

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

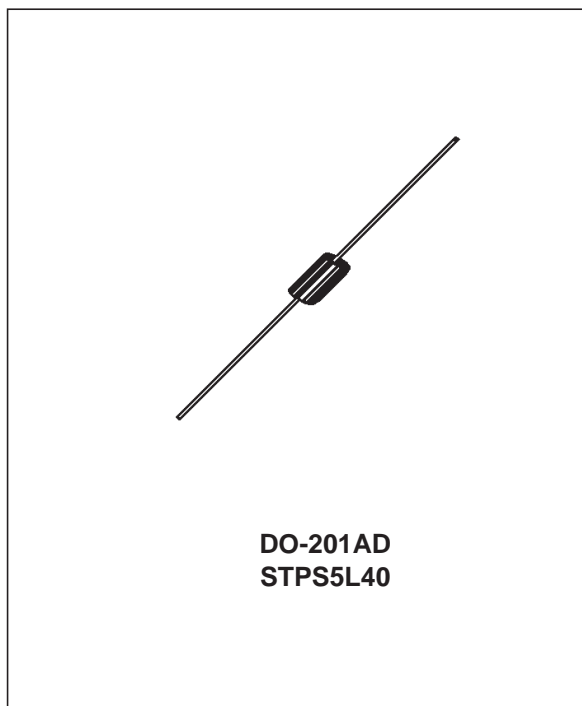
FEATURES AND BENEFITS

- Negligible switching losses
- Low forward voltage drop for higher efficiency.
- Low thermal resistance

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	5	A
I_{FSM}	Surge non repetitive forward current	150	A
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/ μs

* : $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th}(j-a)}$ 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	$^{\circ}\text{C}/\text{W}$
$R_{th(j-l)}$	Junction to leads	15	$^{\circ}\text{C}/\text{W}$
	Lead length = 10 mm		

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.

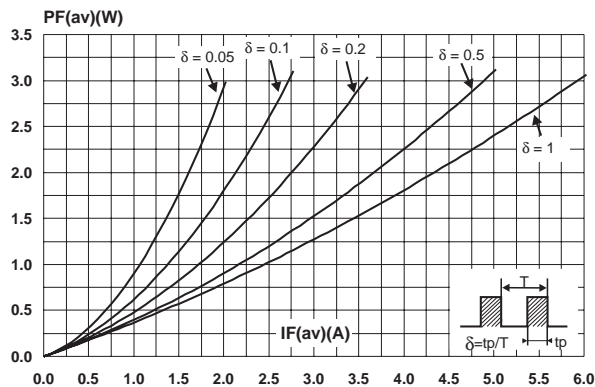


Fig. 2: Average forward current versus ambient temperature ($\delta = 0.5$).

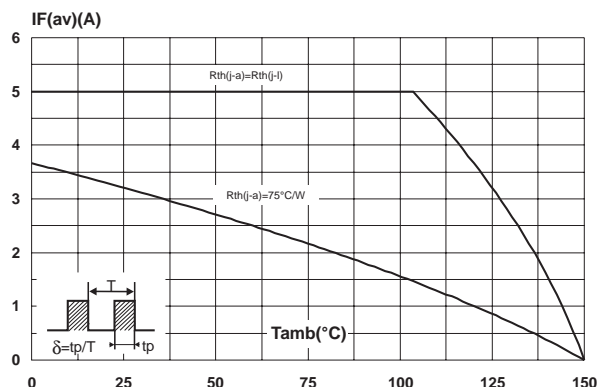


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values).

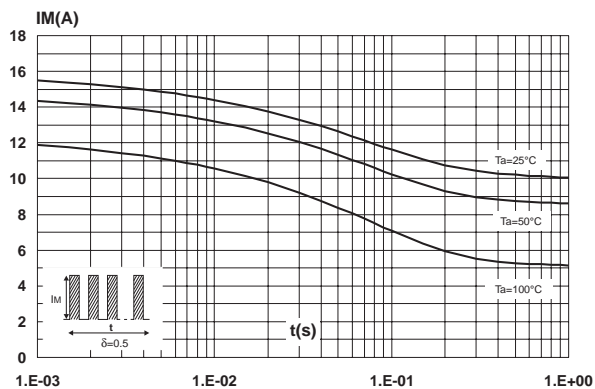


Fig. 4: Relative variation of thermal impedance junction to ambient versus pulse duration.

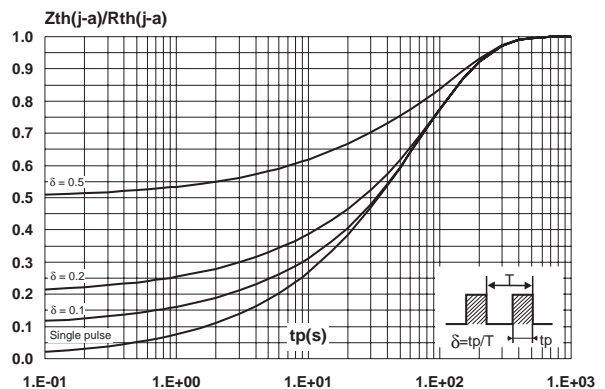


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values).

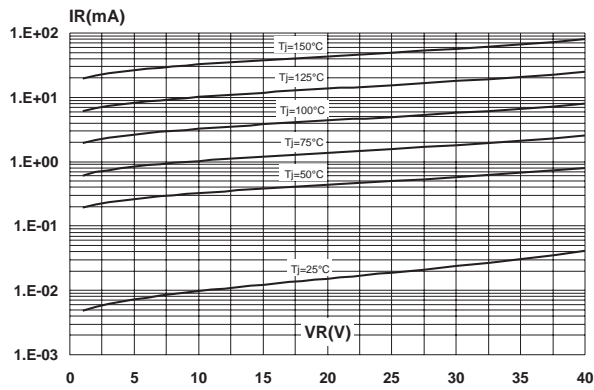


Fig. 6: Junction capacitance versus reverse voltage applied (typical values).

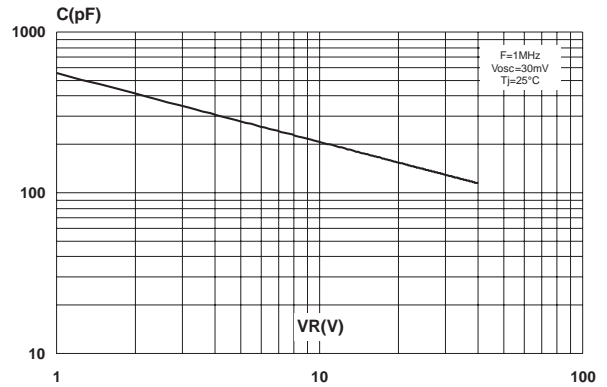


Fig. 7-1: Forward voltage drop versus forward current (low level).

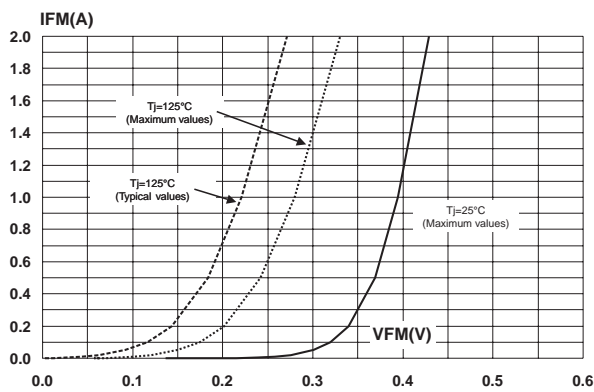


Fig. 7-2: Forward voltage drop versus forward current (high level).

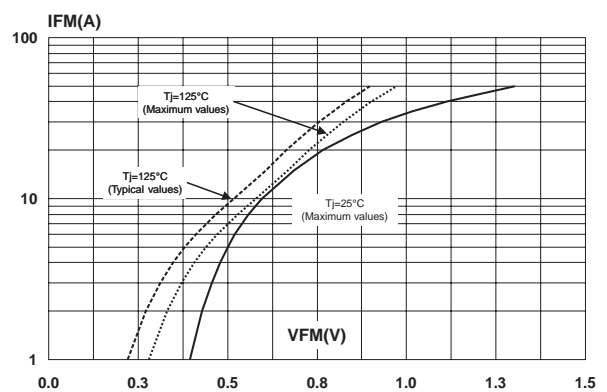


Fig. 8: Thermal resistance junction to ambient versus copper surface under each lead (epoxy printed board FR4, $\text{Cu} = 35\mu\text{m}$).

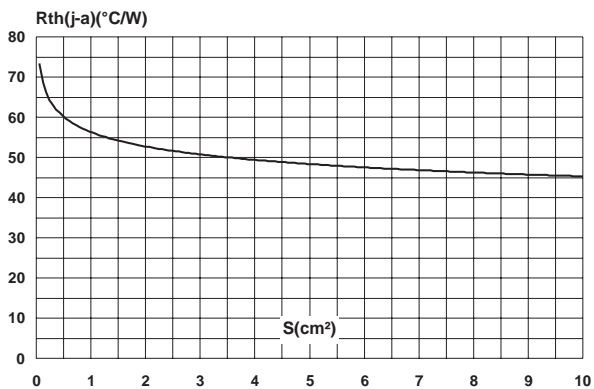
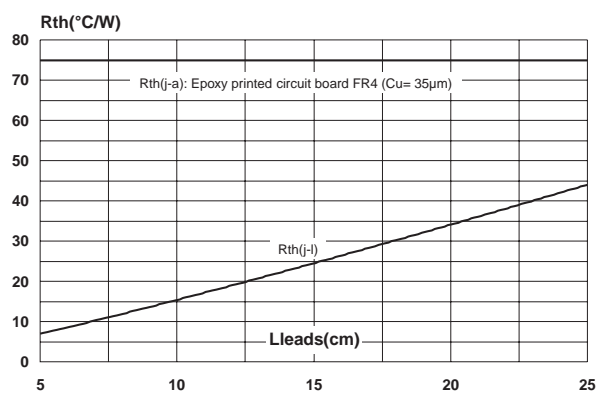


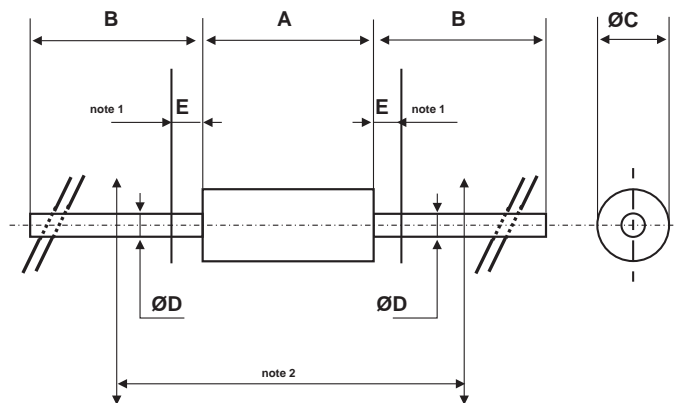
Fig. 9: Thermal resistances versus leads length.



STPS5L40

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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