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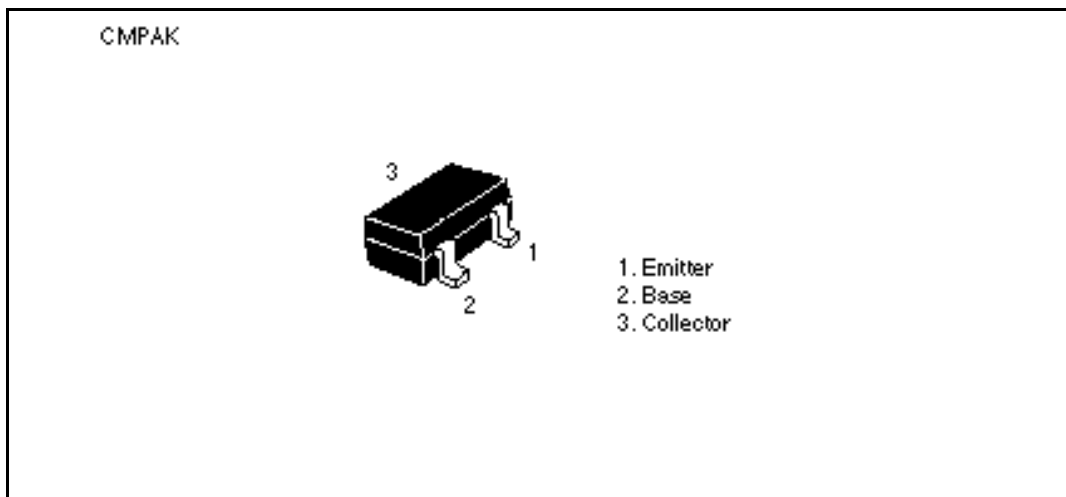
Silicon NPN Epitaxial

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Application

UHF frequency converter

Outline



Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	30	V
Collector to emitter voltage	V_{CEO}	25	V
Emitter to base voltage	V_{EBO}	4	V
Collector current	I_C	20	mA
Collector power dissipation	P_C	100	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

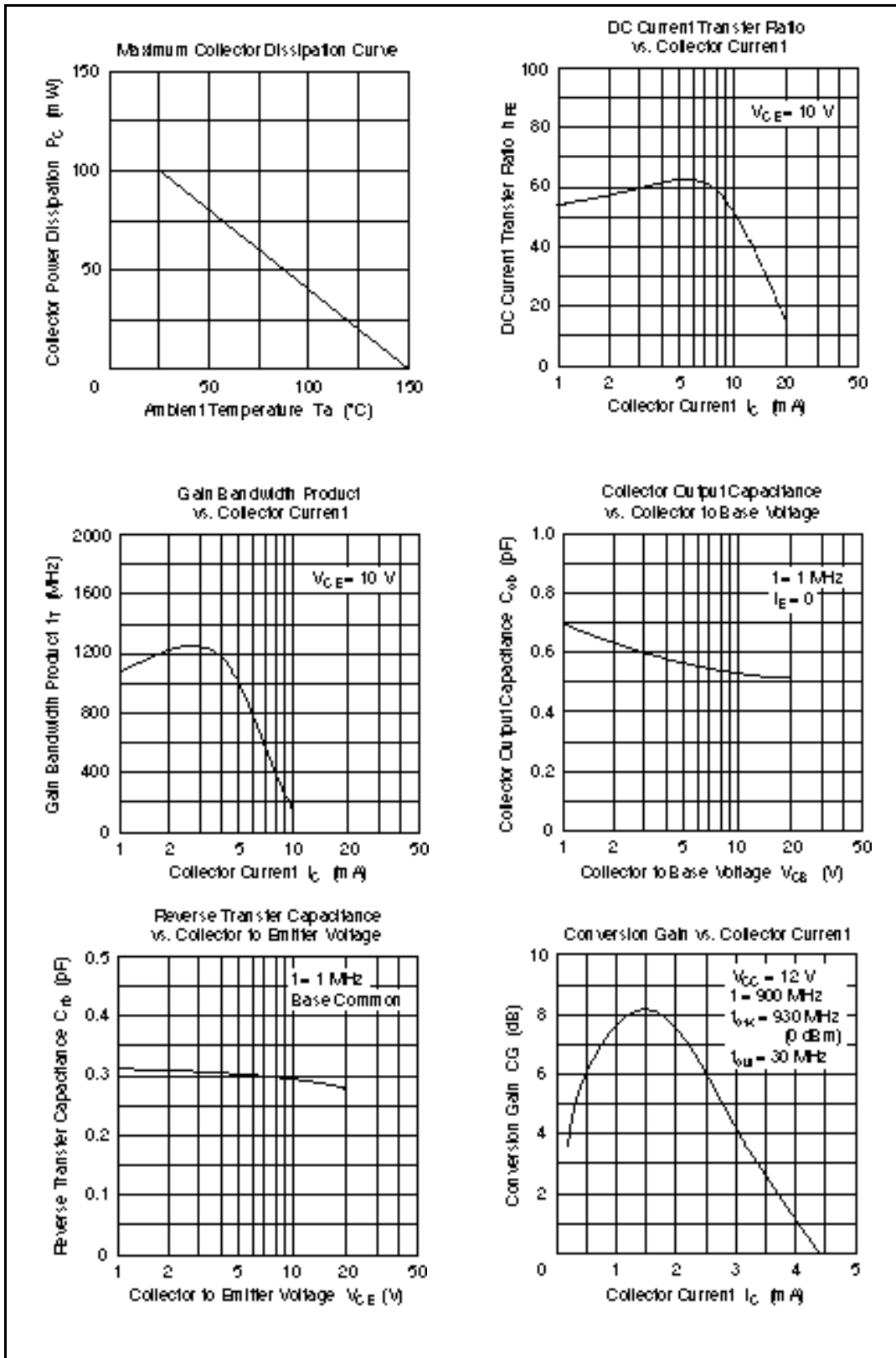


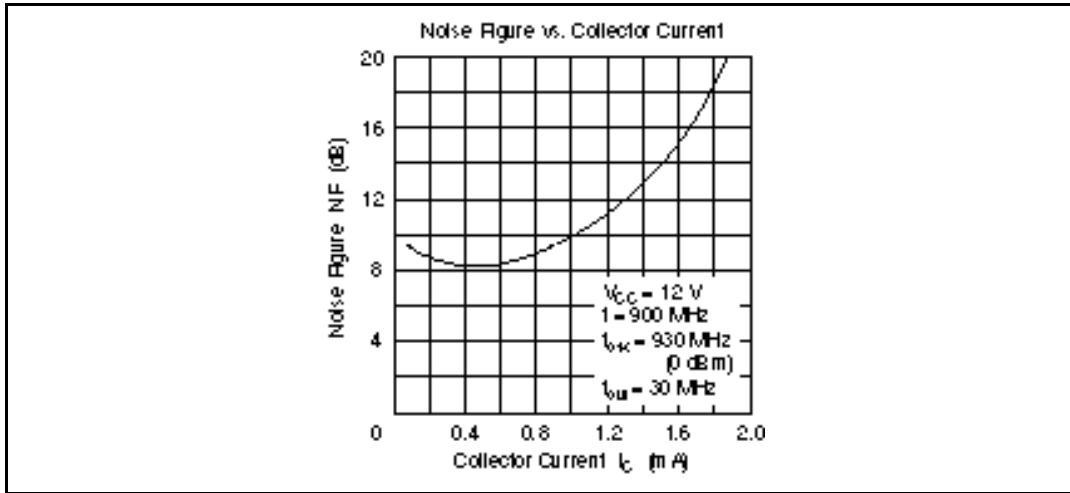
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Electrical Characteristics (Ta = 25°C)

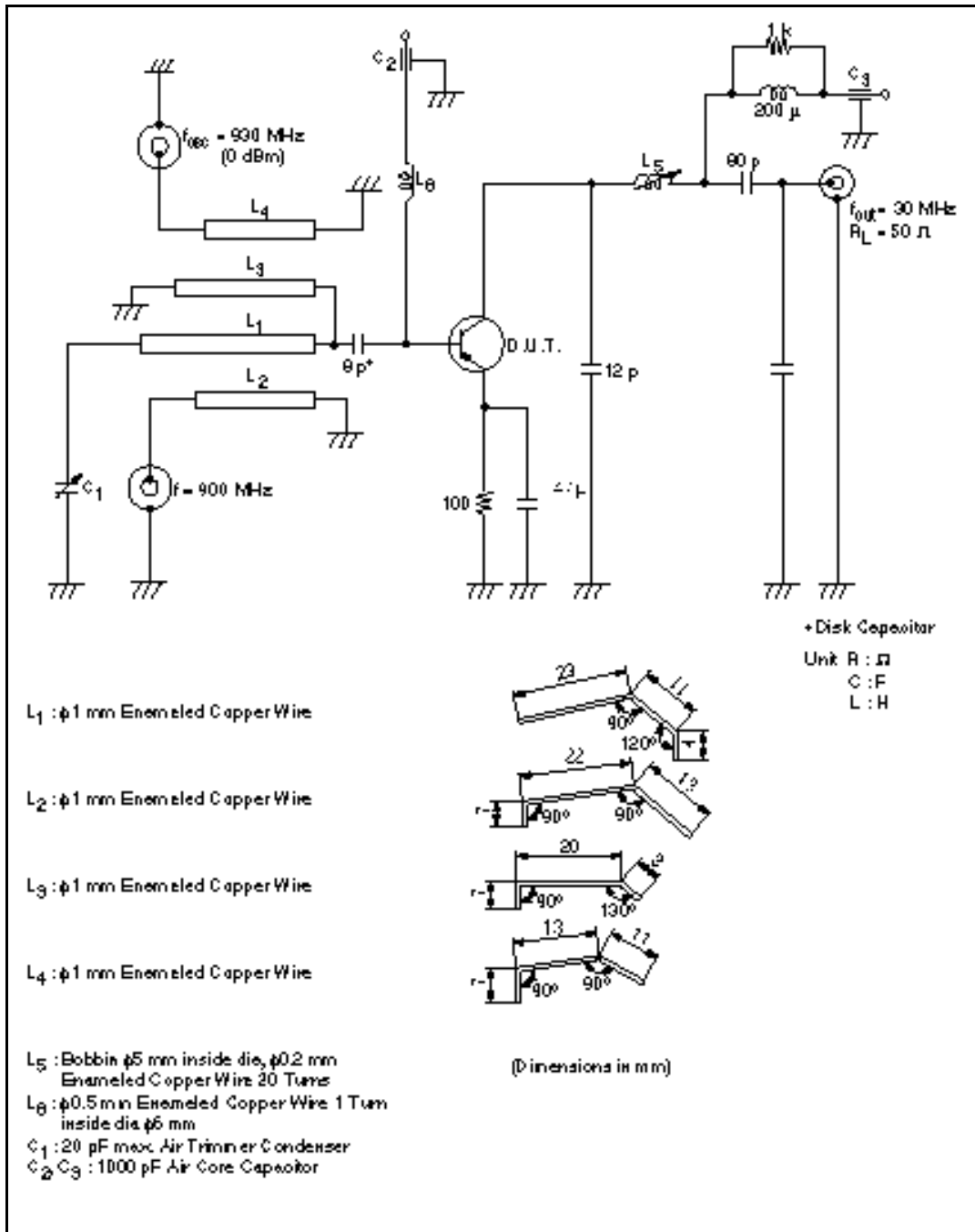
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	30	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	25	—	—	V	$I_C = 1 \text{ mA}, R_{BE} =$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	4	—	—	V	$I_E = 10 \mu A, I_C = 0$
Collector cutoff current	I_{CBO}	—	—	0.5	μA	$V_{CB} = 10 \text{ V}, I_E = 0$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	5	V	$I_C = 10 \text{ mA}, I_B = 1 \text{ mA}$
DC current transfer ratio	h_{FE}	30	—	—		$V_{CE} = 10 \text{ V}, I_C = 3 \text{ mA}$
Gain bandwidth product	f_T	700	1000	—	MHz	$V_{CE} = 10 \text{ V}, I_C = 5 \text{ mA}$
Collector output capacitance	Cob	—	—	0.8	pF	$V_{CB} = 10 \text{ V}, I_C = 5 \text{ mA},$ $f = 1 \text{ MHz}$
Conversion gain	CG	—	7.0	—	dB	$V_{CC} = 12 \text{ V}, I_E = 0,$ $f = 900 \text{ MHz}$
Noise figure	NF	—	10.0	—	dB	$f_{OSC} = 930 \text{ MHz (0 dBm)},$ $f_{out} = 30 \text{ MHz}$

Note: Marking is "EC".





Conversion Gain and Noise Figure Test Circuit



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