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MRF226

The RF Line

13 W – 225 MHz

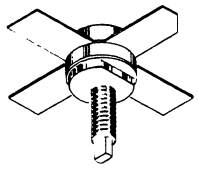
RF POWER TRANSISTOR

NPN SILICON

NPN SILICON RF POWER TRANSISTOR

. . . designed for 12.5 Volt large-signal power amplifier applications in communication equipment operating at 225 MHz. Ideally suited for Class E citizens band radio.

- Specified 12.5 Volt, 225 MHz Characteristics –
  Output Power = 13 Watts
  Minimum Gain = 9.0 dB
  Efficiency = 50%
- Characterized With Series Equivalent Large-Signal Impedance Parameters
- Designed to Withstand Load Mismatch at all Phase Angles with 20:1 VSWR

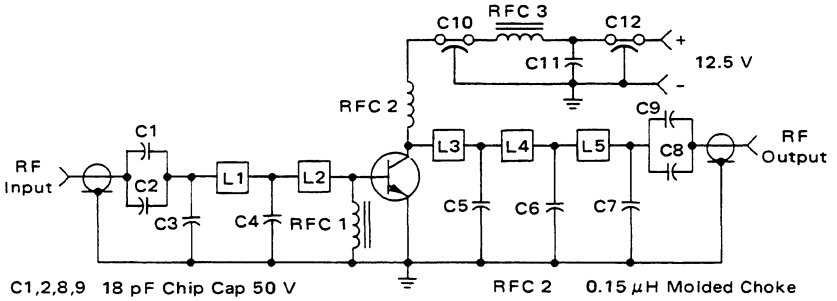


MAXIMUM RATINGS

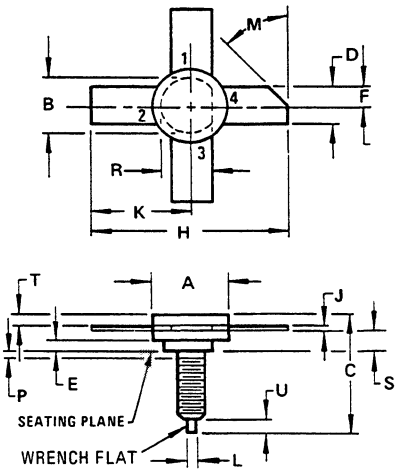
Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	18	Vdc
Collector-Base Voltage	V_{CBO}	36	Vdc
Emitter-Base Voltage	V_{EBO}	4.0	Vdc
Collector Current – Continuous	I_C	2.5	Adc
Total Device Dissipation @ $T_C = 25^oC$(1) Derate above 25^oC	P_D	45 257	Watts mW/^oC
Storage Temperature Range	T_{stg}	-65 to +200	^oC
Stud Torque (2)	–	6.5	In. Lb.

(1) These devices are designed for RF operation. The total device dissipation rating applies only when the devices are operated as Class C RF amplifiers.
(2) For repeated assembly, use 5 In. Lb.

FIGURE 1 – 225 MHz TEST CIRCUIT SCHEMATIC



C1,2,8,9	18 pF Chip Cap 50 V	RFC 2	0.15 μH Molded Choke
C3	15 pF UNELCO	L1	0.15 x 3.15 inch Microstrip
C4,5	80 pF UNELCO	L2	0.15 x 0.55 inch Microstrip
C6	25 pF UNELCO	L3	0.15 x 1.4 inch Microstrip
C7	7.0 pF UNELCO	L4	0.15 x 2.35 inch Microstrip
C10,12	680 pF Feedthru ALLEN BRADLEY	L5	0.15 x 0.5 inch Microstrip
C11	1.0 μF, 35 V Tantalum	Board is G10 3 x 5 x 0.062 inch	
RFC 1,3	Ferroxcube VK200	$\epsilon_R = 5$	



DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	9.40	9.78	0.370	0.385
B	8.13	8.38	0.320	0.330
C	18.03	19.05	0.710	0.750
D	5.59	5.84	0.220	0.230
E	1.78	2.03	0.070	0.080
F	2.79	2.92	0.110	0.115
H	26.42	28.70	1.040	1.130
J	0.10	0.15	0.004	0.006
K	13.21	14.35	0.520	0.565
L	1.40	1.65	0.055	0.065
M	45° NOM		45° NOM	
P	–	1.27	–	0.050
R	7.59	7.80	0.299	0.307
S	4.01	4.52	0.158	0.178
T	2.16	2.41	0.085	0.095
U	2.54	3.30	0.100	0.130

NOTE:
CASE 145A-01 USE 8-32NC2A STUD

CASE 145A-01

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector Emitter Breakdown Voltage (I_C = 15 mAdc, I_B = 0)	BV_{CEO}	18	–	Vdc
Collector-Base Breakdown Voltage (I_C = 5.0 mAdc, I_E = 0)	BV_{CBO}	36	–	Vdc
Emitter-Base Breakdown Voltage (I_E = 2.5 mAdc, I_C = 0)	BV_{EBO}	4.0	–	Vdc
Collector Cutoff Current (V_{CB} = 15 Vdc, I_E = 0)	I_{CBO}	–	0.25	mAdc
ON CHARACTERISTICS				
DC Current Gain (I_C = 250 mAdc, V_{CE} = 5.0 Vdc)	h_{FE}	5.0	–	–
FUNCTIONAL TEST (Figure 1)				
Common-Emitter Amplifier Power Gain (P_{out} = 13 W, V_{CC} = 12.5 Vdc, f = 225 MHz)	G_{PE}	9.0	–	dB
Collector Efficiency (P_{out} = 13 W, V_{CC} = 12.5 Vdc, f = 225 MHz)	η	50	–	%

FIGURE 2 – OUTPUT POWER versus INPUT POWER

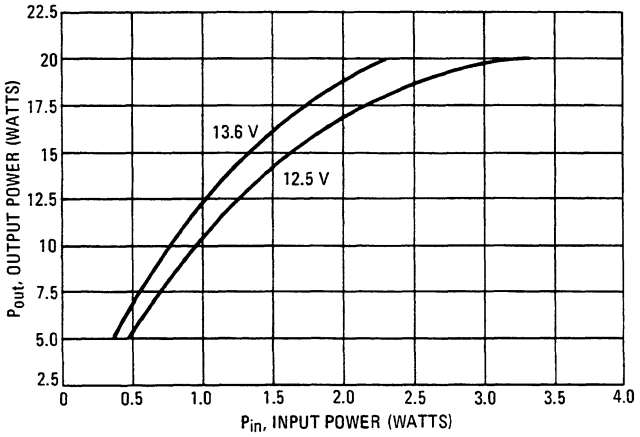
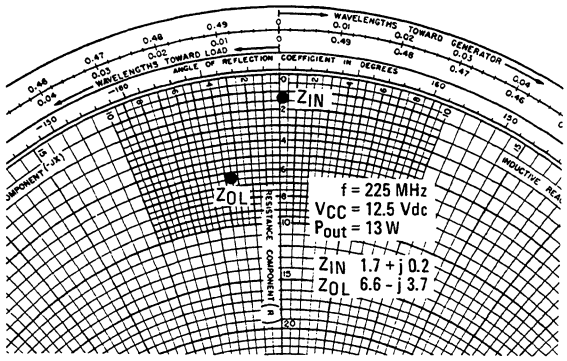


FIGURE 3 – SERIES EQUIVALENT IMPEDANCE



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