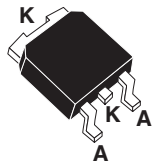
STPS1045B

POWER SCHOTTKY RECTIFIER

Table 1: Main Product Characteristics

$I_{F(AV)}$	10 A
V_{RRM}	45 V
T_j	175°C
V_F(max)	0.57 V



DPAK

FEATURES AND BENEFITS

- Negligible switching losses
- Low forward drop
- Low capacitance
- High reverse avalanche surge capability
- Avalanche specification

DESCRIPTION

High voltage Schottky rectifier suited for Switch Mode Power Supplies and other Power Converters.
Packaged in DPAK, this device is intended for use in high frequency circuitries where low switching losses are required.

Table 2: Order Codes

Part Number	Marking
STPS1045B	S1045
STPS1045B-TR	S1045

Table 3: Absolute Maximum Ratings

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		45	V
$I_{F(RMS)}$ / pin	RMS forward voltage		7	A
$I_{F(AV)}$	Average forward current	T_c = 150°C δ = 0.5	10	A
I_{FSM}	Surge non repetitive forward current	t_p = 10ms sinusoidal	75	A
I_{RRM}	Repetitive peak reverse current	t_p = 2µs F = 1KHz	1	A
P_{ARM}	Repetitive peak avalanche power	t_p = 1µs T_j = 25°C	4000	W
T_{stg}	Storage temperature range		-65 to + 175	°C
T_j	Maximum operating junction temperature		175	°C
dV/dt	Critical rate of rise of reverse voltage		10000	V/µs

Table 4: Thermal Parameters

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case	3	°C/W

Table 5: Static Electrical Characteristics

Symbol	Parameter	Tests conditions		Min.	Typ	Max.	Unit
I_R *	Reverse leakage current	T_j = 25°C	$V_R = V_{RRM}$			100	µA
		T_j = 125°C			7	15	mA
V_F **	Forward voltage drop	T_j = 25°C	I_F = 10A			0.63	V
		T_j = 125°C			0.50	0.57	
		T_j = 25°C	I_F = 20A			0.84	
		T_j = 125°C			0.65	0.72	

Pulse test: * tp = 5 ms, δ < 2%

** tp = 380 µs, δ < 2%

To evaluate the conduction losses use the following equation: $P = 0.42 \times I_{F(AV)} + 0.015\ I_F{}^2{}_{(RMS)}$

Figure 1: Average forward power dissipation versus average forward current

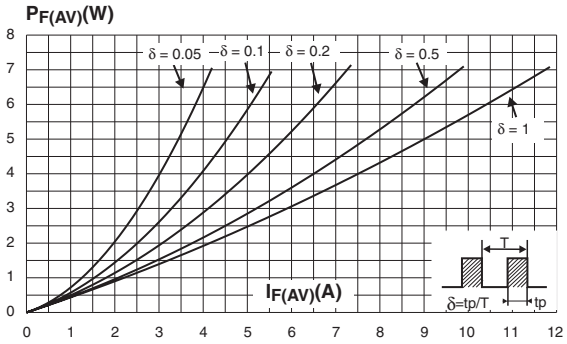


Figure 2: Average forward current versus ambient temperature (δ = 0.5)

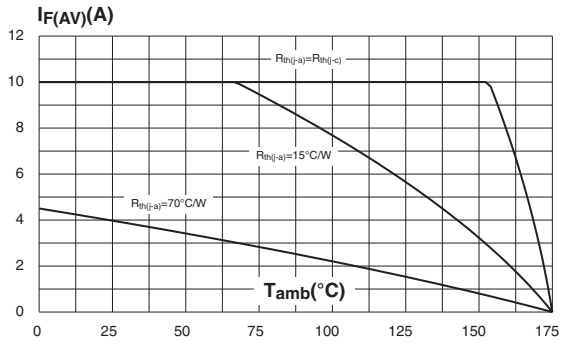


Figure 3: Normalized avalanche power derating versus pulse duration

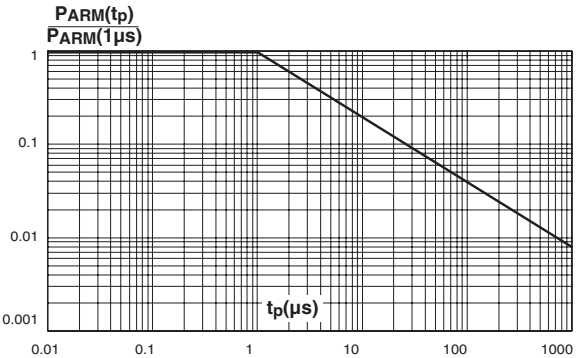


Figure 4: Normalized avalanche power derating versus junction temperature

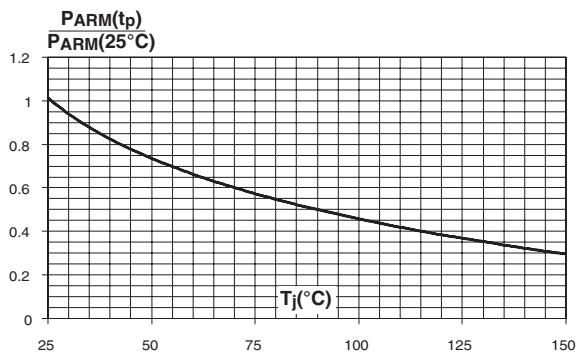


Figure 5: Non repetitive surge peak forward current versus overload duration (maximum values)

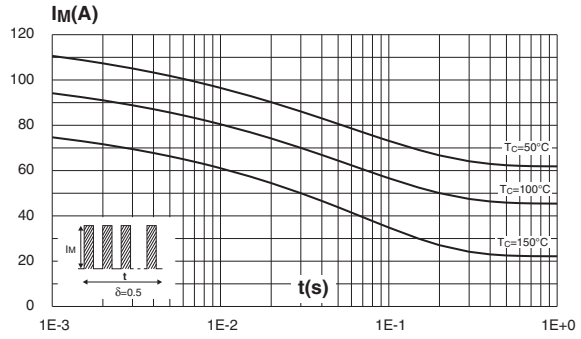


Figure 6: Relative variation of thermal impedance junction to case versus pulse duration

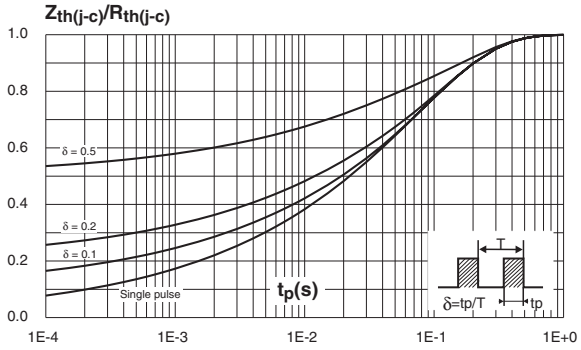


Figure 7: Reverse leakage current versus reverse voltage applied (typical values)

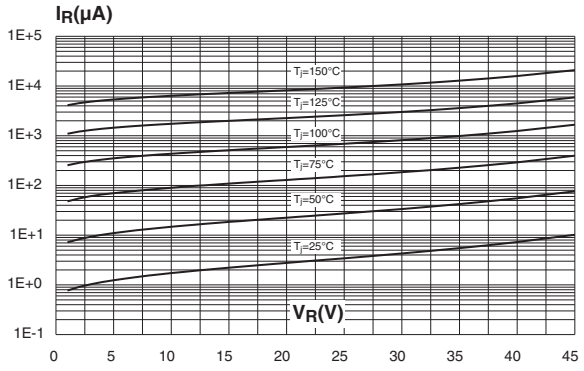


Figure 8: Junction capacitance versus reverse voltage applied (typical values)

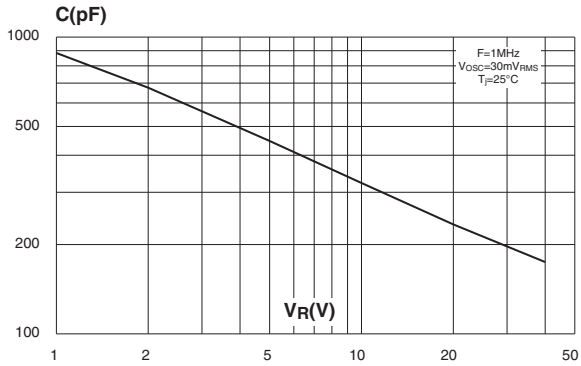


Figure 9: Forward voltage drop versus forward current

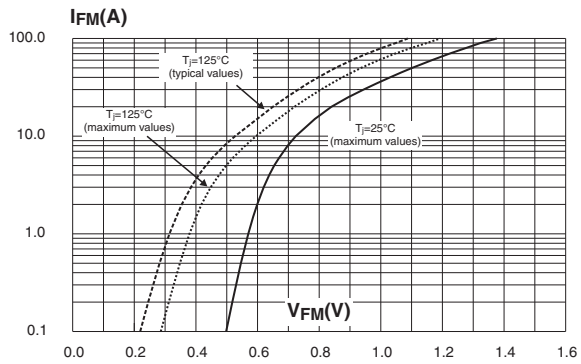


Figure 10: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board, copper thickness: 35µm)

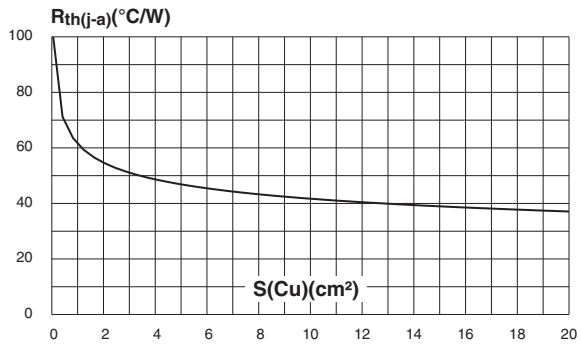
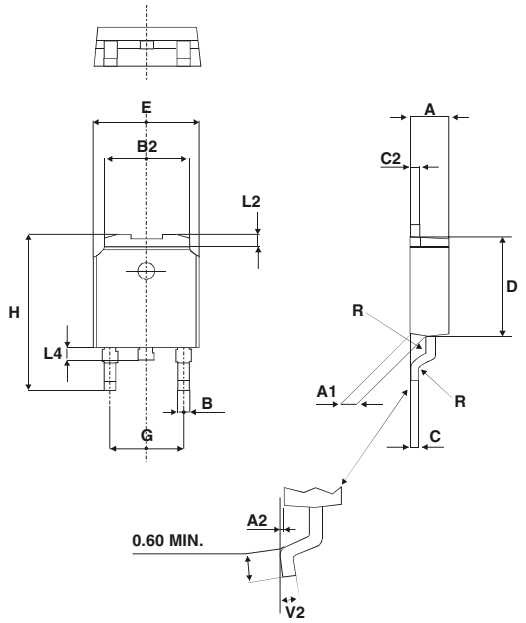


Figure 11: DPAK Package Mechanical Data



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max	Min.	Max.
A	2.20	2.40	0.086	0.094
A1	0.90	1.10	0.035	0.043
A2	0.03	0.23	0.001	0.009
B	0.64	0.90	0.025	0.035
B2	5.20	5.40	0.204	0.212
C	0.45	0.60	0.017	0.023
C2	0.48	0.60	0.018	0.023
D	6.00	6.20	0.236	0.244
E	6.40	6.60	0.251	0.259
G	4.40	4.60	0.173	0.181
H	9.35	10.10	0.368	0.397
L2	0.80 typ.		0.031 typ.	
L4	0.60	1.00	0.023	0.039
V2	0°	8°	0°	8°

Figure 12: Foot Print Dimensions (in millimeters)

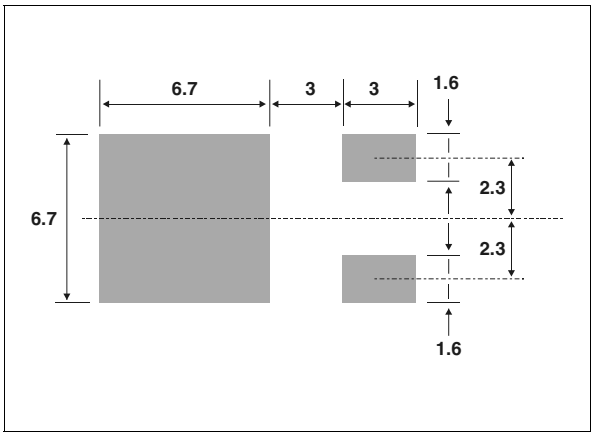


Table 6: Ordering Information

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS1045B	S1045	DPAK	0.30 g	75	Tube
STPS1045B-TR	S1045			2500	Tape & reel

- Cooling method: by conduction (C)

Table 7: Revision History

Date	Revision	Description of Changes
Jul-2003	3B	Last issue.
21-Apr-2005	4	IPAK package removed.
03-Nov-2005	5	DPAK Foot Print dimensions updated.