

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

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

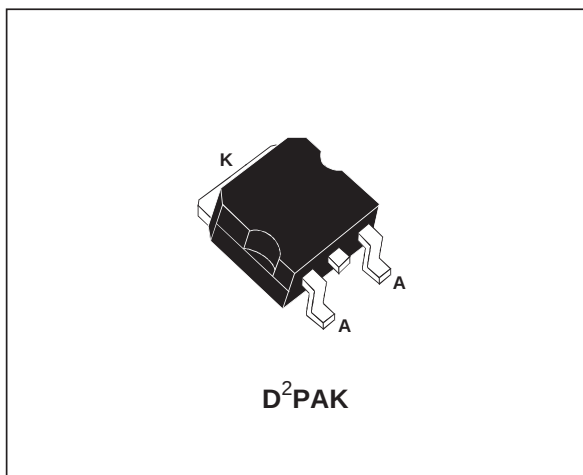
FEATURES AND BENEFITS

- 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 D²PAK 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	$T_c = 150^\circ\text{C}$ $\delta = 0.5$	30	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10\text{ ms}$ Sinusoidal	200	A
I_{RRM}	Repetitive peak reverse current	$t_p = 2\text{ }\mu\text{s}$ $F = 1\text{ kHz square}$	1	A
I_{RSM}	Non Repetitive peak reverse current	$t_p = 100\text{ }\mu\text{s square}$	3	A
P_{ARM}	Repetitive peak avalanche power	$t_p = 1\text{ }\mu\text{s}$ $T_j = 25^\circ\text{C}$	6000	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

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

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	μA
		$T_j = 125^\circ\text{C}$		20	80	mA
V_F **	Forward voltage drop	$T_j = 125^\circ\text{C}$	$I_F = 30\text{ A}$	0.53	0.63	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 : * $t_p = 5\text{ ms}$, $\delta < 2\%$

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

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.

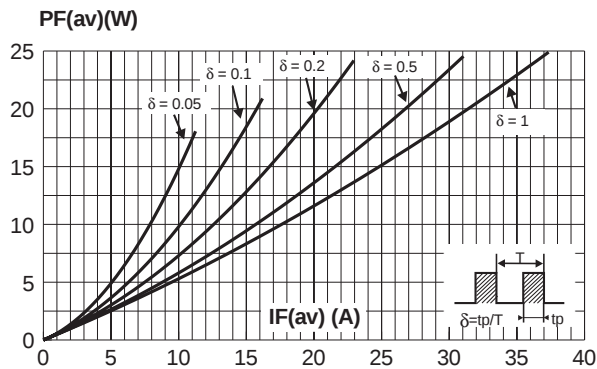


Fig. 3: Normalized avalanche power derating versus pulse duration.

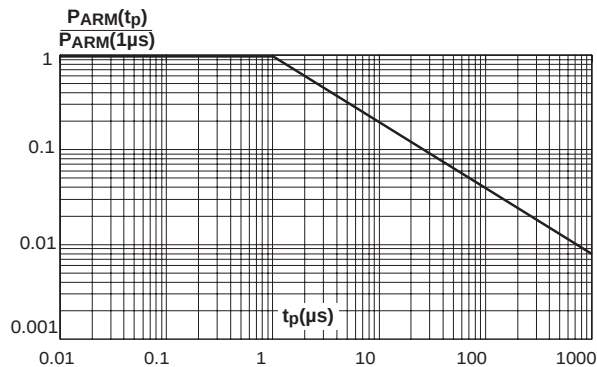


Fig. 2: Average forward current versus ambient temperature ($\delta=0.5$).

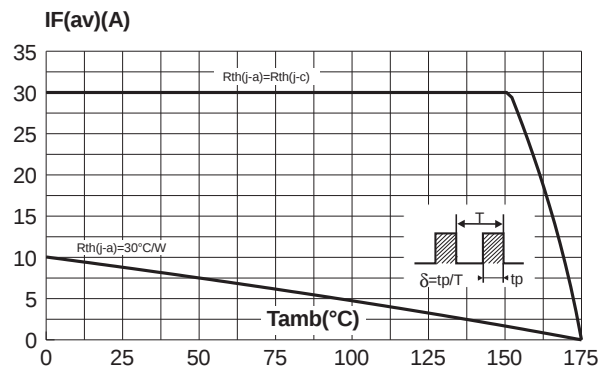


Fig. 4: Normalized avalanche power derating versus junction temperature.

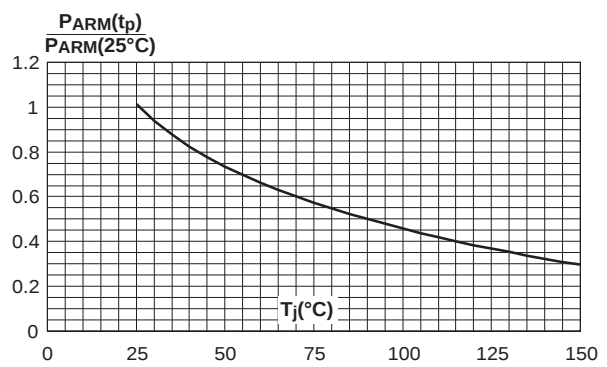


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values).

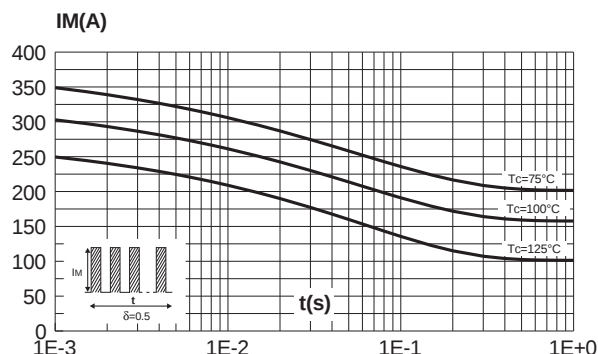


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

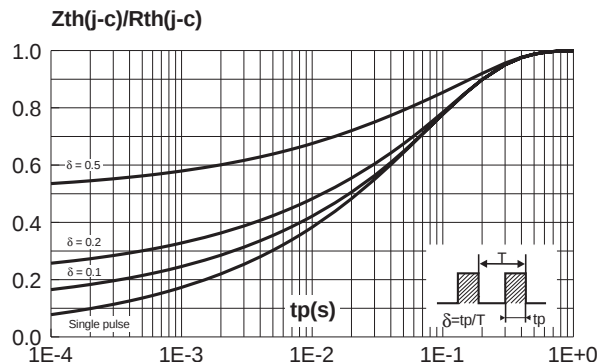


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values)

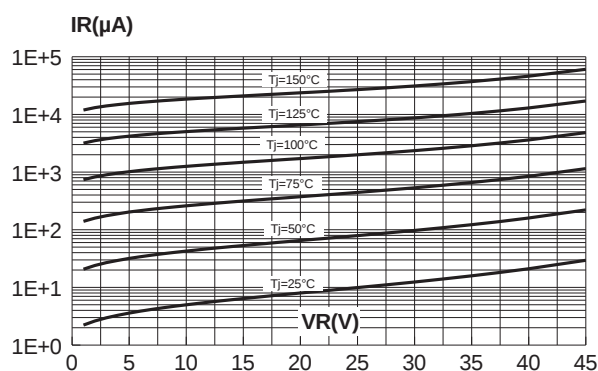


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

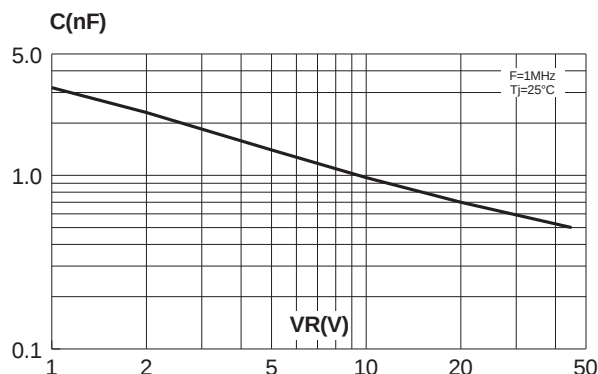


Fig. 9: Forward voltage drop versus forward current (maximum values).

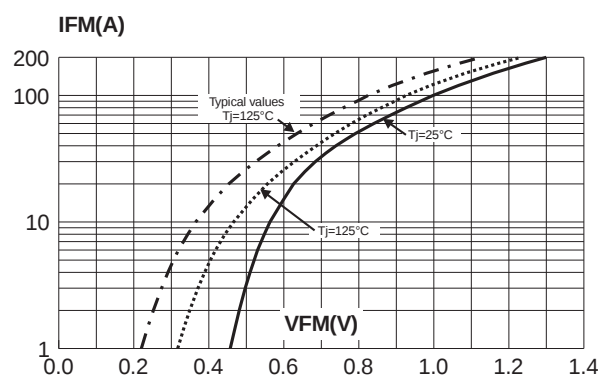
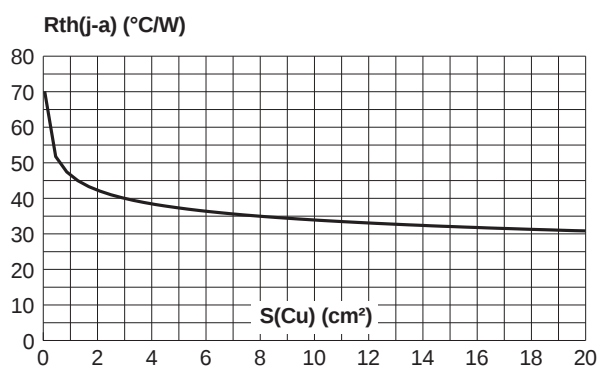
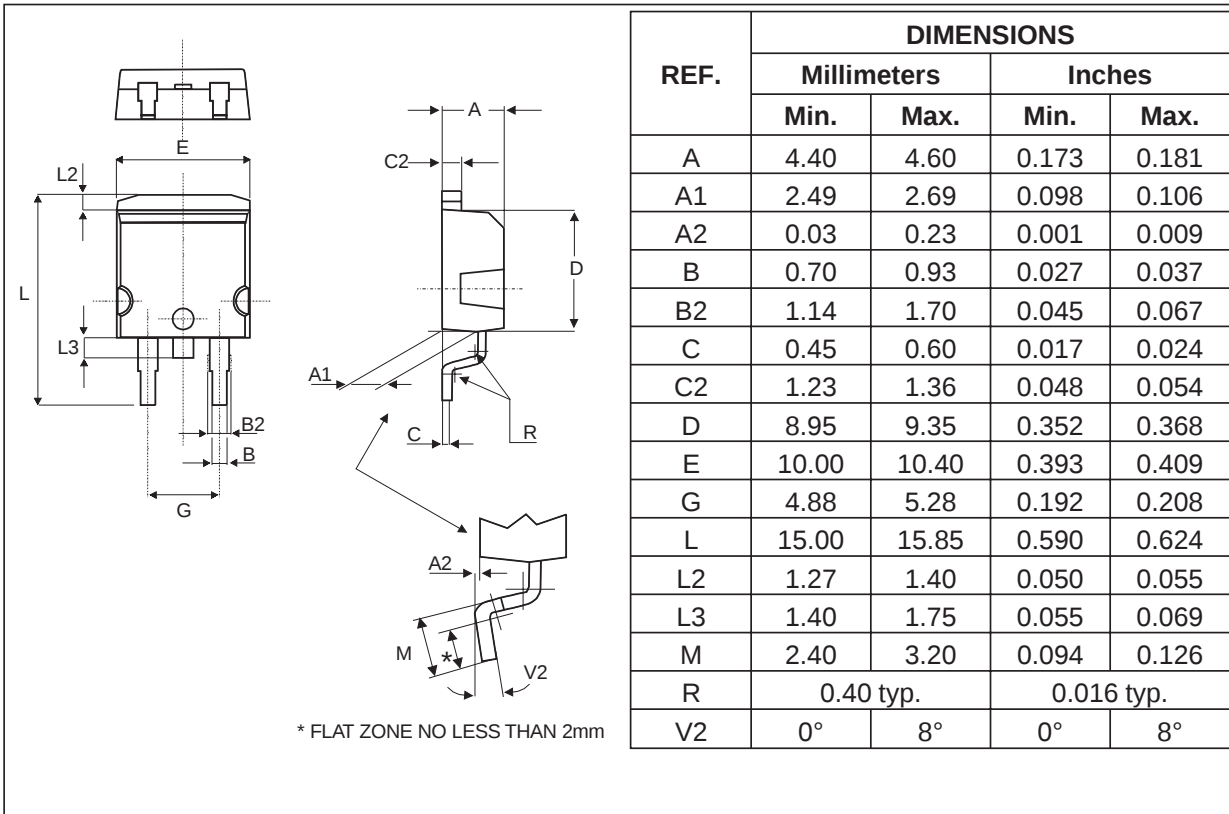


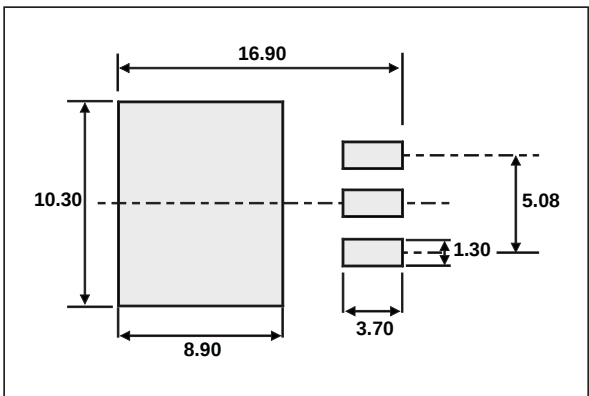
Fig. 10: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board, copper thickness: $35\mu\text{m}$)



PACKAGE MECHANICAL DATA
D²PAK



FOOTPRINT DIMENSIONS (in millimeters)



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

- Epoxy meets UL94, V0

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