

### RF Power Transistor



Island Labs


The TP 2312 is designed for 6 V to 12 V VHF applications and is intended for class A, B or C medium power amplifiers, frequency multipliers or oscillator circuits.

Its grounded emitter construction gives excellent thermal dissipation and the ability of providing further heatsinking where necessary the case also acts as a good RF screen.

This device features high gain and an infinite VSWR rating at all phase angles at rated power output.

### 3 W - 175 MHz

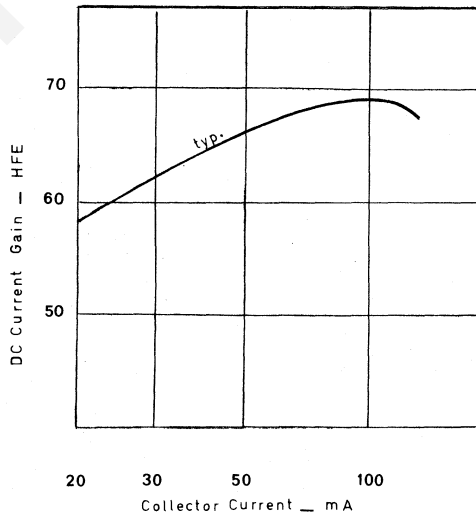
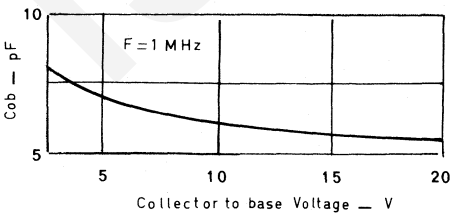
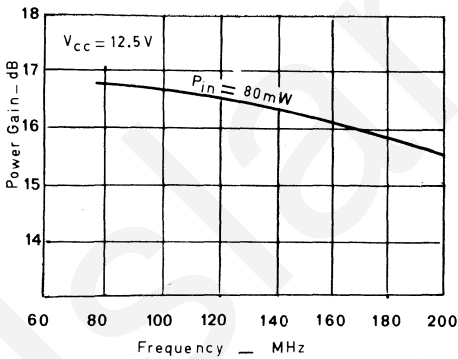
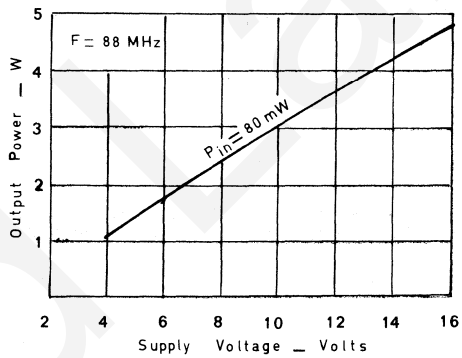
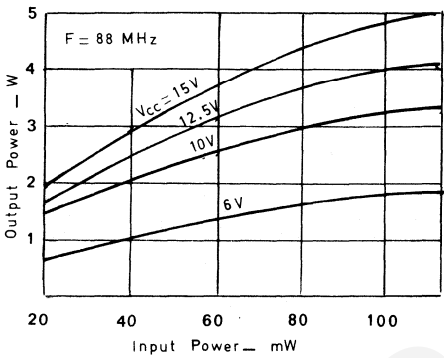
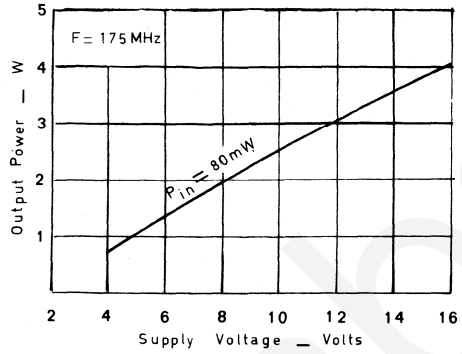
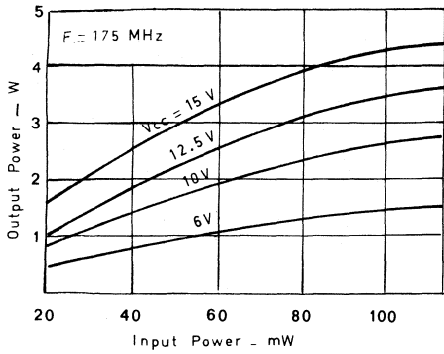
### 12.5 V



TO 39 GE

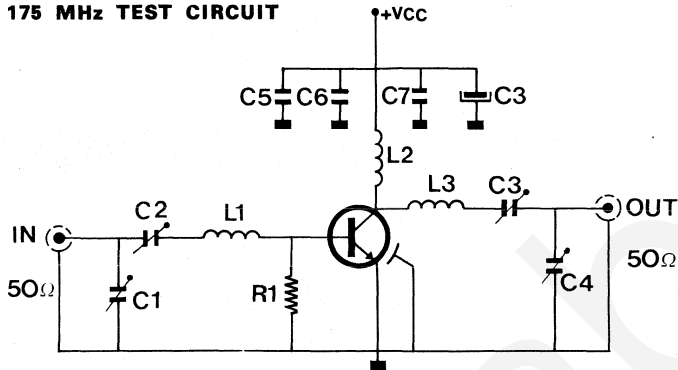
#### Electrical Characteristics (T<sub>case</sub> = 25 °C)

	SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
DC Test	BV <sub>EBO</sub>	Emitter - Base Breakdown Voltage	I <sub>E</sub> = 1 mA I <sub>C</sub> = 0	4			V
	BV <sub>CEO</sub>	Collector - Emitter Breakdown Voltage	I <sub>C</sub> = 25 mA I <sub>B</sub> = 0	16			V
	BV <sub>CBO</sub>	Collector - Base Breakdown Voltage	I <sub>C</sub> = 5 mA I <sub>E</sub> = 0	35			V
	I <sub>CBO</sub>	Collector Cutoff Current	V <sub>CB</sub> = 15 V I <sub>E</sub> = 0			1	mA
	H <sub>FE</sub>	D.C Current Gain	V <sub>CE</sub> = 5 V I <sub>C</sub> = 100 mA	20	70		—
RF Test	P <sub>GAIN</sub>	Power Gain	V <sub>CE</sub> = 12.5 V F = 175 MHz P <sub>in</sub> = 80 mW V <sub>CE</sub> = 6 V F = 175 MHz P <sub>in</sub> = 80 mW V <sub>CE</sub> = 12.5 V F = 88 MHz P <sub>in</sub> = 80 mW	2.75 1 3	3 1.3 3.5		W
	η	Efficiency	V <sub>CE</sub> = 12.5 V F = 175 MHz P <sub>out</sub> = 3 W	60	68		%
	Load VSWR	Mismatch Tolerance	All Phase Angles V <sub>CE</sub> = 12.5 V F = 175 MHz P <sub>out</sub> = 2.75 W		∞ : 1		
	Z <sub>in</sub>	Common Emitter Amplifier Input Impedance	V <sub>CE</sub> = 12.5 V F = 175 MHz P <sub>in</sub> = 80 mW F = 88 MHz		2.9 + j 4.36 2.94 - j 7.67		Ω
	Z <sub>Load</sub>	Common Emitter Amplifier Load Impedance	V <sub>CE</sub> = 12.5 V F = 175 MHz P <sub>out</sub> = 3 W F = 88 MHz		25.1 + j 10.2 29 + j 18.4		Ω
	C <sub>OB</sub>	Collector - Base Capacitance	V <sub>CB</sub> = 20 V F = 1 MHz		5.5	7	pF
Operating	I <sub>C</sub>	Continuous Collector Current				0.7	A
	θ <sub>j-c</sub>	Thermal Resistance	T <sub>C</sub> = 25 °C			25	°C/W
	T <sub>STG</sub>	Storage Temperature and Junction Temperature	—	- 65°		200°	°C
	P <sub>D</sub>	Power Dissipation	T <sub>C</sub> = 25 °C			7	W



NOTA : TYPICAL CHARACTERISTICS

**175 MHz TEST CIRCUIT**



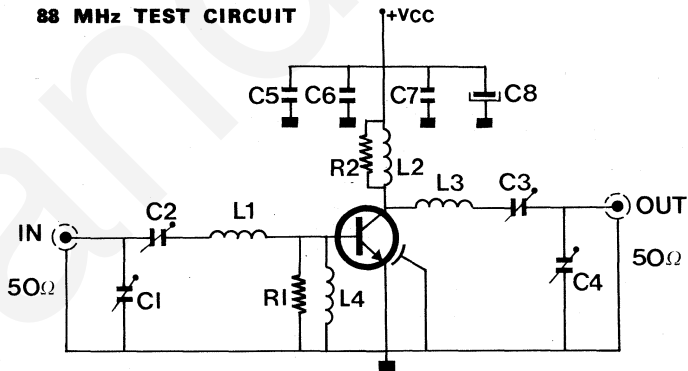
- $C_1 = C_2 = C_3 = C_4 =$  ARCO 404 7-60 pF trimmer capacitor
- $C_5 =$  1000 pF mica capacitor
- $C_6 =$  10 nF ceramic disc
- $C_7 =$  0.1  $\mu$ F ceramic disc
- $C_8 =$  47  $\mu$ F electrolytic

- $L_1 = L_3 =$  2.5 turns - silvered wire  $\varnothing$  1.5 mm - 10 mm I.D.
- $L_2 =$  3 turns - silvered wire  $\varnothing$  1.5 mm - 10 mm I.D.

$R_1 =$  47 ohms - 1/2 W - carbon composition

**NOTA :** CASE MUST BE GROUNDED

**88 MHz TEST CIRCUIT**



- $C_1 = C_2 = C_3 = C_4 =$  ARCO 404 7-60 pF trimmer capacitor
- $C_5 =$  1000 pF mica capacitor
- $C_6 =$  10 nF ceramic disc
- $C_7 =$  0.1  $\mu$ F ceramic disc
- $C_8 =$  47  $\mu$ F electrolytic

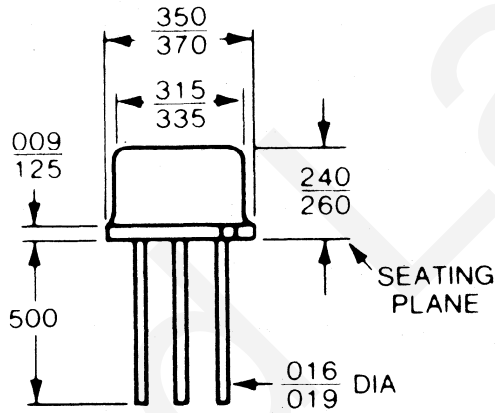
- $L_1 = L_3 =$  2.5 turns - silvered wire  $\varnothing$  1.5 mm - 10 mm I.D.
- $L_2 =$  3 turns - silvered wire  $\varnothing$  1.5 mm - 10 mm I.D.
- $L_4 =$  0.45  $\mu$ H - molded coil
- $R_1 =$  47 ohms - 1/2 W

$R_2 =$  220 ohms - 1/2 W

**NOTA :** CASE MUST BE GROUNDED

# PACKAGE OUTLINE

## TO-39 GE



PIN 3 EMITTER  
 2 BASE  
 1 COLLECTOR

