

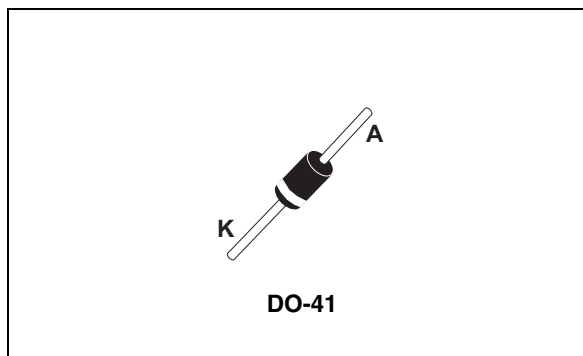
## Low drop power Schottky rectifier

### Features

- 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-41 these devices are intended for use in low voltage, high frequency inverters, free wheeling, polarity protection and small battery chargers.



**Table 1. Device summary**

Symbol	Value	Unit
$I_{F(AV)}$	1	A
$V_{RRM}$	40	V
$T_j$	150	°C
$V_F$ (max)	0.45	V

# 1 Characteristics

**Table 2. Absolute ratings (limiting values)**

Symbol	Parameter		Value			Unit
			1N5817	1N5818	1N5819	
V <sub>RRM</sub>	Repetitive peak reverse voltage		20	30	40	V
I <sub>F(RMS)</sub>	Forward rms current		10			A
I <sub>F(AV)</sub>	Average forward current	T <sub>L</sub> = 125 °C, δ = 0.5	1			A
I <sub>FSM</sub>	Surge non repetitive forward current	t <sub>p</sub> = 10 ms Sinusoidal	25			A
P <sub>ARM</sub>	Repetitive peak avalanche power	t <sub>p</sub> = 1 μs, T <sub>j</sub> = 25 °C	1200	1200	900	W
T <sub>stg</sub>	Storage temperature range		-65 to + 150			°C
T <sub>j</sub>	Maximum operating junction temperature <sup>(1)</sup>		150			°C
dV/dt	Critical rate of rise of reverse voltage		10000			V/μs

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

**Table 3. Thermal resistances**

Symbol	Parameter		Value	Unit
R <sub>th(j-a)</sub>	Junction to ambient	Lead length = 10 mm	100	°C/W
R <sub>th(j-l)</sub>	Junction to lead	Lead length = 10 mm	45	°C/W

**Table 4. Static electrical characteristics**

Symbol	Parameter	Tests conditions		1N5817	1N5818	1N5819	Unit
I <sub>R</sub> <sup>(1)</sup>	Reverse leakage current	T <sub>j</sub> = 25 °C	V <sub>R</sub> = V <sub>RRM</sub>	0.5	0.5	0.5	mA
		T <sub>j</sub> = 100 °C		10	10	10	mA
V <sub>F</sub> <sup>(1)</sup>	Forward voltage drop	T <sub>j</sub> = 25 °C	I <sub>F</sub> = 1 A	0.45	0.50	0.55	V
		T <sub>j</sub> = 25 °C	I <sub>F</sub> = 3 A	0.75	0.80	0.85	V

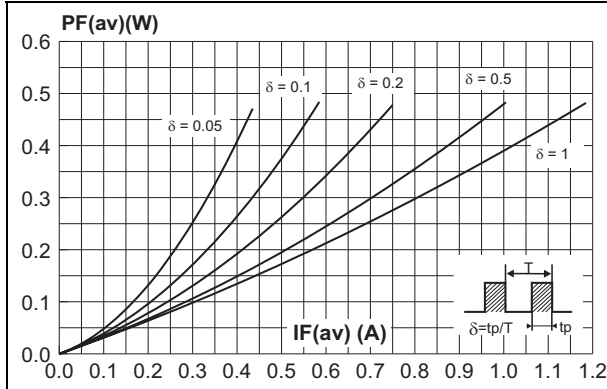
1. Pulse test : t<sub>p</sub> = 380 μs, δ < 2%

To evaluate the conduction losses use the following equations :

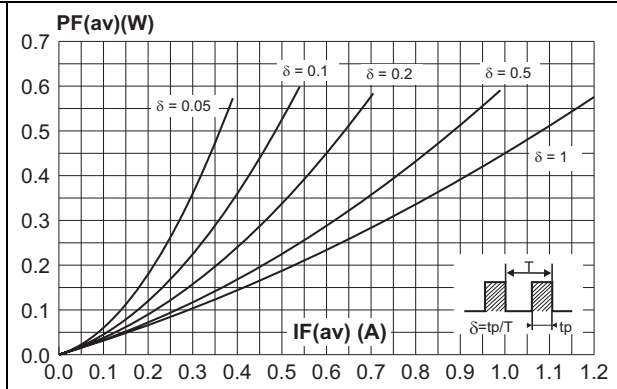
$$P = 0.3 \times I_{F(AV)} + 0.090 I_{F2(RMS)}^2 \text{ for 1N5817 / 1N5818}$$

$$P = 0.3 \times I_{F(AV)} + 0.150 I_{F2(RMS)}^2 \text{ for 1N5819}$$

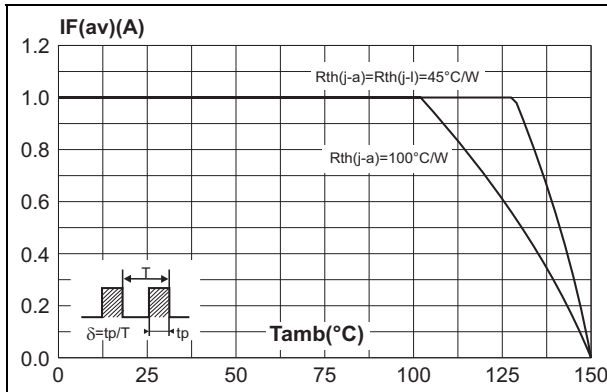
**Figure 1. Average forward power dissipation versus average forward current (1N5817/1N5818)**



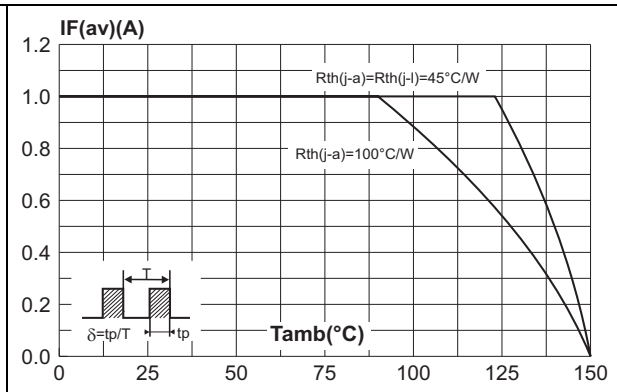
**Figure 2. Average forward power dissipation versus average forward current (1N5819)**



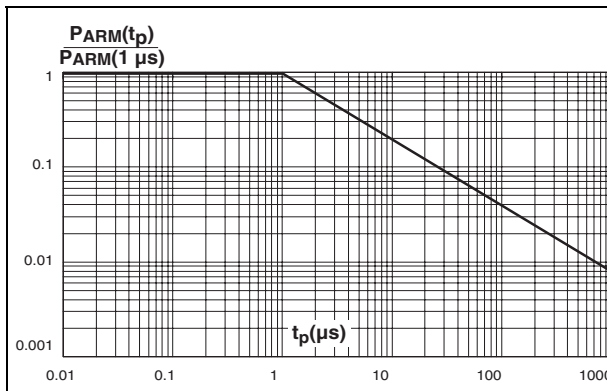
**Figure 3. Average forward current versus ambient temperature (delta = 0.5) (1N5817/1N5818)**



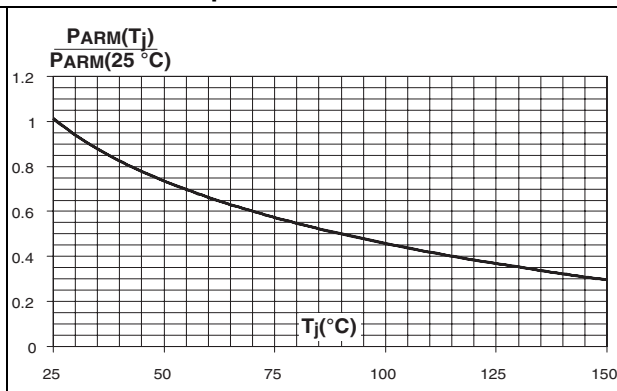
**Figure 4. Average forward current versus ambient temperature (delta = 0.5) (1N5819)**



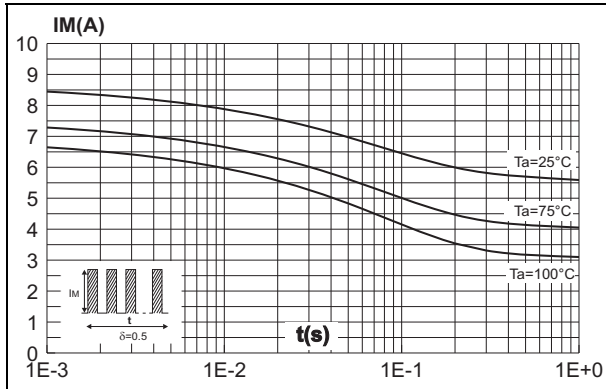
**Figure 5. Normalized avalanche power derating versus pulse duration**



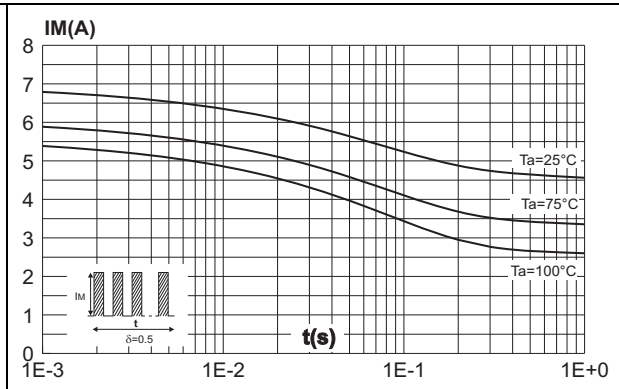
**Figure 6. Normalized avalanche power derating versus junction temperature**



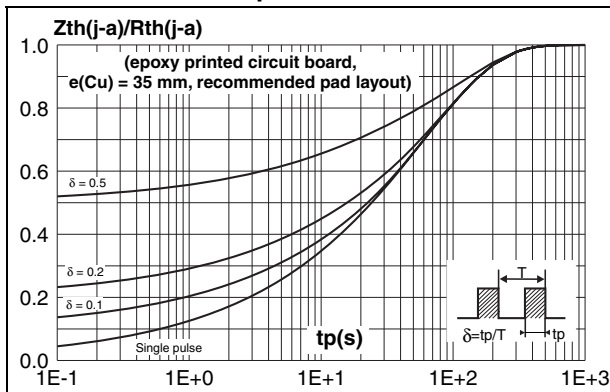
**Figure 7. Non repetitive surge peak forward current versus overload duration (maximum values) (1N5817/1N5818)**



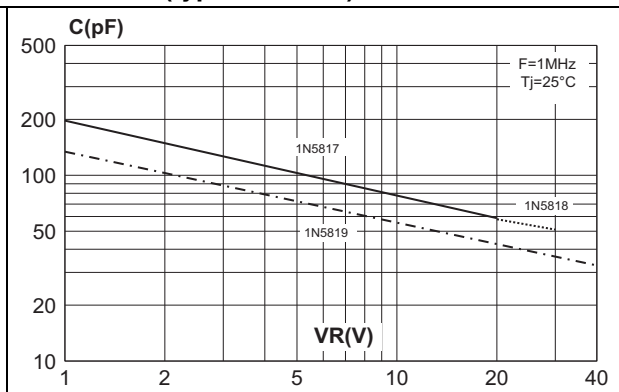
**Figure 8. Non repetitive surge peak forward current versus overload duration (maximum values) (1N5819)**



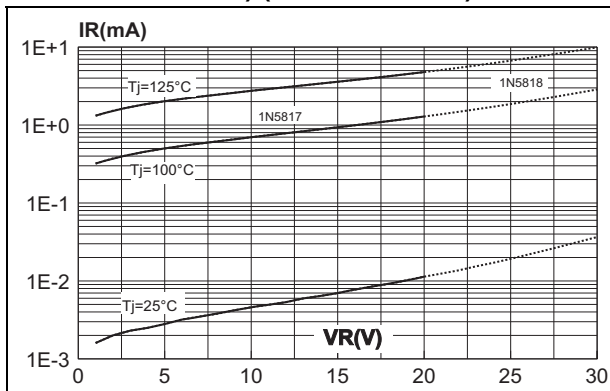
**Figure 9. Relative variation of thermal impedance junction to ambient versus pulse duration**



**Figure 10. Junction capacitance versus reverse voltage applied (typical values)**



**Figure 11. Reverse leakage current versus reverse voltage applied (typical values) (1N5817/1N5818)**



**Figure 12. Reverse leakage current versus reverse voltage applied (typical values) (1N5819)**

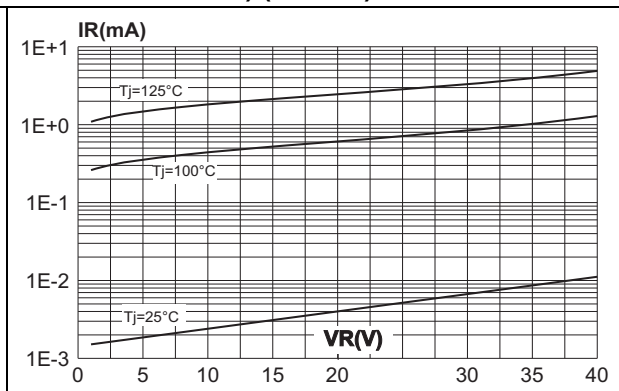


Figure 13. Forward voltage drop versus forward current (typical values) (1N5817/1N5818)

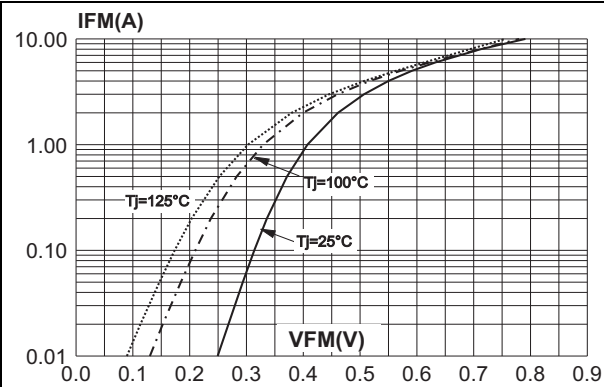


Figure 14. Forward voltage drop versus forward current (typical values) (1N5819)

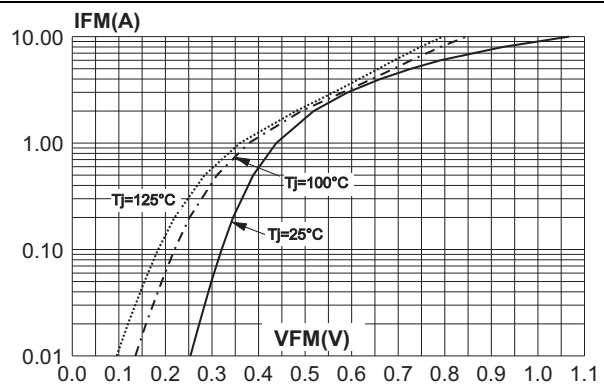
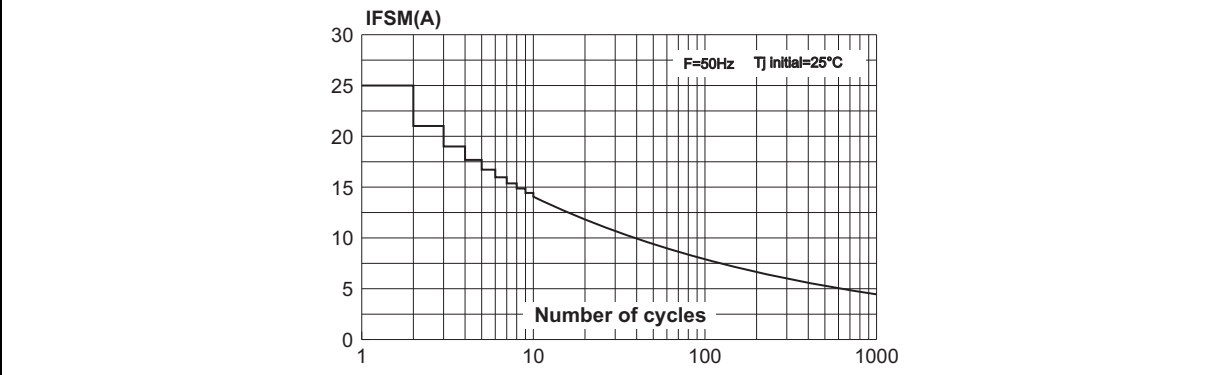


Figure 15. Non repetitive surge peak forward current versus number of cycles



## 2 Package Information

- Epoxy meets UL94, V0
- Band indicates cathode

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**Table 5. DO-41 (Plastic) dimensions**

	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
	A	4.07	5.20	0.160
B	2.04	2.71	0.080	0.107
C	25.4		1	
D	0.71	0.86	0.028	0.034

## 3 Ordering information

**Table 6. Ordering information**

Order code	Marking	Package	Weight	Base qty	Delivery mode
1N581x	Part number cathode ring	DO-41	0.34 g	2000	Ammopack
1N581xRL	Part number cathode ring	DO-41	0.34 g	5000	Tape and reel

## 4 Revision history

**Table 7. Document revision history**

Date	Revision	Changes
Jul-2003	4A	Last update.
04-Jul-2011	5	Updated <a href="#">Table 5.: DO-41 (Plastic) dimensions.</a>

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