2SA1958

Silicon PNP Epitaxial

HITACHI

Application

High frequency amplifier

Features

- Excellent high frequency characteristics
  f_T = 500 MHz typ
- High voltage and low output capacitance
  V_{CEO} = –150 V, Cob = 5.5 pF typ
- Suitable for wide band video amplifier
- Complementary pair with 2SC5120

Outline

TO-126FM

1. Emitter
2. Collector
3. Base

Hitachi semiconductor

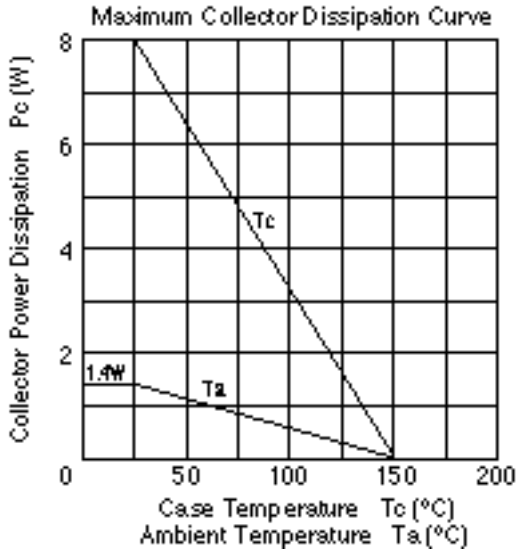
Absolute Maximum Ratings (Ta = 25°C)

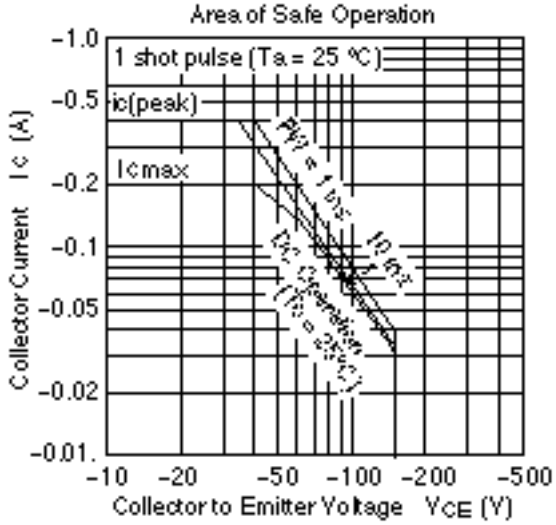
Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	–150	V
Collector to emitter voltage	V_{CEO}	–150	V
Emitter to base voltage	V_{EBO}	–3	V
Collector current	I_C	–0.2	A
Collector peak current	$I_{C(peak)}$	–0.4	A
Collector power dissipation	P_C	1.4	W
		8*[1]	
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

Note: 1. T_C = 25°C.

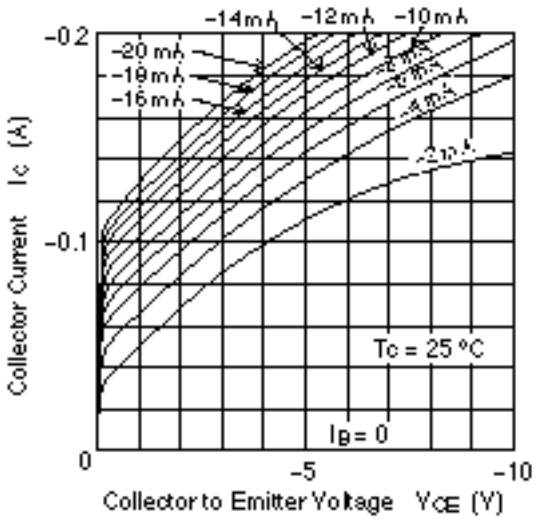
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	–150	—	—	V	I_C = –10 µA, I_E = 0
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	–150	—	—	V	I_C = –1 mA, R_{BE} = ∞
Collector cutoff current	I_{CBO}	—	—	–10	µA	V_{CB} = –100 V, I_E = 0
Emitter cutoff current	I_{EBO}	—	—	–10	µA	V_{EB} = –3 V, I_C = 0
DC current transfer ratio	h_{FE}	50	—	150	—	V_{CE} = –10 V, I_C = –10 mA
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	–1.0	V	I_C = –50 mA, I_B = –5 mA
Gain bandwidth product	f_T	400	500	—	MHz	V_{CE} = –20 V, I_C = –50 mA
Collector output capacitance	Cob	—	5.5	7.0	pF	V_{CB} = –30 V, I_E = 0, f = 1 MHz

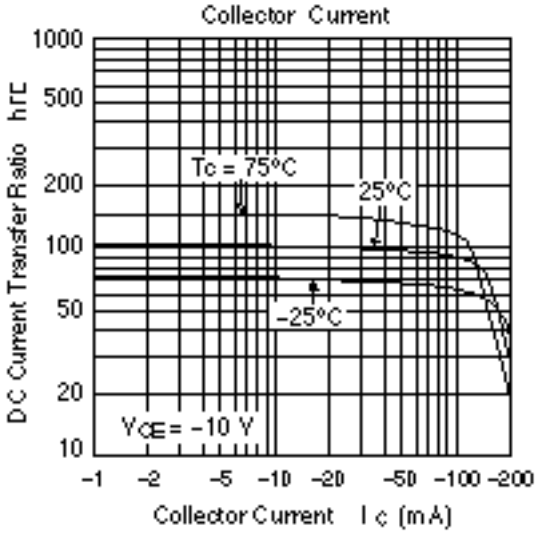

Maximum Collector Dissipation Curve
Collector Power Dissipation Pc (W)
8
6
4
2
0
50
100
150
200
Tc
1.4W
Ta
Case Temperature Tc (°C)
Ambient Temperature Ta (°C)

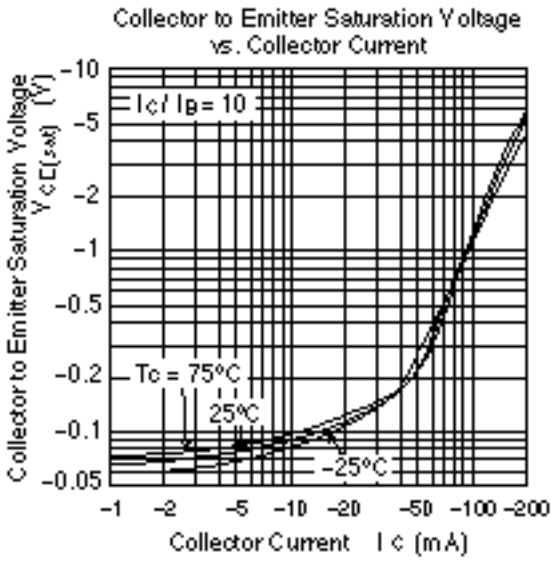

Area of Safe Operation
Collector Current Ic (A)
-1.0
-0.5
-0.2
-0.1
-0.05
-0.02
-0.01
1 shot pulse (Ta = 25 °C)
ic(peak)
Icmax
PW = 10 ms
DC operation (Tc = 25°C)
-10
-20
-50
-100
-200
-500
Collector to Emitter Voltage VCE (V)

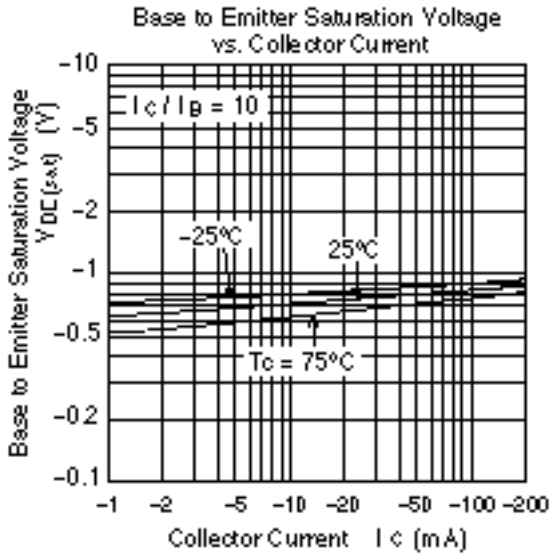
Typical Output Characteristics

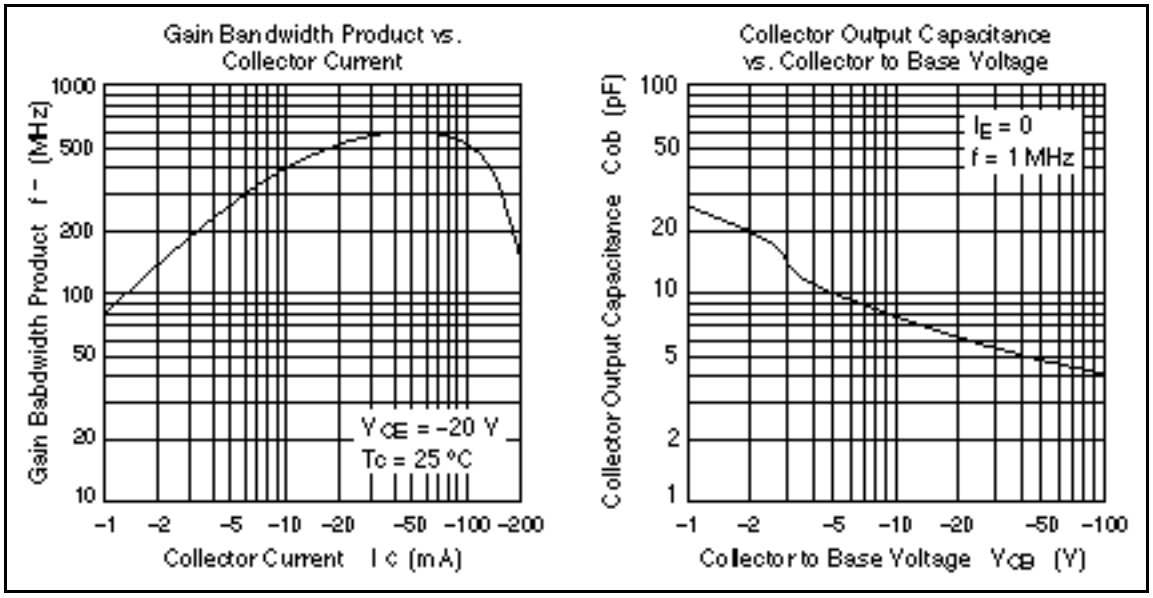


DC Current Transfer Ratio vs. Collector Current




Collector to Emitter Saturation Voltage
vs. Collector Current
Collector to Emitter Saturation Voltage
$V_{CE(sat)}$ (V)
$I_C / I_B = 10$
Tc = 75°C
25°C
–25°C
–10
–5
–2
–1
–0.5
–0.2
–0.1
–0.05
–1 –2 –5 –10 –20 –50 –100 –200
Collector Current I_C (mA)


Base to Emitter Saturation Voltage
vs. Collector Current
Base to Emitter Saturation Voltage
$V_{BE(sat)}$ (V)
$I_C / I_B = 10$
–25°C
25°C
Tc = 75°C
–10
–5
–2
–1
–0.5
–0.2
–0.1
–1 –2 –5 –10 –20 –50 –100 –200
Collector Current I_C (mA)


Gain Bandwidth Product vs.
Collector Current
Gain Babdwidth Product f – (MHz)
1000
500
200
100
50
20
10
–1
–2
–5
–10
–20
–50
–100
–200
VCE = –20 V
Tc = 25 °C
Collector Current Ic (mA)
Collector Output Capacitance
vs. Collector to Base Voltage
Collector Output Capacitance Cob (pF)
100
50
20
10
5
2
1
IE = 0
f = 1 MHz
Collector to Base Voltage VCB (V)

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