



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

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.

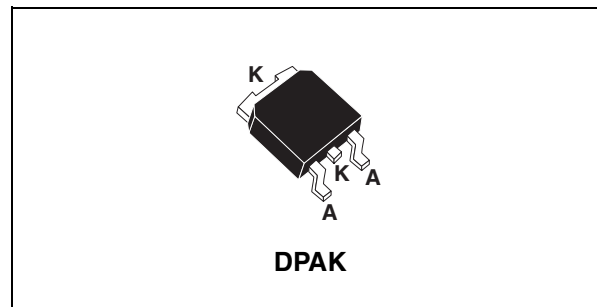


Table 2: Order Codes

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	$T_c = 150^\circ\text{C} \quad \delta = 0.5$	10	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10\text{ms}$ sinusoidal	75	A
I_{RRM}	Repetitive peak reverse current	$t_p = 2\mu\text{s} \quad F = 1\text{KHz}$	1	A
P_{ARM}	Repetitive peak avalanche power	$t_p = 1\mu\text{s} \quad T_j = 25^\circ\text{C}$	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	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$		100	μA
		$T_j = 125^\circ\text{C}$		7	15	mA
V_F^{**}	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 10\text{A}$		0.63	V
		$T_j = 125^\circ\text{C}$		0.50	0.57	
		$T_j = 25^\circ\text{C}$	$I_F = 20\text{A}$		0.84	
		$T_j = 125^\circ\text{C}$		0.65	0.72	

Pulse test: * $t_p = 5\text{ ms}$, $\delta < 2\%$

** $t_p = 380\text{ }\mu\text{s}$, $\delta < 2\%$

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

Figure 1: Average forward power dissipation versus average forward current

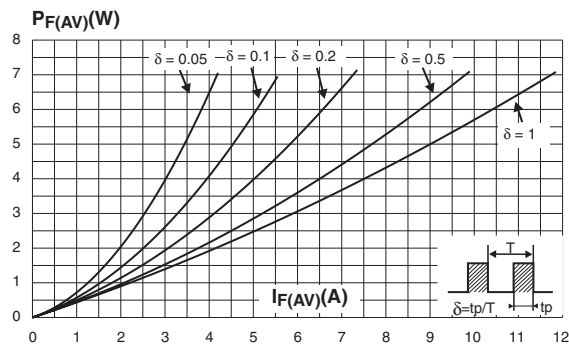
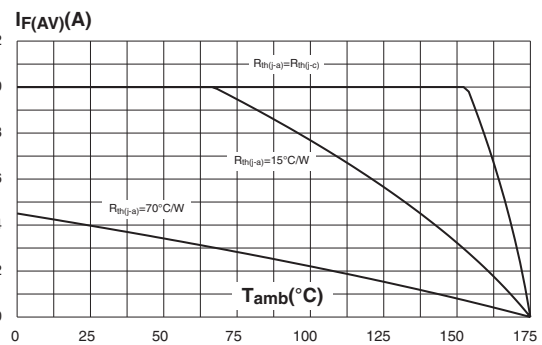
Figure 2: Average forward current versus ambient temperature ($\delta = 0.5$)

Figure 3: Normalized avalanche power derating versus pulse duration

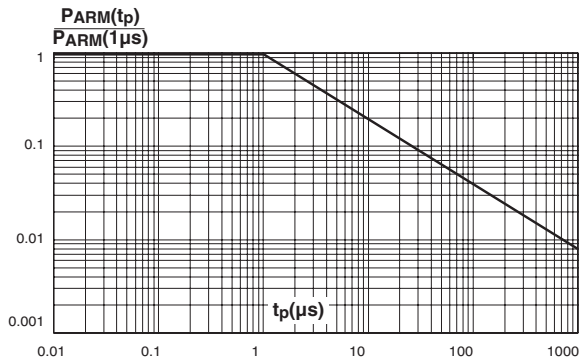


Figure 4: Normalized avalanche power derating versus junction temperature

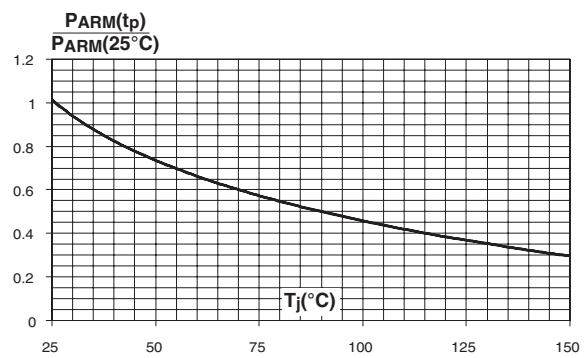


Figure 5: Non repetitive surge peak forward current versus overload duration (maximum values)

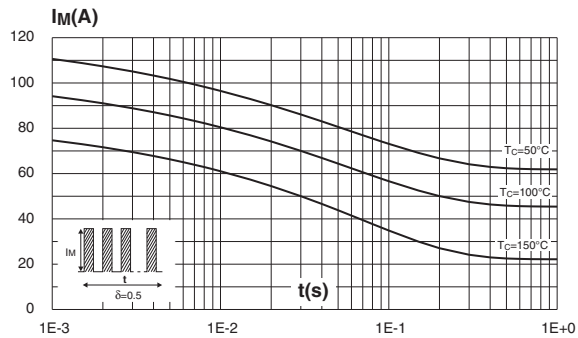


Figure 6: Relative variation of thermal impedance junction to case versus pulse duration

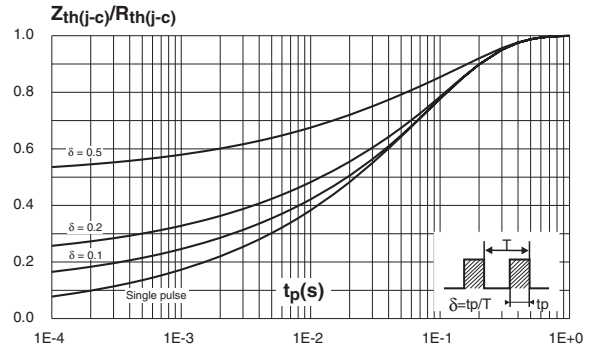


Figure 7: Reverse leakage current versus reverse voltage applied (typical values)

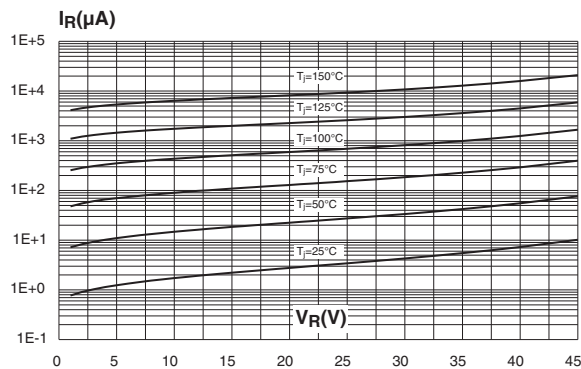


Figure 8: Junction capacitance versus reverse voltage applied (typical values)

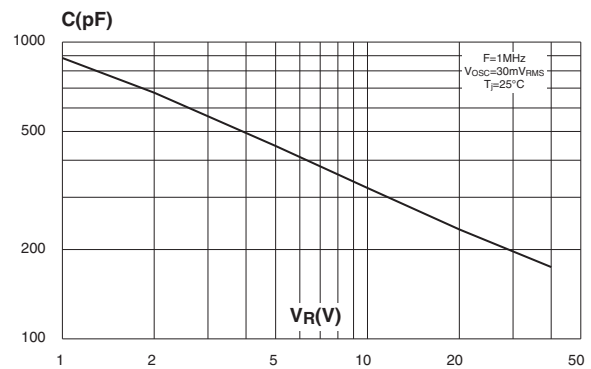


Figure 9: Forward voltage drop versus forward current

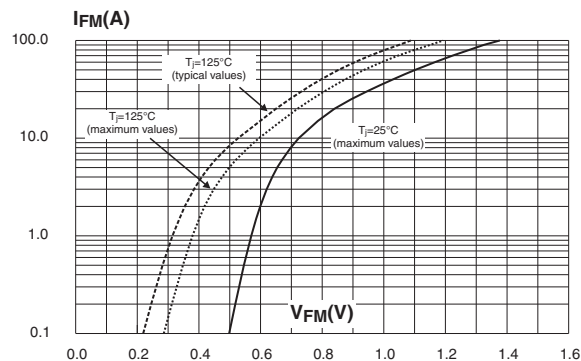


Figure 10: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board, copper thickness: $35\mu\text{m}$)

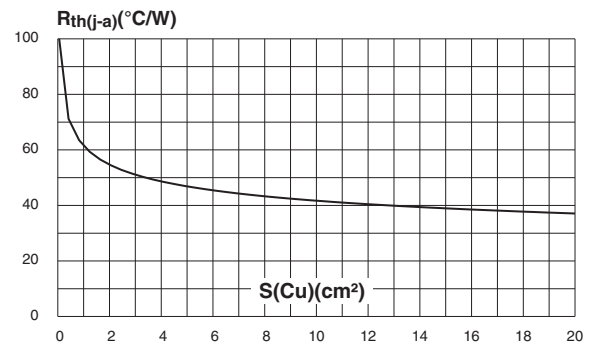


Figure 11: DPAK Package Mechanical Data

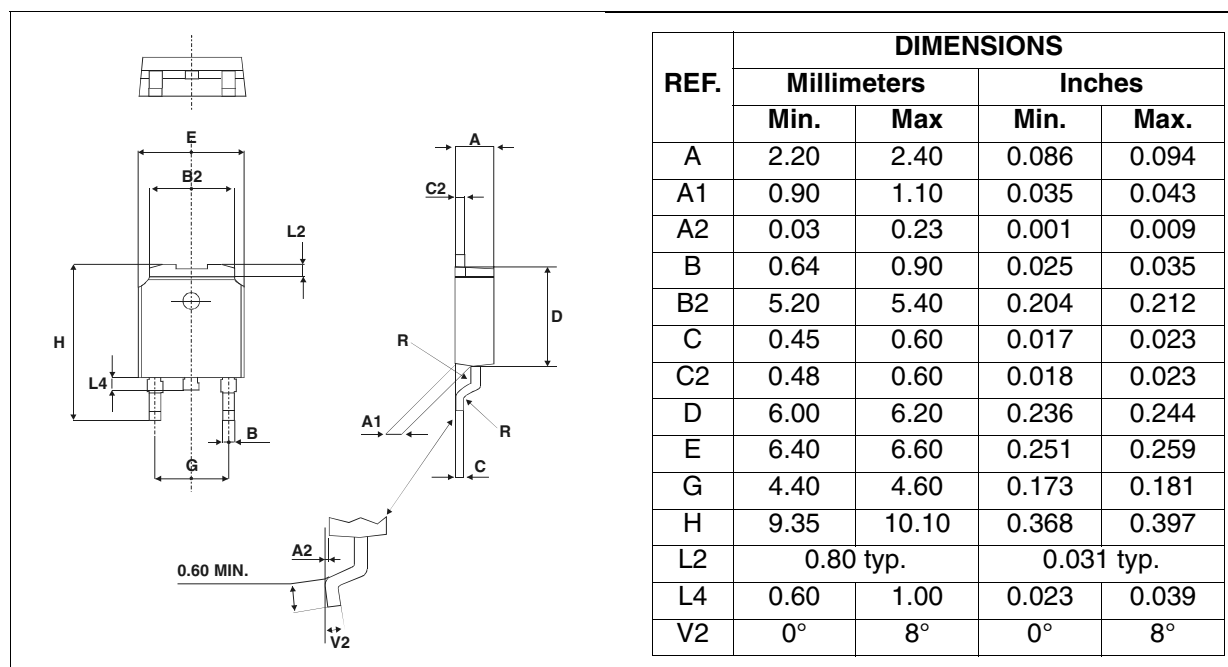


Figure 12: Foot Print Dimensions (in millimeters)

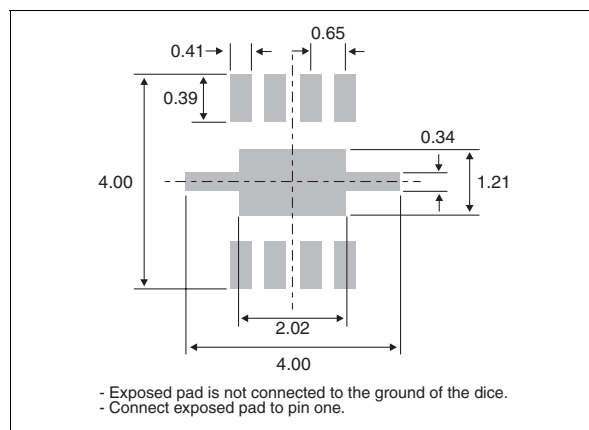


Table 6: Ordering Information

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.

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