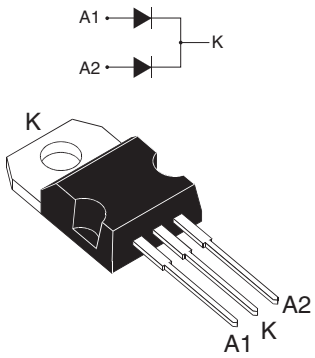
STPS60H100C

Power Schottky rectifier

Main product characteristics

$I_{F(AV)}$	2 x 30 A
V_{RRM}	100 V
T_j	175° C
$V_{F(max)}$	0.72 V



TO-220AB

STPS60H100CT

Feature and benefits

- High junction temperature capability
- Low leakage current
- Low thermal resistance
- High frequency operation
- Avalanche specification

Description

Dual center tab Schottky rectifier suited for High Frequency server and telecom base station SMPS. Packaged in TO-220AB, this device combines high current rating and low volume to enhance both reliability and power density of the application.

Order code

Part Number	Marking
STPS60H100CT	STPS60H100CT

Table 1. Absolute ratings (limiting values)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			100	V
$I_{F(RMS)}$	RMS forward current			60	A
$I_{F(AV)}$	Average forward current	Tc = 150° C $\delta = 0.5$	Per diode Per device	30 60	A
I_{FSM}	Surge non repetitive forward current		t_p = 10 ms Sinusoidal	300	A
P_{ARM}	Repetitive peak avalanche power		t_p = 1 µs T_j = 25° C	18100	W
T_{stg}	Storage temperature range			-65 to + 175	° C
T_j	Maximum operating junction temperature(1)			175	° C
dV/dt	Critical rate of rise of reverse voltage			10000	V/µs

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

1 Characteristics

Table 2. Thermal resistances

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode Total	1.0 0.7	° C/W
$R_{th(c)}$		Coupling	0.4	

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

Table 3. Static electrical characteristics (per diode)

Symbol	Test conditions			Min.	Typ.	Max.	Unit
I_R(1)	Reverse leakage current	T_j = 25° C	$V_R = V_{RRM}$		2	10	µA
		T_j = 125° C			3	10	mA
V_F(2)	Forward voltage drop	T_j = 25° C	I_F = 30 A			0.84	V
		T_j = 125° C	I_F = 30 A		0.67	0.72	
		T_j = 25° C	I_F = 60 A		0.92	0.98	
		T_j = 125° C	I_F = 60 A		0.8	0.84	

1. Pulse test : tp = 5 ms, δ < 2%
2. Pulse test : tp = 380 µs, δ < 2%

To evaluate the maximum conduction losses use the following equation :
$P = 0.6 \times I_{F(AV)} + 0.004\ IF^2_{(RMS)}$

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

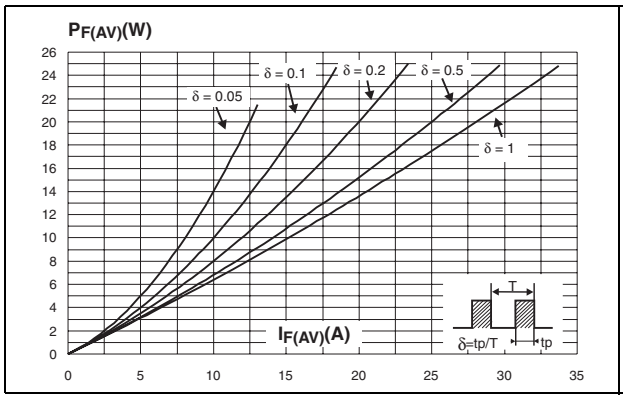


Figure 2. Average forward current versus ambient temperature (δ = 0.5, per diode)

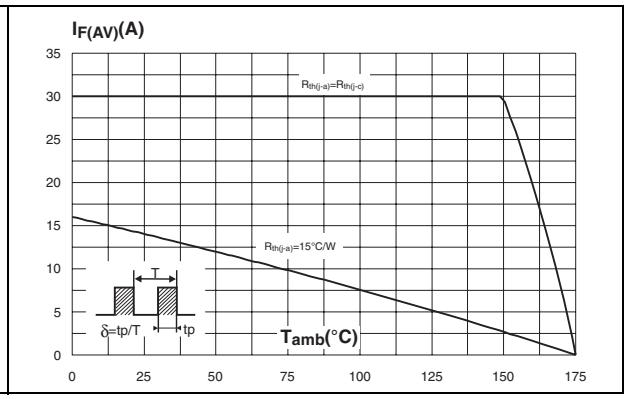


Figure 3. Normalized avalanche power derating versus pulse duration

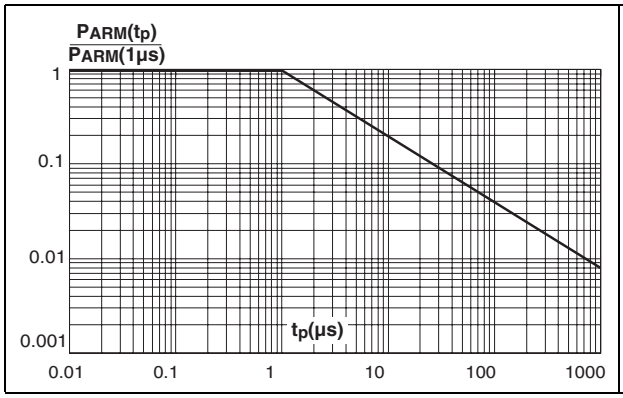


Figure 4. Normalized avalanche power derating versus junction temperature

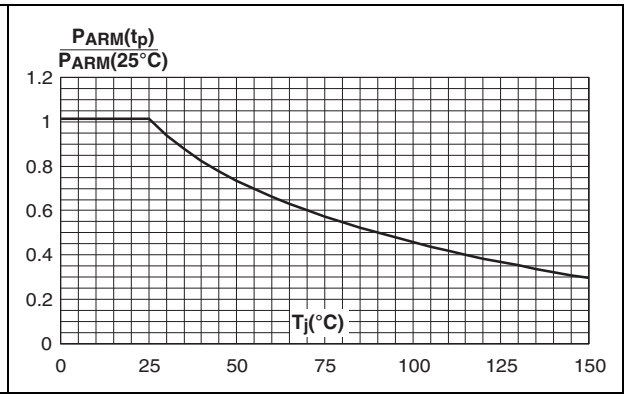


Figure 5. Non repetitive surge peak forward current versus overload duration

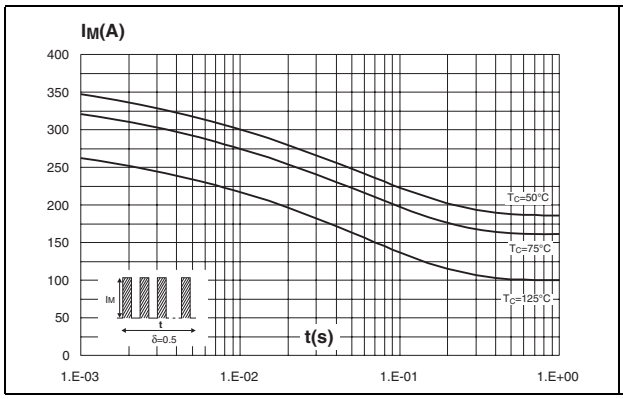


Figure 6. Relative variation of thermal impedance junction to case versus pulse

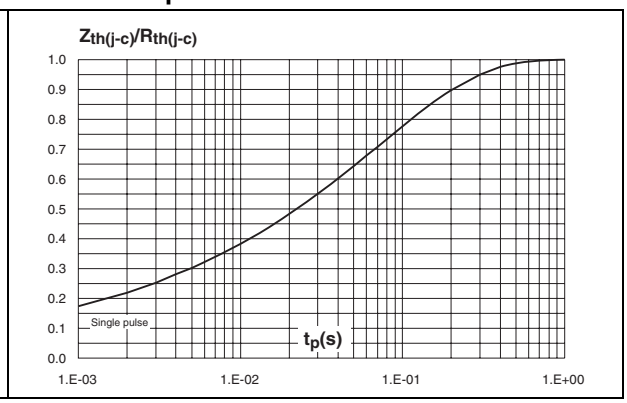


Figure 7. Reverse leakage current versus reverse voltage applied (typical values)

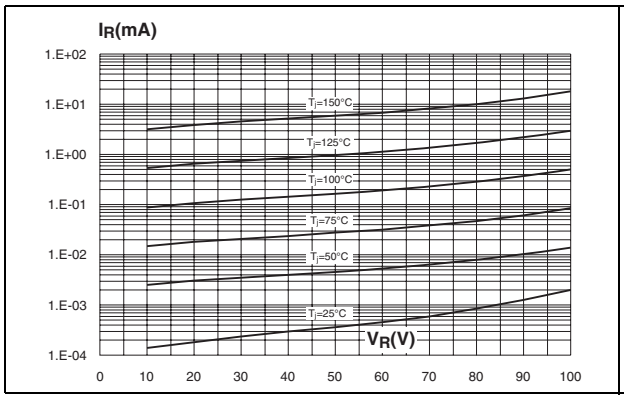


Figure 8. Junction capacitance versus reverse voltage applied (typical values)

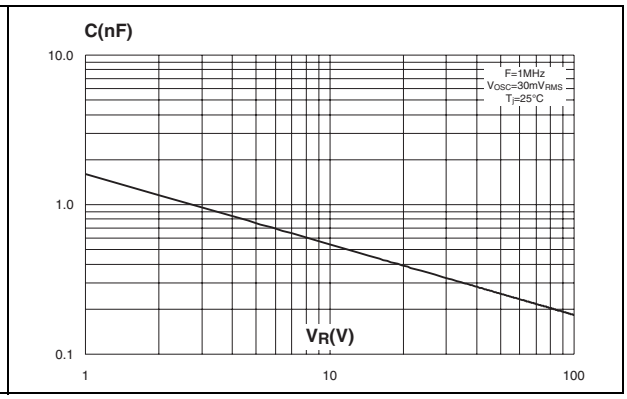
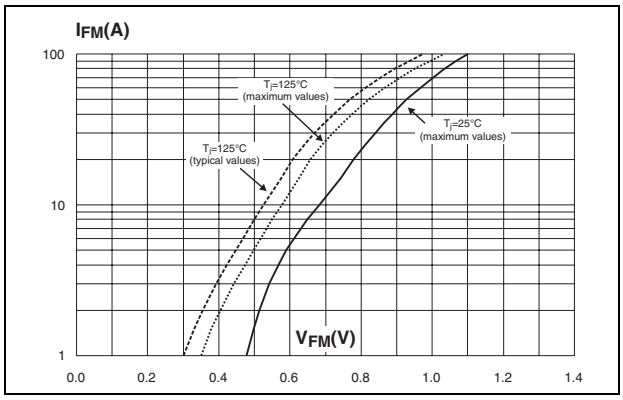


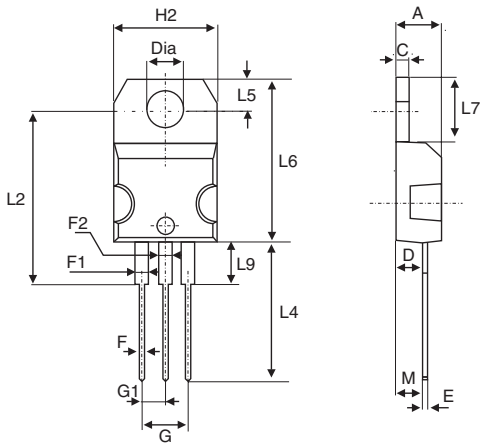
Figure 9. Forward voltage drop versus forward current



2 Package information

- Epoxy meets UL94, V0
- Cooling method: by conduction (C)
- Recommended torque value: 0.8 Nm
- Maximum torque value: 1.0 Nm

Figure 10. Package dimensions TO-220AB



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
F2	1.14	1.70	0.044	0.066
G	4.95	5.15	0.194	0.202
G1	2.40	2.70	0.094	0.106
H2	10	10.40	0.393	0.409
L2	16.4 typ.		0.645 typ.	
L4	13	14	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.	3.75	3.85	0.147	0.151

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a lead-free second level interconnect. The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com.

3 Ordering information

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS60H100CT	STPS60H100CT	TO-220AB	2.20 g	50	Tube

4 Revision history

Date	Revision	Description of Changes
02-Aug-2004	1	First issue
07-Feb-2007	2	Reformatted to current stndards. Added ECOPACK statement on page 5. Corrected typograhical errors on pages 1 and 3

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