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# 2SC1344, 2SC1345

Silicon NPN Epitaxial

# HITACHI

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## Application

Low frequency low noise amplifier

## Outline

TO-92 (1)



1. Emitter
2. Collector
3. Base

# 2SC1344, 2SC1345

## Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	2SC1344	2SC1345	Unit
Collector to base voltage	$V_{CBO}$	30	55	V
Collector to emitter voltage	$V_{CEO}$	30	50	V
Emitter to base voltage	$V_{EBO}$	5	5	V
Collector current	$I_C$	100	100	mA
Collector power dissipation	$P_C$	200	200	mW
Junction temperature	$T_j$	150	150	°C
Storage temperature	$T_{stg}$	-55 to +150	-55 to +150	°C

## Electrical Characteristics (Ta = 25°C)

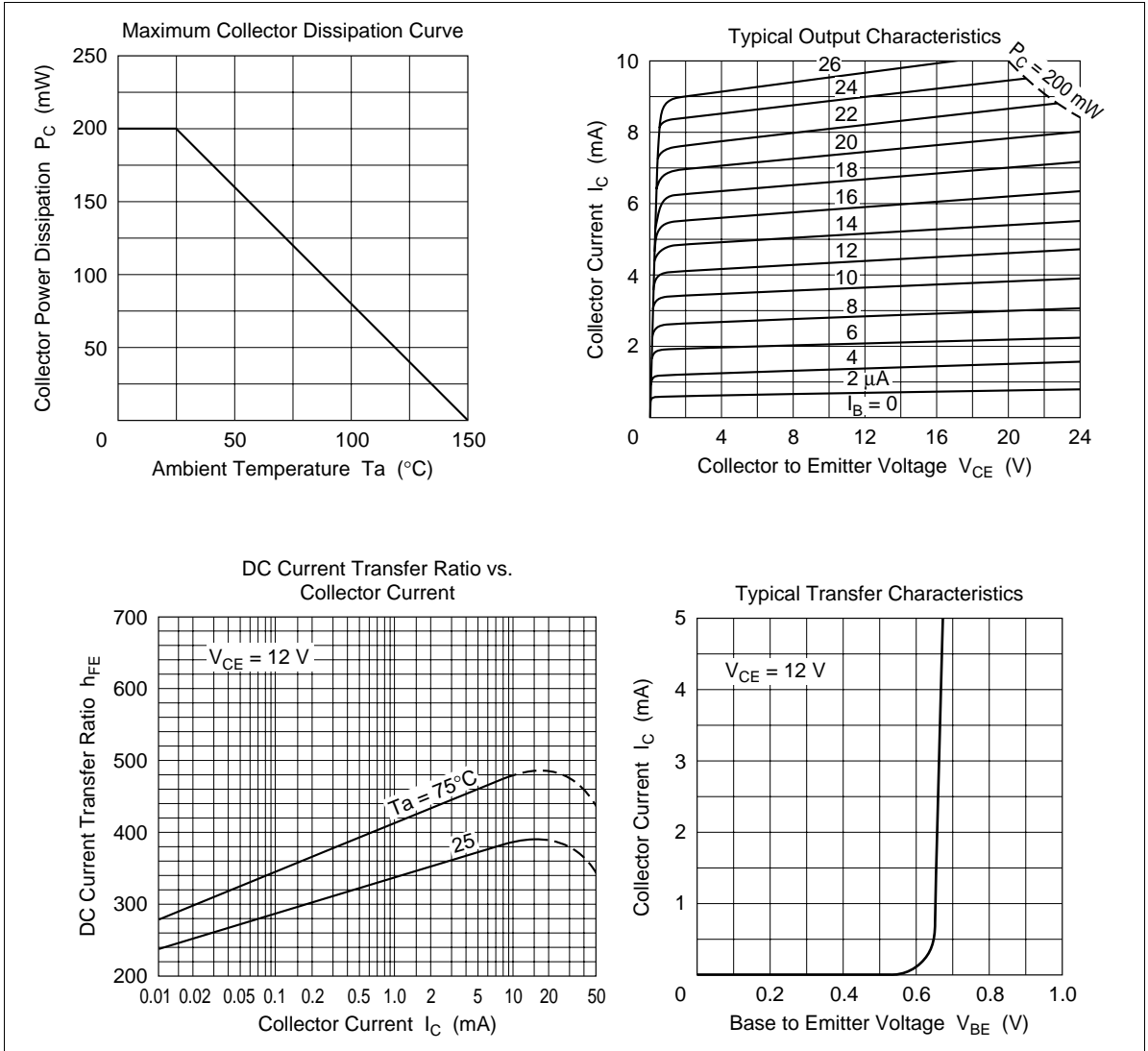
Item	Symbol	2SC1344			2SC1345			Unit	Test conditions
		Min	Typ	Max	Min	Typ	Max		
Collector to base breakdown voltage	$V_{(BR)CBO}$	30	—	—	55	—	—	V	$I_C = -10 \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	30	—	—	50	—	—	V	$I_C = 1 \text{ mA}, R_{BE} = \infty$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	5	—	—	5	—	—	V	$I_E = 10 \mu A, I_C = 0$
Collector cutoff current	$I_{CBO}$	—	—	0.5	—	—	0.5	$\mu A$	$V_{CB} = 18 \text{ V}, I_E = 0$
Emitter cutoff current	$I_{EBO}$	—	—	0.5	—	—	0.5	$\mu A$	$V_{CB} = 2 \text{ V}, I_C = 0$
DC current transfer ratio	$h_{FE}^{*1}$	250	—	1200	250	—	1200		$V_{CE} = 12 \text{ V}, I_C = 2 \text{ mA}$
Base to emitter voltage	$V_{BE}$	—	—	0.75	—	—	0.75	V	$V_{CE} = 12 \text{ V}, I_C = 2 \text{ mA}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	0.5	—	—	0.5	V	$I_C = 10 \text{ mA}, I_B = 1 \text{ mA}$
Gain bandwidth product	$f_T$	—	230	—	—	230	—	MHz	$V_{CE} = 12 \text{ V}, I_C = 2 \text{ mA}$
Collector output capacitance	$C_{ob}$	—	—	3.5	—	—	3.5	pF	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$
Noise figure	NF	—	—	8	—	—	8	dB	$V_{CE} = 6 \text{ V}, I_C = 0.1 \text{ mA}, f = 10 \text{ Hz}, R_g = 10 \text{ k}\Omega$
		—	—	1	—	—	1	dB	$V_{CE} = 6 \text{ V}, I_C = 0.1 \text{ mA}, f = 1 \text{ kHz}, R_g = 10 \text{ k}\Omega$

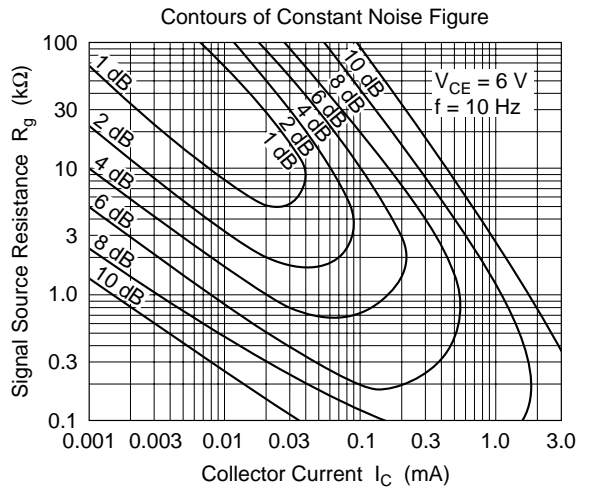
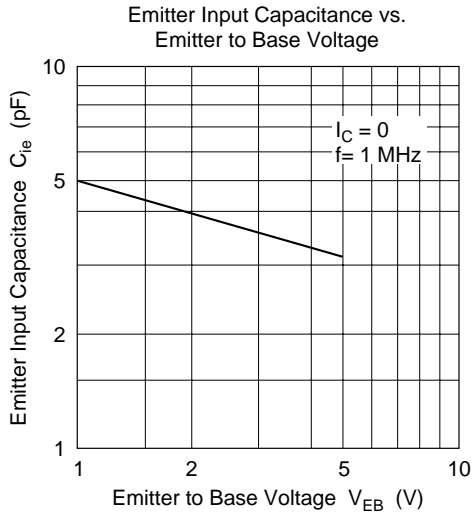
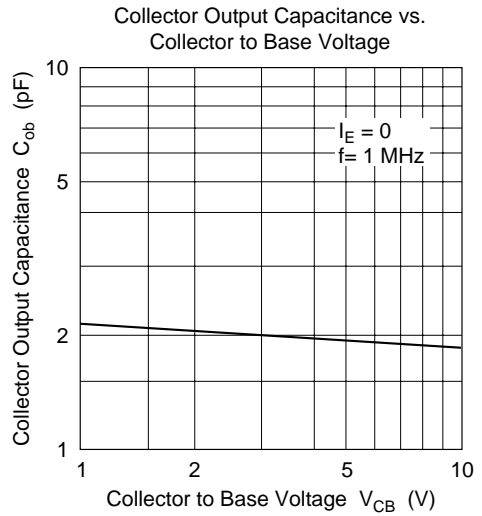
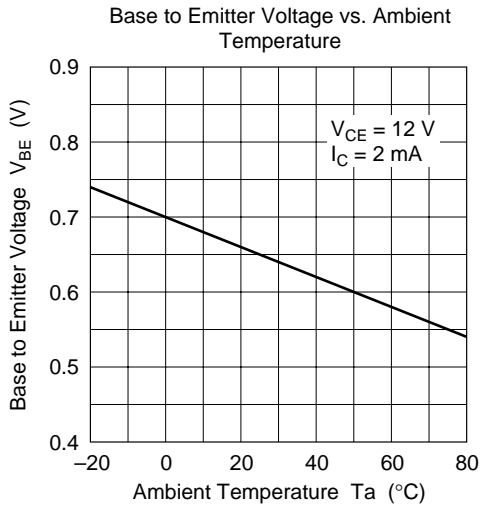
Note: 1. The 2SC1344 and 2SC1345 are grouped by  $h_{FE}$  as follows.

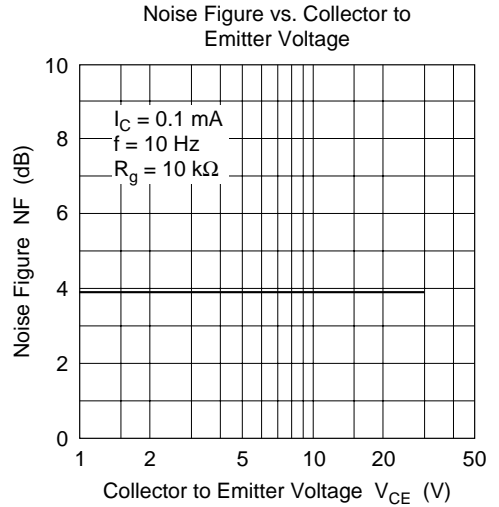
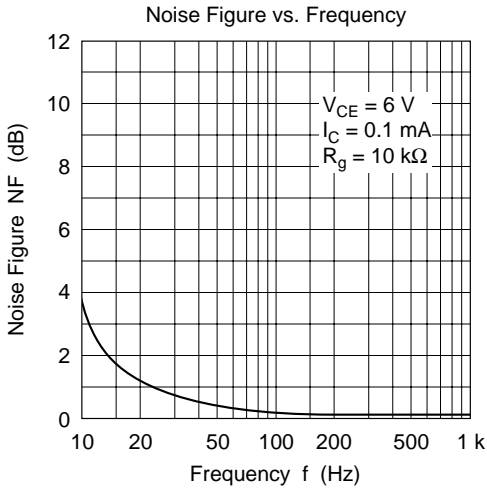
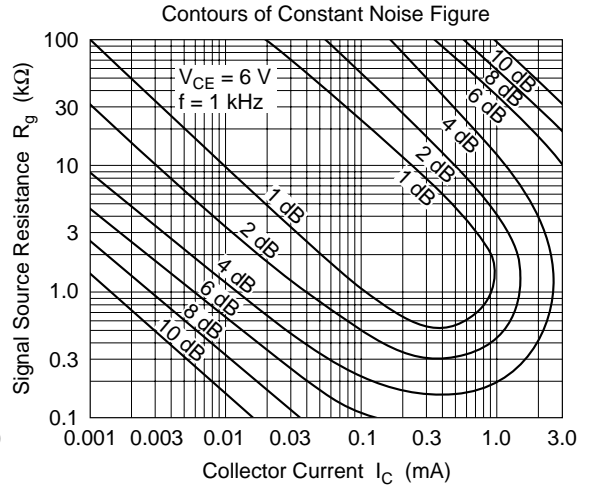
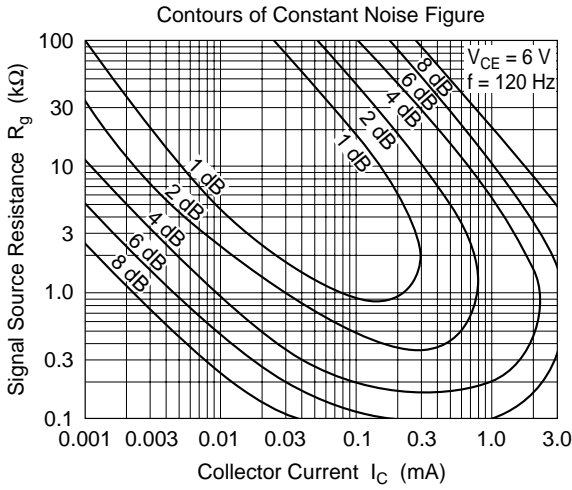
D	E	F
250 to 500	400 to 800	600 to 1200

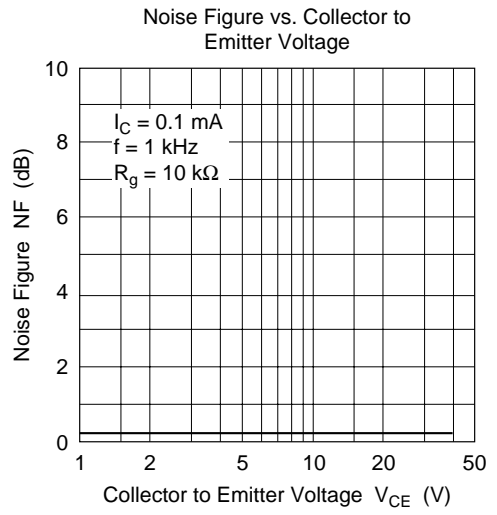
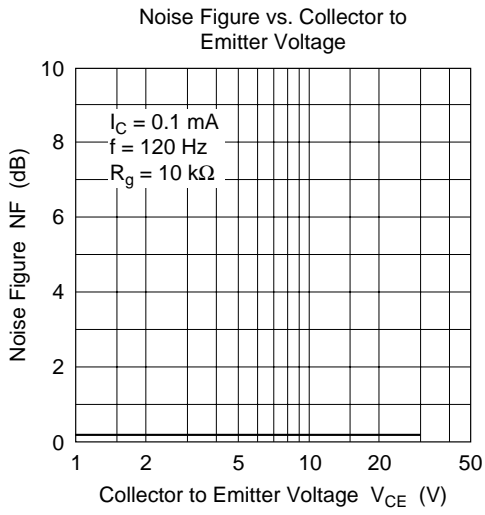
**Small Signal h Parameters** ( $V_{CE} = 5V$ ,  $I_C = 0.1 \text{ mA}$ ,  $f = 270 \text{ Hz}$ ,  $T_a = 25^\circ\text{C}$ , Emitter common)

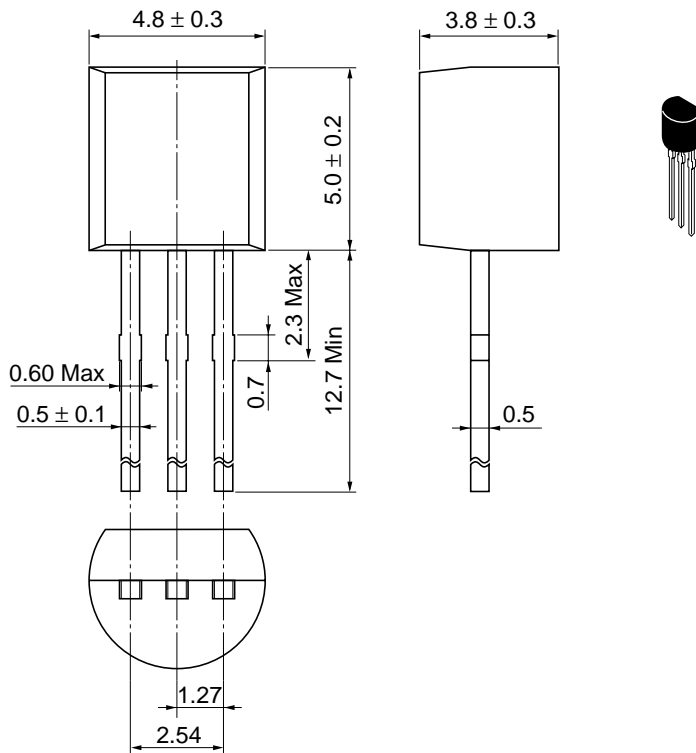
Item	Symbol	D	E	F	Unit
Input impedance	hie	110	170	240	kΩ
Voltage feedback ratio	hre	9.5	14.5	16	$\times 10^{-4}$
Current transfer ratio	hfe	340	540	825	
Output admittance	hoe	12.0	12.5	13.5	μS











Hitachi Code	TO-92 (1)
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	0.25 g

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