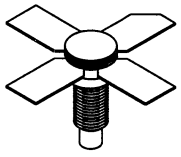
MRF1029

The RF Line
UHF Power Transistor

. . . designed primarily for wideband, large-signal output and driver amplifier stages to 1.0 GHz.

- Designed for Class A Linear Power Amplifiers
- Specified 25 Volt, 900 MHz Characteristics:
  Output Power — 1.5 Watts
  Power Gain — 8.0 dB Min, Class AB
- Gold Metallization for Improved Reliability

1.5 W, TO 1.0 GHz
LINEAR
UHF POWER TRANSISTOR
NPN SILICON



.280 SOE
CASE 244C, STYLE 1

2

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
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	14.5 0.084	Watts W/°C
Operating Junction Temperature	T_J	200	°C
Storage Temperature Range	T_{stg}	−65 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case (T_C = 70°C)	$R_{\theta JC}$	12	°C/W

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I_C = 10 mA, I_B = 0)	$V_{(BR)CEO}$	30	—	—	Vdc
Collector-Emitter Breakdown Voltage (I_C = 10 mA, V_{BE} = 0)	$V_{(BR)CES}$	60	—	—	Vdc
Collector-Base Breakdown Voltage (I_C = 10 mA, I_E = 0)	$V_{(BR)CBO}$	60	—	—	Vdc
Emitter-Base Breakdown Voltage (I_E = 5.0 mA, I_C = 0)	$V_{(BR)EBO}$	4.0	—	—	Vdc
Collector Cutoff Current (V_{CB} = 25 V, I_E = 0)	I_{CBO}	—	—	1.0	mAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 250 mA, V_{CE} = 5.0 V)	h_{FE}	20	—	80	—
DYNAMIC CHARACTERISTICS					
Output Capacitance (V_{CB} = 28 V, I_E = 0, f = 1.0 MHz)	C_{ob}	—	—	4.75	pF
FUNCTIONAL TESTS					
Common-Emitter Amplifier Power Gain (V_{CE} = 25 V, P_{out} = 1.5 W, f = 900 MHz, I_C = 0.2 A)	G_{PE}	8.0	9.3	—	dB
Load Mismatch (V_{CE} = 25 V, I_C = 0.2 A, P_{out} = 1.5 W, f = 900 MHz, Load VSWR = ∞:1, All Phase Angles)	ψ	No Degradation in Output Power			

TYPICAL CHARACTERISTICS

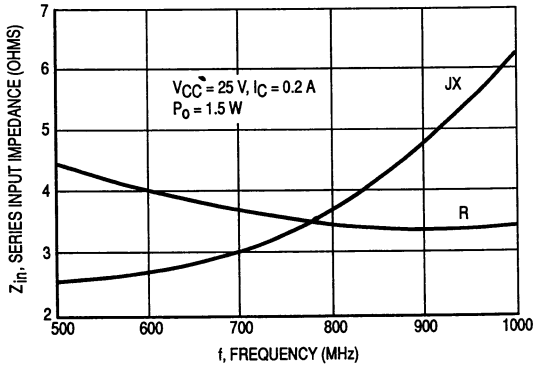


Figure 1. Input Impedance versus Frequency

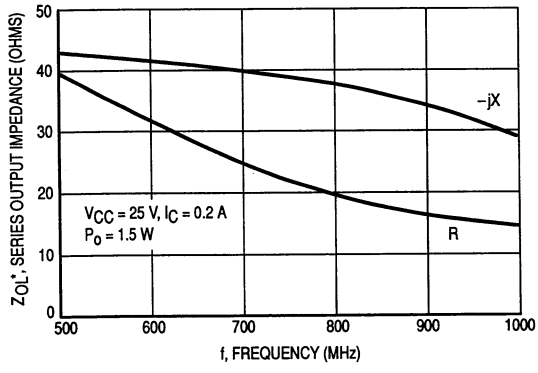


Figure 2. Output Impedance versus Frequency

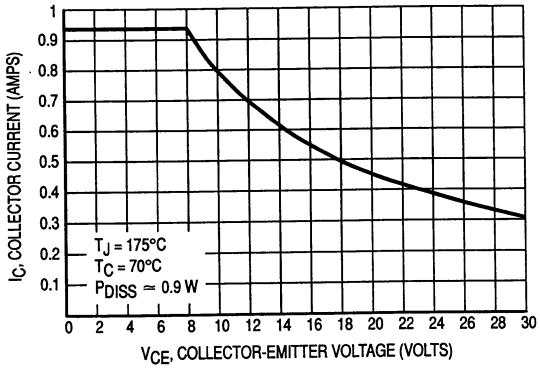


Figure 3. RF Safe Operating Area

V_{CE} (Volts)	I_C (mA)	f (GHz)	S_{11}		S_{21}		S_{12}		S_{22}	
			Mag	∠ϕ	Mag	∠ϕ	Mag	∠ϕ	Mag	∠ϕ
25	200	0.40	0.86	178	10.43	74	0.04	35	0.43	−143
		0.45	0.86	177	9.7	80	0.04	32	0.41	−149
		0.50	0.86	175	9.03	78	0.04	35	0.41	−151
		0.55	0.86	174	8.11	76	0.05	37	0.42	−150
		0.60	0.86	172	7.46	72	0.05	38	0.43	−149
		0.65	0.86	171	6.9	71	0.05	41	0.43	−151
		0.70	0.86	170	6.04	69	0.05	41	0.43	−150
		0.75	0.85	168	5.71	66	0.05	43	0.45	−149
		0.80	0.85	167	5.16	64	0.05	46	0.45	−150
		0.85	0.85	165	4.48	61	0.06	47	0.46	−149
		0.90	0.85	164	4.36	59	0.06	49	0.47	−148
		0.95	0.85	162	3.64	56	0.06	51	0.47	−149
		1.00	0.84	160	3.48	54	0.06	51	0.48	−148

Table 1. Common Emitter S-Parameters

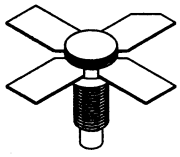
MRF1030

The RF Line
UHF Power Transistor

. . . designed primarily for wideband, large-signal output and driver amplifier stages to 1.0 GHz.

- Designed for Class A Linear Power Amplifiers
- Specified 25 Volt, 900 MHz Characteristics:
  Output Power — 3.0 Watts
  Power Gain — 7.5 dB Min, Class AB
- Gold Metallization for Improved Reliability

3.0 W, TO 1.0 GHz
LINEAR
UHF POWER TRANSISTOR
NPN SILICON



CASE 244C, STYLE 1
(.280 SOE)

2

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
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	29 0.167	Watts W/°C
Operating Junction Temperature	T_J	200	°C
Storage Temperature Range	T_{stg}	−65 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case (T_C = 70°C)	$R_{\theta JC}$	6.0	°C/W

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I_C = 15 mA, I_B = 0)	$V_{(BR)CEO}$	30	—	—	Vdc
Collector-Emitter Breakdown Voltage (I_C = 15 mA, V_{BE} = 0)	$V_{(BR)CES}$	60	—	—	Vdc
Collector-Base Breakdown Voltage (I_C = 15 mA, I_E = 0)	$V_{(BR)CBO}$	60	—	—	Vdc
Emitter-Base Breakdown Voltage (I_E = 5.0 mA, I_C = 0)	$V_{(BR)EBO}$	4.0	—	—	Vdc
Collector Cutoff Current (V_{CB} = 25 V, I_E = 0)	I_{CBO}	—	—	2.0	mAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 500 mA, V_{CE} = 5.0 V)	h_{FE}	20	—	80	—
DYNAMIC CHARACTERISTICS					
Output Capacitance (V_{CB} = 28 V, I_E = 0, f = 1.0 MHz)	C_{ob}	—	—	9.8	pF
FUNCTIONAL TESTS					
Common-Emitter Amplifier Power Gain (V_{CE} = 25 V, P_{out} = 3.0 W, f = 900 MHz, I_C = 0.4 A)	G_{PE}	7.5	8.5	—	dB
Load Mismatch (V_{CE} = 25 V, I_C = 0.4 A, P_{out} = 3.0 W, f = 900 MHz, Load VSWR = ∞:1, All Phase Angles)	ψ	No Degradation in Output Power			

TYPICAL CHARACTERISTICS

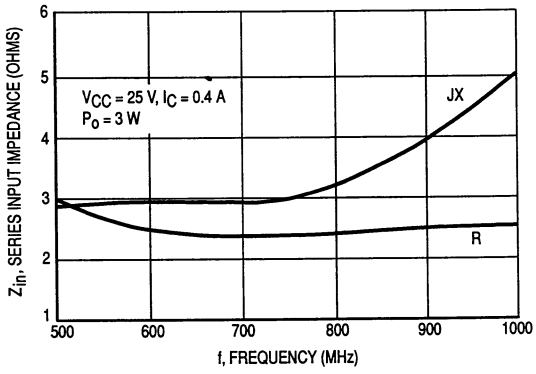


Figure 1. Input Impedance versus Frequency

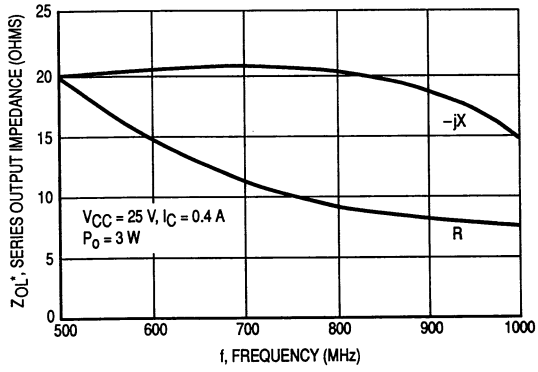


Figure 2. Output Impedance versus Frequency

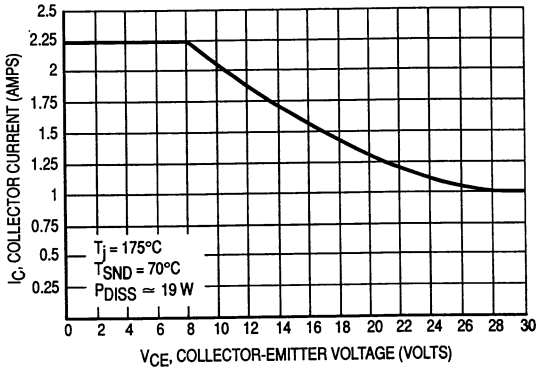


Figure 3. RF Safe Operating Area

V_{CE} (Volts)	I_C (mA)	f (GHz)	S_{11}		S_{21}		S_{12}		S_{22}	
			Mag	∠ϕ	Mag	∠ϕ	Mag	∠ϕ	Mag	∠ϕ
25	400	0.40	0.92	178	2.05	73	0.03	48	0.62	−171
		0.45	0.92	177	1.9	81	0.03	46	0.63	−169
		0.50	0.92	176	1.75	80	0.03	48	0.63	−170
		0.55	0.92	175	1.57	79	0.04	51	0.63	−170
		0.60	0.92	175	1.47	75	0.04	53	0.63	−169
		0.65	0.92	174	1.38	74	0.04	57	0.64	−170
		0.70	0.92	173	1.25	72	0.04	57	0.64	−170
		0.75	0.92	172	1.2	70	0.05	59	0.64	−169
		0.80	0.92	172	1.13	68	0.05	62	0.64	−170
		0.85	0.91	171	1.05	66	0.05	63	0.64	−169
		0.90	0.91	170	1.04	64	0.06	64	0.64	−169
		0.95	0.91	169	0.96	64	0.06	67	0.65	−169
		1.00	0.91	168	0.95	61	0.06	66	0.65	−169

Table 1. Common Emitter S-Parameters

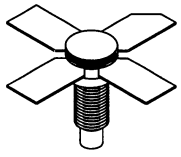
MRF1031

The RF Line
UHF Power Transistor

. . . designed primarily for wideband, large-signal output and driver amplifier stages to 1.0 GHz.

- Designed for Class A Linear Power Amplifiers
- Specified 25 Volt, 900 MHz Characteristics:
  Output Power — 4.5 Watts
  Power Gain — 7.0 dB Min, Class AB
- Gold Metallization for Improved Reliability

4.5 W, TO 1.0 GHz
LINEAR
UHF POWER TRANSISTOR
NPN SILICON



CASE 244C, STYLE 1
(.280 SOE)

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
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	50 0.286	Watts W/°C
Operating Junction Temperature	T_J	200	°C
Storage Temperature Range	T_{stg}	−65 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case (T_C = 70°C)	$R_{\theta JC}$	3.5	°C/W

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I_C = 20 mA, I_B = 0)	$V_{(BR)CEO}$	30	—	—	Vdc
Collector-Emitter Breakdown Voltage (I_C = 20 mA, V_{BE} = 0)	$V_{(BR)CES}$	60	—	—	Vdc
Collector-Base Breakdown Voltage (I_C = 20 mA, I_E = 0)	$V_{(BR)CBO}$	60	—	—	Vdc
Emitter-Base Breakdown Voltage (I_E = 5.0 mA, I_C = 0)	$V_{(BR)EBO}$	4.0	—	—	Vdc
Collector Cutoff Current (V_{CB} = 25 V, I_E = 0)	I_{CBO}	—	—	2.5	mAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 1.0 mA, V_{CE} = 5.0 V)	h_{FE}	20	—	80	—
DYNAMIC CHARACTERISTICS					
Output Capacitance (V_{CB} = 28 V, I_E = 0, f = 1.0 MHz)	C_{ob}	—	—	14	pF
FUNCTIONAL TESTS					
Common-Emitter Amplifier Power Gain (V_{CE} = 25 V, P_{out} = 4.5 W, f = 900 MHz, I_C = 0.6 A)	G_{PE}	7.0	8.0	—	dB
Load Mismatch (V_{CE} = 25 V, I_C = 0.6 A, P_{out} = 4.5 W, f = 900 MHz, Load VSWR = ∞:1, All Phase Angles)	ψ	No Degradation in Output Power			

TYPICAL CHARACTERISTICS

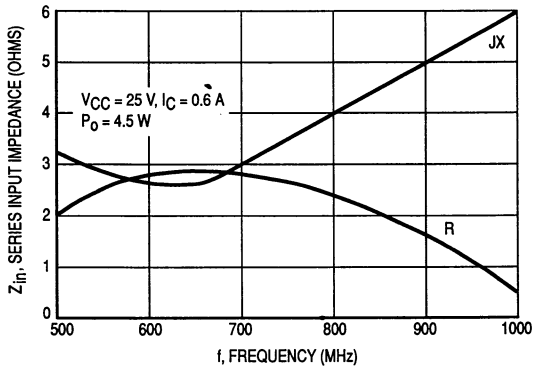


Figure 1. Input Impedance versus Frequency

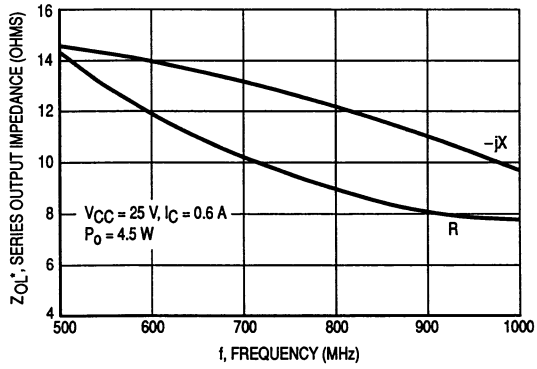


Figure 2. Output Impedance versus Frequency

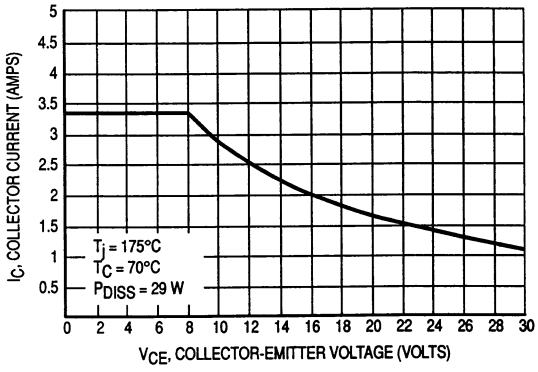


Figure 3. RF Safe Operating Area

V_{CE} (Volts)	I_C (mA)	f (GHz)	S_{11}		S_{21}		S_{12}		S_{22}	
			Mag	∠ϕ	Mag	∠ϕ	Mag	∠ϕ	Mag	∠ϕ
25	500	0.40	0.95	178	1.54	81	0.02	62	0.67	−171
		0.45	0.96	178	1.35	79	0.03	62	0.68	−170
		0.50	0.95	177	1.24	77	0.03	64	0.69	−170
		0.55	0.95	177	1.12	75	0.03	67	0.69	−170
		0.60	0.96	176	1.04	72	0.03	68	0.69	−169
		0.65	0.95	176	0.97	72	0.04	72	0.7	−170
		0.70	0.95	175	0.88	69	0.04	72	0.7	−170
		0.75	0.95	175	0.84	68	0.04	74	0.7	−169
		0.80	0.95	174	0.79	66	0.04	77	0.71	−170
		0.85	0.95	174	0.73	64	0.05	78	0.71	−170
		0.90	0.95	173	0.72	62	0.05	77	0.72	−169
		0.95	0.95	172	0.67	62	0.05	81	0.72	−170
		1.00	0.95	172	0.65	59	0.05	79	0.72	−169

Table 1. Common Emitter S-Parameters

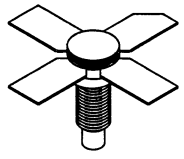
MRF1032

The RF Line
UHF Power Transistor

. . . designed primarily for large-signal output and driver amplifier stages to 1.0 GHz.

- Designed for Class A Linear Power Amplifiers
- Specified 25 Volt, 900 MHz Characteristics:
  Output Power — 6.0 Watts
  Power Gain — 6.5 dB Min, Class AB
- Gold Metallization for Improved Reliability

6.0 W, TO 1.0 GHz
LINEAR
UHF POWER TRANSISTOR
NPN SILICON



CASE 244C, STYLE 1
(.280 SOE)

2

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
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	50 0.286	Watts W/°C
Operating Junction Temperature	T_J	200	°C
Storage Temperature Range	T_{stg}	−65 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case (T_C = 70°C)	$R_{\theta JC}$	3.5	°C/W

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I_C = 20 mA, I_B = 0)	$V_{(BR)CEO}$	30	—	—	Vdc
Collector-Emitter Breakdown Voltage (I_C = 20 mA, V_{BE} = 0)	$V_{(BR)CES}$	60	—	—	Vdc
Collector-Base Breakdown Voltage (I_C = 20 mA, I_E = 0)	$V_{(BR)CBO}$	60	—	—	Vdc
Emitter-Base Breakdown Voltage (I_E = 5.0 mA, I_C = 0)	$V_{(BR)EBO}$	4.0	—	—	Vdc
Collector Cutoff Current (V_{CB} = 25 V, I_E = 0)	I_{CBO}	—	—	3.0	mAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 1.0 mA, V_{CE} = 5.0 V)	h_{FE}	20	—	80	—
DYNAMIC CHARACTERISTICS					
Output Capacitance (V_{CB} = 28 V, I_E = 0, f = 1.0 MHz)	C_{ob}	—	—	19.5	pF
FUNCTIONAL TESTS					
Common Emitter Amplifier Power Gain (V_{CE} = 25 V, P_{out} = 6.0 W, f = 900 MHz, I_C = 0.85 A)	G_{PE}	6.5	7.5	—	dB
Load Mismatch (V_{CE} = 25 V, P_{out} = 6.0 W, f = 900 MHz, Load VSWR = ∞:1, All Phase Angles)	ψ	No Degradation in Output Power			

V_{CE} (Volts)	I_C (mA)	f (GHz)	S_{11}		S_{21}		S_{12}		S_{22}	
			Mag	∠ϕ	Mag	∠ϕ	Mag	∠ϕ	Mag	∠ϕ
25	850	0.4	0.97	178	1.01	82	0.03	85	0.74	179
		0.5	0.96	177	0.99	74	0.03	69	0.78	−179
		0.6	0.96	176	0.84	77	0.03	73	0.78	−179
		0.7	0.97	175	0.68	75	0.04	76	0.77	−177
		0.8	0.96	174	0.62	69	0.05	77	0.78	178
		0.9	0.96	173	0.60	67	0.05	78	0.78	−178
		1.0	0.96	172	0.54	66	0.06	77	0.78	−177

Table 1. Common Emitter S-Parameters

MRF1375

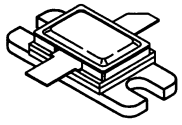
Motorola Preferred Device

375 W (PEAK), 1025–1150 MHz
MICROWAVE POWER
TRANSISTOR
NPN SILICON

The RF Line
Microwave Pulse Power Transistor

Designed for 1025-1150 MHz pulse common base amplifier applications such as TACAN and DME.

- Guaranteed Performance @ 1090 MHz
  Output Power = 375 Watts Peak
  Gain = 6.7 dB Min 7.5 dB (Typ)
- 100% Tested for Load Mismatch at All Phase Angles with 3:1 VSWR
- Hermetically Sealed Package
- Silicon Nitride Passivated
- Gold Metallized, Emitter Ballasted for Long Life and Resistance to Metal Migration
- Internal Input Matching
- Characterized using 10 μs, 1% Duty Pulse Format



CASE 355G, STYLE 1

2

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CES}	70	Vdc
Collector-Base Voltage	V_{CBO}	70	Vdc
Emitter-Base Voltage	V_{EBO}	4.0	Vdc
Collector Current — Peak (1)	I_C	29	Adc
Total Device Dissipation @ T_C = 25°C (1) (2) Derate above 25°C	P_D	1458 8.33	Watts W/°C
Storage Temperature Range	T_{stg}	– 65 to +200	°C
Junction Temperature	T_J	200	°C

THERMAL CHARACTERISTICS

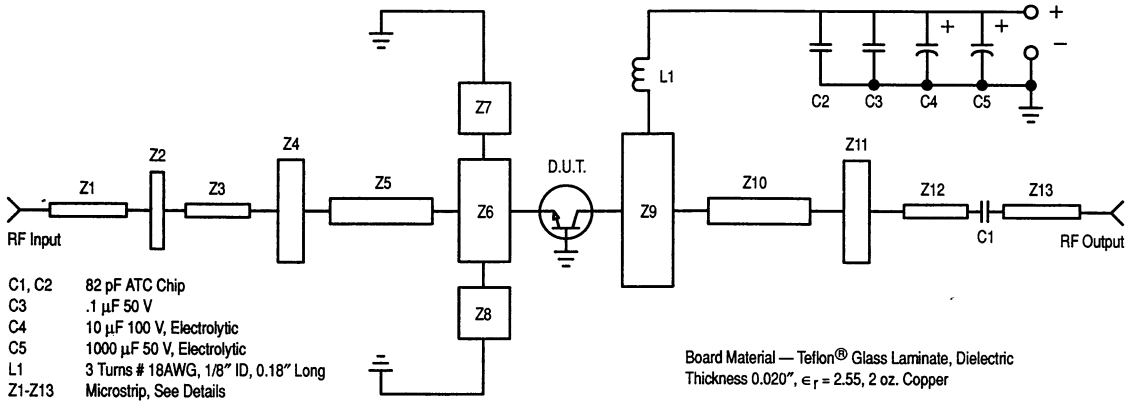
Rating	Symbol	Max	Unit
Thermal Resistance, Junction to Case (3) (4)	$R_{\theta JC}$	0.12	°C/W

NOTES:
1. Under pulse RF operating conditions.
2. These devices are designed for RF operation. The total device dissipation rating applies only when the devices are operated as pulsed RF amplifiers.
3. Thermal Resistance is determined under specified RF operating conditions by infrared measurement techniques.
4. Pulse Width = 10 μs, Duty Cycle = 1%

Preferred devices are Motorola recommended choices for future use and best overall value.

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I_C = 60 mAdc, V_{BE} = 0)	$V_{(BR)CES}$	70	—	—	Vdc
Collector-Base Breakdown Voltage (I_C = 60 mAdc, I_E = 0)	$V_{(BR)CBO}$	70	—	—	Vdc
Emitter-Base Breakdown Voltage (I_E = 10 mAdc, I_C = 0)	$V_{(BR)EBO}$	4.0	—	—	Vdc
Collector Cutoff Current (V_{CB} = 50 Vdc, I_E = 0)	I_{CBO}	—	—	3.0	mAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 5.0 Adc, V_{CE} = 5.0 Vdc)	h_{FE}	10	—	—	—
FUNCTIONAL TESTS					
Common-Base Amplifier Power Gain (V_{CC} = 50 Vdc, P_{out} = 375 W Peak, f = 1090 MHz)	G_{PB}	6.7	7.5	—	dB
Collector Efficiency (V_{CC} = 50 Vdc, P_{out} = 375 W Peak, f = 1090 MHz)	η_C	40	—	—	%
Load Mismatch (V_{CC} = 50 Vdc, P_{out} = 375 W Peak, f = 1090 MHz, Load VSWR = 3:1 All Phase Angles)	Ψ	No Degradation in Output Power			



C1, C2 82 pF ATC Chip
C3 .1 µF 50 V
C4 10 µF 100 V, Electrolytic
C5 1000 µF 50 V, Electrolytic
L1 3 Turns # 18AWG, 1/8″ ID, 0.18″ Long
Z1-Z13 Microstrip, See Details

Board Material — Teflon® Glass Laminate, Dielectric Thickness 0.020″, ϵ_r = 2.55, 2 oz. Copper

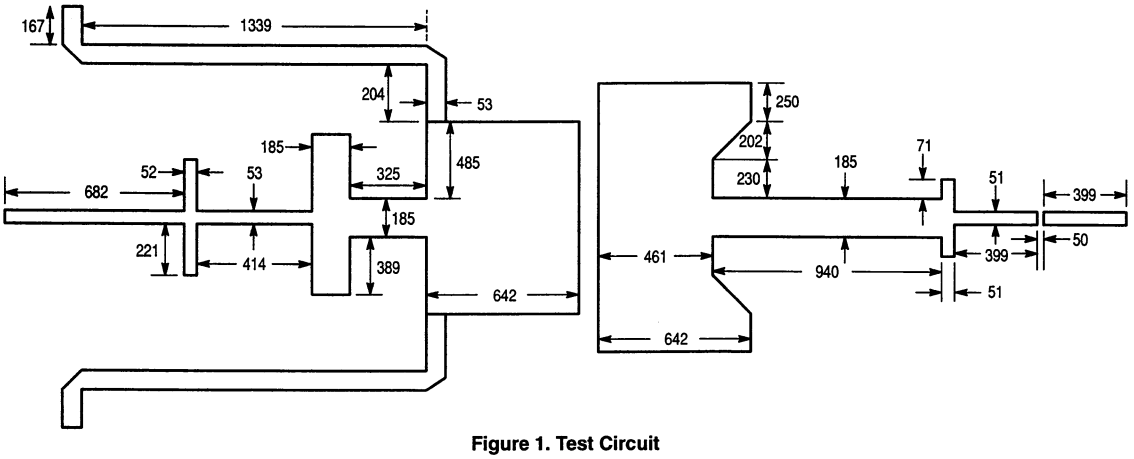


Figure 1. Test Circuit

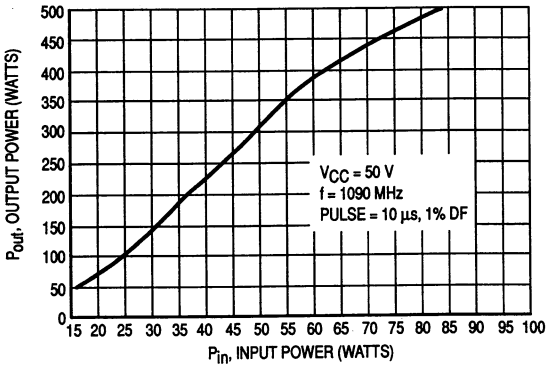


Figure 2. Output Power versus Input Power

2

P_{out} = 375 W, V_{CC} = 50 V
T_p = 10 µs, DF = 1%

Freq MHz	Z_{in} Ohms	Z_{OL}^* Ohms (1)
1025	2.4 + j1.7	1.1 + j1.3
1050	2.1 + j1.2	1.1 + j1.4
1090	1.8 + j1.1	1.1 + j1.3
1125	1.6 + j1.1	1.3 + j1.3
1150	1.4 + j1.0	1.2 + j1.6

(1) Z_{OL}^* is the conjugate of the optimum load impedance into which the device operates at a given output power voltage and frequency.

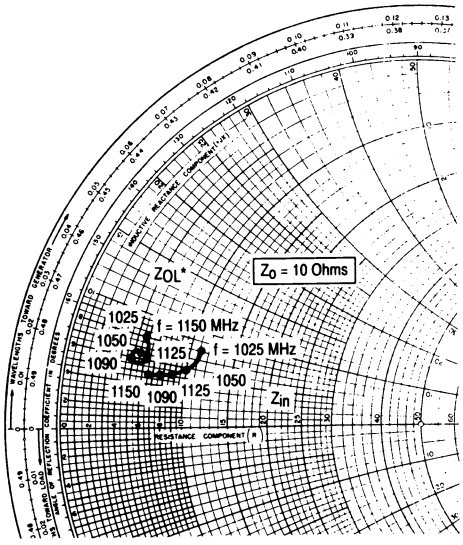


Figure 3. Series Equivalent Input/Output Impedances

MRF1500

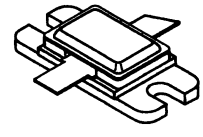
Motorola Preferred Device

500 W (PEAK), 1025–1150 MHz
MICROWAVE POWER
TRANSISTOR
NPN SILICON

The RF Line
Microwave Pulse Power Transistor

Designed for 1025–1150 MHz pulse common base amplifier applications such as DME.

- Guaranteed Performance @ 1090 MHz
  Output Power = 500 Watts Peak
  Gain = 5.2 dB Min
- 100% Tested for Load Mismatch at All Phase Angles with 10:1 VSWR
- Hermetically Sealed Industry Package
- Silicon Nitride Passivated
- Gold Metallized, Emitter Ballasted for Long Life and Resistance to Metal Migration
- Internal Input Matching
- Characterized with 10 μs, 1.0% Duty Cycle Pulses



CASE 355E, STYLE 1

2

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CES}	65	Vdc
Collector-Base Voltage	V_{CBO}	65	Vdc
Emitter-Base Voltage	V_{EBO}	3.5	Vdc
Collector Current — Peak (1)	I_C	35	Adc
Total Device Dissipation @ T_C = 25°C (1), (2) Derate above 25°C	P_D	1750 10	Watts W/°C
Storage Temperature Range	T_{stg}	−65 to +200	°C
Junction Temperature	T_J	200	°C

THERMAL CHARACTERISTICS

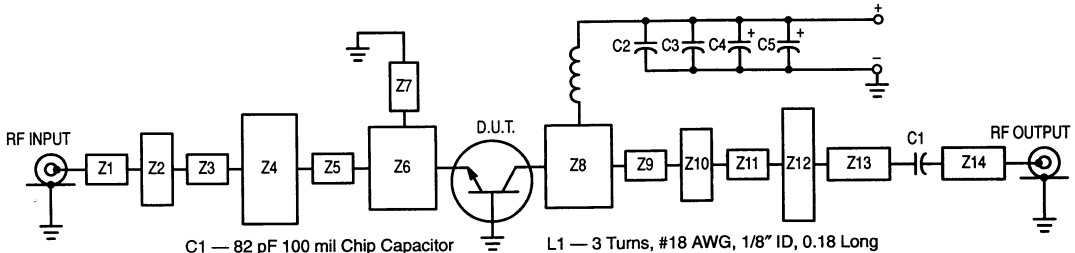
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case (3)	$R_{\theta JC}$	0.1	°C/W

NOTES:
1. Under pulse RF operating conditions.
2. These devices are designed for RF operation. The total device dissipation rating applies only when the devices are operated as pulsed RF amplifiers.
3. Thermal Resistance is determined under specified RF operating conditions by infrared measurement techniques. (Worst case θ_{JC} value measured @32 μs, 2.0%)

Preferred devices are Motorola recommended choices for future use and best overall value.

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I_C = 60 mAdc, V_{BE} = 0)	$V_{(BR)CES}$	70	—	—	Vdc
Collector-Base Breakdown Voltage (I_C = 60 mAdc, I_E = 0)	$V_{(BR)CBO}$	70	—	—	Vdc
Emitter-Base Breakdown Voltage (I_E = 10 mAdc, I_C = 0)	$V_{(BR)EBO}$	4.0	—	—	Vdc
Collector Cutoff Current (V_{CB} = 50 Vdc, I_E = 0)	I_{CBO}	—	—	40	mAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 5.0 Adc, V_{CE} = 5.0 Vdc)	h_{FE}	20	40	—	—
FUNCTIONAL TESTS					
Common-Base Amplifier Power Gain (V_{CC} = 50 Vdc, P_{out} = 500 W Peak, f = 1090 MHz)	G_{PB}	5.2	—	—	dB
Collector Efficiency (V_{CC} = 50 Vdc, P_{out} = 500 W Peak, f = 1090 MHz)	η	37	—	—	%
Load Mismatch (V_{CC} = 50 Vdc, P_{out} = 500 W Peak, f = 1090 MHz, Load VSWR = 10:1 All Phase Angles)	ψ	No Degradation in Output Power			



C1 — 82 pF 100 mil Chip Capacitor
C2 — 82 pF 100 mill Chip Capacitor
C3 — 0.1 μF
C4 — 10 μF 100 V, Electrolytic
C5 — 1000 μF 60 V, Electrolytic

L1 — 3 Turns, #18 AWG, 1/8″ ID, 0.18 Long
Z1–Z14 — Microstrip, See Details Below
Board Material — Teflon-Glass Laminate,
Dielectric Thickness = .020″,
ϵ_r = 2.55, 2 oz. Copper

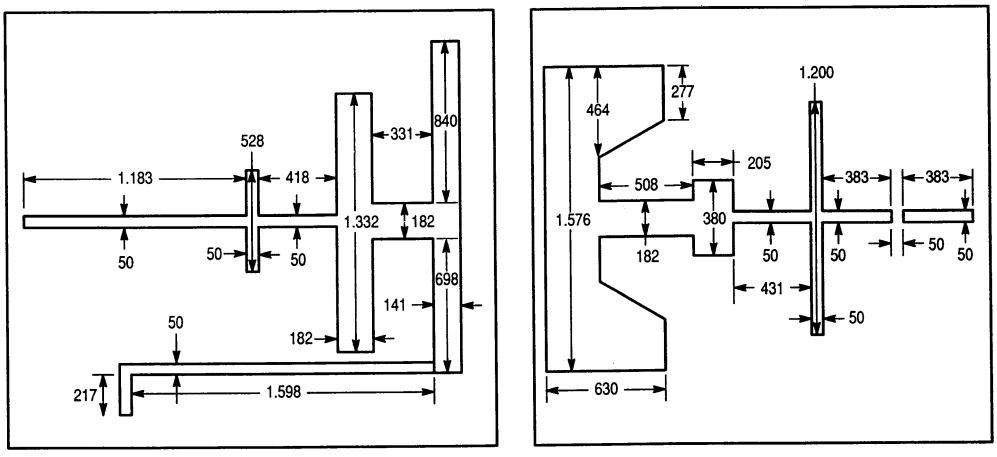


Figure 1. Test Circuit

TYPICAL CHARACTERISTICS

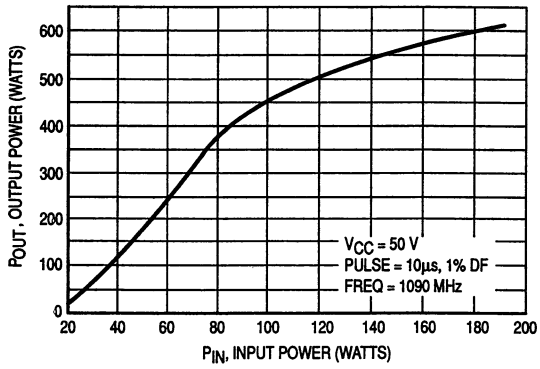
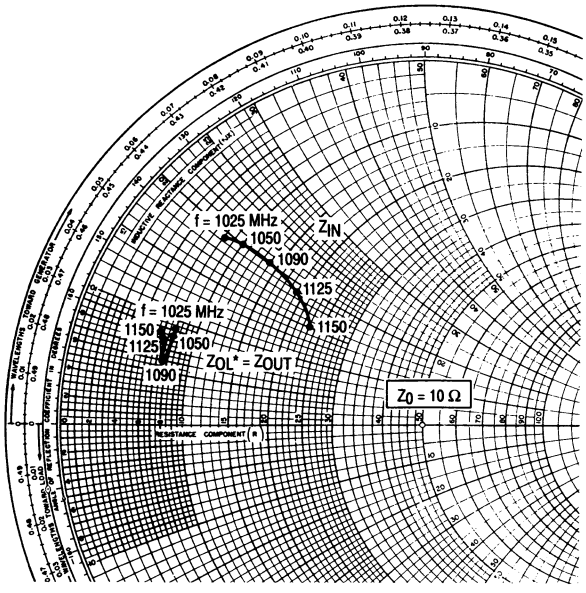


Figure 2. Output Power versus Input Power



f MHz	Z_{IN} OHMS	Z_{OL}*
1025	1.6 + j3.9	1.6 + j1.7
1050	2.0 + j4.0	1.6 + j1.6
1090	2.8 + j4.0	1.5 + j1.1
1125	3.9 + j3.8	1.5 + j1.4
1150	4.6 + j3.0	1.4 + j1.6

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

Figure 3. Series Equivalent Input/Output Impedances