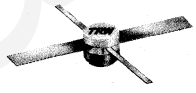
TRW® SEMICONDUCTORS

TP 251

7.5 Volts Transistor

400 - 512 MHz
0.2 Watts
13 dB Gain

The latest in the TRW RF transistor, this device has been specifically designed and characterized for 7.5 V operation. It is ideally suited for use in pocketphones where low battery voltage is used.

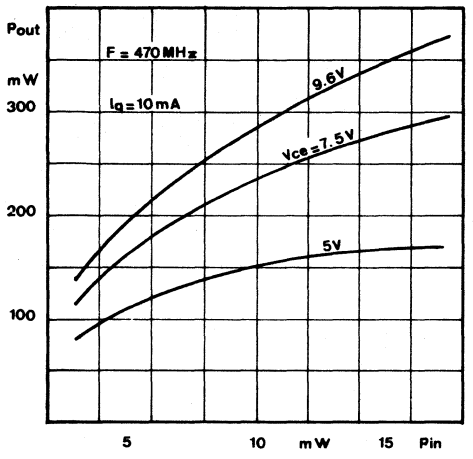


200 SOE STUDLESS

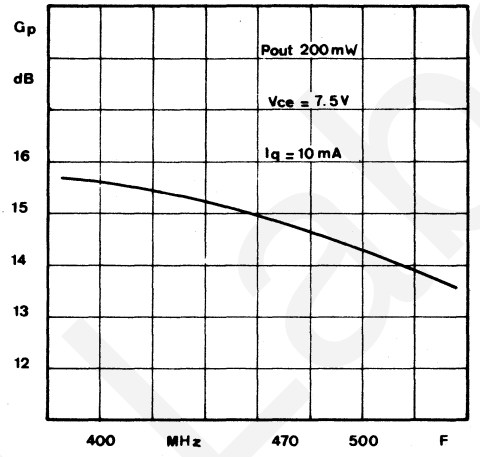
PRELIMINARY

	SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
DC Test	BV_{EBO}	Emitter - Base Breakdown Voltage	I_E = 1 mA I_C = 0	4			V
	BV_{CEO}	Collector - Emitter Breakdown Voltage	I_C = 5 mA I_B = 0	18			V
	BV_{CBO}	Collector - Base Breakdown Voltage	I_C = 2 mA I_E = 0	40			V
	I_{CBO}	Collector Cutoff Current	V_{CB} = 15 V I_E = 0			0.5	mA
	H_{FE}	D.C Current Gain	V_{CE} = 5 V I_C = 50 mA	20			—
RF Test	P_{GAIN}	Power Gain	F = 470 MHz Iq = 10 mA V_{CE} = 7.5 V P_{in} = 10 mW V_{CE} = 9.6 V P_{in} = 10 mW	 0.175 0.200	 0.230 0.290		W
	η	Efficiency	F = 470 MHz Iq = 10 mA V_{CE} = 7.5 V Rated Output Power	35	40		%
	Z_{in}	Common Emitter Amplifier Input Impedance	F = 470 MHz AB Class V_{CE} = 7.5 V P_{in} = 10 mW		5 + j 0.5		Ω
	Z_{Load}	Common Emitter Amplifier Load Impedance	F = 470 MHz AB Class V_{CE} = 7.5 V P_{out} = 0.2 W		47 + j 45		Ω
	C_{OB}	Collector - Base Capacitance	V_{CB} = 10 V F = 1 MHz		1.6	2.5	pF
Operating	I_C	Continous Collector Current				0.2	A
	θ_{j-C}	Thermal Resistance	T_C = 25 °C			175	°C/W
	T_{STG}	Storage Temperature and Junction Temperature		— 65°		200°	°C
	P_D	Power Dissipation	T_C = 25 °C			1	W

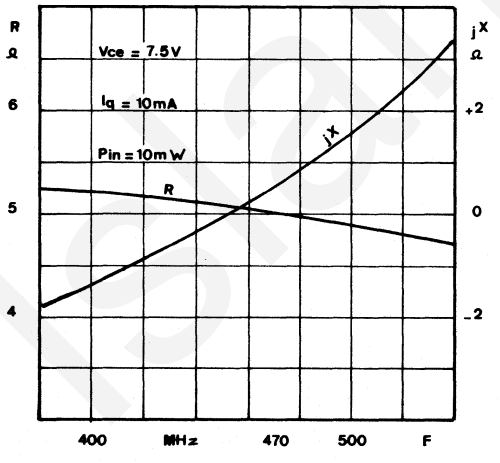
Output Power vs Input Power and V_{CE}



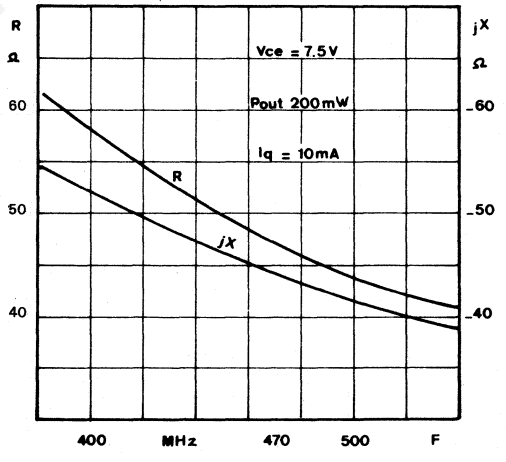
Power Gain vs Frequency



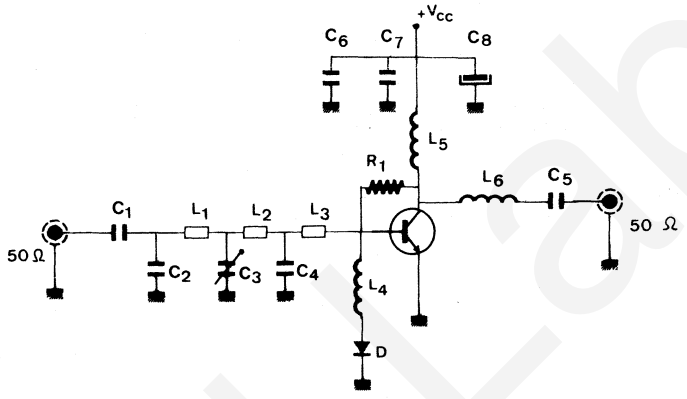
Input Impedance vs Frequency



Output Impedance vs Frequency



400-512 MHz TEST CIRCUIT



C_1 = 27 pF Ceramic 632 RTC
C_2 = 8.2 pF Ceramic 632 RTC
C_3 = 3-20 pF Trimmer Capacitor
C_4 = 22 pF Ceramic 632 RTC
C_5 = C_6 = 1000 pF Ceramic 629 RTC
C_7 = 10 nF Ceramic 629 RTC
C_8 = 10 µF/25 V Electrolytic

L_1 = Stripline Z_0 = 70 ohms l = 0.061 λ
L_2 = Stripline Z_0 = 70 ohms l = 0.026 λ
L_3 = Stripline Z_0 = 50 ohms l = 0.031 λ
} F_{REF} = 480 MHz

L_4 = L_5 = 0.15 µH Molded Coil
L_6 = 3 turns - Silvered Wire 6/10 mm - 4 mm I.D - 8 mm length

R_1 = 5 10 Ω Carbon Composition 1/4 W

PACKAGE
.200 SOE STUDLESS