2SC1342

Silicon NPN Epitaxial Planar

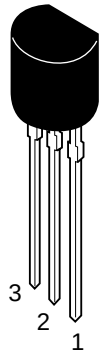
HITACHI

Application

- VHF amplifier, mixer
- Local oscollator

Outline

TO-92 (2)



1. Emitter
2. Collector
3. Base

Hitachi semiconductor

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	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

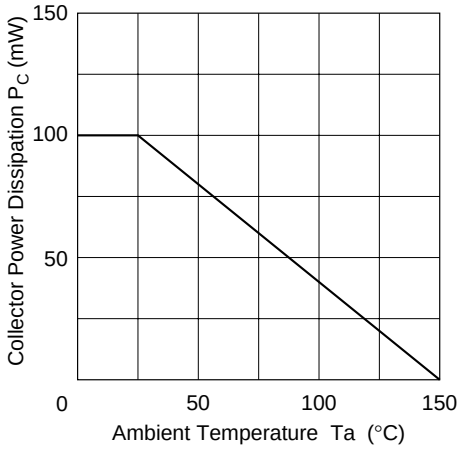
Electrical Characteristics (Ta = 25°C)

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

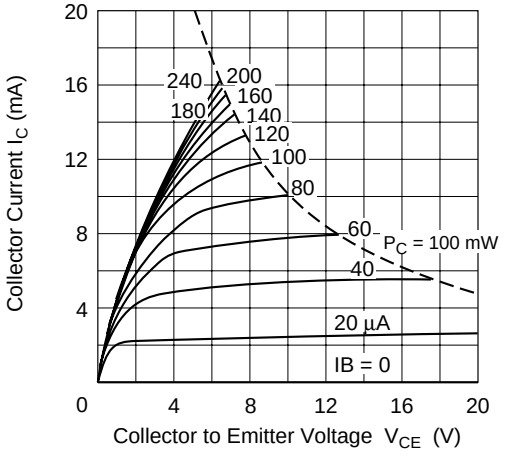
Note: 1. The 2SC1342 is grouped by h_{FE} as follows.

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

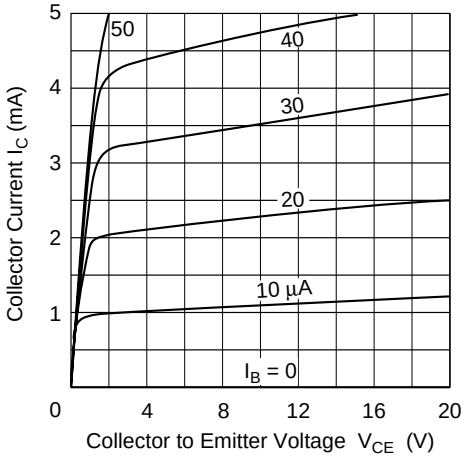
Maximum Collector Dissipation Curve



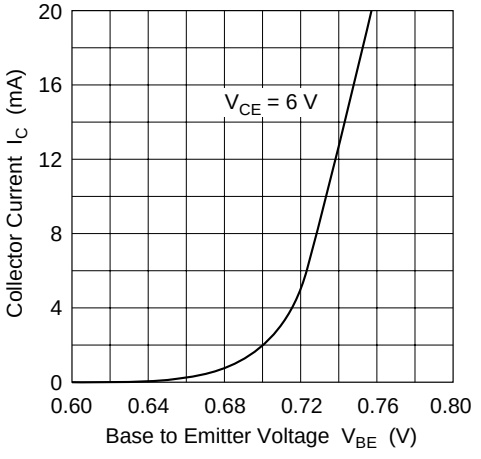
Typical Output Characteristics (1)



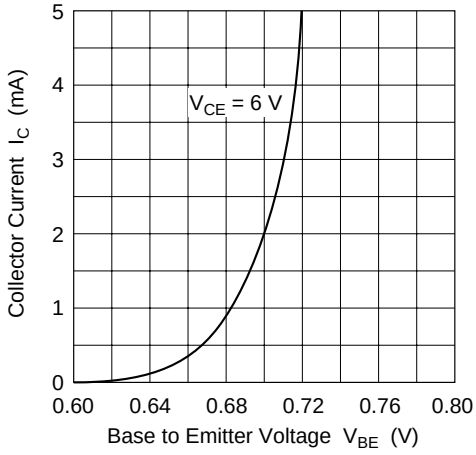
Typical Output Characteristics (2)



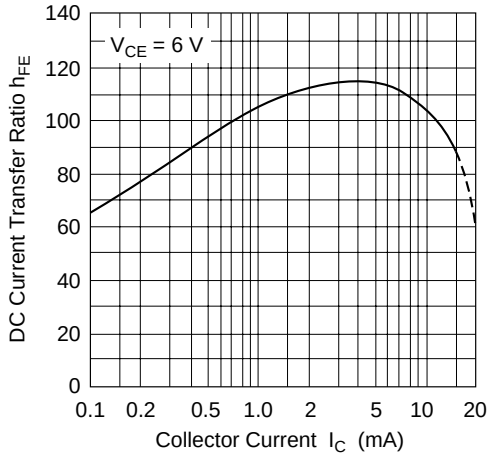
Typical Transfer Characteristics (1)



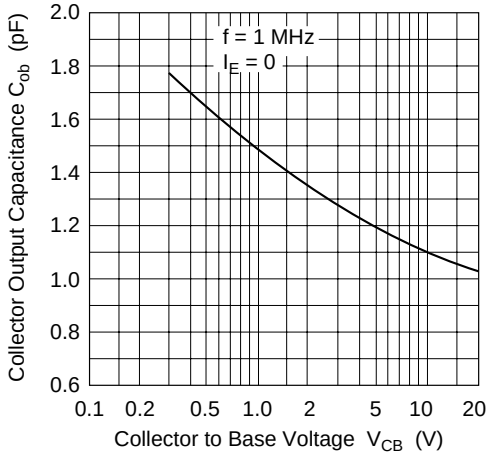
Typical Transfer Characteristics (2)



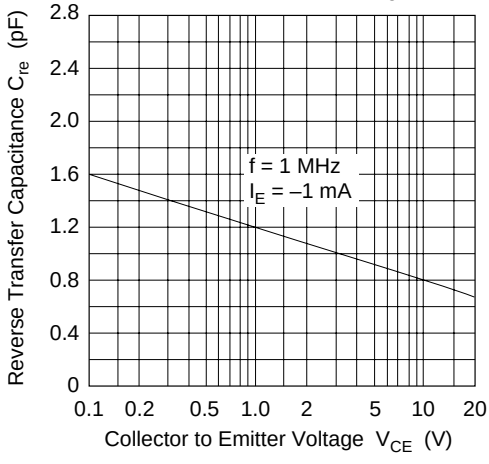
DC Current Transfer Ratio vs. Collector Current



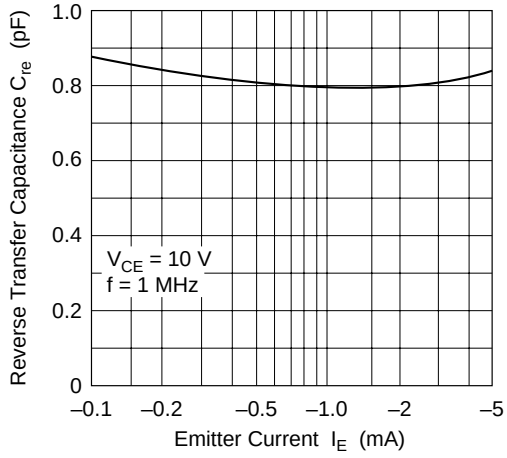
Collector Output Capacitance vs. Collector to Base Voltage



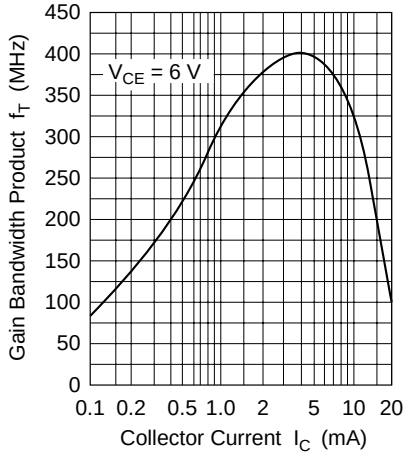
Reverse Transfer Capacitance vs. Collector to Emitter Voltage



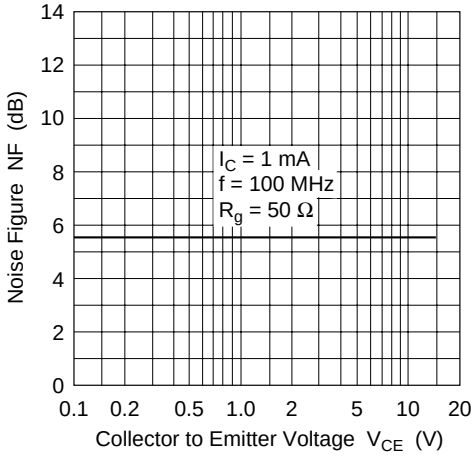
Reverse Transfer Capacitance vs. Emitter Current



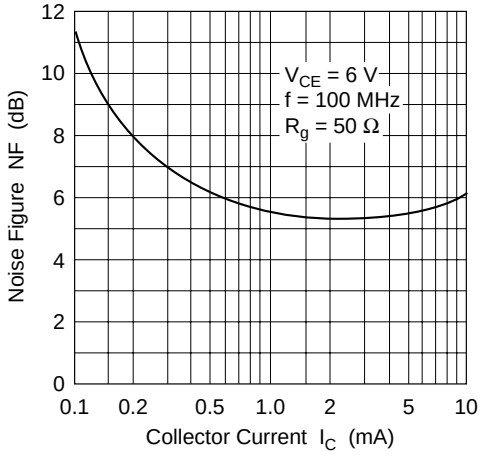
Gain Bandwidth Product vs. Collector Current



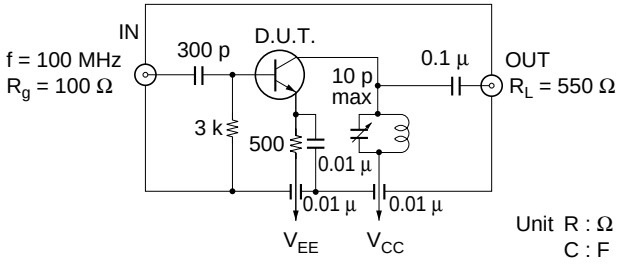
Noise Figure vs. Collector to Emitter Voltage



Noise Figure vs. Collector Current



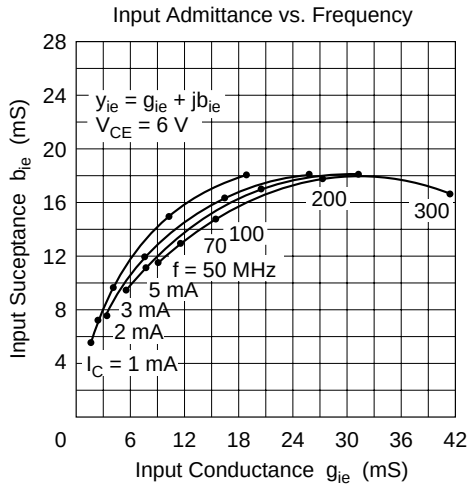
Power Gain Test Circuit

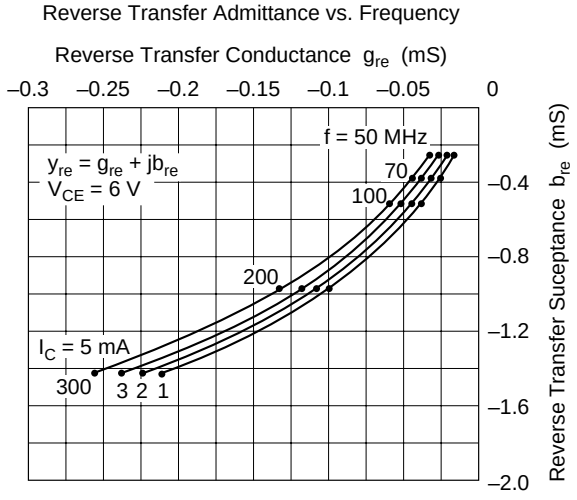


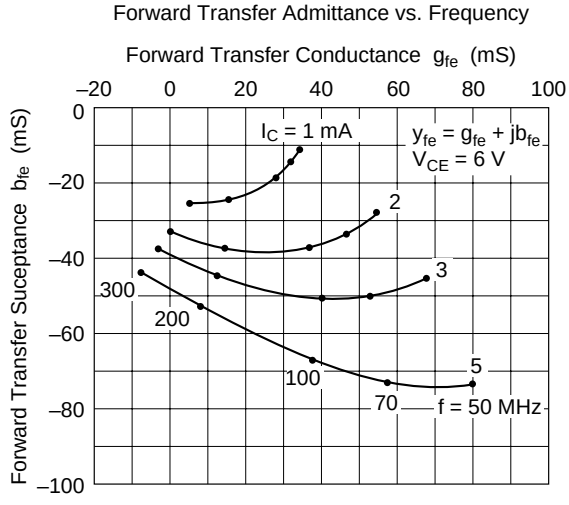
Unit R : Ω
C : F

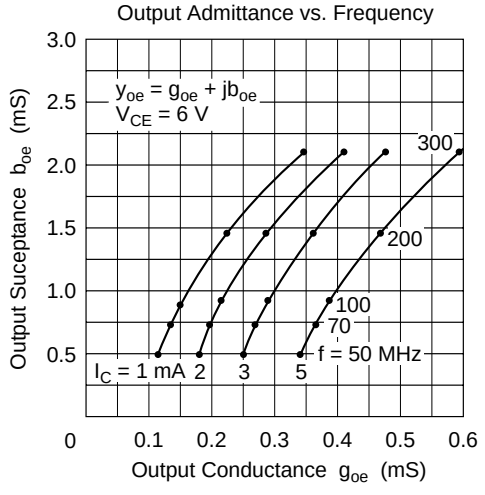
Small Signal y Parameters (V_{CE} = 6V, I_C = 1 mA, Emitter Common Ta = 25°C)

Item	Symbol	f = 50 MHz	f = 100 MHz	f = 200 MHz	Unit
Input admittance	yie	1.8 + j5.5	4.3 + j9.9	11.5 + j15.25	mS
Reverse transfer admittance	yre	–0.022 – j0.26	–0.04 – j0.52	–0.105 – j0.96	
Forward transfer admittance	yfe	34 – j12	28 – j19	15.5 – j25	
Output admittance	yoe	0.1 + j0.5	0.15 + j0.9	0.21 + j1.45	

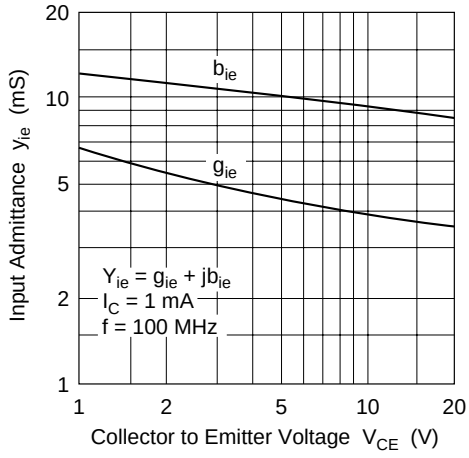




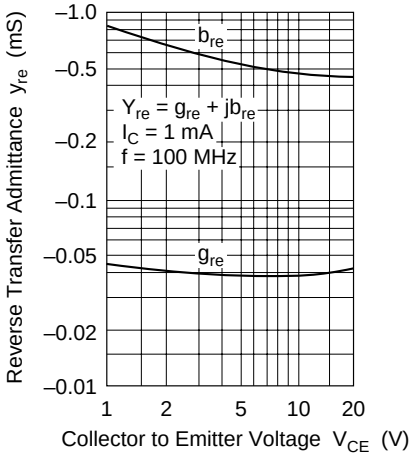




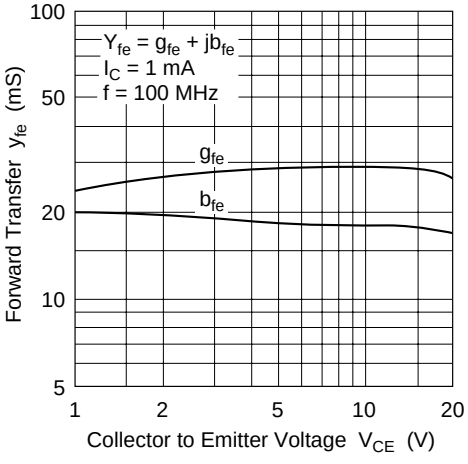
Input Admittance vs. Collector to Emitter Voltage



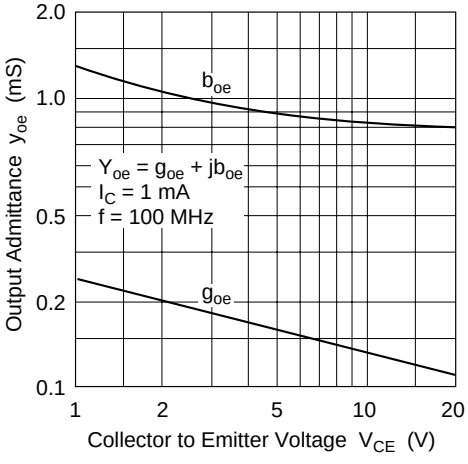
Reverse Transfer Admittance vs. Collector to Emitter Voltage



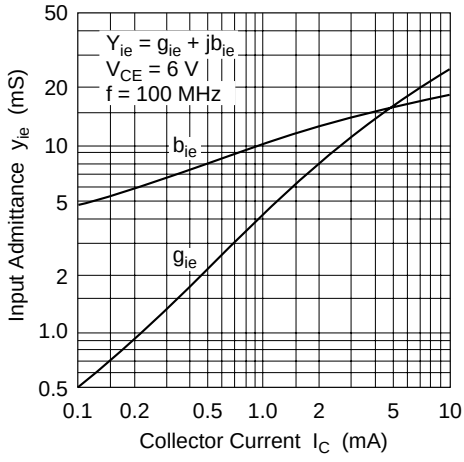
Forward Transfer Admittance vs. Collector to Emitter Voltage



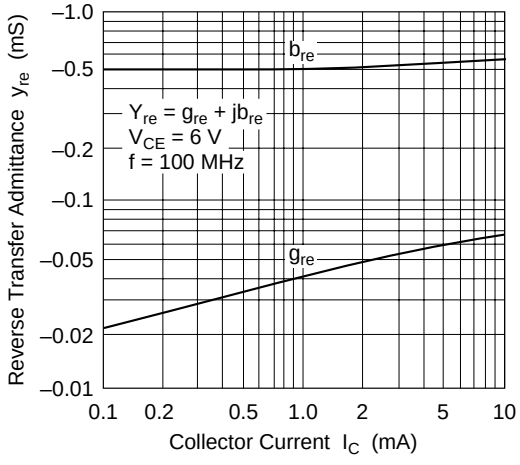
Output Admittance vs. Collector to Emitter Voltage



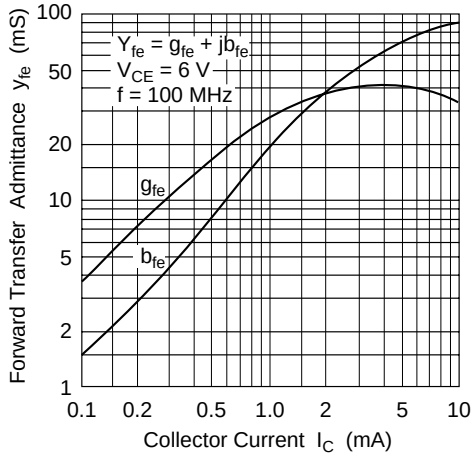
Input Admittance vs. Collector Current



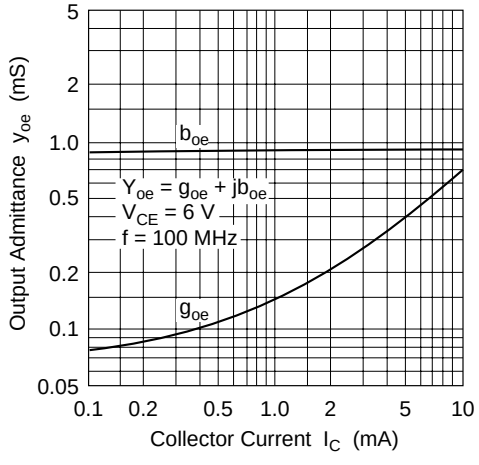
Reverse Transfer Admittance vs. Collector Current



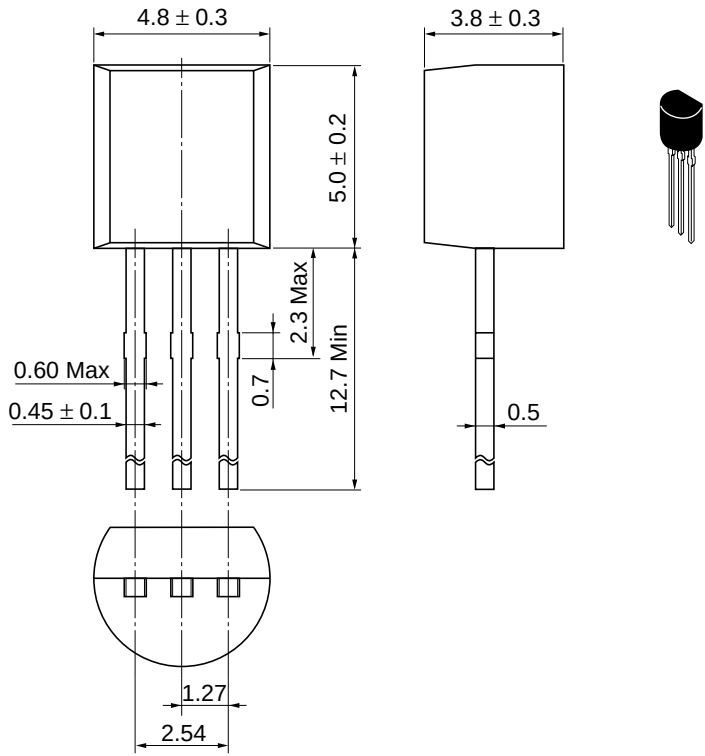
Forward Transfer Admittance vs. Collector Current



Output Admittance vs. Collector Current



Unit: mm



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

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