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Jameco Part Number 177949

LOW DROP POWER SCHOTTKY RECTIFIER

MAIN PRODUCTS CHARACTERISTICS

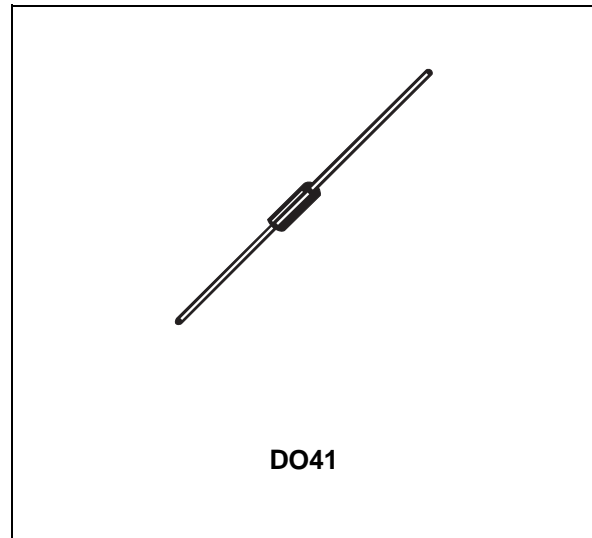
| | |
|---------------------------|---------------|
| I_{F(AV)} | 1 A |
| V_{RRM} | 40 V |
| T_j | 150°C |
| V_{F(max)} | 0.45 V |

FEATURES AND BENEFITS

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

DESCRIPTION

Axial Power Schottky rectifier suited for Switch Mode Power Supplies and high frequency DC to DC converters. Packaged in DO41 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 |
|---------------------|--|---------------|--------|--------|------|
| | | 1N5817 | 1N5818 | 1N5819 | |
| V _{RRM} | Repetitive peak reverse voltage | 20 | 30 | 40 | V |
| I _{F(RMS)} | RMS forward current | 10 | | | A |
| I _{F(AV)} | Average forward current | 1 | | | A |
| I _{FSM} | Surge non repetitive forward current | 25 | | | A |
| 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

1N581x

THERMAL RESISTANCES

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

STATIC ELECTRICAL CHARACTERISTICS

| Symbol | Parameter | Tests Conditions | | 1N5817 | 1N5818 | 1N5819 | Unit |
|---------|-------------------------|----------------------|-----------------|--------|--------|--------|------|
| I_R^* | Reverse leakage current | $T_j = 25^{\circ}C$ | $V_R = V_{RRM}$ | 1 | 1 | 1 | mA |
| | | $T_j = 100^{\circ}C$ | | 10 | 10 | 10 | mA |
| V_F^* | Forward voltage drop | $T_j = 25^{\circ}C$ | $I_F = 1 A$ | 0.45 | 0.55 | 0.6 | V |
| | | $T_j = 25^{\circ}C$ | $I_F = 3 A$ | 0.75 | 0.875 | 0.9 | V |

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

To evaluate the conduction losses use the following equations :

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

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

Fig. 1: Average forward power dissipation versus average forward current (1N5817/1N5818).

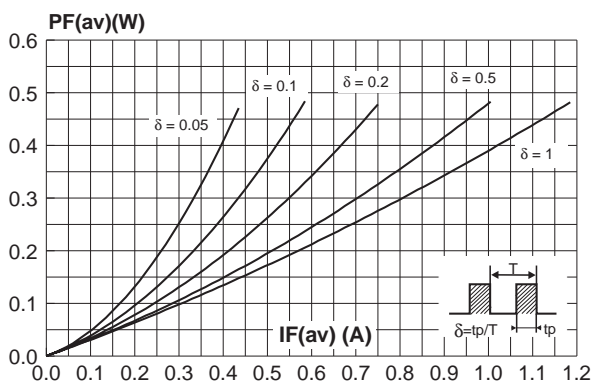


Fig. 2: Average forward power dissipation versus average forward current (1N5819).

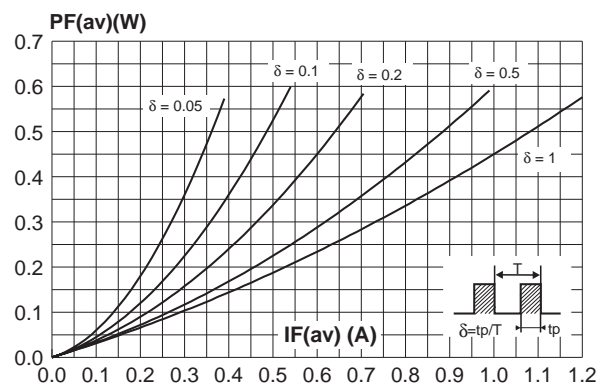


Fig. 2-1: Average forward current versus ambient temperature ($\delta=0.5$) (1N5817/1N5818).

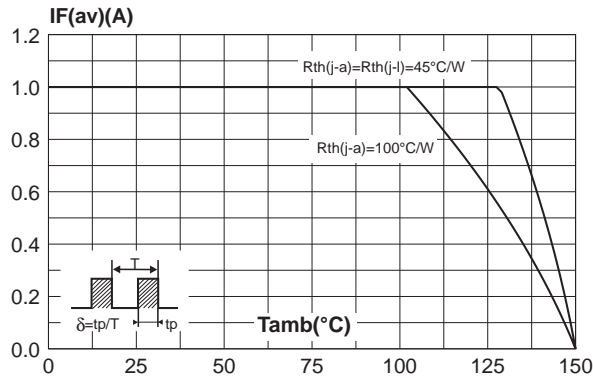


Fig. 2-2: Average forward current versus ambient temperature ($\delta=0.5$) (1N5819).

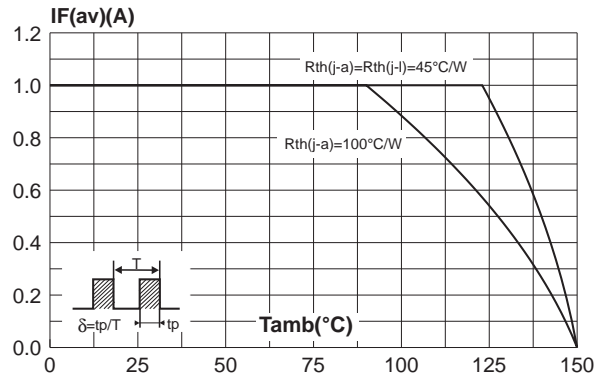


Fig. 3-1: Non repetitive surge peak forward current versus overload duration (maximum values) (1N5817/1N5818).

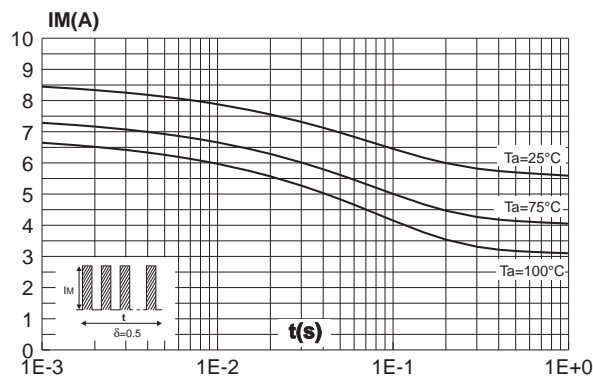


Fig. 3-2: Non repetitive surge peak forward current versus overload duration (maximum values) (1N5819).

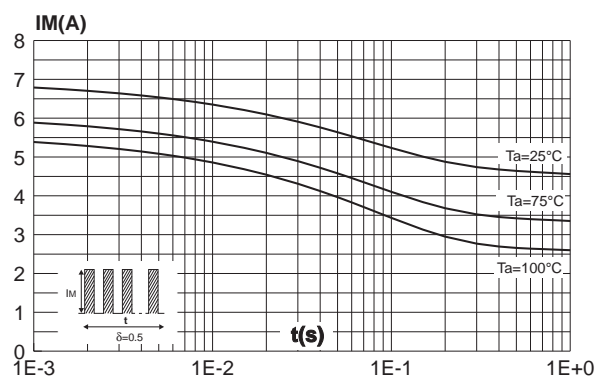


Fig. 4: Relative variation of thermal impedance junction to ambient versus pulse duration (epoxy printed circuit board, e(Cu)=35mm, recommended pad layout).

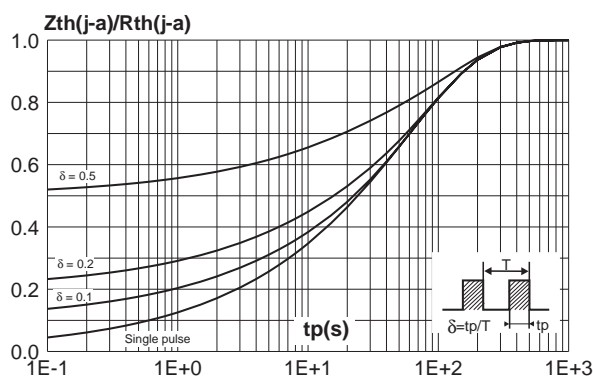
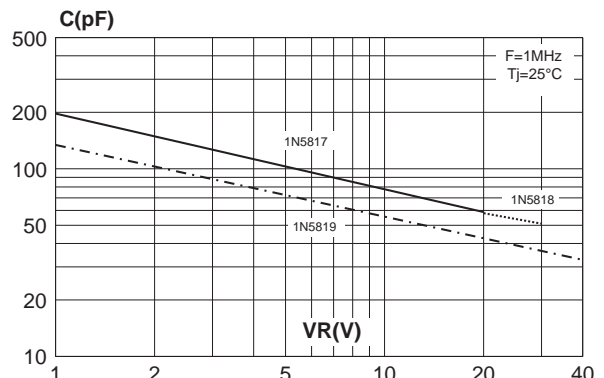


Fig. 5: Junction capacitance versus reverse voltage applied (typical values).



1N581x

Fig. 6-1: Reverse leakage current versus reverse voltage applied (typical values) (1N5817/1N5818).

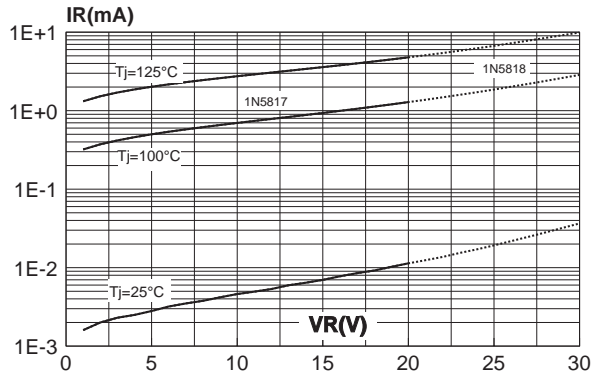


Fig. 6-2: Reverse leakage current versus reverse voltage applied (typical values) (1N5819).

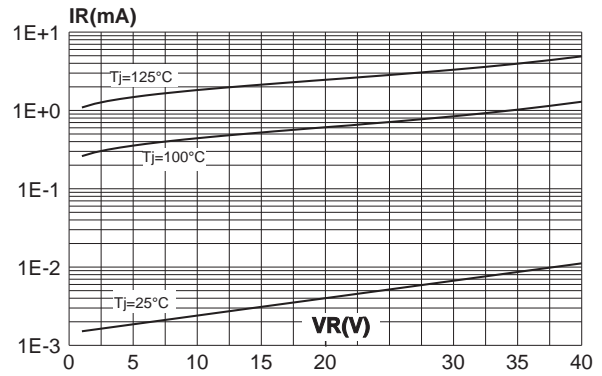


Fig. 7-1: Forward voltage drop versus forward current (typical values) (1N5817/1N5818).

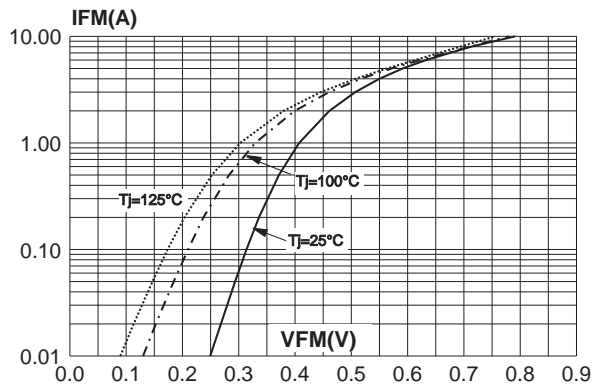


Fig. 7-2: Forward voltage drop versus forward current (typical values) (1N5819).

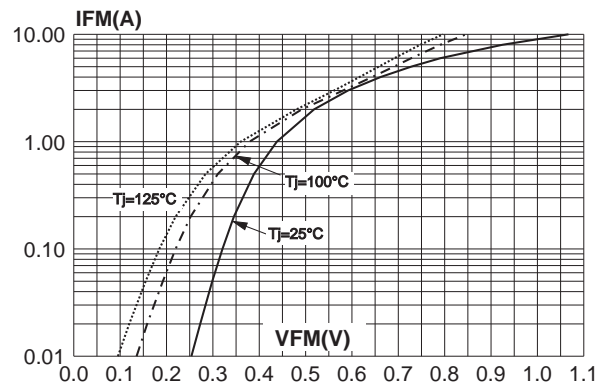
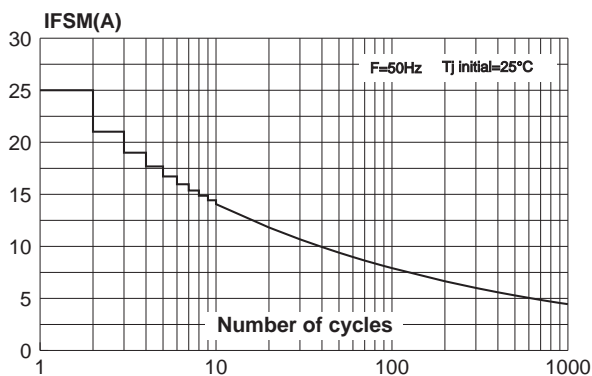
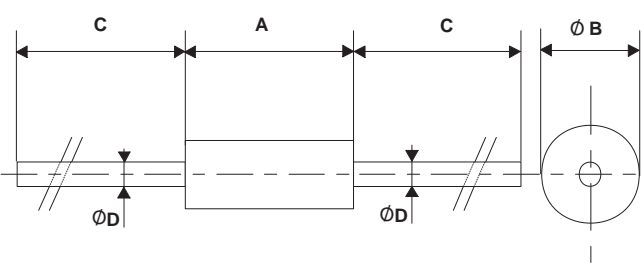


Fig. 8: Non repetitive surge peak forward current versus number of cycles.



PACKAGE MECHANICAL DATA
DO41 plastic

|  | DIMENSIONS | | | |
|---|-------------|------|--------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| | A | 4.1 | 5.2 | 0.16 |
| B | 2 | 2.7 | 0.08 | 0.107 |
| C | 25.4 | | 1 | |
| D | 0.71 | 0.86 | 0.028 | 0.034 |

| Ordering type | Marking | Package | Weight | Base qty | Delivery mode |
|---------------|-----------------------------|---------|--------|----------|---------------|
| 1N581x | Part number cathode ring | DO41 | 0.34g | 2000 | Ammopack |
| 1N581xRL | Part number cathode ring | DO41 | 0.34g | 5000 | Tape & reel |

- Epoxy meets UL94,V0

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