MRF626
MRF627

MRF626
CASE 305-01, STYLE 1

MRF627
CASE 305A-01, STYLE 1

HIGH FREQUENCY TRANSISTOR

NPN SILICON

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	20	Vdc
Collector-Base Voltage	V_{CBO}	30	Vdc
Emitter-Base Voltage	V_{EBO}	3.5	Vdc
Collector Current — Continuous	I_C	150	mAdc
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	2.5 35	Watts mW/°C
Storage Temperature	T_{stg}	−65 to +200°C	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	28.5	°C/W

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I_C = 5.0 mAdc, I_B = 0)	$V_{(BR)CEO}$	20	—	—	Vdc
Collector-Base Breakdown Voltage (I_C = 0.1 mAdc, I_E = 0)	$V_{(BR)CBO}$	30	—	—	Vdc
Emitter-Base Breakdown Voltage (I_E = 0.1 mAdc, I_C = 0)	$V_{(BR)EBO}$	3.5	—	—	Vdc
Collector Cutoff Current (V_{CE} = 12 Vdc, I_B = 0)	I_{CEO}	—	—	1.0	mAdc
Emitter Cutoff Current (V_{BE} = 3.5 Vdc, I_C = 0)	I_{EBO}	—	—	1.0	mAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 50 mAdc, V_{CE} = 10 Vdc)	h_{FE}	15	—	150	—
SMALL-SIGNAL CHARACTERISTICS					
Current-Gain — Bandwidth Product (I_C = 50 mAdc, V_{CE} = 12.5 Vdc, f = 200 MHz) (I_C = 100 mAdc, V_{CE} = 12.5 Vdc, f = 200 MHz) (I_C = 150 mAdc, V_{CE} = 12.5 Vdc, f = 200 MHz)	f_T	 — — —	 2.5 2.7 2.6	 — — —	GHz
Output Capacitance (V_{CB} = 12.5 Vdc, I_E = 0, f = 1.0 MHz)	C_{obo}	—	3.0	3.5	pF
Input Capacitance (V_{BE} = 1.0 Vdc, I_C = 0, f = 1.0 MHz)	C_{ibo}	—	8.8	—	pF
FUNCTIONAL TEST (FIGURE 1)					
Common-Emitter Amplifier Power Gain (V_{CC} = 12.5 Vdc, P_{out} = 0.5 W, f = 470 MHz)	G_{PE}	10	12	—	dB
Collector Efficiency (V_{CC} = 12.5 Vdc, P_{out} = 0.5 W, f = 470 MHz)	η	—	60	—	%
Series Equivalent Input Impedance (V_{CC} = 12.5 Vdc, P_{out} = 0.5 W, f = 470 MHz)	Z_{in}	—	6.0 − j4.0	—	Ohms
Series Equivalent Output Impedance (V_{CC} = 12.5 Vdc, P_{out} = 0.5 W, f = 470 MHz)	Z_{out}	—	45 − j28	—	Ohms

FIGURE 1 – OUTPUT POWER versus INPUT POWER

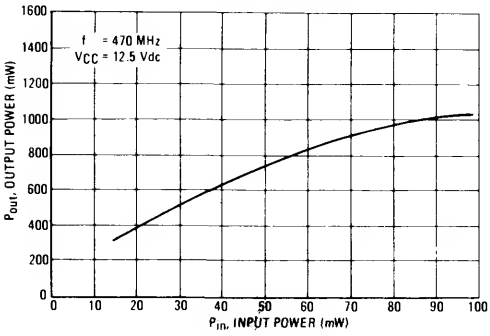


FIGURE 2 – OUTPUT CAPACITANCE versus COLLECTOR BASE VOLTAGE

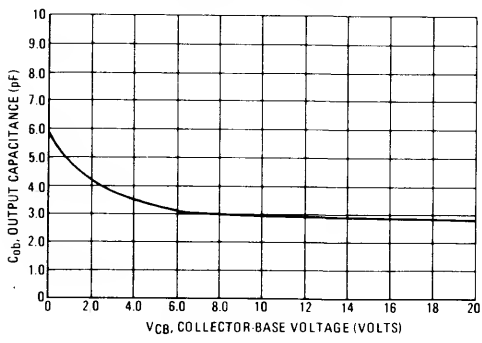
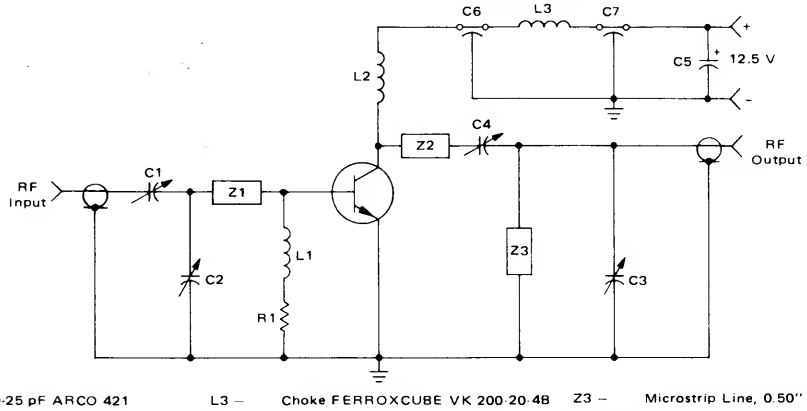


FIGURE 3 – 470 MHz TEST CIRCUIT SCHEMATIC



C1,C2 – 1.0-25 pF ARCO 421
C3,C4 – 1.0-25 pF ARCO 421
C5 – 1.0 μF, 35 V Capacitor
C6,C7 – 1000 pF Feedthru
L1,L2 – 7 Turns, #22 AWG, 0.2" I.D.
L3 – Choke FERROXCUBE VK 200-20-4B
R1 – 1 Ohm, 1/2 W Carbon
Z1 – Microstrip Line, 0.25" W x 1.75 " L
Z2 – Microstrip Line, 0.25" W x 2.00" L
Z3 – Microstrip Line, 0.50" W x 1.00" L
Board-Glass Teflon, 3" x 5" x 0.060"
Mounting Plate is 3" x 5" x 0.75"
Input/Output Connectors – Type N

FIGURE 4 – 470 MHz TEST CIRCUIT LAYOUT

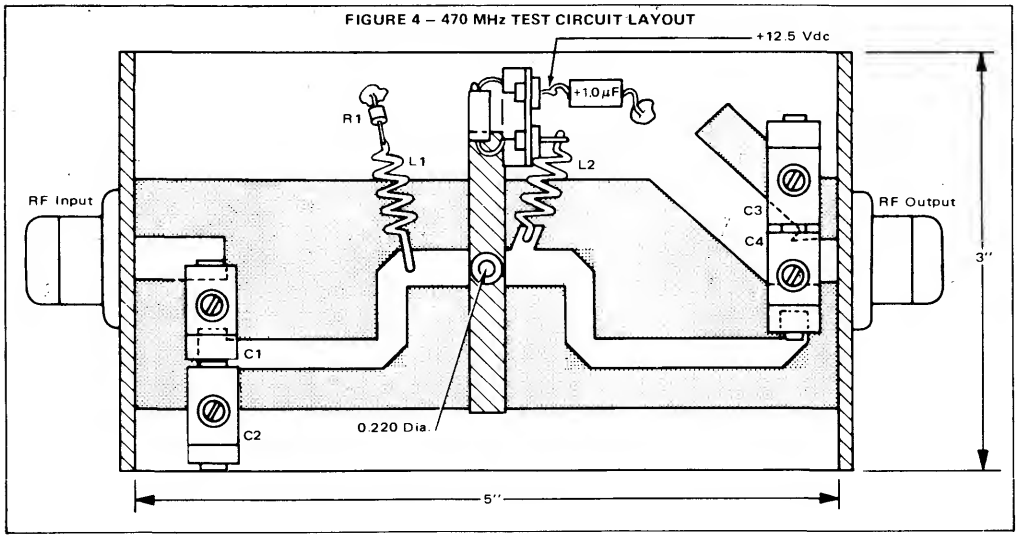


FIGURE 5 – TYPICAL S_{11} and S_{22} versus FREQUENCY

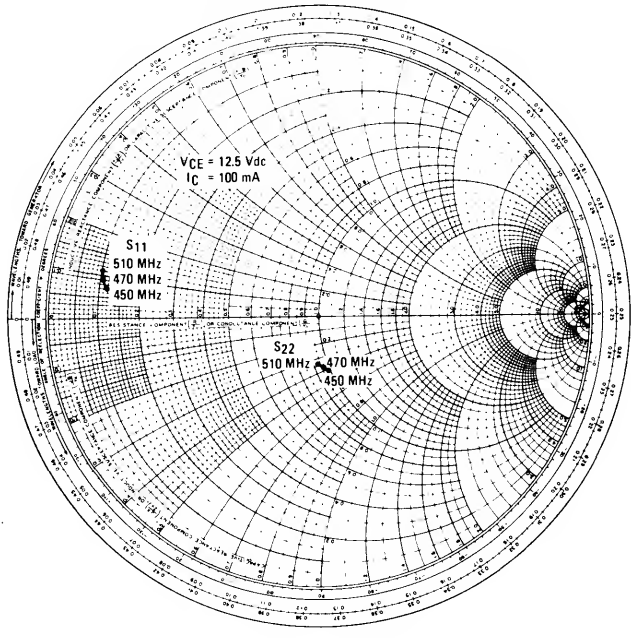


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FIGURE 6 – TYPICAL S_{12} versus FREQUENCY

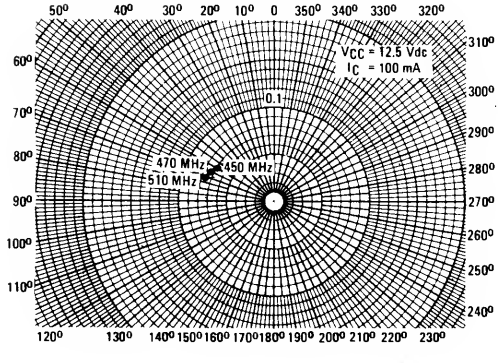

FIGURE 7 – TYPICAL S_{21} versus FREQUENCY