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
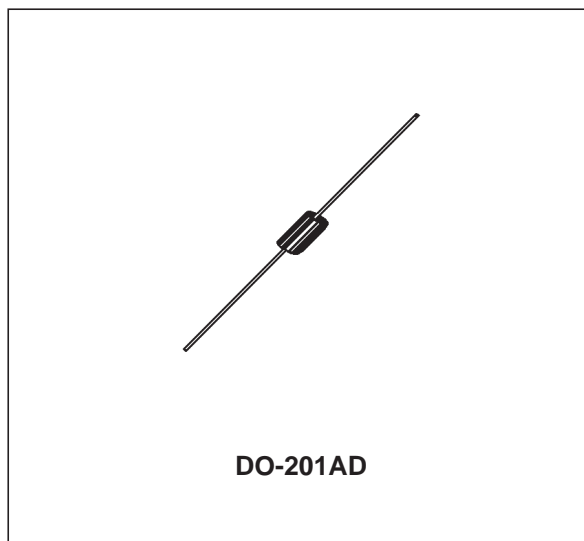
ABSOLUTE RATINGS (limiting values)

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	$T_L = 100°C$ $\delta = 0.5$			3	A
		$T_L = 110°C$ $\delta = 0.5$	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

$* : \dfrac{dPtot}{dTj} < \dfrac{1}{Rth(j-a)}$ 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	$T_j = 25°C$	$V_R = V_{RRM}$	2	2	2	mA
		$T_j = 100°C$		20	20	20	mA
V_F *	Forward voltage drop	$T_j = 25°C$	$I_F = 3\,A$	0.475	0.5	0.525	V
		$T_j = 25°C$	$I_F = 9.4\,A$	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).

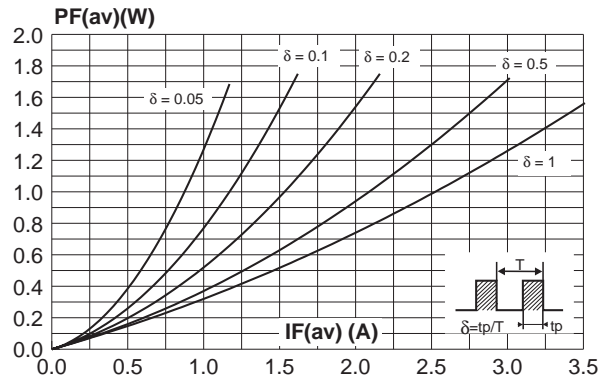**Fig. 3:** Normalized avalanche power derating versus pulse duration.

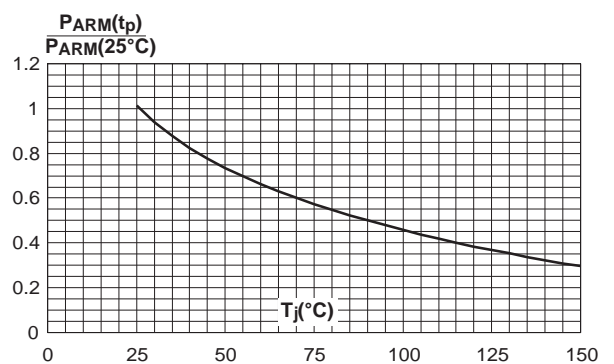**Fig. 4:** Normalized avalanche power derating versus junction temperature.

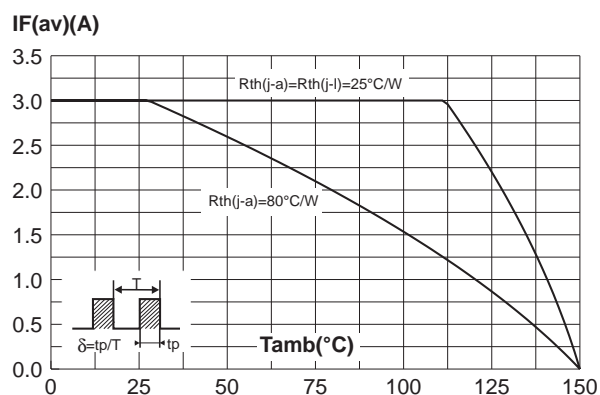**Fig. 5-1:** Average forward current versus ambient temperature (δ=0.5) (1N5820/1N5821).

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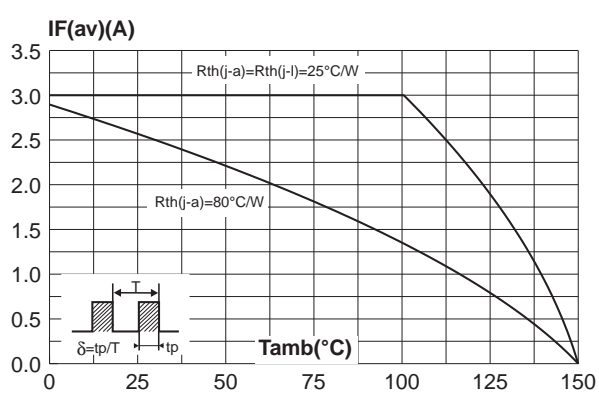

Fig. 6-1: Non repetitive surge peak forward current versus overload duration (maximum values) (1N5820/1N5821).
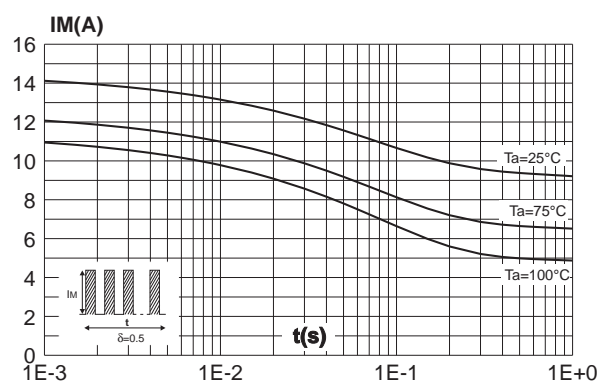

Fig. 6-2: Non repetitive surge peak forward current versus overload duration (maximum values) (1N5822).
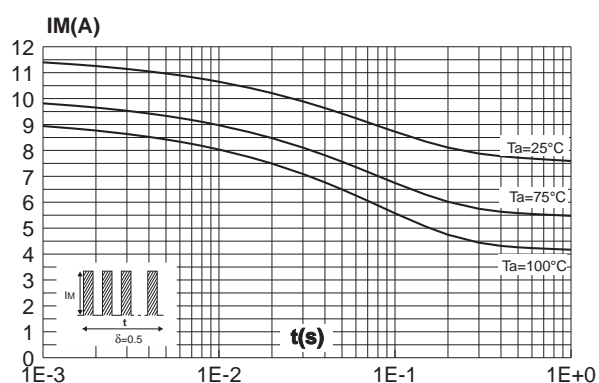

Fig. 7: Relative variation of thermal impedance junction to ambient versus pulse duration (epoxy printed circuit board, e(Cu)=35mm, recommended pad layout).
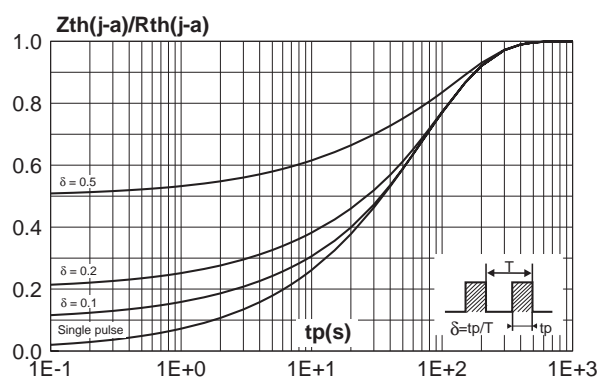
Fig. 8: Junction capacitance versus reverse voltage applied (typical values).
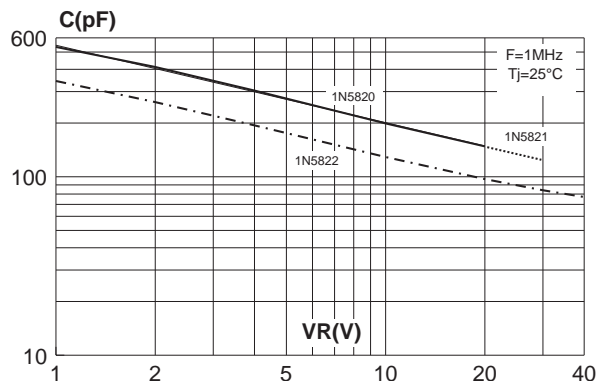
Fig. 9-1: Reverse leakage current versus reverse voltage applied (typical values) (1N5820/1N5821).
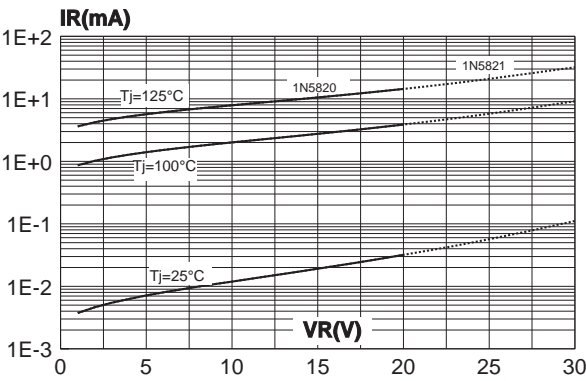

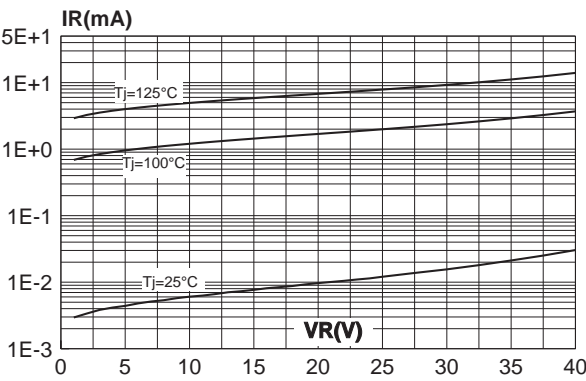**Fig. 9-2:** Reverse leakage current versus reverse voltage applied (typical values) (1N5822).

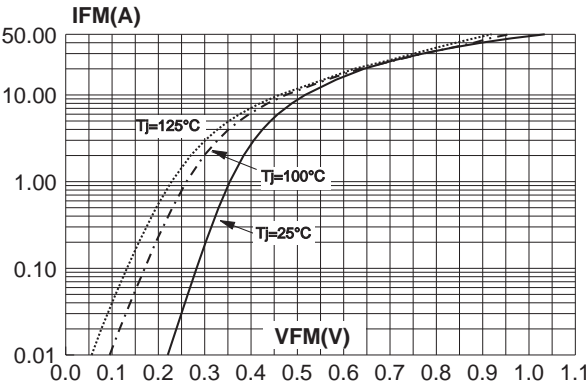**Fig. 10-1:** Forward voltage drop versus forward current (typical values) (1N5820/1N5821).

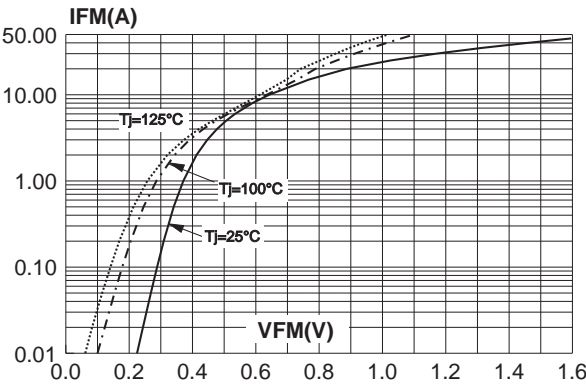**Fig. 10-2:** Forward voltage drop versus forward current (typical values) (1N5822).
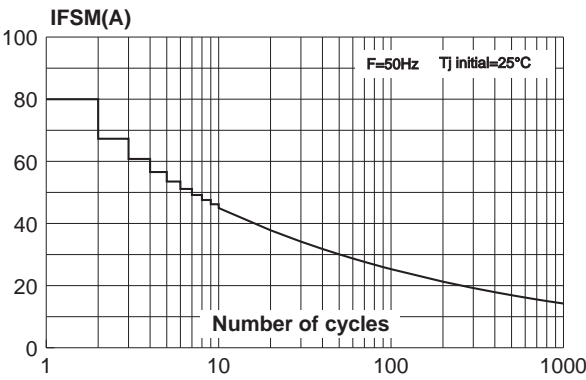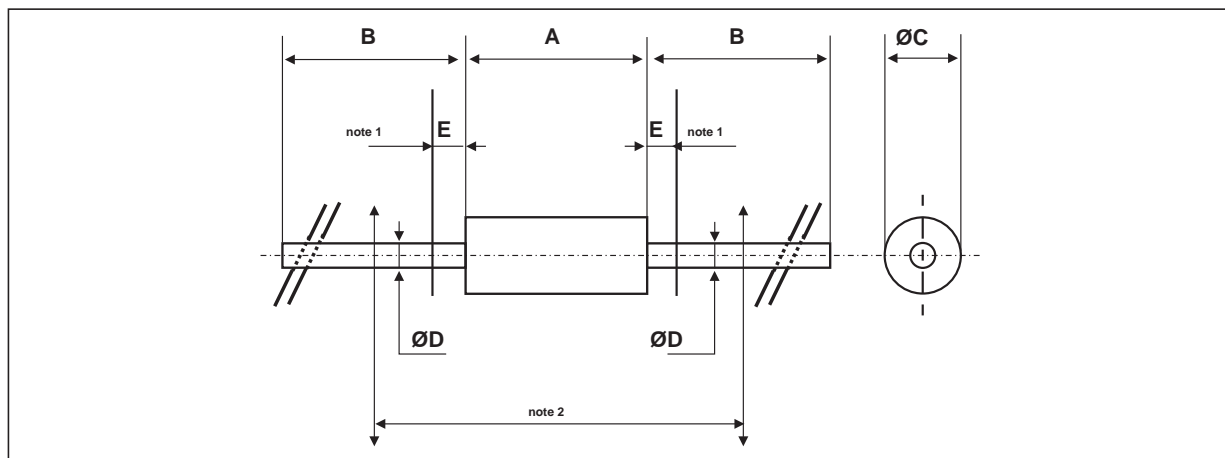

Fig. 11: Non repetitive surge peak forward current versus number of cycles.

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
♠ D		1.30		0.051	placed with its leads bent at right angles is 0.59"(15 mm)
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