

UHF RF POWER TRANSISTORS

400-512 MHz • 12.5 VOLTS

50W

CM50-12A

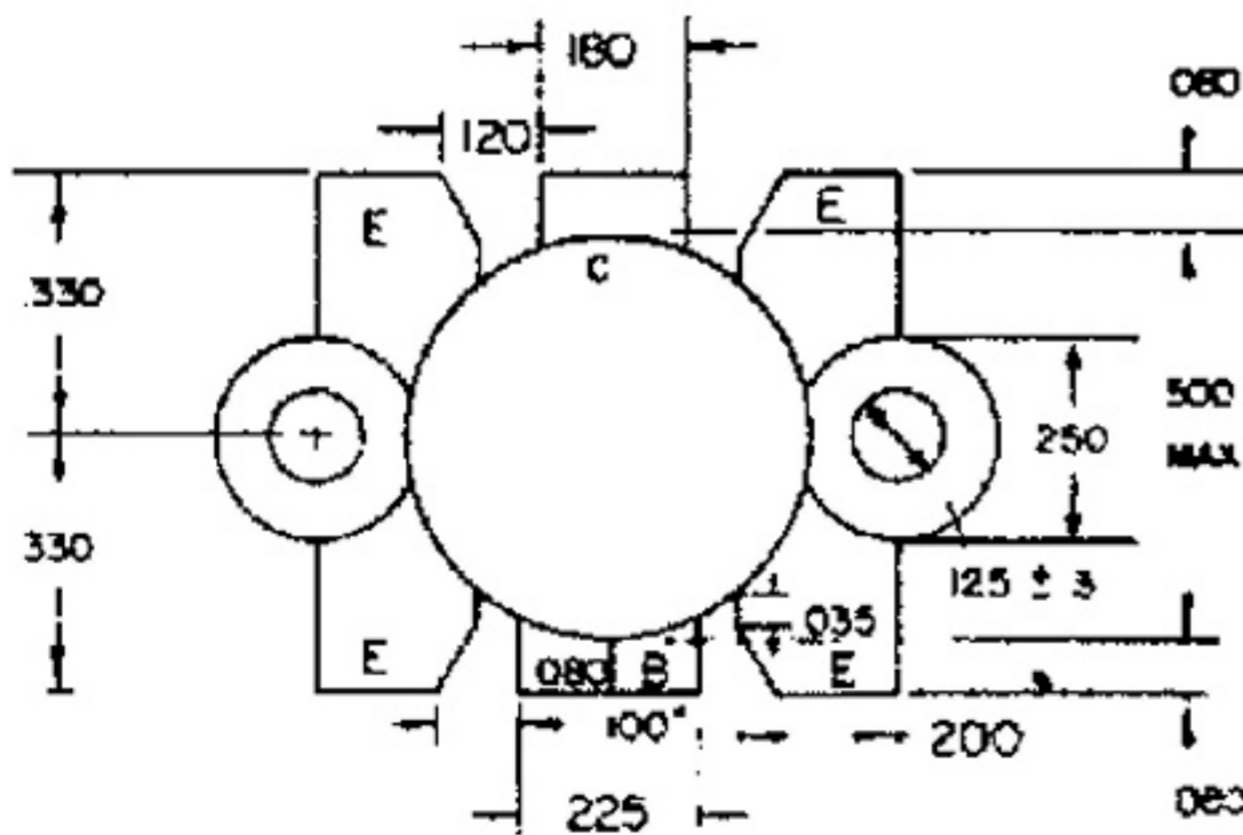


GENERAL DESCRIPTION-This device is capable of providing 50W of RF power across the entire 400-512 MHz band at a Vcc of 12.5 V.

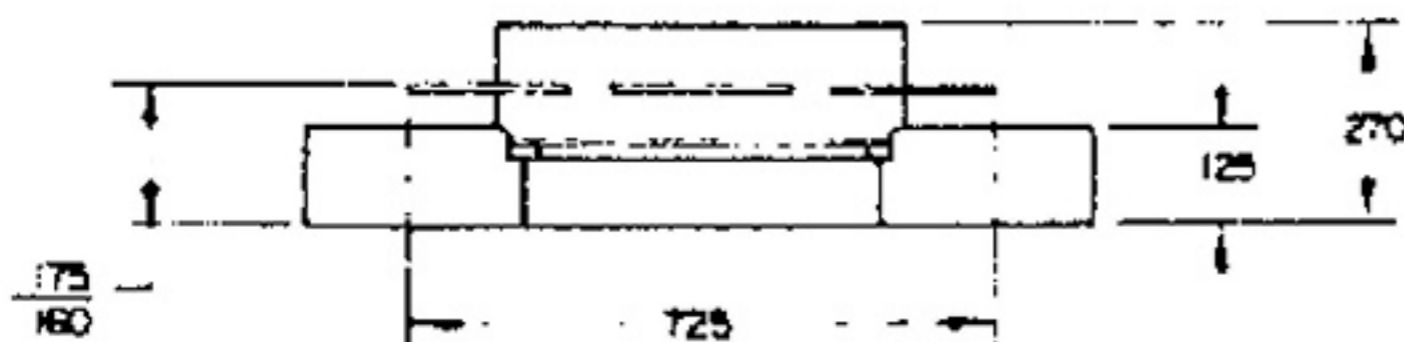
FEATURES

- SUPERIOR POWER PERFORMANCE FROM A 12.5 VOLT SUPPLY.
- MAXIMUM RELIABILITY DUE TO SINGLE CHIP CONSTRUCTION.
- GREATER HIGH FREQUENCY PERFORMANCE IN LOW INDUCTANCE CERAMIC STRIPLINE PACKAGES.
- SPECIALLY DESIGNED FOR 12.5 VOLT OPERATION COVERING THE FREQUENCY BAND OF 400-512 MHz.
- PHASE ANGLES WHEN OPERATED AT RATED POWER AND SUPPLY VOLTAGE OF 15.5 VOLTS.
- MAXIMUM BANDWIDTH DUE TO LOW Q INPUT MATCHING.

TR8 19



NOTE
ALL DIMENSIONS IN
INCHES
ALL LEADS 5 MILS
THICK



ABSOLTE MAXIMUM RATING

Maximum Temperatures

Storage Temperature	-65 ° C to + 200 ° C
Operating Junction Temperature	200 ° C
Lead Temperature (Soldering, 8 seconds time limit) > .1 / 32 "from ceramic	260 ° C

Maximum Power Dissipation (Note 1)

Total Power Dissipation at 25 ° C Case Temperature	145W
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Maximum Voltage and Current

BV CES	Collector to Emitter Voltage	36V
LV CES	Collector to Emitter Voltage	16V
BV EBO	Emitter to Base Voltage	4.0V
I C	Collector Curent	12.5A

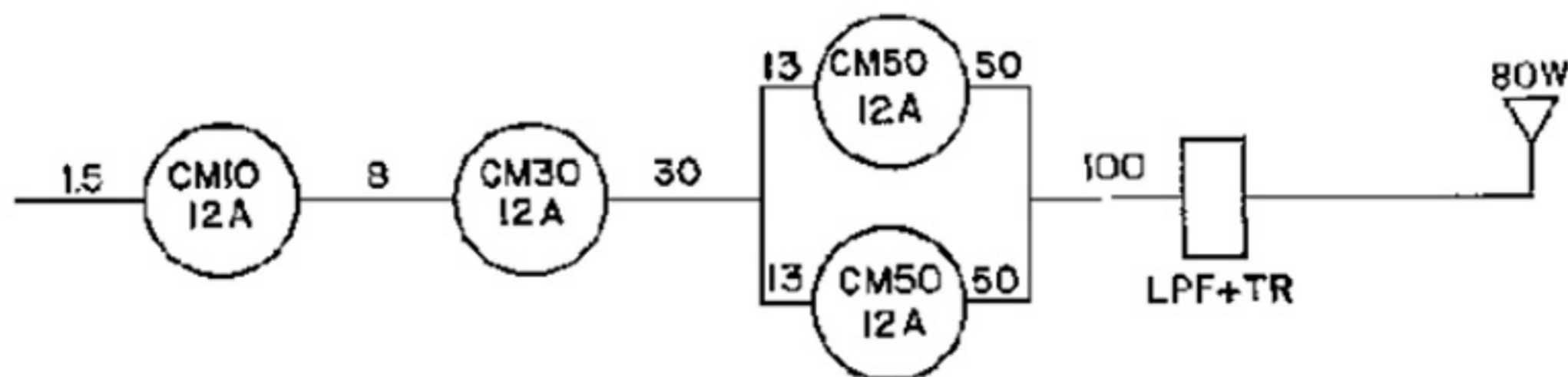
ELECTRICAL CHARACTERISTIC (25 ° C unless otherwise specified)

SYMBOL	CHARATERISTIC	MIN.	TYP	MAX.	UNITS	TEST CONDITIONS
P OUT	Power Output (Note 2)	50.0			WATT	f = 470 MHz, Vcc = 12.5 V
P IN	Power Input (Note 2) (At rated Power Out)			12.5	WATT	f = 470 MHz, Vcc = 12.5 V
<i>n</i>	Collector Efficiency (At rated Power Out)		60		%	f = 470 MHz, Vcc = 12.5 V
Z IN	Series Input Impedance		0.75 + j3.1		OHMS	At rated output power and frequency
Z L	Series Load Impedance		0.8-j2.7		OHMS	At rated output power and frequency
C CB	Collector to Base Capacitance (F = 1.0 MHz)		125		pF	V CB = 12.5 V, I E = 0
LV CEO	Collector to Emitter Voltage	16			VOLTS	I C = 50 mA, I B = 0
BV EBO	Emitter to Base Voltage	4.0			VOLTS	I C = 0, I E = 5 mA
BV CBS	Collector to Emitter	36			VOLTS	I C = 25 mA

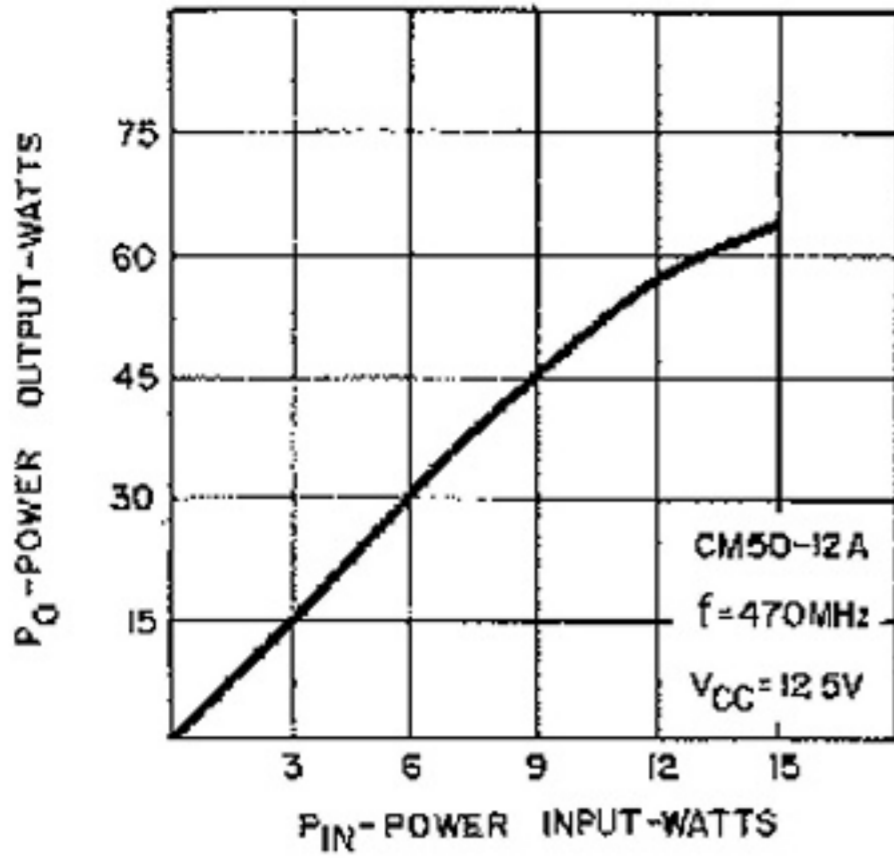
NOTES:

1. This rating gives a maximum junction temperature of 200 ° C. with junction to case themal resistance og 1.2 ° C./watt.
2. Values measured in 470 MHz test amplifier. (Fig. 1)

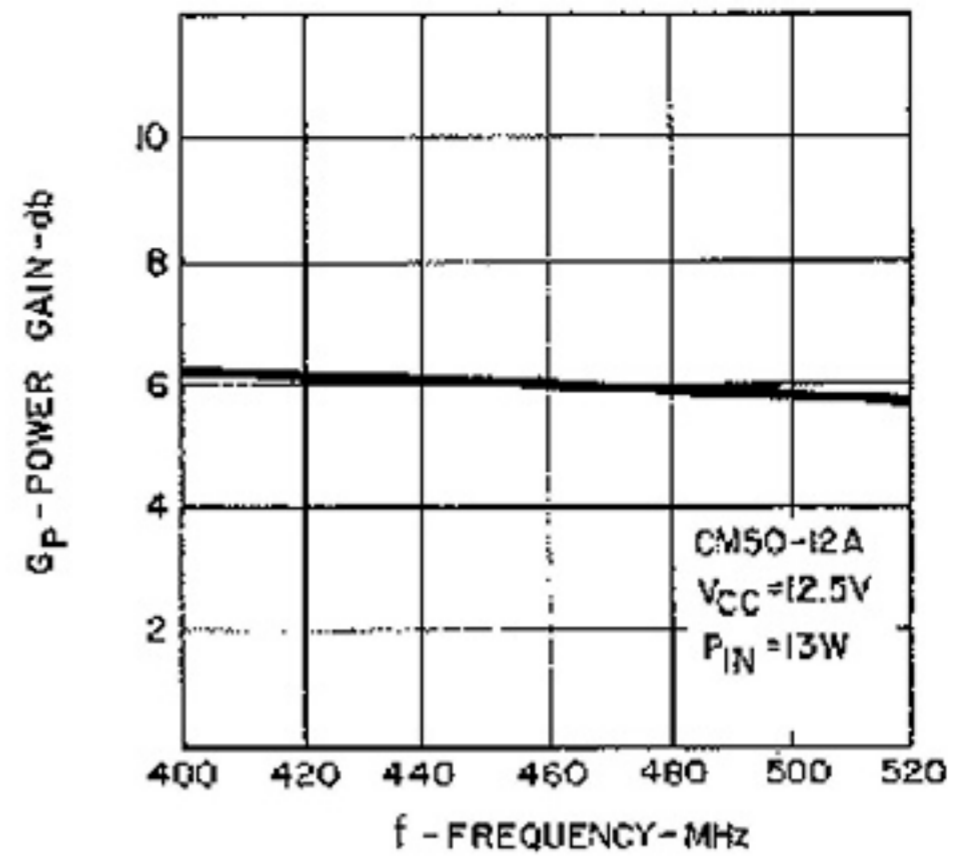
470 MHz 100W PA



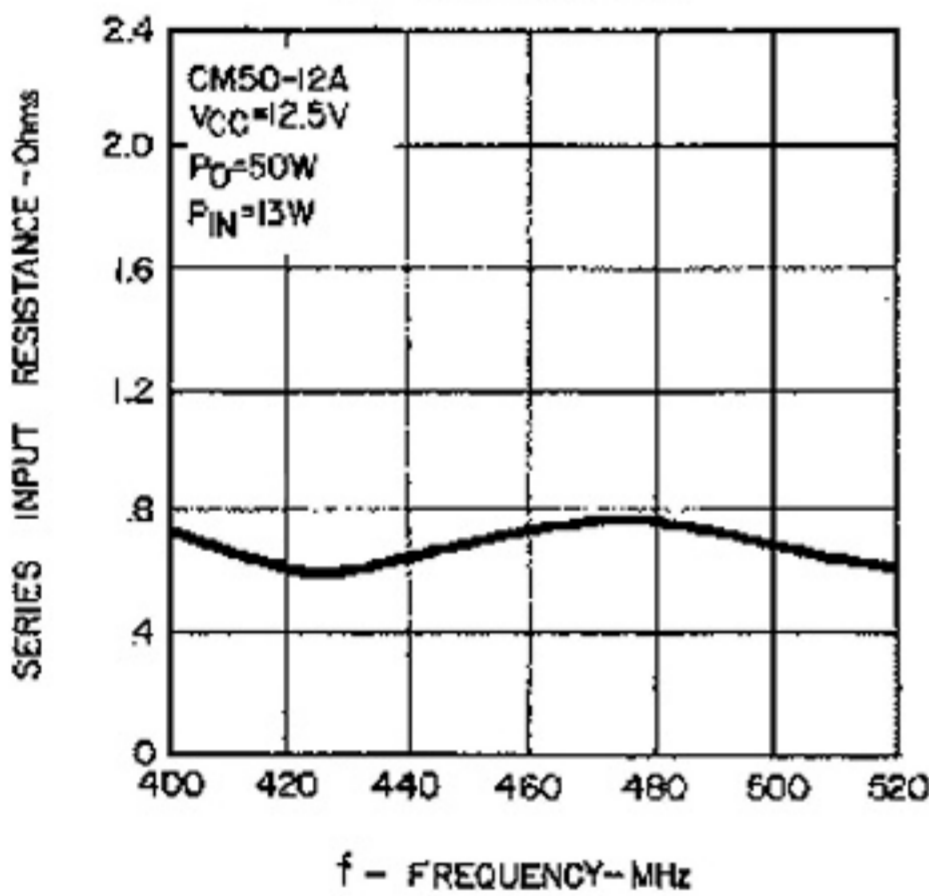
**POWER OUTPUT
VS POWER INPUT**



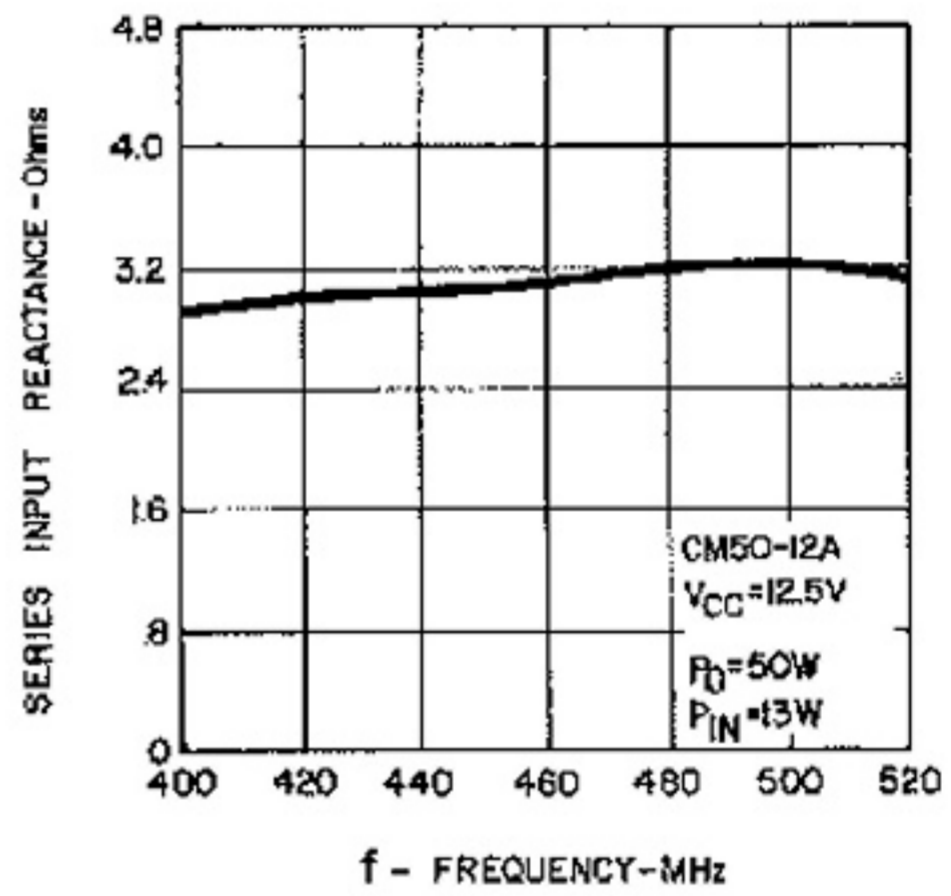
**TYPICAL POWER GAIN
VS FREQUENCY**



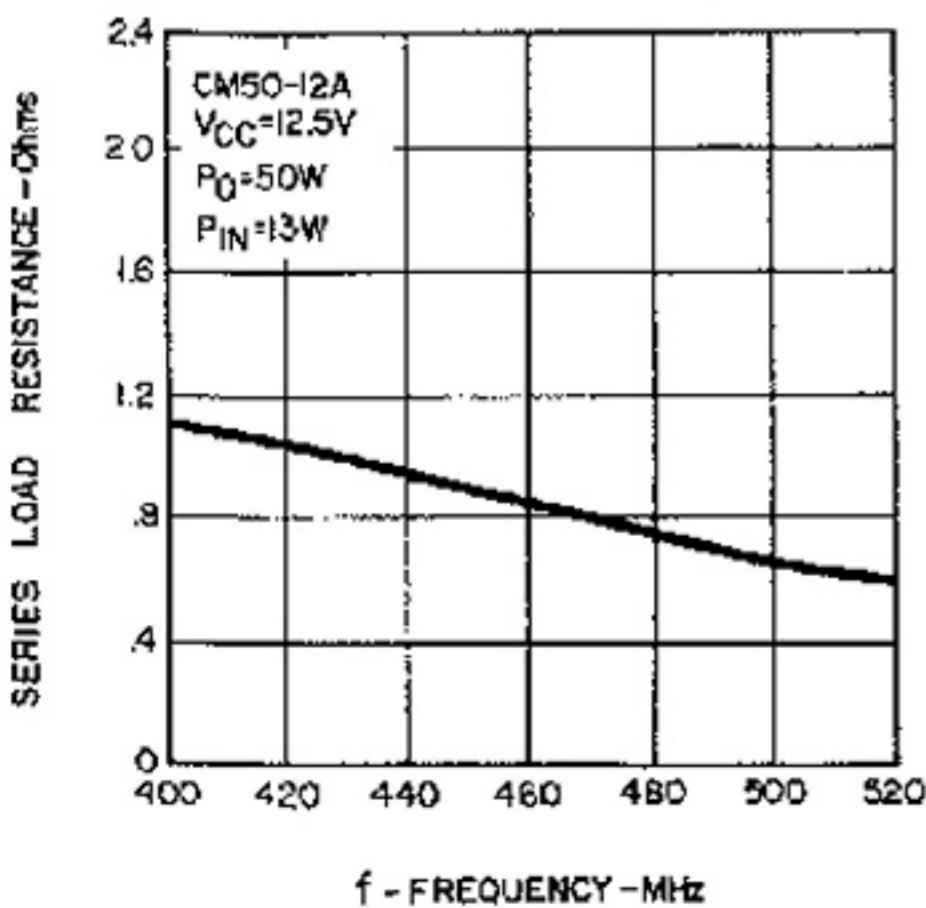
**SERIES INPUT RESISTANCE
VS FREQUENCY**



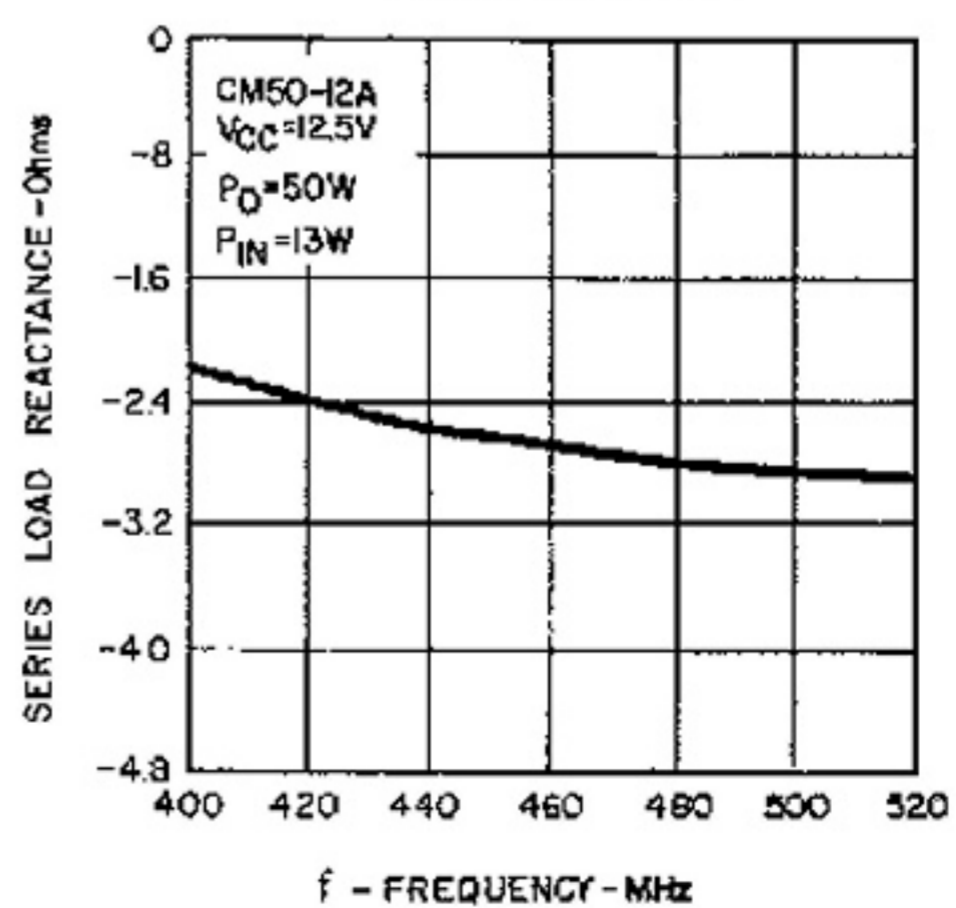
**SERIES INPUT REACTANCE
VS FREQUENCY**



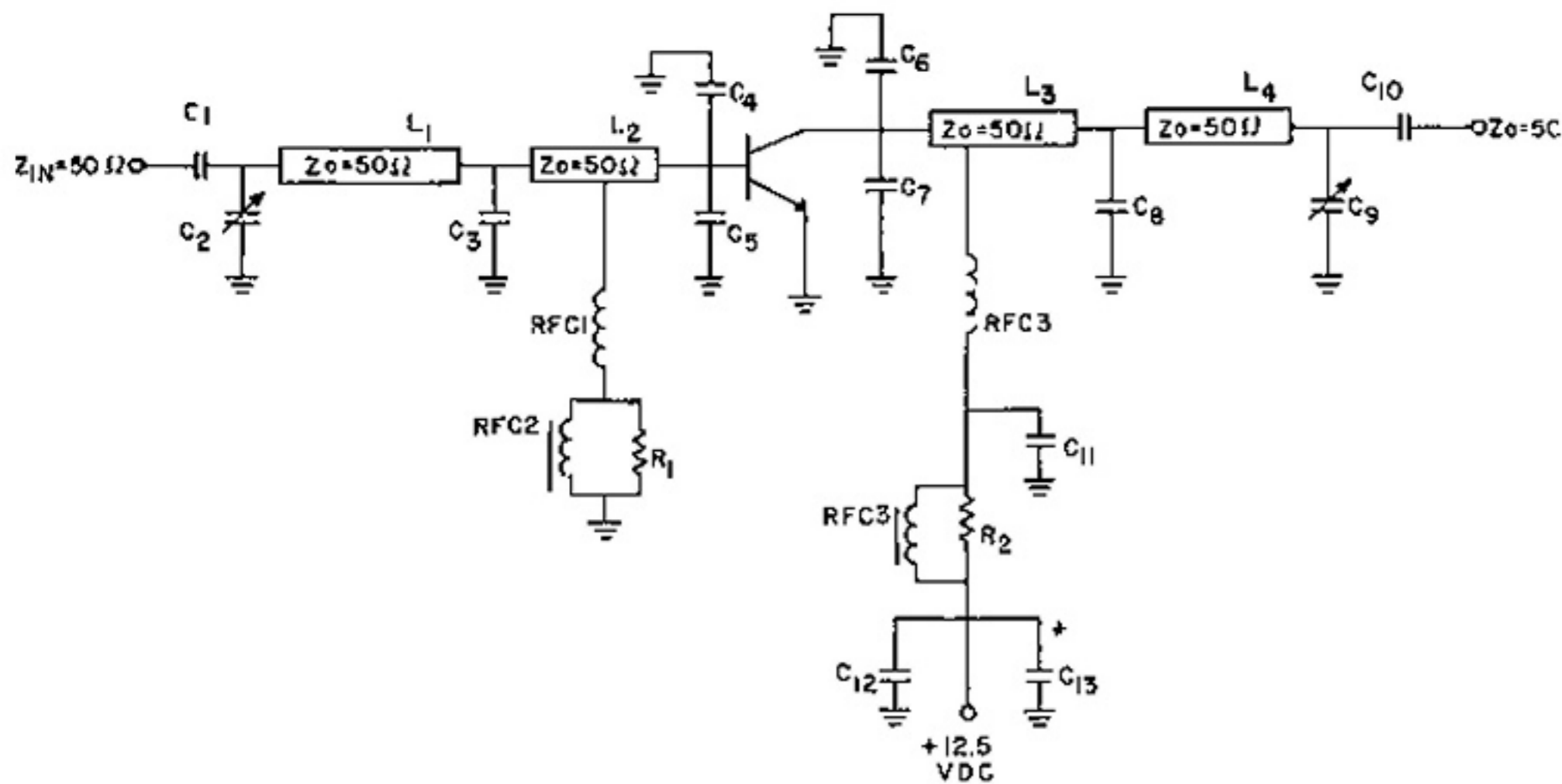
**SERIES LOAD RESISTANCE
VS FREQUENCY**



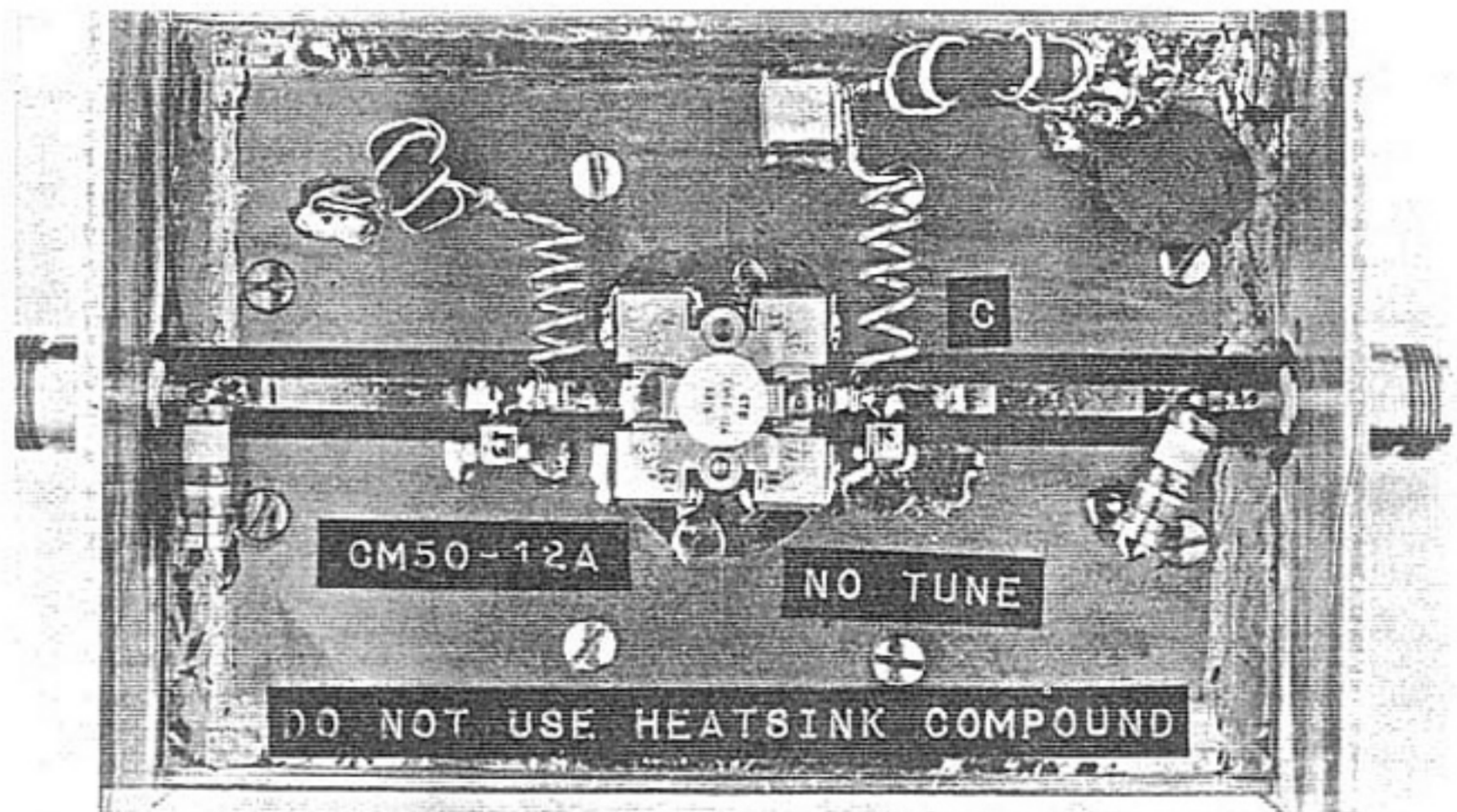
**SERIES LOAD REACTANCE
VS FREQUENCY**



CM50-12A TEST CIRCUIT
FIGURE 1



- | | | | |
|----------------|--|-------|--|
| L1 | Microstripline, $Z_0 = 50 \Omega$, $L = 1.5''$ | RFC1 | 4turns # 16 wire, 1/4 "dia., 3/4" long |
| L2 | Microstripline, $Z_0 = 50 \Omega$, $L = .6''$ | RFC 2 | 4turns # 18 wire on 1/2 "" H "TOROID |
| L3 | Microstripline, $Z_0 = 50 \Omega$, $L = .3''$ | RFC 3 | 4turns # 14 wire, 1/4 "dia., 1" long |
| L4 | Microstripline, $Z_0 = 50 \Omega$, $L = 1.65''$ | RFC 4 | 4turns # 16 wire on 1 "" H "TOROID |
| C1, C10 | 220pF chip capacitor | R1 | 15 Ω 1/2 watt |
| C2, C9 | 2-20 pF piston trimmer | R2 | 15 ohm 1 watt |
| C3, C8 | 15 pF uncased mica | | |
| C4, C5, C6, C7 | 35 pF uncased mica | | |
| C11 | 200 pF uncased mica | | |
| C12 | 0.1 μ fd disc ceramic | | |
| C13 | 1 μ fd @ 35 Vdc | | |



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<Additional information>

According to the information obtained by people who bought in the past and the information on the Internet, it can be used as the following substitutes.

However, since we do not guarantee it, please judge after reading the data sheet.

ECG company ECG368

Motorola MRF 648

NTE 368

SD1488

2SC1232

2SC2783

2SC2905

2SC3102 • • • FT-847 IC-375 IC-371 TS-2000 HL-63U (Tokyo High Power Amplifier)