NEC
ELECTRON DEVICE

THICK FILM HYBRID INTEGRATED CIRCUIT
MC-5157

VHF~UHF BROAD-BAND AMPLIFIER

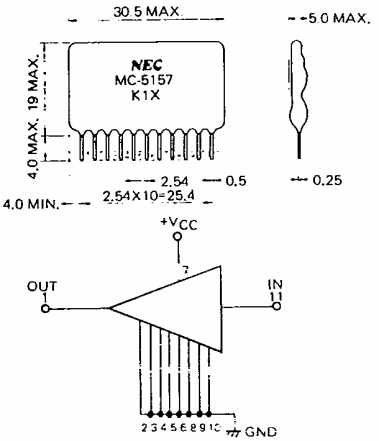
DESCRIPTION AND APPLICATIONS

The MC-5157 is a thick film hybrid integrated circuit designed for broad-band general purpose amplifier applications in the 30 to 900 MHz band. The device is a "post amplifier" which features low noise, flat gain with a typical output of 100 to 110 dBμV/75 Ω. Since the MC-5157 is designed to serve as a VHF·UHF TV booster amplifier, the device is matched to 75 Ω. The MC-5157 offers solutions to many amplifier problems where battery operation and bandwidth is required. Reliability and performance uniformity are assured by gold metallized transistors and NEC's stringent quality-control procedures. The MC-5157 is a complete circuit which requires no additional adjustments or components. Its use offers reductions in teh number of manufacturing operations, assembly time, parts control, maintenance and design complexity.

FEATURES

- Operates as a flat amplifier from 30 to 900 MHz without adjustments or external components.
- Input and output matching to 75 Ω.
- Low noise figure (4.5 dB TYP.)
- Low intermodulation distortion (IM_2=−46 dB, IM_3=−57 dB TYP.)

PACKAGE DIMENSIONS
in millimeters



ABSOLUTE MAXIMUM RATINGS (Ta=25 °C)

Supply Voltage	V_{CC}	18	V
Operating Current	I_{CC}	75	mA
Input Voltage	V_I	0.5	V
Total Dissipation	P_T	1.3	W
Operating Temperature	T_{opt}	−30 to +65	°C
Storage Temperature	T_{stg}	−30 to +85	°C

ELECTRICAL CHARACTERISTICS (Ta=25 °C, V_{CC}=+12 V, Z_S=Z_L=75 Ω)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Operating Current	I_{CC}	34	39	44	mA	
Average Gain	$G_{V(av)}$	24		25	dB	f=30~900 MHz
Gain Flatness	$\pm G_{V(av)}$		1.0	1.2	dB	f=30~900 MHz
Input Output VSWR	$VSWR_{I,O}$			2.5		f=30~900 MHz
Isolation	I_{SO}	30			dB	f=30~900 MHz
Noise Figure	NF		4.5	5.0	dB	f=30~300 MHz
			4.8	5.5	dB	f=300~900 MHz
2nd Order Intermodulation Distortion	IM_2		−46	−40	dB	f_1=90 MHz, f_2=100 MHz, $f=f_1+f_2$
			−51*		dB	V_O=100 dBμV/75 Ω
2nd Order Intermodulation Distortion	IM_2		−43.5	−38	dB	f_1=200 MHz, f_2=500 MHz, $f=f_1+f_2$
			−49*		dB	V_O=100 dBμV/75 Ω
3rd Order Intermodulation Distortion	IM_3		−57	−53	dB	f_1=200 MHz, f_2=210 MHz, $f=2f_1-f_2$
			−65*		dB	V_O=100 dBμV/75 Ω

*V_{CC}=15 V

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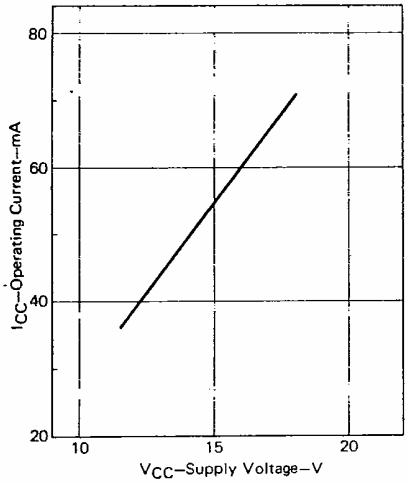
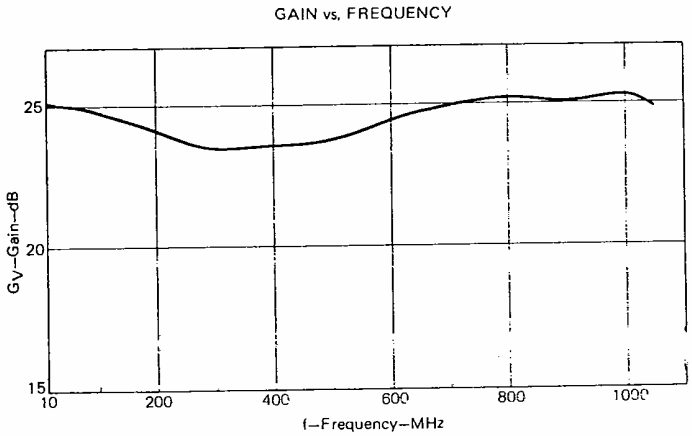
TYPICAL CHARACTERISTICS (Ta=25 °C)

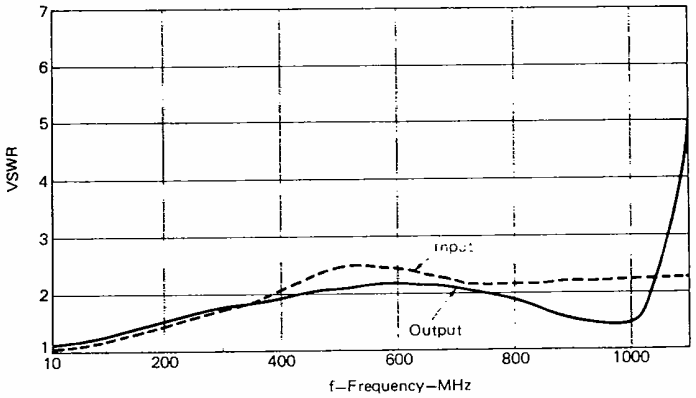
OPERATING CURRENT vs. SUPPLY VOLTAGE



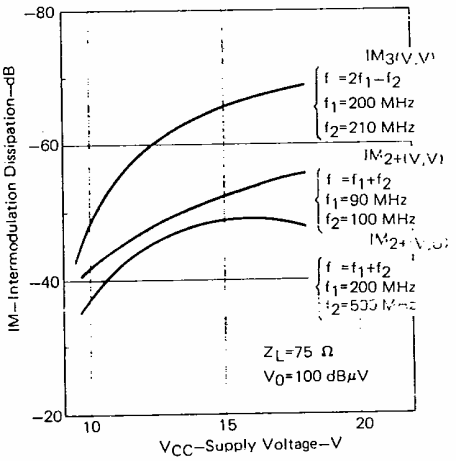
GAIN vs. FREQUENCY



VSWR vs. FREQUENCY



INTERMODULATION DISSIPATION vs. SUPPLY VOLTAGE



NOISE FIGURE VS. FREQUENCY