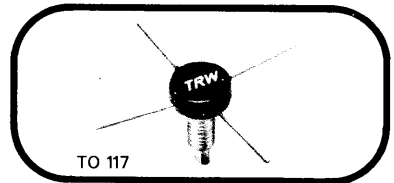


UHF LINEAR TRANSISTORS

The TP 3094 is NPN transistor gold metallized for reliability. It use diffused emitter ballast resistors for super linearity. The transition frequency of 3 GHz make these transistor ideal for UHF broad-band linear amplification such as in high level **1 volt MATV** amplifier up to 860 MHz or low power **200 mW TV transposers** stages.

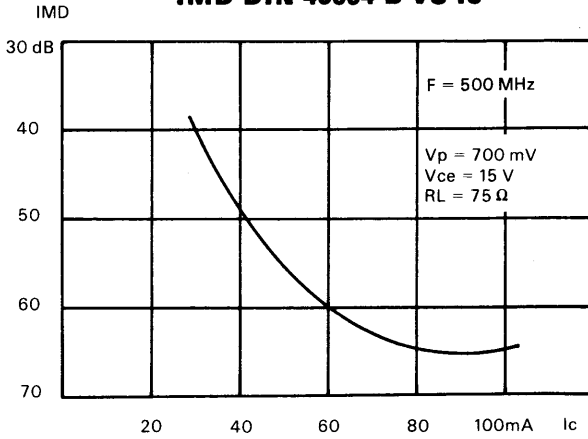
HIGH OUTPUT
1 V (DIN 45004/B)
200 mw (DIN 45004/K)
10 DB GAIN AT 860 MHz
GOLD RELIABILITY



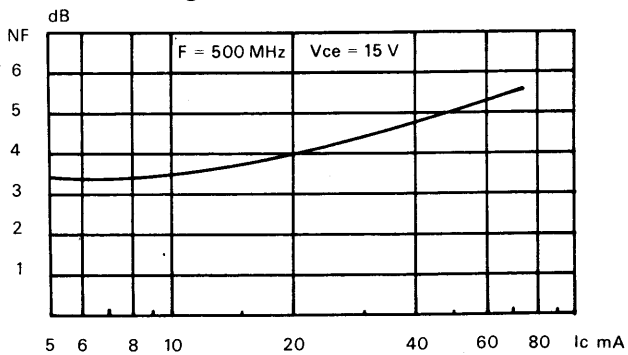
Electrical Characteristics (T_{CASE} = 25 °C)

	SYMBOL	CHARACTERISTICS	TEST CONDITIONS	TYP.	MIN.	TYP.	MAX.	UNIT
DC Test	BV _{EBO}	Emitter - Base Breakdown Voltage	I _E = 0.1 ma		3.5			V
	BV _{CEO}	Collector - Emitter Breakdown Voltage	I _C = 10 mA		25			V
	BV _{CER}	Collector - Emitter Breakdown Voltage	I _C = 10 mA R _{BE} = 10 ohms		30			V
	BV _{CBO}	Collector - Base Breakdown Voltage	I _C = 1 mA		30			V
	I _{CBO}	Collector - Base Leakage	V _{CB} = 15 V				200	μA
	h _{FE}	D.C. Current Gain	V _{CE} = 10 V I _C = 90 mA		25			
RF Test	NF	Noise Figure	V _{CE} = 15 V I _C = 40 mA F = 500 MHz			4.7	5.2	dB
	f _T	Cutoff Frequency	V _{CE} = 15 V I _C = 100 mA F = 500 MHz			2.6		GHz
	G _{Umax}	Maximum Unilateralized Gain	V _{CE} = 15 V I _C = 100 mA F = 500 MHz			13.6		dB
	S ₂₁	Forward Gain 50 Ω/50 Ω	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 I _C = 100 mA V _{out} = 700 mV			- 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
	θ _{JC}	Thermal Resistance Junction - Case	T _{CASE} = 25 °C				35	°C/W
	P _T	Dissipated Power					5.0	W
	T _{STG}	Storage Temperature						
	T _J	Junction Temperature			- 65		+ 200	°C

IMD DIN 45004 B VS I_c

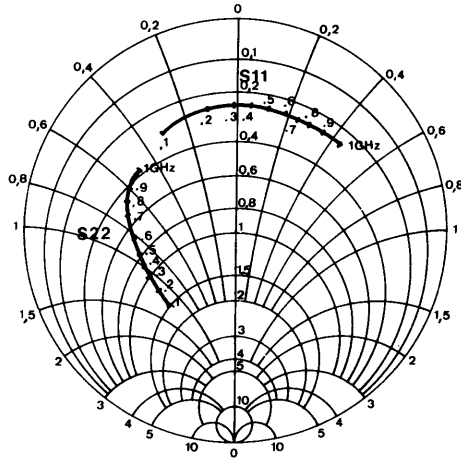


Noise Figure vs Collector current



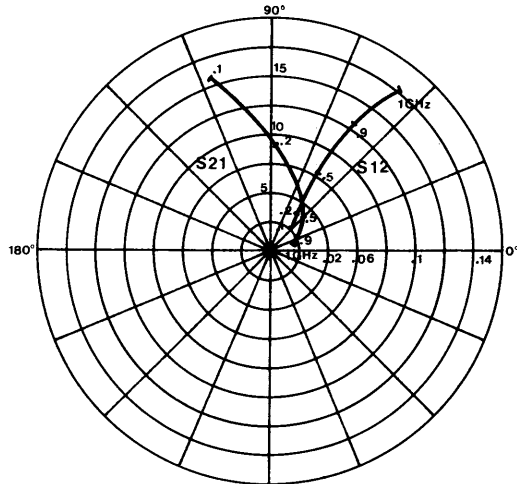
S11 and S22 vs Frequency

$V_{CE} = 15\text{ V} - I_C = 100\text{ mA}$

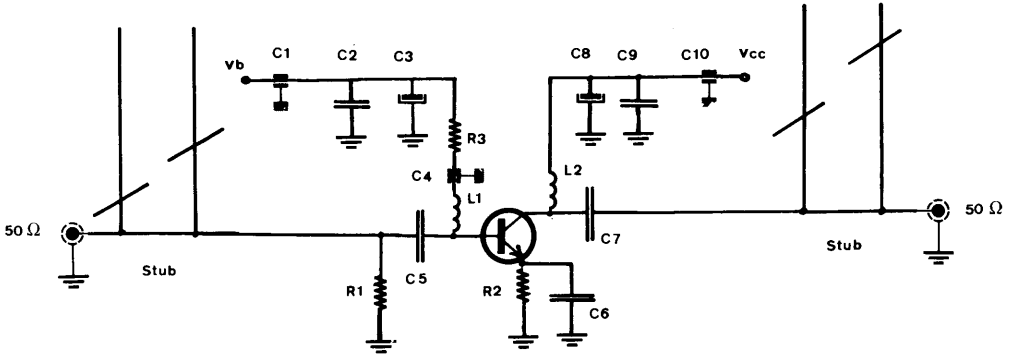


S21 - S12 Parameters vs Frequency

$V_{CE} = 15\text{ V} - I_C = 100\text{ mA}$

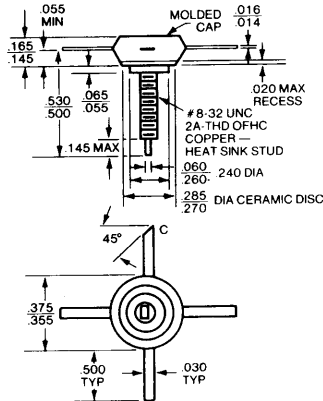


IMD AND NF TEST CIRCUIT AT 500 MHz



- 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

TO-117
Package Outline



RF TRANSISTOR

10 W - 88 MHz - 12 V

NPN SILICON

Designed for 12.5 V VHF amplifiers. Class B or C operation.

12.5 V characteristics :

Output power 88 MHz - 8 W min.

Minimum gain at 88 MHz - 10 dB.

Power output useable to the top ratings and capable of withstanding infinite VSWR at all phase angles.

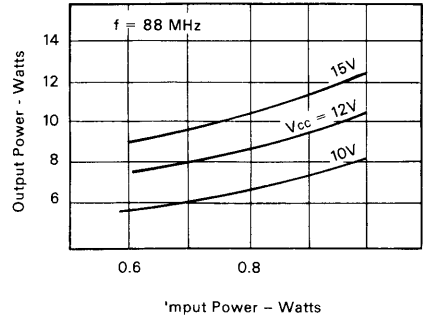
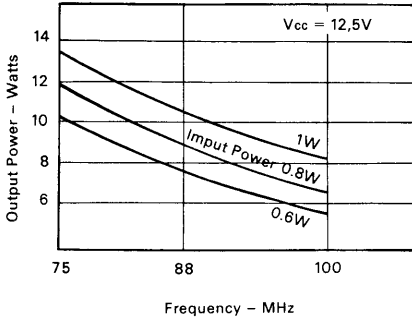


380 SOE

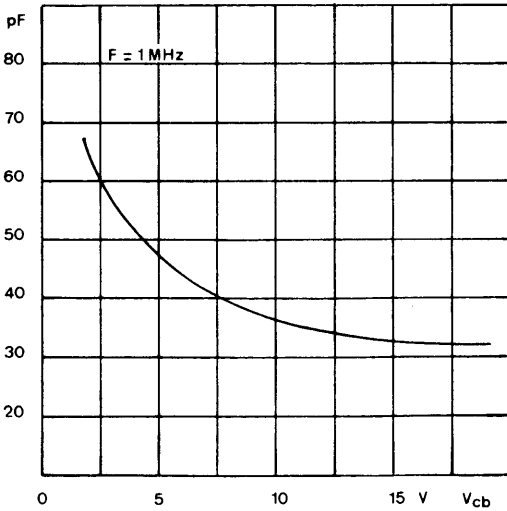
Electrical Characteristics (T_{flange} = 25 °C)

	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	20			V
	BV _{CBO}	Collector - Base Breakdown Voltage	I _C = 3 mA I _E = 0	40			V
	I _{CBO}	Collector Cutoff Current	V _{CB} = 15 V I _E = 0			2	mA
	H _{FE}	D.C Current Gain	V _{CE} = 10 V I _C = 100 mA	15			—
RF Test	P _{GAIN}	Power Gain	V _{CE} = 12.5 V F = 88 MHz P _{in} = 1.2 W	10			W
	η	Efficiency	V _{CE} = 12.5 V F = 88 MHz P _{out} = 20 W	60			%
	Load VSWR	Mismatch Tolerance	V _{CE} = 12.5 V F = 88 MHz P _{out} = 10 W		∞ : 1		
	Z _{in}	Common Emitter Amplifier Input Impedance	V _{CE} = 12.5 V F = 88 MHz P _{in} = 1.2 W		4 + j 1.5		Ω
	Z _{Load}	Common Emitter Amplifier Load Impedance	V _{CE} = 12.5 V F = 88 MHz P _{out} = 10 W		6.48 + j 0.88		Ω
	C _{OB}	Collector - Base Capacitance	V _{CB} = 15 V F = 1 MHz		35	50	pF
Operating	I _C	Continuous Collector Current				2	A
	θ _{j-c}	Thermal Resistance	T _C = 25 °C			7	°C/W
	T _{STG}	Storage Temperature and Junction Temperature		- 65°		200°	°C
	P _D	Power Dissipation	T _C = 25 °C			25	W

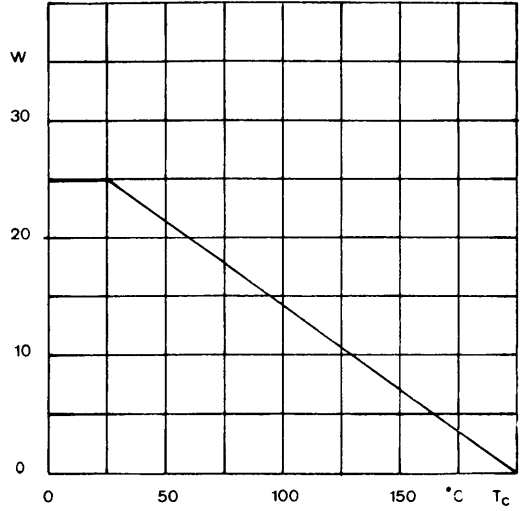
Typical RF Characteristics



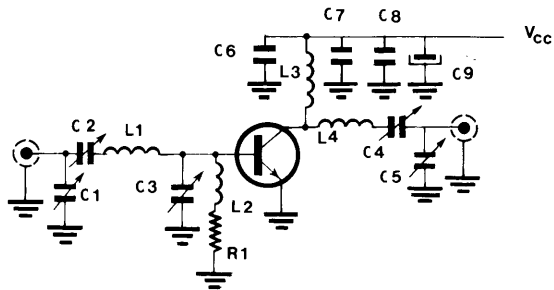
Collector Base capacitance



Power - Temperature Derating Curve



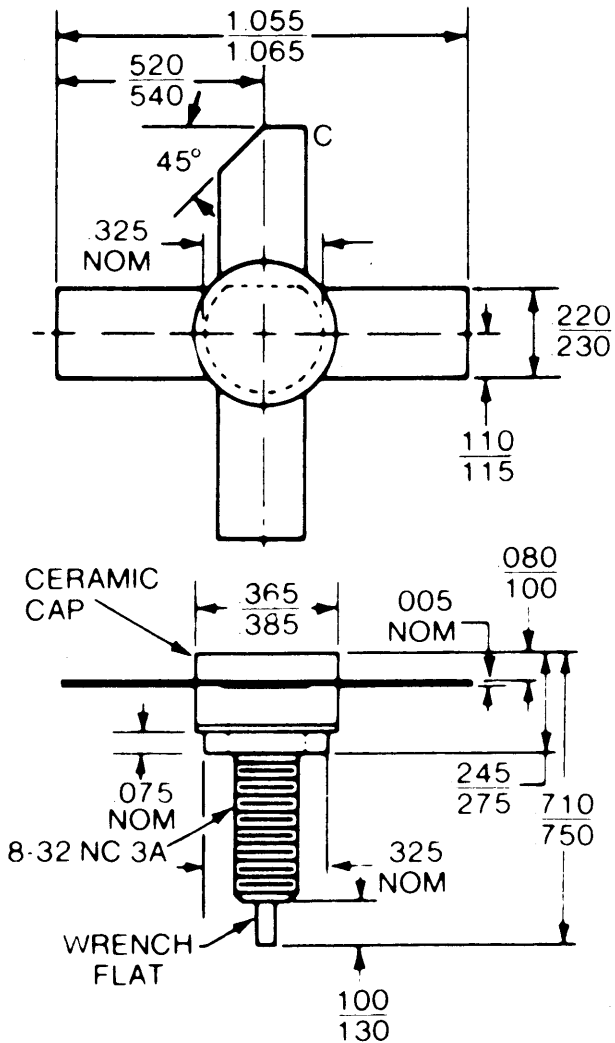
88 MHz TEST CIRCUIT



- $C_1 - C_4 = 24/200$ pF Trimmer capacitor
 $C_2 = 7/100$ pF Trimmer capacitor
 $C_3 - C_5 = 55/300$ pF Trimmer capacitor
 $C_6 = 1000$ pF
 $C_7 = 10000$ pF
 $C_8 = 0,1$ μ F
 $C_9 = 100$ μ F/35 V
 $L_1 = 5$ turns # 14 AWG 3/8" ID
 $L_2 = 1$ μ H
 $L_3 = 9$ turns # 16 AWG 5/16" ID
 $L_4 = 4$ turns # 14 AWG 3/8" ID
 $R_1 = 2,4$ Ω

PACKAGE OUTLINE

.380 SOE

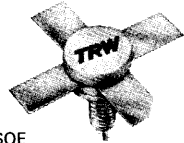


RF Power Transistor

7 W - 175 MHz
28 V

The TP 8706 is designed for use in 28 V FM or 12.5 V AM VHF amplifiers operating under class A, B or C conditions.

Its construction which incorporates gold metallization for longer life, enables the part to be used at its maximum ratings and be able to withstand and infinite VSWR at all phase angles.



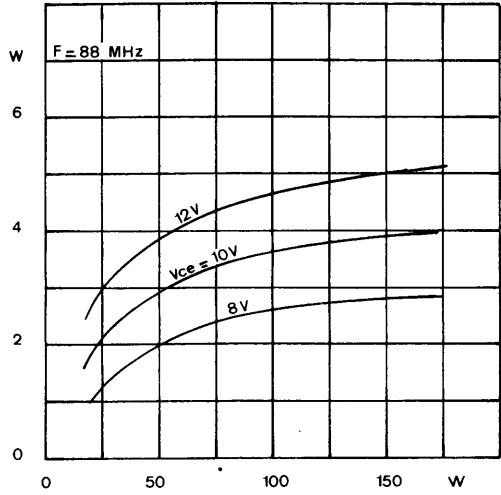
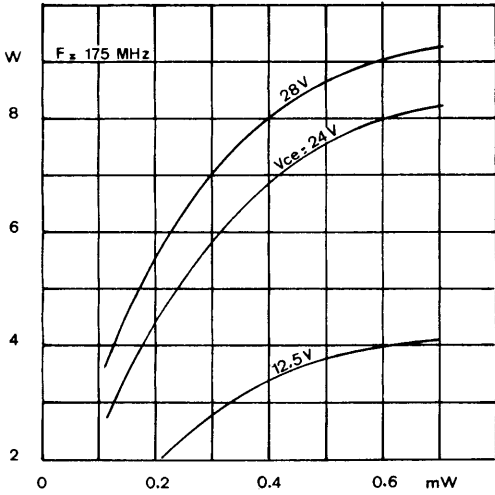
380 SOE

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

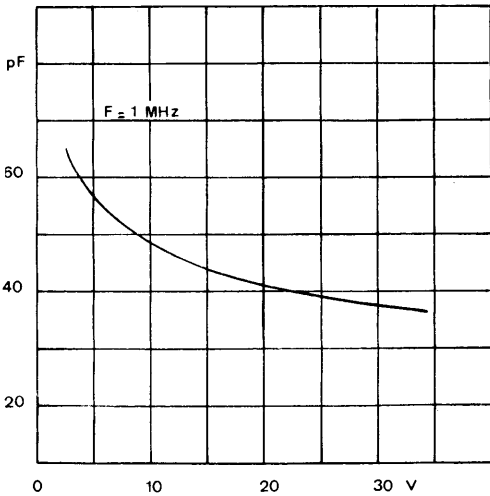
	SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
DC Test	BV _{EBO}	Emitter - Base Breakdown Voltage	I _E = 1 mA I _C = 0	4			V
	BV _{CEO}	Collector - Emitter Breakdown Voltage	I _C = 50 mA I _B = 0	36			V
	BV _{CBO}	Collector - Base Breakdown Voltage	I _C = 50 mA I _E = 0	60			V
	I _{CBO}	Collector Cutoff Current	V _{CB} = 25 V I _E = 0			1	mA
	H _{FE}	D.C Current Gain	V _{CE} = 10 V I _C = 100 mA	20		150	—
RF Test	P _{GAIN}	Power Gain	V _{CE} = 28 V F = 175 MHz P _{in} = 0.4 W V _{CE} = 12.5 V F = 88 MHz P _{in} = 0.1 W	7 3.5	7.8 4.5		W
	η	Efficiency	V _{CE} = 28 V F = 175 MHz P _{out} = 7 W	50			%
	Load VSWR	Mismatch Tolerance	All Phases Angles V _{CE} = 28 V F = 175 MHz P _{out} = 7 W		∞ : 1		
	Z _{in}	Common Emitter Amplifier Input Impedance	V _{CE} = 28 V F = 175 MHz P _{in} = 0.4 W		2.3 + j0.7		Ω
	Z _{Load}	Common Emitter Amplifier Load Impedance	V _{CE} = 28 V F = 175 MHz P _{out} = 7 W		21.94 + j26.17		Ω
	C _{OB}	Collector - Base Capacitance	V _{CB} = 30 V F = 1 MHz		37	50	pF
Operating	I _C	Continuous Collector Current				1.5	A
	θ _{j-c}	Thermal Resistance	T _C = 25 °C			17.5	°C/W
	T _{STG}	Storage Temperature and Junction Temperature		-65°		200°	°C
	P _D	Power Dissipation	T _C = 25 °C			10	W

TYPICAL CHARACTERISTICS

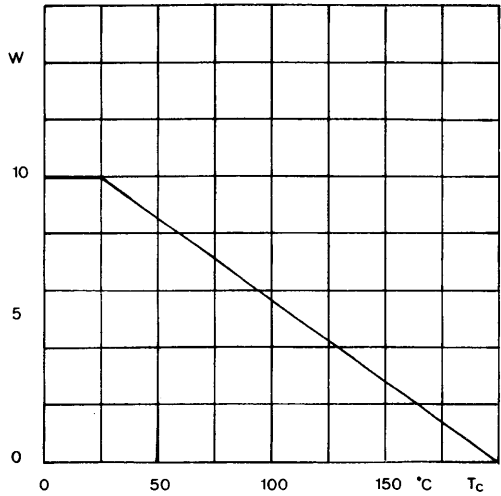
Output Power vs Input Power and Voltage Supply



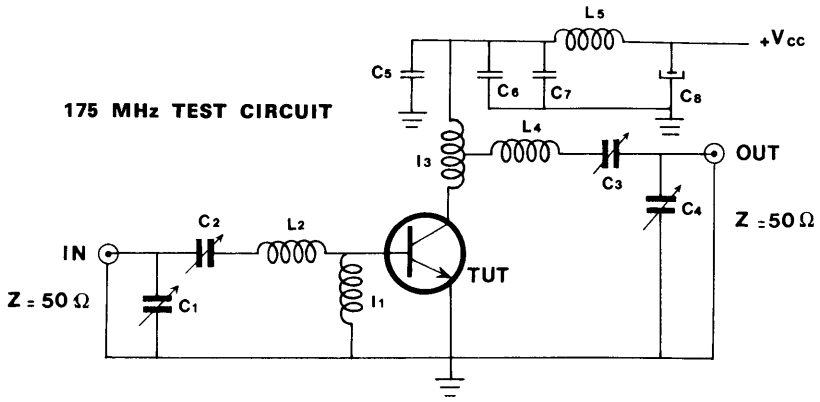
Coll. Base Capacitance



Power - Temperature Derating Curve

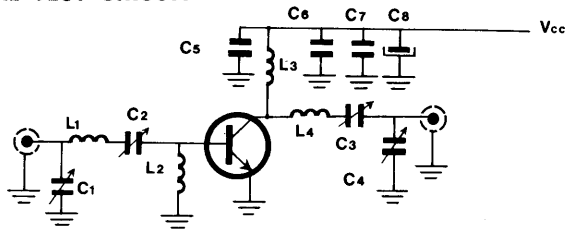


175 MHz TEST CIRCUIT



- C₁-C₂-C₃-C₄ adjustable capacitor 3/70 pF
- C₅ 1000 pF disc capacitor
- C₆ 10000 pF disc capacitor
- C₇ 0.1 μF disc capacitor
- C₈ 50 μF electrolytic capacitor
- L₁ 0.15 μH choke
- L₂ 3 turns 1 mm wire 6 mm I.D. 10 mm length
- L₃ 3 turns 1 mm wire 10 mm I.D. 12 mm length
- L₄ 3 turns 1 mm wire 6 mm I.D. 10 mm length
- L₅ 2 turns on ferrite

88 MHz TEST CIRCUIT



- C₁-C₂-C₃ 24/200 pF # trimmer capacitor
- C₄ 7/100 pF trimmer capacitor
- C₅ 1000 pF
- C₆ 10000 pF
- C₇ 0.1 μF
- C₈ 100 μF/35 V
- L₁-L₄ 4 turns # 14 AWG 1/2" I.D.
- L₂ 0.47 μH
- L₃ 6 turns 14 AWG 1/2" I.D. close wound

PACKAGE OUTLINE

.380 SOE

