



HIGH ISOLATION SILICON MMIC IF AMPLIFIERS

T-74-11-01

UPC1668 SERIES
UPC1669 SERIES
UPC1670 SERIES

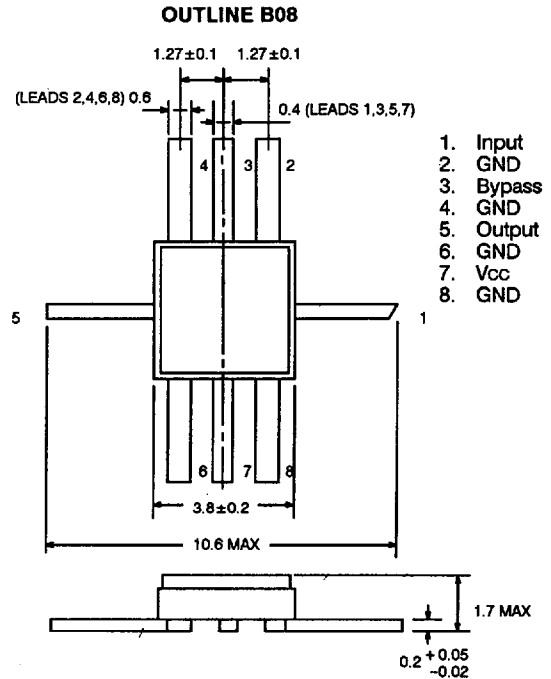
FEATURES

- HIGH ISOLATION
- LOW INPUT/OUTPUT RETURN LOSS
- LOW IMD

DESCRIPTION AND APPLICATIONS

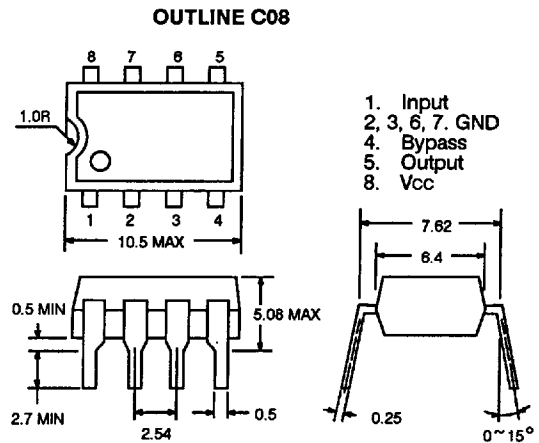
The UPC1668, 1669, 1670, are bipolar analog integrated circuits which function as high isolation IF amplifiers. They have been specifically designed as IF amplifiers for video communications. The series is available in two package styles and in chip form.

OUTLINE DIMENSIONS (Units in mm)



ABSOLUTE MAXIMUM RATINGS (TA = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
Vcc	Supply Voltage	V	12
PT	Total Power Dissipation UPC1668B, 69B, 70B UPC1668C, 69C, 70C	W mW	1.5 750
Tstg	Storage Temperature UPC1668B, 69B, 70C UPC1668C, 69C, 70C	°C °C	-65 to +200 -55 to +150
PIN	Input Power	dBm	+15



RECOMMENDED OPERATING CONDITIONS

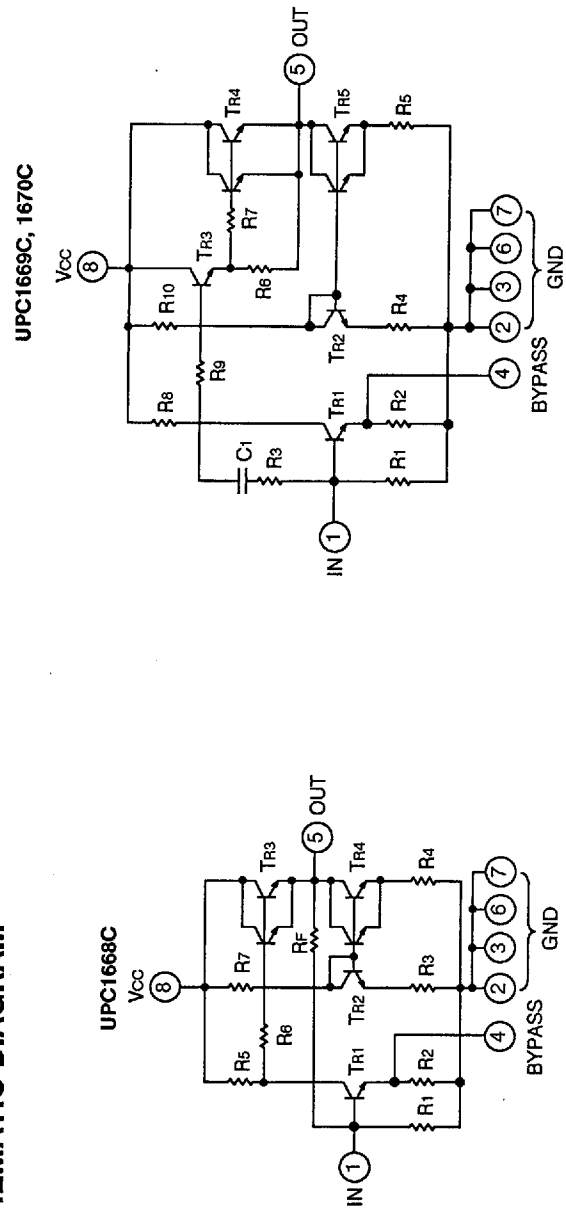
PART NUMBER PACKAGE OUTLINE			UPC1668,69,70B B08			UPC1668,69,70C C08		
SYMBOLS	ITEMS	UNITS	MIN	TYP	MAX	MIN	TYP	MAX
TOP	Operating Temperature	°C	-55		+125	-45		+85
Vcc	Supply Voltage	V	8	10	11	8	10	11

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ C$)

SYMBOLS	PARAMETERS AND CONDITIONS	UPC1668B B08			UPC1669B B08			UPC1670B B08			UPC1668C C08			UPC1669C C08			UPC1670C C08		
		MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
I_{CC}	Circuit Current, $V_{CC} = 10 V, P_{IN} = 0 dBm$	35	48	60	35	48	60	35	48	60	35	48	60	35	48	60	35	48	60
G_L^*	Linear Gain, $V_{CC} = 10 V, f = 70 MHz$	12.5	14.5	16.0	9.0	10.5	12.0	8.5	10.5	12.0	14.5	16.0	16.0	9.0	10.5	12.0	5.5	7.0	8.5
f_{OPR}^*	Operating Frequency, $V_{CC} = 10 V$	10		170	10		180	10		220	10		150	10		150	10		150
I_{SOL}^*	Isolation, $V_{CC} = 10 V, f = 70 MHz$	45	60		45	55		45	60		45	55		45	55		45	55	
$RLIN^*$	Input Return Loss, $V_{CC} = 10 V, f = 70 MHz$	16	22		16	30		16	20		16	26		16	28		16	25	
$RLOUT^*$	Output Return Loss, $V_{CC} = 10 V, f = 70 MHz$	20	30		20	35		20	35		20	30		20	50		20	35	
$P_1 dB^*$	1 dB Gain Compression Output Power, $V_{CC} = 10 V, f = 70 MHz$		13			11			11			13			11			11	
NF*	Noise Figure, $V_{CC} = 10 V, f = 70 MHz$		6.5			7.0			7.5			6.5			7.0			7.5	
$IM3^*$	3rd Order Intermodulation, $V_{CC} = 10 V, f_1 = 70 MHz, f_2 = 72 MHz, P_{O1} = P_{O2} = 0 dBm$		50			56			56			50			56			56	

* $Z_0 = 75 \Omega$

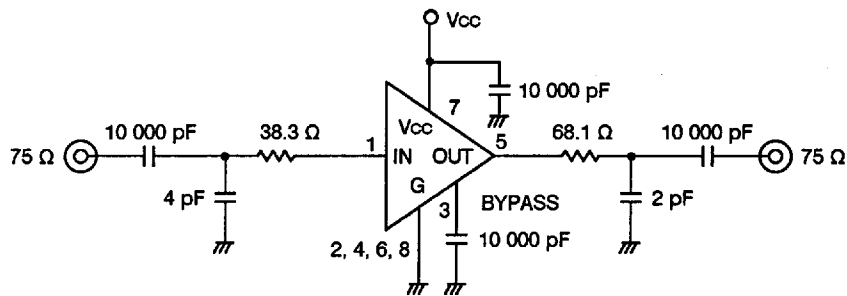
SCHEMATIC DIAGRAM



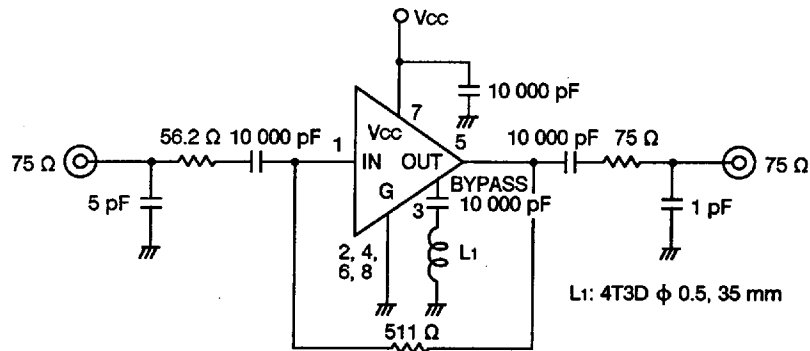
UPC1668 SERIES, UPC1669 SERIES, UPC1670 SERIES

TEST CIRCUIT DIAGRAMS (70 MHz Recommended Circuits)

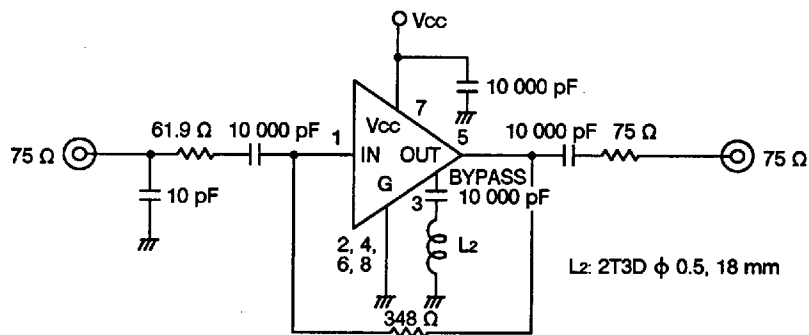
UPC1668B



UPC1669B

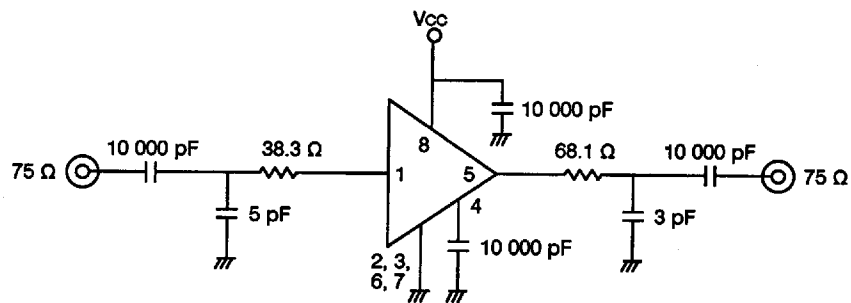


UPC1670B

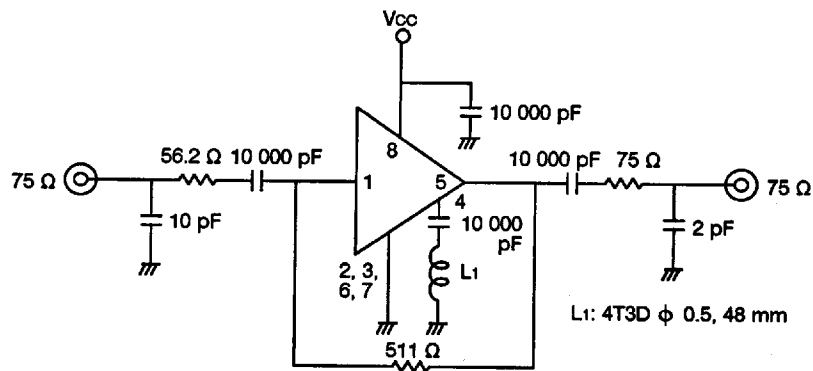


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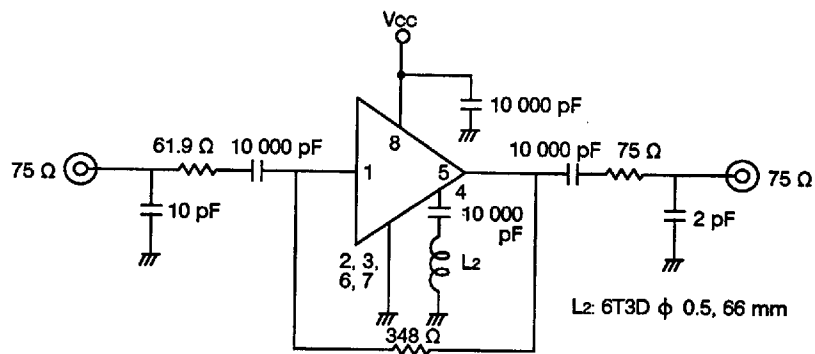
UPC1668C



UPC1669C

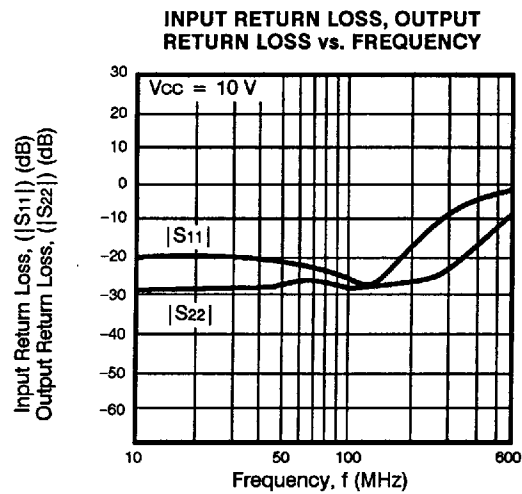
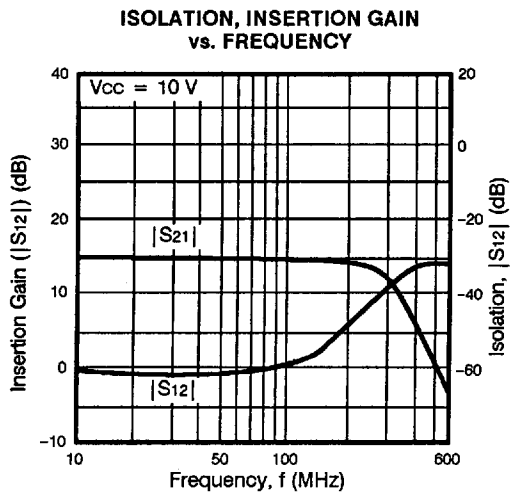
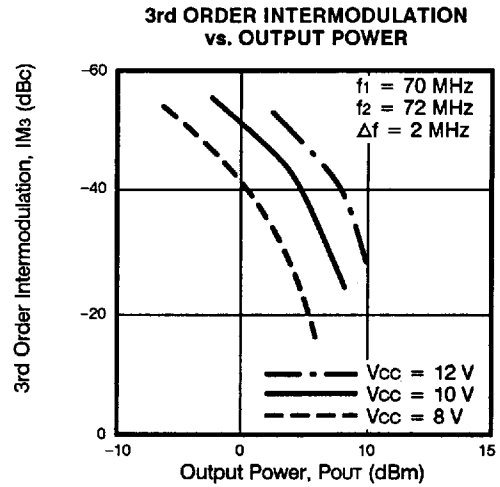
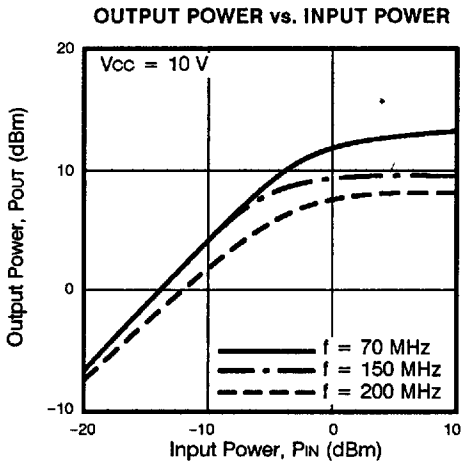
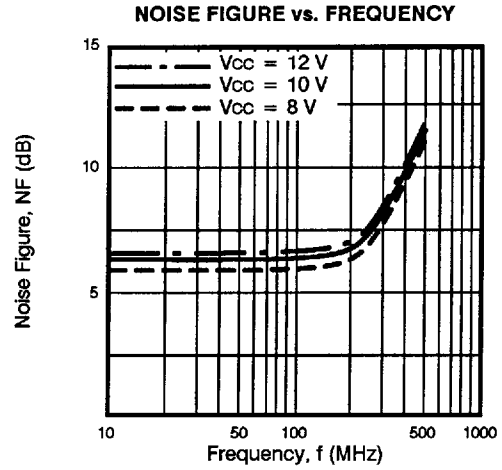
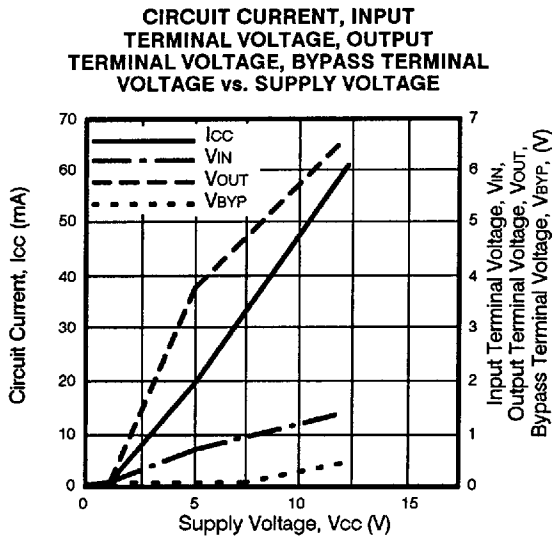


UPC1670C

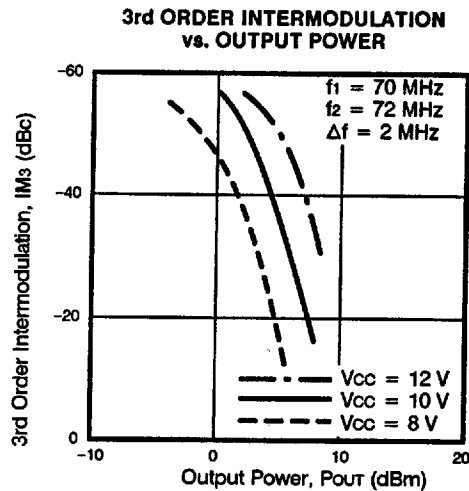
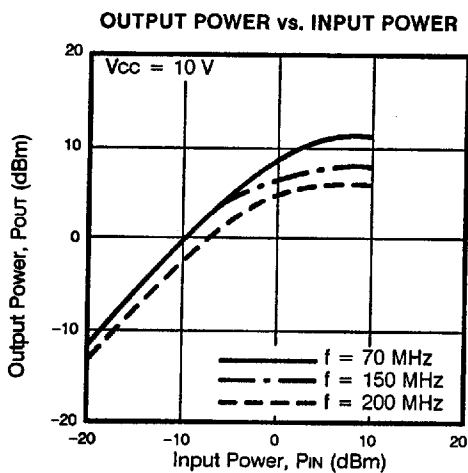
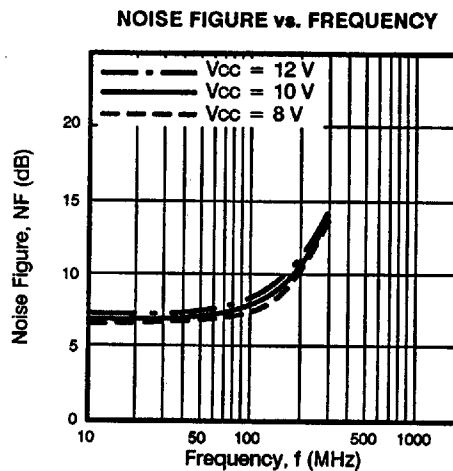
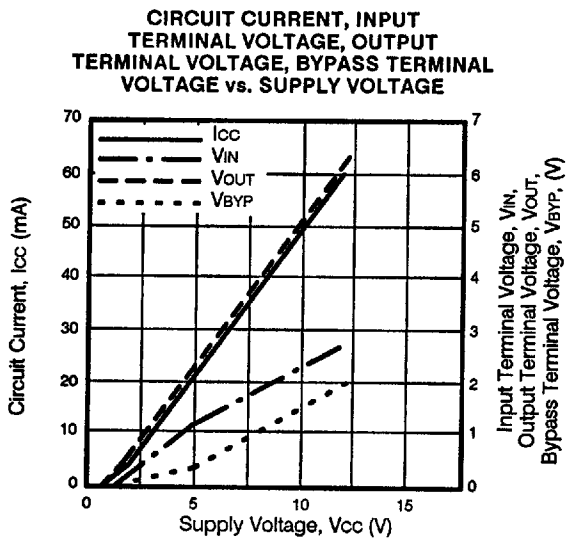
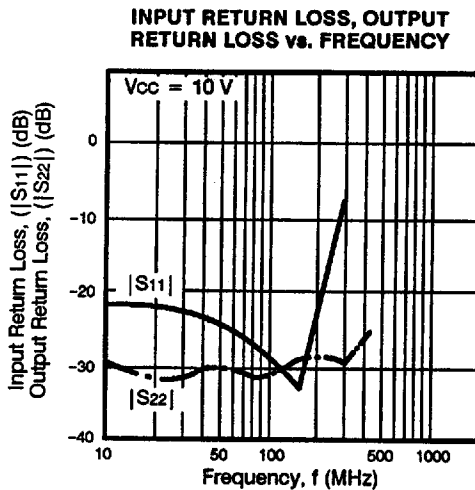
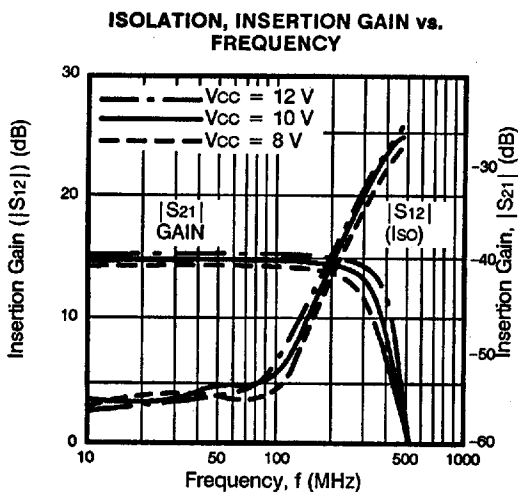


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TYPICAL PERFORMANCE CHARACTERISTICS (TA = 25 °C)



TYPICAL PERFORMANCE CHARACTERISTICS (T_A = 25 °C)

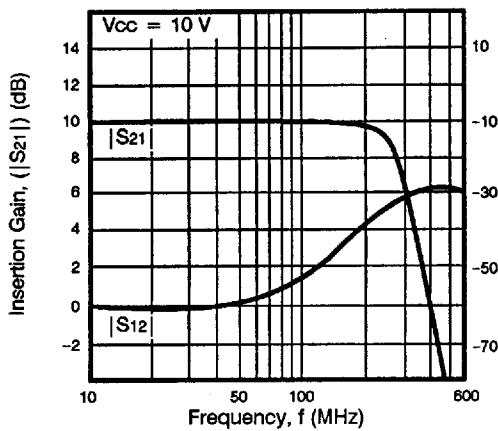


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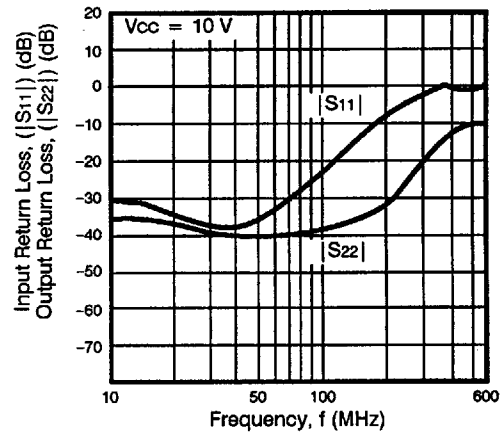
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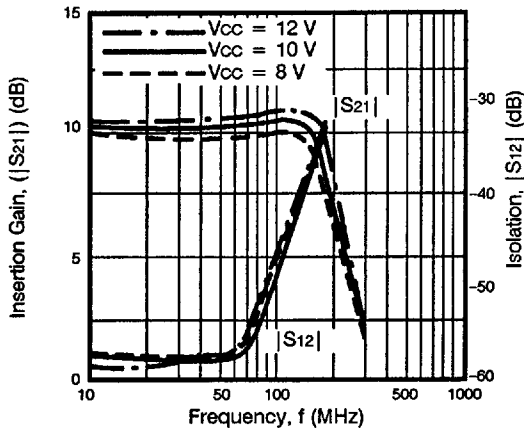
ISOLATION, INSERTION GAIN vs. FREQUENCY



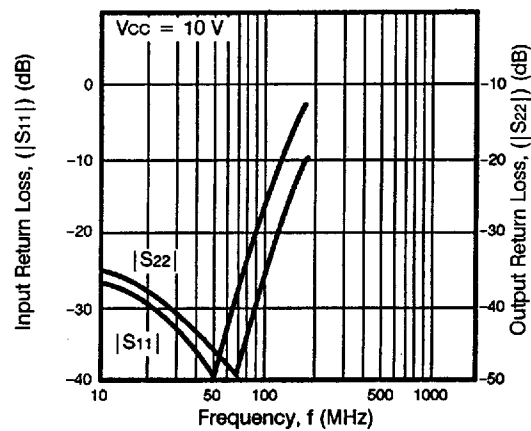
INPUT RETURN LOSS, OUTPUT RETURN LOSS vs. FREQUENCY



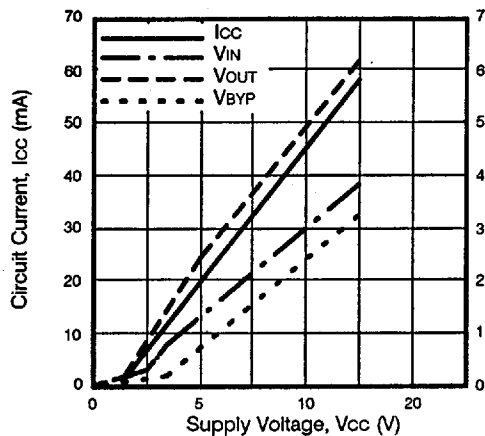
ISOLATION, INSERTION GAIN vs. FREQUENCY



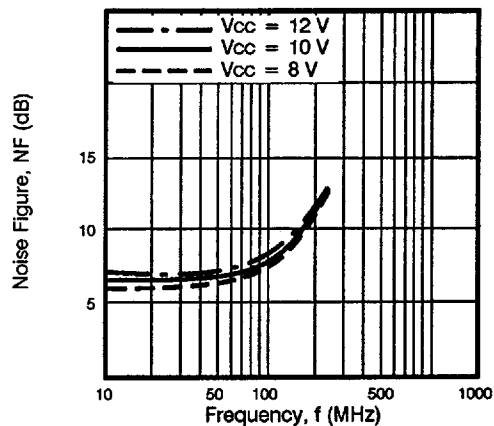
INPUT/OUTPUT RETURN LOSS vs. FREQUENCY



CIRCUIT CURRENT, INPUT TERMINAL VOLTAGE, OUTPUT TERMINAL VOLTAGE, BYPASS TERMINAL VOLTAGE vs. SUPPLY VOLTAGE



NOISE FIGURE vs. FREQUENCY



TYPICAL PERFORMANCE CHARACTERISTICS (TA = 25 °C)

