

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

2SC3123

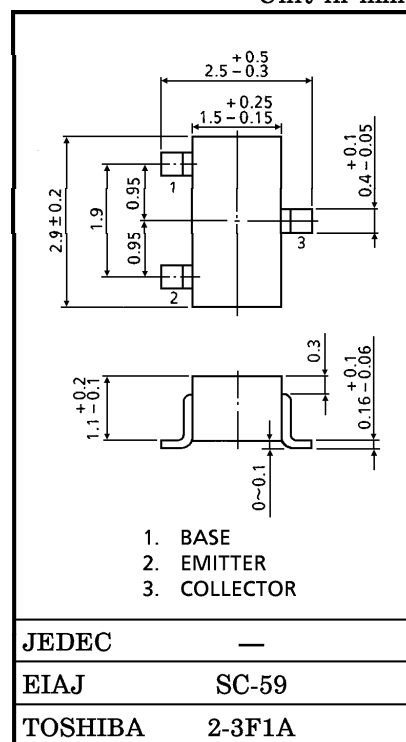
TV VHF MIXER APPLICATIONS

Unit in mm

- High Conversion Gain : $G_{ce} = 23\text{dB}$ (Typ.)
- Low Reverse Transfer Capacitance : $C_{re} = 0.4\text{pF}$ (Typ.)

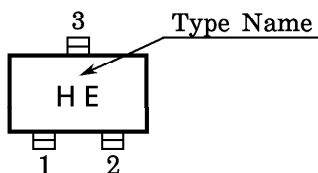
MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	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	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55~125	$^\circ\text{C}$



Weight : 0.012g

Marking



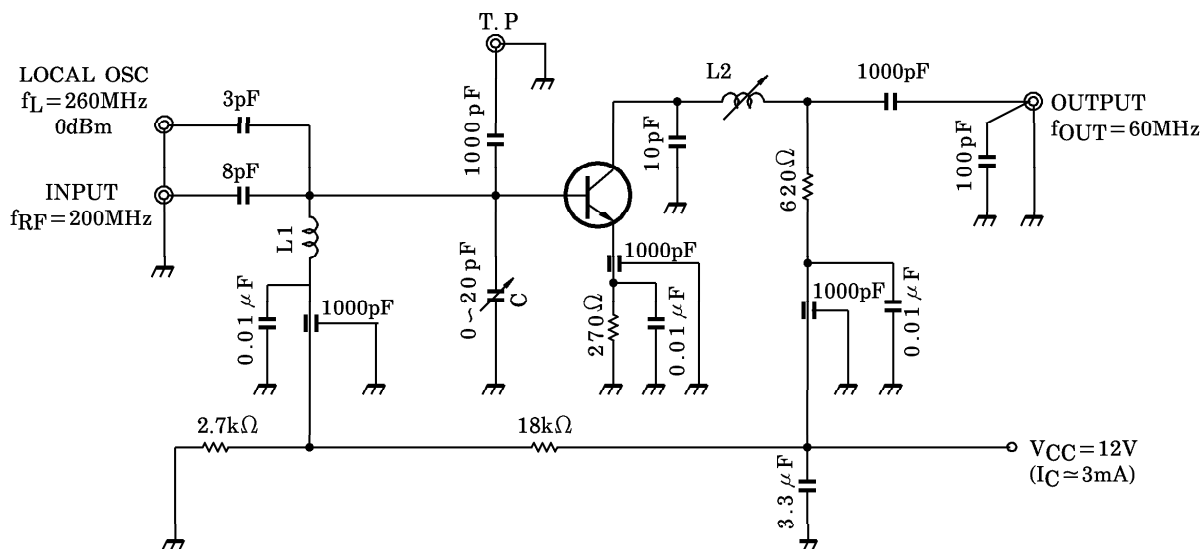
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	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

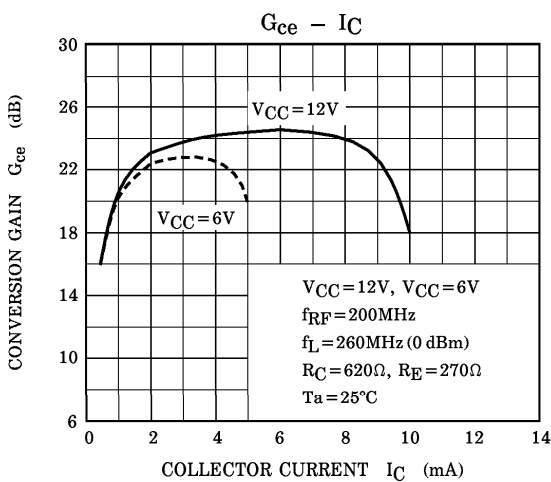
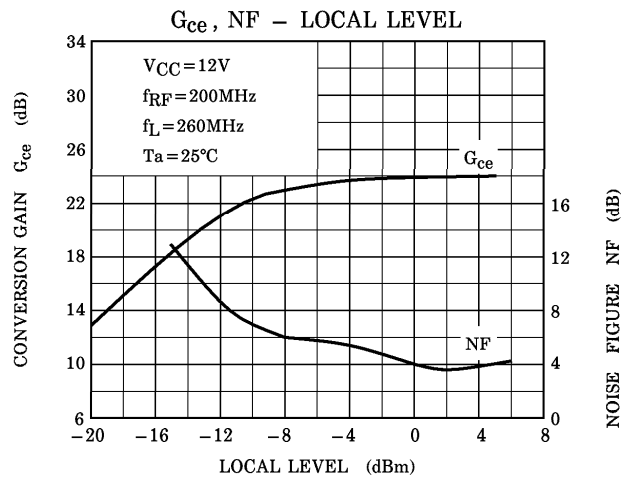
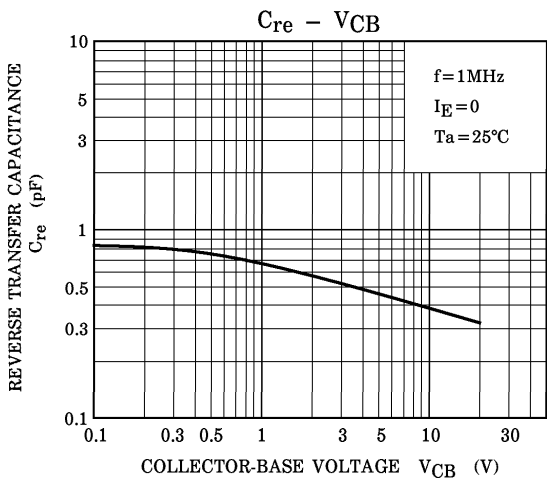
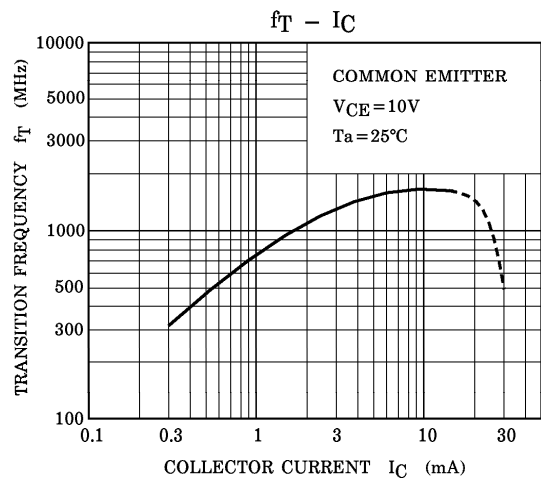
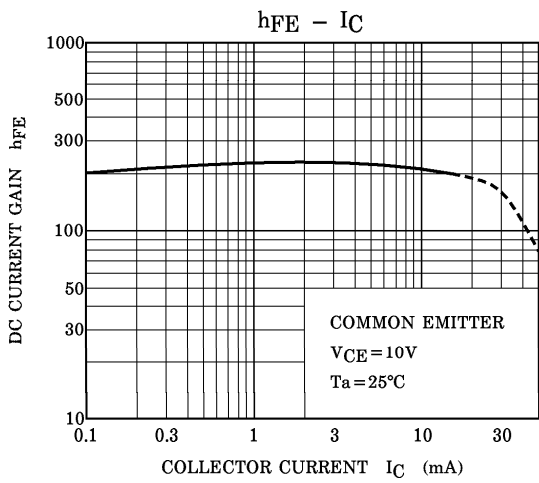
961001EAA1

- TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.

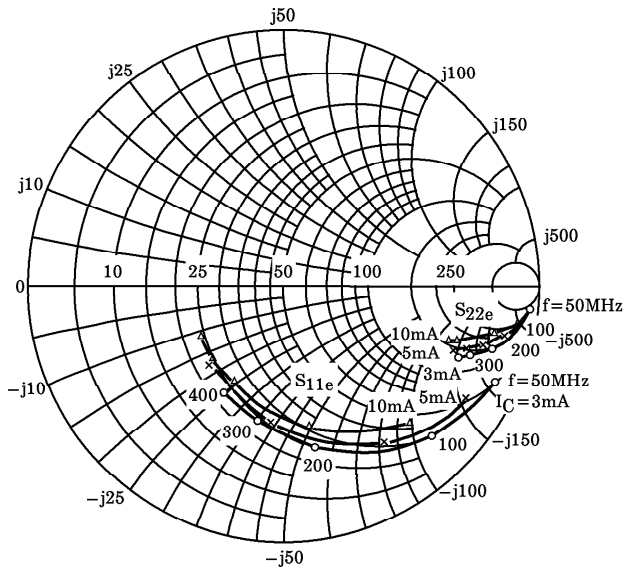
Fig.1 200MHz G_{ce} , NF TEST CIRCUIT



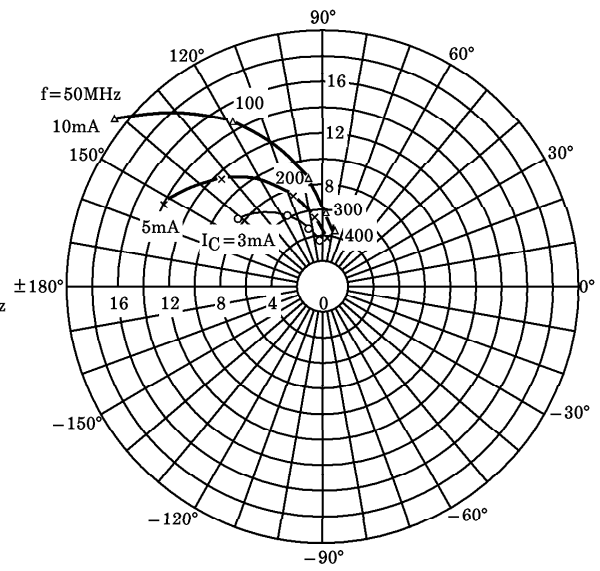
- L1 : 0.8mm ϕ SILVER PLATED COPPER WIRE, 1.5T 5mm ID
- L2 : COIL WITH CORE SCN-5962A ① - ③ (TOKO INC.) OR EQUIVALENT
- C : AIR TRIMMER TTA25A200A (MURATA MFG, Co., LTD.) OR EQUIVALENT



S_{11e}, S_{22e}
 $V_{CE} = 10V$
 $T_a = 25^\circ C$
 (UNIT: Ω)



S_{21e}
 $V_{CE} = 10V$
 $T_a = 25^\circ C$



S_{12e}
 $V_{CE} = 10V$
 $T_a = 25^\circ C$

