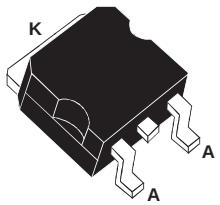
STPS3045G

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	**30 A**
V_{RRM}	**45 V**
Tj (max)	**175°C**
V_F (max)	**0.63 V**



D^2PAK

FEATURES AND BENEFITS

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

DESCRIPTION

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

Packaged in D^2PAK 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_{RRM}	Repetitive peak reverse voltage		45	V
$I_{F(RMS)}$	RMS forward current		50	A
$I_{F(AV)}$	Average forward current	Tc = 150°C δ = 0.5	30	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal	200	A
I_{RRM}	Repetitive peak reverse current	tp = 2 µs F = 1kHz square	1	A
I_{RSM}	Non Repetitive peak reverse current	tp = 100 µs square	3	A
P_{ARM}	Repetitive peak avalanche power	tp = 1µs Tj = 25°C	6000	W
T_{stg}	Storage temperature range		- 65 to + 175	°C
Tj	Maximum operating junction temperature*		175	°C
dV/dt	Critical rate of rise of reverse voltage		10000	V/µs

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

July 2003 - Ed: 5A

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	Tj = 25°C	$V_R = V_{RRM}$			500	µA
		Tj = 125°C			20	80	mA
V_F **	Forward voltage drop	Tj = 125°C	I_F = 30 A		0.53	0.63	V
		Tj = 25°C	I_F = 60 A			0.84	
		Tj = 125°C	I_F = 60 A		0.68	0.78	

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

To evaluate the conduction losses use the following equation :
$P = 0.48 \times I_{F(AV)} + 0.005\ I_F{}^2{}_{(RMS)}$

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

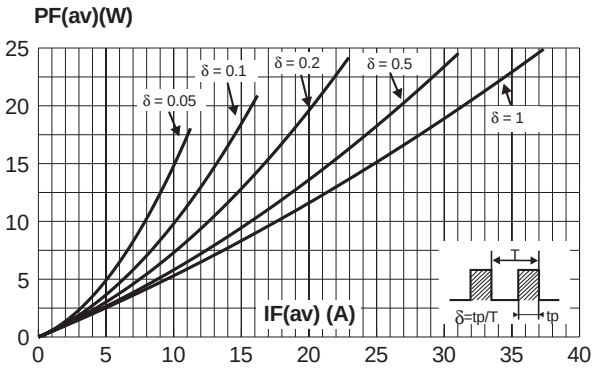


Fig. 2: Average forward current versus ambient temperature (δ=0.5).

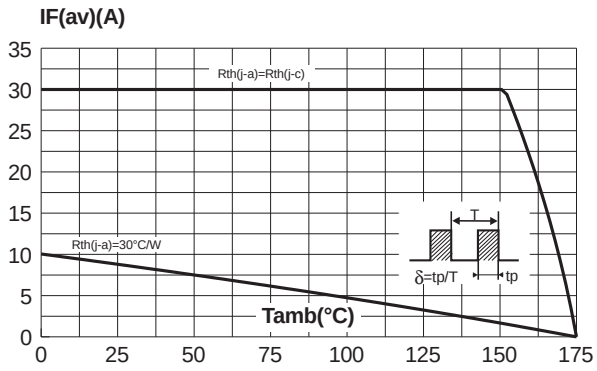


Fig. 3: Normalized avalanche power derating versus pulse duration.

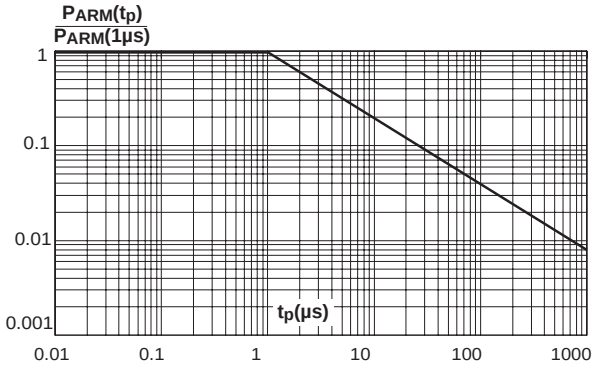


Fig. 4: Normalized avalanche power derating versus junction temperature.

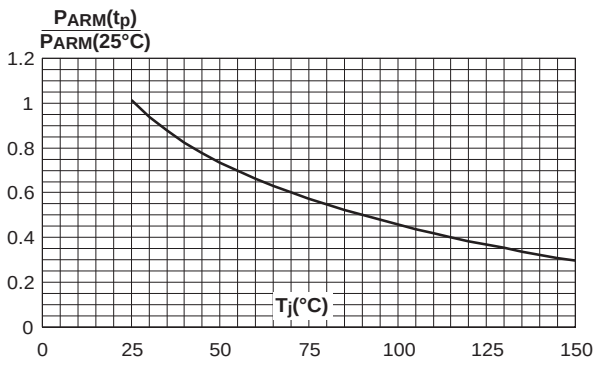


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values).

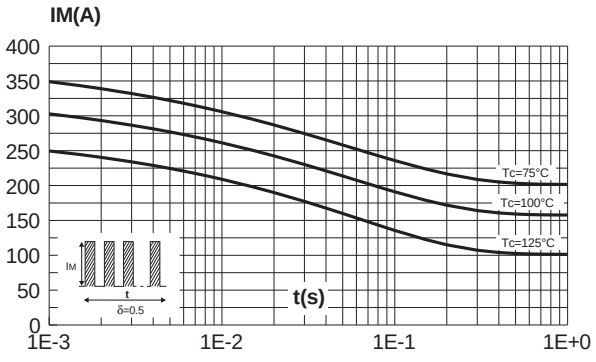


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

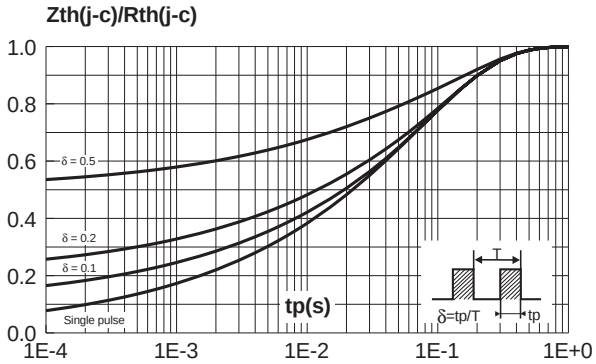


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values)

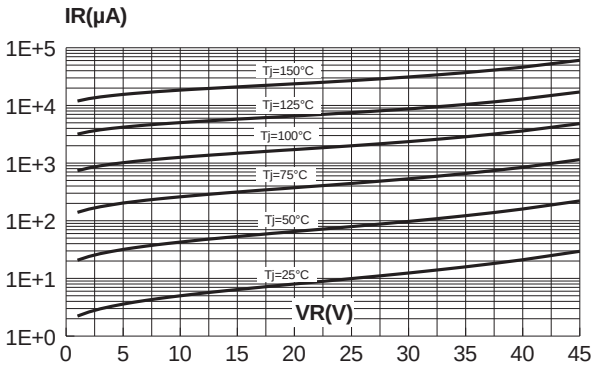


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

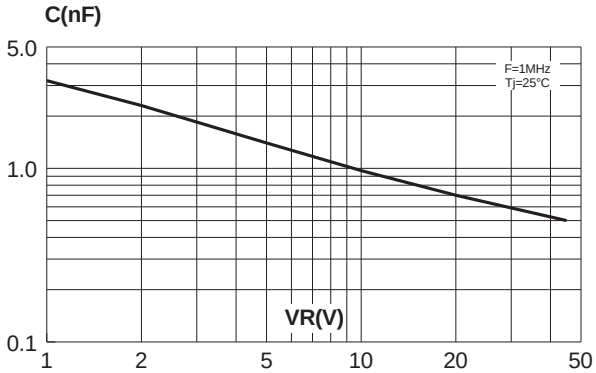


Fig. 9: Forward voltage drop versus forward current (maximum values).

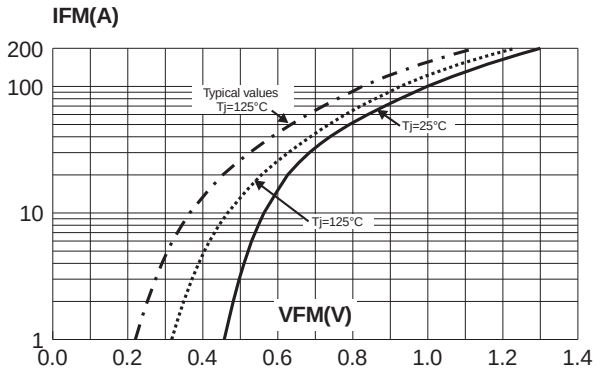
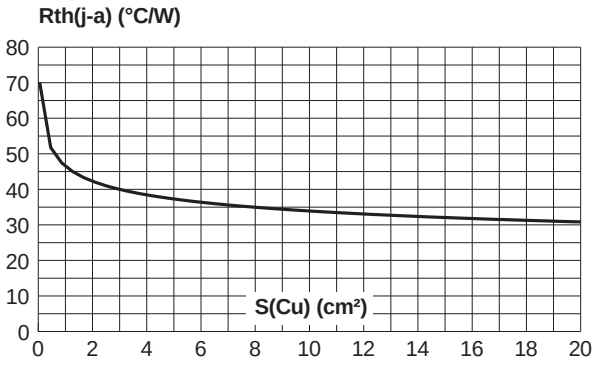
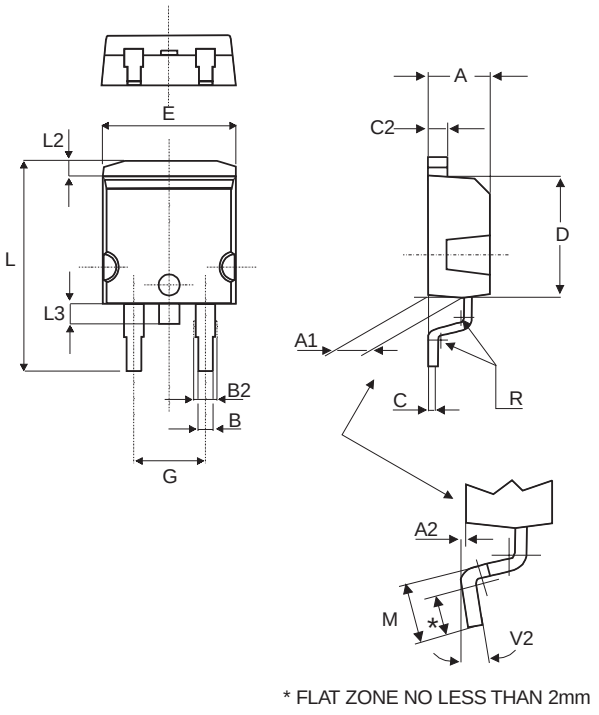


Fig. 10: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board, copper thickness: 35µm)



PACKAGE MECHANICAL DATA

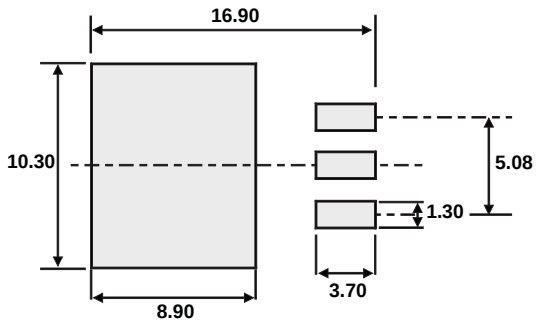
D^2PAK



* FLAT ZONE NO LESS THAN 2mm

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^2PAK	1.48g	50	Tube
STPS3045G-TR	STPS3045G	D^2PAK	1.48g	500	Tape & Reel

- Epoxy meets UL94, V0