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1N582x

LOW DROP POWER SCHOTTKY RECTIFIER

MAIN PRODUCTS CHARACTERISTICS

$I_F(AV)$	3 A
V_{RRM}	40 V
T_j	150°C
$V_F(max)$	0.475 V

FEATURES AND BENEFITS

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- EXTREMELY FAST SWITCHING
- LOW FORWARD VOLTAGE DROP
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

Axial Power Schottky rectifier suited for Switch Mode Power Supplies and high frequency DC to DC converters. Packaged in DO-201AD these devices are intended for use in low voltage, high frequency inverters, free wheeling, polarity protection and small battery chargers.



DO-201AD

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value			Unit
			1N5820	1N5821	1N5822	
V_{RRM}	Repetitive peak reverse voltage		20	30	40	V
$I_F(RMS)$	RMS forward current		10			A
$I_F(AV)$	Average forward current	$T_L = 100^\circ C \quad \delta = 0.5$			3	A
		$T_L = 110^\circ C \quad \delta = 0.5$	3	3		A
I_{FSM}	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ Sinusoidal	80			A
P_{ARM}	Repetitive peak avalanche power	$t_p = 1\mu s \quad T_j = 25^\circ C$	1700			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		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
$R_{th(j-a)}$	Junction to ambient	Lead length = 10 mm	80	°C/W
$R_{th(j-l)}$	Junction to lead	Lead length = 10 mm	25	°C/W

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests Conditions		1N5820	1N5821	1N5822	Unit
I_R^*	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$	2	2	2	mA
		$T_j = 100^\circ\text{C}$		20	20	20	mA
V_F^*	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 3\text{ A}$	0.475	0.5	0.525	V
		$T_j = 25^\circ\text{C}$	$I_F = 9.4\text{ A}$	0.85	0.9	0.95	V

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

To evaluate the conduction losses use the following equations :

$$P = 0.33 \times I_{F(AV)} + 0.035 I_{F(RMS)}^2 \text{ for } 1N5820 / 1N5821$$

$$P = 0.33 \times I_{F(AV)} + 0.060 I_{F(RMS)}^2 \text{ for } 1N5822$$

Fig. 1: Average forward power dissipation versus average forward current (1N5820/1N5821).

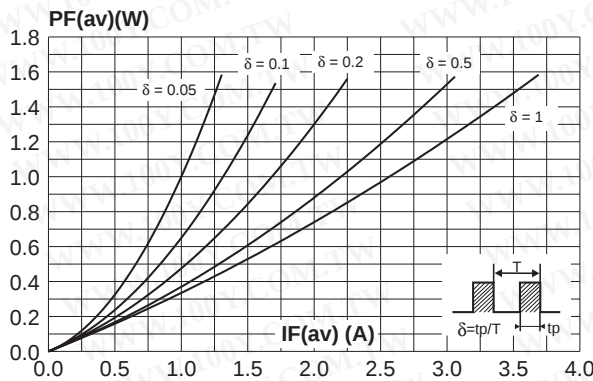


Fig. 3: Normalized avalanche power derating versus pulse duration.

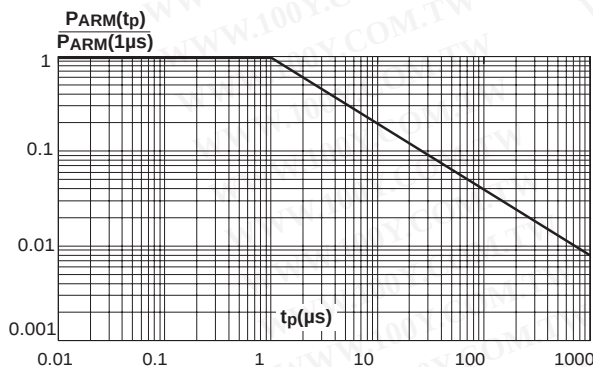


Fig. 2: Average forward power dissipation versus average forward current (1N5822).

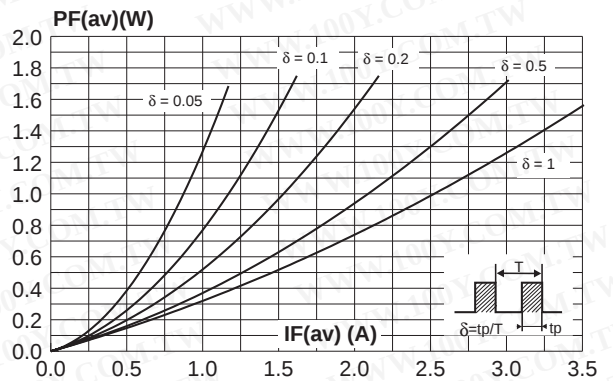


Fig. 4: Normalized avalanche power derating versus junction temperature.

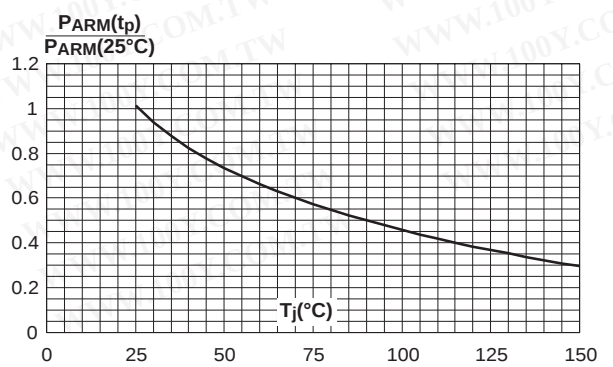


Fig. 5-1: Average forward current versus ambient temperature ($\delta=0.5$) (1N5820/1N5821).

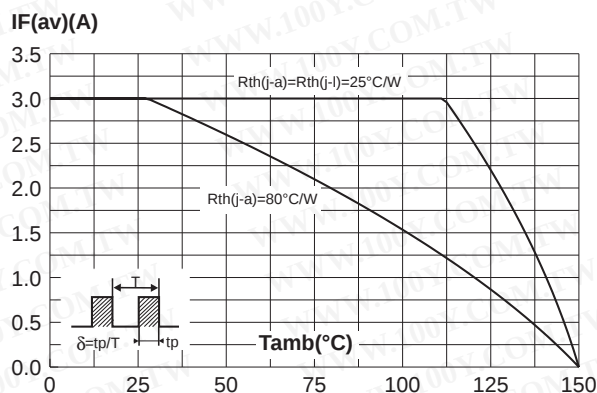


Fig. 5-2: Average forward current versus ambient temperature ($\delta=0.5$) (1N5822).

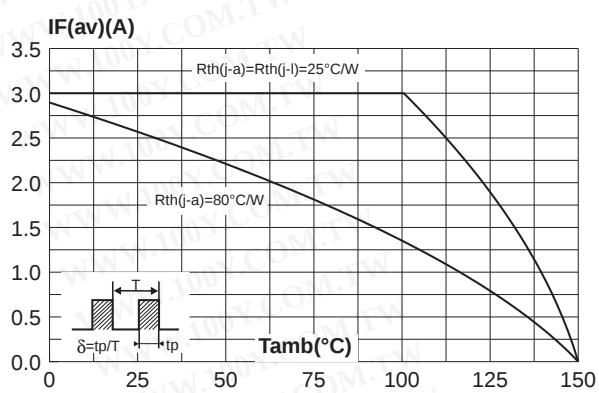


Fig. 6-1: Non repetitive surge peak forward current versus overload duration (maximum values) (1N5820/1N5821).

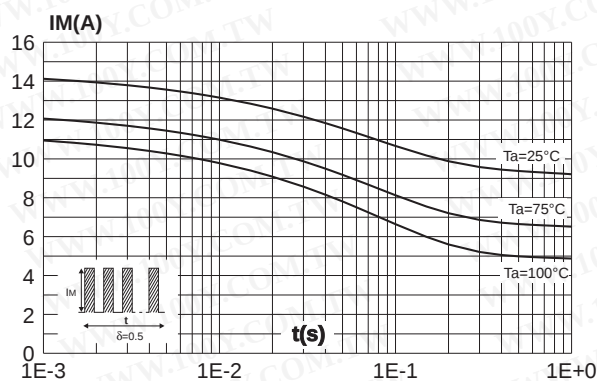


Fig. 6-2: Non repetitive surge peak forward current versus overload duration (maximum values) (1N5822).

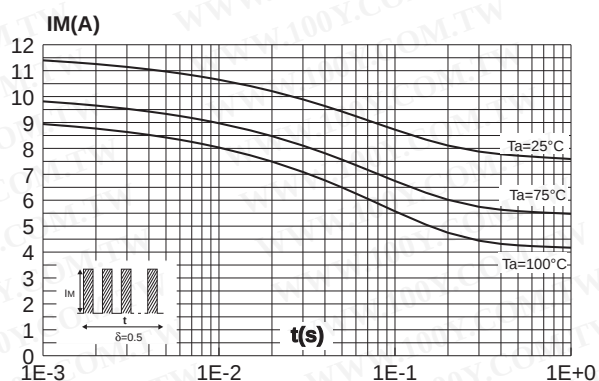


Fig. 7: Relative variation of thermal impedance junction to ambient versus pulse duration (epoxy printed circuit board, e(Cu)=35mm, recommended pad layout).

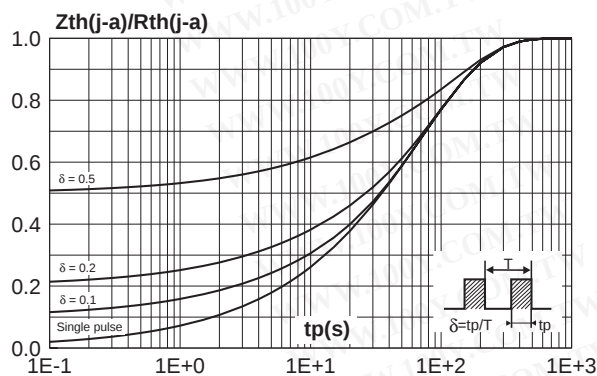
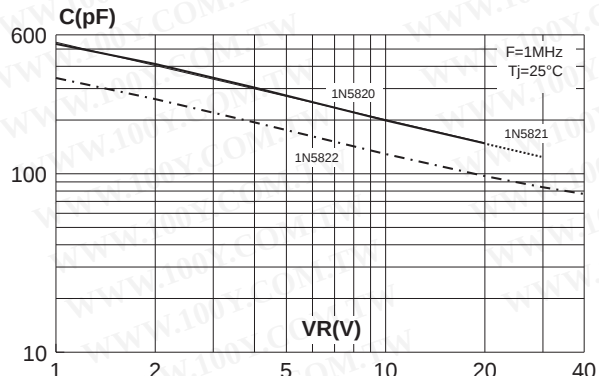


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).



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Fig. 9-1: Reverse leakage current versus reverse voltage applied (typical values) (1N5820/1N5821).

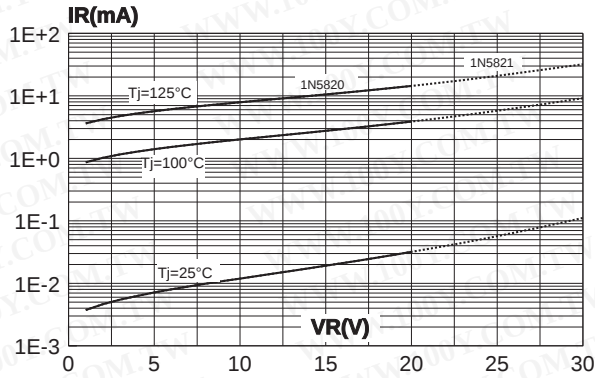


Fig. 9-2: Reverse leakage current versus reverse voltage applied (typical values) (1N5822).

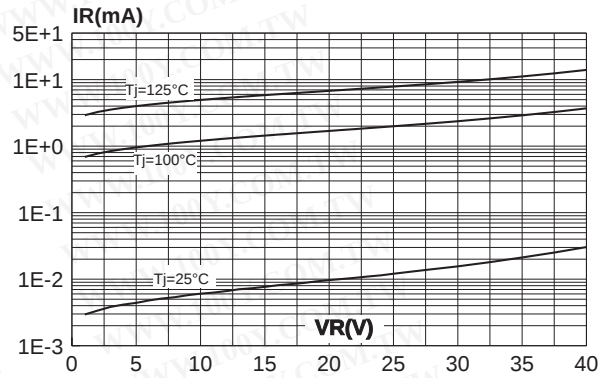


Fig. 10-1: Forward voltage drop versus forward current (typical values) (1N5820/1N5821).

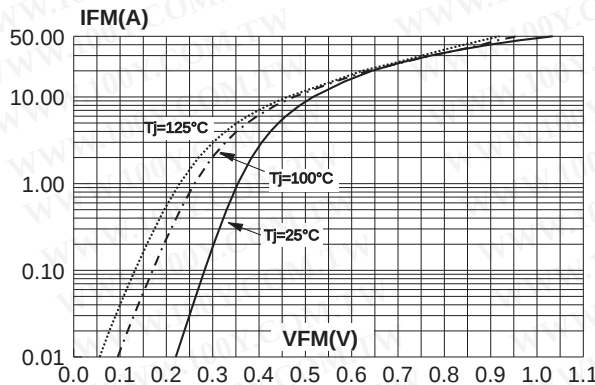


Fig. 10-2: Forward voltage drop versus forward current (typical values) (1N5822).

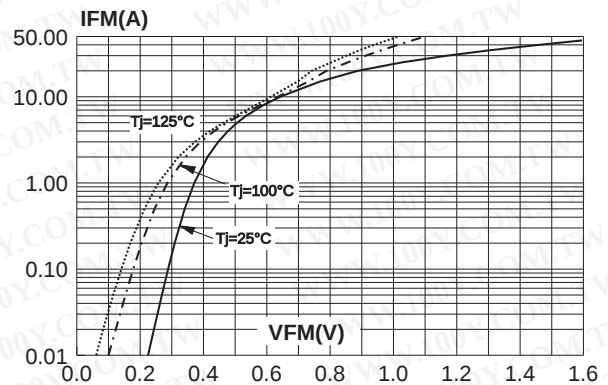
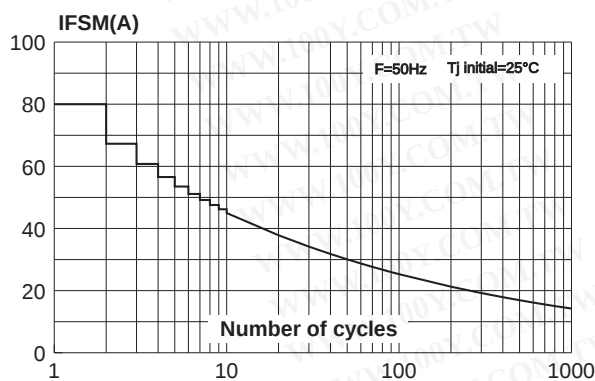
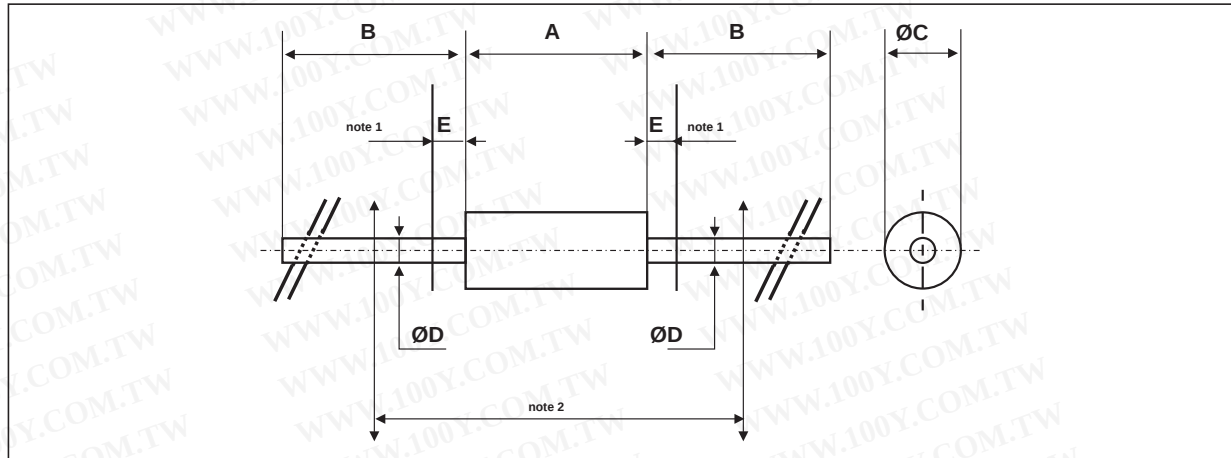


Fig. 11: Non repetitive surge peak forward current versus number of cycles.



PACKAGE MECHANICAL DATA
 DO-201AD plastic



REF.	DIMENSIONS				NOTES
	Millimeters		Inches		
	Min.	Max.	Min.	Max.	
A		9.50		0.374	1 - The lead diameter ϕ 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		
ϕ C		5.30		0.209	
ϕ D		1.30		0.051	
E		1.25		0.049	

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
1N582x	Part number cathode ring	DO-201AD	1.12g	600	Ammopack
1N582xRL	Part number cathode ring	DO-201AD	1.12g	1900	Tape & reel

• EPOXY MEETS UL94,V0

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