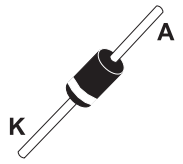
1N5817, 1N5818, 1N5819

Low drop power Schottky rectifier

Features

- Very small conduction losses
- Negligible switching losses
- Extremely fast switching
- Low forward voltage drop
- Avalanche capability specified



DO-41

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_{RRM}	Repetitive peak reverse voltage		20	30	40	V
$I_{F(RMS)}$	Forward rms current		10			A
$I_{F(AV)}$	Average forward current	T_L = 125 °C, δ = 0.5	1			A
I_{FSM}	Surge non repetitive forward current	t_p = 10 ms Sinusoidal	25			A
P_{ARM}	Repetitive peak avalanche power	t_p = 1 µs, T_j = 25 °C	1200	1200	900	W
T_{stg}	Storage temperature range		-65 to + 150			°C
T_j	Maximum operating junction temperature(1)		150			°C
dV/dt	Critical rate of rise of reverse voltage		10000			V/µs

1. $\frac{dPtot}{dTj} < \frac{1}{Rth(j\text{-}a)}$ condition to avoid thermal runaway for a diode on its own heatsink.

Table 3. Thermal resistances

Symbol	Parameter		Value	Unit
$R_{th\ (j\text{-}a)}$	Junction to ambient	Lead length = 10 mm	100	°C/W
$R_{th\ (j\text{-}l)}$	Junction to lead	Lead length = 10 mm	45	°C/W

Table 4. Static electrical characteristics

Symbol	Parameter	Tests conditions		1N5817	1N5818	1N5819	Unit
I_R (1)	Reverse leakage current	T_j = 25 °C	$V_R = V_{RRM}$	0.5	0.5	0.5	mA
		T_j = 100 °C		10	10	10	mA
V_F (1)	Forward voltage drop	T_j = 25 °C	I_F = 1 A	0.45	0.50	0.55	V
		T_j = 25 °C	I_F = 3 A	0.75	0.80	0.85	V

1. Pulse test : t_p = 380 µs, δ < 2%

To evaluate the conduction losses use the following equations :
$P = 0.3 \times I_{F(AV)} + 0.090\ I_{F^2(RMS)}$ for 1N5817 / 1N5818
$P = 0.3 \times I_{F(AV)} + 0.150\ I_{F^2(RMS)}$ for 1N5819

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

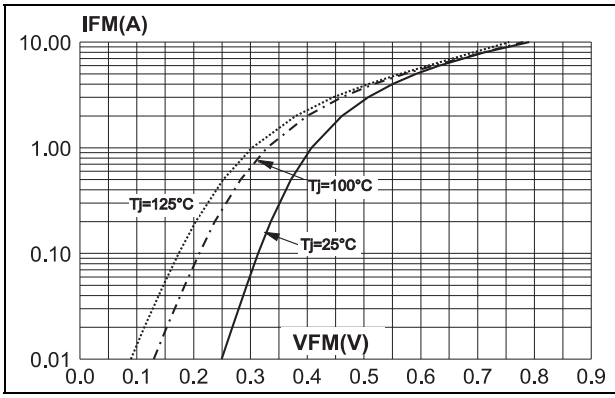


Figure 14. Forward voltage drop versus forward current (typical values) (1N5819)

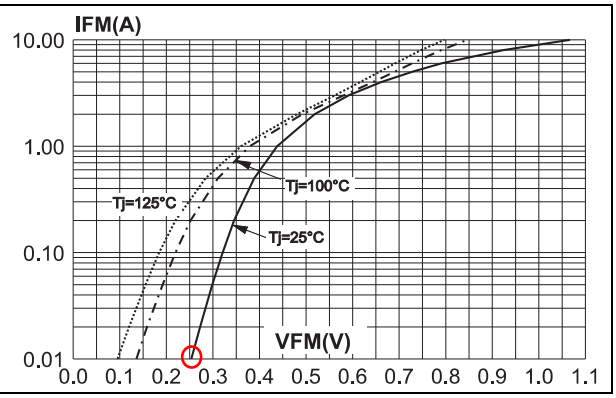


Figure 15. Non repetitive surge peak forward current versus number of cycles