

MRF628

CASE 249-05, STYLE 1

UHF AMPLIFIER TRANSISTOR

NPN SILICON



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	16	Vdc
Collector-Base Voltage	V_{CBO}	36	Vdc
Emitter-Base Voltage	V_{EBO}	4.0	Vdc
Collector Current — Continuous	I_C	200	mAdc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	3.0 17.2	Watts mW/°C
Storage Temperature	T_{stg}	-65 to +200	°C

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage(1) ($I_C = 20$ mAdc, $I_B = 0$)	$V_{(BR)CEO}$	16	—	—	Vdc
Collector-Emitter Breakdown Voltage(1) ($I_C = 20$ mAdc, $V_{BE} = 0$)	$V_{(BR)CES}$	36	—	—	Vdc
Collector-Base Breakdown Voltage ($I_C = 20$ mAdc, $I_E = 0$)	$V_{(BR)CBO}$	36	—	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = 5.0$ mAdc, $I_C = 0$)	$V_{(BR)EBO}$	4.0	—	—	Vdc
Collector Cutoff Current ($V_{CB} = 15$ Vdc, $I_C = 0$)	I_{CBO}	—	—	0.5	mAdc
Collector Cutoff Current ($V_{CE} = 15$ Vdc, $V_{BE} = 0$, $T_C = 25^\circ\text{C}$)	I_{CES}	—	—	2.0	mAdc

ON CHARACTERISTICS

DC Current Gain ($I_C = 100$ mAdc, $V_{CE} = 5.0$ Vdc)	h_{FE}	20	—	—	—
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SMALL-SIGNAL CHARACTERISTICS

Output Capacitance ($V_{CB} = 12$ Vdc, $I_E = 0$, $f = 1.0$ MHz)	C_{obo}	—	6.0	10	pF
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FUNCTIONAL TEST (FIGURES 5 AND 6)

Common-Emitter Amplifier Power Gain ($V_{CC} = 12.5$ Vdc, $P_{out} = 0.5$ W, $I_C(\text{max}) = 80$ mAdc, $f = 470$ MHz)	G_{PE}	10	—	—	dB
Collector Efficiency ($V_{CC} = 12.5$ Vdc, $P_{out} = 0.5$ W, $I_C(\text{max}) = 80$ mAdc, $f = 470$ MHz)	η	50	—	—	%

(1) Pulsed thru 25 mH inductor.

FIGURE 1 – SERIES EQUIVALENT IMPEDANCE PARAMETERS

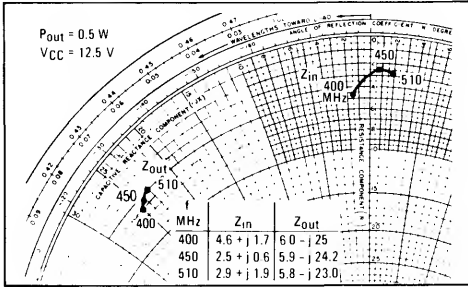


FIGURE 2 – OUTPUT POWER versus INPUT POWER

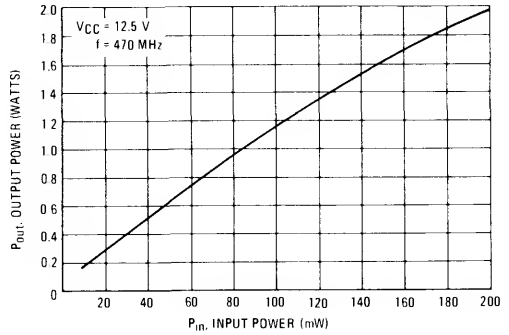


FIGURE 3 – OUTPUT POWER versus FREQUENCY

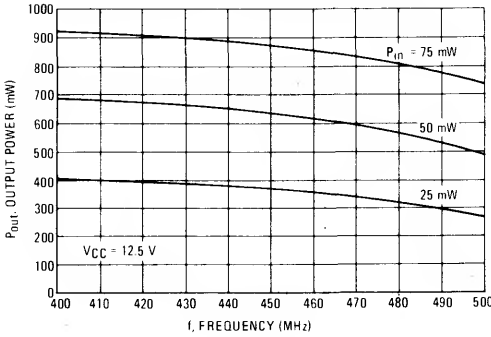


FIGURE 4 – OUTPUT POWER versus VOLTAGE

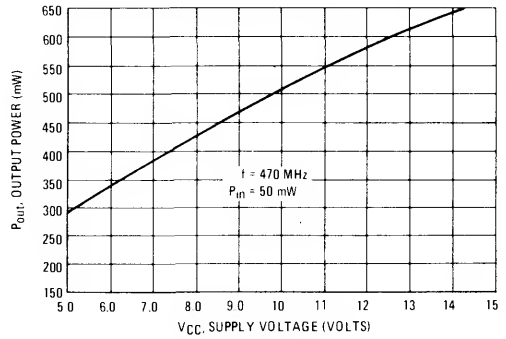


FIGURE 5 – 470 MHz TEST CIRCUIT

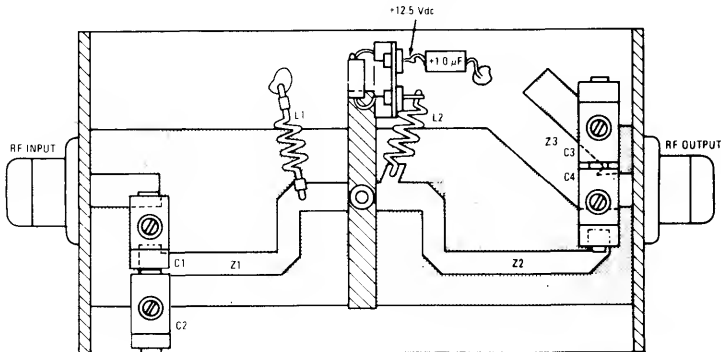
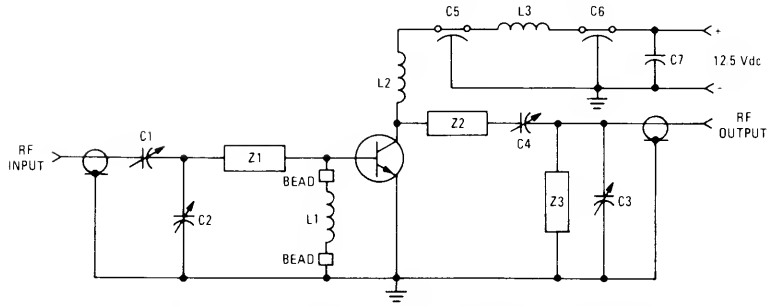


FIGURE 6 - 470 MHz TEST CIRCUIT SCHEMATIC



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|----------|---|---|
| C1,2,3,4 | 1.0-25 pF ARCO 421 OR EQUIVALENT | BOARD GLASS TEFLON, $\epsilon_r = 2.56$, $t = 0.062$ |
| C5,6 | 1000 pF FEEDTHRU CAPACITOR | MOUNTING PLATE - 3" x 5" x 0.060" |
| C7 | 1.0 μ F, 35 V CAPACITOR | INPUT OUTPUT CONNECTORS - TYPE N |
| L1,2 | 7 TURNS #22 AWG, 0.2" I.O.
FERRITE BEADS FERROXCUBE
56-590 65 38 AS SHOWN ON L1 | |
| L3 | 1-CHOKE FERROXCUBE VK-200 20-4B | |