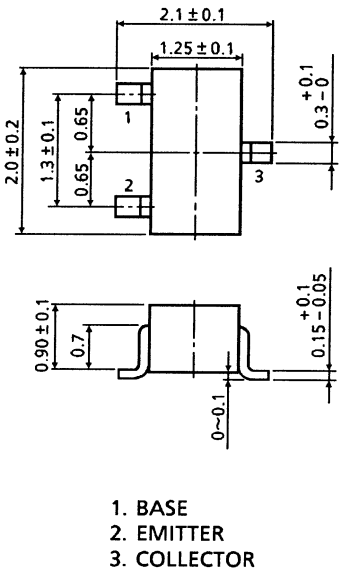
TOSHIBA Transistor Silicon NPN Epitaxial Planar Type

2SC4246

TV Tuner, UHF Oscillator Applications (common base)
TV Tuner, UHF Converter Applications (common base)

- Transition frequency is high and dependent on current excellently.

Unit: mm



1. BASE
2. EMITTER
3. COLLECTOR

JEDEC	—
JEITA	SC-70
TOSHIBA	2-2E1A

Weight: 0.006 g (typ.)

Absolute Maximum Ratings (Ta = 25°C)

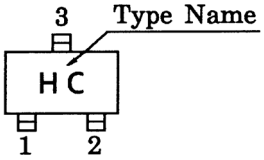
Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	30	V
Collector-emitter voltage	V_{CEO}	15	V
Emitter-base voltage	V_{EBO}	3	V
Base current	I_B	25	mA
Collector current	I_C	50	mA
Collector power dissipation	P_C	100	mW
Junction temperature	T_j	125	°C
Storage temperature range	T_{stg}	−55~125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

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook (“Handling Precautions”/“Derating Concept and Methods”) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

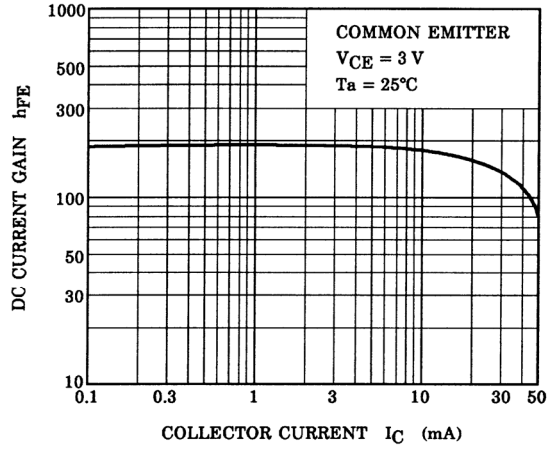
Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	V_{CB} = 15 V, I_E = 0	—	—	0.1	μA
Emitter cut-off current	I_{EBO}	V_{EB} = 3 V, I_C = 0	—	—	1.0	μA
Collector-emitter breakdown voltage	$V_{(BR)\ CEO}$	I_C = 1 mA, I_B = 0	15	—	—	V
DC current gain	h_{FE}	V_{CE} = 3 V, I_C = 8 mA	60	150	320	
Transition frequency	f_T	V_{CE} = 10 V, I_C = 8 mA	1100	1500	—	MHz
Output capacitance	C_{ob}	V_{CB} = 10 V, I_E = 0, f = 1 MHz	—	0.9	1.3	pF
Collector-base time constant	$C_c.r_{bb'}$	V_{CB} = 10 V, I_C = 8 mA, f = 30 MHz	—	7	12	ps

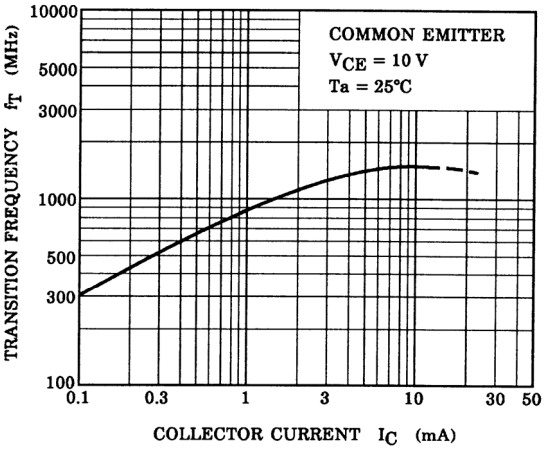
Marking



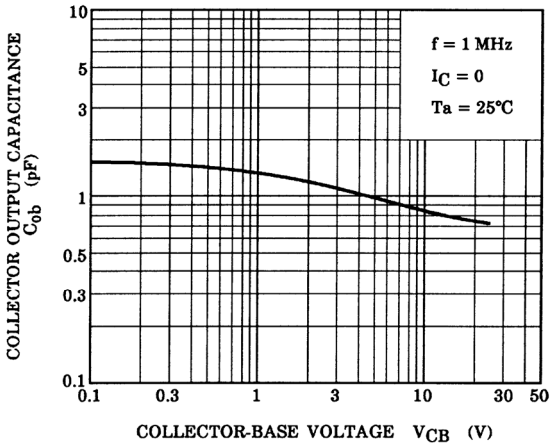
h_{FE} – I_C



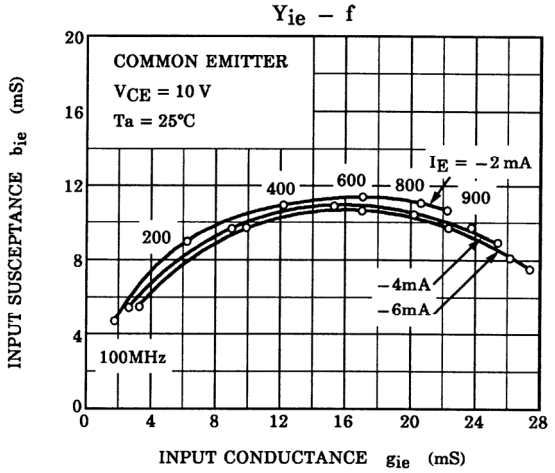
f_T – I_C



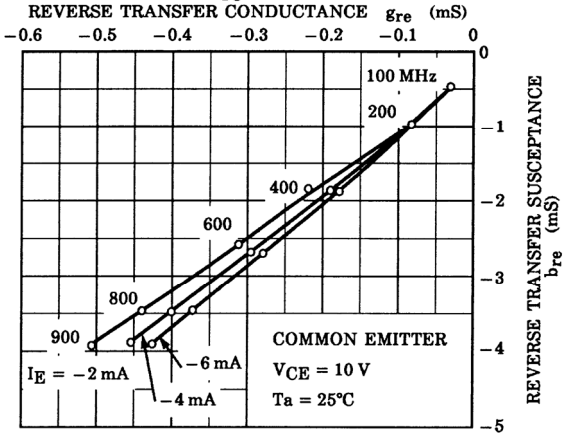
C_{ob} – V_{CB}



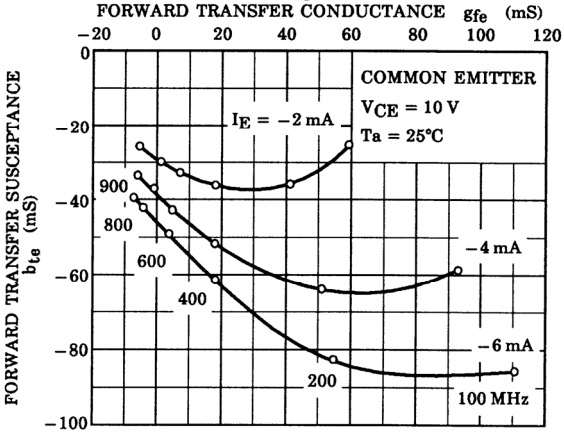
Y_{ie} – f

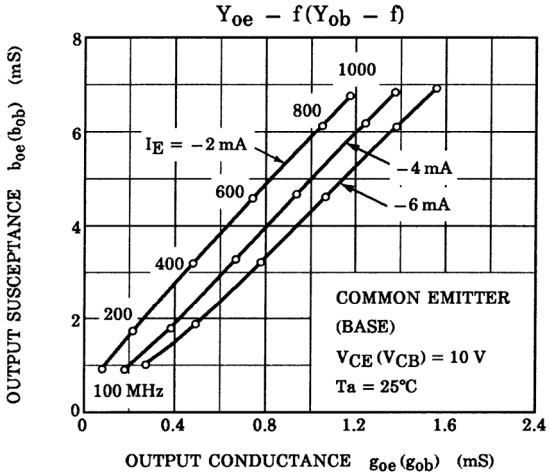


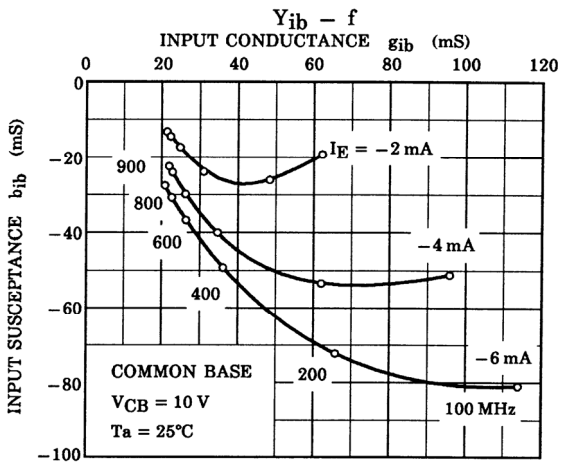
Y_{re} – f

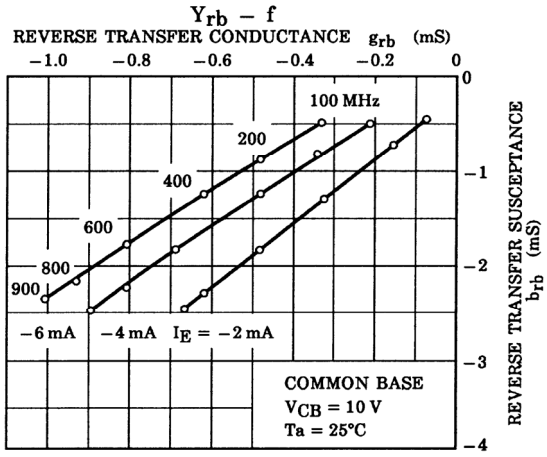


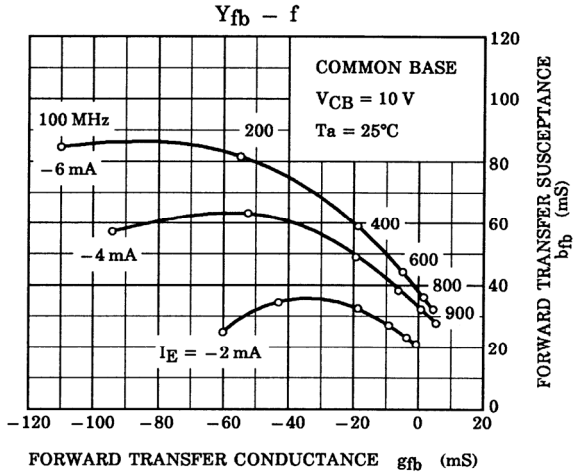
Y_{fe} – f

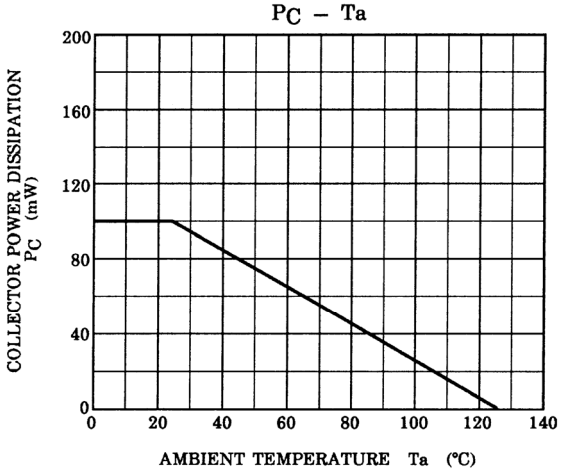



Y_{oe} – f (Y_{ob} – f)
OUTPUT SUSCEPTANCE b_{oe} (b_{ob}) (mS)
OUTPUT CONDUCTANCE g_{oe} (g_{ob}) (mS)
I_E = –2 mA
–4 mA
–6 mA
1000
800
600
400
200
100 MHz
COMMON EMITTER
(BASE)
V_{CE} (V_{CB}) = 10 V
Ta = 25°C


Y_{ib} – f
INPUT CONDUCTANCE g_{ib} (mS)
INPUT SUSCEPTANCE b_{ib} (mS)
I_E = –2 mA
–4 mA
–6 mA
900
800
600
400
200
100 MHz
COMMON BASE
V_{CB} = 10 V
Ta = 25°C


Y_{rb} – f
REVERSE TRANSFER CONDUCTANCE g_{rb} (mS)
REVERSE TRANSFER SUSCEPTANCE b_{rb} (mS)
100 MHz
200
400
600
800
900
–6 mA
–4 mA
I_E = –2 mA
COMMON BASE
V_{CB} = 10 V
Ta = 25°C


Y_{fb} – f
FORWARD TRANSFER SUSCEPTANCE b_{fb} (mS)
FORWARD TRANSFER CONDUCTANCE g_{fb} (mS)
COMMON BASE
V_{CB} = 10 V
Ta = 25°C
100 MHz
200
400
600
800
900
–6 mA
–4 mA
I_E = –2 mA


P_C – Ta
COLLECTOR POWER DISSIPATION P_C (mW)
AMBIENT TEMPERATURE Ta (°C)

RESTRICTIONS ON PRODUCT USE

20070701-EN GENERAL

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