

Hybrid Broadband Amplifier

FEATURES

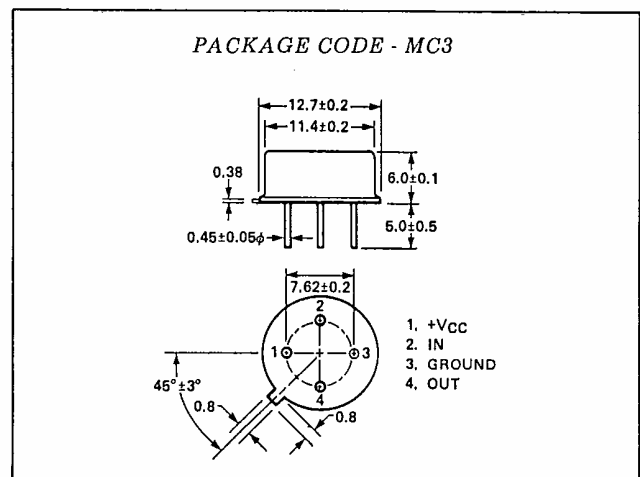
- BROADBAND PERFORMANCE
5 TO 300MHz
- HERMETICALLY SEALED TO-8 PACKAGE
- INPUT AND OUTPUT MATCHED TO 75Ω

- 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)



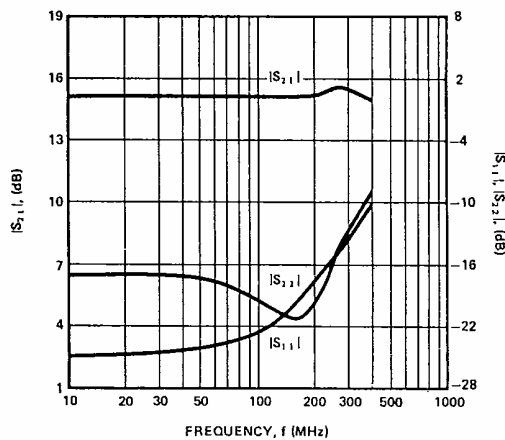
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ C$)

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 $f = 5 \sim 300MHz$	dB	14.5	15.0	15.5	14.5	15.0	15.5
$\Delta S_{21} $	Gain Flatness at $f = 5 \sim 300MHz$, $Z_0 = 75\Omega$	dB		± 0.25	± 0.5		± 0.25	± 0.5
$ S_{11} $	Input Reflection Loss at $f = 5 \sim 300MHz$	dB	-10			-10		
$ S_{22} $	Output Reflection Loss at $f = 5 \sim 300MHz$	dB	-10			-10		
$ S_{12} $	Inversion Power Gain at $f = 5 \sim 300MHz$	dB	-15			-15		
NF	Noise Figure at $f = 5 \sim 300MHz$	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, $f = 200MHz$, $Z_0 = 75\Omega$	dBm	9	10		18	20	

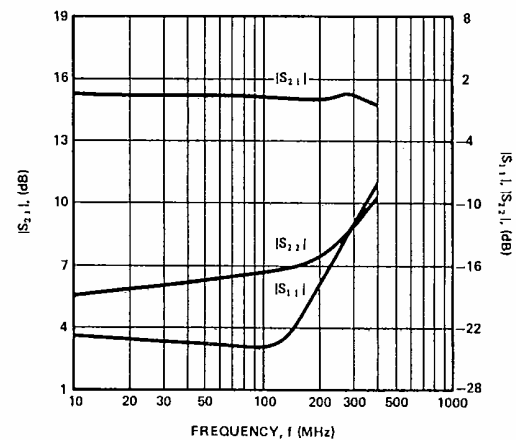
MC5152, MC5253, HYBRID BROADBAND AMPLIFIER

PERFORMANCE CHARACTERISTICS ($T_a = 25^\circ\text{C}$) ($V_{CC} = 15\text{V}$, $Z_S = Z_L = 75\Omega$)

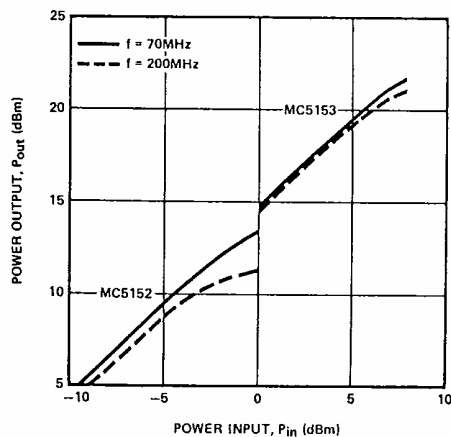
TYPICAL PERFORMANCE
FOR THE MC5152



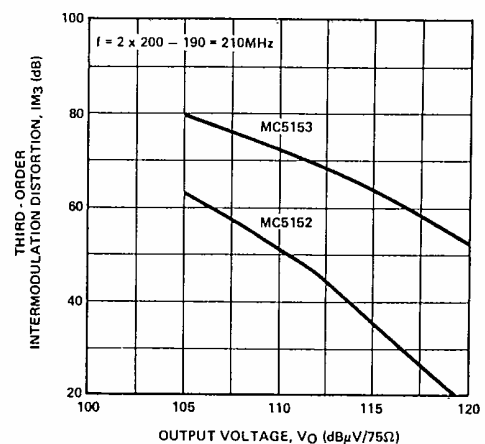
TYPICAL PERFORMANCE
FOR THE MC5152



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



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

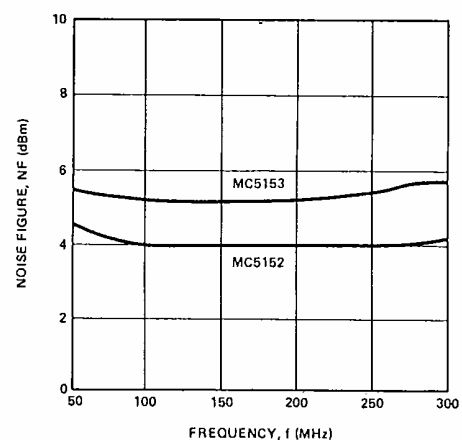


ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

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

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

TYPICAL NOISE FIGURE VS. FREQUENCY
FOR THE MC5152 AND MC5153



EXCLUSIVE SALES AGENT FOR **NEC Corporation** MICROWAVE SEMICONDUCTORS PRODUCTS — U.S. & CANADA
CALIFORNIA EASTERN LABORATORIES, INC. • Headquarters • 3005 Democracy Way • Santa Clara, CA 95050 • (408) 988-3500 • Telex 34-6393 or 171197