

# RECTIFIERS

## High Efficiency, ESP, 2.5 Amp to 20 Amp

1N5802-1N5806  
1N5807-1N5811  
1N5812-1N5816

### FEATURES

- Exceptional Efficiency
- Low Forward Voltage
- Extremely Fast Reverse Recovery Time
- Extremely Fast Forward Recovery Time
- High Surge
- Small Size
- Rugged, High Current Termination
- Radiation Tolerant

### DESCRIPTION

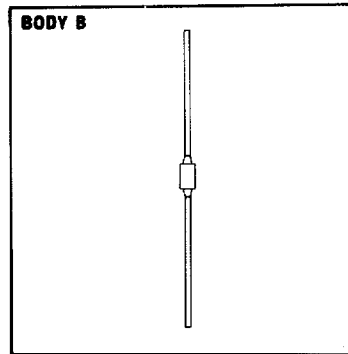
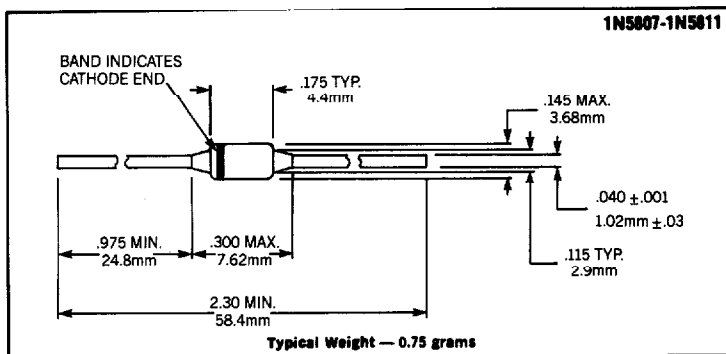
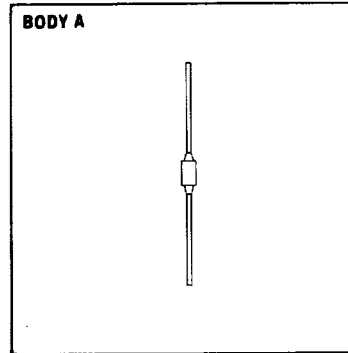
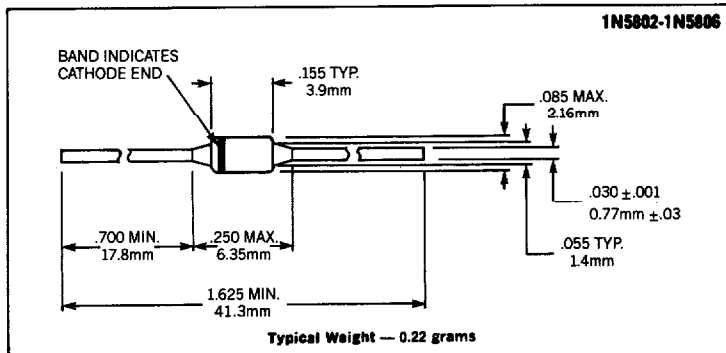
This series of High Efficiency Power Rectifiers allows circuit designers to design high current, high frequency supplies to 500 kHz with very low diode losses. The high forward surge capability makes these devices useful in protective circuits.

### ABSOLUTE MAXIMUM RATINGS

Peak Inverse Voltage	2.5 Amp Series	6 Amp Series	20 Amp Series
50V	1N5802	1N5807	1N5812
75V	1N5803	1N5808	1N5813
100V	1N5804	1N5809	1N5814
125V	1N5805	1N5810	1N5815
150V	1N5806	1N5811	1N5816

	2.5 AMP SERIES	6.0 AMP SERIES	20 AMP SERIES
Maximum Average D.C. Output Current			
@ $T_L = 75^\circ\text{C}$ , $L = 3\mu\text{s}$	2.5A	6.0A	—
@ $T_C = 100^\circ\text{C}$			20.0A
Non-Repetitive Sinusoidal			
Surge Current (8.3ms)	35A	125A	250A
Operating and Storage Temperature Range	-65°C to +175°C		
Thermal Resistance	2.5A and 6A Series	See Lead Temperature Derating Curve	
	20A Series	3.0°C/W	

### MECHANICAL SPECIFICATIONS



THESE DEVICES ALSO AVAILABLE IN SURFACE MOUNT PACKAGE. SEE SECTION 10

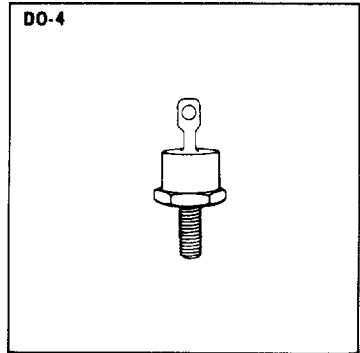
**Microsemi Corp.**  
**Watertown**  
The diode experts

**MECHANICAL SPECIFICATIONS**

**1N5812-1N5816**

**Part Identification:** Type number printed on metal case.  
**Polarity:** Cathode to stud end  
**Max. Weight:** 7.0 Grams  
**Installation Precautions:** Maximum unlubricated stud torque: 10 inch pounds  
**Thermal Resistance:** 3.0°C/W

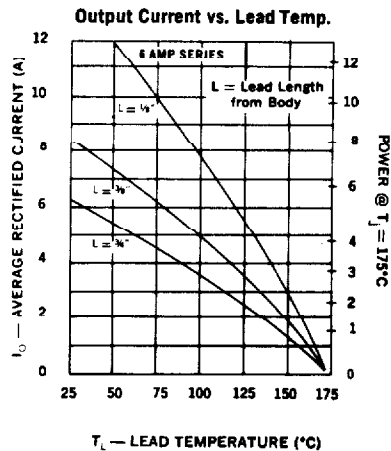
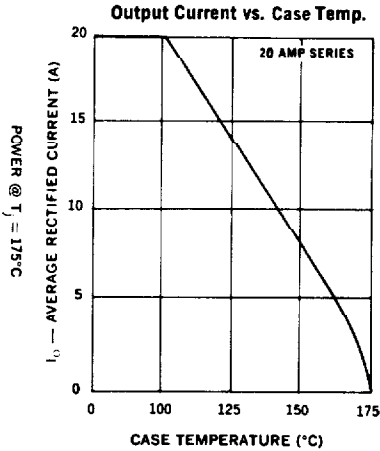
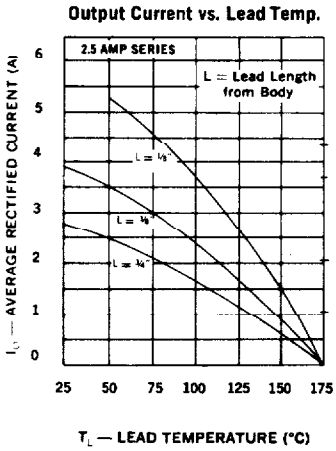
Dimensions in inches.



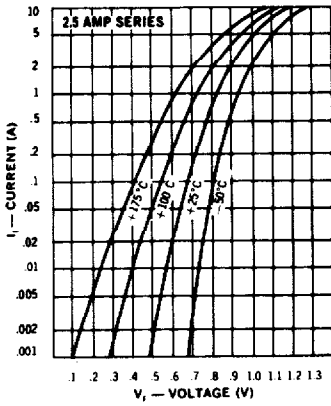
**ELECTRICAL SPECIFICATIONS (at 25°C unless noted)**

Type	PIV	Maximum Forward Voltage Drop*	Leakage Current @ PIV		Maximum Reverse Recovery Time $t_{rr}$ $t_{REC}$	Typical Forward Recovery Time @ 1A Recover to 1V	Typical Forward Recovery Voltage @ 1A $t_r = 8ns$	Typical Junction Capacitance @ -10V
			25°C	100°C				
1N5802 1N5803 1N5804 1N5805 1N5806	50V 75V 100V 125V 150V	.875 @ 1A	1μA	50μA	25ns, 0.5A-0.5A-0.05A	15ns	1.5V	15pf
1N5807 1N5808 1N5809 1N5810 1N5811	50V 75V 100V 125V 150V	.875 @ 4A	5μA	150μA	30ns, 1.0-1.0-0.1A	15ns	1.5V	45pf
1N5812 1N5813 1N5814 1N5815 1N5816	50V 75V 100V 125V 150V	.900 @ 10A	10μA	750μA	35ns, 1.0-1.0-0.1A	15ns	1.5V	200pf

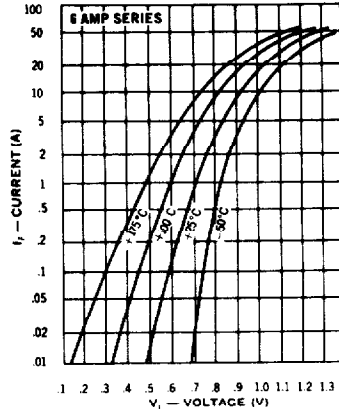
\*Pulse width = 250ms



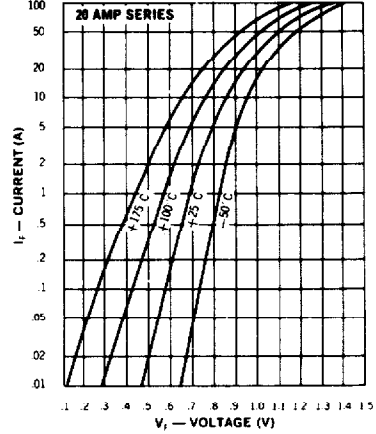
**Typical Forward Current vs. Forward Voltage**



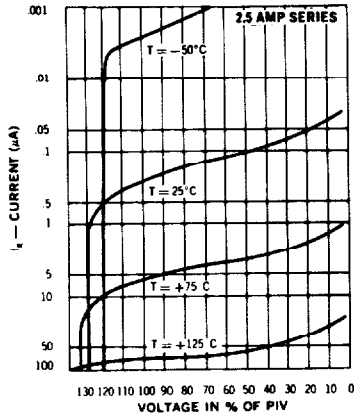
**Typical Forward Current vs. Forward Voltage**



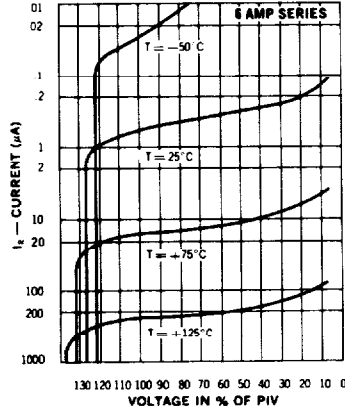
**Typical Forward Current vs. Forward Voltage**



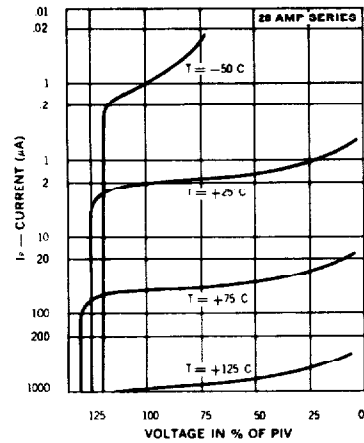
**Typical Reverse Current vs. Voltage**



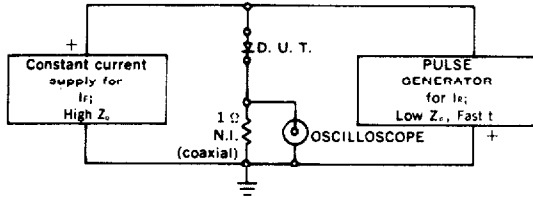
**Typical Reverse Current vs. Voltage**



**Typical Reverse Current vs. Voltage**

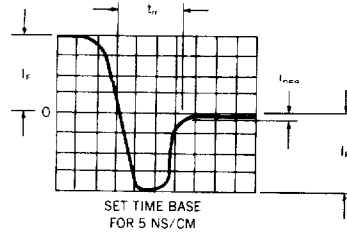


**Reverse-Recovery Time Circuit**

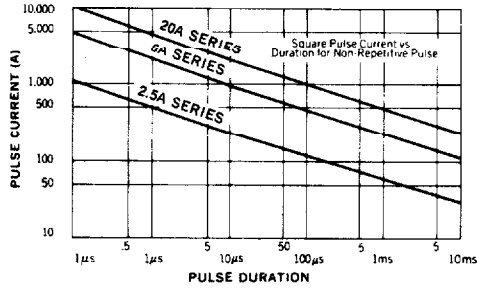


- NOTES:**  
 1. Oscilloscope: Rise time  $\leq 3$  ns; input impedance =  $50 \Omega$ .  
 2. Pulse Generator: Rise time  $\leq 8$  ns; source impedance  $10 \Omega$ .

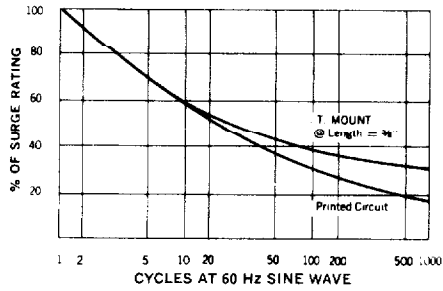
**Characteristic Waveform**



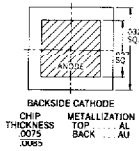
**Forward Pulse Current vs. Duration**



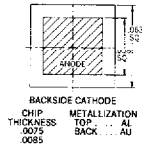
**Multiple Surge Current vs. Duration**



1N5804, 1N5806



1N5809, 1N5811



1N5814, 1N5816

