

## POWER SCHOTTKY RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	5 A
$V_{RRM}$	40 V
$T_j(max)$	150°C
$V_F(max)$	0.44 V

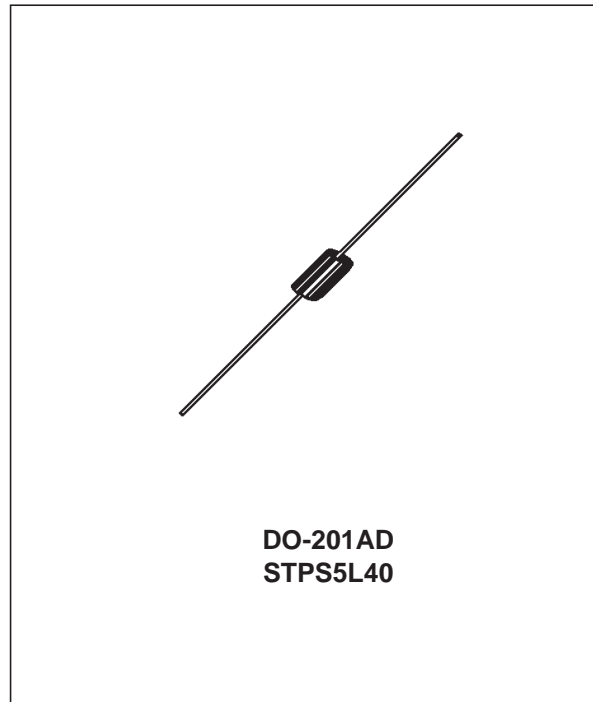
### FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP FOR HIGHER EFFICIENCY.
- LOW THERMAL RESISTANCE
- AVALANCHE CAPABILITY SPECIFIED

### DESCRIPTION

Axial Power Schottky rectifier suited for Switch Mode Power Supplies and high frequency inverters.

Packaged in DO-201AD, this device is intended for use in low voltage output for small battery chargers & consumer SMPS such as DVD and Set-Top-Box..



### ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$V_{RRM}$	Repetitive peak reverse voltage		40	V
$I_{F(RMS)}$	RMS forward current		15	A
$I_{F(AV)}$	Average forward current	$T_I = 100^\circ\text{C} \quad \delta = 0.5$	5	A
$I_{FSM}$	Surge non repetitive forward current	Half wave, single phase $t_p = 10 \text{ ms}$	150	A
$P_{ARM}$	Repetitive peak avalanche power	$t_p = 1 \mu\text{s} \quad T_j = 25^\circ\text{C}$	2700	W
$T_{stg}$	Storage temperature range		- 65 to + 150	°C
$T_j$	Maximum operating junction temperature *		150	°C
$dV/dt$	Critical rate of rise of reverse voltage (rated $V_R$ , $T_j = 25^\circ\text{C}$ )		10000	V/ $\mu\text{s}$

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

# STPS5L40

## THERMAL PARAMETERS

Symbol	Parameter		Value	Unit
$R_{th(j-a)}$	Junction to ambient		75	°C/W
$R_{th(j-l)}$	Junction to leads	Lead length = 10 mm	15	°C/W

## STATIC ELECTRICAL CHARACTERISTICS

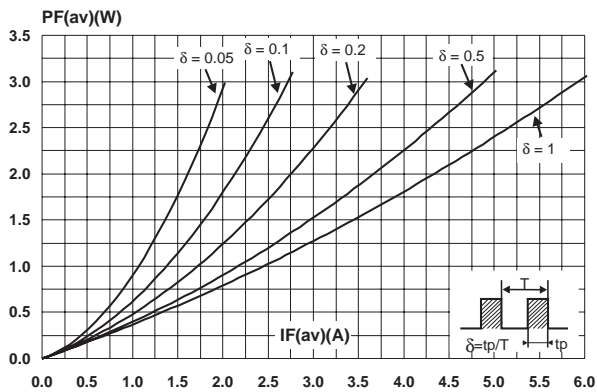
Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
$I_R^*$	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			0.2	mA
		$T_j = 100^\circ\text{C}$			8	25	
		$T_j = 125^\circ\text{C}$			25	75	
$V_F^*$	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 5\text{ A}$		0.44	0.50	V
		$T_j = 100^\circ\text{C}$			0.40	0.46	
		$T_j = 125^\circ\text{C}$			0.38	0.44	

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

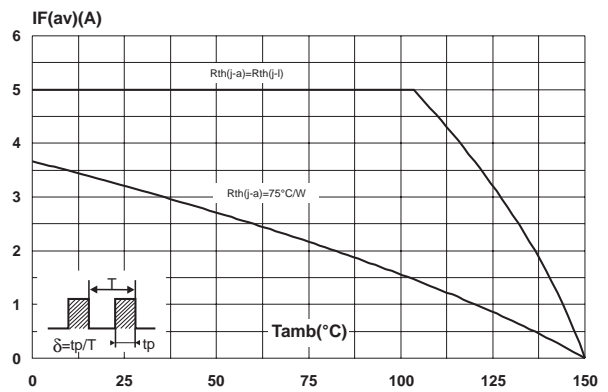
To evaluate the maximum conduction losses use the following equation:

$$P = 0.34 \times I_{F(AV)} + 0.028 \times I_{F(RMS)}^2$$

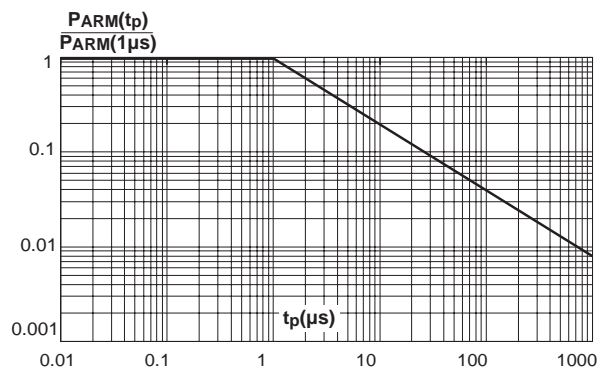
**Fig. 1:** Conduction losses versus average current.



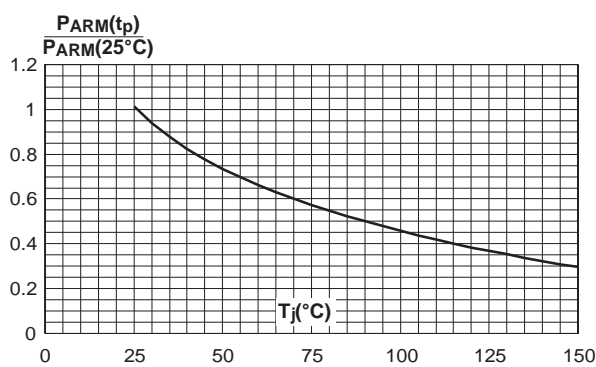
**Fig. 2:** Average forward current versus ambient temperature ( $\delta = 0.5$ ).



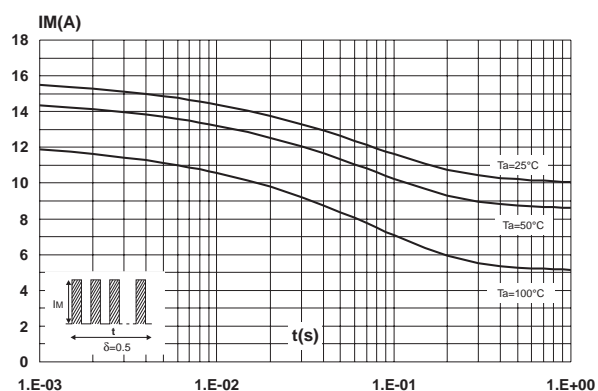
**Fig. 3:** Normalized avalanche power derating versus pulse duration.



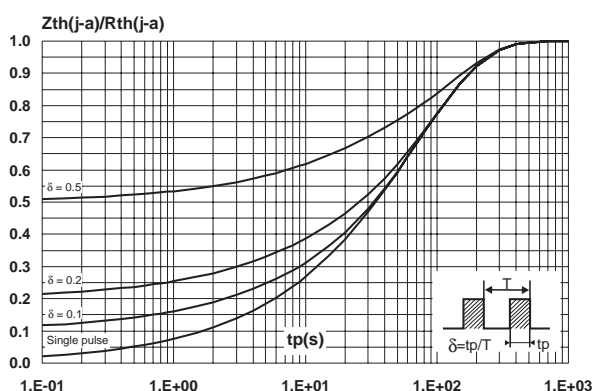
**Fig. 4:** Normalized avalanche power derating versus junction temperature.



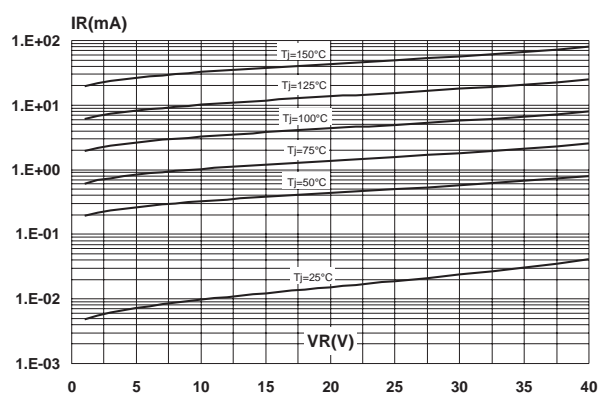
**Fig. 5:** Non repetitive surge peak forward current versus overload duration (maximum values).



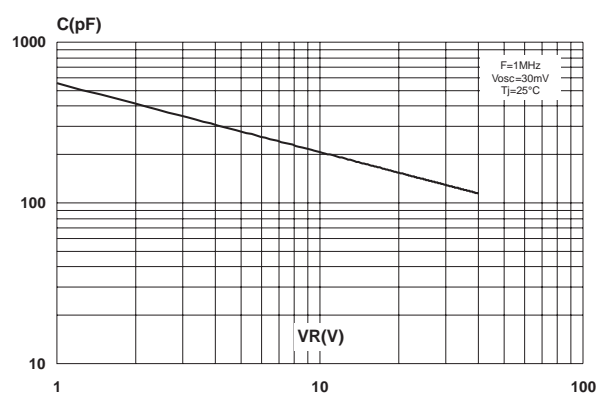
**Fig. 6:** Relative variation of thermal impedance junction to ambient versus pulse duration.



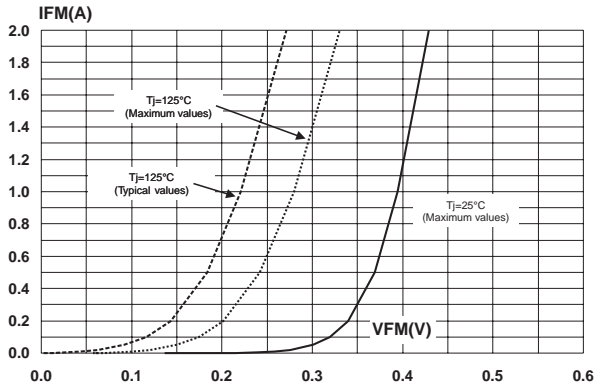
**Fig. 7:** Reverse leakage current versus reverse voltage applied (typical values).



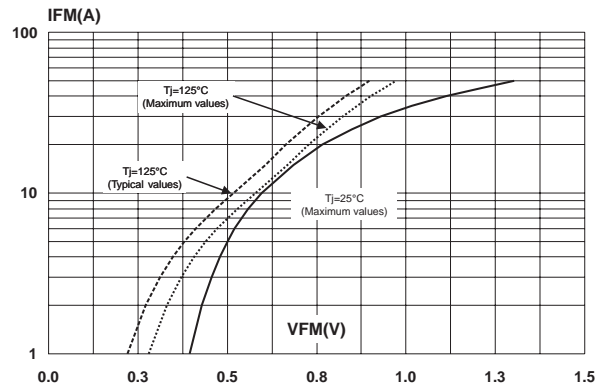
**Fig. 8:** Junction capacitance versus reverse voltage applied (typical values).



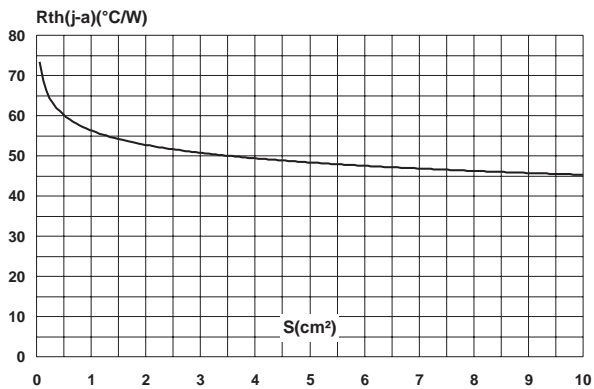
**Fig. 9-1:** Forward voltage drop versus forward current (low level).



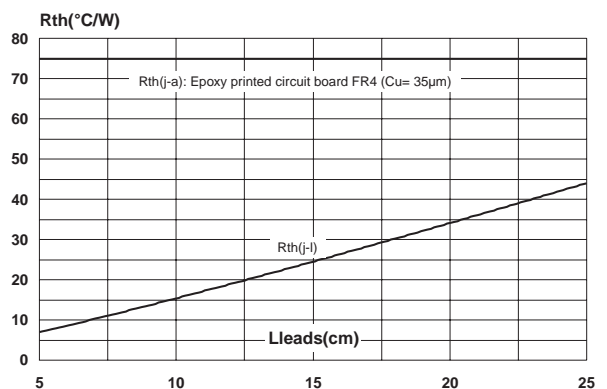
**Fig. 9-2:** Forward voltage drop versus forward current (high level).



**Fig. 10:** Thermal resistance junction to ambient versus copper surface under each lead (epoxy printed board FR4, Cu = 35 $\mu\text{m}$ ).

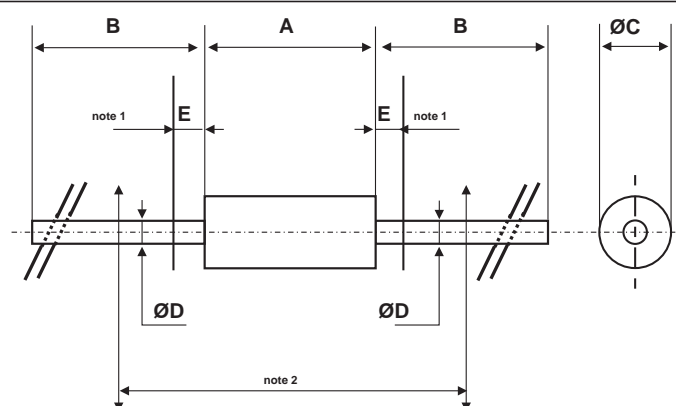


**Fig. 11:** Thermal resistances versus leads length.



## PACKAGE MECHANICAL DATA

DO-201AD plastic



REF.	DIMENSIONS				NOTES
	Millimeters		Inches		
	Min.	Max.	Min.	Max.	
A		9.50		0.374	1 - The lead diameter $\varnothing D$ is not controlled over zone E 2 - The minimum axial length within which the device may be placed with its leads bent at right angles is 0.59" (15 mm)
B	25.40		1.000		
$\varnothing C$		5.30		0.209	
$\varnothing D$		1.30		0.051	
E		1.25		0.049	

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS5L40	STPS5L40	DO-201AD	1.12g	600	Ammopack
STPS5L40RL	STPS5L40	DO-201AD	1.12g	1900	Tape and reel

- WHITE BAND INDICATES CATHODE
- EPOXY MEETS UL94,V0

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