2SD1868, 2SD1869

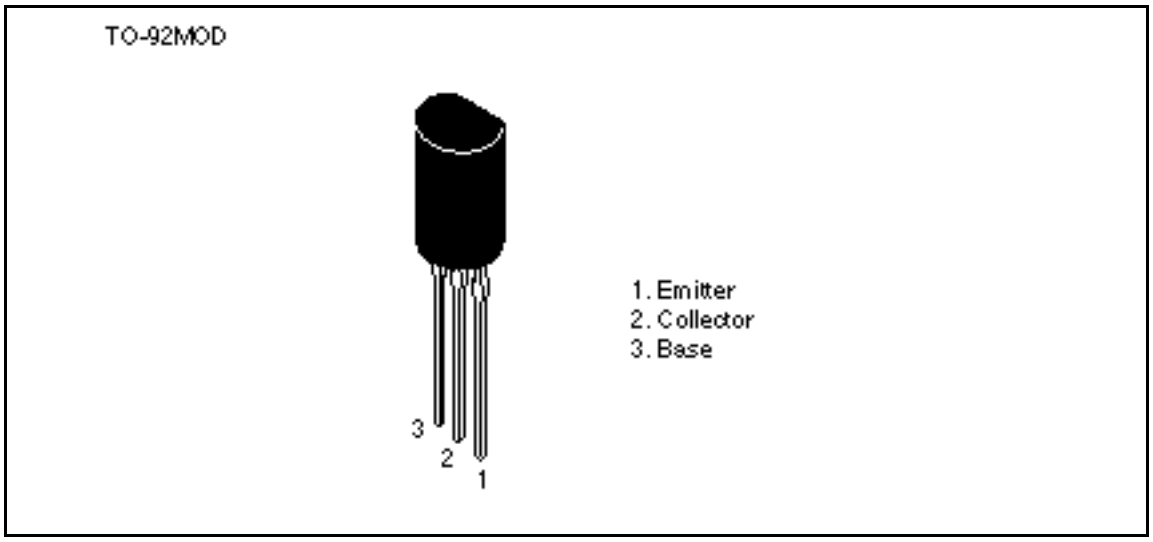
Silicon NPN Epitaxial

HITACHI

Application

Low frequency high voltage amplifier

Outline



Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	2SA1868	2SA1869	Unit
Collector to base voltage	V_{CBO}	160	200	V
Collector to emitter voltage	V_{CEO}	160	200	V
Emitter to base voltage	V_{EBO}	5	5	V
Collector current	I_C	100	100	mA
Collector power dissipation	P_C	0.9	0.9	W
Junction temperature	Tj	150	150	°C
Storage temperature	Tstg	–55 to +150	–55 to +150	°C

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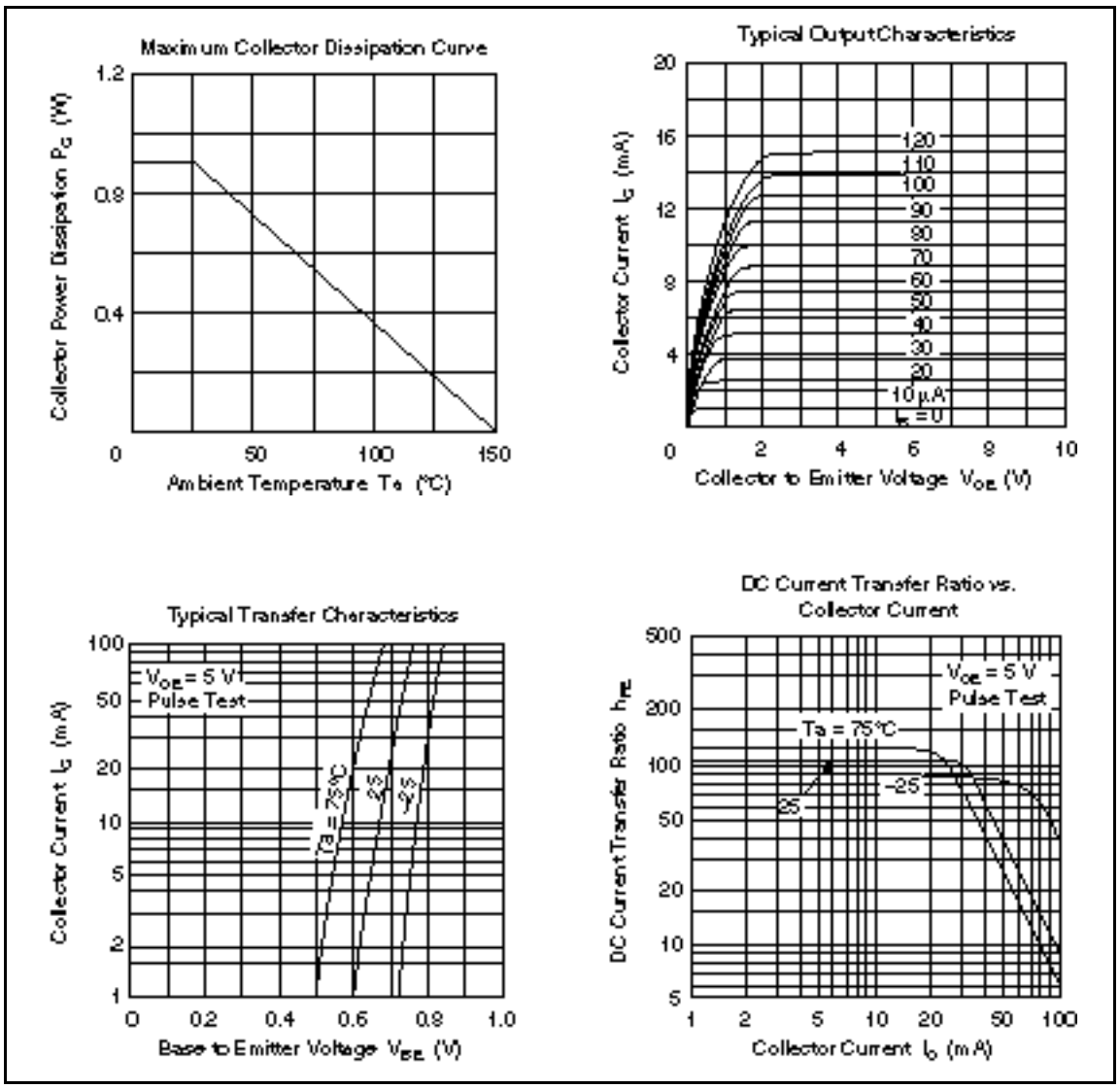
Electrical Characteristics (Ta = 25°C)

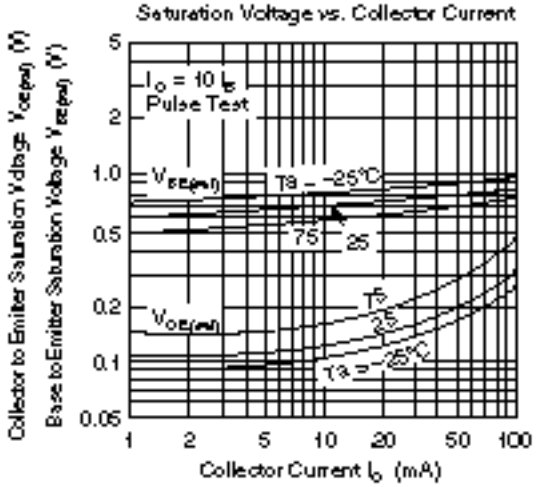
Item		Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	2SD1868	$V_{(BR)CBO}$	160	—	—	V	I_C = 10 µA, I_E = 0
	2SD1869		200				
Collector to emitter breakdown voltage	2SD1868	$V_{(BR)CEO}$	160	—	—	V	I_C = 1 mA, R_{BE} = ∞
	2SD1869		200				
Emitter to base breakdown voltage		$V_{(BR)EBO}$	5	—	—	V	I_E = 10 µA, I_C = 0
Collector cutoff current	2SD1868	I_{CBO}	—	—	10	µA	V_{CB} = 140 V, I_E = 0
	2SD1869						V_{CB} = 160 V, I_E = 0
DC current transfer ratio		h_{FE1}*[1]	60	—	320		V_{CE} = 5 V, I_C = 10 mA
		h_{FE2}	30	—	—		V_{CE} = 5 V, I_C = 1 mA
Base to emitter voltage		V_{BE}	—	—	1.5	V	V_{CE} = 5 V, I_C = 10 mA
Collector to emitter saturation voltage		$V_{CE(sat)}$	—	—	2	V	I_C = 30 mA, I_B = 3 mA
Gain bandwidth product		f_T	—	140	—	MHz	V_{CE} = 5 V, I_C = 10 mA
Collector output capacitance		C_{ob}	—	3.8	—	pF	V_{CB} = 10 V, I_E = 0, f = 1 MHz

Note: 1. The 2SD1868 and 2SD1869 are grouped by h_{FE1} as follows.

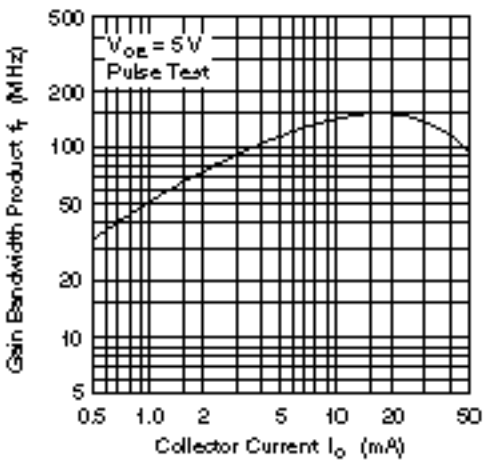
Grade	B	C	D
h_{FE1}	60 to 120	100 to 200	160 to 320


Maximum Collector Dissipation Curve
Collector Power Dissipation P_C (W)
1.2
0.8
0.4
0
50
100
150
Ambient Temperature Ta (°C)
Typical Output Characteristics
Collector Current I_C (mA)
20
16
12
8
4
0
2
4
6
8
10
120
110
100
90
80
70
60
50
40
30
20
10 µA
I_B = 0
Collector to Emitter Voltage V_{CE} (V)
Typical Transfer Characteristics
Collector Current I_C (mA)
100
50
20
10
5
2
1
V_{CE} = 5 V
Pulse Test
Ta = 75°C
25
−25
0
0.2
0.4
0.6
0.8
1.0
Base to Emitter Voltage V_{BE} (V)
DC Current Transfer Ratio vs. Collector Current
DC Current Transfer Ratio h_{FE}
500
200
100
50
20
10
5
V_{CE} = 5 V
Pulse Test
Ta = 75°C
25
−25
1
2
5
10
20
50
100
Collector Current I_C (mA)

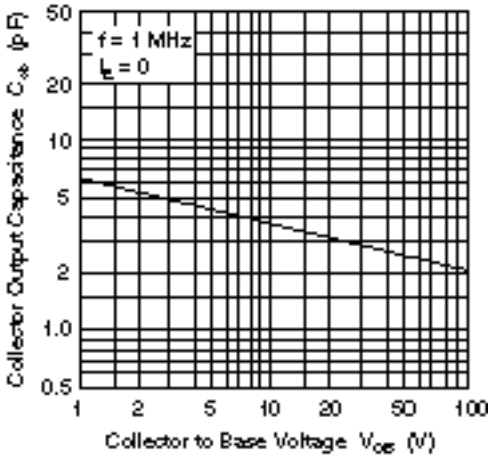
Saturation Voltage vs. Collector Current



Gain Bandwidth Product vs. Collector Current



Collector Output Capacitance vs. Collector to Base Voltage



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HITACHI

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

For further information write to:

Hitachi America, Ltd.
Semiconductor & IC Div.
2000 Sierra Point Parkway
Brisbane, CA. 94005-1835
U.S.A.
Tel: 415-589-8300
Fax: 415-583-4207

Hitachi Europe GmbH
Electronic Components Group
Continental Europe
Dornacher Straße 3
D-85622 Feldkirchen
München
Tel: 089-9 91 80-0
Fax: 089-9 29 30 00

Hitachi Europe Ltd.
Electronic Components Div.
Northern Europe Headquarters
Whitebrook Park
Lower Cookham Road
Maidenhead
Berkshire SL6 8YA
United Kingdom
Tel: 0628-585000
Fax: 0628-778322

Hitachi Asia Pte. Ltd.
16 Collyer Quay #20-00
Hitachi Tower
Singapore 0104
Tel: 535-2100
Fax: 535-1533

Hitachi Asia (Hong Kong) Ltd.
Unit 706, North Tower,
World Finance Centre,
Harbour City, Canton Road
Tsim Sha Tsui, Kowloon
Hong Kong
Tel: 27359218
Fax: 27306071