MRF227

CASE 79-03, STYLE 5

HIGH FREQUENCY 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}	400	mdc
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	5.0 28.5	Watts mW/°C
Storage Temperature	T_{stg}	−65 to +200	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I_C = 50 mAdc, I_B = 0)	$V_{(BR)CEO}$	16	—	—	Vdc
Collector-Emitter Breakdown Voltage (I_C = 50 mAdc, V_{BE} = 0)	$V_{(BR)CES}$	36	—	—	Vdc
Emitter-Base Breakdown Voltage (I_E = 1.0 mAdc, I_C = 0)	$V_{(BR)EBO}$	4.0	—	—	Vdc
Collector Cutoff Current (V_{CB} = 15 Vdc, I_E = 0)	I_{CBO}	—	—	1.0	mAdc
Collector Cutoff Current (V_{CE} = 15 Vdc, V_{BE} = 0, T_C = 55°C)	I_{CES}	—	—	10	mAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 100 mAdc, V_{CE} = 5.0 Vdc)	h_{FE}	20	—	200	—
SMALL SIGNAL CHARACTERISTICS					
Output Capacitance (V_{CB} = 12.5 Vdc, I_E = 0, f = 1.0 MHz)	C_{obo}	—	—	15	pF
FUNCTIONAL TEST (FIGURE 1)					
Common-Emitter Amplifier Power Gain (P_{out} = 3.0 W, V_{CC} = 12.5 Vdc, f = 225 MHz)	G_{PE}	13.5	15	—	dB
Collector Efficiency (P_{out} = 3.0 W, V_{CC} = 12.5 Vdc, f = 225 MHz)	η	60	—	—	%

FIGURE 1 – 225 MHz TEST CIRCUIT

C1,C2,C3,C4	ARCO 420
C5	1000 pF, UNELCO
C6	0.047 pF, ERIE
C7	1.0 pF, TANTALUM
L1	#18 AWG, 1" Wire Length
L2	VK200-4 Ferroxcube
L3	1 Turn, #18 AWG, 1/4" ID x 2" Wire Length
L4	0.15 μH DELEVAN Molded Choke

Board – Glass Teflon, ϵ_R = 2.56, t = 0.062"
Input/Output Connectors – Type N

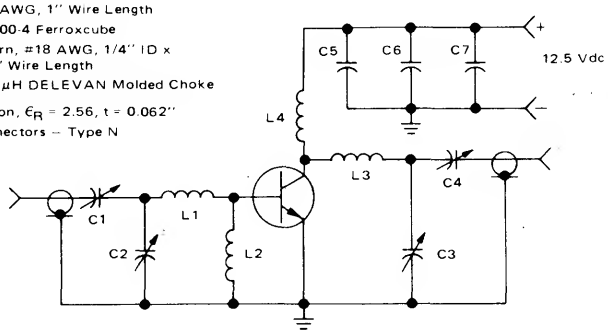

FIGURE 2 – INPUT POWER versus OUTPUT POWER – 12.5 V

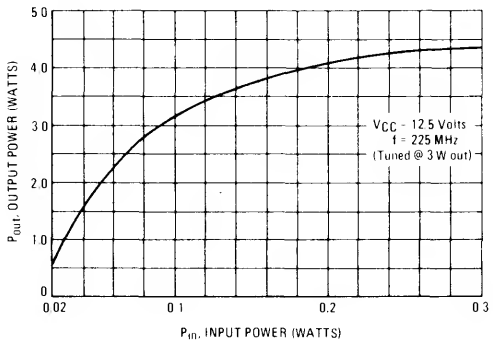

FIGURE 3 – INPUT POWER versus OUTPUT POWER – 13.6 V

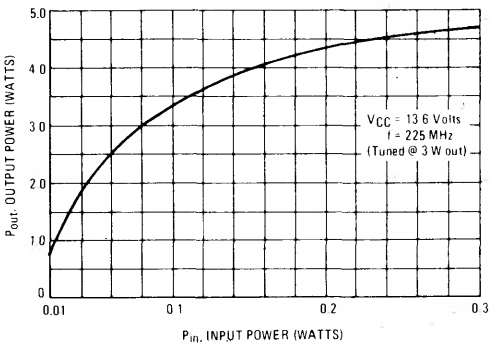

FIGURE 4 – INPUT POWER versus OUTPUT POWER – 7.5 V

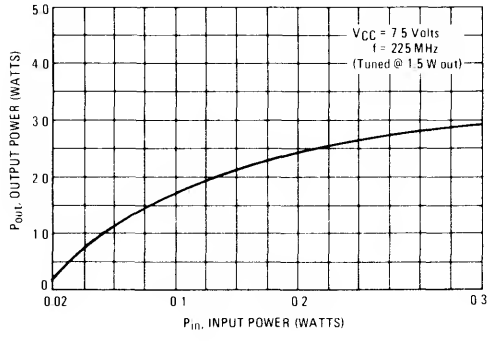

FIGURE 5 – OUTPUT POWER versus SUPPLY VOLTAGE

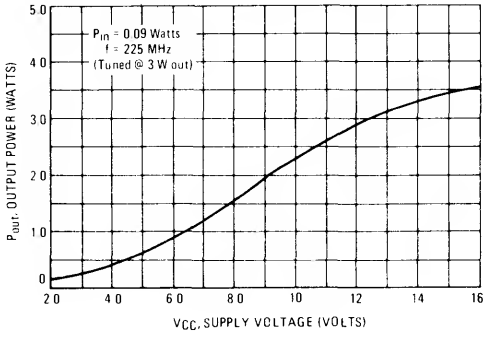

FIGURE 6 – SERIES EQUIVALENT IMPEDANCE