
2SC1342

Silicon NPN Epitaxial Planar

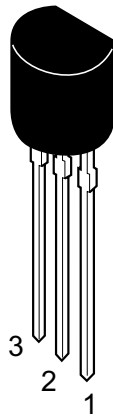
HITACHI

Application

- VHF amplifier, mixer
- Local oscillator

Outline

TO-92 (2)



1. Emitter
2. Collector
3. Base

Absolute Maximum Ratings (Ta = 25°C)

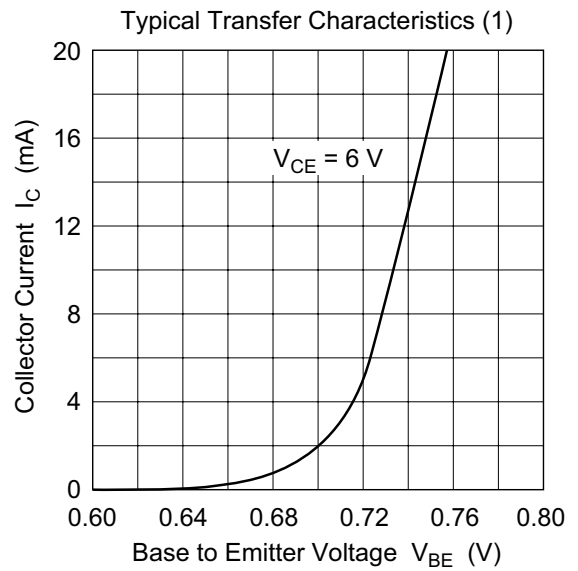
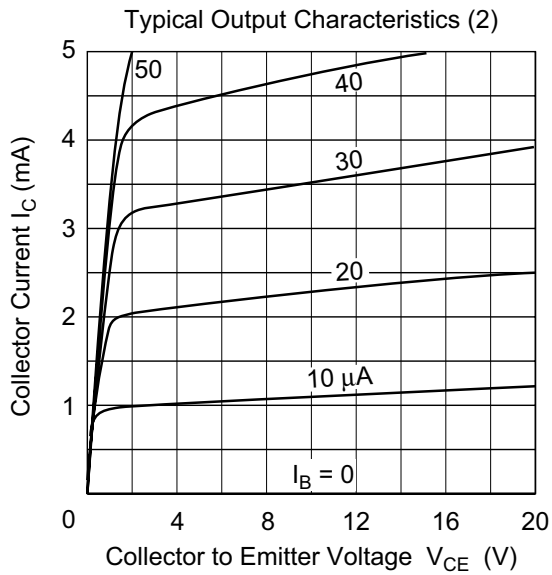
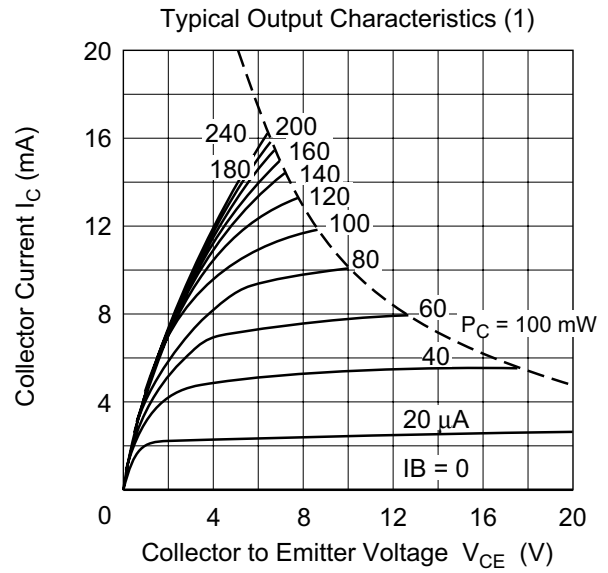
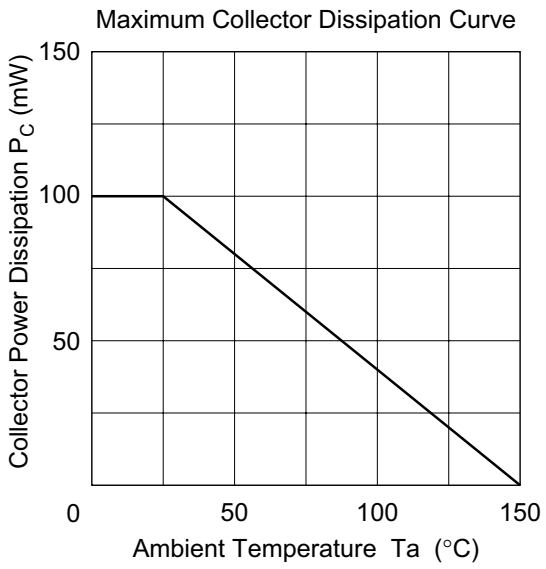
Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	30	V
Collector to emitter voltage	V_{CEO}	20	V
Emitter to base voltage	V_{EBO}	4	V
Collector current	I_C	30	mA
Collector power dissipation	P_C	100	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

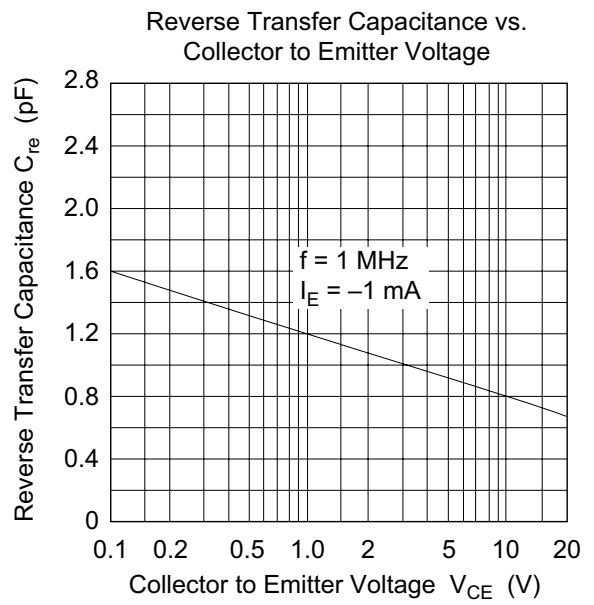
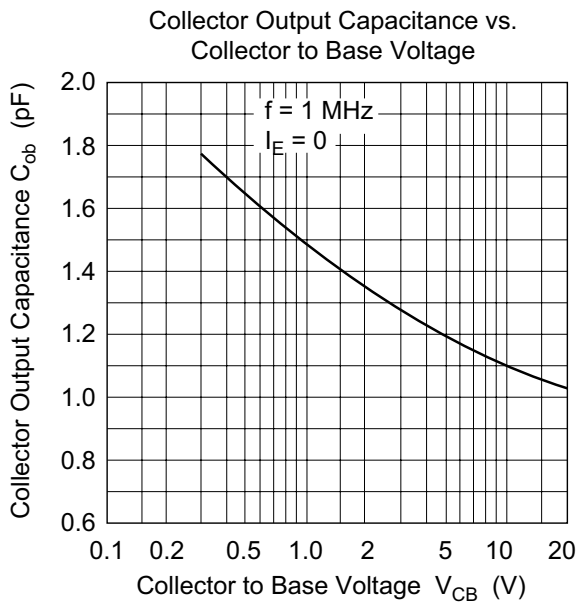
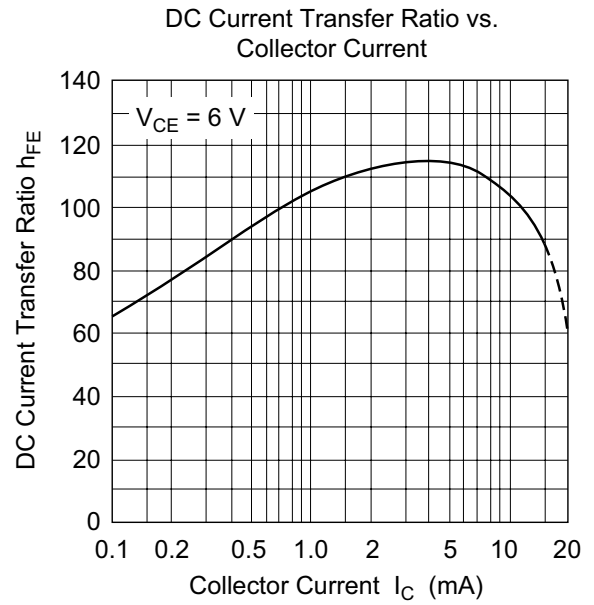
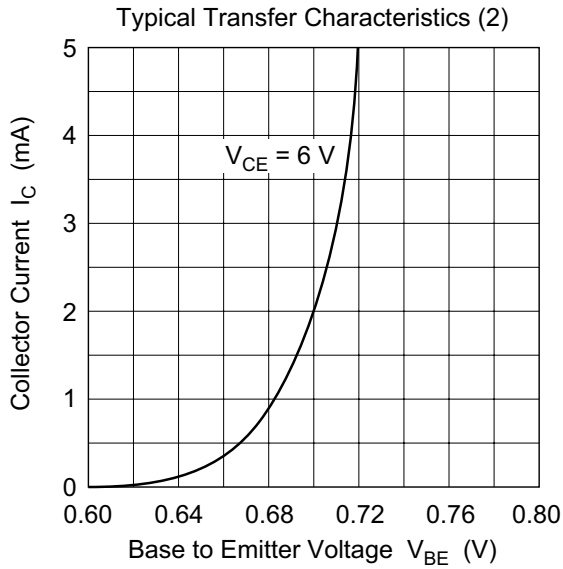
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	30	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	20	—	—	V	$I_C = 1 \text{ mA}, R_{BE} = \infty$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	4	—	—	V	$I_E = 10 \mu A, I_C = 0$
Collector cutoff current	I_{CBO}	—	—	0.5	μA	$V_{CB} = 10 \text{ V}, I_E = 0$
DC current transfer ratio	h_{FE}^{*1}	35	—	200		$V_{CE} = 6 \text{ V}, I_C = 1 \text{ mA}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	0.8	1.2	V	$I_C = 10 \text{ mA}, I_B = 1 \text{ mA}$
Collector output capacitance	C_{ob}	—	1.1	1.5	pF	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$
Base time constant	$r_{bb'} \cdot C_C$	—	20	35	ps	$V_{CB} = 6 \text{ V}, I_C = 1 \text{ mA}, f = 31.8 \text{ MHz}$
Gain bandwidth product	f_T	150	320	—	MHz	$V_{CE} = 6 \text{ V}, I_C = 1 \text{ mA}$
Noise figure	NF	—	5.5	8.5	dB	$V_{CE} = 6 \text{ V}, I_C = 1 \text{ mA}, f = 100 \text{ MHz}, R_g = 50 \Omega$
Reverse transfer capacitance	C_{re}	—	0.9	1.2	pF	$V_{CE} = 10 \text{ V}, I_E = -1 \text{ mA}, f = 1 \text{ MHz}$
Power gain	PG	13	17	—	dB	$V_{CE} = 6 \text{ V}, I_C = 1 \text{ mA}, f = 100 \text{ MHz}, R_g = 100 \Omega, R_L = 550 \Omega, \text{Unneutralized}$

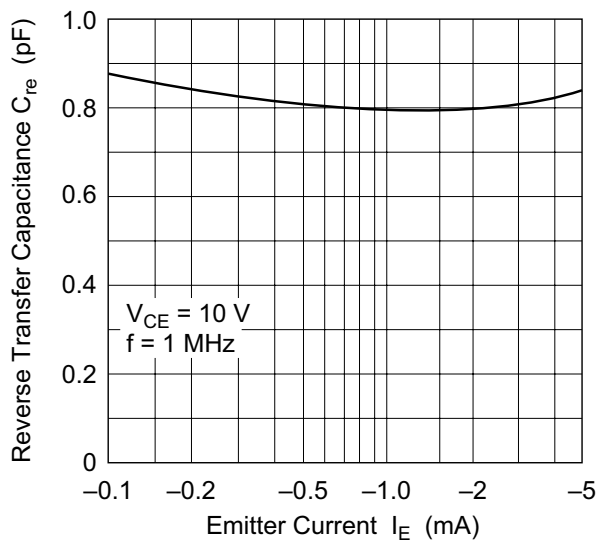
Note: 1. The 2SC1342 is grouped by h_{FE} as follows.

A	B	C
35 to 70	60 to 120	100 to 200

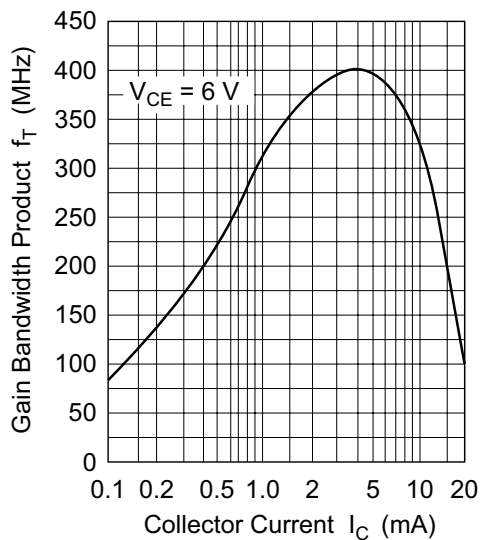




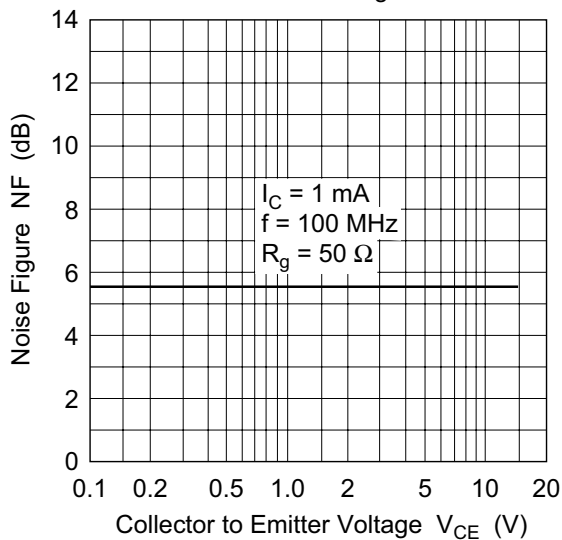
Reverse Transfer Capacitance vs. Emitter Current



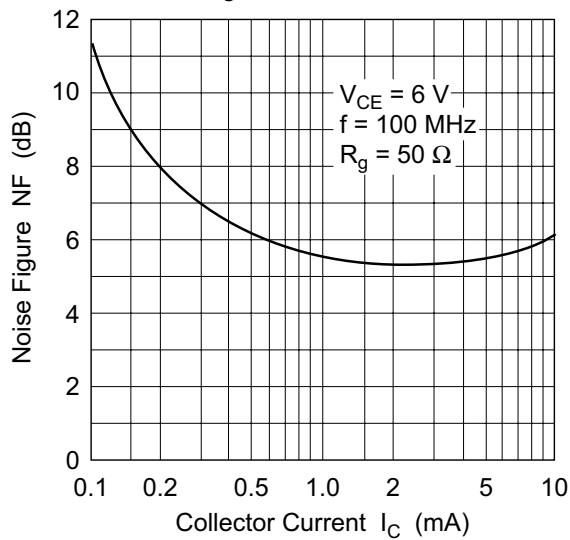
Gain Bandwidth Product vs. Collector Current



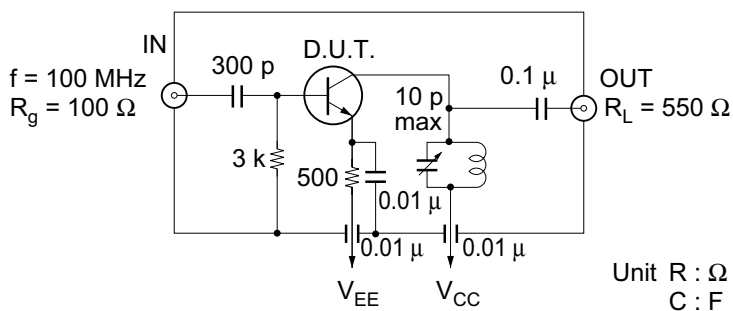
Noise Figure vs. Collector to Emitter Voltage



Noise Figure vs. Collector Current

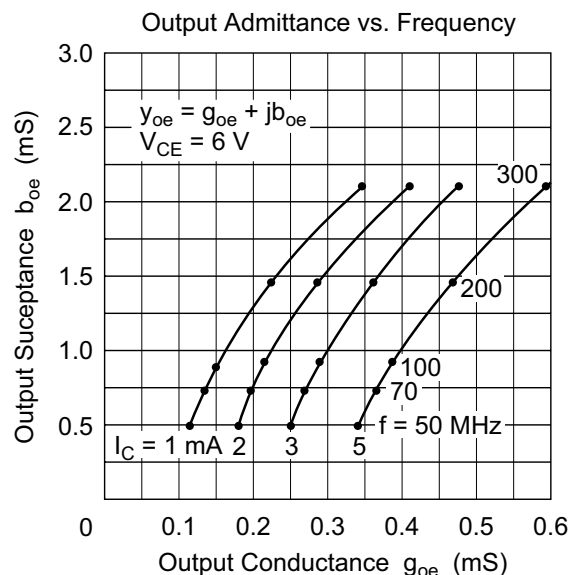
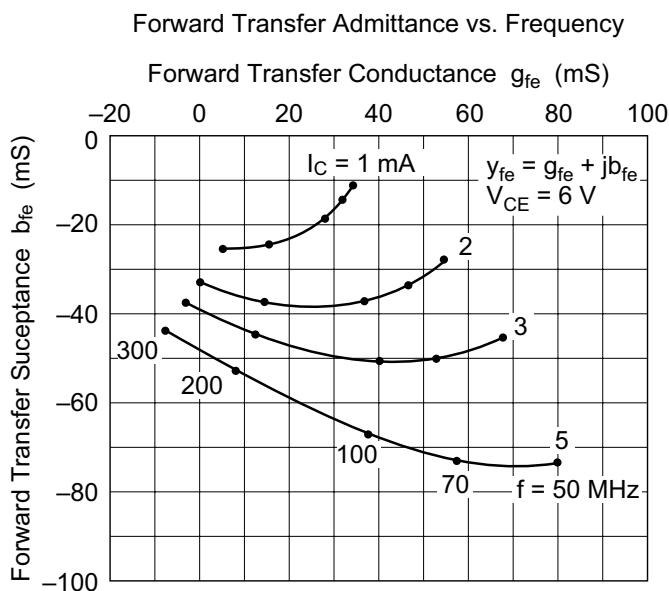
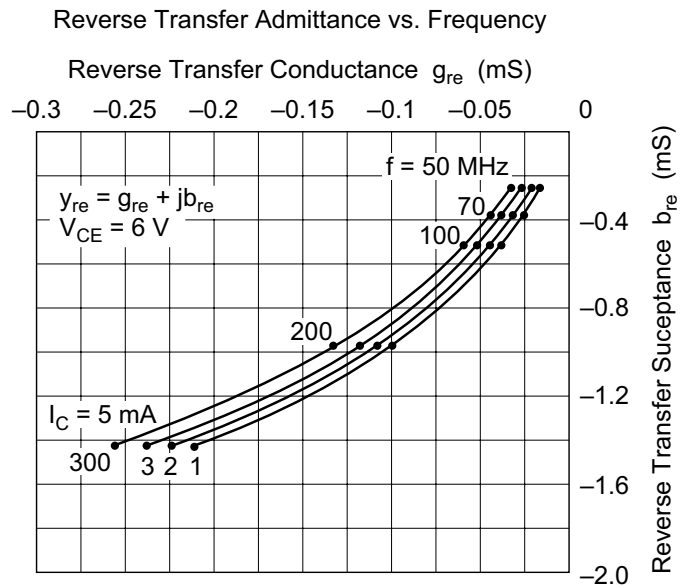
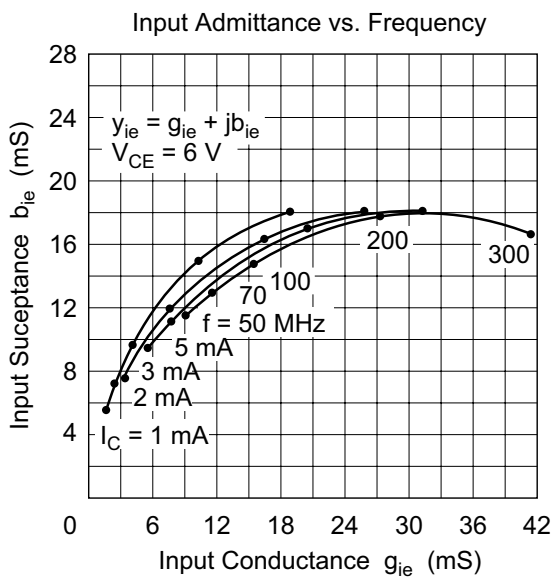


Power Gain Test Circuit

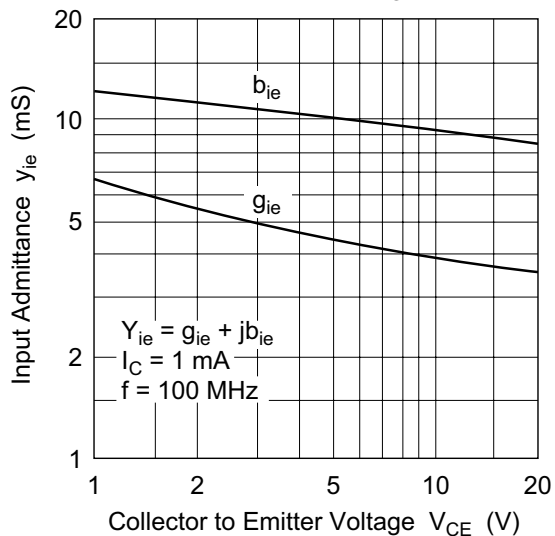


Small Signal y Parameters ($V_{CE} = 6V, I_C = 1\text{ mA},$ Emitter Common $T_a = 25^\circ C$)

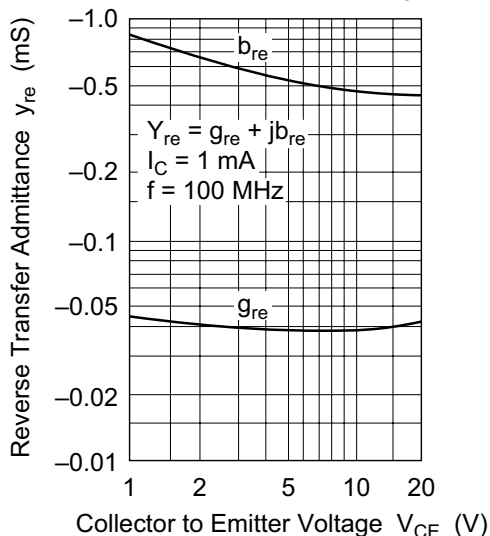
Item	Symbol	f = 50 MHz	f = 100 MHz	f = 200 MHz	Unit
Input admittance	y_{ie}	$1.8 + j5.5$	$4.3 + j9.9$	$11.5 + j15.25$	mS
Reverse transfer admittance	y_{re}	$-0.022 - j0.26$	$-0.04 - j0.52$	$-0.105 - j0.96$	
Forward transfer admittance	y_{fe}	$34 - j12$	$28 - j19$	$15.5 - j25$	
Output admittance	y_{oe}	$0.1 + j0.5$	$0.15 + j0.9$	$0.21 + j1.45$	



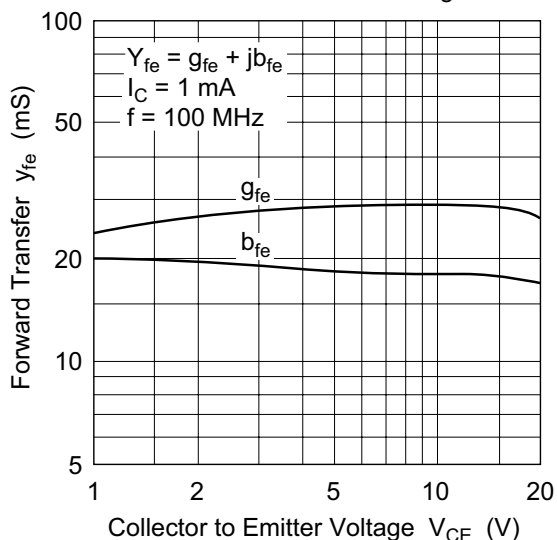
Input Admittance vs. Collector to Emitter Voltage



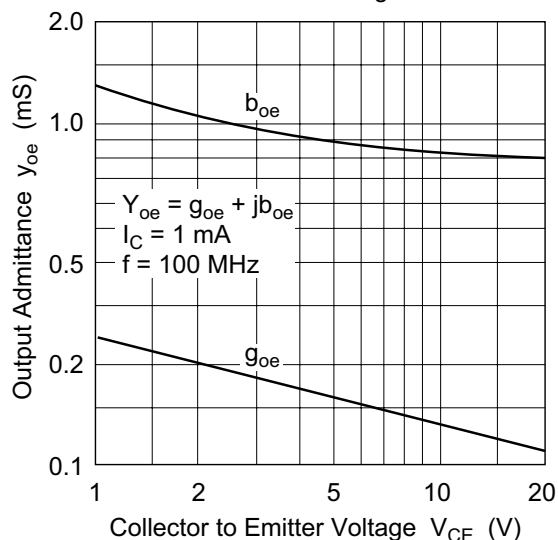
Reverse Transfer Admittance vs. Collector to Emitter Voltage

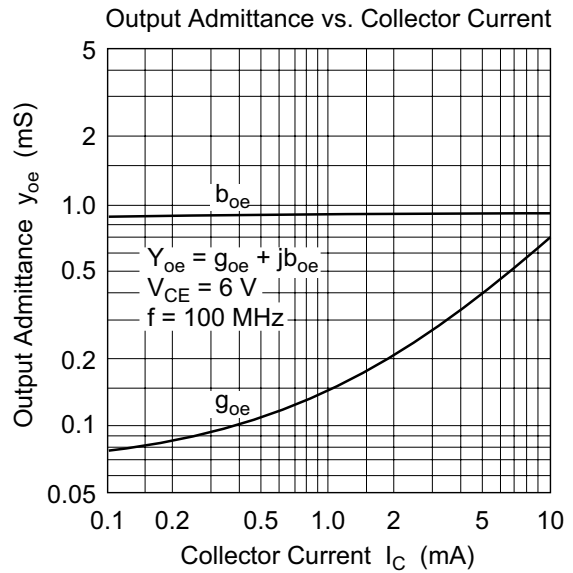
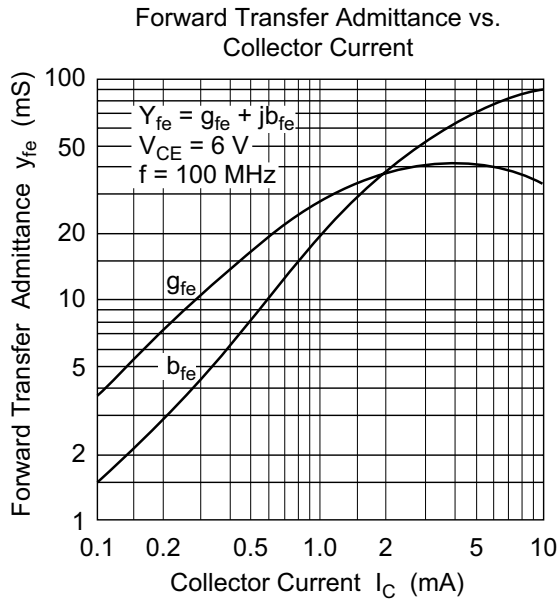
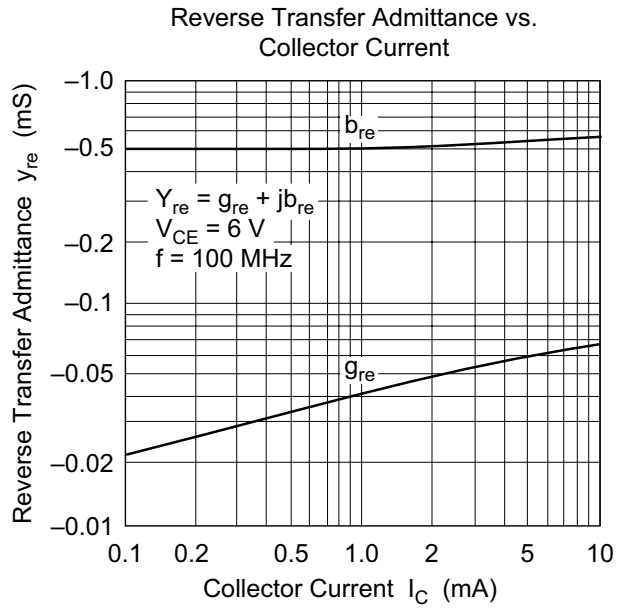
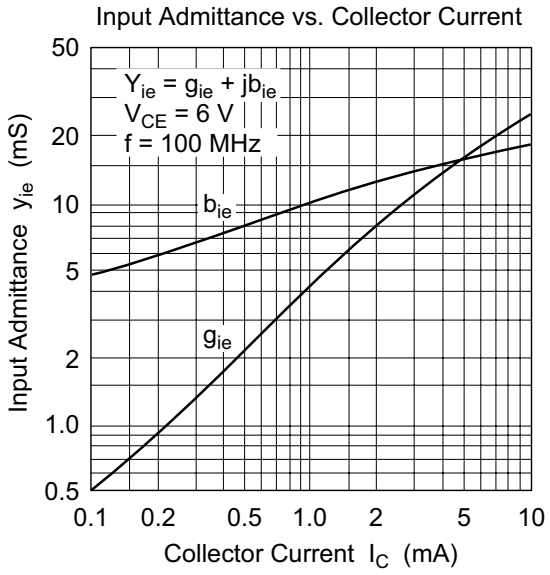


Forward Transfer Admittance vs. Collector to Emitter Voltage

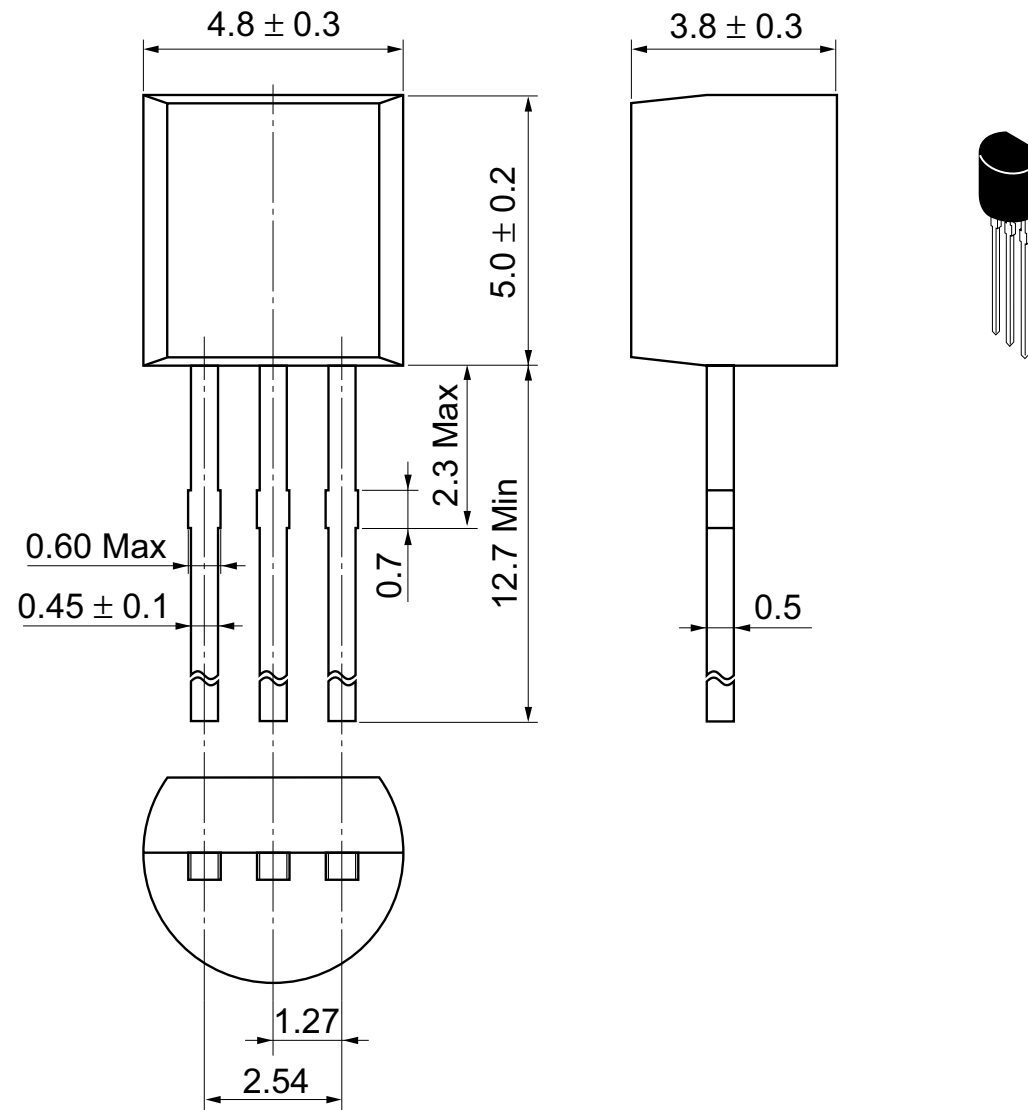


Output Admittance vs. Collector to Emitter Voltage





Unit: mm



Hitachi Code	TO-92 (2)
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	0.25 g

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