2SC1344, 2SC1345

Silicon NPN Epitaxial

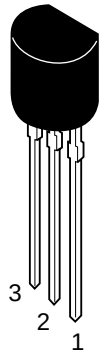
HITACHI

Application

Low frequency low noise amplifier

Outline

TO-92 (1)



1. Emitter
2. Collector
3. Base

Hitachi semiconductor

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

Electrical Characteristics (Ta = 25°C)

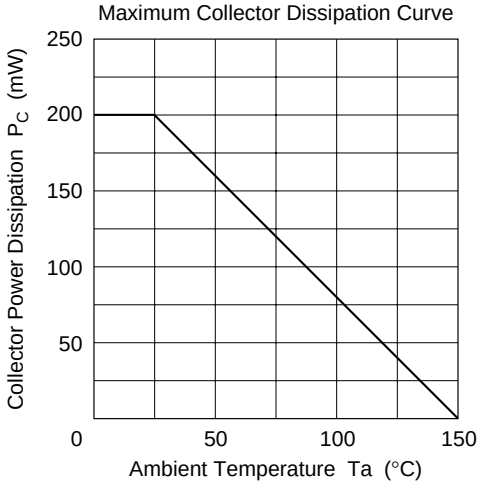
		2SC1344			2SC1345				
Item	Symbol	Min	Typ	Max	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	30	—	—	55	—	—	V	I_C = –10 µA, I_E = 0
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	30	—	—	50	—	—	V	I_C = 1 mA, R_{BE} = ∞
Emitter to base breakdown voltage	$V_{(BR)EBO}$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

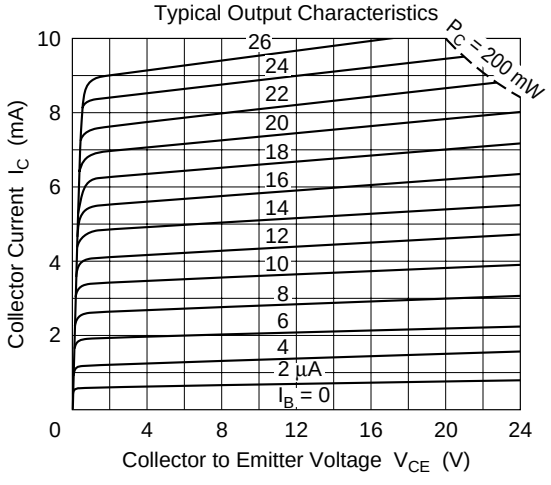
Note: 1. The 2SC1344 and 2SC1345 are grouped by h_{FE} as follows.

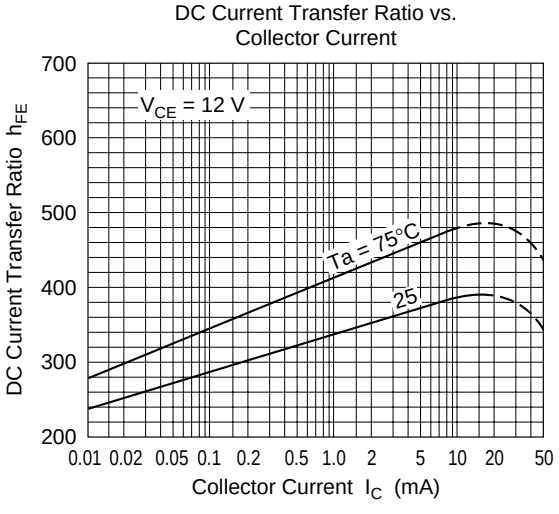
D	E	F
250 to 500	400 to 800	600 to 1200

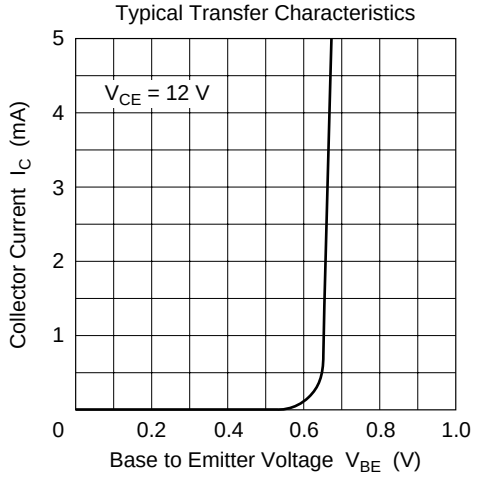
Small Signal h Parameters (V_{CE} = 5V, I_C = 0.1 mA, f = 270 Hz, Ta = 25°C, Emitter common)

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

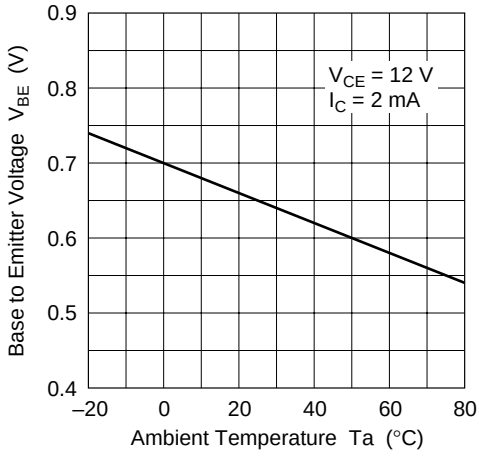




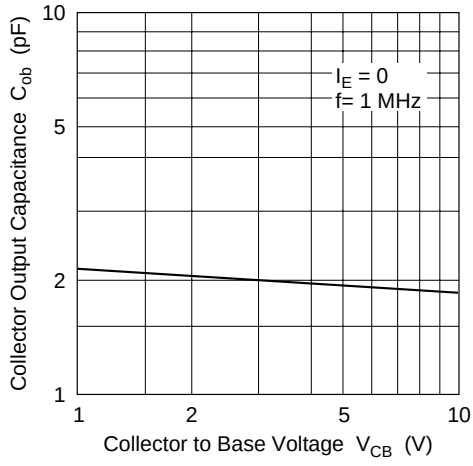




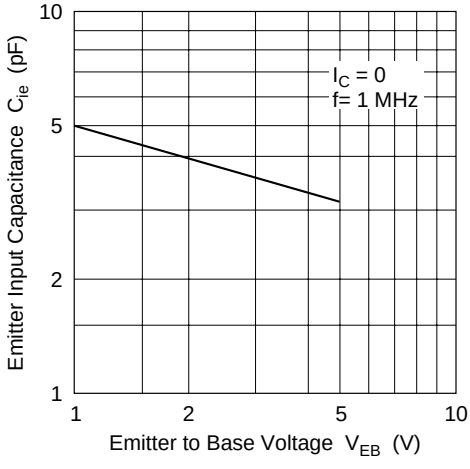
Base to Emitter Voltage vs. Ambient Temperature



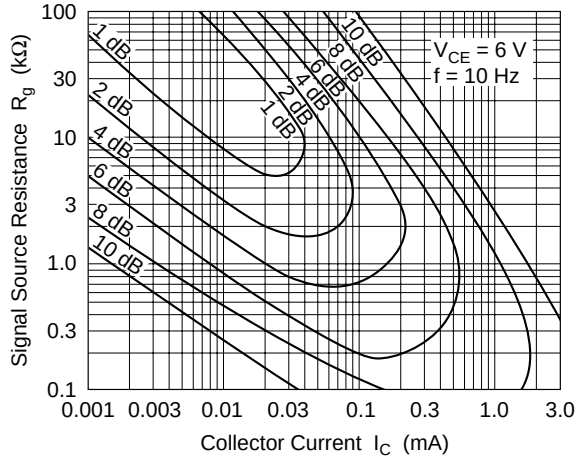
Collector Output Capacitance vs. Collector to Base Voltage



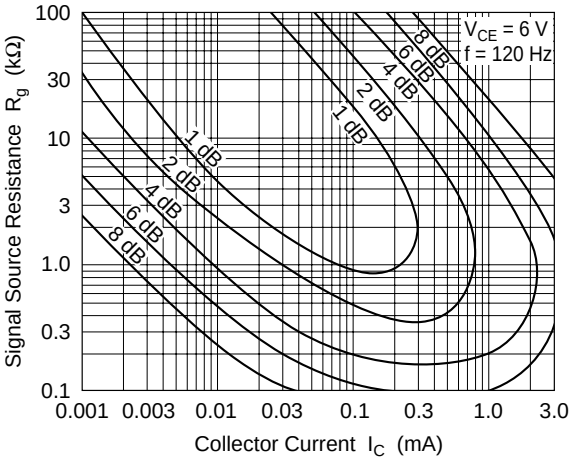
Emitter Input Capacitance vs. Emitter to Base Voltage



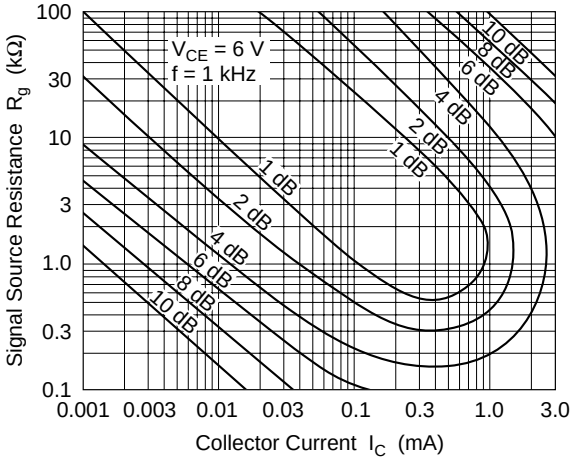
Contours of Constant Noise Figure



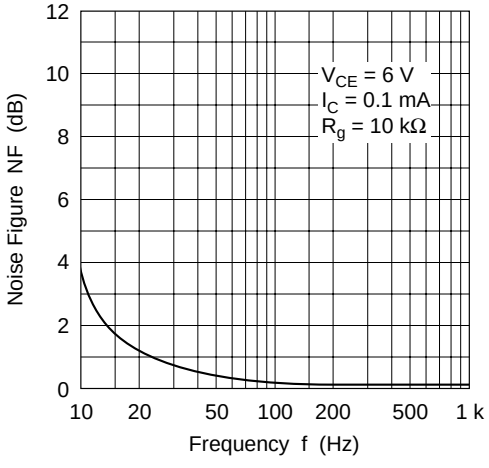
Contours of Constant Noise Figure



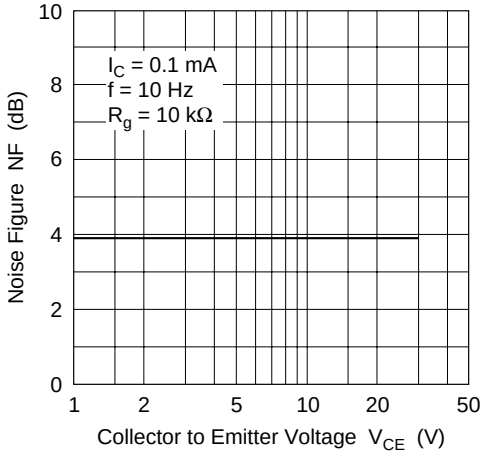
Contours of Constant Noise Figure



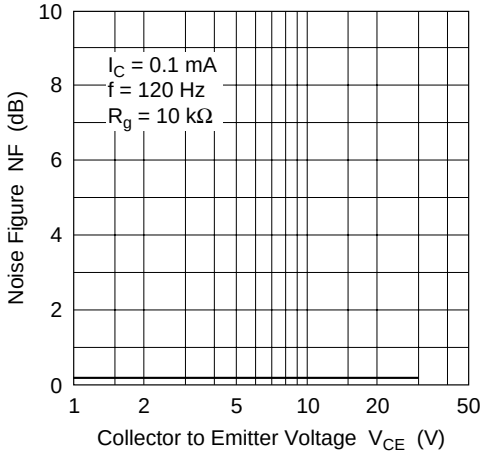
Noise Figure vs. Frequency



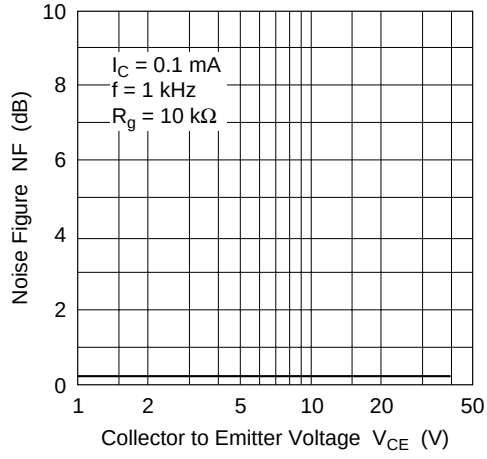
Noise Figure vs. Collector to Emitter Voltage



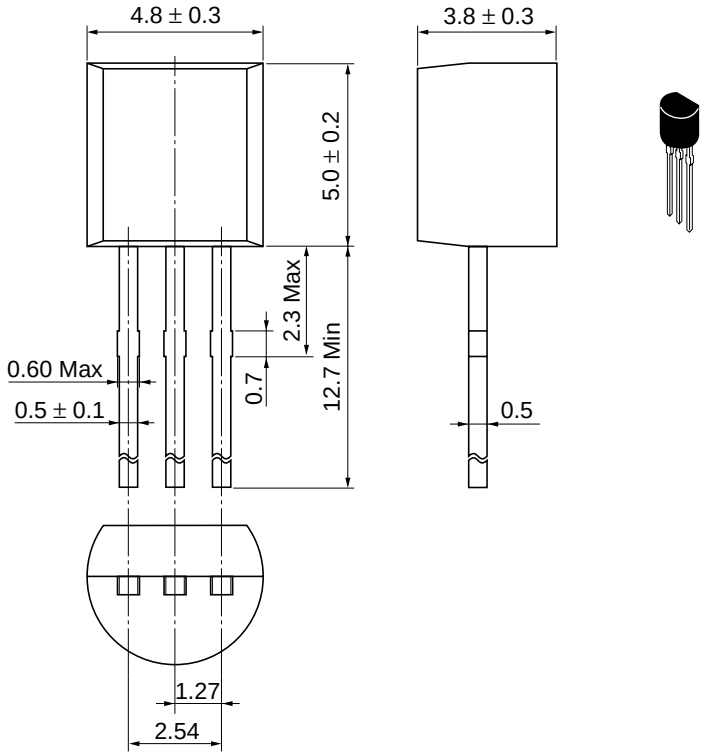
Noise Figure vs. Collector to Emitter Voltage



Noise Figure vs. Collector to Emitter Voltage



Unit: mm



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

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HITACHI

Hitachi, Ltd.
Semiconductor & Integrated Circuits.
Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan
Tel: Tokyo (03) 3270-2111 Fax: (03) 3270-5109

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For further information write to:

Hitachi Semiconductor
(America) Inc.
179 East Tasman Drive,
San Jose,CA 95134
Tel: <1> (408) 433-1990
Fax: <1>(408) 433-0223

Hitachi Europe GmbH
Electronic components Group
Dornacher Straße 3
D-85622 Feldkirchen, Munich
Germany
Tel: <49> (89) 9 9180-0
Fax: <49> (89) 9 29 30 00

Hitachi Europe Ltd.
Electronic Components Group.
Whitebrook Park
Lower Cookham Road
Maidenhead
Berkshire SL6 8YA, United Kingdom
Tel: <44> (1628) 585000
Fax: <44> (1628) 778322

Hitachi Asia Pte. Ltd.
16 Collyer Quay #20-00
Hitachi Tower
Singapore 049318
Tel: 535-2100
Fax: 535-1533

Hitachi Asia Ltd.
Taipei Branch Office
3F, Hung Kuo Building. No.167,
Tun-Hwa North Road, Taipei (105)
Tel: <886> (2) 2718-3666
Fax: <886> (2) 2718-8180

Hitachi Asia (Hong Kong) Ltd.
Group III (Electronic Components)
7/F., North Tower, World Finance Centre,
Harbour City, Canton Road, Tsim Sha Tsui,
Kowloon, Hong Kong
Tel: <852> (2) 735 9218
Fax: <852> (2) 730 0281
Telex: 40815 HITEC HX

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