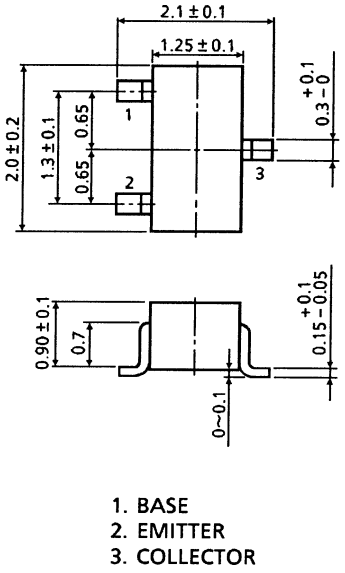
TOSHIBA Transistor Silicon NPN Epitaxial Planar Type

2SC4253

TV Final Picture IF Amplifier Applications

- Good linearity of f_T

Unit: mm



JEDEC	—
JEITA	SC-70
TOSHIBA	2-2E1A

Weight: 0.006 g (typ.)

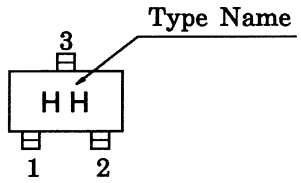
Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	30	V
Collector-emitter voltage	V_{CEO}	25	V
Emitter-base voltage	V_{EBO}	4	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

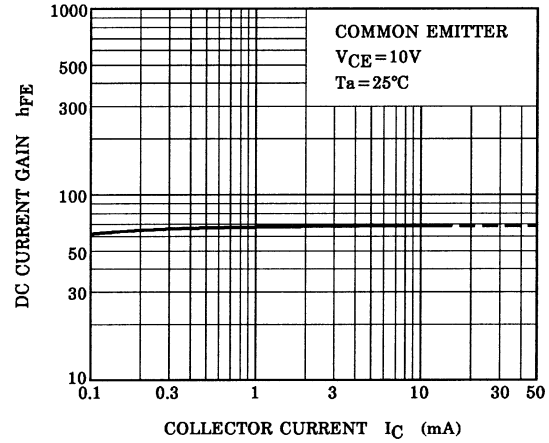
Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	V_{CB} = 30 V, I_E = 0	—	—	0.1	μA
Emitter cut-off current		I_{EBO}	V_{EB} = 3 V, I_C = 0	—	—	0.1	μA
Collector-emitter breakdown voltage		$V_{(BR)\ CEO}$	I_C = 1 mA, I_B = 0	25	—	—	V
DC current gain		h_{FE}	V_{CE} = 10 V, I_C = 10 mA	20	70	200	
Saturation voltage	Collector-emitter	$V_{CE\ (sat)}$	I_C = 15 mA, I_B = 1.5 mA	—	—	0.2	V
	Base-emitter	$V_{BE\ (sat)}$		—	—	1.5	
Collector output capacitance		C_{ob}	V_{CB} = 10 V, I_E = 0, f = 1 MHz	—	1.1	1.6	pF
Collector-base time constant		C_c.rbb'	V_{CB} = 10 V, I_C = 1 mA, f = 30 MHz	—	—	25	ps
Transition frequency		f_T	V_{CE} = 10 V, I_C = 10 mA	250	600	—	MHz

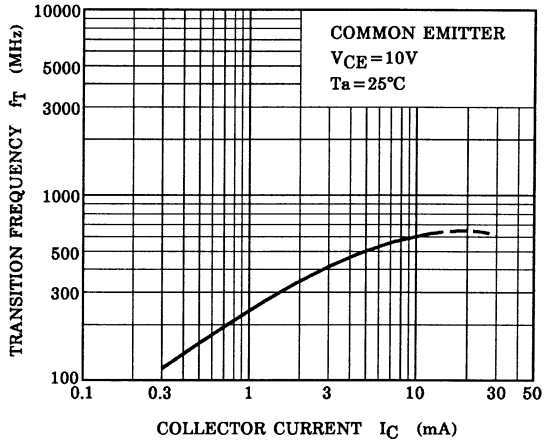
Marking



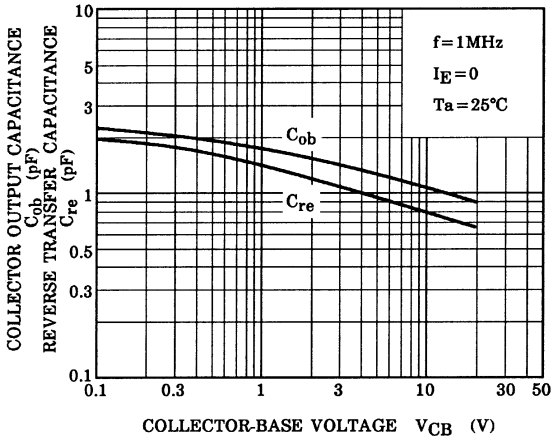
h_{FE} – I_C



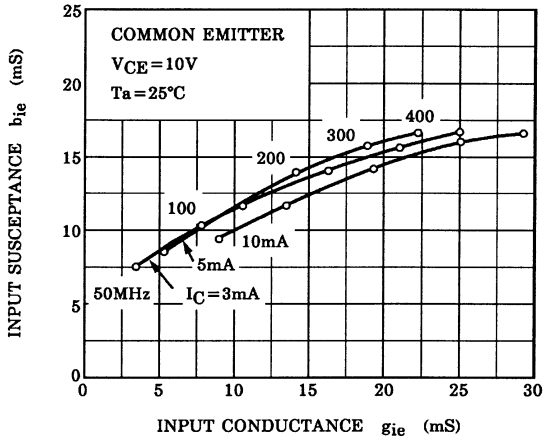
f_T – I_C



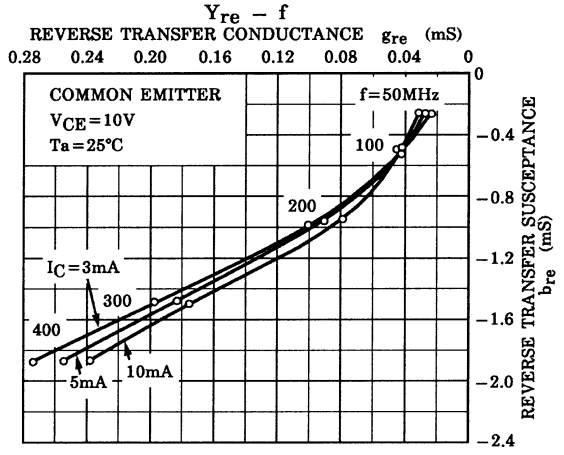
C_{ob}, C_{re} – V_{CB}



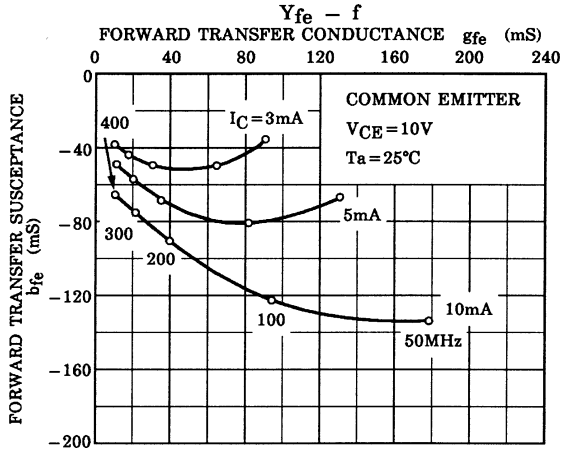
Y_{ie} – f

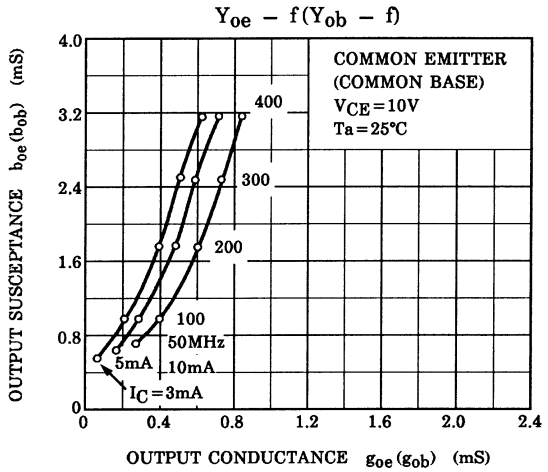


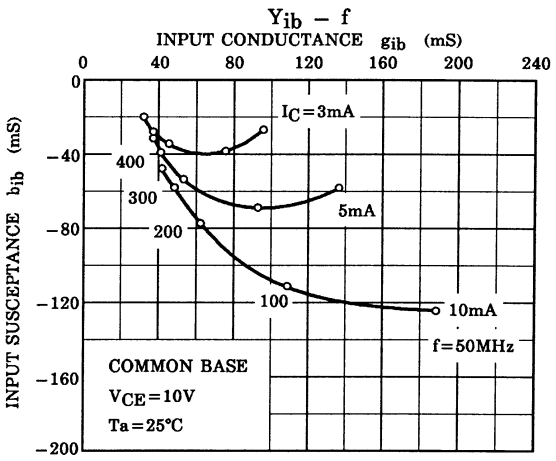
Y_{re} – f

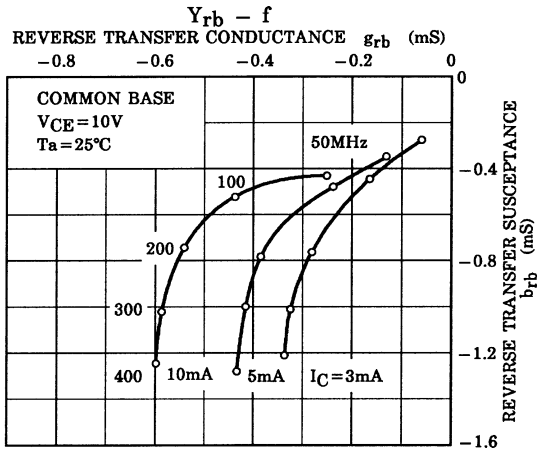


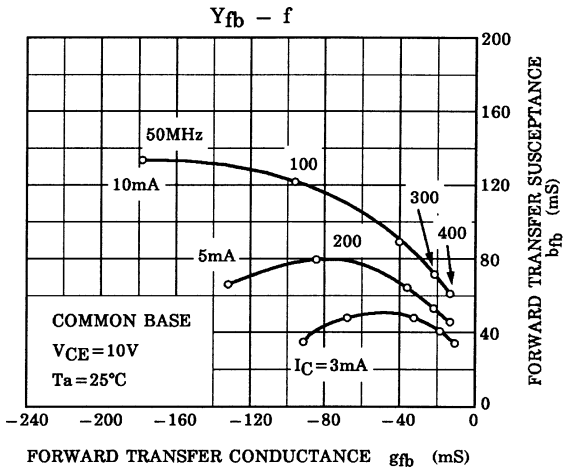
Y_{fe} – f

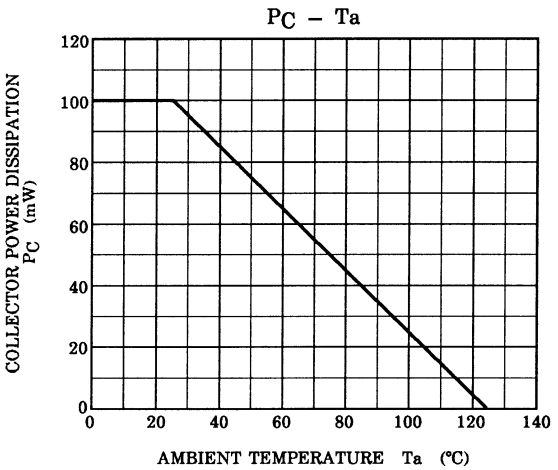



Y_{oe} – f(Y_{ob} – f)
COMMON EMITTER
(COMMON BASE)
V_{CE}=10V
Ta=25°C
400
300
200
100
50MHz
10mA
5mA
I_C=3mA
OUTPUT SUSCEPTANCE b_{oe} (b_{ob}) (mS)
OUTPUT CONDUCTANCE g_{oe} (g_{ob}) (mS)
4.0
3.2
2.4
1.6
0.8
0
0.4
0.8
1.2
1.6
2.0
2.4


Y_{ib} – f
INPUT CONDUCTANCE g_{ib} (mS)
INPUT SUSCEPTANCE b_{ib} (mS)
I_C=3mA
5mA
10mA
400
300
200
100
f=50MHz
COMMON BASE
V_{CE}=10V
Ta=25°C
0
40
80
120
160
200
240
0
−40
−80
−120
−160
−200


Y_{rb} – f
REVERSE TRANSFER CONDUCTANCE g_{rb} (mS)
REVERSE TRANSFER SUSCEPTANCE b_{rb} (mS)
COMMON BASE
V_{CE}=10V
Ta=25°C
50MHz
100
200
300
400
10mA
5mA
I_C=3mA
−0.8
−0.6
−0.4
−0.2
0
−0.4
−0.8
−1.2
−1.6


Y_{fb} – f
FORWARD TRANSFER SUSCEPTANCE b_{fb} (mS)
FORWARD TRANSFER CONDUCTANCE g_{fb} (mS)
50MHz
10mA
100
300
400
200
5mA
I_C=3mA
COMMON BASE
V_{CE}=10V
Ta=25°C
200
160
120
80
40
0
−240
−200
−160
−120
−80
−40
0


P_C – Ta
COLLECTOR POWER DISSIPATION P_C (mW)
AMBIENT TEMPERATURE Ta (°C)
120
100
80
60
40
20
0
0
20
40
60
80
100
120
140

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