating versus pulse duration

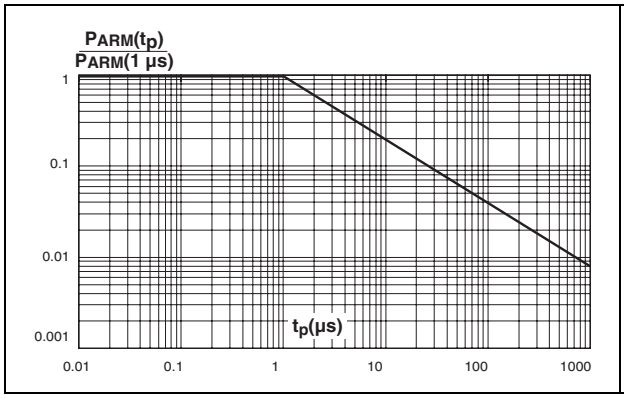


Figure 4. Normalized avalanche power derating versus junction temperature

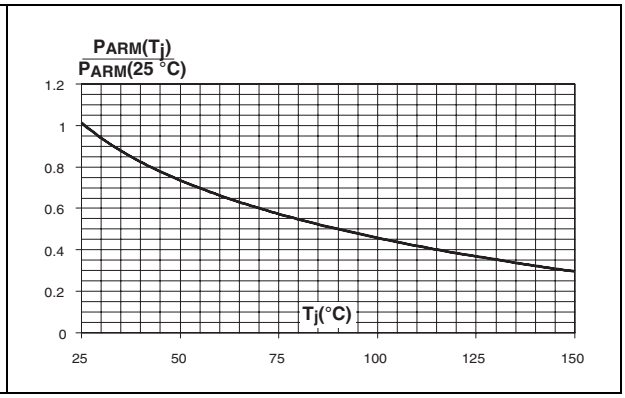


Figure 5. Non repetitive surge peak forward current versus overload duration (maximum values, per diode)

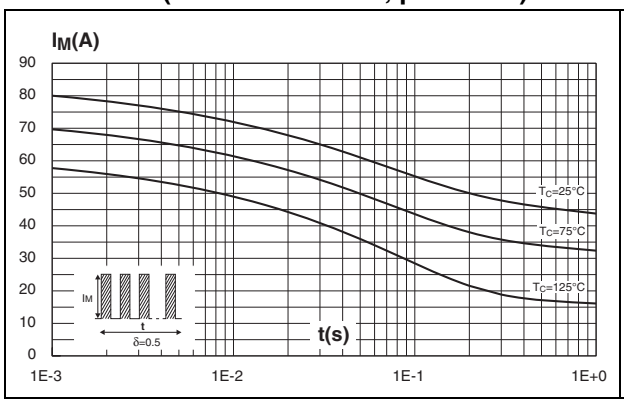


Figure 6. Relative variation of thermal transient impedance junction to case versus pulse duration

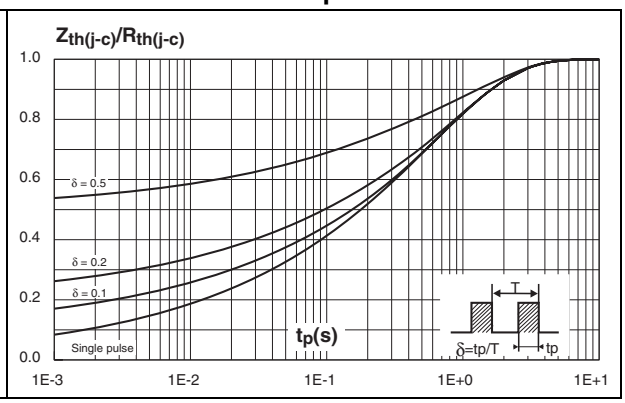


Figure 7. Reverse leakage current versus reverse voltage applied (typical values, per diode)

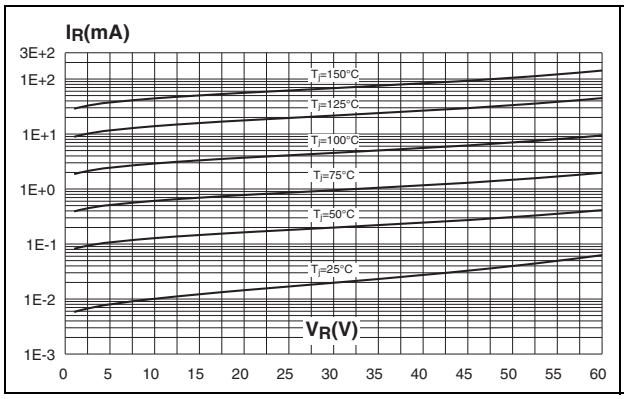


Figure 8. Junction capacitance versus reverse voltage applied (typical values, per diode)

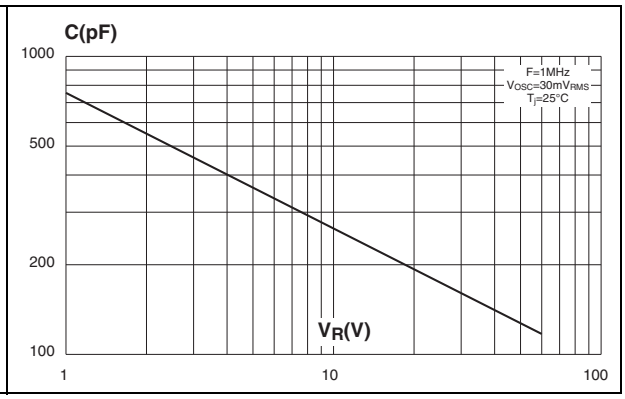
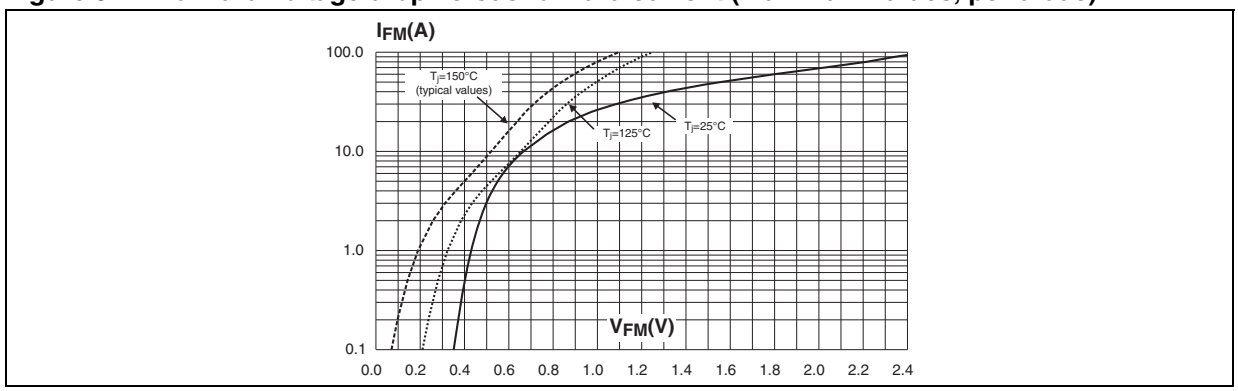


Figure 9. Forward voltage drop versus forward current (maximum values, per diode)

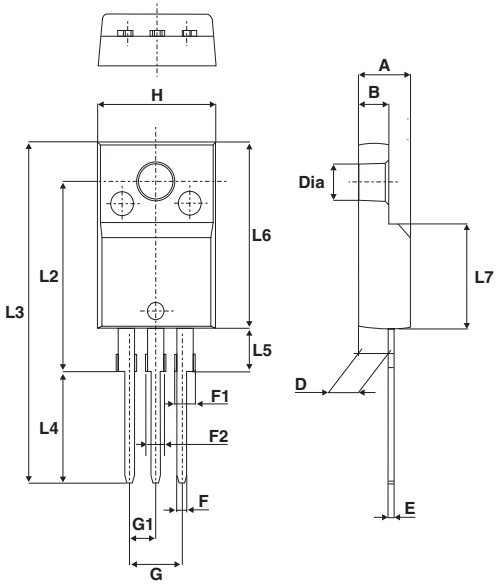


2 Package information

- Epoxy meets UL94, V0
- Cooling method: by conduction (C)
- Recommended torque value: 0.4 to 0.6 N·m

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Table 5. TO-220FPAB Dimensions



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
F2	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

3 Ordering information

Table 6. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
STPS10L60CFP	STPS10L60CFP	TO-220FPAB	2 g	50	Tube

4 Revision history

Table 7. Document revision history

Date	Revision	Changes
Jul-2003	3C	Last release.
26-Mar-2007	4	Removed ISOWATT package. Added D^2PAK package.
04-May-2011	5	Removed D^2PAK package and updated graphic in *Table 5*.

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