NEC

HYBRID IC AMPLIFIER
MC5152,53

Hybrid Broadband Amplifier

FEATURES

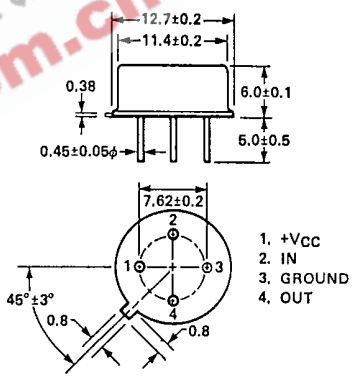
- BROADBAND PERFORMANCE
  5 TO 300MHz
- HERMETICALLY SEALED TO-8 PACKAGE
- INPUT AND OUTPUT MATCHED TO 75Ω
- HIGH RELIABILITY
- LOW INTERMODULATION DISTORTION
  IM_3 = –50dB
- LOW NOISE FIGURE

DESCRIPTION AND APPLICATIONS

The MC5152 and MC5153 are thin film hybrid integrated circuits designed for broadband general purpose or IF amplifier applications up to 300MHz. Both devices feature low noise and distortion, flat gain, and are tuned to 75Ω. Since these devices are designed to serve as broadband VHF amplifiers, they offer solutions to many amplifier problems including instruments where a broad bandwidth is required. For narrow band applications, bandpass circuits may be used. The MC5152 and MC5153 are complete circuits which require no additional adjustments or components. Reliability and performance are assured by gold metallized transistors and NEC's stringent quality control procedures.

PHYSICAL DIMENSIONS (Units in mm)

PACKAGE CODE - MC3



ELECTRICAL CHARACTERISTICS (T_a=25°C)

MC PART NUMBER / PACKAGE CODE			MC5152 MC3			MC5153 MC3		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX	MIN	TYP	MAX
I_{CC}	Operating current	mA	29	32	34	59	67	75
$\|S_{21}\|$	Power Gain at f = 5 ~ 300MHz	dB	14.5	15.0	15.5	14.5	15.0	15.5
$\Delta\|S_{21}\|$	Gain Flatness at f = 5 ~ 300MHz, Z_O = 75Ω	dB		±0.25	±0.5		±0.25	±0.5
$\|S_{11}\|$	Input Reflection Loss at f = 5 ~ 300MHz	dB	–10			–10		
$\|S_{22}\|$	Output Reflection Loss at f = 5 ~ 300MHz	dB	–10			–10		
$\|S_{12}\|$	Inversion Power Gain at f = 5 ~ 300MHz	dB	–15			–15		
NF	Noise Figure at f = 5 ~ 300MHz	dB		4.0	4.5		6.0	6.5
IM_3	3rd Order Intermodulation Distortion f_1 = 190MHz, f_2 = 200MHz, f = $2f_2 - f_1$	dB			–50			–66
IP_3	3rd Order Intercept Point f_1 = 190MHz, f_2 = 200MHz, f = $2f_2 - f_1$	dB	25			33		
P_{out}	Power Output at 1dB Compression, f = 200MHz, Z_O = 75Ω	dBm	9	10		18	20	

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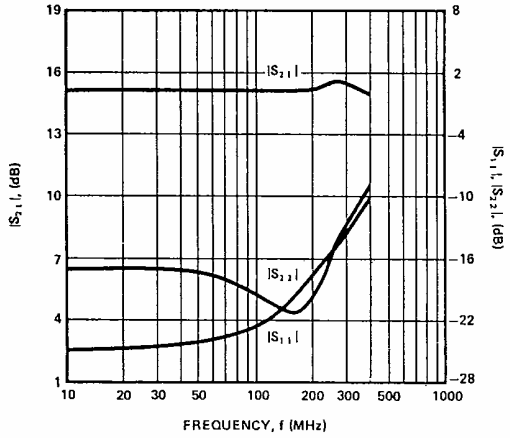
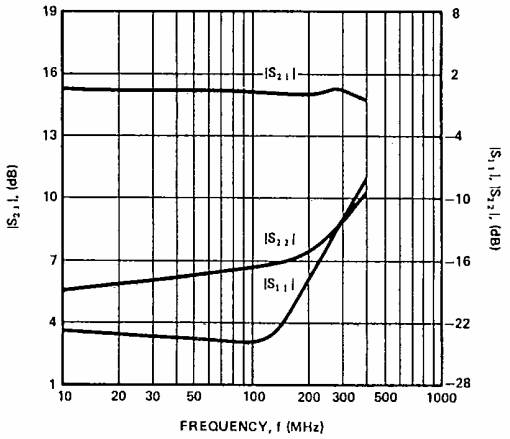
PERFORMANCE CHARACTERISTICS (T_a=25°C) (V_{CC} = 15V, Z_S = Z_L = 75Ω)

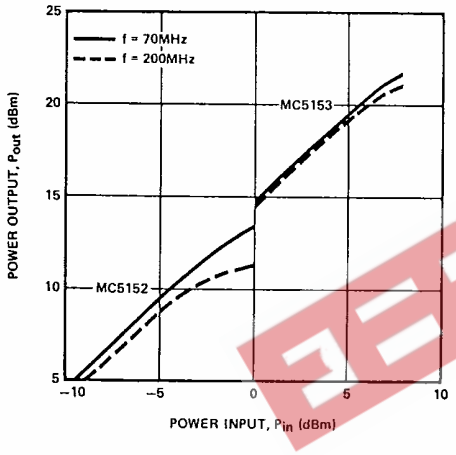
TYPICAL PERFORMANCE FOR THE MC5152



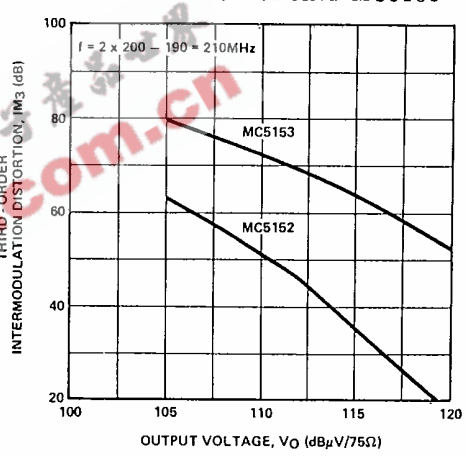
TYPICAL PERFORMANCE FOR THE MC5152



TYPICAL POWER OUTPUT VS. POWER INPUT FOR THE MC5152 AND MC5153



TYPICAL THIRD-ORDER INTERMODULATION DISTORTION CHARACTERISTICS FOR THE MC5152 AND MC5153

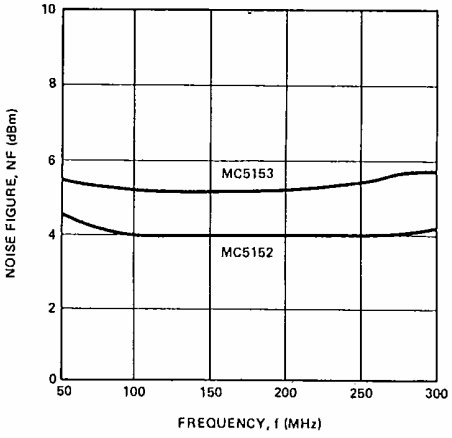


ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V_{CC}	Supply Voltage	V	18
I_{CC}	Operating Current MC5152 MC5153	 dBm dBm	 45 90
P_{in}	Input Power MC5152 MC5153	 dBm dBm	 0 10
P_T	Total Power Dissipation MC5152 MC5153	 mW mW	 800 1600
T_{opt}*	Operating Temperature MC5152 MC5153	 °C °C	 –40~+90 –40~+75
T_{stg}	Storage Temperature	°C	–40~+100

*T_{opt} is the temperature at the back of the case.

TYPICAL NOISE FIGURE VS. FREQUENCY FOR THE MC5152 AND MC5153



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