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# 2SA1083, 2SA1084, 2SA1085

Silicon PNP Epitaxial

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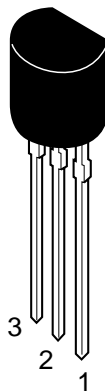
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## Application

- Low frequency low noise amplifier
- Complementary pair with 2SC2545, 2SC2546 and 2SC2547

## Outline

TO-92 (1)



1. Emitter
2. Collector
3. Base

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## 2SA1083, 2SA1084, 2SA1085

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

Item	Symbol	2SA1083	2SA1084	2SA1085	Unit
Collector to base voltage	$V_{CBO}$	-60	-90	-120	V
Collector to emitter voltage	$V_{CEO}$	-60	-90	-120	V
Emitter to base voltage	$V_{EBO}$	-5	-5	-5	V
Collector current	$I_C$	-100	-100	-100	mA
Emitter current	$I_E$	100	100	100	mA
Collector power dissipation	$P_C$	400	400	400	mW
Junction temperature	$T_j$	150	150	150	°C
Storage temperature	$T_{stg}$	-55 to +150	-55 to +150	-55 to +150	°C

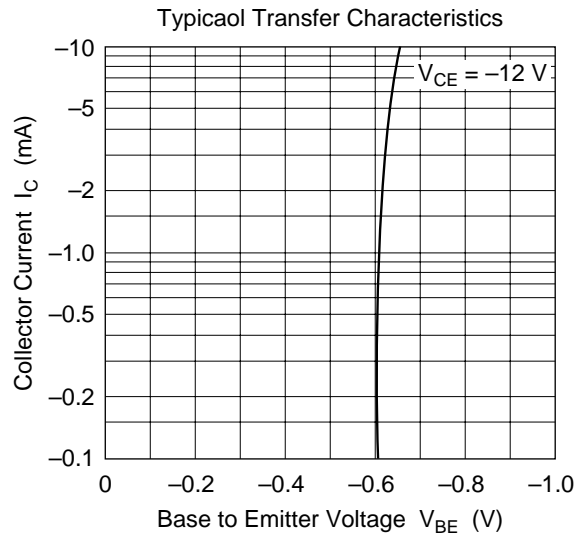
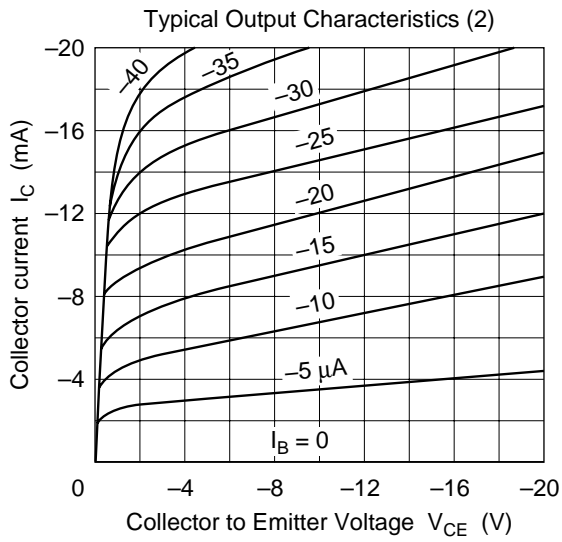
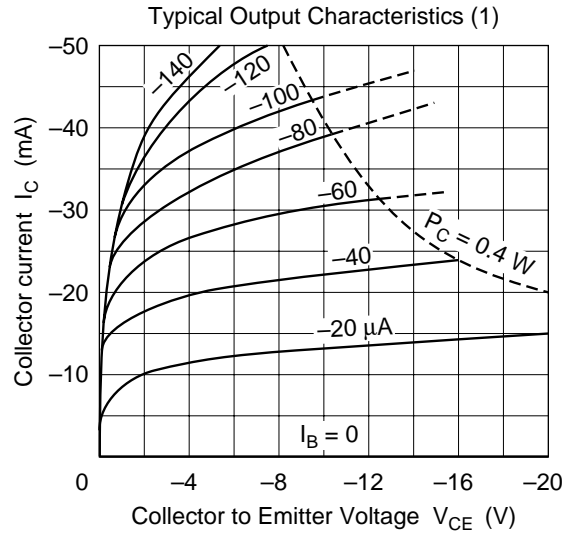
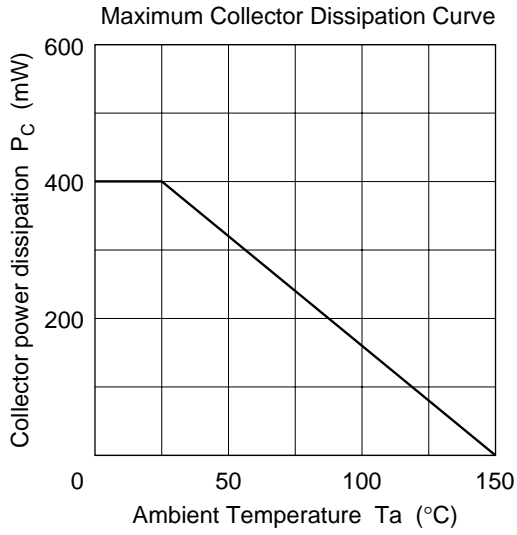
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## Electrical Characteristics (Ta = 25°C)

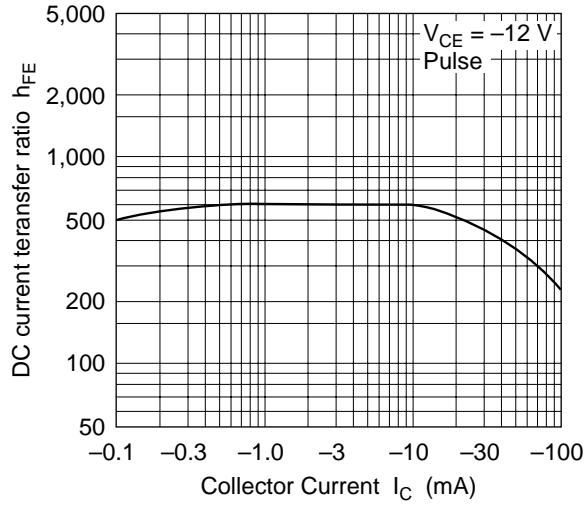
Item	Symbol	2SA1083			2SA1084			2SA1085			Unit	Test conditions
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max		
Collector to base breakdown voltage	$V_{(BR)CBO}$	-60	—	—	-90	—	—	-120	—	—	V	$I_C = -10 \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	-60	—	—	-90	—	—	-120	—	—	V	$I_C = -1 \text{ mA}, R_{BE} = \infty$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	-5	—	—	-5	—	—	-5	—	—	V	$I_E = -10 \mu A, I_C = 0$
Collector cutoff current	$I_{CBO}$	—	—	-0.1	—	—	-0.1	—	—	-0.1	$\mu A$	$V_{CB} = -50 \text{ V}, I_E = 0$
Emitter cutoff current	$I_{EBO}$	—	—	-0.1	—	—	-0.1	—	—	-0.1	$\mu A$	$V_{EB} = -2 \text{ V}, I_C = 0$
DC current transfer ratio	$h_{FE}^{*1}$	250	—	800	250	—	800	250	—	800		$V_{CE} = -12 \text{ V}, I_C = -2 \text{ mA}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	-0.2	—	—	-0.2	—	—	-0.2	V	$I_C = -10 \text{ mA}, I_B = -1 \text{ mA}$
Base to emitter voltage	$V_{BE}$	—	-0.6	—	—	-0.6	—	—	-0.6	—	V	$V_{CE} = -12 \text{ V}, I_C = -2 \text{ mA}$
Gain bandwidth product	$f_T$	—	90	—	—	90	—	—	90	—	MHz	$V_{CE} = -12 \text{ V}, I_C = -2 \text{ mA}$
Collector output capacitance	$C_{ob}$	—	3.5	—	—	3.5	—	—	3.5	—	pF	$V_{CB} = -10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$
Noise voltage referred to input	$e_n$	—	0.5	—	—	0.5	—	—	0.5	—	nV/ $\sqrt{\text{Hz}}$	$V_{CE} = -6 \text{ V}, I_C = -10 \text{ mA}, f = 1 \text{ kHz}, R_g = 0, \Delta f = 1 \text{ Hz}$

Note: 1. The 2SA1083, 2SA1084 and 2SA1085 are grouped by  $h_{FE}$  as follows.

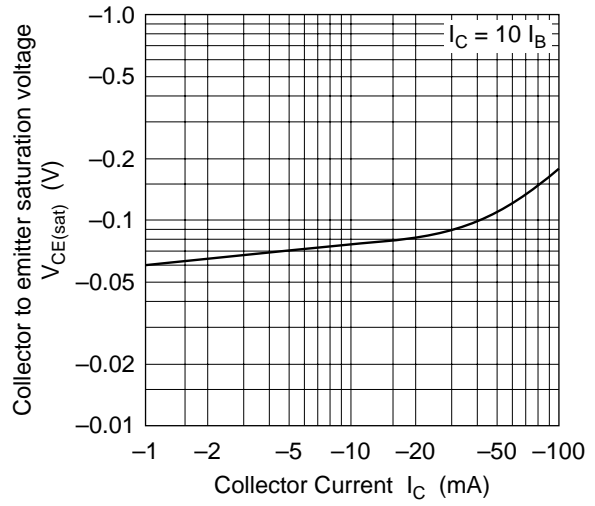
D	E
250 to 500	400 to 800



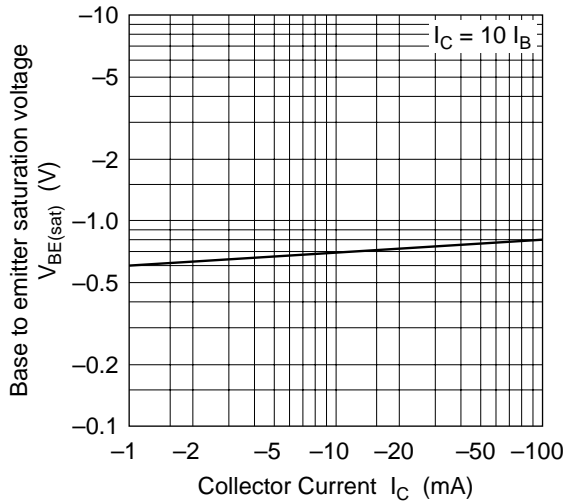
DC Current Transfer Ratio vs. Collector Current



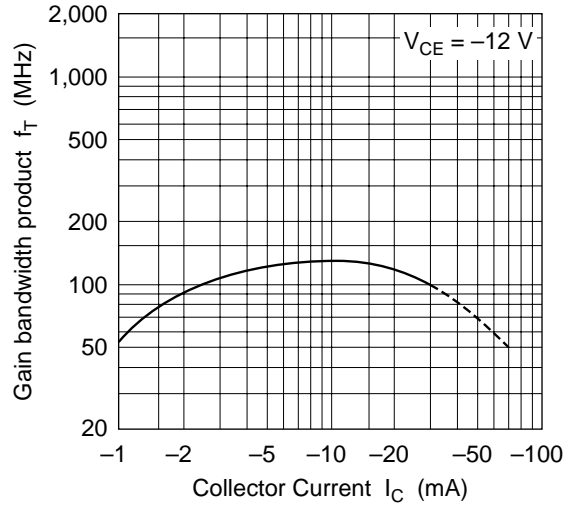
Collector to Emitter Saturation Voltage vs. Collector Current



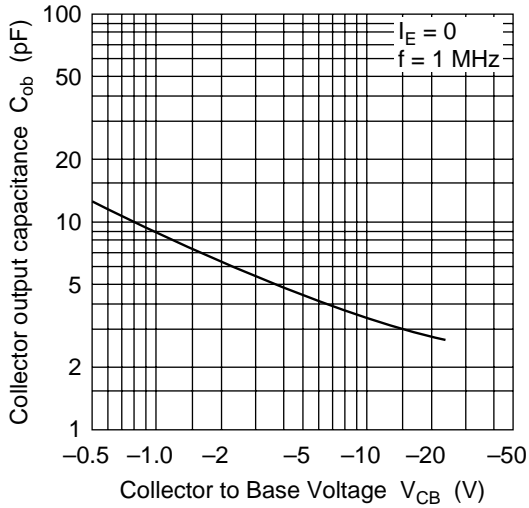
Base to Emitter Saturation Voltage vs. Collector Current



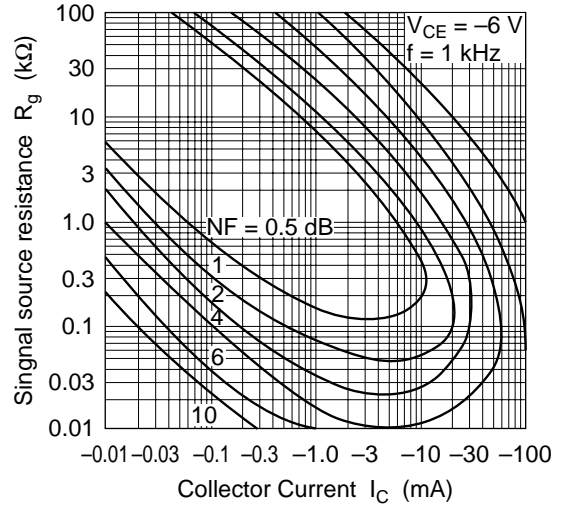
Gain Bandwidth Product vs. Collector Current



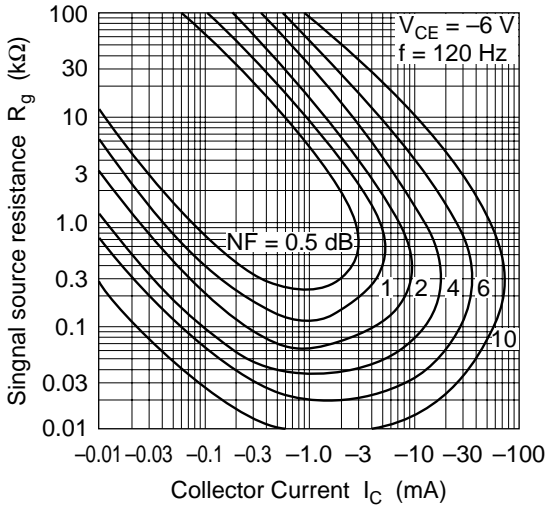
Collector Output Capacitance vs. Collector to Base Voltage



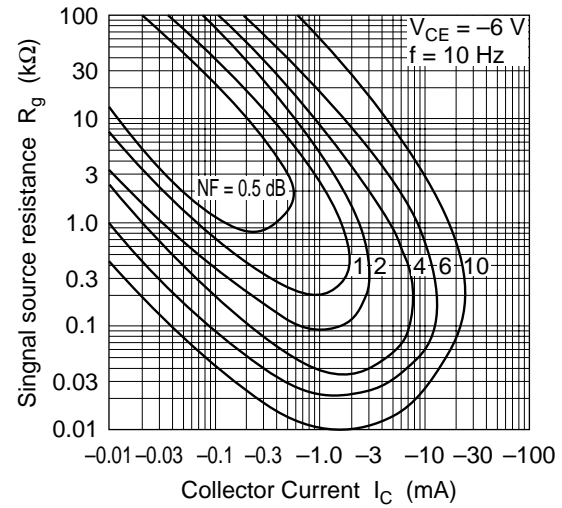
Contours of Constant Noise Figure (1)



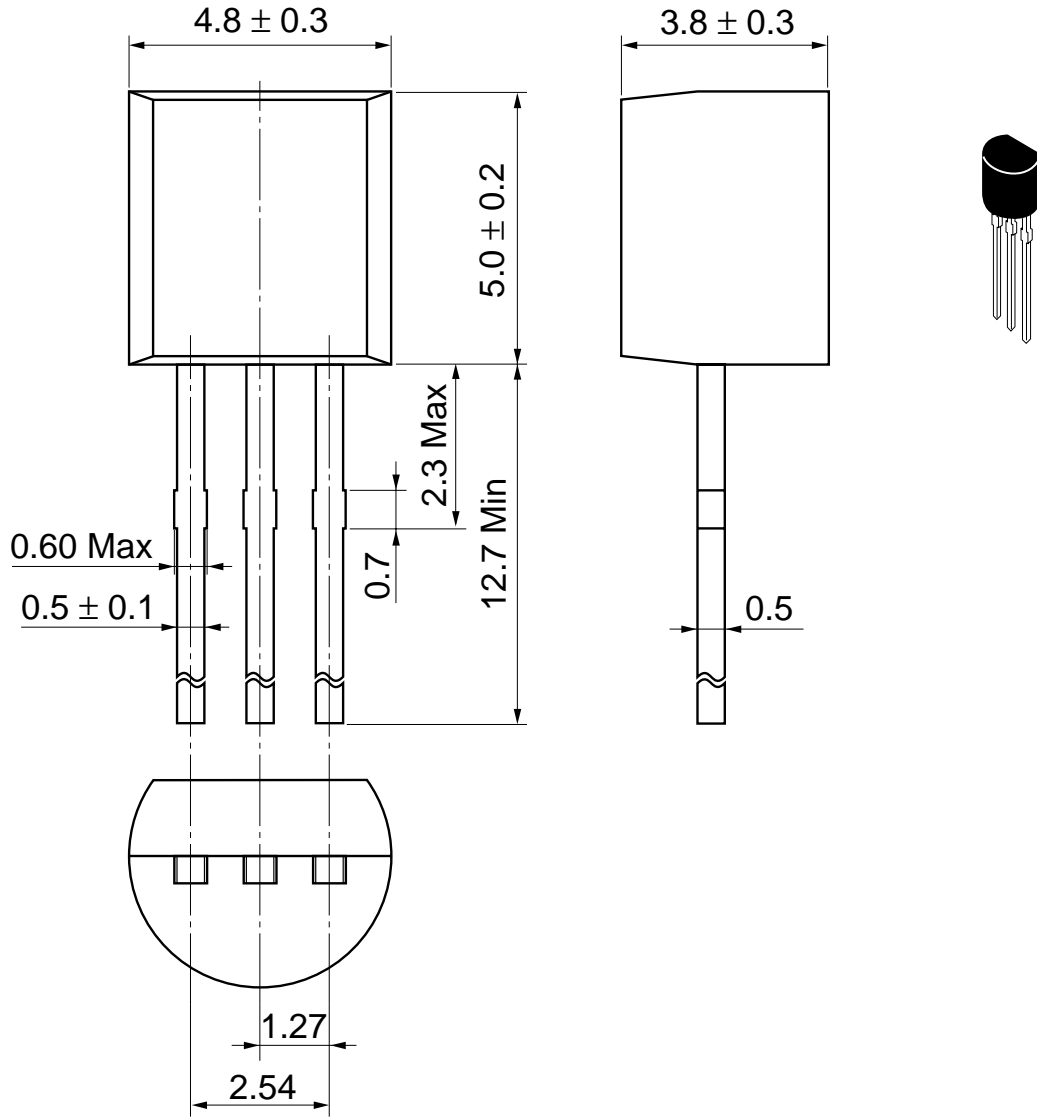
Contours of Constant Noise Figure (2)



Contours of Constant Noise Figure (3)



Unit: mm



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

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