MRF331

The RF Line

10 W — 400 MHz

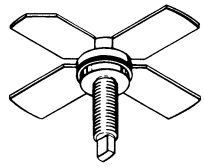
RF POWER TRANSISTOR

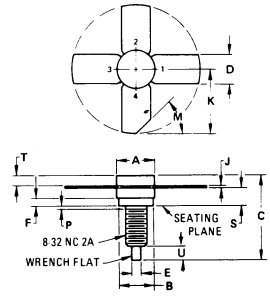
NPN SILICON

NPN SILICON RF POWER TRANSISTOR

. . . designed primarily for wideband large-signal driver and predriver amplifier stages in the 100–500 MHz frequency range.

- Guaranteed Performance at 400 MHz and 28 Vdc
  Output Power = 10 Watts
  Minimum Gain = 8 dB
  Efficiency = 55%
- 100% Tested for Load Mismatch at All Phase Angles With 30:1 VSWR
- Broadband Version of MRF321
- Gold Metallization System for High Reliability
- Controlled Wirebonding Gives High Input Impedance
- See EB74 for Broadband Circuit Details





STYLE 1:
PIN 1. EMITTER
2. BASE
3. EMITTER
4. COLLECTOR

DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	7.06	7.26	0.278	0.286
B	6.20	6.50	0.244	0.256
C	14.99	16.51	0.590	0.650
D	5.46	5.97	0.215	0.235
E	1.40	1.65	0.055	0.065
F	1.52	–	0.060	–
J	0.08	0.18	0.003	0.007
K	11.05	–	0.435	–
M	45° NOM		45° NOM	
P	–	1.27	–	0.050
S	3.00	3.25	0.118	0.128
T	1.40	1.78	0.055	0.070
U	2.92	3.68	0.115	0.145

CASE 244-04

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	33	Vdc
Collector-Base Voltage	V_{CBO}	60	Vdc
Emitter-Base Voltage	V_{EBO}	4.0	Vdc
Collector Current — Continuous — Peak	I_C	1.1 1.5	Adc
Total Device Dissipation @ T_A = 25°C (1) Derate above 25°C	P_D	27 160	Watts mW/°C
Storage Temperature Range	T_{stg}	−65 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case (2)	$R_{\theta JC}$	6.4	°C/W

(1) These devices are designed for RF operation. The total device dissipation rating applies only when the devices are operated as RF amplifiers.

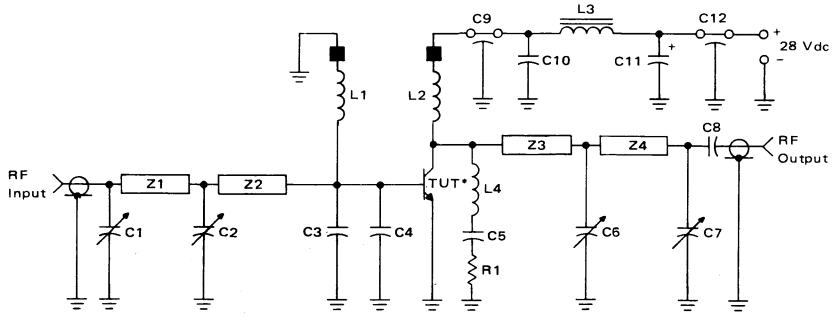
(2) Thermal Resistance is determined under specified RF operating conditions by infrared measurement techniques.

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I_C = 20 mAdc, I_B = 0)	$V_{(BR)CEO}$	33	–	–	Vdc
Collector-Emitter Breakdown Voltage (I_C = 20 mAdc, V_{BE} = 0)	$V_{(BR)CES}$	60	–	–	Vdc
Collector-Base Breakdown Voltage (I_C = 20 mAdc, I_E = 0)	$V_{(BR)CBO}$	60	–	–	Vdc
Emitter-Base Breakdown Voltage (I_E = 2.0 mAdc, I_C = 0)	$V_{(BR)EBO}$	4.0	–	–	Vdc
Collector Cutoff Current (V_{CB} = 30 Vdc, I_E = 0)	I_{CBO}	–	–	1.0	mAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 500 mAdc, V_{CE} = 5.0 Vdc)	h_{FE}	20	–	80	–
DYNAMIC CHARACTERISTICS					
Output Capacitance (V_{CB} = 28 Vdc, I_E = 0, f = 1.0 MHz)	C_{ob}	–	10	12	pF
FUNCTIONAL TESTS					
Common-Emitter Amplifier Power Gain (V_{CC} = 28 Vdc, P_{out} = 10 W, f = 400 MHz)	G_{PE}	8.0	10.5	–	dB
Collector Efficiency (V_{CC} = 28 Vdc, P_{out} = 10 W, f = 400 MHz)	η	55	65	–	%
Load Mismatch (V_{CC} = 28 Vdc, P_{out} = 10 W, f = 400 MHz, VSWR = 30:1 all phase angles)	ψ	No Degradation in Power Output			

3

FIGURE 1 – 400 MHz TEST CIRCUIT



C1, C2, C6 – 1.0–20 pF Johanson Trimmer (JMC5501)
C3, C4 – 50 pF Chip Capacitor
C5, C10 – 0.1 μF Erie Redcap
C7 – 0.5–10 pF Johanson Trimmer (JMC5201)
C8 – 270 pF Chip Capacitor
C9, C12 – 680 pF Feedthru
C11 – 1.0 μF 50 V Tantalum

R1 – 5.1 Ω 1/4 Watt

L1, L2 – 0.15 μH Molded Choke with Ferrite Bead (Ferroxcube 56-590-65/4B)

L3 – VK-200-19/4B
L4 – 4 Turns #20 Enamel, 1/8" ID

Z1 – Microstrip 0.1" W X 1.35" L
Z2 – Microstrip 0.1" W X 0.55" L
Z3 – Microstrip 0.1" W X 0.8" L
Z4 – Microstrip 0.1" W X 1.75" L

Board – Glass Teflon ϵ_r = 2.56, t = 0.062"

Input/Output Connectors – Type N

*Transistor Under Test

FIGURE 2 – POWER GAIN versus FREQUENCY

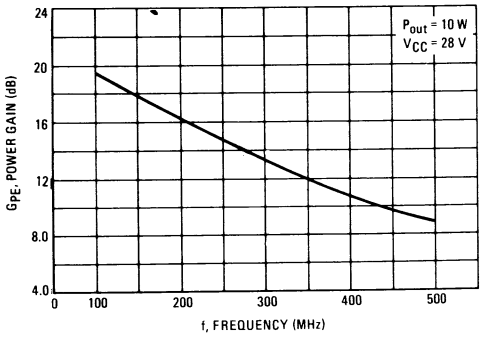


FIGURE 3 – OUTPUT POWER versus INPUT POWER

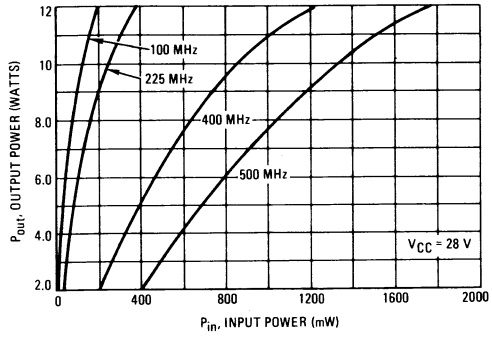


FIGURE 4 – OUTPUT POWER versus SUPPLY VOLTAGE

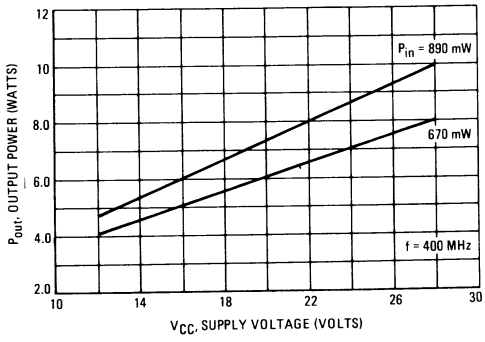


FIGURE 5 – TEST CIRCUIT

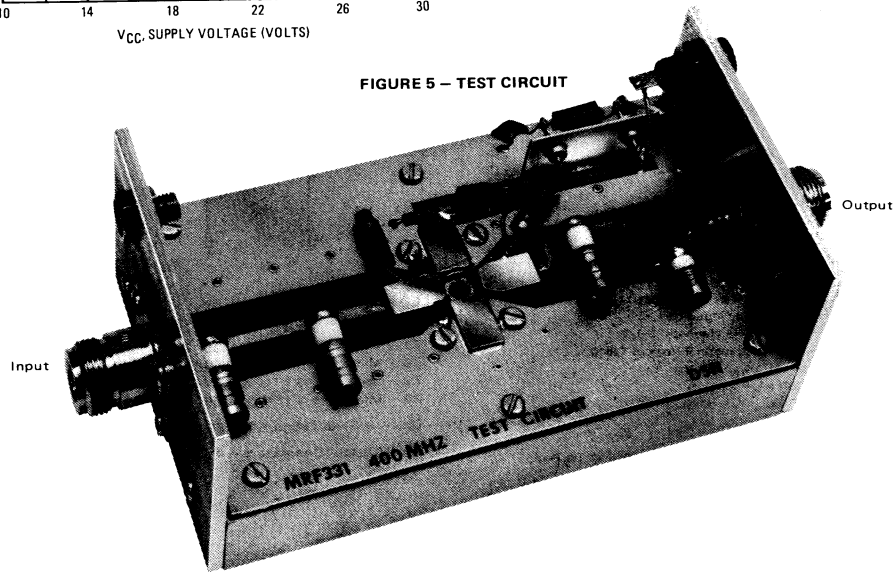
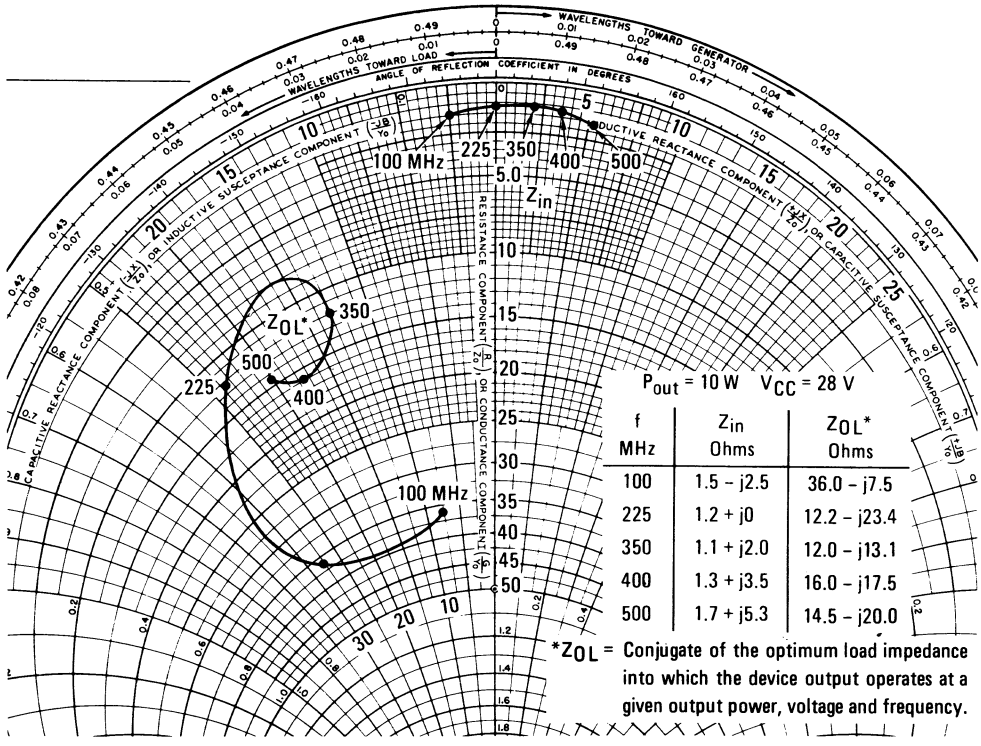


FIGURE 6 – SERIES EQUIVALENT INPUT/OUTPUT IMPEDANCE



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MRF338

The RF Line

80 W — 400-512 MHz

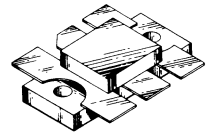
CONTROLLED "Q" BROADBAND RF POWER TRANSISTOR

NPN SILICON

NPN SILICON RF POWER TRANSISTOR

. . . designed primarily for wideband large-signal output and driver amplifier stages in the 400–512 MHz frequency range.

- Specified 28 Volt, 470 MHz Characteristics —
  Output Power = 80 Watts
  Minimum Gain = 7.3 dB
  Efficiency = 50% (Min)
- Built-In Matching Network for Broadband Operation
- 100% Tested for Load Mismatch at All Phase Angles With 30:1 VSWR
- Gold Metallization System for High Reliability Applications



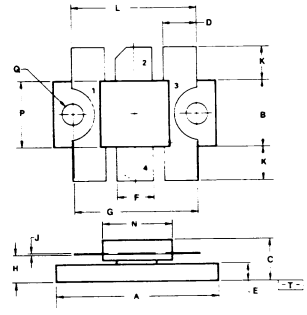
MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	30	Vdc
Collector-Base Voltage	V_{CBO}	60	Vdc
Emitter-Base Voltage	V_{EBO}	4.0	Vdc
Collector Current — Continuous — Peak	I_C	9.0 12.0	Adc
Total Device Dissipation @ T_C = 25°C (1) Derate above 25°C	P_D	250 1.43	Watts W/°C
Storage Temperature Range	T_{stg}	-65 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case (2)	$R_{\theta JC}$	0.7	°C/W

(1) These devices are designed for RF operation. The total device dissipation rating applies only when the devices are operated as RF amplifiers.
(2) Thermal Resistance is determined under specified RF operating conditions by infrared measurement techniques.



NOTES:
1. DIMENSIONS A AND B ARE DATUMS.
2. POSITIONAL TOLERANCE FOR MOUNTING HOLES: ⌖ ø 0.13(0.005)Ⓜ T AⓂ BⓂ
3. -T- IS SEATING PLANE.
4. DIM "D" FOUR PLACES; DIM "F" TWO PLACES.
5. DIMENSIONING AND TOLERANCING PER ANSI Y14.5, 1973.

STYLE 1:
PIN 1. EMITTER
2. COLLECTOR
3. EMITTER
4. BASE

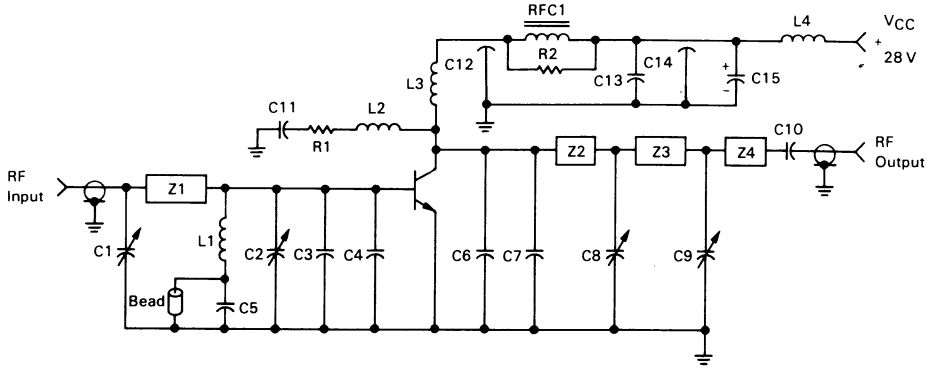
DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	24.51	25.02	0.965	0.985
B	9.91	10.41	0.390	0.410
C	6.73	7.24	0.265	0.285
D	4.83	5.33	0.190	0.210
E	2.42	2.92	0.095	0.115
F	5.47	5.96	0.215	0.235
G	18.42 BSC		0.725 BSC	
H	3.94	4.44	0.155	0.175
J	0.10	0.15	0.004	0.006
K	4.95	5.21	0.195	0.205
L	18.80	19.55	0.740	0.770
N	10.54	10.80	0.415	0.425
P	9.91	10.16	0.390	0.400
Q	3.18	3.42	0.125	0.135

CASE 333-02

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I_C = 80 mAdc, I_B = 0)	$V_{(BR)CEO}$	30	—	—	Vdc
Collector-Emitter Breakdown Voltage (I_C = 80 mAdc, V_{BE} = 0)	$V_{(BR)CES}$	60	—	—	Vdc
Emitter-Base Breakdown Voltage (I_E = 8.0 mAdc, I_C = 0)	$V_{(BR)EBO}$	4.0	—	—	Vdc
Collector-Base Breakdown Voltage (I_C = 80 mAdc, I_E = 0)	$V_{(BR)CBO}$	60	—	—	Vdc
Collector Cutoff Current (V_{CB} = 30 Vdc, I_E = 0)	I_{CBO}	—	—	5.0	mAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 4.0 Adc, V_{CE} = 5.0 Vdc)	h_{FE}	20	—	80	—
DYNAMIC CHARACTERISTICS					
Output Capacitance (V_{CB} = 28 Vdc, I_E = 0, f = 1.0 MHz)	C_{ob}	—	95	125	pF
FUNCTIONAL TESTS (Figure 1)					
Common-Emitter Amplifier Power Gain (V_{CC} = 28 Vdc, P_{out} = 80 W, f = 470 MHz)	G_{PE}	7.3	8.8	—	dB
Collector Efficiency (V_{CC} = 28 Vdc, P_{out} = 80 W, f = 470 MHz)	η	50	60		%
Load Mismatch (V_{CC} = 28 Vdc, P_{out} = 80 W, f = 470 MHz, VSWR = 30:1 all angles)	ψ	No Degradation in Output Power			

FIGURE 1 — 470 MHz TEST CIRCUIT



C1, C2, C8, C9 — 0.8–20 pF Johanson (JMC 5501)
C3, C4, C6, C7 — 25 pF Underwood 100 V
C5, C10 — 100 pF Underwood 100 V
C11, C13 — 0.1 μF Erie Redcap
C12, C14 — 680 pF Feedthru
C15 — 1.0 μF Tantalum
L1 — 0.15 μH Molded Choke
L2 — 5 Turns #20 AWG, 0.185" ID, Close Wound
L3 — 3 Turns #18 AWG, 0.185" ID, Close Wound
L4 — 4 Turns #18 AWG, 0.185" ID, Close Wound

RFC1 — Ferroxcube VK200 19/4B
Bead — Ferroxcube #56-590-65/3B
R1, R2 — 10 Ω 2.0 Watt Carbon
Z1 — Microstrip Line 0.190" W × 2.5" L
Z2 — Microstrip Line 0.190" W × 0.289" L
Z3 — Microstrip Line 0.190" W × 0.55" L
Z4 — Microstrip Line 0.190" W × 0.325" L
Board — Glass Teflon, ϵ_r = 2.56, t = 0.062"

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FIGURE 2 — POWER OUTPUT versus POWER INPUT

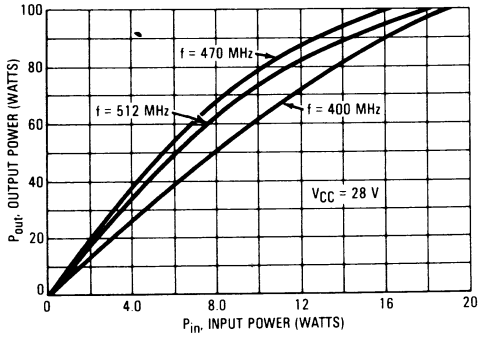

FIGURE 3 — OUTPUT POWER versus SUPPLY VOLTAGE

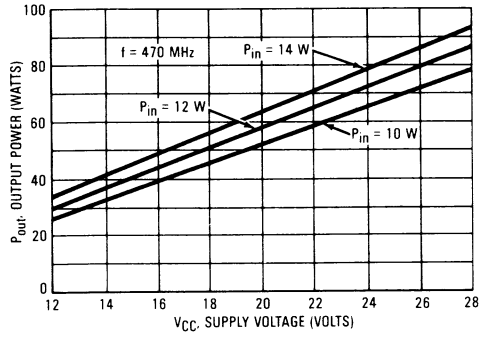

FIGURE 4 — POWER GAIN versus FREQUENCY

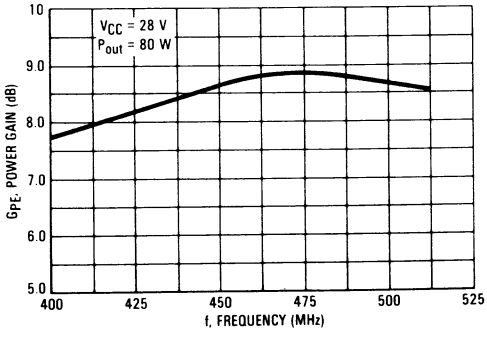

FIGURE 5 — OUTPUT POWER versus FREQUENCY

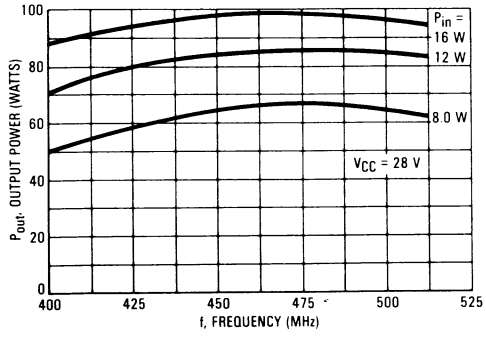

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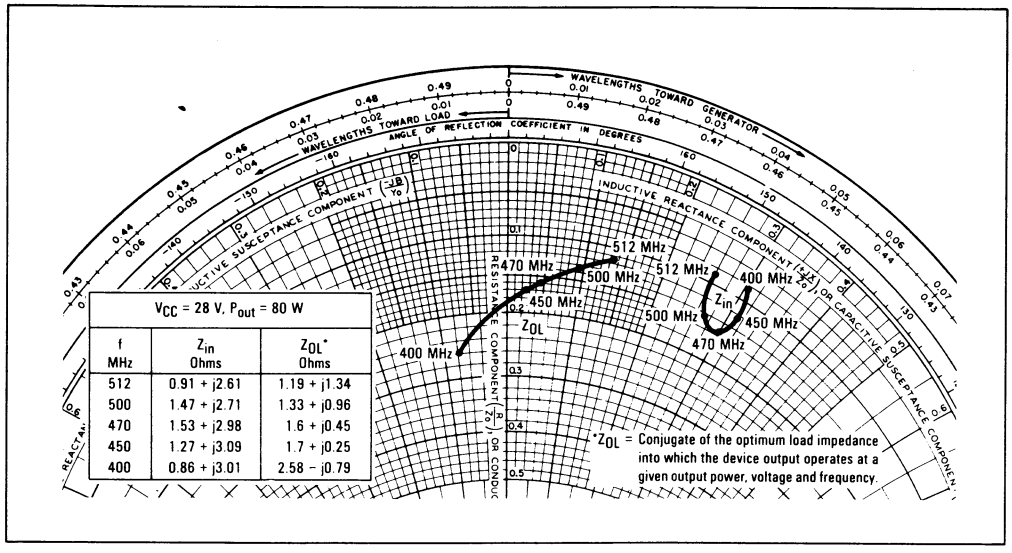
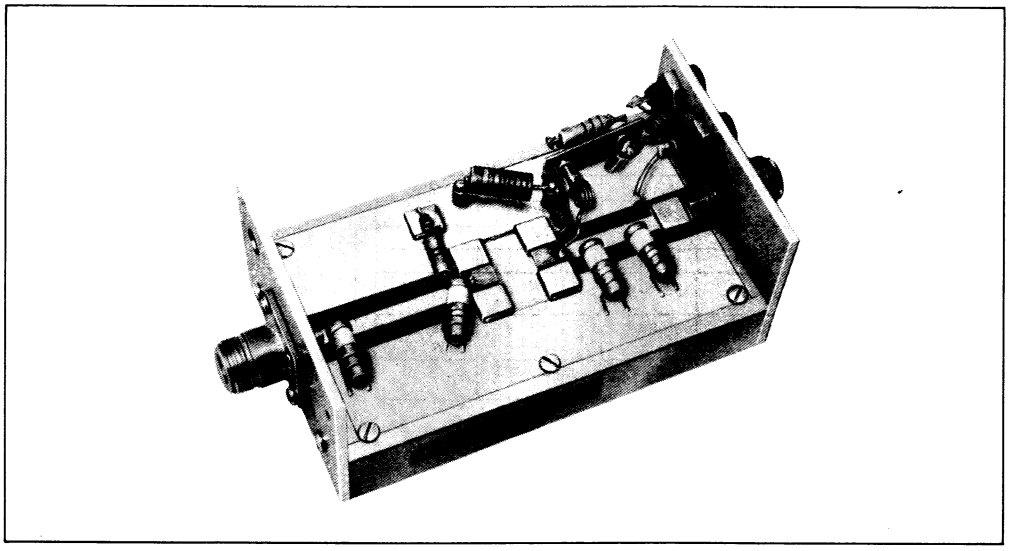
FIGURE 6 — SERIES EQUIVALENT INPUT/OUTPUT IMPEDANCE



V_{CC} = 28 V, P_{out} = 80 W

f MHz	Z_{in} Ohms	Z_{OL}^* Ohms
512	0.91 + j2.61	1.19 + j1.34
500	1.47 + j2.71	1.33 + j0.96
470	1.53 + j2.98	1.6 + j0.45
450	1.27 + j3.09	1.7 + j0.25
400	0.86 + j3.01	2.58 − j0.79

FIGURE 7 — TEST FIXTURE



3

MRF340

The RF Line

8 W 100–150 MHz

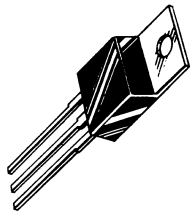
RF POWER TRANSISTOR

NPN SILICON

NPN SILICON RF POWER TRANSISTOR

. . . designed primarily for use in VHF amplifiers with amplitude modulation and other communications equipment operating to 150 MHz.

- Low Cost Common Emitter TO-220 Package
- Specified 27 V, 136 MHz Performance:
  Output Power = 8.0 W
  Power Gain = 13 dB Min
  Efficiency = 50% Min
- 20:1 VSWR Load Mismatch Capability at Rated Output Power and Supply Voltage
- Other Devices in the Series:
  MRF342 24 W
  MRF344 60 W



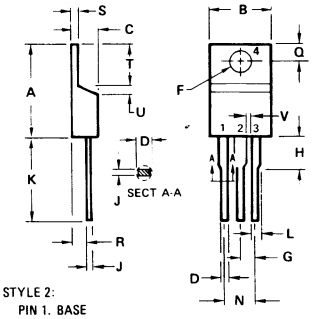
MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	35	Vdc
Collector-Base Voltage	V_{CBO}	65	Vdc
Emitter-Base Voltage	V_{EBO}	4.0	Vdc
Collector-Current — Continuous Peak	I_C	1.0 1.2	Adc
Total Device Dissipation — $T_C = 25^oC$ (1) Derate above 25^oC	P_D	15 86	Watts $mW/^oC$
Storage Temperature Range	T_{stg}	−65 to +150	^oC

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	11.6	$^oC/W$

1. These devices are designed for RF operation. The total device dissipation rating applies only when the devices are operated as RF amplifiers.



STYLE 2:
PIN 1. BASE
2. EMITTER
3. COLLECTOR
4. EMITTER

DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	15.11	15.75	0.595	0.620
B	9.65	10.29	0.380	0.405
C	4.06	4.82	0.160	0.190
D	0.64	0.89	0.025	0.035
F	3.61	3.73	0.142	0.147
G	2.41	2.67	0.095	0.105
H	2.79	3.30	0.110	0.130
J	0.36	0.56	0.014	0.022
K	12.70	14.27	0.500	0.562
L	1.14	1.27	0.045	0.050
N	4.83	5.33	0.190	0.210
Q	2.54	3.04	0.100	0.120
R	2.04	2.79	0.080	0.110
S	1.14	1.39	0.045	0.055
T	5.97	6.48	0.235	0.255
U	0.76	1.27	0.030	0.050
V	1.14	-	0.045	-

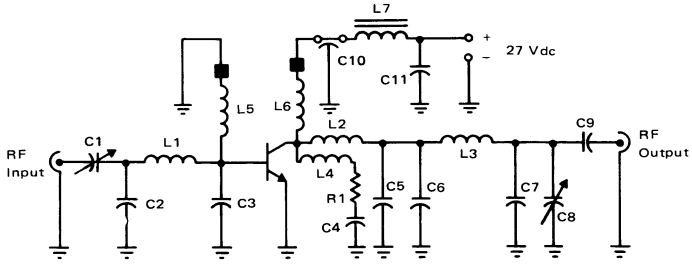
CASE 221A-02

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I_C = 20 mAdc, I_B = 0)	$V_{(BR)CEO}$	35	–	–	Vdc
Collector-Emitter Breakdown Voltage (I_C = 20 mAdc, V_{BE} = 0)	$V_{(BR)CES}$	65	–	–	Vdc
Collector-Base Breakdown Voltage (I_C = 20 mAdc, I_E = 0)	$V_{(BR)CBO}$	65	–	–	Vdc
Emitter-Base Breakdown Voltage (I_E = 2.0 mAdc, I_C = 0)	$V_{(BR)EBO}$	4.0	–	–	Vdc
Collector Cutoff Current (V_{CE} = 27 Vdc, V_{BE} = 0)	I_{CES}	–	–	1.0	mAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 100 mAdc, V_{CD} = 5.0 Vdc)	h_{FE}	10	–	100	–
DYNAMIC CHARACTERISTICS					
Output Capacitance (V_{CB} = 27 Vdc, I_E = 0, f = 1.0 MHz)	C_{ob}	–	8.0	15	pF
FUNCTIONAL TESTS					
Common-Emitter Amplifier Power Gain (V_{CC} = 13.5 Vdc, P_{out} = 2.0 W, f = 136 MHz)	G_{PE}	9.0	10.5	–	dB
Common Emitter Amplifier Power Gain (V_{CC} = 27 Vdc, P_{out} = 8.0 W, f = 136 MHz)	G_{PE}	13.0	14.9	–	dB
Collector Efficiency (V_{CC} = 27 Vdc, P_{out} = 8.0 W, f = 136 MHz)	η	50	60	–	%
Load Mismatch (V_{CC} = 27 Vdc, P_{out} = 8.0 W (peak), f = 136 MHz. Drive modulated with 1.0 kHz square wave, 50% duty cycle. Load VSWR ≥ 20:1, all phase angles)	ψ	No Degradation in Power Output			

3

FIGURE 1 – 136 MHz TEST CIRCUIT



C1 – Arco 404 8–60 pF
C2, C5 – 40 pF UNELCO
C3 – 80 pF UNELCO
C4, C11 – 0.1 μF Erie Redcap
C6 – 25 pF UNELCO
C7 – 5.0 pF UNELCO
C8 – Arco 403 3–35 pF
C9 – 510 pF Dipped Mica
C10 – 680 pF Feedthru

L1 – 3 Turns #18 AWG, 1/8" ID
L2, L3 – 4 Turns #18 AWG, 1/8" ID
L4 – 0.33 μH Molded Choke
L5 – 0.15 μH Molded Choke with Ferrite Bead
L6 – 0.47 μH Molded Choke with Ferrite Bead
L7 – VK-200-19/4B

R1 – 100 Ω, 1.0 Watt

FIGURE 2 – POWER GAIN versus FREQUENCY

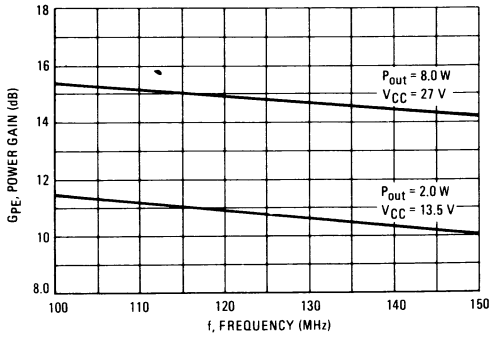


FIGURE 3 – OUTPUT POWER versus SUPPLY VOLTAGE (f = 136 MHz)

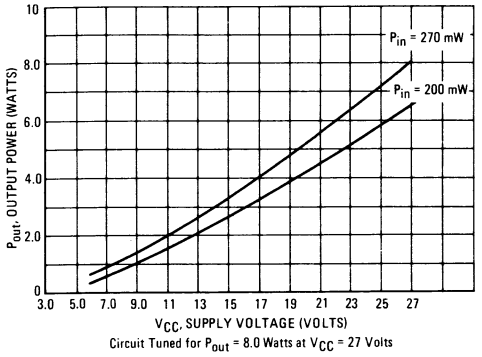


FIGURE 4 – OUTPUT POWER versus INPUT POWER (V_{CC} = 27 V)

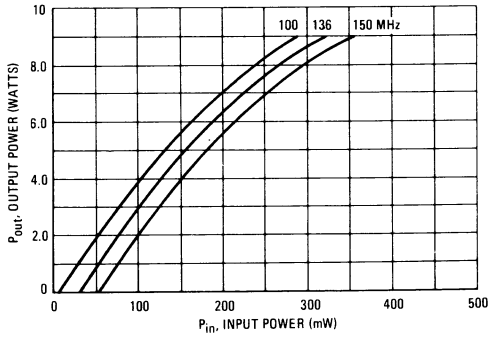


FIGURE 5 – OUTPUT POWER versus INPUT POWER (V_{CC} = 13.5 V)

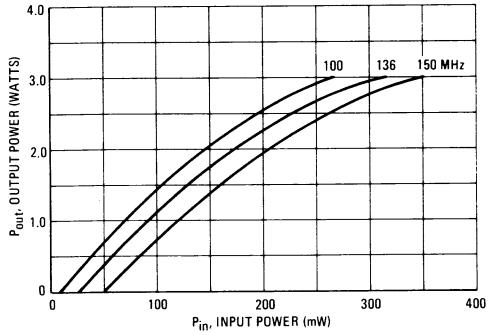
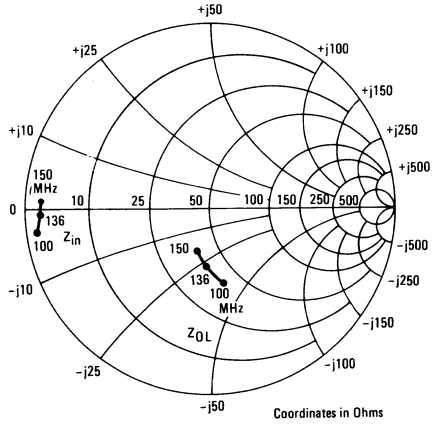


FIGURE 6 – SERIES EQUIVALENT INPUT/OUTPUT IMPEDANCES



V_{CC} = 27 V P_{out} = 8.0 W

f MHz	Z_{in} Ohms	Z_{OL}* Ohms
100	3.40 – j1.70	42.6 – j31.8
136	4.00 – j0.57	39.2 – j26.4
150	3.95 + j0.66	38.3 – j17.0

*Z_{OL} = Conjugate of the optimum load impedance into which the device operates at a given output power, voltage, and frequency.

FIGURE 7 – 136 MHz TEST AMPLIFIER

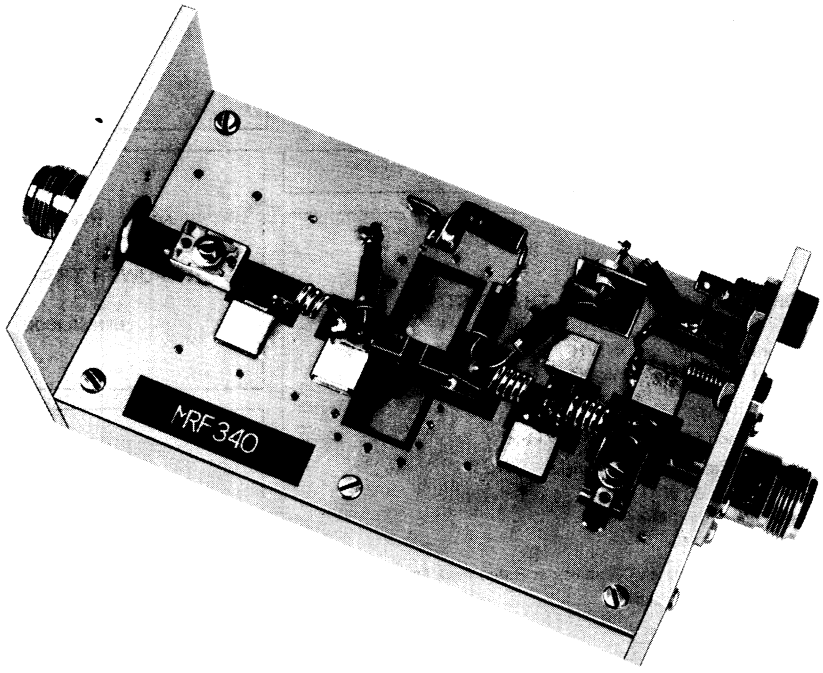
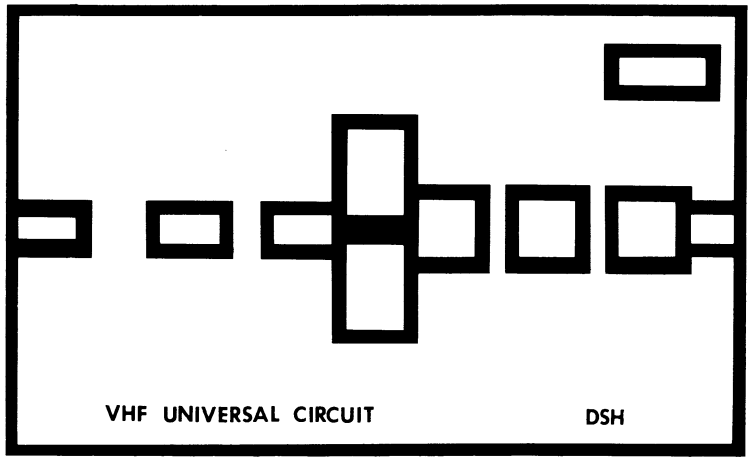


FIGURE 8 – PRINTED CIRCUIT BOARD LAYOUT – 136 MHz TEST CIRCUIT



MRF344

The RF Line

NPN SILICON RF POWER TRANSISTOR

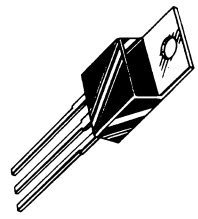
. . . designed primarily for use in VHF amplifiers with amplitude modulation and other communications equipment operating to 150 MHz.

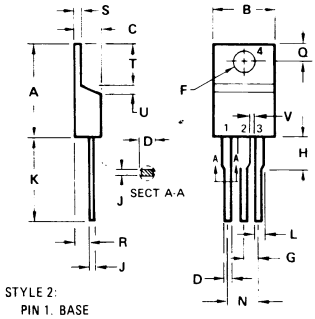
- Low Cost Common Emitter TO-220 Package
- Specified 27 V, 136 MHz Performance:
  Output Power = 60 W
  Power Gain = 6.0 dB Min
  Efficiency = 50% Min
- 20:1 VSWR Load Mismatch Capability at Rated Peak Output Power and Supply Voltage
- Other Devices in the Series:
  MRF340 8 W
  MRF342 24 W

60 W 100–150 MHz

RF POWER TRANSISTOR

NPN SILICON





STYLE 2:
PIN 1. BASE
2. EMITTER
3. COLLECTOR
4. EMITTER

DIM	MILLIMETERS MIN	MAX	INCHES MIN	MAX
A	15.11	15.75	0.595	0.620
B	9.65	10.29	0.380	0.405
C	4.06	4.82	0.160	0.190
D	0.64	0.89	0.025	0.035
F	3.61	3.73	0.142	0.147
G	2.41	2.67	0.095	0.105
H	2.79	3.30	0.110	0.130
J	0.36	0.56	0.014	0.022
K	12.70	14.27	0.500	0.562
L	1.14	1.27	0.045	0.050
N	4.83	5.33	0.190	0.210
Q	2.54	3.04	0.100	0.120
R	2.04	2.79	0.080	0.110
S	1.14	1.39	0.045	0.055
T	5.97	6.48	0.235	0.255
U	0.76	1.27	0.030	0.050
V	1.14	-	0.045	-

CASE 221A-02

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	35	Vdc
Collector-Base Voltage	V_{CBO}	65	Vdc
Emitter-Base Voltage	V_{EBO}	4.0	Vdc
Collector-Current — Continuous Peak	I_C	5.0 6.0	Adc
Total Device Dissipation — T_C = 25°C (1) Derate above 25°C	P_D	87.5 0.5	Watts mW/°C
Storage Temperature Range	T_{stg}	-65 to +150	°C

THERMAL CHARACTERISTICS

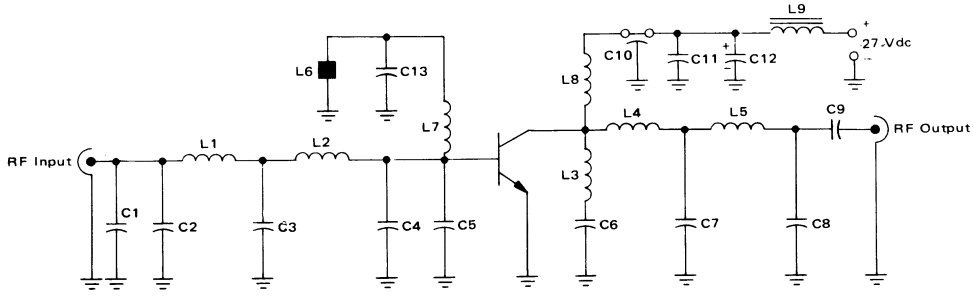
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.0	°C/W

1. These devices are designed for RF operation. The total device dissipation rating applies only when the devices are operated as RF amplifiers.

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I_C = 50 mAdc, I_B = 0)	$V_{(BR)CEO}$	35	–	–	Vdc
Collector-Emitter Breakdown Voltage (I_C = 50 mAdc, V_{BE} = 0)	$V_{(BR)CES}$	65	–	–	Vdc
Collector-Base Breakdown Voltage (I_C = 50 mAdc, I_E = 0)	$V_{(BR)CBO}$	65	–	–	Vdc
Emitter-Base Breakdown Voltage (I_E = 5.0 mAdc, I_C = 0)	$V_{(BR)EBO}$	4.0	–	–	Vdc
Collector Cutoff Current (V_{CE} = 27 Vdc, V_{BE} = 0)	I_{CES}	–	–	5.0	mAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 2.0 Adc, V_{CE} = 5.0 Vdc)	h_{FE}	10	–	80	–
DYNAMIC CHARACTERISTICS					
Output Capacitance (V_{CB} = 27 Vdc, I_E = 0, f = 1.0 MHz)	C_{ob}	–	130	200	pF
FUNCTIONAL TESTS					
Common-Emitter Amplifier Power Gain (V_{CC} = 13.5 Vdc, P_{out} = 15 W, f = 136 MHz)	G_{PE}	4.0	4.5	–	dB
Common Emitter Amplifier Power Gain (V_{CC} = 27 Vdc, P_{out} = 60 W, f = 136 MHz)	G_{PE}	6.0	6.7	–	dB
Collector Efficiency (V_{CC} = 27 Vdc, P_{out} = 60 W, f = 136 MHz)	η	50	60	–	%
Load Mismatch (V_{CC} = 27 Vdc, P_{out} = 60 W (peak), f = 136 MHz. Drive modulated with 1.0 kHz square wave, 50% duty cycle. Load VSWR ~ 20:1, all phase angles)	ψ	No Degradation in Power Output			

FIGURE 1 – 136 MHz TEST CIRCUIT



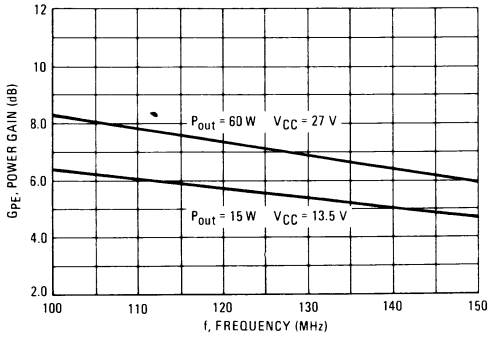
C1, C2 – 10 pF UNELCO
C3, C8 – 25 pF UNELCO
C4, C5, C7 – 100 pF UNELCO
C6, C11 – 0.1 μF Erie Redcap
C9 – 1000 pF UNELCO
C10 – 1000 pF UNELCO Feedthru
C12 – 1.0 μF 50 V Tantalum
C13 – 200 pF UNELCO

L1 – 3/4" of #20 AWG
L2 – 1/2" of #20 AWG
L3 – 2 Turns, 1/8" ID #20 AWG
L4 – Copper Strap 15 mil Thick 3/16" X 1/2" L
L5 – 2 Turns #20 AWG 1/4" ID
L6 – Ferrite Bead on Lead of L7
L7, L8 – 0.15 μH Molded Choke
L9 – VK-200-19/4B

Input/Output Connectors Type N

3

FIGURE 2 – POWER GAIN versus FREQUENCY



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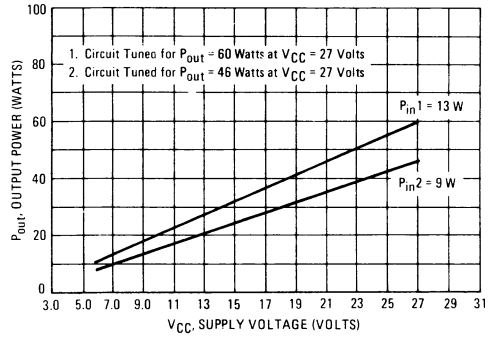
(f = 136 MHz)



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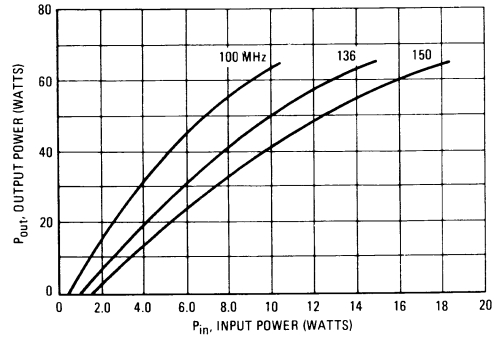
(V_{CC} = 27 V)



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(V_{CC} = 13.5 V)

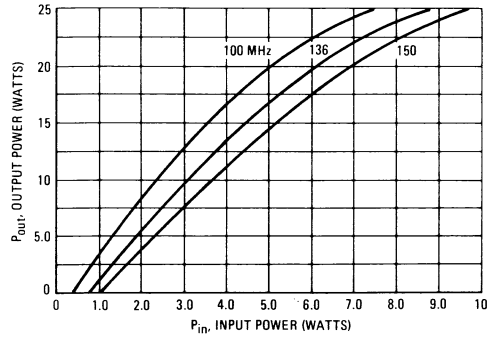
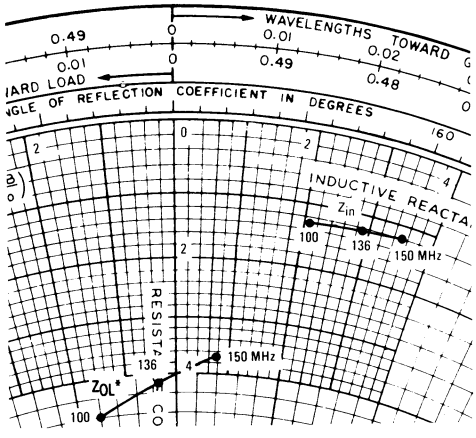


FIGURE 6 – SERIES EQUIVALENT INPUT/OUTPUT IMPEDANCES

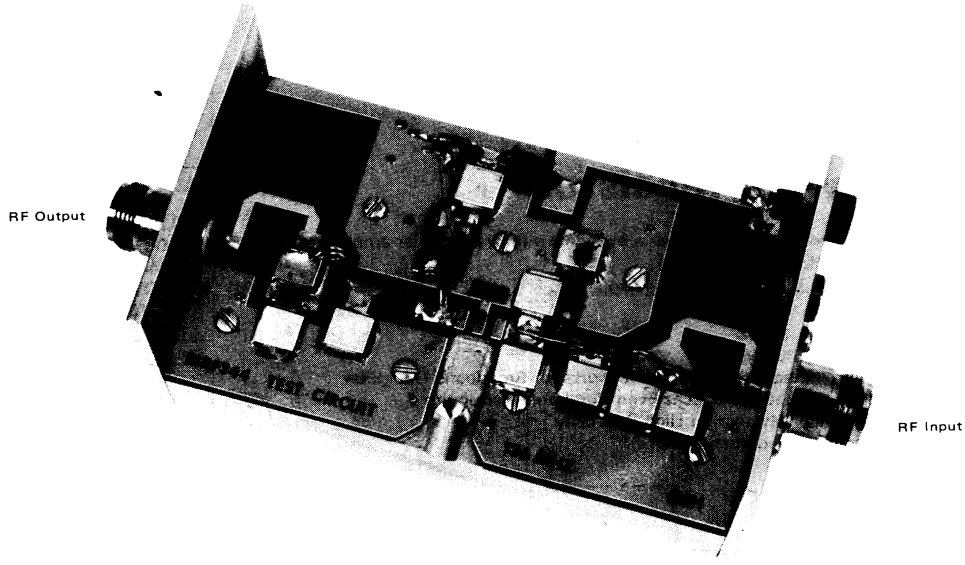


V_{CC} = 27 V P_{out} = 60 W

f MHz	Z_{in} Ohms	Z_{OL}* Ohms
100	1.33 + j2.1	4.8 - j1.6
136	1.25 + j2.86	4.2 - j0.32
150	1.2 + J3.5	3.7 + j0.8

*Z_{OL} = Conjugate of the optimum load impedance into which the device operates at a given output power voltage, and frequency.

FIGURE 7 – 136 MHz TEST AMPLIFIER



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