Axial Lead Rectifiers

SCHOTTKY BARRIER RECTIFIERS
1.0 AMPERE 20, 30 and 40 VOLTS

1N5817, 1N5818, 1N5819

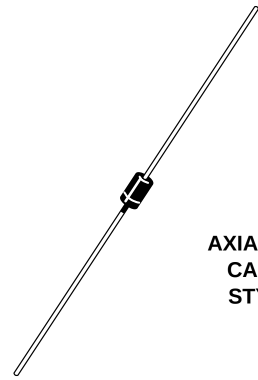
This series employs the Schottky Barrier principle in a large area metal−to−silicon power diode. State−of−the−art geometry features chrome barrier metal, epitaxial construction with oxide passivation and metal overlap contact. Ideally suited for use as rectifiers in low−voltage, high−frequency inverters, free wheeling diodes, and polarity protection diodes.

Features

- Extremely Low V_F
- Low Stored Charge, Majority Carrier Conduction
- Low Power Loss/High Efficiency
- These are Pb−Free Devices*

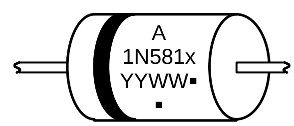
Mechanical Characteristics:

- Case: Epoxy, Molded
- Weight: 0.4 Gram (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max for 10 Seconds
- Polarity: Cathode Indicated by Polarity Band
- ESD Ratings: Machine Model = C (>400 V)
  Human Body Model = 3B (>8000 V)



AXIAL LEAD
CASE 59
STYLE 1

MARKING DIAGRAM



A =Assembly Location
1N581x =Device Number
x= 7, 8, or 9
YY =Year
WW =Work Week
▪ =Pb−Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

See detailed ordering and shipping information on page 6 of this data sheet.

*For additional information on our Pb−Free strategy and soldering details, please download the **onsemi** Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

MAXIMUM RATINGS

Rating	Symbol	1N5817	1N5818	1N5819	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	20	30	40	V
Non−Repetitive Peak Reverse Voltage	V_{RSM}	24	36	48	V
RMS Reverse Voltage	$V_{R(RMS)}$	14	21	28	V
Average Rectified Forward Current (Note 1), ($V_{R(equiv)} \leq 0.2\ V_R$(dc), T_L = 90°C, $R_{\theta JA}$ = 80°C/W, P.C. Board Mounting, see Note 2, T_A = 55°C)	I_O		1.0		A
Ambient Temperature (Rated V_R(dc), $P_{F(AV)}$ = 0, $R_{\theta JA}$ = 80°C/W)	T_A	85	80	75	°C
Non−Repetitive Peak Surge Current, (Surge applied at rated load conditions, half−wave, single phase 60 Hz, T_L = 70°C)	I_{FSM}				

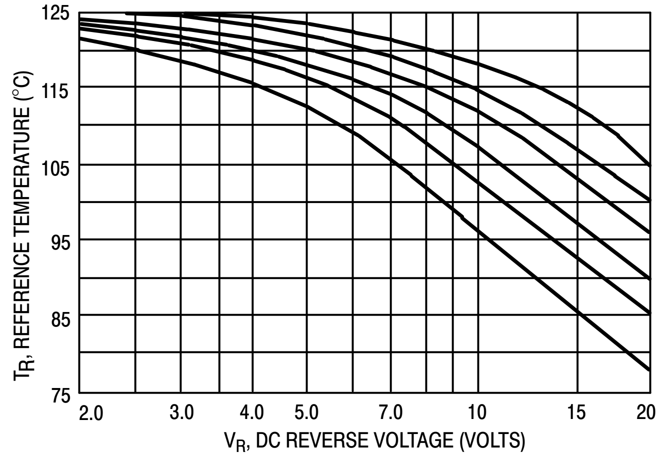
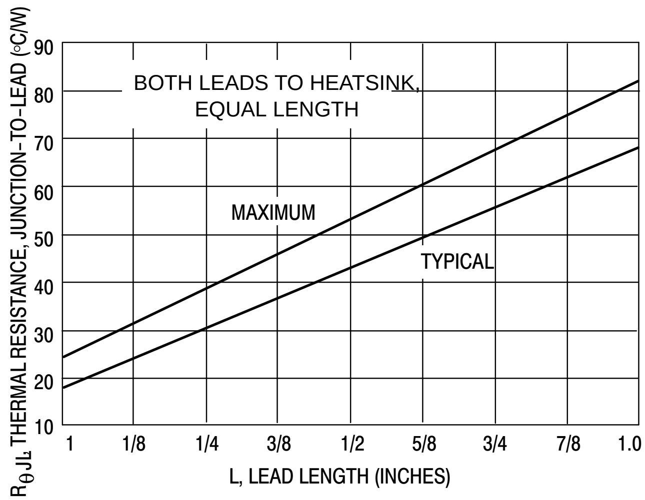


Figure 1. Maximum RefTURE (

Share Feedback
Your Opinion Matters



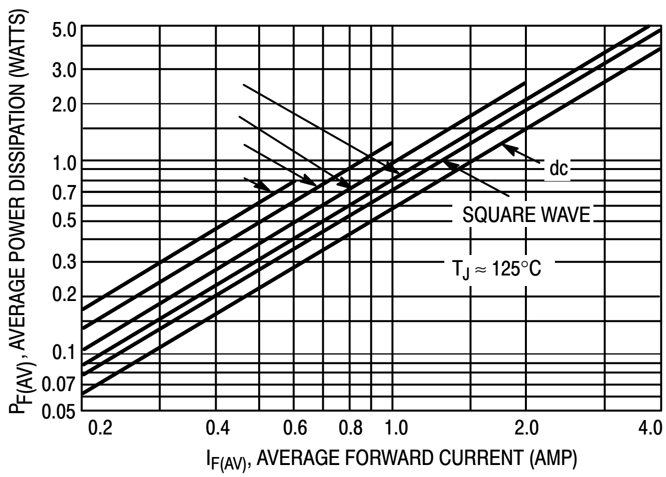
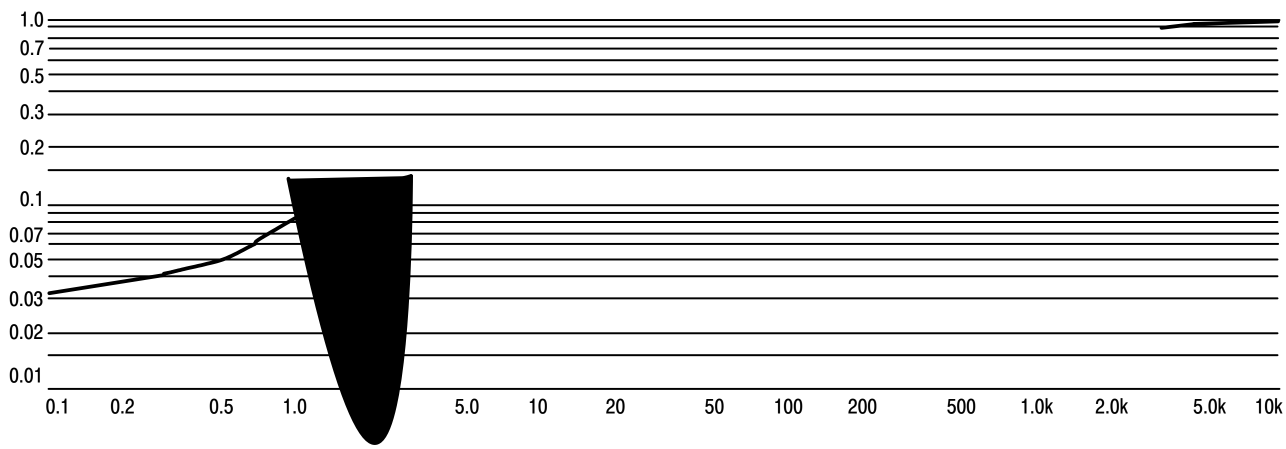
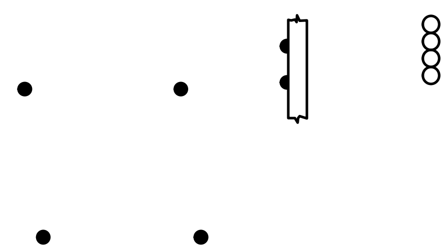
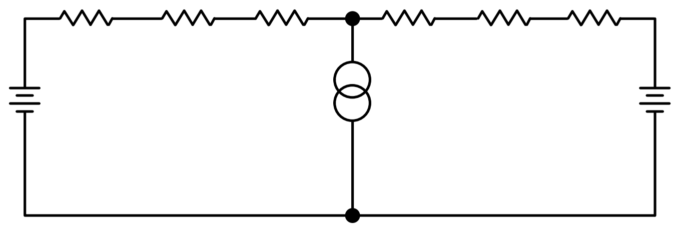
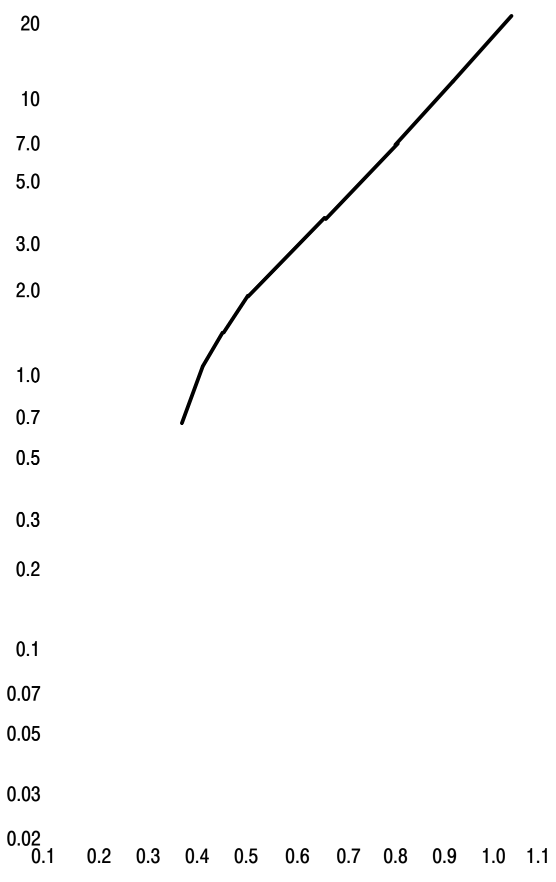


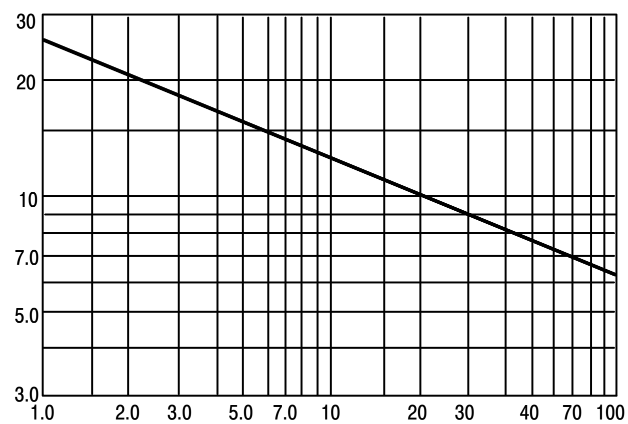
Figure 4. Steady–State Thermal Resistance

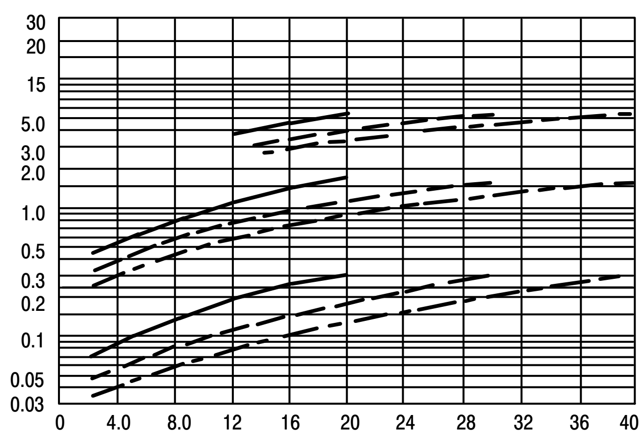







20
10
7.0
5.0
3.0
2.0
1.0
0.7
0.5
0.3
0.2
0.1
0.07
0.05
0.03
0.02
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1


30
20
10
7.0
5.0
3.0
1.0
2.0
3.0
5.0
7.0
10
20
30
40
70
100


30
20
15
5.0
3.0
2.0
1.0
0.5
0.3
0.2
0.1
0.05
0.03
0
4.0
8.0
12
16
20
24
28
32
36
40

NOTE 6. — HIGH FREQUENCY OPERATION

Since current flow in a Schottky rectifier is the result of majority carrier conduction, it is not subject to junction diode forward and reverse recovery transients due to minority carrier injection and stored charge. Satisfactory circuit analysis work may be performed by using a model consisting of an ideal diode in parallel with a variable capacitance. (See Figure 10.)

Rectification efficiency measurements show that operation will be satisfactory up to several megahertz. For example, relative waveform rectification efficiency is approximately 70 percent at 2.0 MHz, e.g., the ratio of dc power to RMS power in the load is 0.28 at this frequency, whereas perfect rectification would yield 0.406 for sine wave inputs. However, in contrast to ordinary junction diodes, the loss in waveform efficiency is not indicative of power loss: it is simply a result of reverse current flow through the diode capacitance, which lowers the dc output voltage.

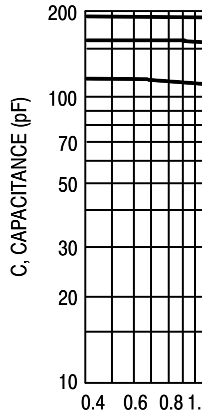
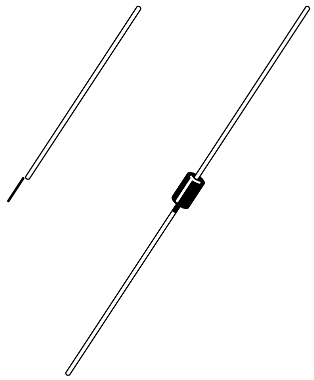


Fig [redacted]

ORDERING INFORMATION

Device	Package	[redacted]
1N5817	Axial Lead*	[redacted]
1N5817G	Axial Lead*	[redacted]
1N5817RL	Axial Lead*	[redacted]
1N5817RLG	Axial Lead*	5000 / Tape & Reel
1N5818		



SCALE 1:1