

TOSHIBA Transistor Silicon NPN Epitaxial Planar Type

## 2SC4245

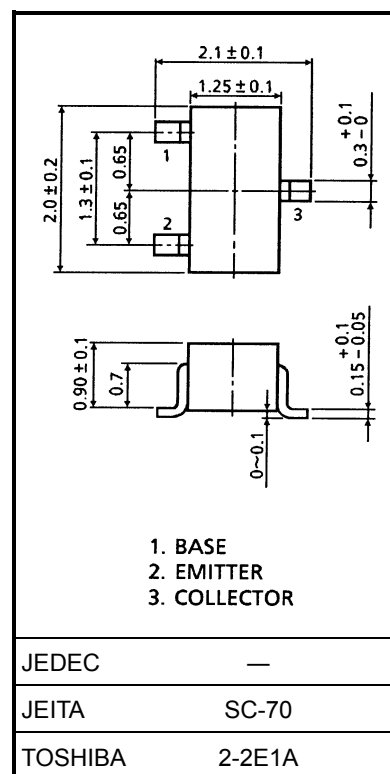
TV Tuner, UHF Mixer Applications

VHF~UHF Band RF Amplifier Applications

Unit: mm

## Maximum Ratings (Ta = 25°C)

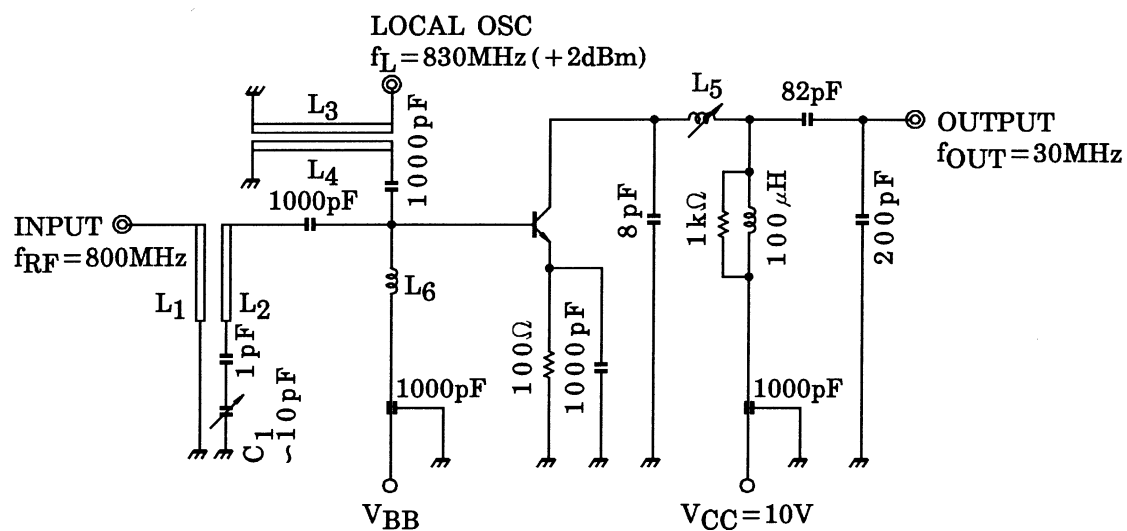
Characteristics	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	30	V
Collector-emitter voltage	$V_{CEO}$	15	V
Emitter-base voltage	$V_{EBO}$	3	V
Collector current	$I_C$	50	mA
Base current	$I_B$	25	mA
Collector power dissipation	$P_C$	100	mW
Junction temperature	$T_j$	125	°C
Storage temperature range	$T_{stg}$	-55~125	°C



## Electrical Characteristics (Ta = 25°C)

Weight: 0.006 g (typ.)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	$I_{CBO}$	$V_{CB} = 30\text{ V}, I_E = 0$	—	—	0.1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = 2\text{ V}, I_C = 0$	—	—	1.0	$\mu\text{A}$
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = 1\text{ mA}, I_B = 0$	15	—	—	V
DC current gain	$h_{FE}$	$V_{CE} = 10\text{ V}, I_C = 5\text{ mA}$	40	100	200	
Reverse transfer capacitance	$C_{re}$	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	0.6	0.9	pF
Transition frequency	$f_T$	$V_{CE} = 10\text{ V}, I_C = 2\text{ mA}$	1500	2400	—	MHz
Conversion gain	$G_{ce}$	$V_{CC} = 10\text{ V}, I_C = 2\text{ mA}, f = 800\text{ MHz}$	12	17	—	dB
Noise figure	NF	$f_L = 830\text{ MHz (+2dBm)}$ (Figure 1)	—	8	13	dB



$L_1 \sim L_4$ :  $\phi 0.8$  mm silver plated copper wire

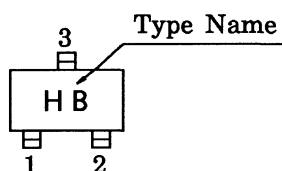
$L_5$ : Coil with core SCN-5948 (1)-(3) TOKO or equivalent

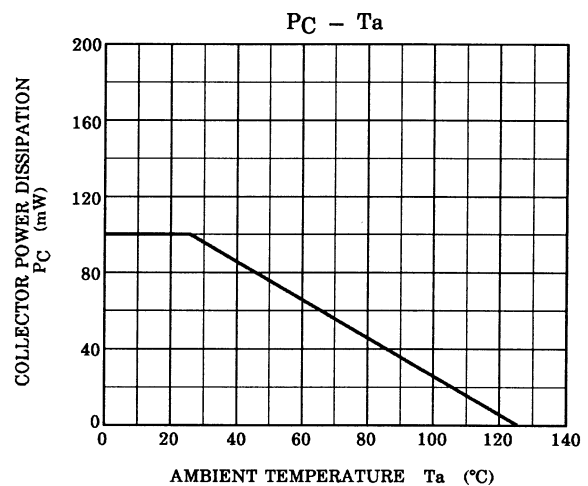
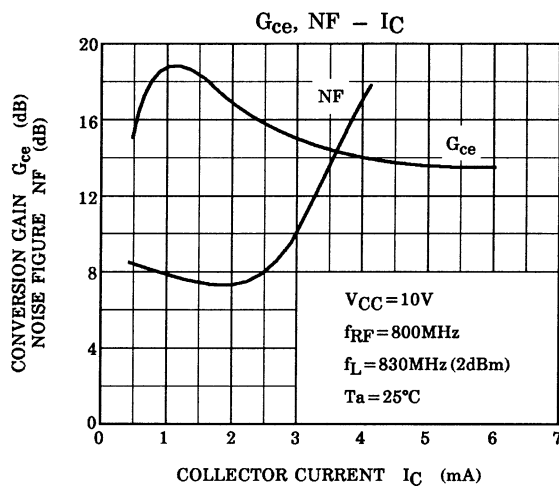
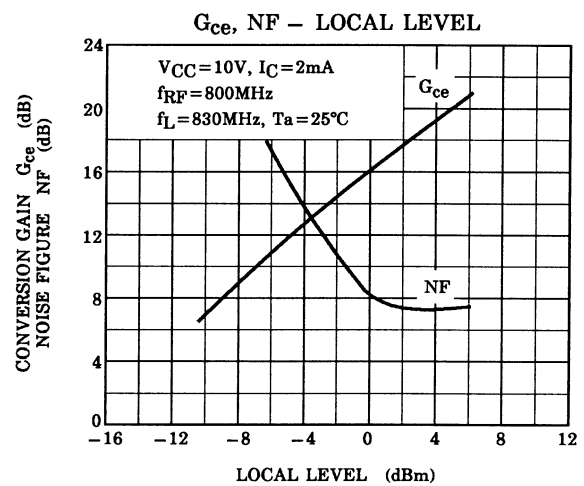
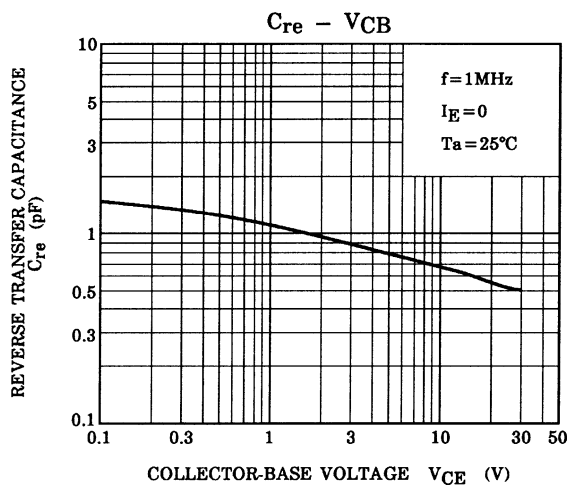
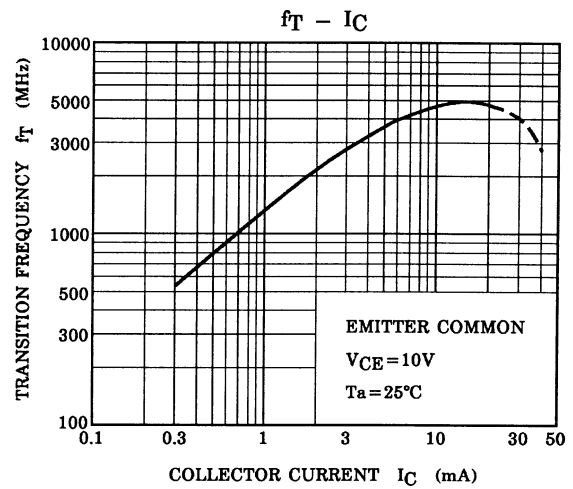
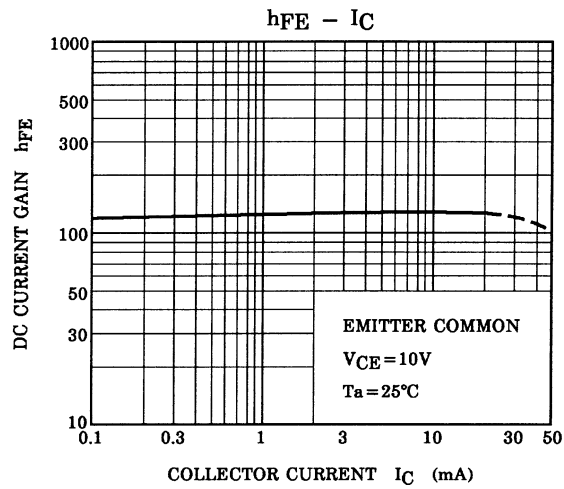
$L_6$ :  $\phi 0.2$  mm copper wire 10 T 5 mm ID

$C_1$ : Air trimmer TTA23A100 MURATA Manufacturing. Co., Ltd. or equivalent

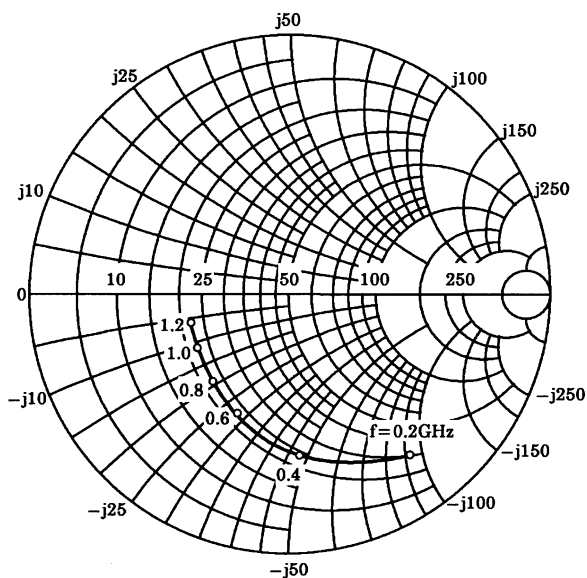
**Figure 1 800 MHz  $G_{ce}$ , NF Test Circuit**

## Marking

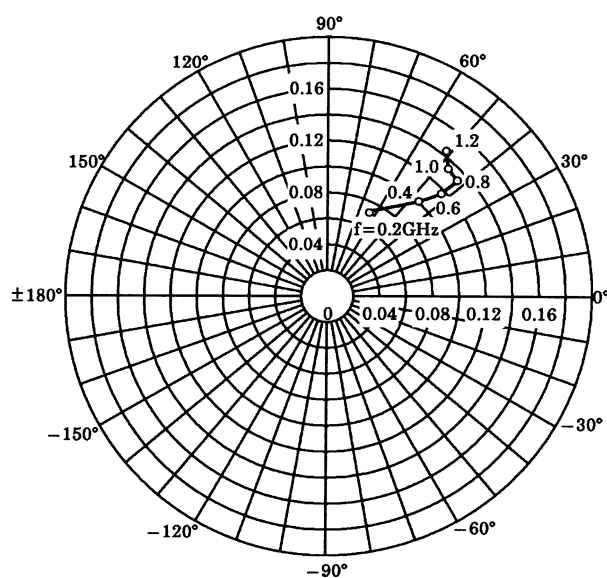




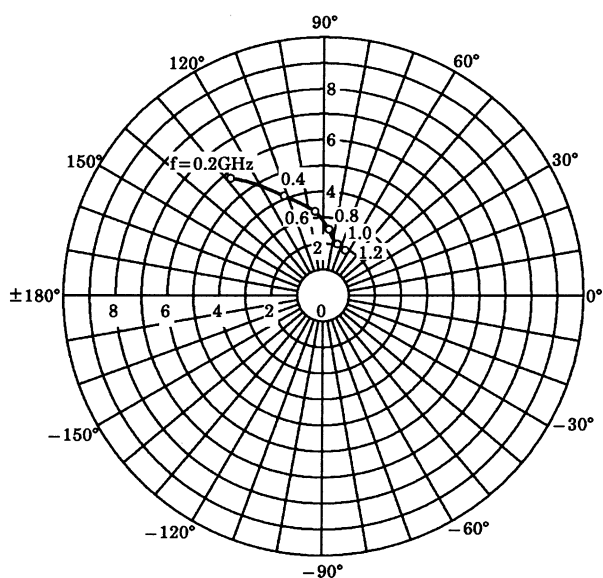
$S_{11e}$   
 $V_{CE} = 10V$   
 $I_C = 2mA$   
 $T_a = 25^\circ C$   
 (UNIT :  $\Omega$ )



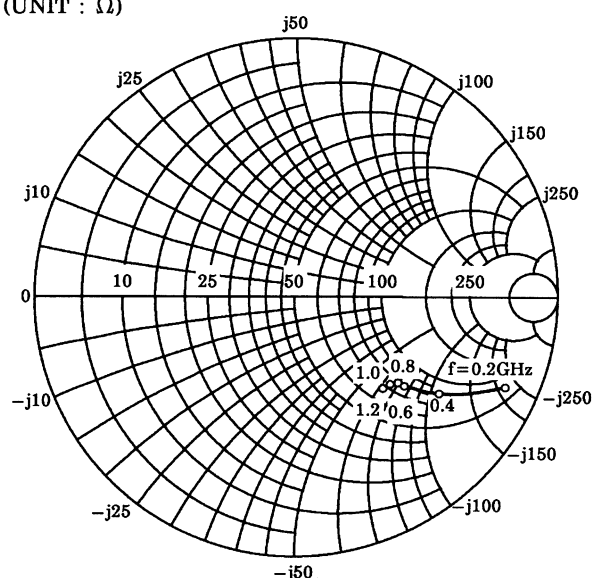
$S_{12e}$   
 $V_{CE} = 10V$   
 $I_C = 2mA$   
 $T_a = 25^\circ C$



$S_{21e}$   
 $V_{CE} = 10V$   
 $I_C = 2mA$   
 $T_a = 25^\circ C$



$S_{22e}$   
 $V_{CE} = 10V$   
 $I_C = 2mA$   
 $T_a = 25^\circ C$   
 (UNIT :  $\Omega$ )



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