S 897 T

Silicon NPN planar RF transistor

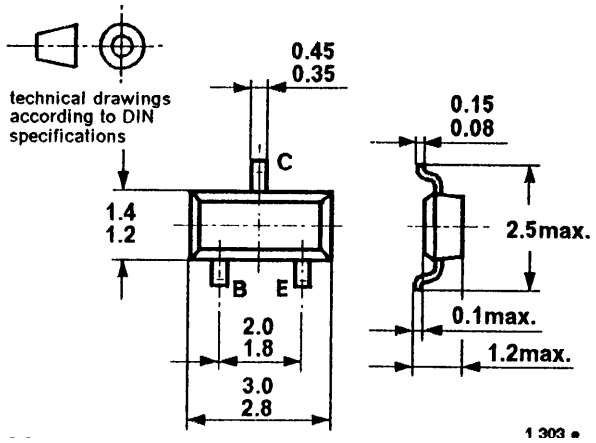
Applications

High gain linear broadband RF amplifier.

Features

- Small feedback capacitance
- Low noise figure
- Low cross modulation

Dimensions in mm



Marking: 897

Plastic case (SOT 23)

Absolute Maximum Ratings

Parameters	Symbol	Value	Unit
Collector-base voltage	V_{CBO}	20	V
Collector-emitter voltage	V_{CEO}	15	V
Emitter-base voltage	V_{EBO}	2.5	V
Collector current	I_C	50	mA
Total power dissipation $T_{amb} \leq 65°C$	P_{tot}	300	mW
Junction temperature	T_j	175	°C
Storage temperature range	T_{stg}	–65 to +175	°C

Maximum Thermal Resistance

Parameters	Symbol	Maximum	Unit
Junction ambient on glass fibre printed board (25 x 20 x 1.5) mm^3 plated with 35 µm Cu	R_{thJA}	400	K/W

Electrical DC Characteristics

T_{amb} = 25°C

Parameters / Test Conditions	Symbol	Min.	Typ.	Max.	Unit
Collector-base cut-off current V_{CB} = 10 V, I_E = 0 A	I_{CBO}			100	nA
Collector-base breakdown voltage I_C = 10 µA	$V_{(BR)CBO}$	20			V
Collector-emitter breakdown voltage I_C = 5 mA, I_B = 0 A	$V_{(BR)CEO}$ [1)]	15			V
Emitter-base breakdown voltage I_E = 10 µA	$V_{(BR)EBO}$	2.5			V
DC forward current transfer ratio V_{CE} = 6 V, I_C = 3 mA V_{CE} = 6 V, I_C = 100 µA	 h_{FE} h_{FE}	 40 20	 90		

1) $\frac{t_p}{T}$ = 0.01, t_p = 0.3 ms

Electrical AC Characteristics

T_{amb} = 25°C

Parameters / Test Conditions	Symbol	Min.	Typ.	Max.	Unit
Transition frequency V_{CE} = 5 V, f = 500 MHz, I_C = 10 mA V_{CE} = 5 V, f = 500 MHz, I_C = 30 mA	 f_T f_T		 2.8 4.2		 GHz GHz
Collector-base capacitance V_{CB} = 5 V, f = 1 MHz	C_{cb}		0.9		pF
Collector-emitter capacitance V_{CE} = 5 V, f = 1 MHz	C_{ce}		0.2		pF
Emitter-base capacitance V_{EB} = 0.5 V, f = 1 MHz	C_{eb}		3.2		pF
Noise figure V_{CE} = 5 V, I_C = 3 mA, R_G = 50 Ω, f = 500 MHz V_{CE} = 5 V, I_C = 3 mA, R_G = 75 Ω, f = 5 MHz	 F F		 1.9 1.0		 dB dB
Power gain V_{CE} = 5 V, R_G = 50 Ω, R_L = R_{Lopt}, f = 500 MHz, I_C = 3 mA I_C = 30 mA I_C = 30 mA, f = 800 MHz	 G_{pe} G_{pe} G_{pe}		 10 14 10		 dB dB dB
Linear output voltage – two tone intermodulation test V_{CE} = 6 V, I_C = 30 mA, d_{IM} = 60 dB, f_1 = 806 MHz, f_2 = 810 MHz, R_G = R_L = 50 Ω	 $V_1 = V_2$		 260		 mV
Third order intercept point V_{CE} = 6 V, I_C = 30 mA, f = 800 MHz	IP_3		31		dBm

$P_{tot} = f(T_{amb})$

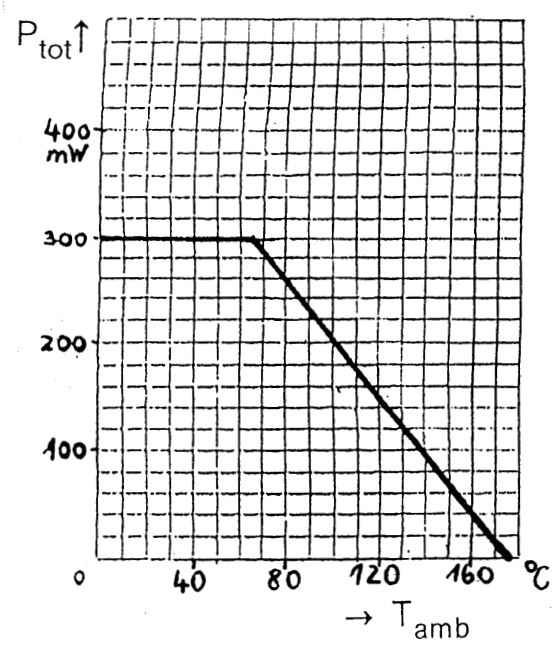


Figure 1 Total power dissipation

$f_T = f(I_C)$; f = 500 MHz, V_{CE} = 5 V

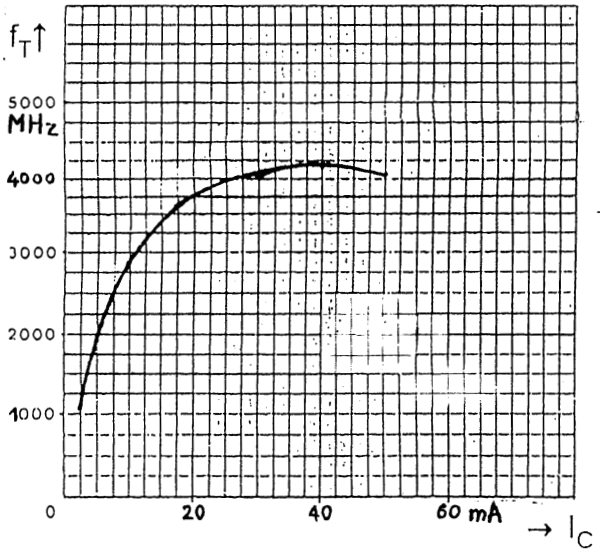


Figure 2 Transition frequency

$C_{cb} = f(V_{CB})$, f = 1 MHz

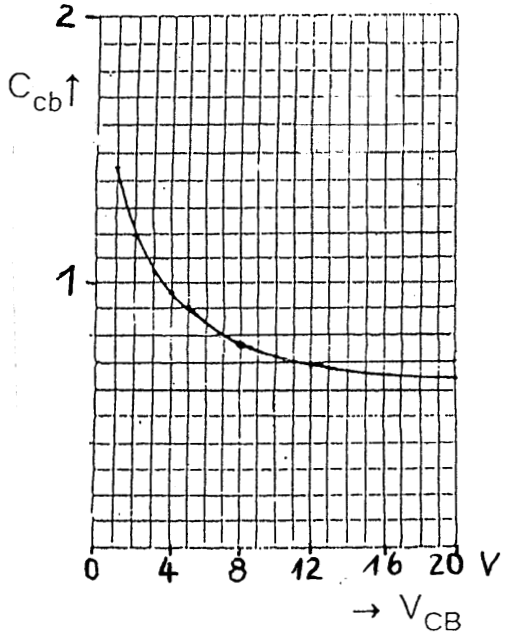


Figure 3 Collector-base capacitance

f = f(I_C); V_{CE} = 5 V, R_G 50 Ω

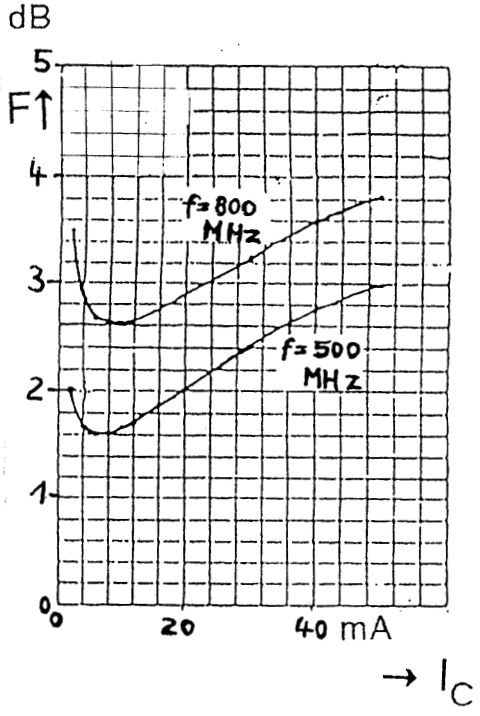


Figure 4 Noise figure

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