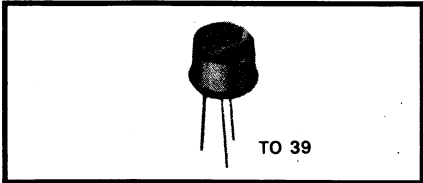


UHF Linear Transistor

- 3 GHz FT
- 1 Volt output DIN 45004 B
- 3.5 dB at 500 MHz



The TP 3093 is an NPN silicon transistor using gold metallization and diffused emitter ballast resistors for long term reliability. Its main characteristics are high output level, low noise

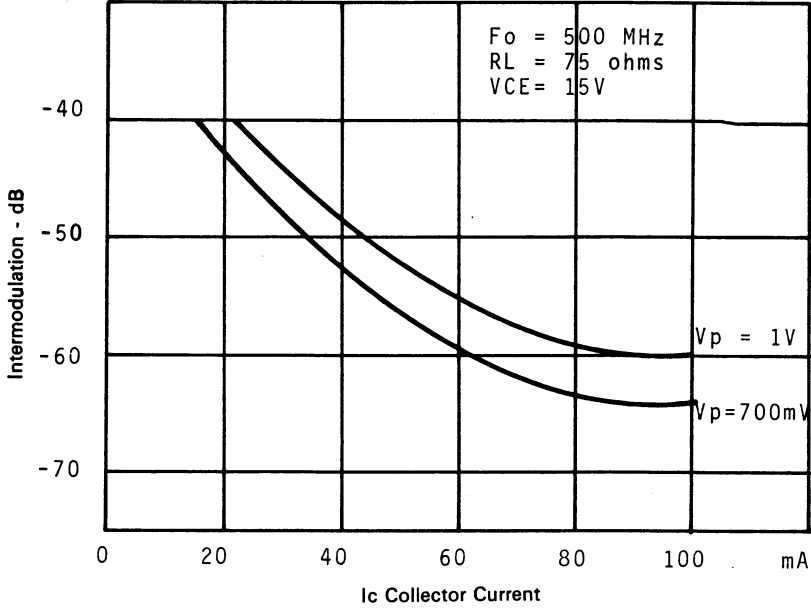
figure and high Ft. These features make TP 3093 an ideal candidate for broadband linear amplifier up to 1 GHz (MATV), oscillators, mixers, multipliers and others.



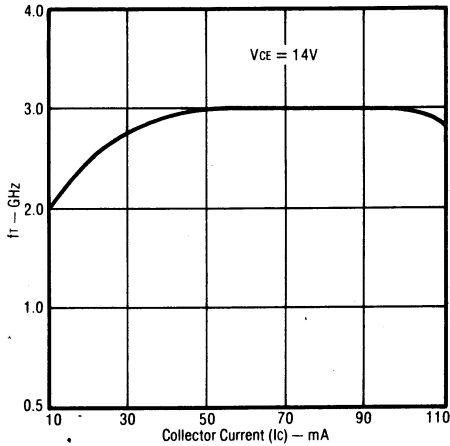
Electrical Characteristics (T_{case} = 25 °C)

	SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
DC Test	BV _{EBO}	Emitter - Base Breakdown Voltage	I _E = 0.1 mA	3			V
	BV _{CEO}	Collector - Emitter Breakdown Voltage	I _C = 10 mA	20			V
	BV _{CBO}	Collector - Base Breakdown Voltage	I _C = 1 mA	30			V
	h _{FE}	D.C Current Gain	V _{CE} = 5 V I _C = 50 mA	20			
RF Test	NF	Noise Figure	V _{CE} = 15 V I _C = 20 mA F = 500 MHz		3.5		dB
	f _T	Cutoff Frequency	V _{CE} = 15 V I _C = 50 mA F = 500 MHz		3		GHz
	G _{Umax}	Maximum Unilateralized Gain	V _{CE} = 15 V I _C = 50 mA F = 500 MHz		9.5		dB
	S ₂₁	Forward Gain 50 Ω/50 Ω	V _{CE} = 15 V I _C = 50 mA F = 500 MHz		8.5		dB
	IMD	Intermodulation Distortion 3 Tone - DIN 45004/B F = 500 MHz R _{Load} = 75 ohms	V _{CE} = 15 V V _{out} = 700 mV I _C = 60 mA V _{out} = 1000 mV		-65 -56		dB dB
	C _{OB}	Collector - Base Capacitance	V _{CB} = 15 V f = 1 MHz			4	pF
Thermal	I _{Cmax}	Maximum Collector Current			200		mA
	θ _{JC}	Thermal Resistance Junction - Case	T _{CASE} = 25 °C		50°		°C/W
	P _T	Dissipated Power	T _{CASE} = 25 °C		3.5		W
	T _{STG}	Storage Temperature		-65		+200	°C

DIN 45004 B IMD VS Ic Collector Current

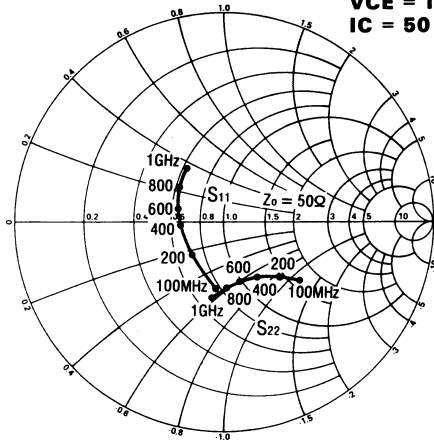


Cutoff Frequency



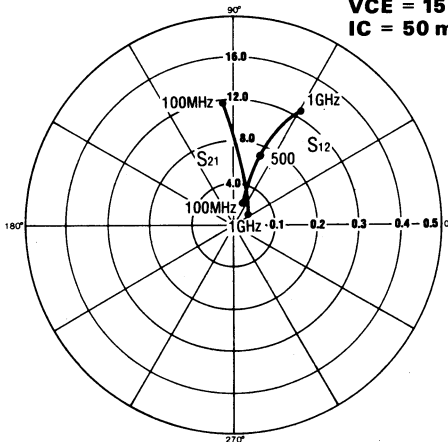
S 22 - S 11 Parameters vs Frequency

VCE = 15 V
IC = 50 mA

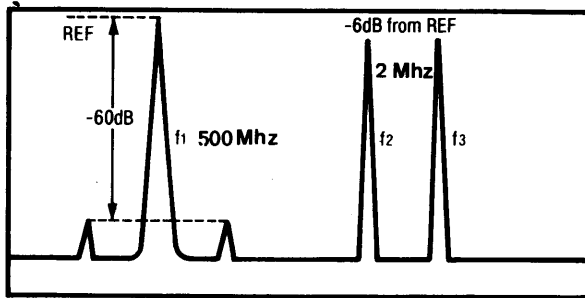


S 21 - S 12 Parameters vs Frequency

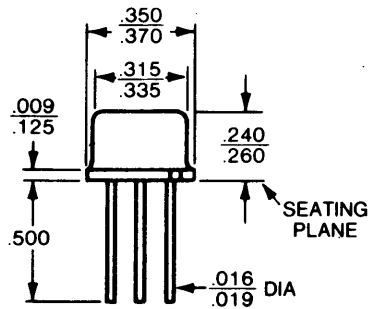
VCE = 15 V
IC = 50 mA



Intermodulation Distortion Test

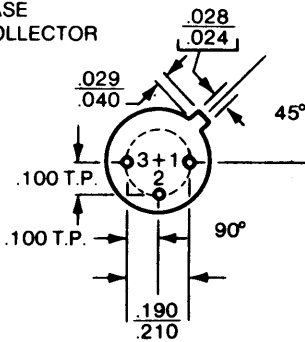


Package Outline TO-39



- PIN 1. ÉMITTER
- 2. BASE
- 3. COLLECTOR

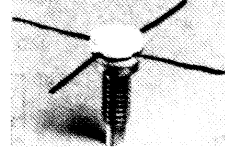
DIMENSIONS IN INCHES



UHF Linear Transistor

- High Output
- 1 V (DIN 45004/B)
- 200 MW (DIN 45004/K)
- 10 dB Gain at 860 MHz
- Gold Reliability

TO 117 C



The TP 3098 is a NPN transistor gold metallized for reliability.

ideal for UHF broadband linear amplification such as in high level 1 VOLT MATV Amplifiers up to 860 MHz or low power 200 mW TV TRANSPOSER stages.

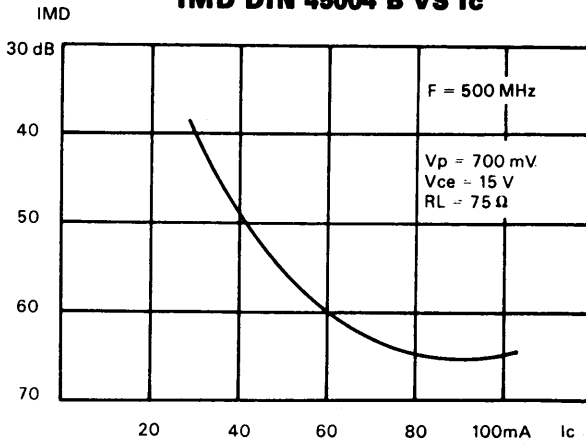
It uses diffused emitter ballast resistors for super linearity, The transition frequency of 3 GHz makes these transistor



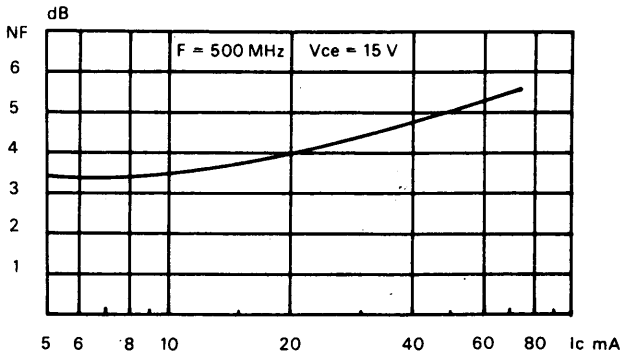
Electrical Characteristics (T_{case} = 25 °C)

	SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
DC Test	BV _{BEO}	Emitter - Base Breakdown Voltage	I _E = 0.1 mA	3.0			V
	BV _{CEO}	Collector - Emitter Breakdown Voltage	I _C = 10 mA	20			V
	BV _{CER}	Collector - Emitter Breakdown Voltage	I _C = 10 mA R _{BE} = 10	25			V
	BV _{CBO}	Collector - Base Breakdown Voltage	I _C = 1 mA	30			V
	I _{CBO}	Collector - Base Leakage	V _{CB} = 15 V			0.2	mA
	H _{FE}	D.C. Current Gain	V _{CE} = 10 V I _C = 90 mA	60			
RF Test	N _F	Noise Figure	V _{CE} = 15 V I _C = 40 mA F = 500 MHz			6.5	dB
	F _T	Cutoff Frequency	V _{CE} = 15 V I _C = 100 mA F = 500 MHz		2.6		GHz
	G _{Umax}	Maximum Gain	V _{CE} = 15 V I _C = 100 mA F = 500 MHz		13.5		dB
	S ₂₁	Forward Gain 50 ohms/50 ohms	V _{CE} = 15 V I _C = 100 mA F = 500 MHz		11.5		dB
	IMD	Intermodulation Distortion 3 tone — DIN 45004/B F = 500 MHz R _{Load} = 75 ohms	V _{CE} = 15 V V _{out} = 700 mV I _C = 100 mA		- 65	- 60	dB
	C _{OB}	Collector Base Capacitance	V _{CB} = 10 V F = 1 MHz		2.5		pF
Thermal	I _{Cmax}	Maximum Collector Current				200	mA
	O _{JC}	Thermal Resistance	T _{case} = 25 °C			35	°C/W
	P _T	Dissipated Power				5.0	W
	T _{STG}	Storage Temperature		- 65		+ 200	°C
	T _J	Junction Temperature					

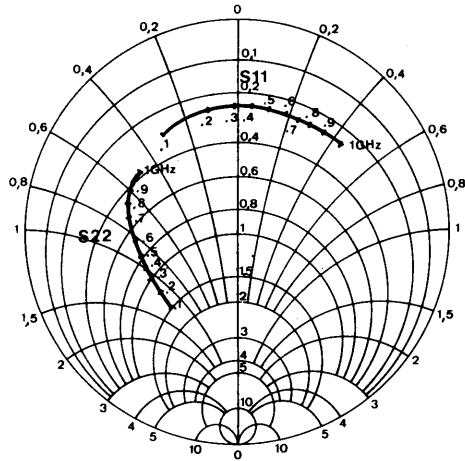
IMD DIN 45004 B VS I_c



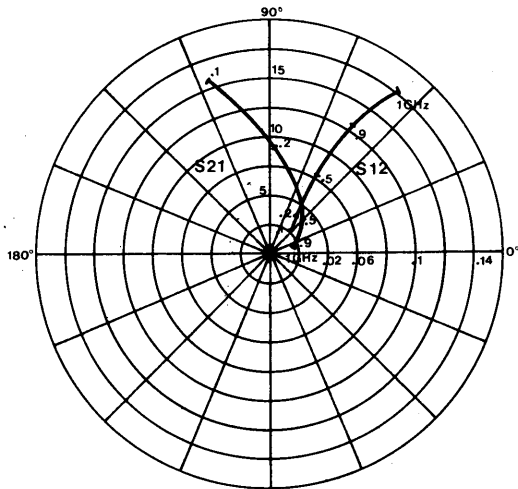
Noise Figure vs Collector current



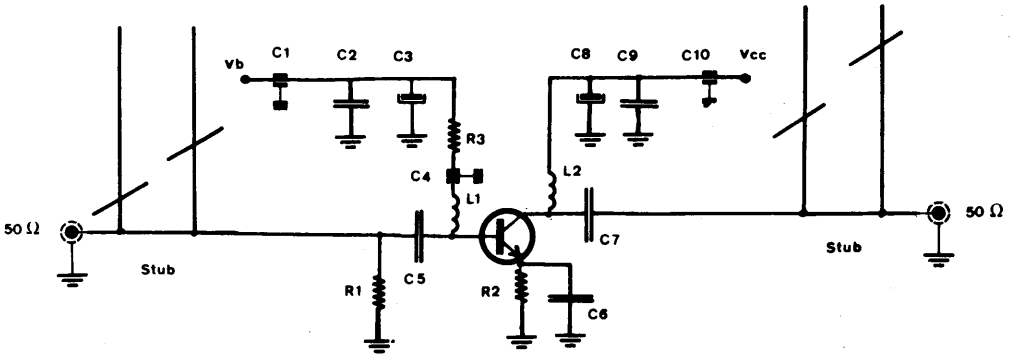
S11 and S22 vs Frequency
 $V_{CE} = 15\text{ V} - I_C = 100\text{ mA}$



S21 - S12 Parameters vs Frequency
 $V_{CE} = 15\text{ V} - I_C = 100\text{ mA}$



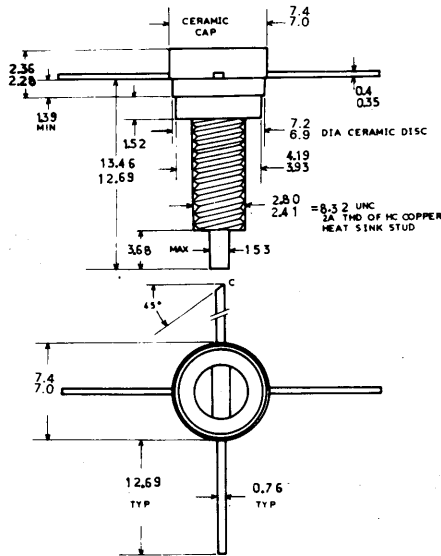
IMD AND NF TEST CIRCUIT AT 500 MHz



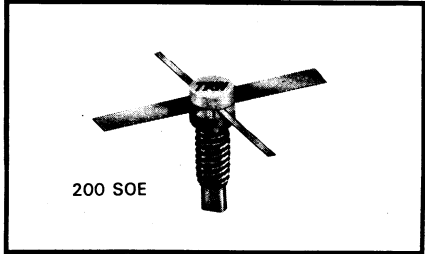
- L_{1,2} 0.1 nH molded coil
- C_{1,4,10} 1000 pF by pass
- C_{2,9} 470 pF ceramic disc
- C_{5,7} 220 pF ceramic chip
- C_{3,8} 47 μF 40 V electrolytic
- C₆ 2 × 220 pF chip one at each emitter lead

- R₁ 100 ohms 1/4 W carbon resistor
- R₂ 39 ohms 1/4 W carbon resistor
- R₃ 1.5 K ohms 1/4 W carbon resistor

Package Outline To 117 G



- 0.20 W
- 960 MHz
- 12 dB Gain
- 24 V
- Class A



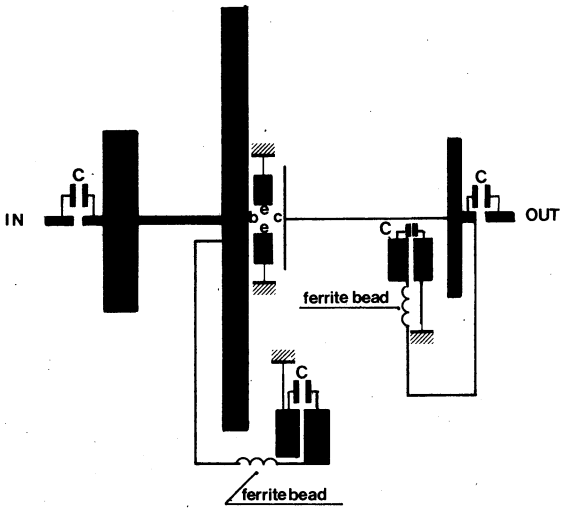
The TP 3400 is designed for use on the 900 MHz mobile band.

This device which is specified as a low power drive device, offering high gain, enables operation in class A, B or C circuits.

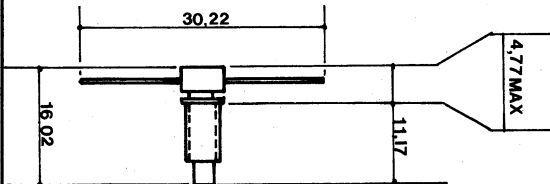
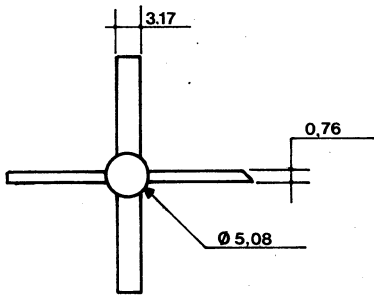


Electrical characteristics (Tcase = 25 °C)

	SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
DC Test	BV_{EBO}	Emitter - Base Breakdown Voltage	$I_E = 0.25 \text{ mA}$	3.5			V
	BV_{CER}	Collector - Emitter Breakdown Voltage	$I_C = 10 \text{ mA}, R_{BE} = 10$	50			V
	BV_{CBO}	Collector - Base Breakdown Voltage	$I_C = 1 \text{ mA}$	45			V
	I_{CBO}	Collector Cutoff Current	$V_{CB} = 24 \text{ V}$			0.25	mA
	H_{FE}	D.C. Current Gain	$V_{CE} = 5 \text{ V}, I_C = 100 \text{ mA}$	20		120	—
RF Test	P_{OUT}		$V_{CE} = 24 \text{ V}, F = 960 \text{ MHz}$ $I_Q = 74 \text{ mA}; P_{in} = 12.5 \text{ mW}$	200			mW
	C_{OB}	Collector Base Capacitance	$V_{CB} = 20 \text{ V}, F = 1 \text{ MHz}$			3	pF
Thermal	I_C	Maximum Collector Current				0.4	A
	θ_{jc}	Thermal Resistance Junction Case	$T_{case} = 70 \text{ }^\circ\text{C}$			30	$^\circ\text{C/W}$
	P_T		$T_{Heatsink} = 25 \text{ }^\circ\text{C}$			5.8	W
	T_{STG}/T_J	Maximum Junction and Storage Temperature		-65		+200	$^\circ\text{C}$

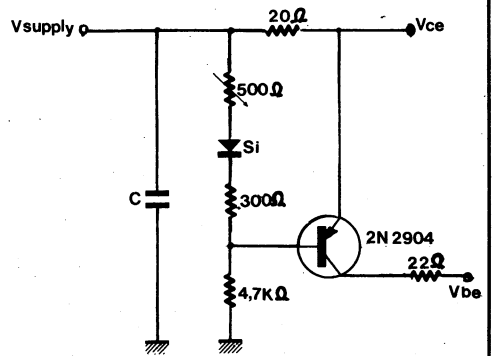


C:100 Pf
 Substrate: Epoxy Glass
 20^mm thick $\epsilon_r = 2,43$
 ▨ : Foil wrap to ground plane

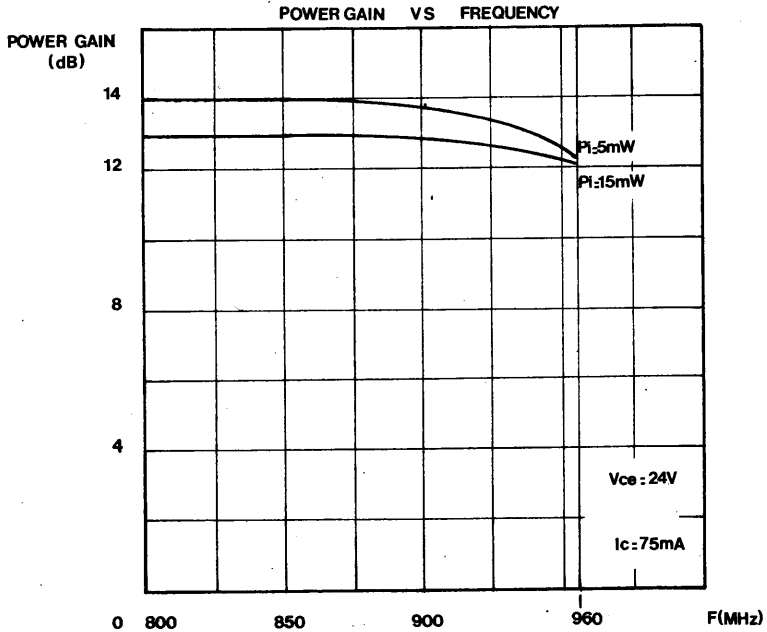
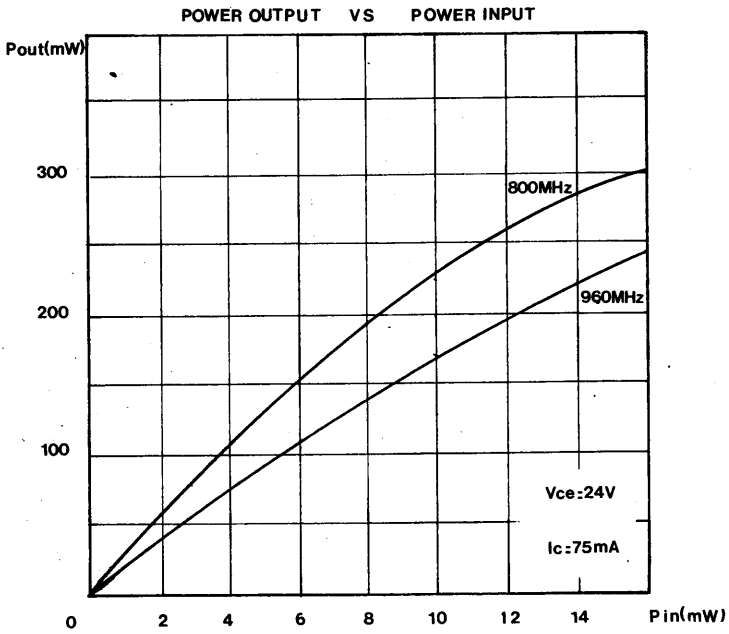


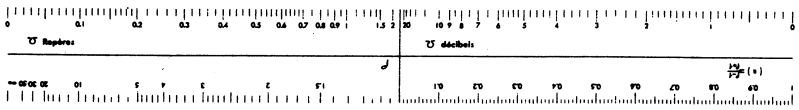
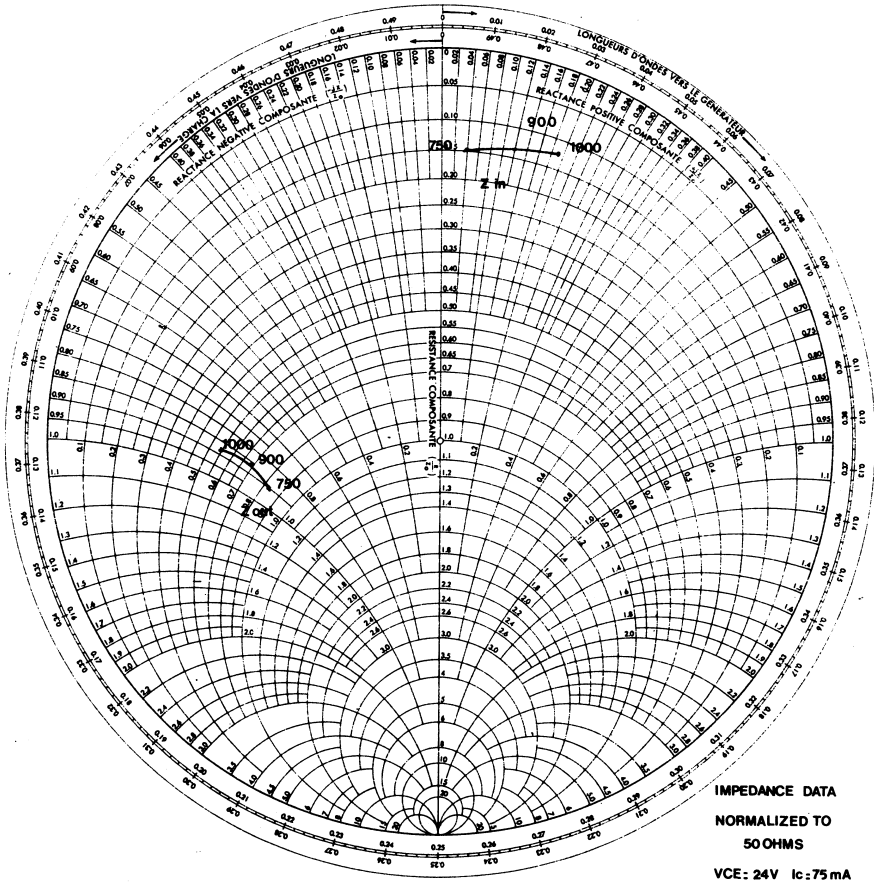
PACKAGE 200 SOE STUD

Dimensions Given in ^m/m



C:1 μ F+0,1 μ F+10nF
 BIAS CIRCUIT





N° 361