

## Features

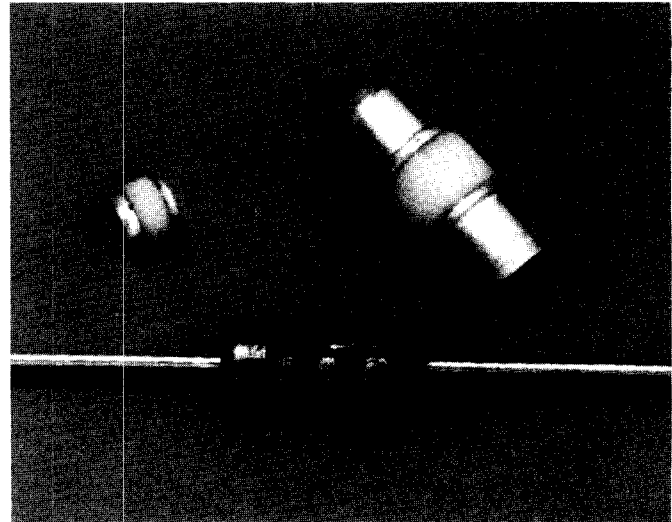
**LOW AND STABLE NOISE FIGURE**

**HIGH BURNOUT RATING**  
**15 W RF Pulse Power Incident**

**RUGGED DESIGN**

**HIGH UNIFORMITY**

**BOTH MEDIUM AND LOW BARRIER  
DIODES AVAILABLE**



## Description / Applications

These Schottky diodes are optimized for use in broad band and narrow band microstrip, coaxial, or waveguide mixer assemblies operating to 18 GHz. The low barrier diodes give optimum noise figure performance at low local oscillator drive levels. Medium barrier diodes provide a wider dynamic range for lower distortion mixer designs. The 5082-2350, -2400, -2510 and -2565 have extremely low 1/f noise, making them ideal for use as Doppler mixers.

## Maximum Ratings at $T_{CASE} = 25^{\circ}C$

Junction Operating and Storage Temperature Range  
5082-2400, 2401, 2565, 2566, 2350, 2351, 2520,  
2521 .....  $-60^{\circ}C$  to  $+125^{\circ}C$   
All other diodes .....  $-60^{\circ}C$  to  $+150^{\circ}C$

*Operation of these devices within the above temperature ratings will assure a device Mean Time Between Failure (MTBF) of approximately  $1 \times 10^7$  hours.*

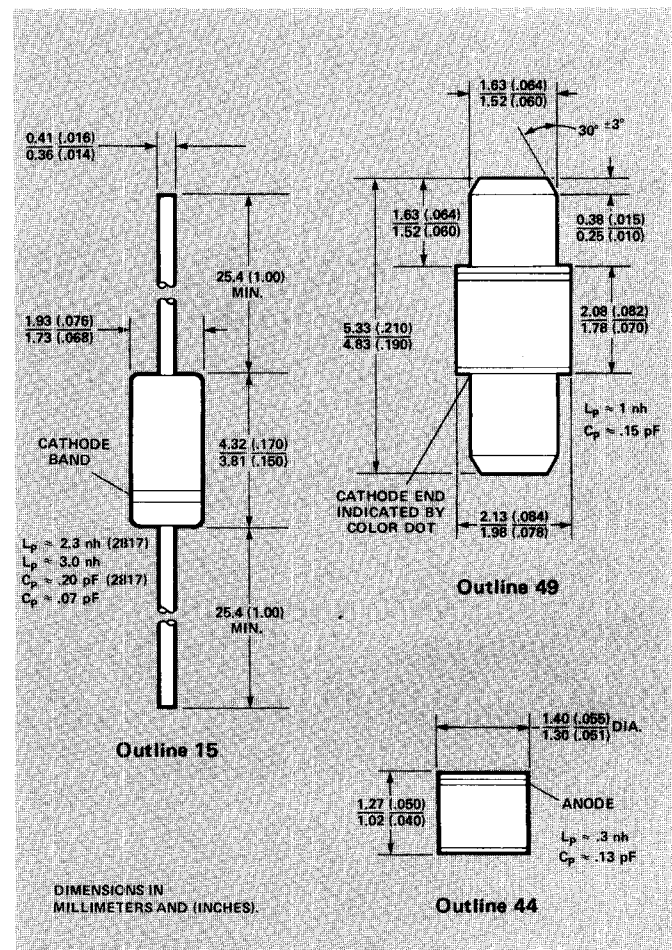
CW Power Dissipation ..... 200 mW  
Derate linearly to 0 W at max. rated temperature  
(Measured in an infinite heat sink).

Pulse Power Dissipation  
Peak power absorbed by the diode.  
1  $\mu s$  pulse,  $D_u = .001$

5082-2400, 2350 ..... 15W  
5082-2565, 2520 ..... 4W  
All other diodes ..... 1W  
Soldering Temperature .....  $230^{\circ}C$  for 5 sec.

Note: The 5082-2200 and -2700 series are pulse sensitive. Handle with care to avoid static discharge through the diode.

## Package Dimensions



# Electrical Specifications at $T_A = 25^\circ\text{C}$

# Typical Parameters

Part Number 5082-	Matched Pair 5082-	Barrier	LO Test Frequency (GHz)	Maximum SSB Noise Figure NF (dB)	IF Impedance $Z_{IF}$ ( $\Omega$ )		Maximum SWR	Package Outline	Junction Capacitance $C_{JO}$ (pF)	Breakdown Voltage $V_{BR}$ (V)
					Min.	Max.				
2817	2818	Medium	2.0	6.0	250	400	1.5:1	15	1.0	15
2400	2401	Medium	2.0	6.0	150	250	1.3:1		0.7	30
2350	2351	Medium	2.0	7.0	150	250	1.5:1		0.9	30
2565	2566	Medium	3.0	6.0	100	250	1.5:1		0.5	5
2520	2521	Medium	3.0	7.0	100	250	1.5:1		0.7	5
2713	2714	Medium	9.375	6.0	200	400	1.5:1	49	.15	3
2711	2712	Medium	9.375	6.5	200	400	2.0:1			
2285	2286	Low	9.375	6.0	100	250	1.5:1			
2287	2288	Low	9.375	6.5	100	250	2.0:1			
2701	2706	Medium	9.375	6.0	200	400	1.5:1	44	.15	3
2702	2707	Medium	9.375	6.5	200	400	1.5:1			
2295	2296	Low	9.375	6.0	100	250	1.5:1			
2297	2298	Low	9.375	6.5	100	250	2.0:1			
2723	2724	Medium	16	6.5	200	400	1.5:1	49	.12	3
2721	2722	Medium	16	7.0	200	400	2.0:1			
2273	2274	Medium	16	6.5	200	400	2.0:1	44	.12	3
Test Conditions	$\Delta NF \leq 0.3\text{dB}$ $\Delta Z_{IF} \leq 25\Omega$		LO Power = 1 mW IF=30 MHz, 1.5 dB NF Zero DC Load Resistance (100 $\Omega$ for 5082-2817)		Same as for NF except IF = 10 KHz		Same as for NF		V = 0	$I_R < 10\mu\text{A}$

## Typical Parameters

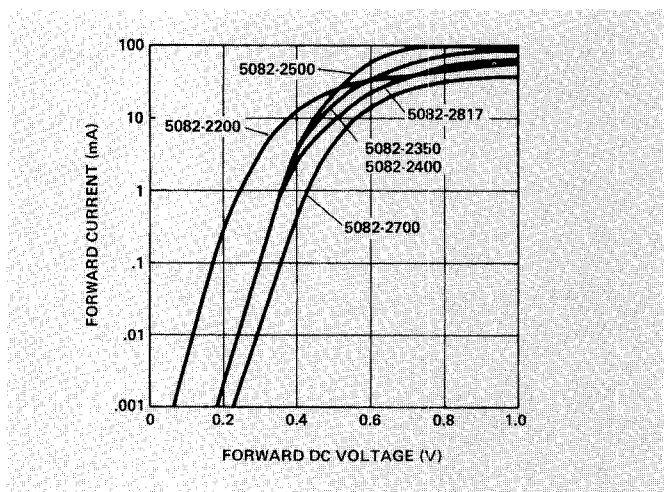


Figure 1. Typical Forward Characteristics at  $T_A = 25^\circ\text{C}$ .

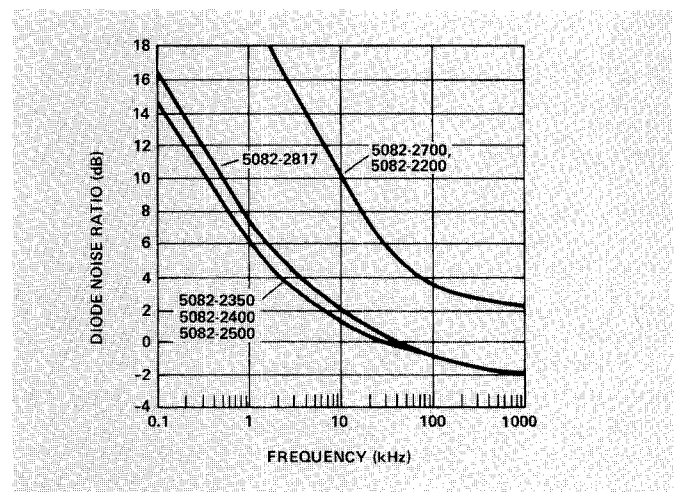


Figure 2. Typical Diode Noise Ratio vs. Frequency at 1 mA Current.

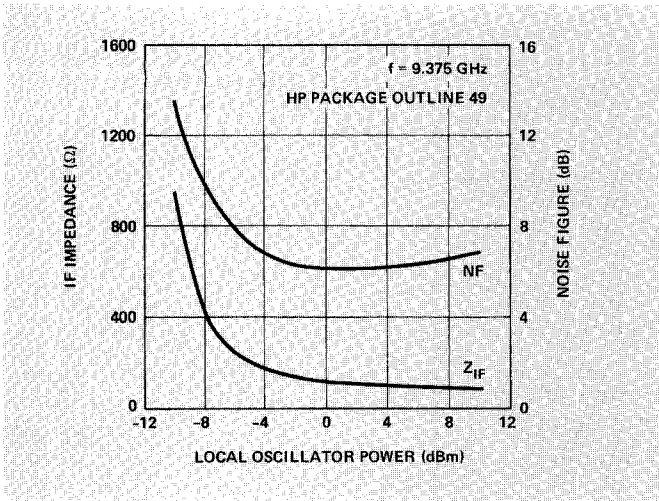


Figure 3. Typical Noise Figure and IF Impedance vs. Local Oscillator Power, 5082-2285 through -2288. Diode unmatched in 50Ω line.

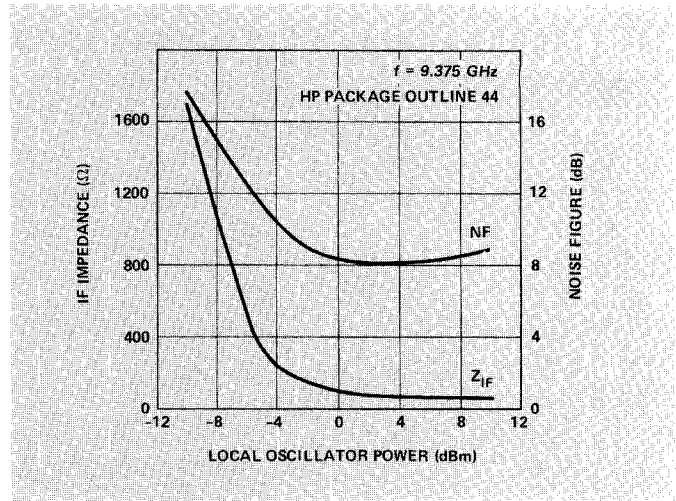


Figure 4. Typical Noise Figure and IF Impedance vs. Local Oscillator Power, 5082-2295 through -2298. Diode unmatched in 50Ω line.

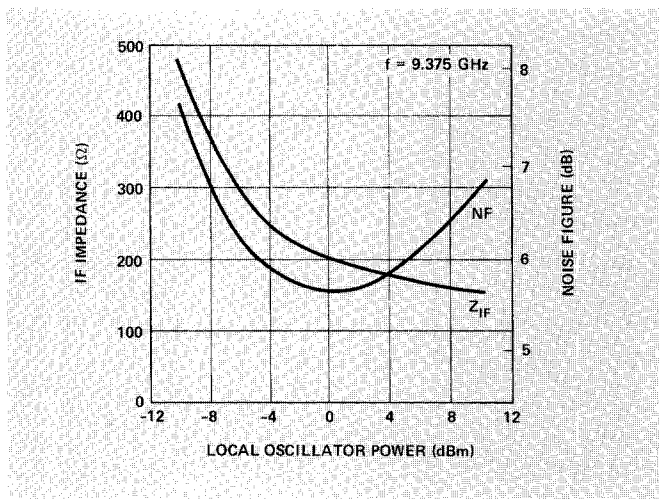


Figure 5. Typical Noise Figure and IF Impedance vs. Local Oscillator Power. Diode matched at each local oscillator power level (5082-2285, 2295).

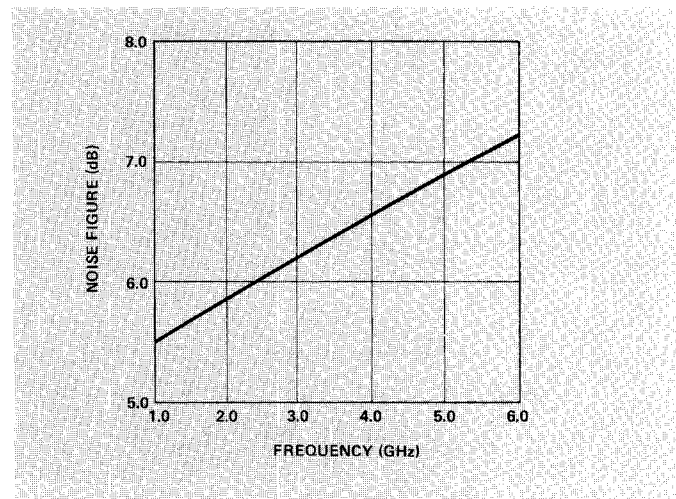


Figure 6. Typical HP 5082-2400 Noise Figure vs. Frequency with  $P_{LO} = 1.0$  mW,  $f_{IF} = 30$  MHz, and  $NF_{IF} = 1.5$  dB. Mount tuned at each frequency.

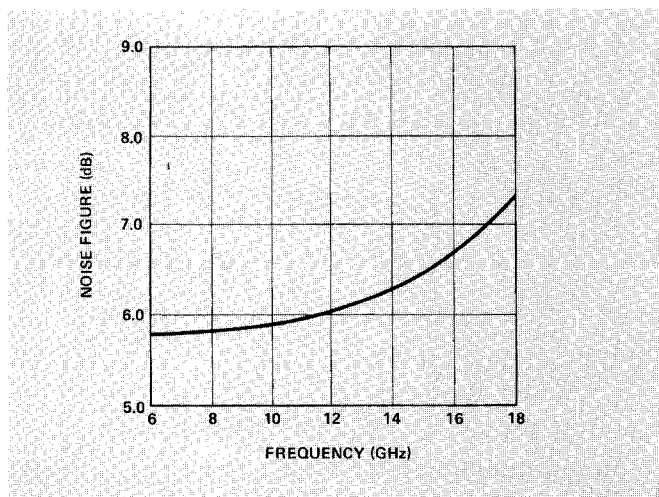


Figure 7. Typical Noise Figure vs. Frequency. IF = 30 MHz,  $NF_{IF} = 1.5$  dB,  $P_{LO} = 1$  mW. Diode matched at each frequency (5082-2200, 2700 series).

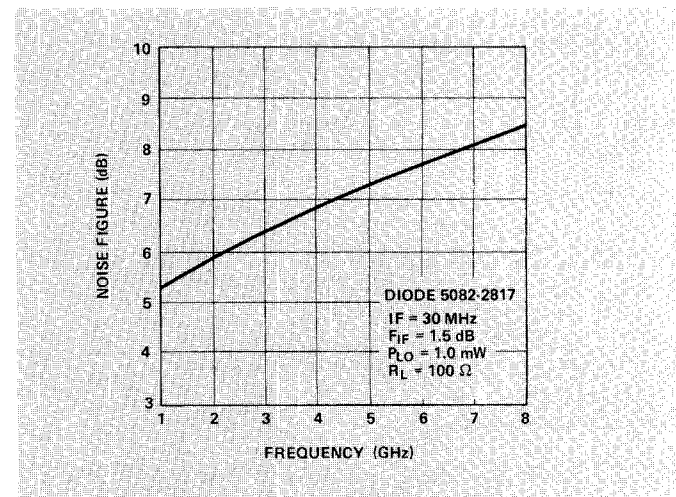


Figure 8. Typical Noise Figure vs. Frequency. The mount is tuned for minimum noise figure at each frequency.



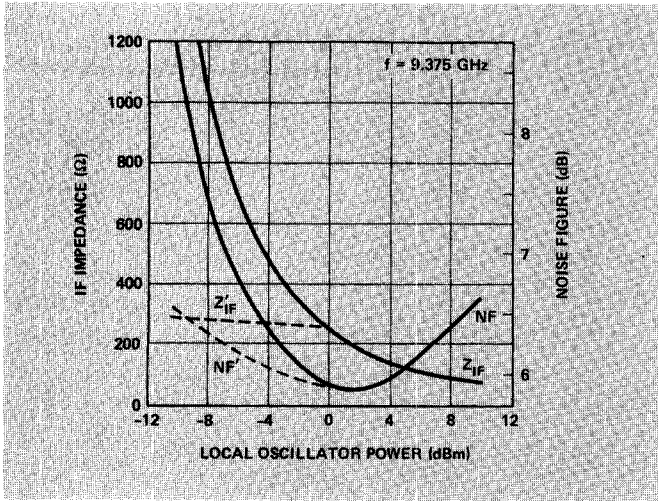


Figure 9. Typical Noise Figure and IF Impedance for 5082-2711 vs. Local Oscillator Power. Note the improved performance at low levels of LO power when dc bias is superimposed (dashed curves).

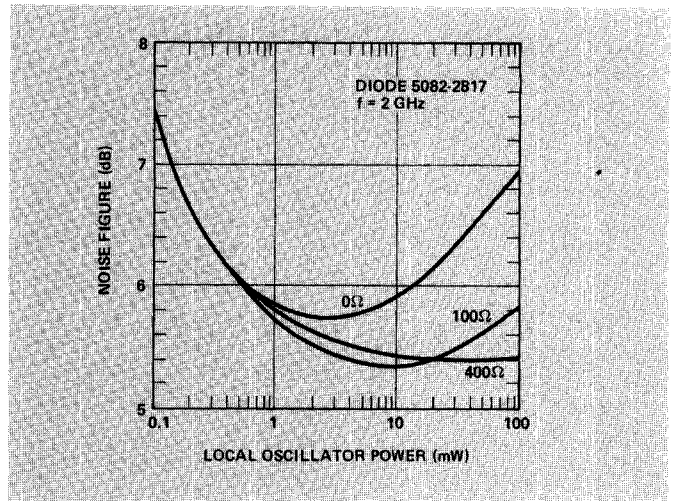


Figure 10. Single Sideband Noise Figure (including an IF-amplifier noise figure of 1.5 dB) vs. Incident LO Power for Various dc-load Resistances  $R_L$ . (The mount is tuned for minimum noise figure at each LO power level).

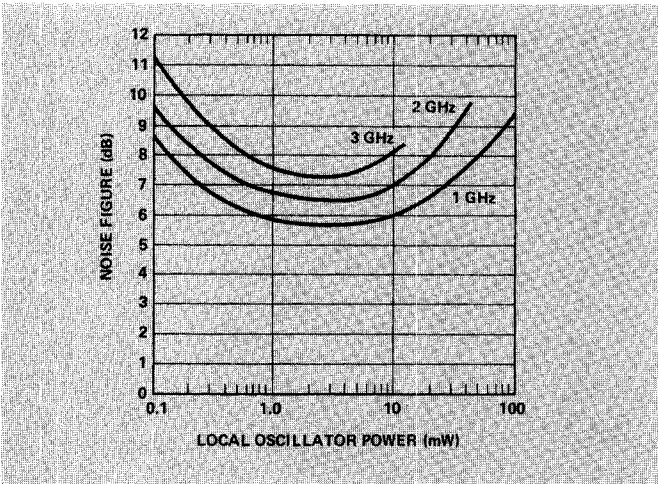


Figure 11. Typical 5082-2350 Noise Figure vs. Local Oscillator Power at 1.0, 2.0 and 3.0 GHz with IF = 30 MHz and  $NF_{IF} = 1.5$  dB.

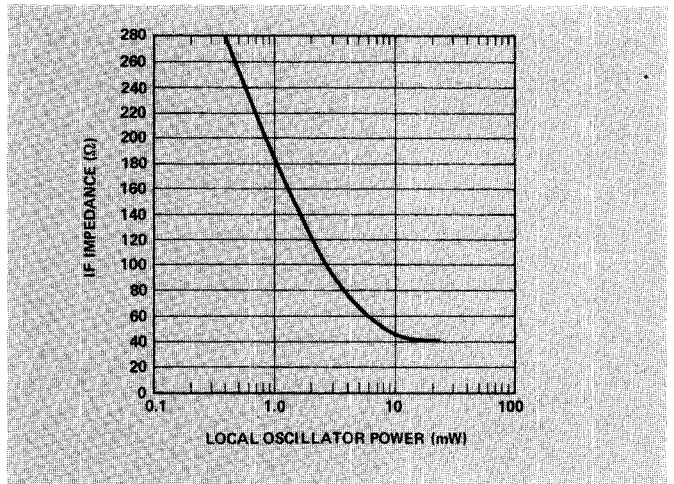


Figure 12. Typical 5082-2300 and 2400 Series IF Impedance vs. Local Oscillator Power with  $f_{LO} = 2.0$  GHz and IF = 30 MHz.

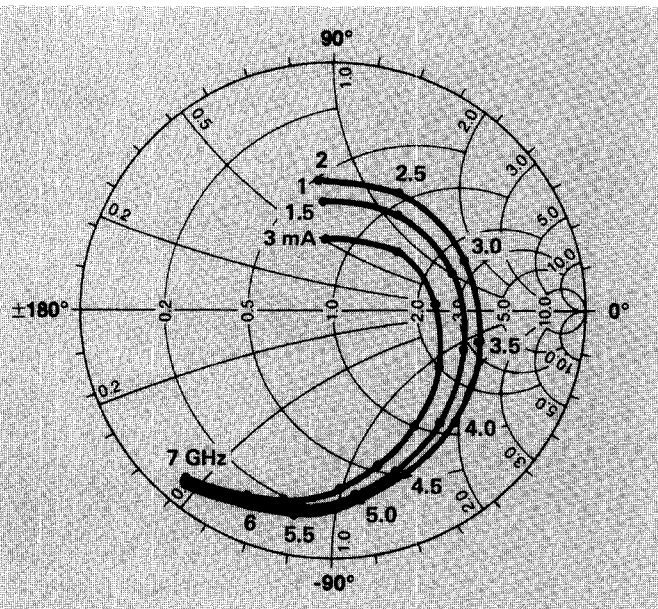


Figure 13. Typical Admittance Characteristics, 5082-2817 with self bias.

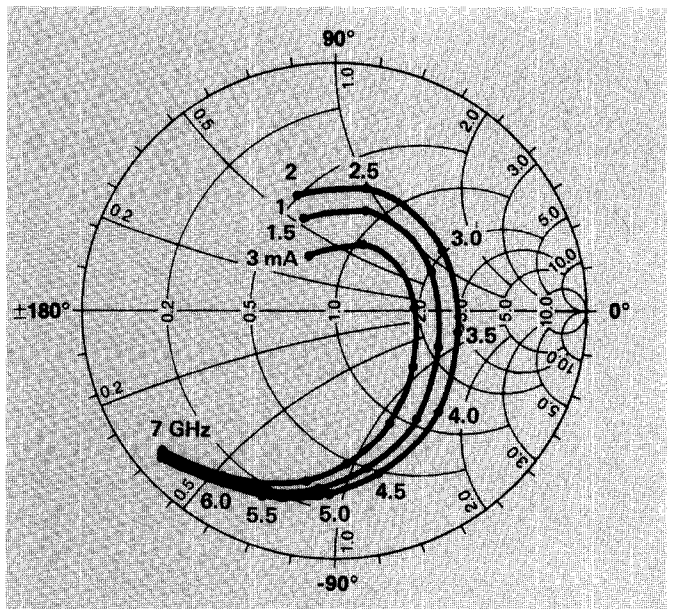


Figure 14. Typical Admittance Characteristics, 5082-2400 with self bias.

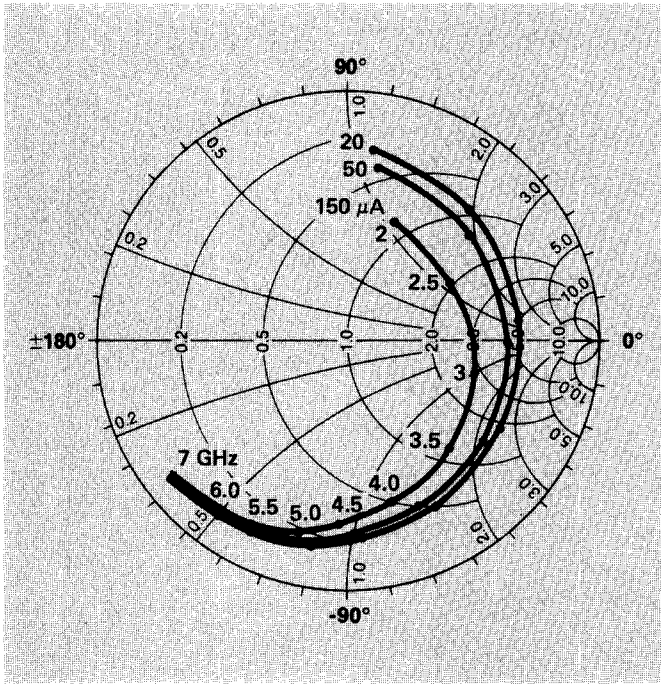


Figure 15. Typical Admittance Characteristics, 5082-2400 with external bias.

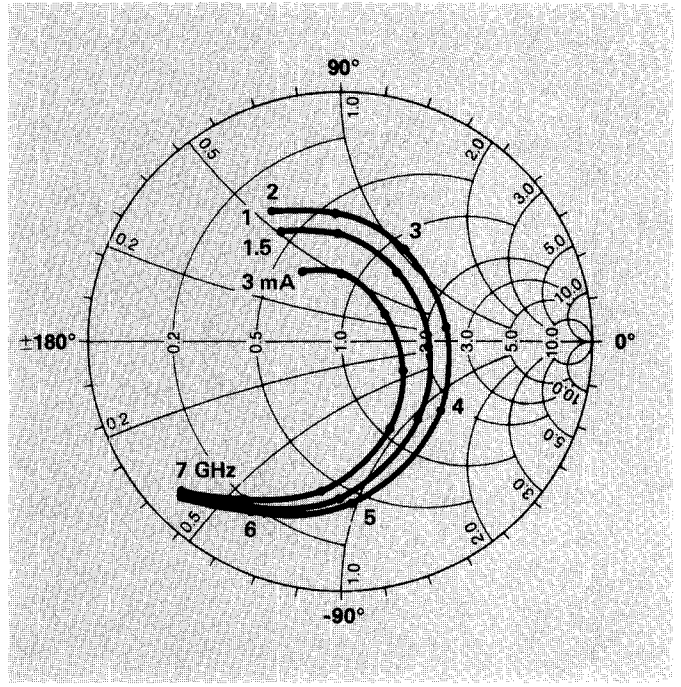


Figure 16. Typical Admittance Characteristics, 5082-2350 with self bias.

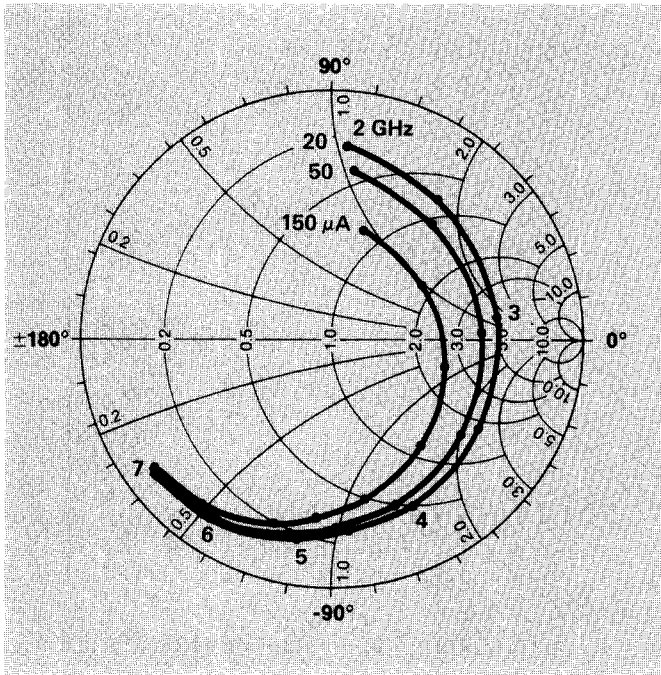


Figure 17. Typical Admittance Characteristics, 5082-2350 with external bias.

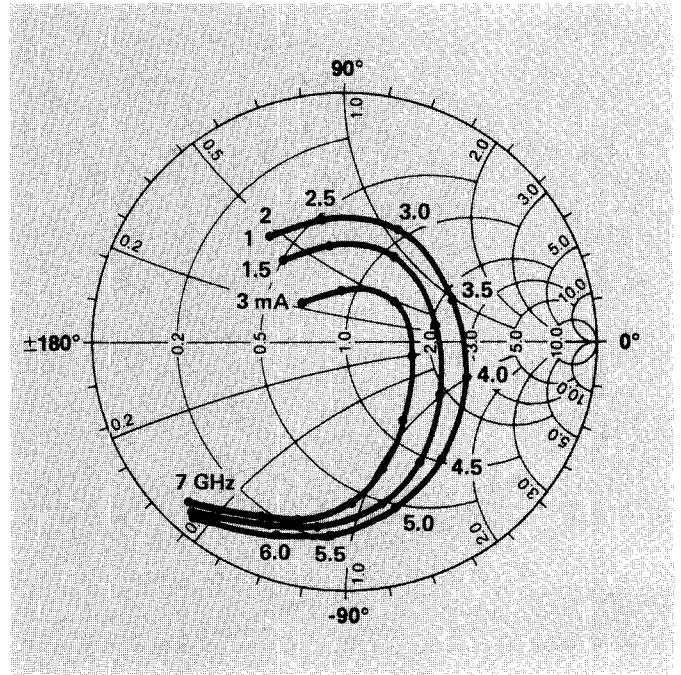


Figure 18. Typical Admittance Characteristics, 5082-2565 with self bias.



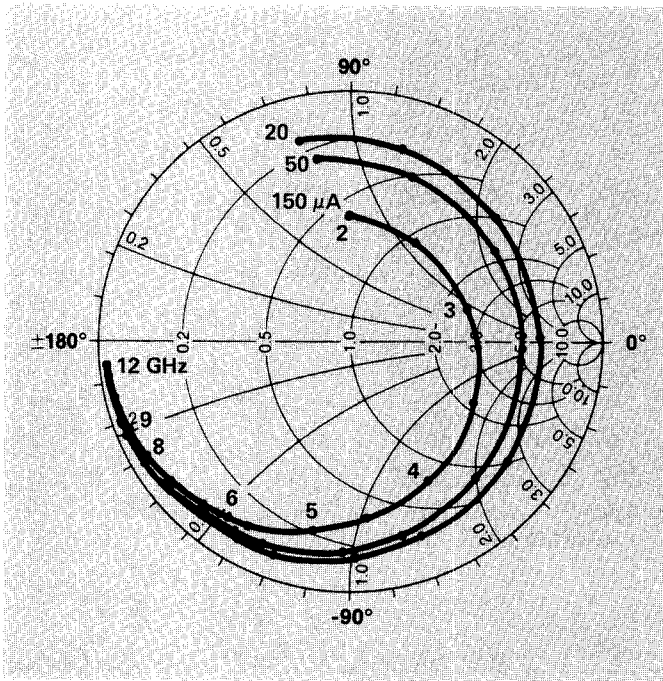


Figure 19. Typical Admittance Characteristics, 5082-2565 with external bias.

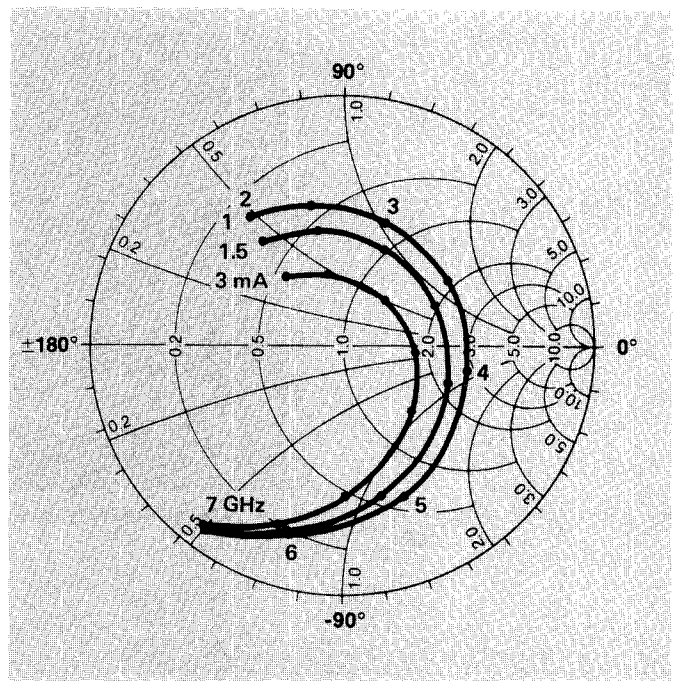


Figure 20. Typical Admittance Characteristics, 5082-2520 with self bias.

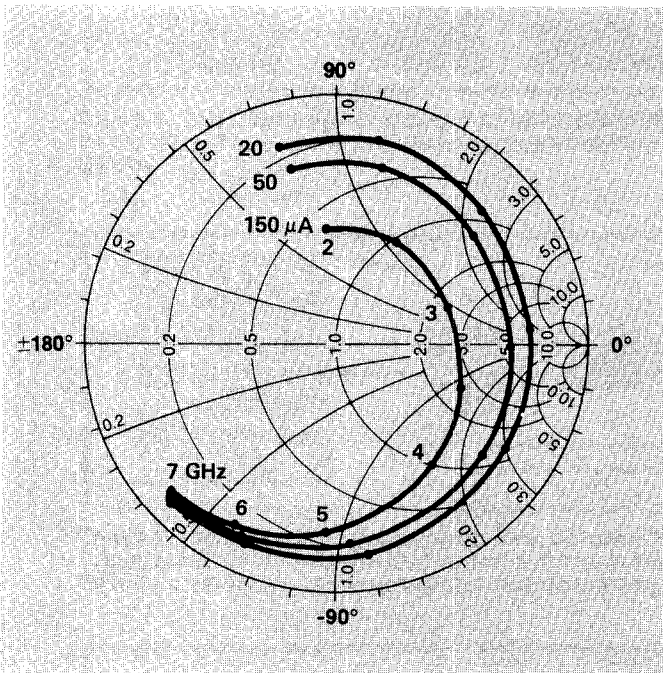


Figure 21. Typical Admittance Characteristics, 5082-2520 with external bias.

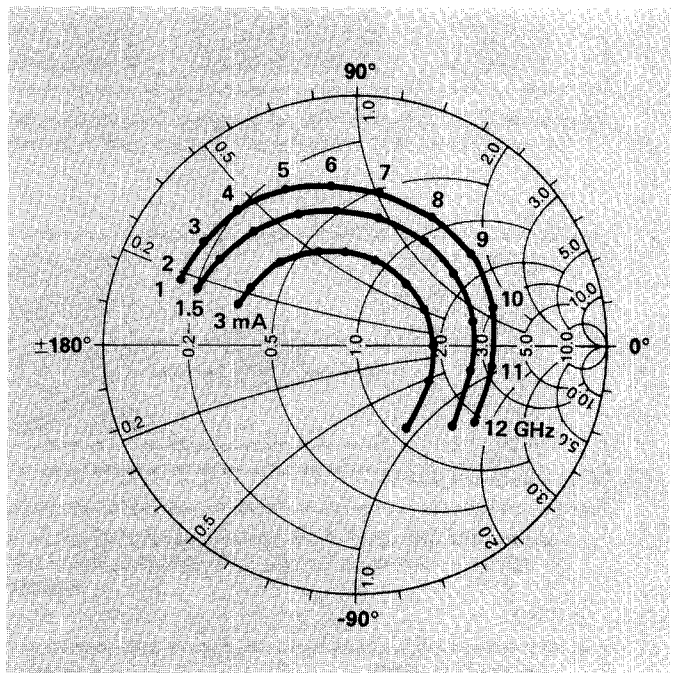


Figure 22. Typical Admittance Characteristics, 5082-2713 with self bias.

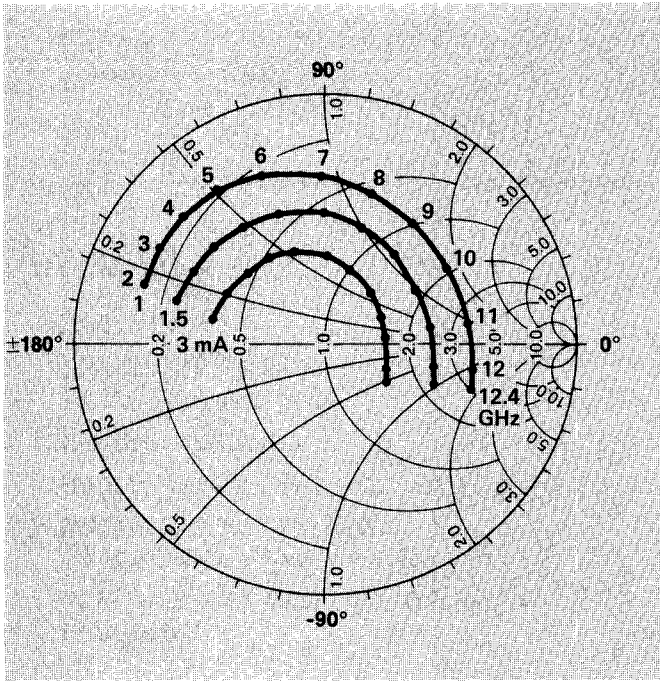


Figure 23. Typical Admittance Characteristics, 5082-2711 with self bias.

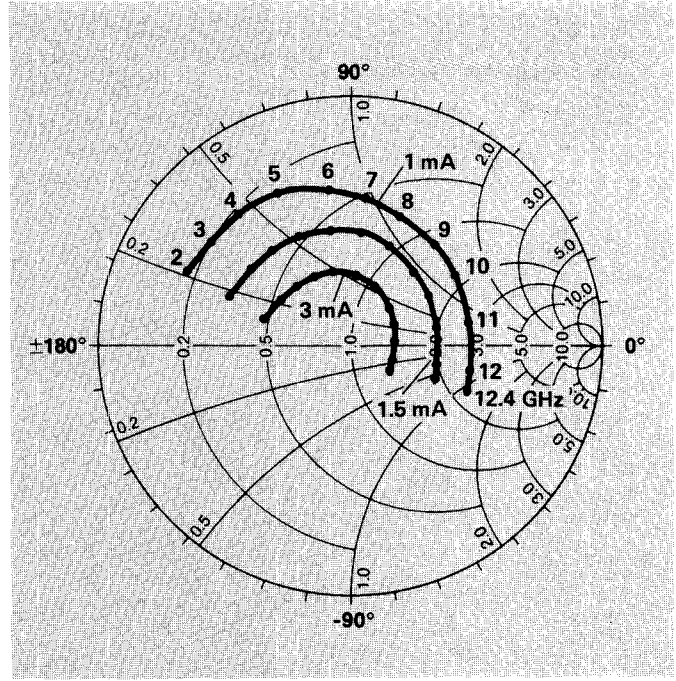


Figure 24. Typical Admittance Characteristics, 5082-2285 with self bias.

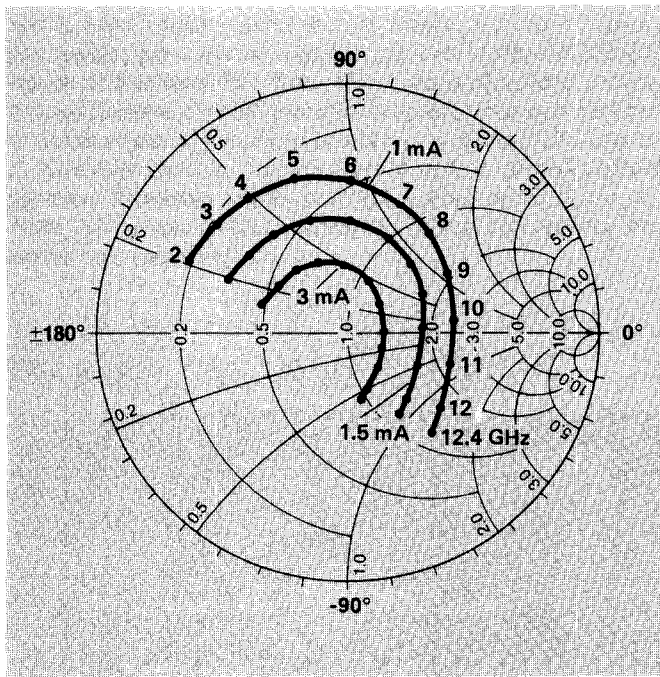


Figure 25. Typical Admittance Characteristics, 5082-2287 with self bias.

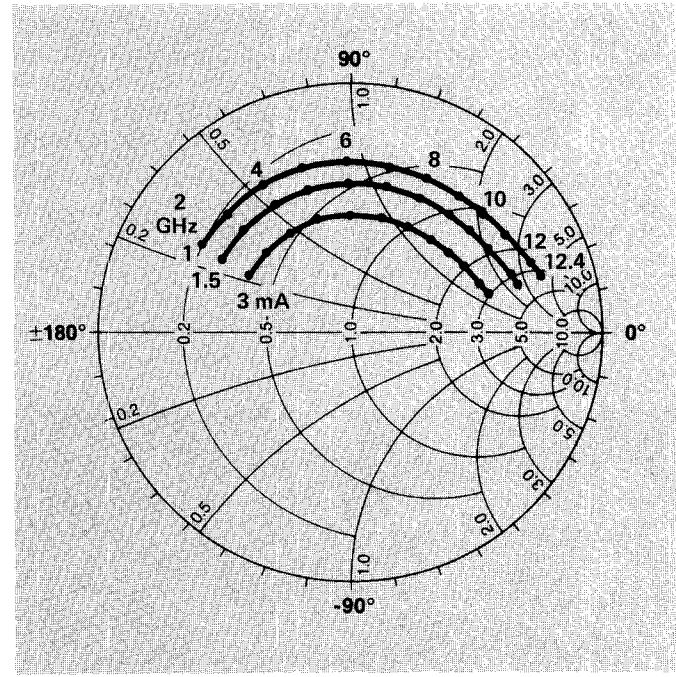


Figure 26. Typical Admittance Characteristics, 5082-2701 with self bias.

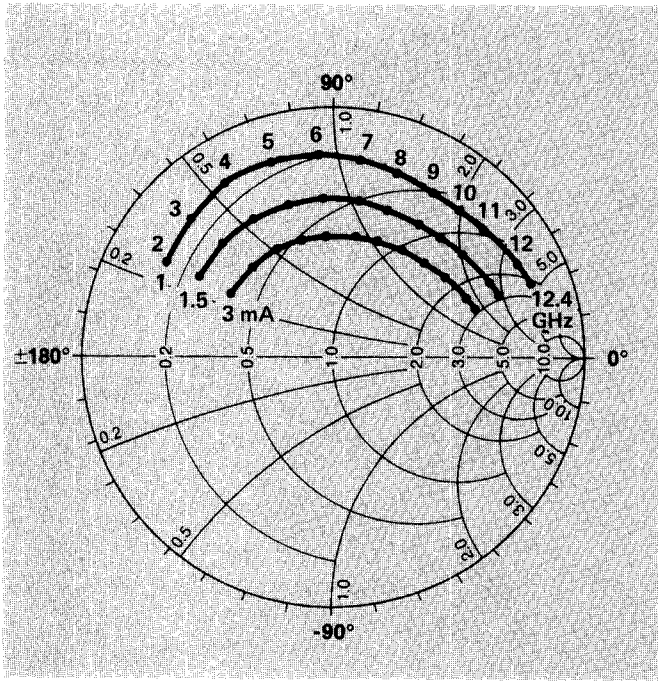


Figure 27. Typical Admittance Characteristics, 5082-2702 with self bias.

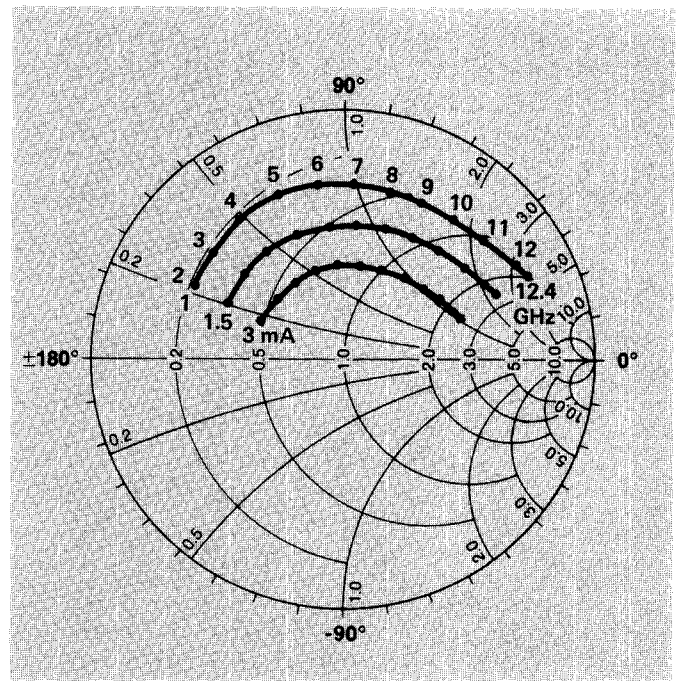


Figure 28. Typical Admittance Characteristics, 5082-2295 with self bias.

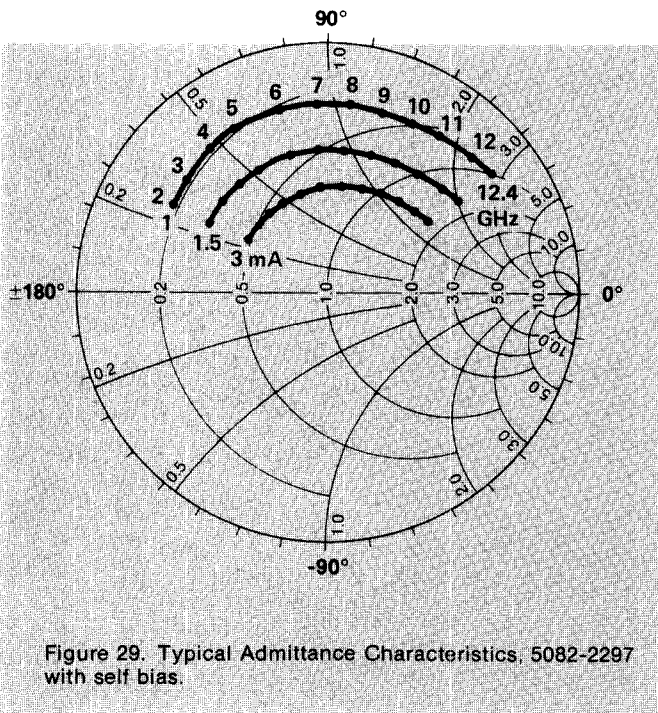


Figure 29. Typical Admittance Characteristics, 5082-2297 with self bias.

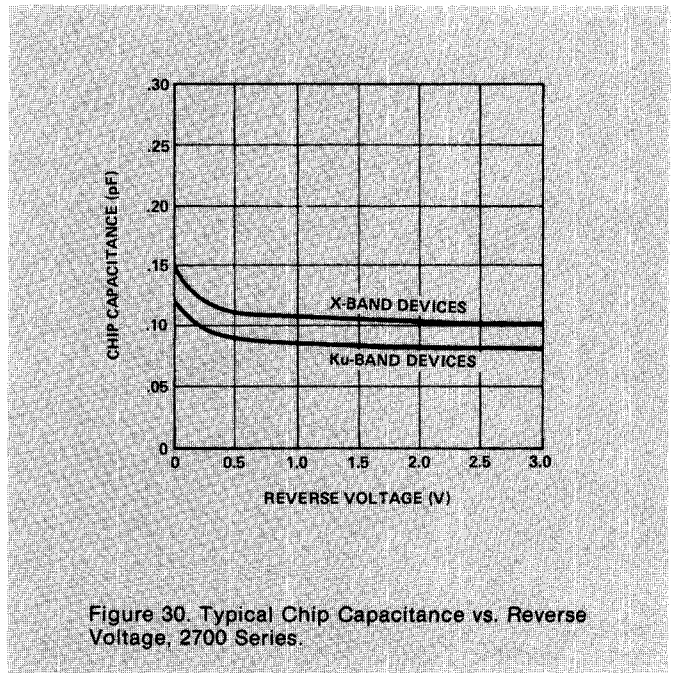


Figure 30. Typical Chip Capacitance vs. Reverse Voltage, 2700 Series.

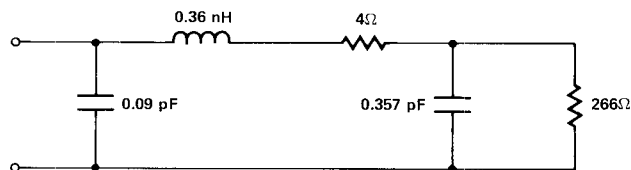


Figure 31. Model for 5082-2701 Mixer Diodes — Rectified Current 1.5 mA.