TRW® SEMICONDUCTORS

PT 8740

RF Power Transistor

2 W - 470 MHz
12.5 V

The PT 8740 is designed for use in 12.5 V UHF and VHF applications and is ideally suited for use in the predriver or driver stage of a power amplifier.

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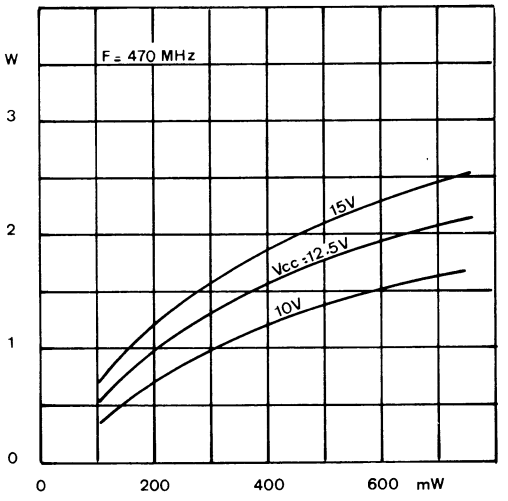
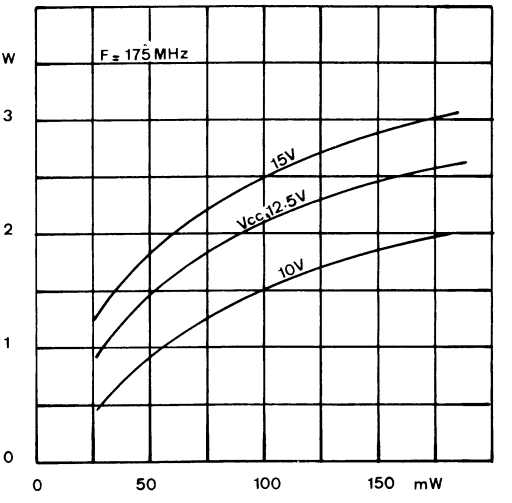
Electrical Characteristics (T_{case} = 25 °C)

	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 = 50 mA I_B = 0	18			V
	BV_{CBO}	Collector - Base Breakdown Voltage	I_C = 10 mA I_E = 0	40			V
	I_{CBO}	Collector Cutoff Current	V_{CB} = 15 V I_E = 0			1	mA
	H_{FE}	D.C Current Gain	V_{CE} = 10 V I_C = 100 mA	15		150	—
RF Test	P_{GAIN}	Power Gain	V_{CE} = 12.5 V F = 470 MHz P_{in} = 0.7 W V_{CE} = 12.5 V F = 175 MHz P_{in} = 0.1 W	2 1.8			W
	η	Efficiency	V_{CE} = 12.5 V F = 470 MHz P_{out} = 2 W	60			%
	Load VSWR	Mismatch Tolerance	All Phases Angles V_{CE} = 12.5 V F = 470 MHz P_{out} = 2 W		∞ : 1		
	Z_{in}	Common Emitter Amplifier Input Impedance	V_{CE} = 12.5 V F = 470 MHz P_{in} = 0.7 W V_{CE} = 12.5 V F = 175 MHz P_{in} = 0.1 W		4.31 — j 1.88 5.06 — j 9.62		Ω
	Z_{Load}	Common Emitter Amplifier Load Impedance	V_{CE} = 12.5 V F = 470 MHz V_{CE} = 12.5 V F = 175 MHz P_{out} = 1.8 W		21.1 + j 7.39 22.3 + j 31.36		Ω
	C_{OB}	Collector - Base Capacitance	V_{CB} = 20 V F = 1 MHz			12	pF
Operating	I_C	Continous Collector Current				0.5	A
	θ_{j-C}	Thermal Resistance	T_C = 25 °C			50	°C/W
	T_{STG}	Storage Temperature and Junction Temperature		— 65°		200°	°C
	P_D	Power Dissipation	T_C = 25 °C			3.5	W

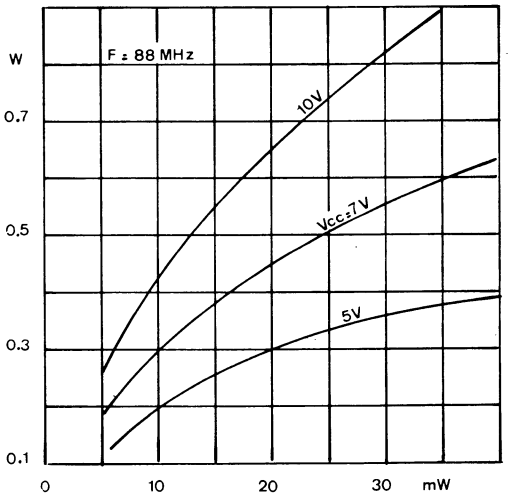
TYPICAL CHARACTERISTICS

Power Output vs Input Power and Voltage Supply

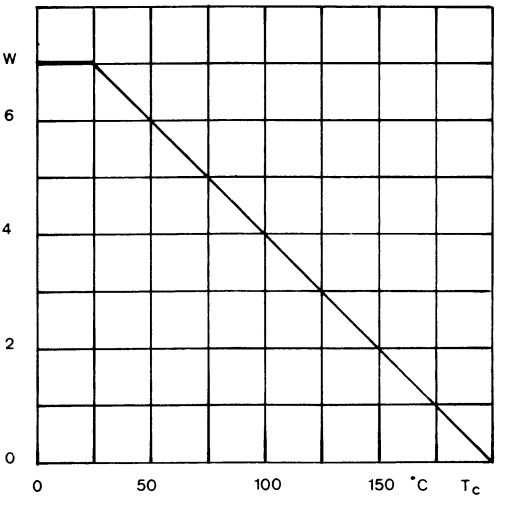




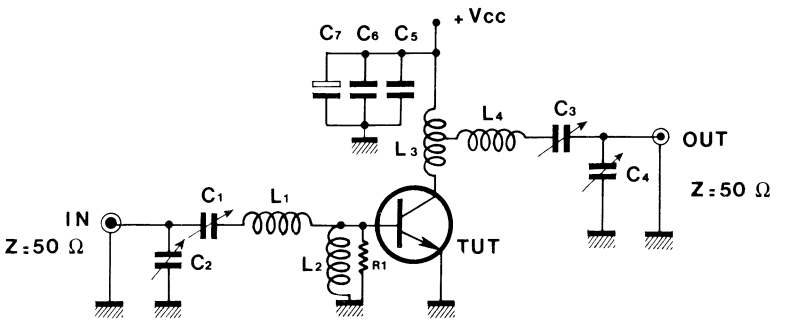
Power Output vs Input Power and Voltage Supply



Power - Temperature Derating Curve

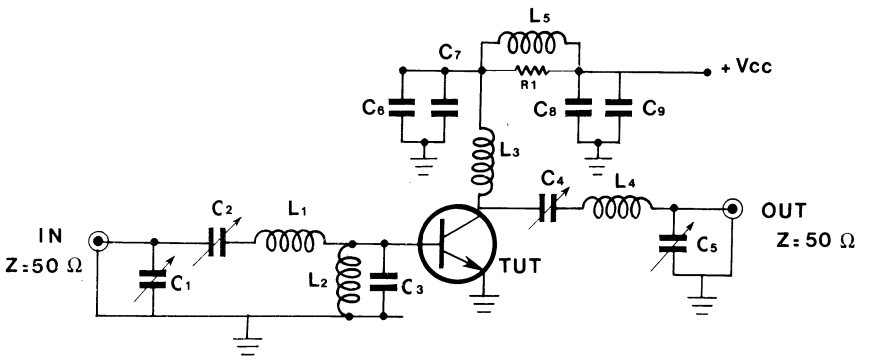


175 MHz AMPLIFIER-POWER OUTPUT TEST CIRCUIT



C_1-C_2-C_3-C_4 = 7.60 pF trimmer capacitor ARCO 404
C_5 = 1000 pF ceramic disc
C_6 = 10 nF ceramic disc
C_7 = 47 µF electrolytic
L_1 = 2 1/2 turns 10/10 mm wire - 1 cm I.D. - 1 cm length
L_2 = 1 µH molded coil
L_3 = 3 turns 10/10 mm wire - 1 cm I.D. - 1,5 cm length center tapped
L_4 = 2 1/2 turns 10/10 mm wire - 1 cm I.D. - 1 cm length
R_1 = 47 ohms 1/2 W carbon composition

470 MHz AMPLIFIER-POWER OUTPUT TEST CIRCUIT



C_1 = 1,5-20 pF trimmer capacitor ARCO 402
C_2-C_4 = 7-60 pF trimmer capacitor ARCO 404
C_5 = 4-40 pF trimmer capacitor ARCO 403
C_3 = 20 pF ceramic disc
C_6-C_8 = 1000 pF silver mica capacitor
C_7-C_9 = 10 nF ceramic disc
L_1 = 3 mm × 12 mm copper strip
L_2 = 0.15 µH molded coil
L_3 = 2 turns 4/10 mm wire - 3 mm I.D.
L_4 = 5 mm × 15 mm copper strip
L_5 = 10 turns 4/10 mm wire on R1
R_1 = Resistor 20 ohms 1/2 W carbon composition

PACKAGE OUTLINE

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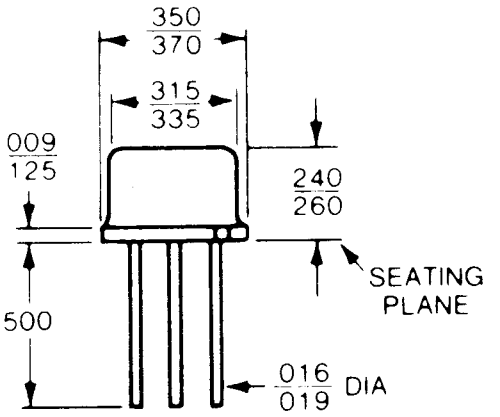
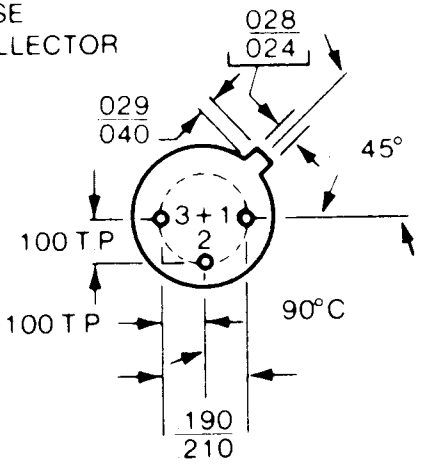


PIN 1 EMITTER
2 BASE
3 COLLECTOR



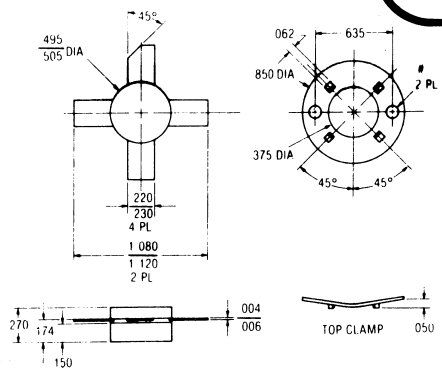
HIGH POWER LINEAR RF POWER TRANSISTOR

PRELIMINARY

The LΘT 1000 Low ΘJC transistor is intended for use in Marine, Military, and Commercial high power SSB and CW RF transmitter designs. The combined die and package state-of-the-art technology enables reliable operation at elevated case temperatures.

200 WATTS PEP,
2-30MHz, 50V,
LOW ΘJC,
0-42°C/W
@100° HEATSINK

.5 Low Theta Package



Electrical Characteristics (T_{case} = 25 °C)

	SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
DC TEST	BV_{CBO}	Collector Base Voltage	I_C = 100mA I_E = 0	110			V
	BV_{CER}	Collector Emitter	I_C = 50mA R = 1Ω	110			V
	I_{CER}	Collector Emitter Leakage	V_{CE} = 80 R = 1Ω			20	mA
	BV_{EBO}	Emitter Base Voltage	I_E = 10mA I_C = 0	3.60			V
	h_{FE}	D.C. Current Gain	V_{CE} = 5.0V I_C = 5.0A	10		70	
RF TEST	P_{OUT}	Power Output	V_{CE} = 50V f = 30MHz P_{IN} = 7.0	200			W
	IMD	3rd Order	V_{CE} = 50V f = 30MHz P_O = 200W	-35			dB
	VSWRL	Collector Load	V_{CE} = 50V f = 30MHz P_O = 200W PEP	3:1			
	*Phase angle s varied >360° during 3- second test						
THERMAL	ΘJC	Thermal Resistance	100°C Case		0.42		c/w