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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

DO-201AD

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.

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°C δ = 0.5			3	A
		T_L = 110°C δ = 0.5	3	3		A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal	80			A
P_{ARM}	Repetitive peak avalanche power	tp = 1µs Tj = 25°C	1700			W
T_{stg}	Storage temperature range		- 65 to + 150			°C
Tj	Maximum operating junction temperature *		150			°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

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	Tj = 25°C	$V_R = V_{RRM}$	2	2	2	mA
		Tj = 100°C		20	20	20	mA
V_F *	Forward voltage drop	Tj = 25°C	I_F = 3 A	0.475	0.5	0.525	V
		Tj = 25°C	I_F = 9.4 A	0.85	0.9	0.95	V

Pulse test : * tp = 380 µs, δ < 2%

To evaluate the conduction losses use the following equations :

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

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

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

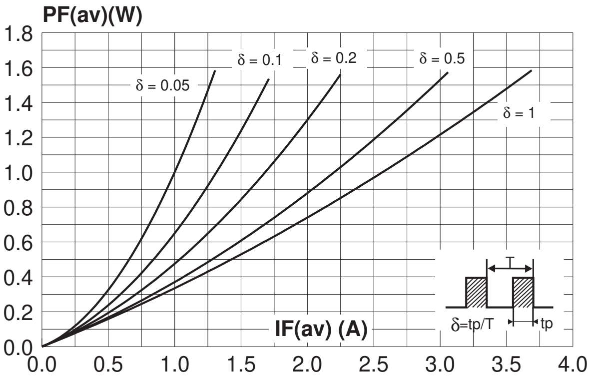


Fig. 2: Average forward power dissipation versus average forward current (1N5822).

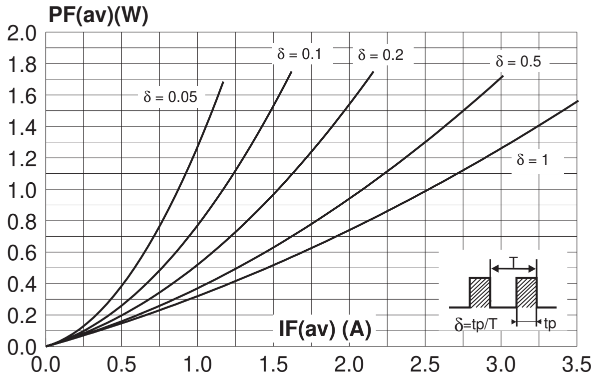


Fig. 3: Normalized avalanche power derating versus pulse duration.

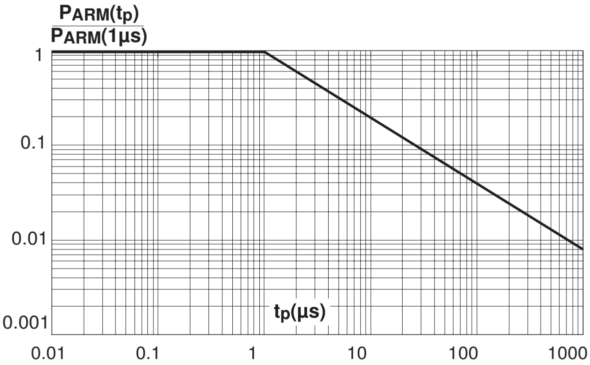


Fig. 4: Normalized avalanche power derating versus junction temperature.

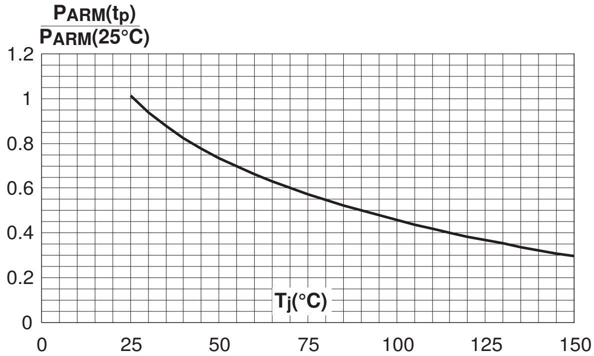


Fig. 5-1: Average forward current versus ambient temperature (δ=0.5) (1N5820/1N5821).

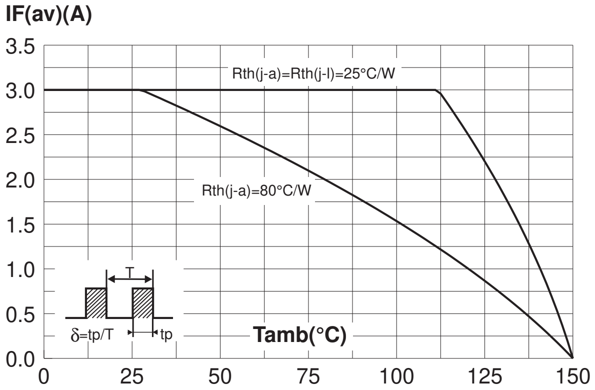


Fig. 5-2: Average forward current versus ambient temperature (δ=0.5) (1N5822).

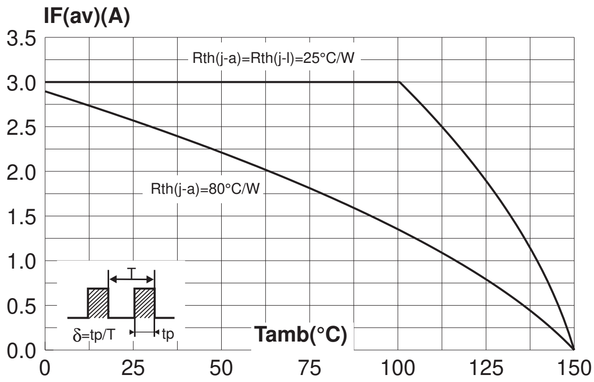


Fig. 6-1: Non repetitive surge peak forward current versus overload duration (maximum values) (1N5820/1N5821).

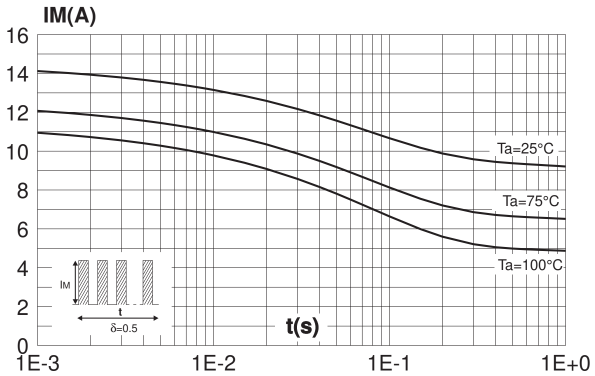


Fig. 6-2: Non repetitive surge peak forward current versus overload duration (maximum values) (1N5822).

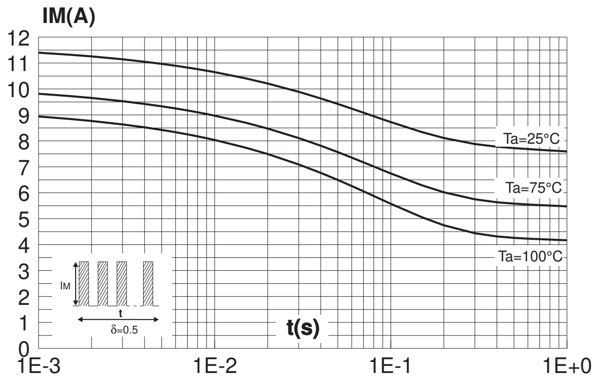


Fig. 7: Relative variation of thermal impedance junction to ambient versus pulse duration (epoxy printed circuit board, e(Cu)=35mm, recommended pad layout).

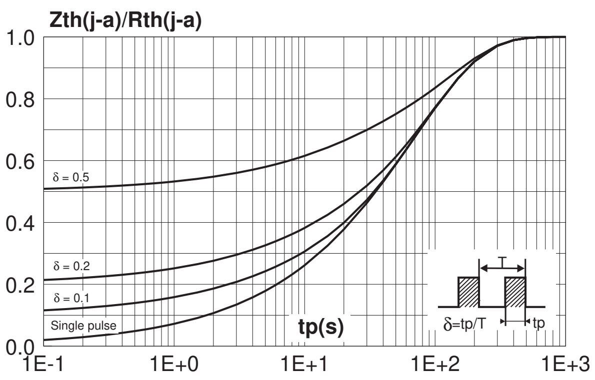


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

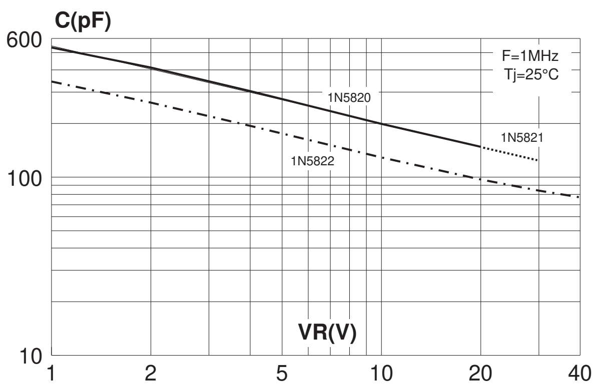


Fig. 9-1: Reverse leakage current versus reverse voltage applied (typical values) (1N5820/1N5821).

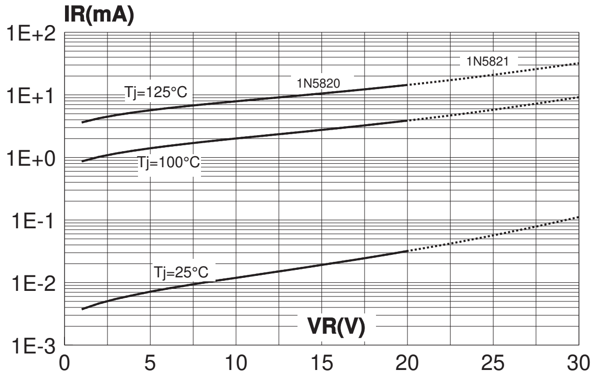


Fig. 9-2: Reverse leakage current versus reverse voltage applied (typical values) (1N5822).

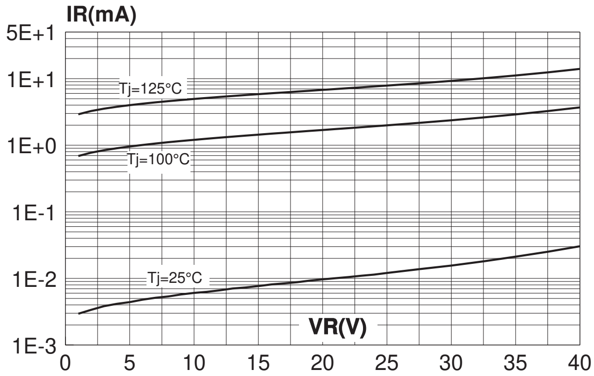


Fig. 10-1: Forward voltage drop versus forward current (typical values) (1N5820/1N5821).

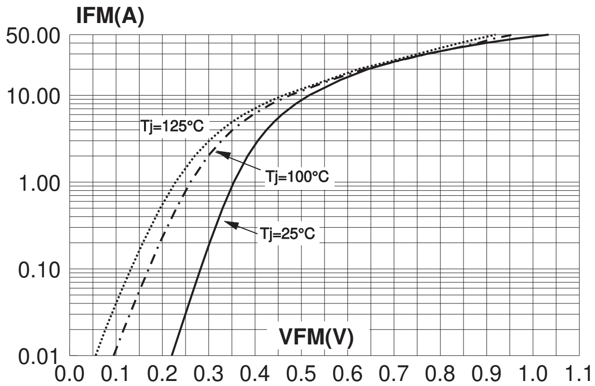


Fig. 10-2: Forward voltage drop versus forward current (typical values) (1N5822).

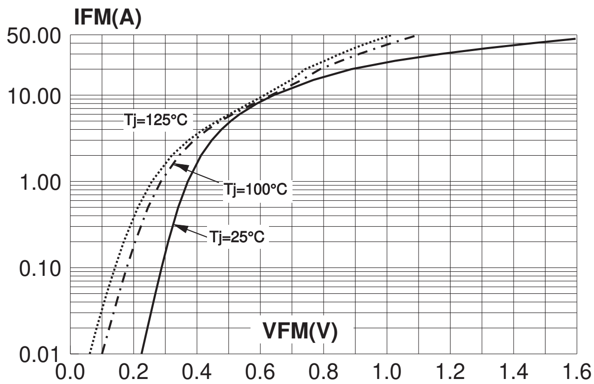
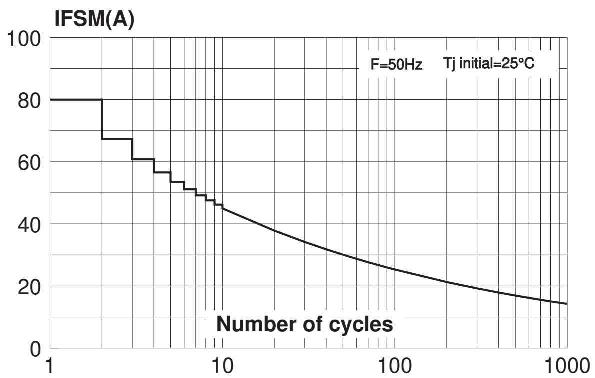
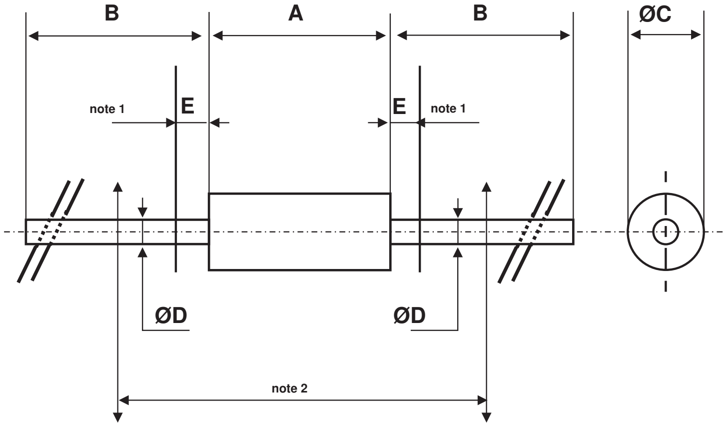


Fig. 11: Non repetitive surge peak forward current versus number of cycles.



PACKAGE MECHANICAL DATA

DO-201AD plastic



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