

2SA1190, 2SA1191

Silicon PNP Epitaxial

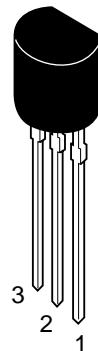
HITACHI

Application

- Low frequency low noise amplifier
- Complementary pair with 2SC2855 and 2SC2856

Outline

TO-92 (1)



1. Emitter
2. Collector
3. Base

2SA1190, 2SA1191

Absolute Maximum Ratings (Ta = 25°C)

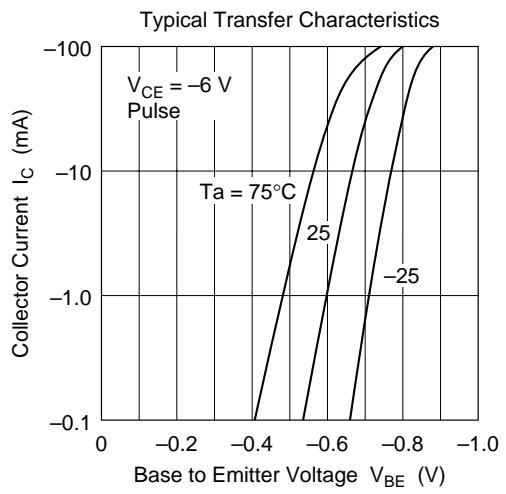
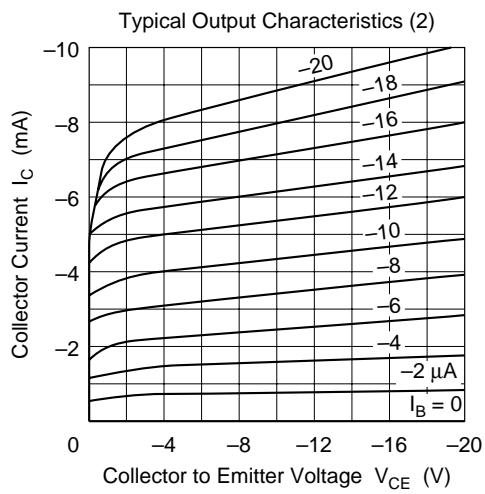
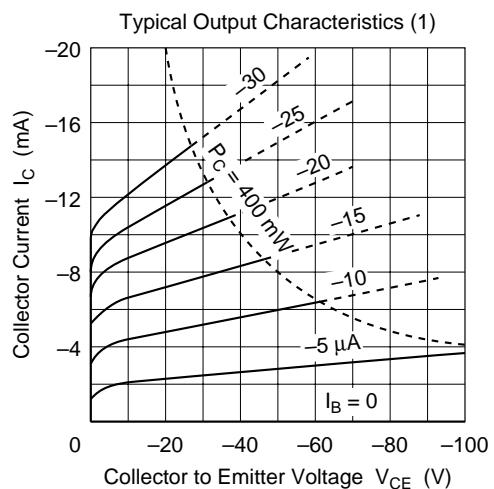
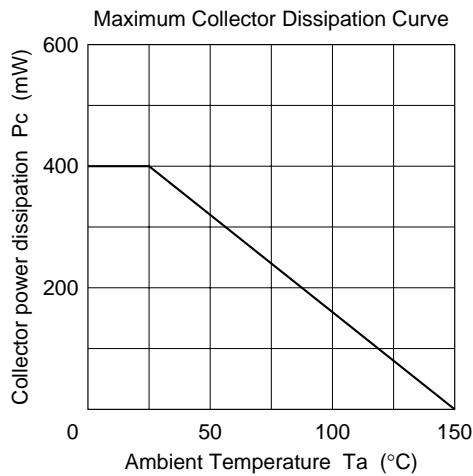
Item	Symbol	2SA1190	2SA1191	Unit
Collector to base voltage	V _{CBO}	-90	-120	V
Collector to emitter voltage	V _{CBO}	-90	-120	V
Emitter to base voltage	V _{EBO}	-5	-5	V
Collector current	I _C	-100	-100	mA
Emitter current	I _E	100	100	mA
Collector power dissipation	P _C	400	400	mW
Junction temperature	T _J	150	150	°C
Storage temperature	T _{STG}	-55 to +150	-55 to +150	°C

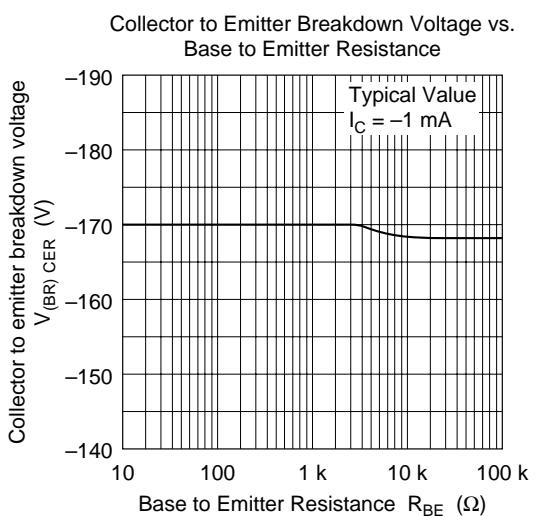
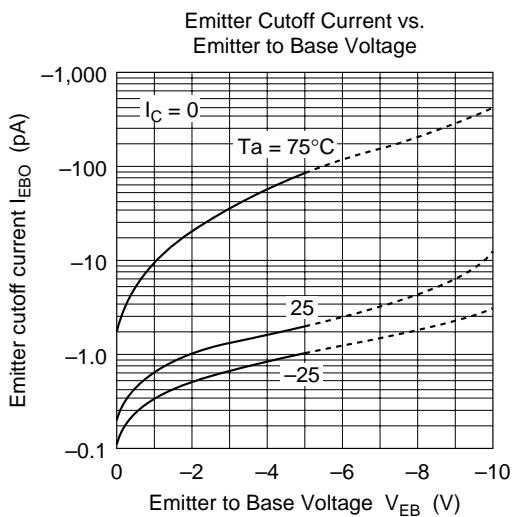
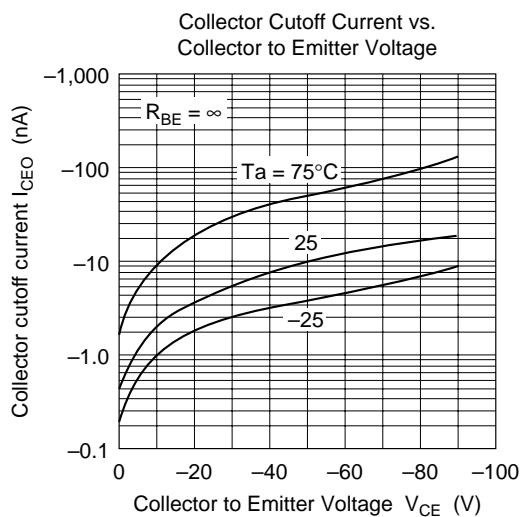
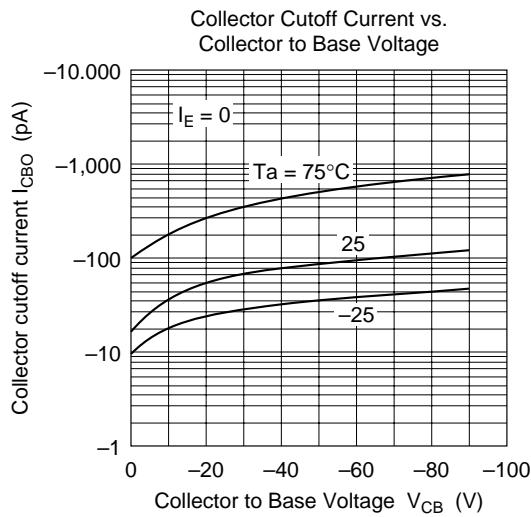
Electrical Characteristics (Ta = 25°C)

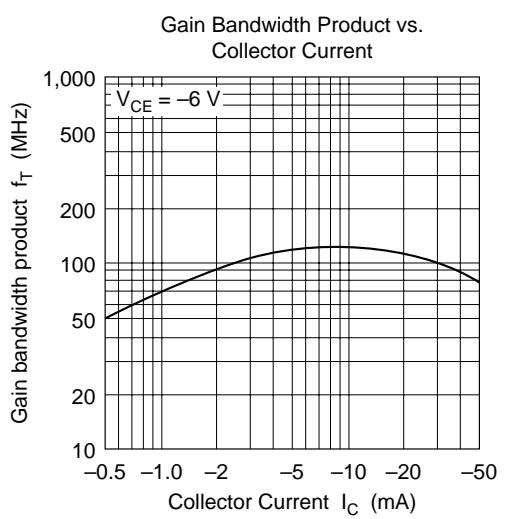
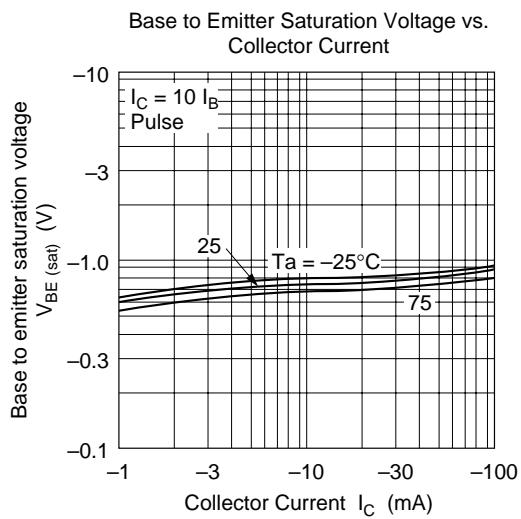
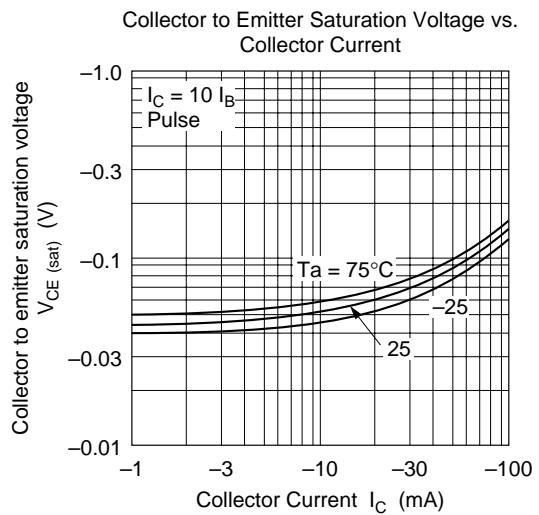
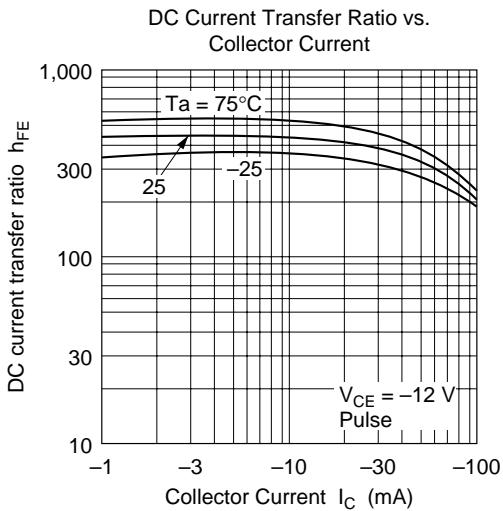
Item	Symbol	2SA1190			2SA1191			Unit	Test conditions
		Min	Typ	Max	Min	Typ	Max		
Collector to base breakdown voltage	V _{(BR)CBO}	-90	—	—	-120	—	—	V	I _C = -10 µA, I _E = 0
Collector to emitter breakdown voltage	V _{(BR)CEO}	-90	—	—	-120	—	—	V	I _C = -1 mA, R _{BE} = ∞
Emitter to base breakdown voltage	V _{(BR)EBO}	-5	—	—	-5	—	—	V	I _E = -10 µA, I _C = 0
Collector cutoff current	I _{CBO}	—	—	-0.1	—	—	-0.1	µA	V _{CB} = -70 V, I _E = 0
Emitter cutoff current	I _{EBO}	—	—	-0.1	—	—	-0.1	µA	V _{EB} = -2 V, I _C = 0
DC current transfer ratio	h _{FE} ^{*1}	250	—	800	250	—	800		V _{CE} = -12 V, I _C = -2 mA ^{*2}
Collector to emitter saturation voltage	V _{CE(sat)}	—	-0.05	-0.15	—	-0.05	-0.15	V	I _C = -10 mA, I _B = -1 mA ^{*2}
Base to emitter saturation voltage	V _{BE(sat)}	—	-0.7	-1.0	—	-0.7	-1.0	V	
Gain bandwidth product	f _T	—	130	—	—	130	—	MHz	V _{CE} = -6 V, I _C = -10 mA
Collector output capacitance	C _{ob}	—	3.2	—	—	3.2	—	pF	V _{CB} = -10 V, I _E = 0, f = 1 MHz
Noise figure	NF	—	0.15	1.5	—	0.15	1.5	dB	V _{CE} = -6 V, I _C = -0.1 mA, R _g = 10 kΩ f = 1 kHz
		—	0.2	2.0	—	0.2	2.0	dB	V _{CE} = -6 V, I _C = -0.1 mA, R _g = 10 kΩ f = 10 Hz
Noise voltage referred to input	e _n	—	0.7	—	—	0.7	—	nV/√Hz	V _{CB} = -6 V, I _C = -10 mA, R _g = 0, f = 1 kHz

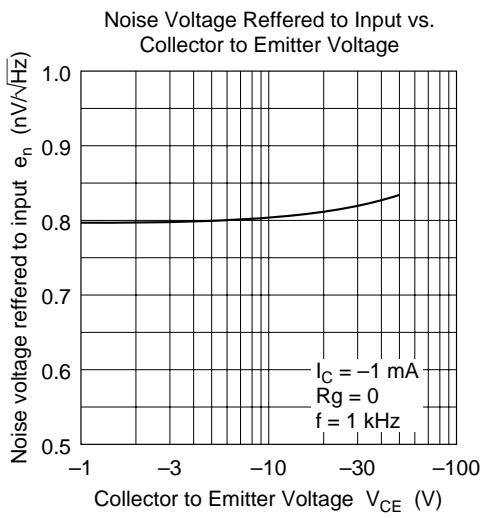
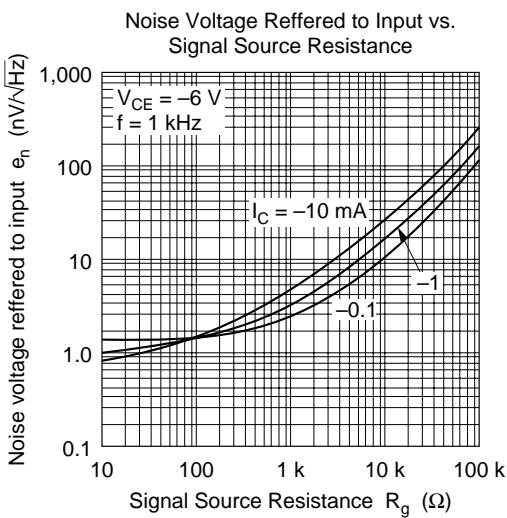
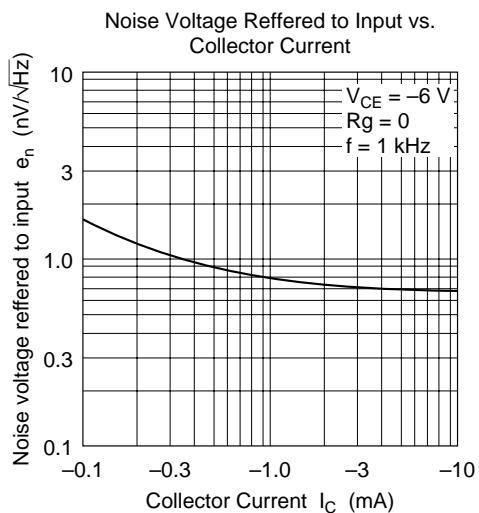
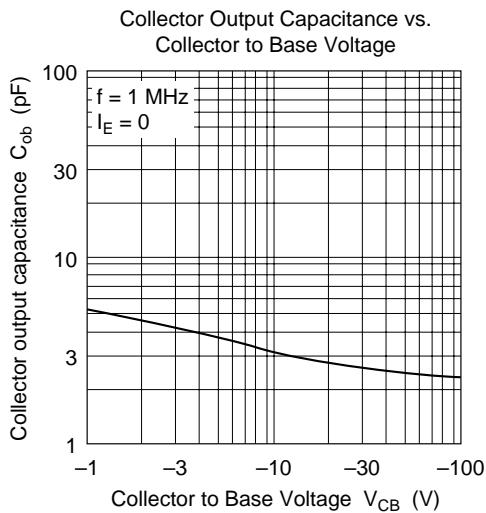
Notes: 1. The 2SA1190 and 2SA1191 are grouped by h_{FE} as follows.
2. Pulse test

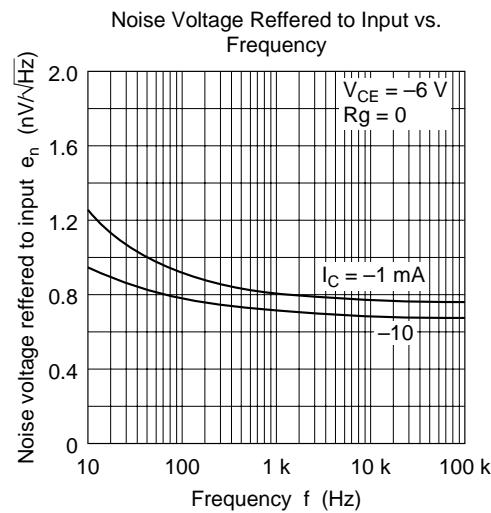
D	E
250 to 500	400 to 800

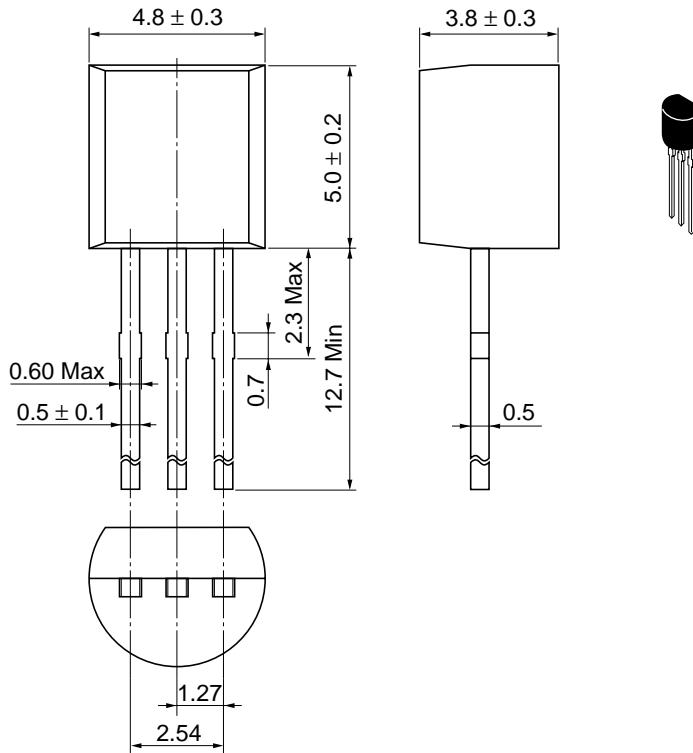












Hitachi Code	TO-92 (1)
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	0.25 g

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