
2SC2512

Silicon NPN Triple Diffused

HITACHI

Application

- VHF Amplifier
- VHF TV Tuner, Mixer

Outline

TO-92 (2)



1. Base
2. Emitter
3. Collector

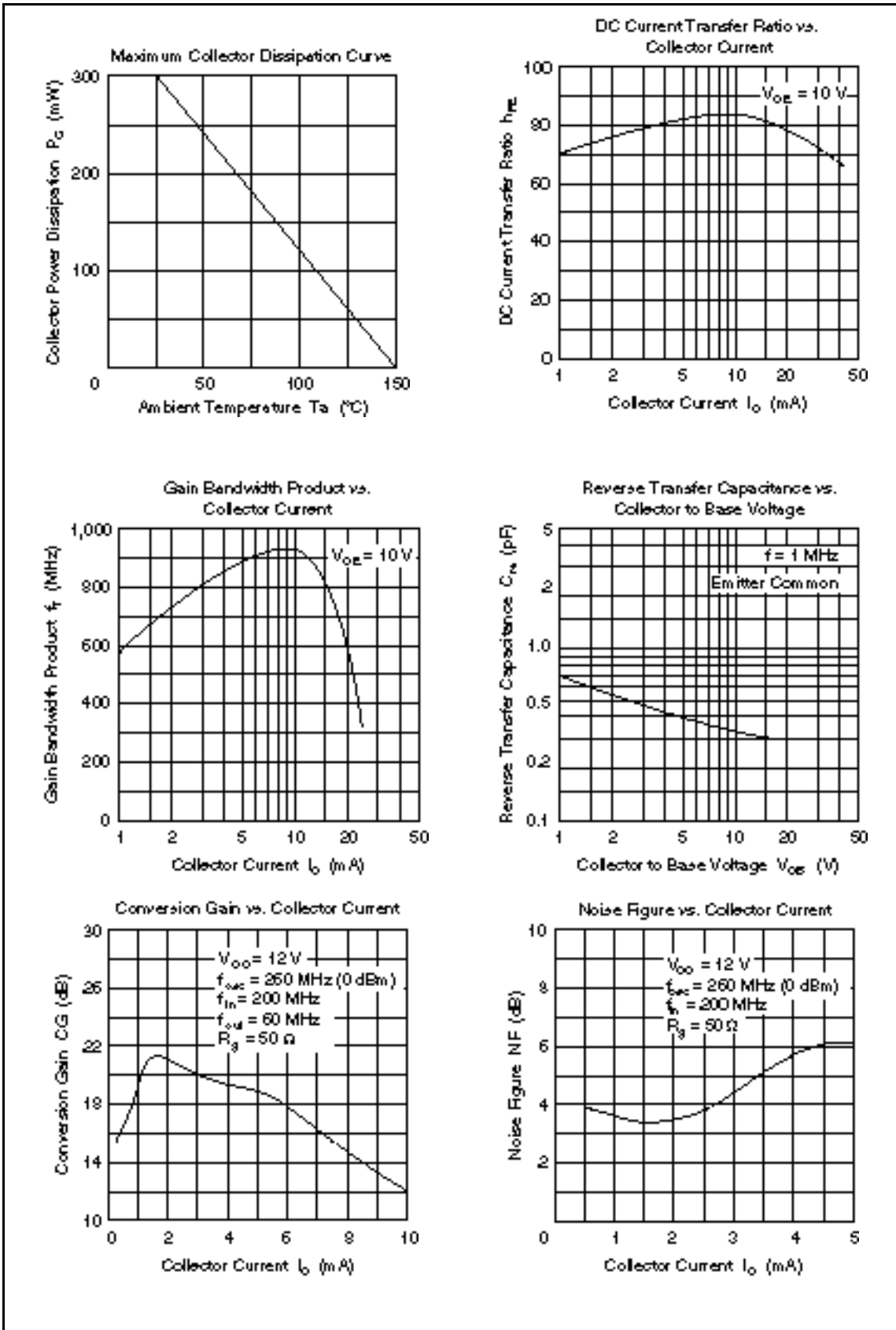
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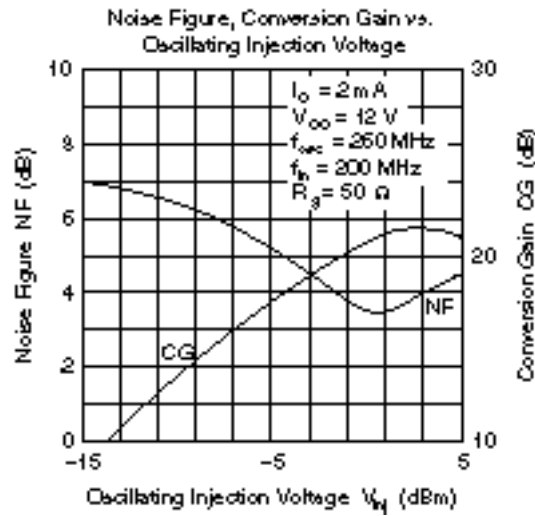
Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	30	V
Collector to emitter voltage	V_{CEO}	20	V
Emitter to base voltage	V_{EBO}	3	V
Collector current	I_C	50	mA
Collector power dissipation	P_C	300	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

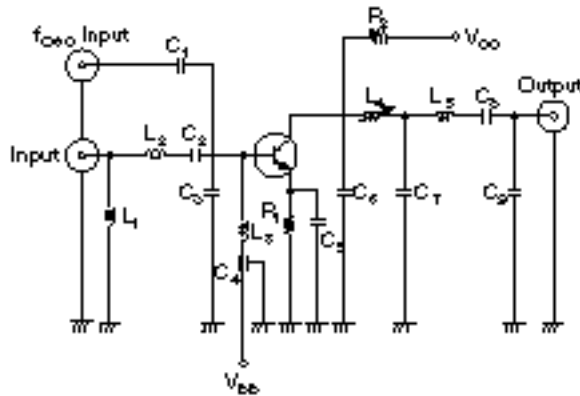
Electrical Characteristics (Ta = 25°C)

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	$V_{(BR)CEO}$	20	—	—	V	$I_C = 1 \text{ mA}, R_{BE} =$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	3	—	—	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	$V_{CE(sat)}$	—	—	1	V	$I_C = 20 \text{ mA}, I_B = 4 \text{ mA}$
DC current transfer ratio	h_{FE}	30	—	—		$V_{CE} = 10 \text{ V}, I_C = 10 \text{ mA}$
Reverse transfer capacitance	C_{re}	—	0.35	0.45	pF	$V_{CB} = 10 \text{ V}$, Emitter common, $f = 1 \text{ MHz}$
Gain bandwidth product	f_T	600	900	—	MHz	$V_{CE} = 10 \text{ V}, I_C = 10 \text{ mA}$
Base time constant	$r_{bb'} \cdot C_C$	—	—	20	ps	$V_{CB} = 10 \text{ V}, I_C = 5 \text{ mA}$, $f = 31.8 \text{ MHz}$
Conversion gain	CG	16	20	—	dB	$V_{CC} = 12 \text{ V}, I_C = 2 \text{ mA}$, $f_{in} = 200 \text{ MHz}$, $f_{OSC} = 260 \text{ MHz}$, $f_{out} = 60 \text{ MHz}$
Noise figure	NF	—	3.8	5.5	dB	$V_{CC} = 12 \text{ V}, I_C = 2 \text{ mA}$, $f_{OSC} = 260 \text{ MHz}, R_g = 50 \Omega$, $f_{in} = 200 \text{ MHz}$





Conversion Gain, Noise Figure Test Circuit



- R_1 : 330 Ω (1/4 W)
- R_2 : 560 Ω (1/4 W)
- L_1 : $\phi 0.8 \text{ mm}$ Copper wire with Enam el 8 Turns inside dia $\phi 3 \text{ mm}$
- L_2 : $\phi 0.8 \text{ mm}$ Copper wire with Enam el 5 Turns inside dia $\phi 3 \text{ mm}$
- L_3 : $\phi 0.5 \text{ mm}$ Copper wire with Enam el 3.5 Turns inside dia $\phi 3 \text{ mm}$
- L_4 : Outside dia $\phi 5 \text{ mm}$ used Ferrite Core, $\phi 0.2 \text{ mm}$ Copper wire with Enam el 6.5 Turns
- L_5 : $\phi 0.2 \text{ mm}$ Copper wire with Enam el 13 Turns inside dia $\phi 5 \text{ mm}$

Parts Specification

- C_1 : 1.5 pF
- C_2 : 57 pF
- C_3 : 17 pF
- C_4 : 1000 pF
- C_5 : 2200 pF
- C_6 : 22 pF
- C_7 : 80 pF
- C_8 : 19 pF
- C_9 : 20 pF

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