



Island Labs

MRF237

The RF Line

NPN SILICON RF POWER TRANSISTOR

... designed for 12.5 Volt large-signal power amplifier applications in communication equipment operating to 225 MHz.

- Specified 12.5 Volt, 175 MHz Characteristics –
Output Power = 4.0 Watts
Minimum Gain = 12 dB
Efficiency = 50%
- Characterized With Series Equivalent Large-Signal Impedance Parameters
- Grounded Emitter TO-39 Package for High Gain and Excellent Heat Dissipation
- Replaces Medium Power Stud Mount Devices

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CE0}	18	Vdc
Collector-Base Voltage	V_{CBO}	36	Vdc
Emitter-Base Voltage	V_{EBO}	4.0	Vdc
Collector Current – Continuous	I_C	1.0	Adc
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	8.0	Watts mW/ $^\circ\text{C}$
Storage Temperature Range	T_{stg}	-65 to +200	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	22	$^\circ\text{C}/\text{W}$

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

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ($I_C = 10 \text{ mAdc}$, $I_B = 0$)	$V_{(BR)CEO}$	18	–	–	Vdc
Collector-Emitter Breakdown Voltage ($I_C = 5.0 \text{ mAdc}$, $V_{BE} = 0$)	$V_{(BR)CES}$	36	–	–	Vdc
Emitter-Base Breakdown Voltage ($I_E = 1.0 \text{ mAdc}$, $I_C = 0$)	$V_{(BR)EBO}$	4.0	–	–	Vdc
Collector Cutoff Current ($V_{CB} = 15 \text{ Vdc}$, $I_E = 0$)	I_{CBO}	–	–	0.25	mAdc

ON CHARACTERISTICS

DC Current Gain ($I_C = 250 \text{ mAdc}$, $V_{CE} = 5.0 \text{ Vdc}$)	h_{FE}	5.0	–	–	–
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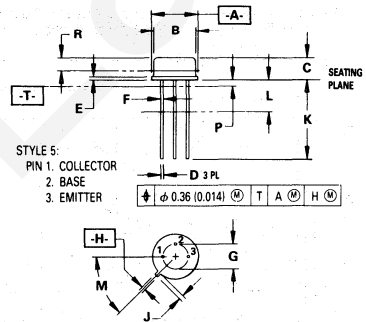
DYNAMIC CHARACTERISTICS

Output Capacitance ($V_{CB} = 15 \text{ Vdc}$, $I_E = 0$, $f = 0.1 \text{ MHz}$)	C_{ob}	–	15	20	pF
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FUNCTIONAL TESTS

Common-Emitter Amplifier Power Gain ($P_{out} = 4.0 \text{ W}$, $V_{CC} = 12.5 \text{ Vdc}$, $f = 175 \text{ MHz}$)	G_{pE}	12	14	–	dB
Collector Efficiency ($P_{out} = 4.0 \text{ W}$, $V_{CC} = 12.5 \text{ Vdc}$, $f = 175 \text{ MHz}$)	η	50	62	–	%

4 W – 175 MHz
RF POWER
TRANSISTOR
NPN SILICON



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION J MEASURED FROM DIMENSION A MAXIMUM.
 4. DIMENSION B SHALL NOT VARY MORE THAN 0.25 (0.010) IN ZONE R. THIS ZONE CONTROLLED FOR AUTOMATIC HANDLING.
 5. DIMENSION F APPLIES BETWEEN DIMENSION P AND L. DIMENSION D APPLIES BETWEEN DIMENSION L AND K MINIMUM. LEAD DIAMETER IS UNCONTROLLED IN DIMENSION P AND BEYOND DIMENSION K MINIMUM.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	9.02	9.29	0.355	0.366
B	8.01	8.50	0.315	0.335
C	4.20	4.57	0.165	0.180
D	0.44	0.53	0.017	0.021
E	0.44	0.88	0.017	0.035
F	0.41	0.48	0.016	0.019
G	5.08 BSC		0.200 BSC	
H	0.72	0.86	0.028	0.034
J	0.74	1.01	0.029	0.040
K	12.70	19.05	0.500	0.750
L	6.35		0.250	
M	45° BSC		45° BSC	
P	–	1.27	–	0.050
R	2.54	–	0.100	–

CASE 79-05
TO-206AF
(TO-39)

FIGURE 1 - 175 MHz TEST CIRCUIT SCHEMATIC

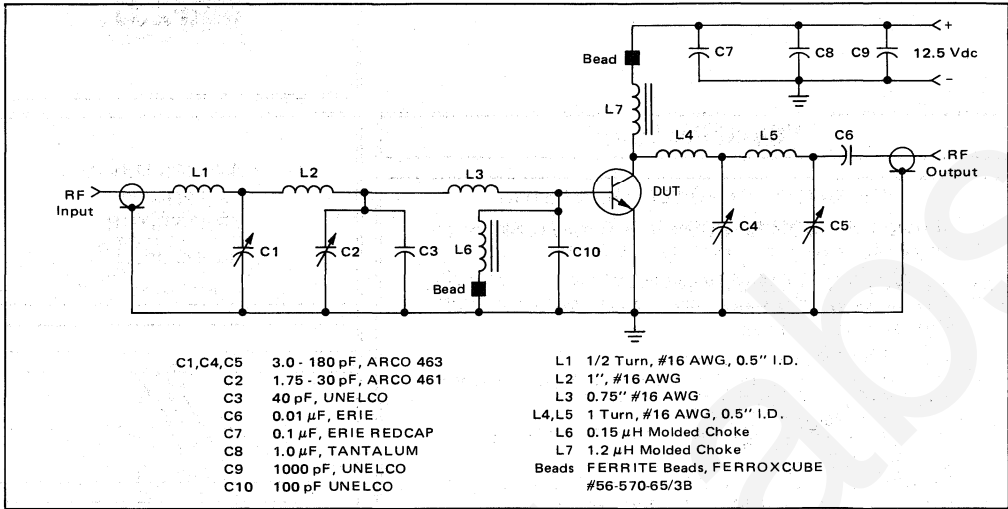


FIGURE 2 - OUTPUT POWER versus INPUT POWER

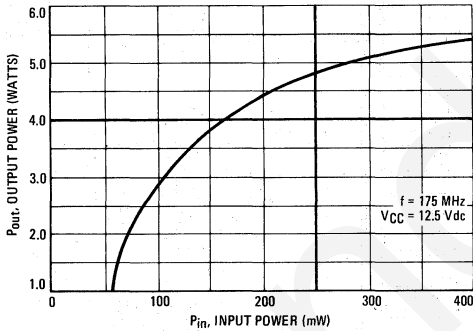


FIGURE 3 - OUTPUT POWER versus FREQUENCY

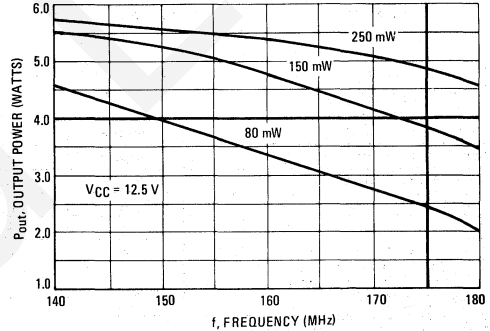


FIGURE 4 - OUTPUT POWER versus SUPPLY VOLTAGE

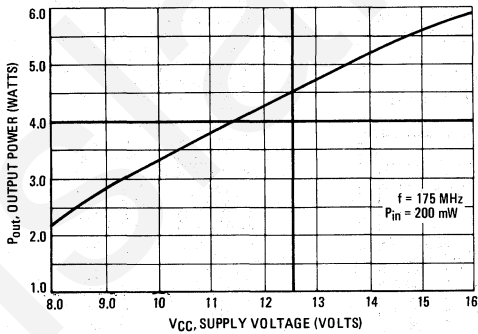
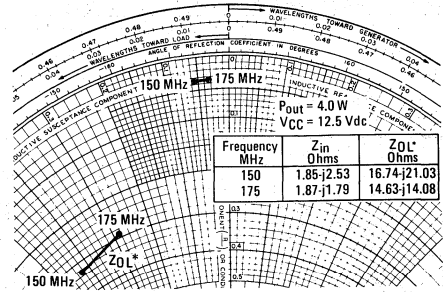


FIGURE 5 - SERIES EQUIVALENT IMPEDANCE



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