
2SC1342

Silicon NPN Epitaxial Planar

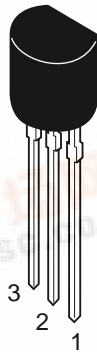
HITACHI

Application

- VHF amplifier, mixer
- Local oscillator

Outline

TO-92 (2)



1. Emitter
2. Collector
3. Base

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Absolute Maximum Ratings (Ta = 25°C)

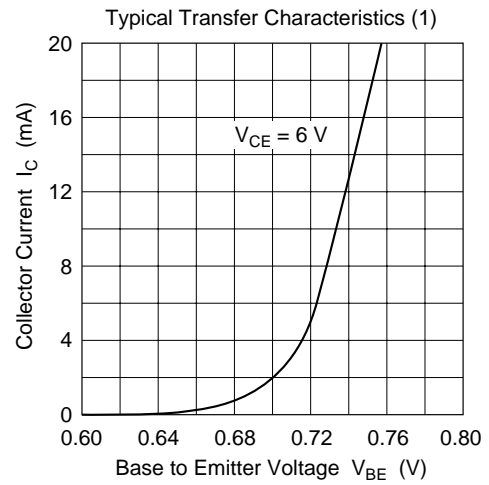
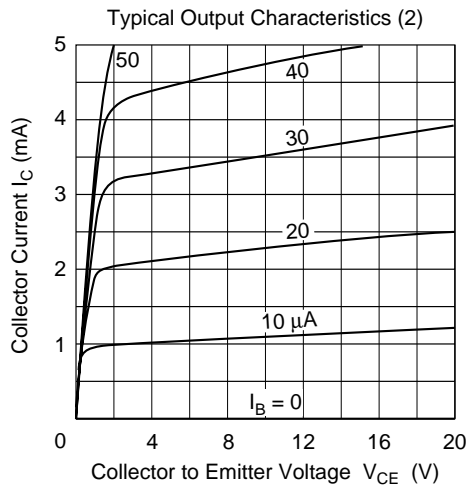
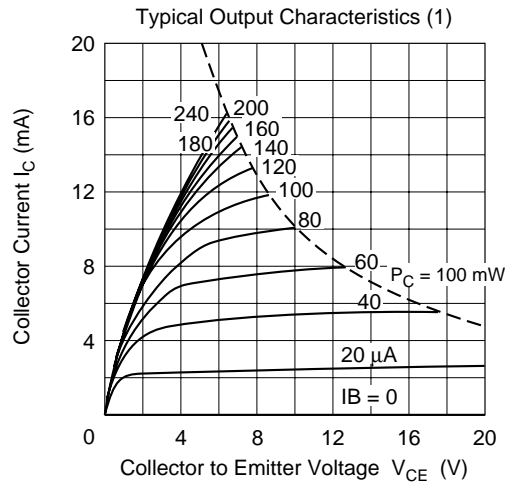
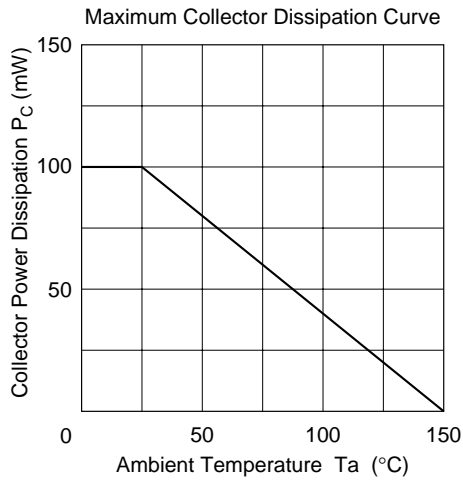
Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	30	V
Collector to emitter voltage	V_{CEO}	20	V
Emitter to base voltage	V_{EBO}	4	V
Collector current	I_C	30	mA
Collector power dissipation	P_C	100	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

Electrical Characteristics (Ta = 25°C)

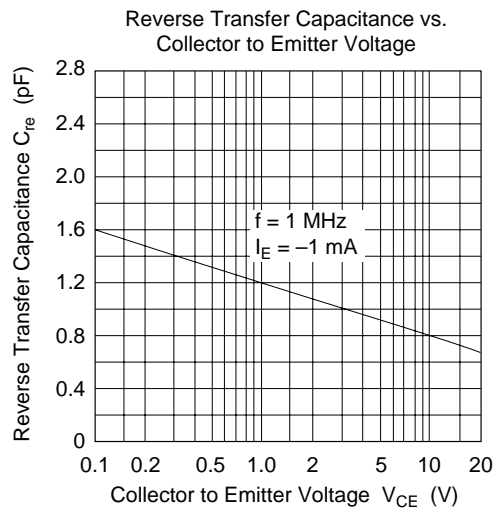
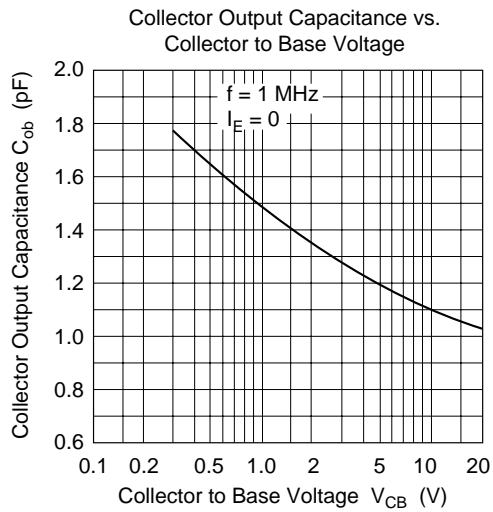
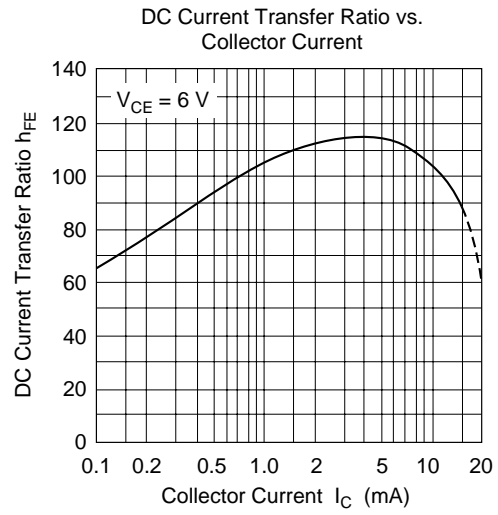
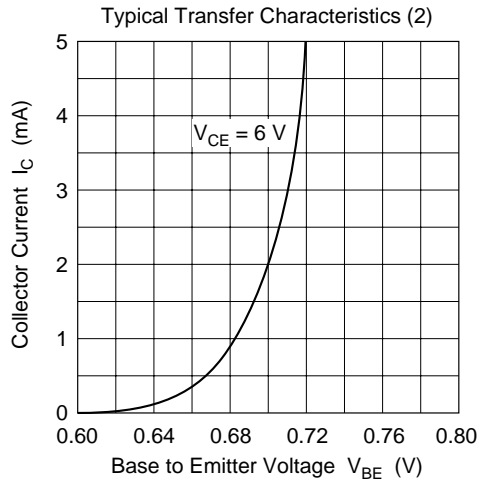
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	30	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	20	—	—	V	$I_C = 1 \text{ mA}, R_{BE} = \infty$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	4	—	—	V	$I_E = 10 \mu A, I_C = 0$
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	$V_{CE} = 6 \text{ V}, I_C = 1 \text{ mA}, f = 100 \text{ MHz}, R_g = 100 \Omega, R_L = 550 \Omega, \text{Unneutralized}$

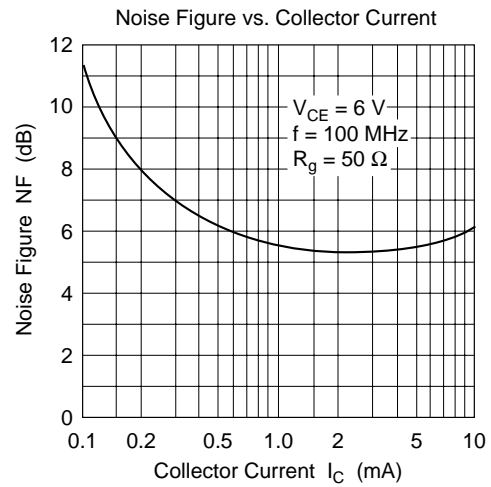
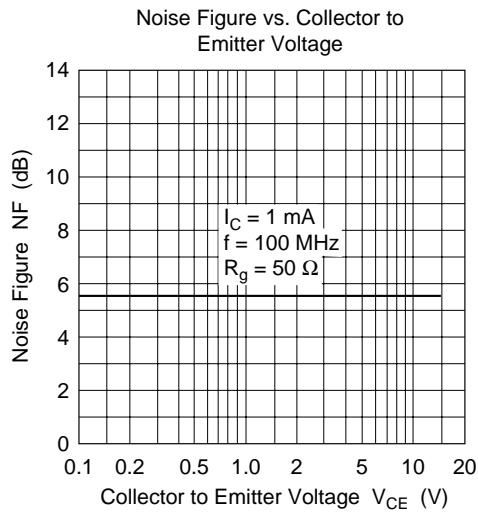
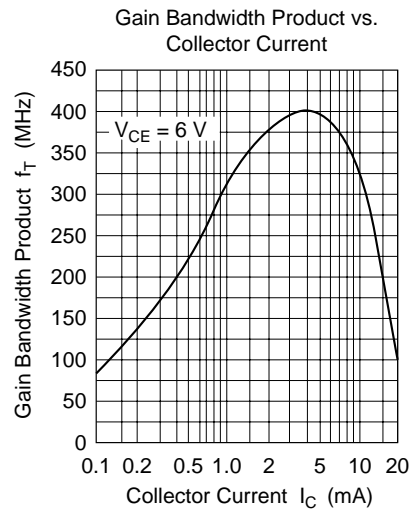
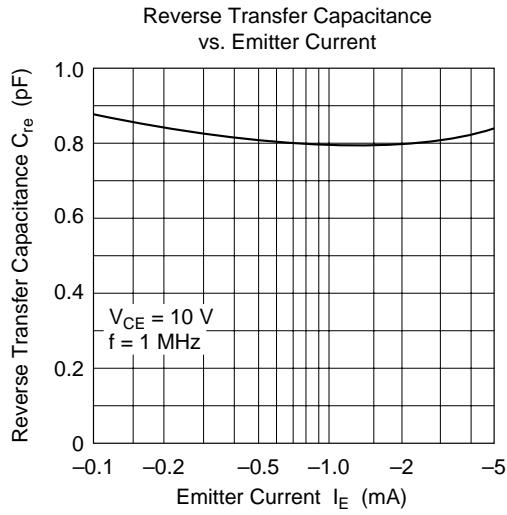
Note: 1. The 2SC1342 is grouped by h_{FE} as follows.

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

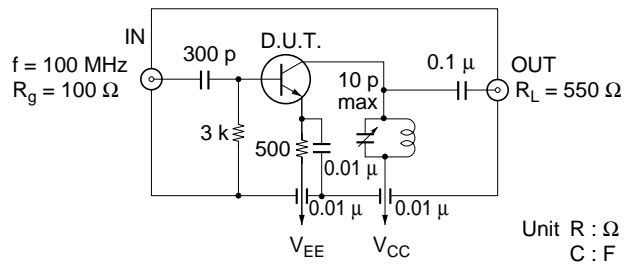


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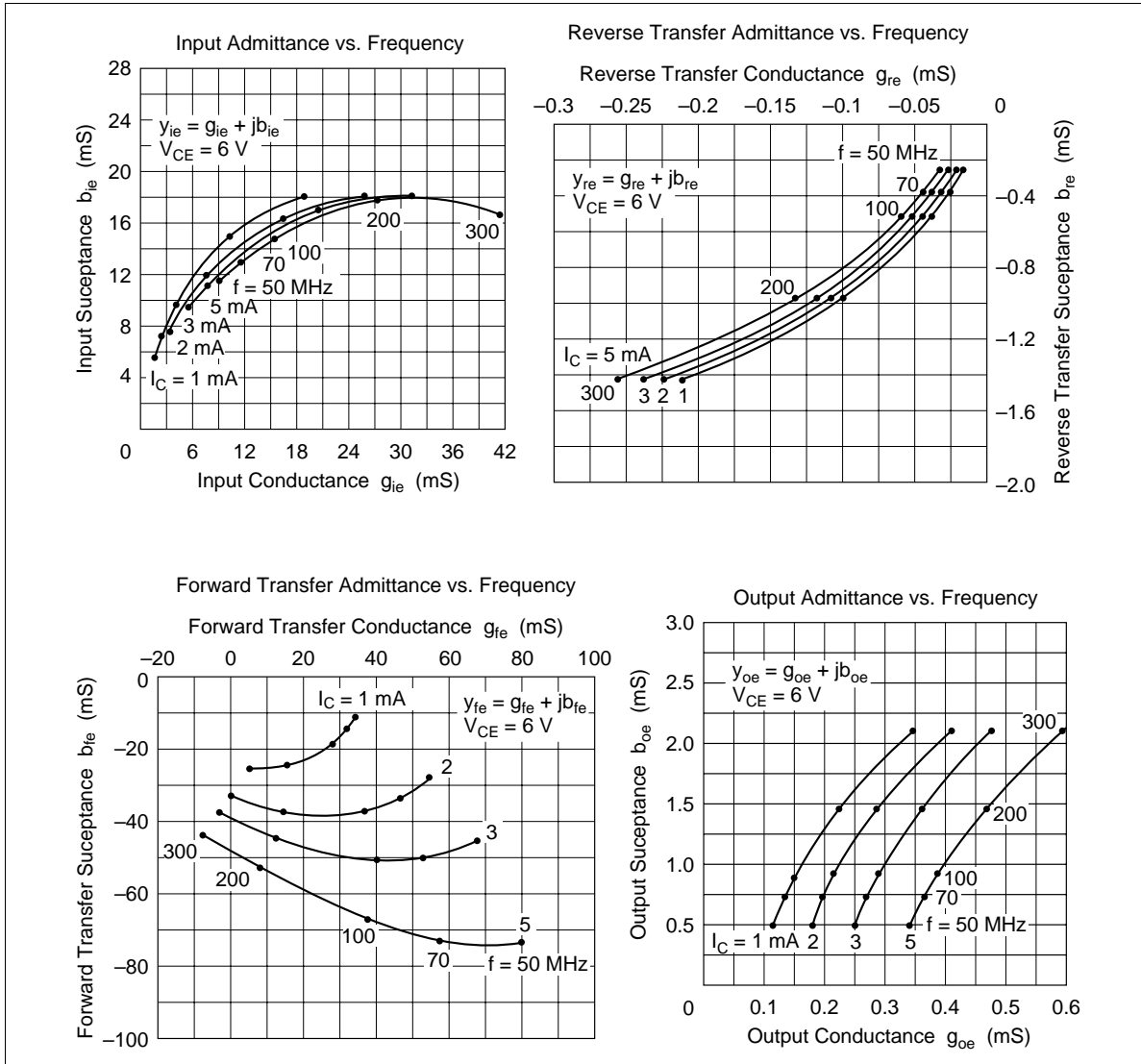
Power Gain Test Circuit

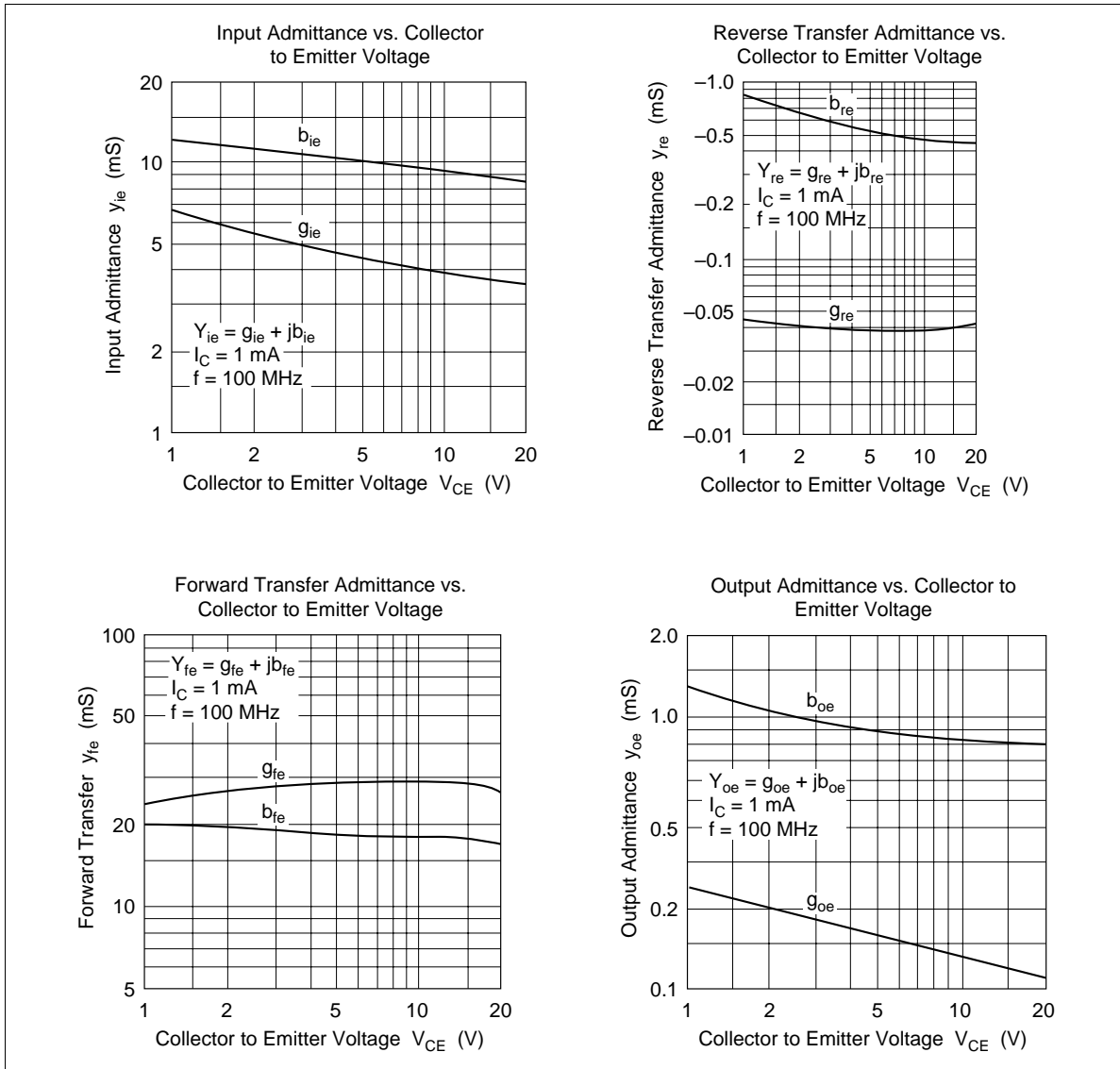


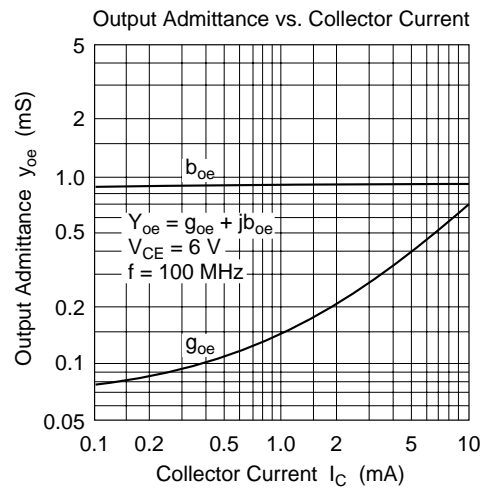
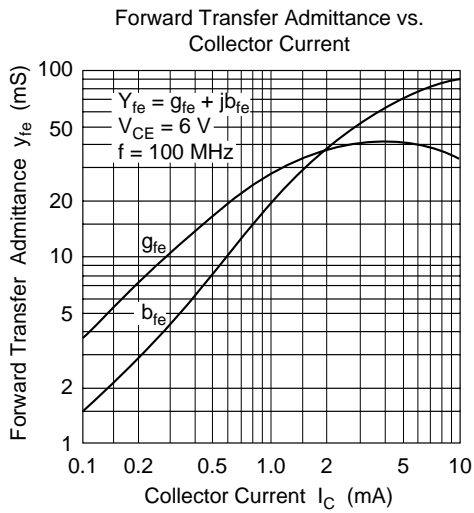
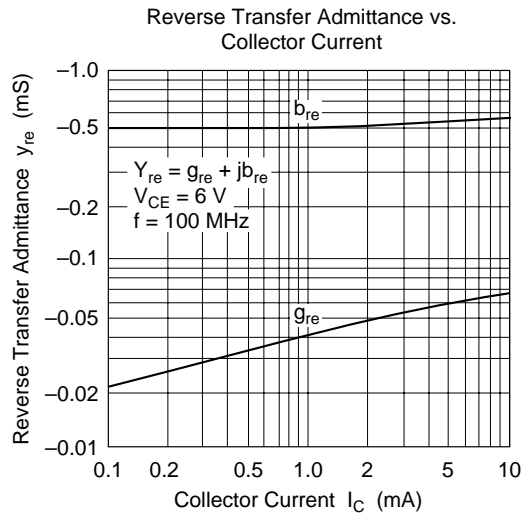
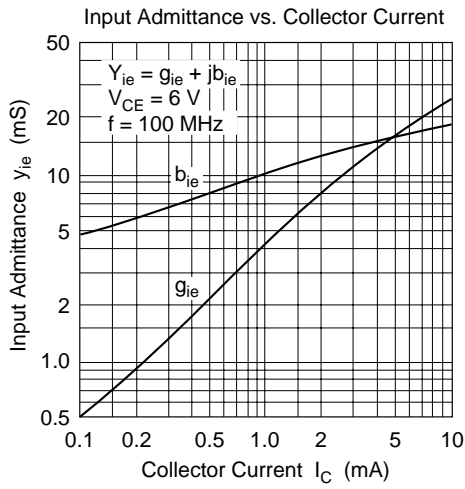
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Small Signal y Parameters ($V_{CE} = 6V$, $I_C = 1\text{ mA}$, Emitter Common $T_a = 25^\circ\text{C}$)

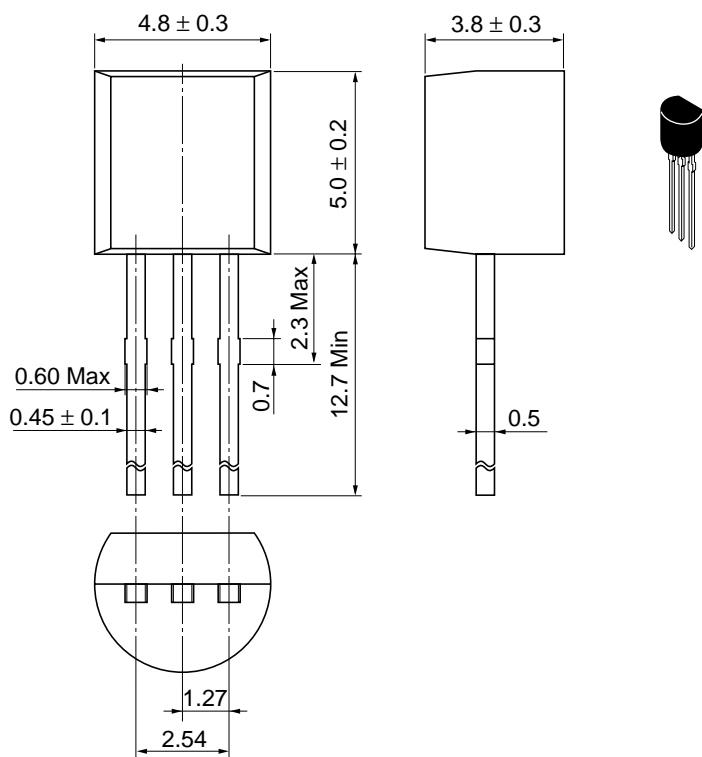
Item	Symbol	f = 50 MHz	f = 100 MHz	f = 200 MHz	Unit
Input admittance	y_{ie}	$1.8 + j5.5$	$4.3 + j9.9$	$11.5 + j15.25$	mS
Reverse transfer admittance	y_{re}	$-0.022 - j0.26$	$-0.04 - j0.52$	$-0.105 - j0.96$	
Forward transfer admittance	y_{fe}	$34 - j12$	$28 - j19$	$15.5 - j25$	
Output admittance	y_{oe}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







Unit: mm



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