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# 2SC2512

Silicon NPN Triple Diffused

# HITACHI

ADE-208-1066 (Z)

1st. Edition

Mar. 2001

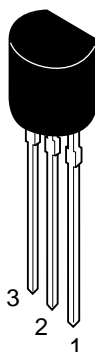
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## Application

- VHF Amplifier
- VHF TV Tuner, Mixer

## Outline

TO-92 (2)



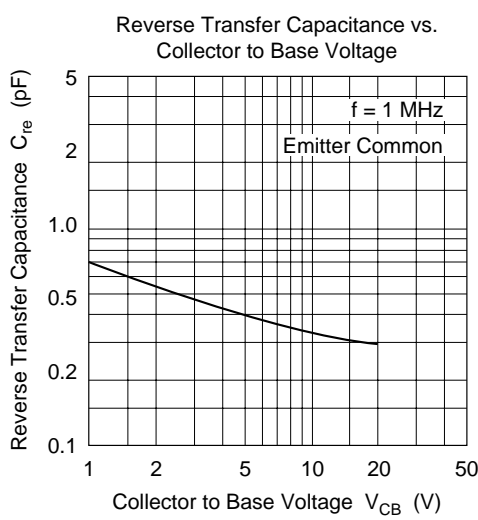
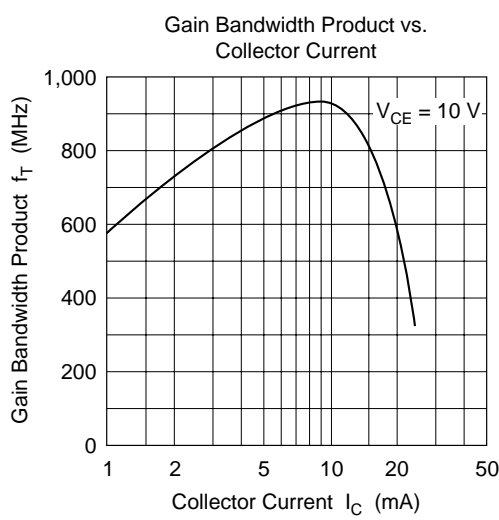
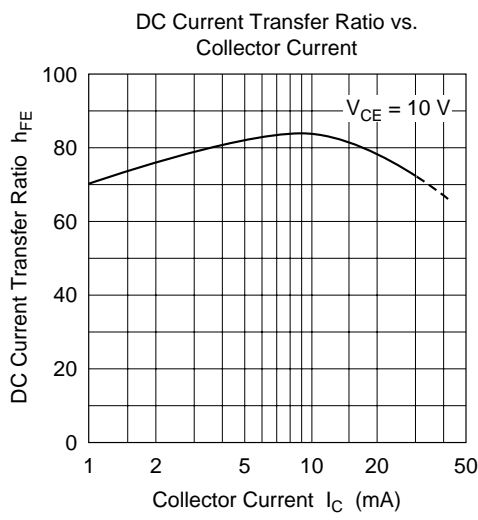
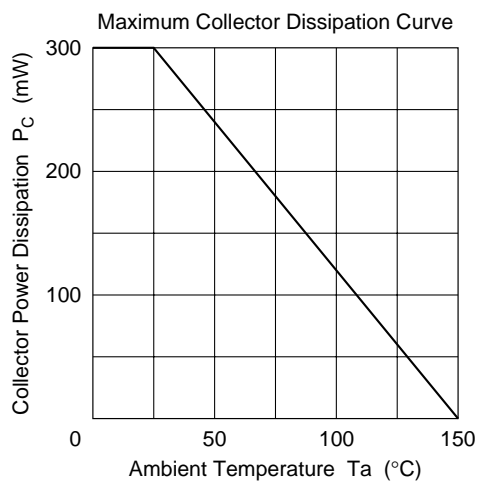
1. Base
2. Emitter
3. Collector

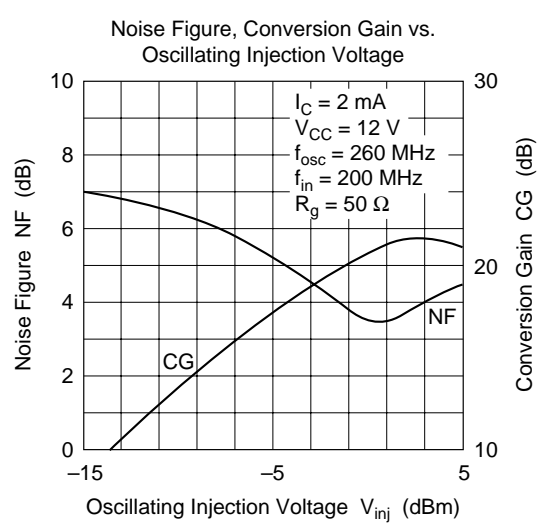
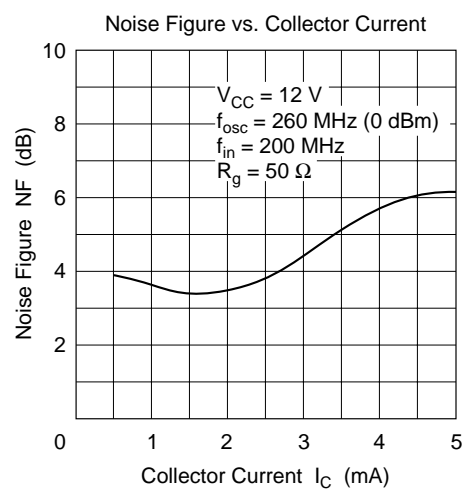
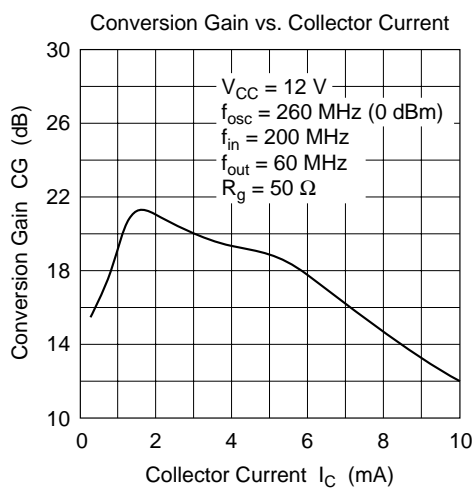
## Absolute Maximum Ratings (Ta = 25°C)

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

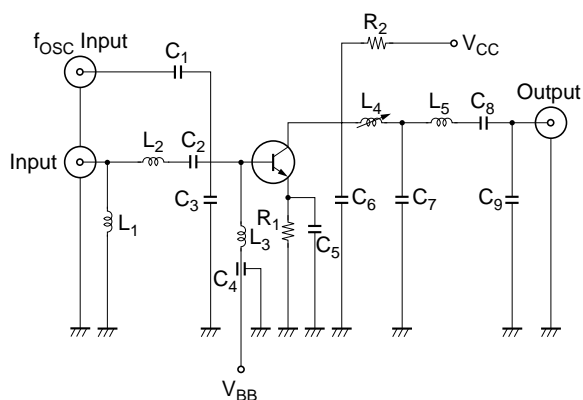
## Electrical Characteristics (Ta = 25°C)

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	$I_C = 1 \text{ mA}, R_{BE} = \infty$
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	$\mu A$	$V_{CB} = 10 \text{ V}, I_E = 0$
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



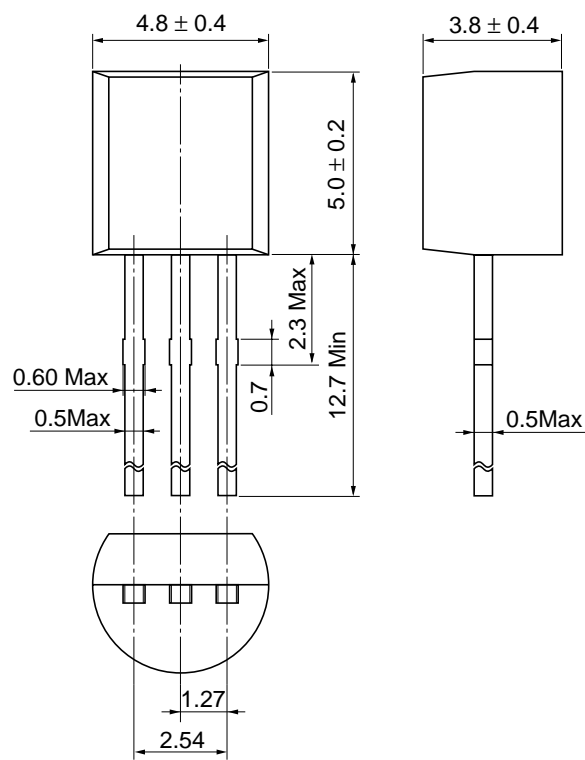
- $R_1$  : 330  $\Omega$  (1/4 W)  
 $R_2$  : 560  $\Omega$  (1/4 W)  
 $L_1$  :  $\phi 0.8$  mm Copper wire with Enamel 8 Turns  
 inside dia  $\phi 3$  mm  
 $L_2$  :  $\phi 0.8$  mm Copper wire with Enamel 5 Turns  
 inside dia  $\phi 3$  mm  
 $L_3$  :  $\phi 0.5$  mm Copper wire with Enamel 3.5 Turns  
 inside dia  $\phi 3$  mm  
 $L_4$  : Outside dia  $\phi 5$  mm used Ferrite Core,  $\phi 0.2$  mm  
 Copper wire with Enamel 6.5 Turns  
 $L_5$  :  $\phi 0.2$  mm Copper wire with Enamel 13 Turns  
 inside dia  $\phi 5$  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  
 $C_8$  : 18 pF  
 $C_9$  : 20 pF

Package Dimensions

As of January, 2001  
Unit: mm



Hitachi Code	TO-92 (2)
JEDEC	Conforms
EIAJ	Conforms
Mass (reference value)	0.25 g

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