

TOSHIBA Transistor Silicon NPN Epitaxial Planar Type

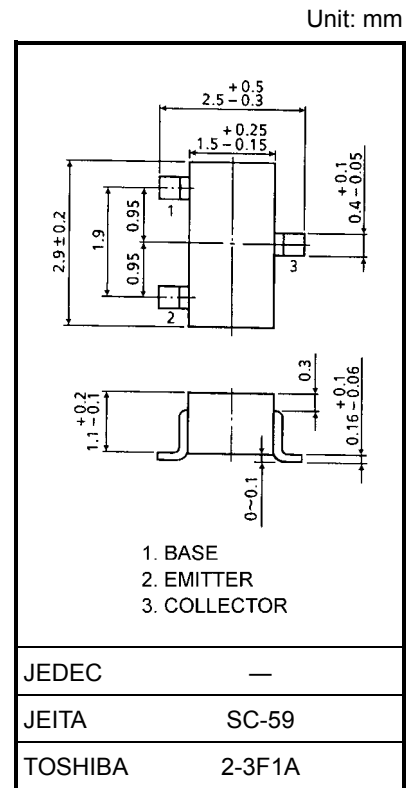
# 2SC3123

## TV VHF Mixer Applications

- High conversion gain:  $G_{ce} = 23\text{dB}$  (typ.)
- Low reverse transfer capacitance:  $C_{re} = 0.4\text{ pF}$  (typ.)

## Maximum Ratings (Ta = 25°C)

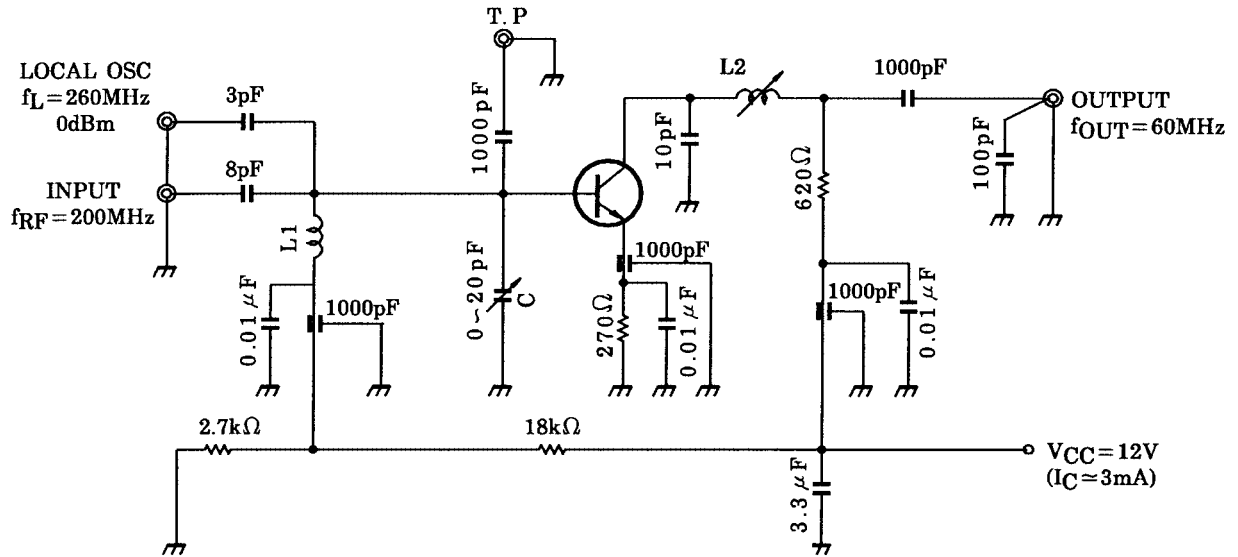
Characteristics	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	30	V
Collector-emitter voltage	$V_{CEO}$	20	V
Emitter-base voltage	$V_{EBO}$	3	V
Collector current	$I_C$	50	mA
Base current	$I_B$	25	mA
Collector power dissipation	$P_C$	150	mW
Junction temperature	$T_j$	125	°C
Storage temperature range	$T_{stg}$	-55~125	°C



Weight: 0.012 g (typ.)

## Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	$I_{CBO}$	$V_{CB} = 25\text{ V}, I_E = 0$	—	—	100	nA
Emitter cut-off current	$I_{EBO}$	$V_{EB} = 3\text{ V}, I_C = 0$	—	—	1000	nA
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = 1\text{ mA}, I_B = 0$	20	—	—	V
DC current gain	$h_{FE}$	$V_{CE} = 10\text{ V}, I_C = 5\text{ mA}$	40	150	300	
Reverse transfer capacitance	$C_{re}$	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	0.4	0.5	pF
Transition frequency	$f_T$	$V_{CE} = 10\text{ V}, I_C = 5\text{ mA}$	900	1400	—	MHz
Conversion gain	$G_{ce}$	$V_{CC} = 12\text{ V}, f = 200\text{ MHz}$	20	23	—	dB
Noise figure	NF	$f_L = 260\text{ MHz}$	—	3.8	5.5	dB



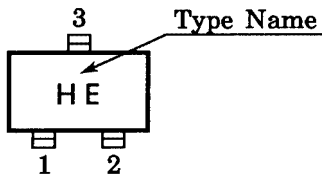
L1: 0.8 mmφ silver plated copper wire, 1.5 T 5 mm ID

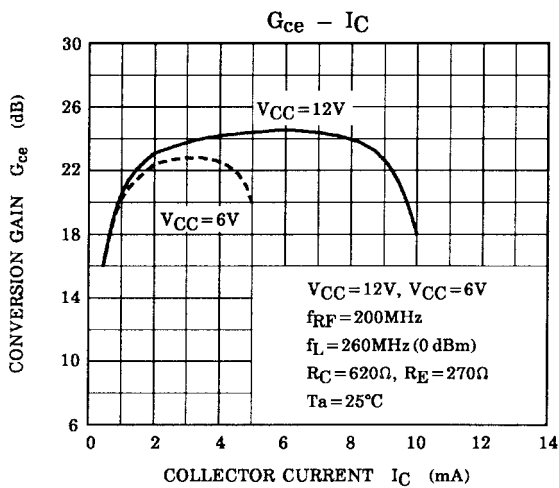
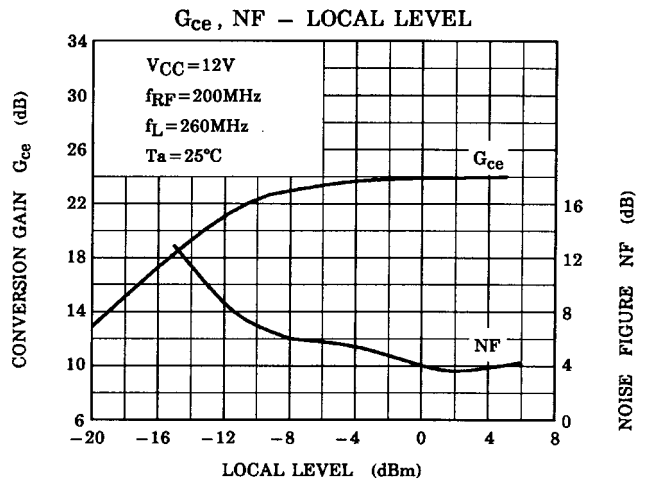
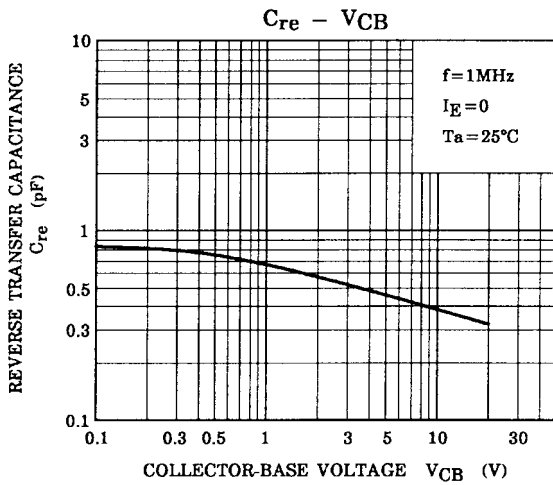
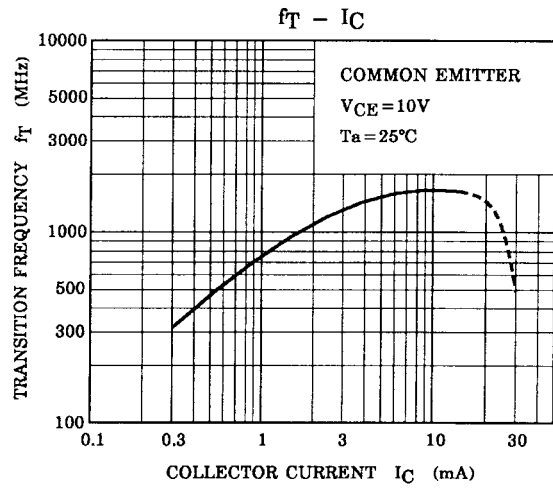
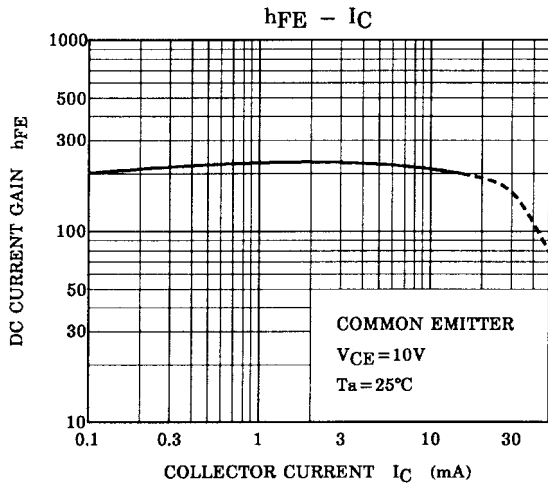
L2: Coil with core SCN-5962A (1)-(3) (TOKO INC.) or equivalent

C: Air trimmer TTA25A200A (MURATA Manufacturing, Co., Ltd.) or equivalent

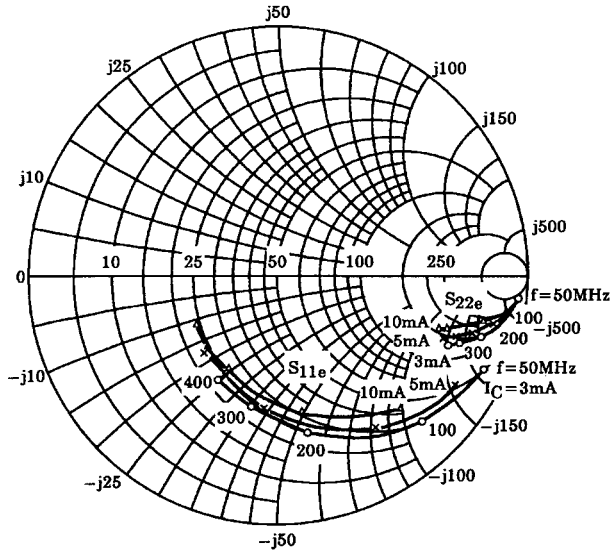
**Figure 1 200 MHz G<sub>ce</sub>, NF Test Circuit**

**Marking**

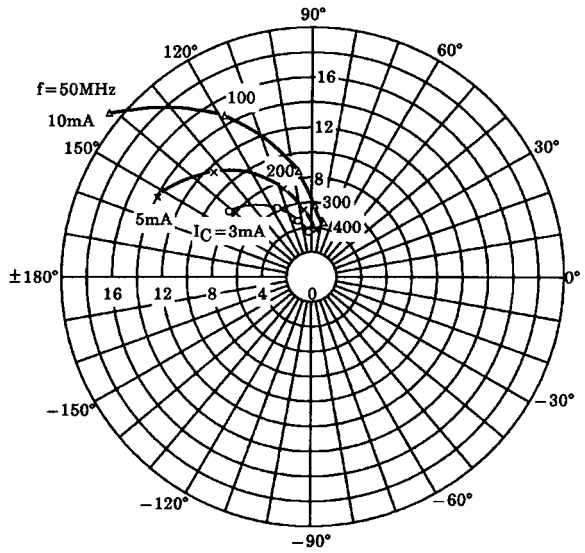




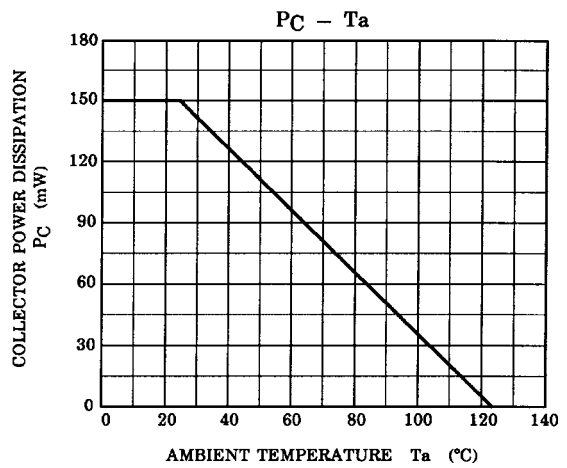
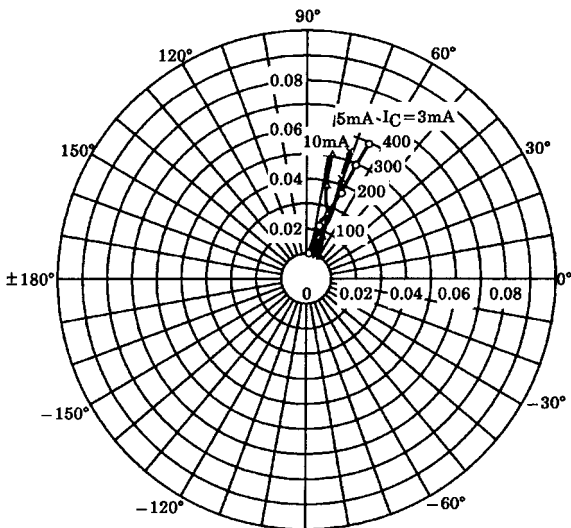
S11e, S22e  
 VCE = 10V  
 Ta = 25°C  
 (UNIT: Ω)



S21e  
 VCE = 10V  
 Ta = 25°C



S12e  
 VCE = 10V  
 Ta = 25°C



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