

**STPS3045G**

## POWER SCHOTTKY RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

I <sub>F(AV)</sub>	30 A
V <sub>RRM</sub>	45 V
T <sub>j</sub> (max)	175°C
V <sub>F</sub> (max)	0.63 V

### FEATURES AND BENEFITS

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- EXTREMELY FAST SWITCHING
- LOW THERMAL RESISTANCE
- HIGH DISSIPATION MINIATURE PACKAGE

### DESCRIPTION

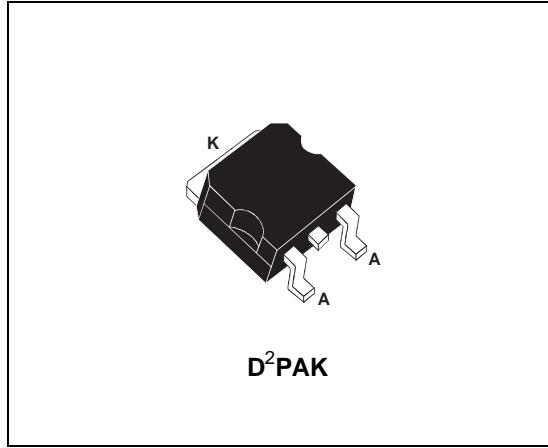
Single Schottky rectifier suited for switchmode power supply and high frequency DC to DC converters.

Packaged in D<sup>2</sup>PAK surface mount package , this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.

### ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V <sub>RRM</sub>	Repetitive peak reverse voltage		45	V
I <sub>F(RMS)</sub>	RMS forward current		50	A
I <sub>F(AV)</sub>	Average forward current	T <sub>c</sub> = 150°C δ = 0.5	30	A
I <sub>FSM</sub>	Surge non repetitive forward current	tp = 10 ms Sinusoidal	200	A
I <sub>RRM</sub>	Repetitive peak reverse current	tp = 2 μs F = 1kHz square	1	A
I <sub>RSR</sub>	Non Repetitive peak reverse current	tp = 100μs square	3	A
T <sub>stg</sub>	Storage temperature range		- 65 to + 175	°C
T <sub>j</sub>	Maximum operating junction temperature*		175	°C
dV/dt	Critical rate of rise of reverse voltage		10000	V/μs

\* :  $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th(j-a)}}$  thermal runaway condition for a diode on its own heatsink



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### THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case	1	°C/W

### STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
$I_R$ *	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			500	$\mu\text{A}$
		$T_j = 125^\circ\text{C}$			20	80	$\text{mA}$
$V_F$ **	Forward voltage drop	$T_j = 125^\circ\text{C}$	$I_F = 30 \text{ A}$		0.53	0.63	$\text{V}$
		$T_j = 25^\circ\text{C}$	$I_F = 60 \text{ A}$			0.84	
		$T_j = 125^\circ\text{C}$	$I_F = 60 \text{ A}$		0.68	0.78	

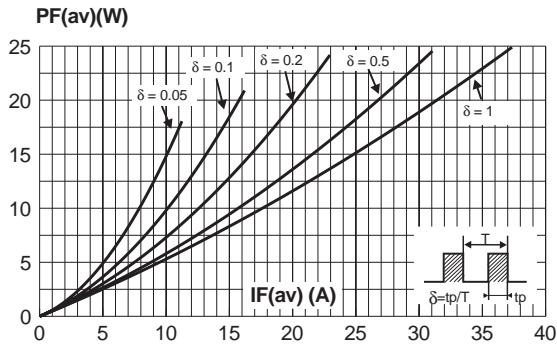
Pulse test : \*  $t_p = 5 \text{ ms}, \delta < 2 \%$

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

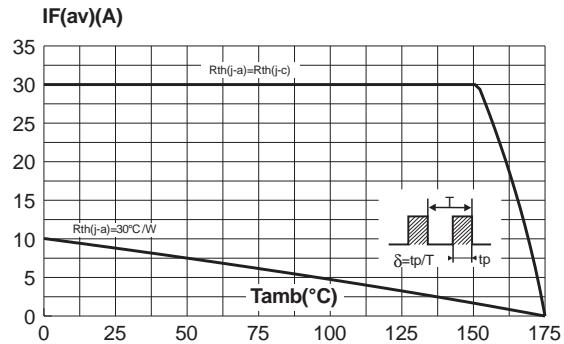
To evaluate the conduction losses use the following equation :

$$P = 0.48 \times I_{F(AV)} + 0.005 I_{F(RMS)}^2$$

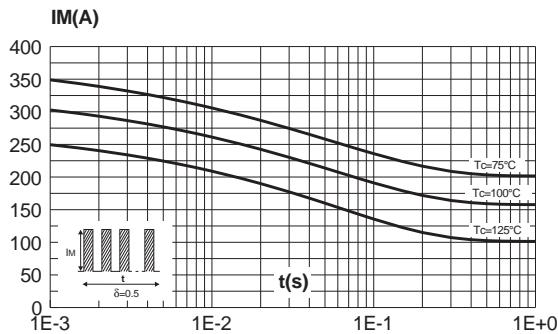
**Fig. 1:** Average forward power dissipation versus average forward current.



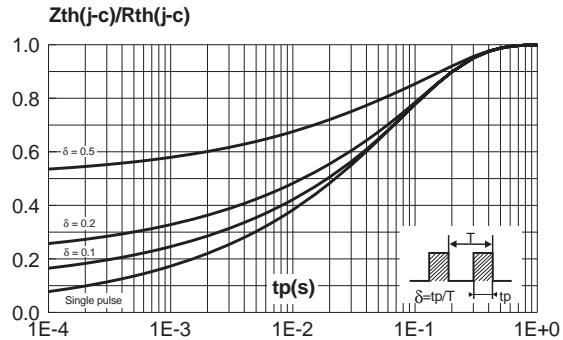
**Fig. 2:** Average forward current versus ambient temperature ( $\delta=0.5$ ).



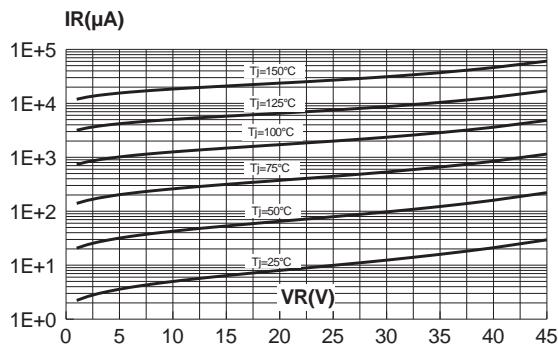
**Fig. 3:** Non repetitive surge peak forward current versus overload duration (maximum values).



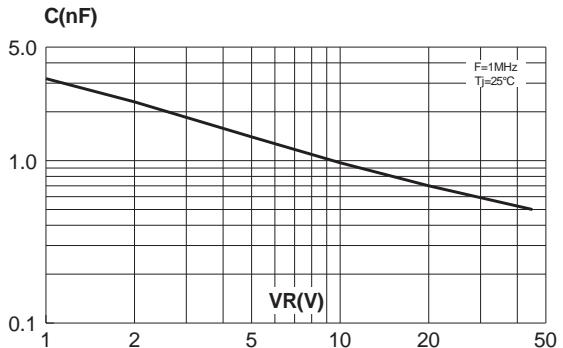
**Fig. 4:** Relative variation of thermal impedance junction to case versus pulse duration.



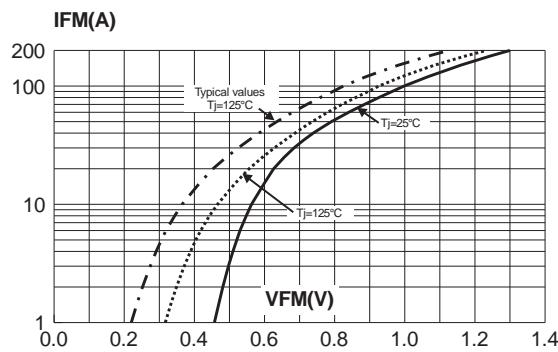
**Fig. 5:** Reverse leakage current versus reverse voltage applied (typical values)



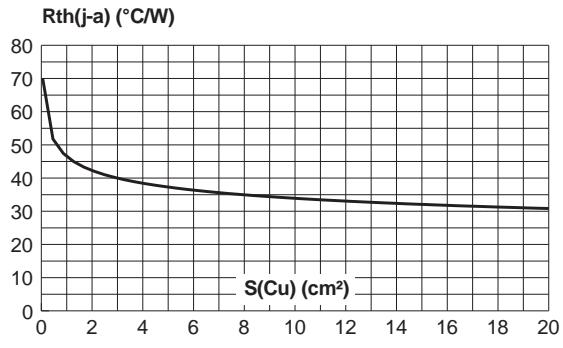
**Fig. 6:** Junction capacitance versus reverse voltage applied (typical values).



**Fig. 7:** Forward voltage drop versus forward current (maximum values).



**Fig. 8:** Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board, copper thickness: 35μm)



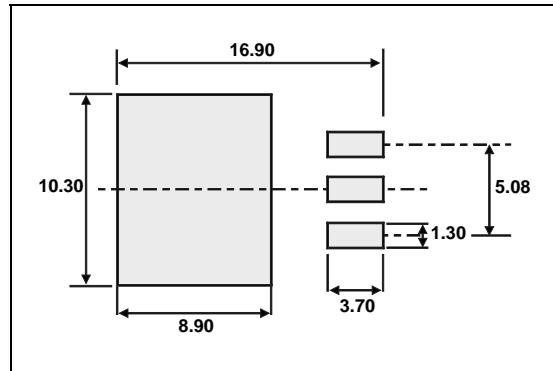
## STPS3045G

### PACKAGE MECHANICAL DATA D<sup>2</sup>PAK

**DIMENSIONS**

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
A1	2.49	2.69	0.098	0.106
A2	0.03	0.23	0.001	0.009
B	0.70	0.93	0.027	0.037
B2	1.14	1.70	0.045	0.067
C	0.45	0.60	0.017	0.024
C2	1.23	1.36	0.048	0.054
D	8.95	9.35	0.352	0.368
E	10.00	10.40	0.393	0.409
G	4.88	5.28	0.192	0.208
L	15.00	15.85	0.590	0.624
L2	1.27	1.40	0.050	0.055
L3	1.40	1.75	0.055	0.069
M	2.40	3.20	0.094	0.126
R	0.40 typ.		0.016 typ.	
V2	0°	8°	0°	8°

### FOOTPRINT DIMENSIONS (in millimeters)



Type	Marking	Package	Weight	Base qty	Delivery mode
STPS3045G	STPS3045G	D <sup>2</sup> PAK	1.48g	50	Tube
STPS3045G-TR	STPS3045G	D <sup>2</sup> PAK	1.48g	500	Tape & Reel

■ Epoxy meets UL94, V0

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