2SD1609, 2SD1610

Silicon NPN Epitaxial

HITACHI

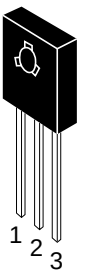
ADE-208-916 (Z)
1st. Edition
Sep. 2000

Application

Low frequency high voltage amplifier complementary pair with 2SB1109 and 2SB1110

Outline

TO-126 MOD



1. Emitter
2. Collector
3. Base

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings 2SD1609	Ratings 2SD1610	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	1.25	1.25	W
Junction temperature	Tj	150	150	°C
Storage temperature	Tstg	–45 to +150	–45 to +150	°C

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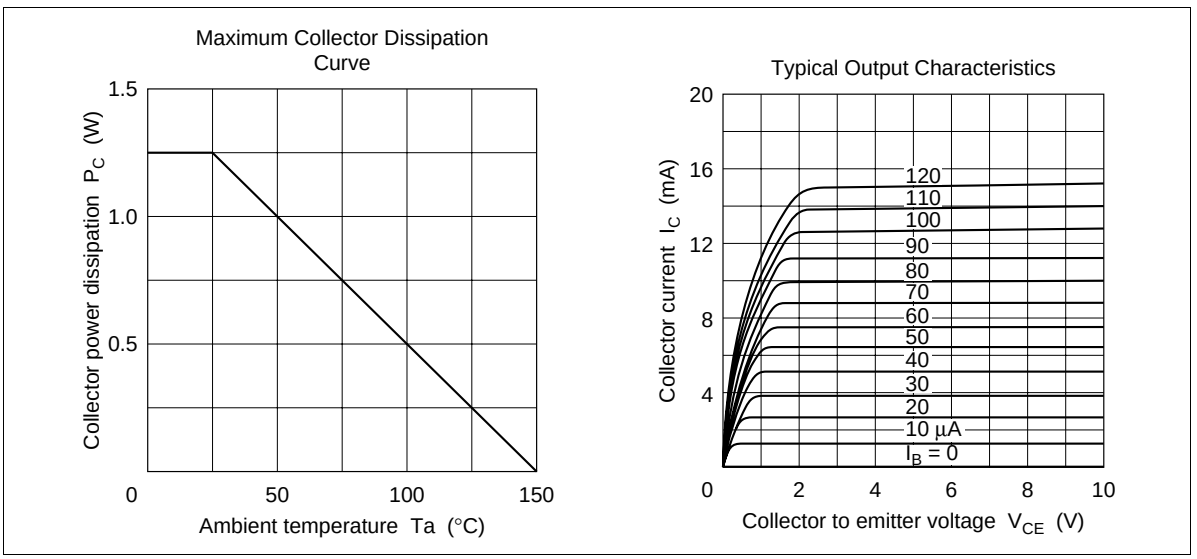
Electrical Characteristics (Ta = 25°C)

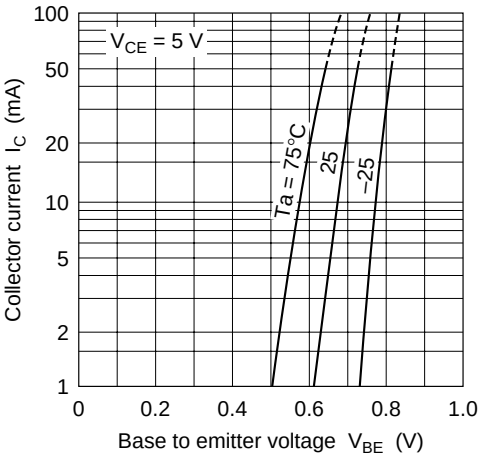
Item	Symbol	2SD1609 Min	2SD1609 Typ	2SD1609 Max	2SD1610 Min	2SD1610 Typ	2SD1610 Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	160	—	—	200	—	—	V	I_C = 10 µA, I_E = 0
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	160	—	—	200	—	—	V	I_C = 1 mA, R_{BE} = ∞
Emitter to base breakdown voltage	$V_{(BR)EBO}$	5	—	—	5	—	—	V	I_E = 10 µA, I_C = 0
Collector cutoff current	I_{CBO}	—	—	10	—	—	—	µA	V_{CB} = 140 V, I_E = 0
		—	—	—	—	—	10		V_{CB} = 160 V, I_E = 0
DC current tarnsfer ratio	h_{FE1}*[1]	60	—	320	60	—	320		V_{CE} = 5 V, I_C = 10 mA
	h_{FE2}	30	—	—	30	—	—		V_{CE} = 5 V, I_C = 1 mA
Base to emitter voltage	V_{BE}	—	—	1.5	—	—	1.5	V	V_{CE} = 5 V, I_C = 10 mA
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	2	—	—	2	V	I_C = 30 mA, I_B = 3 mA
Gain bandwidth product	f_T	—	140	—	—	140	—	MHz	V_{CE} = 5 V, I_C = 10 mA
Collector output capacitance	Cob	—	3.8	—	—	3.8	—	pF	V_{CB} = 10 V, I_E = 0, f = 1 MHz

Note: 1. The 2SD1609 and 2SD1610 are grouped by h_{FE1} as follows.

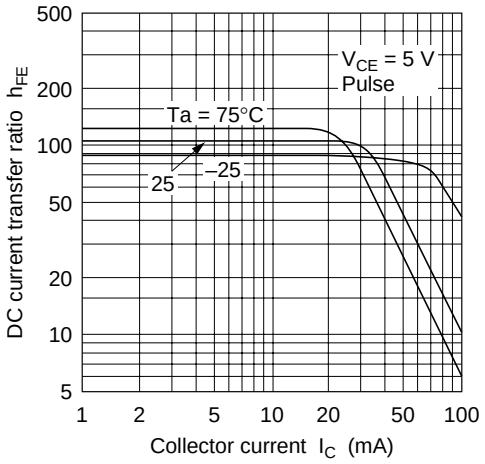
B	C	D
60 to 120	100 to 200	160 to 320



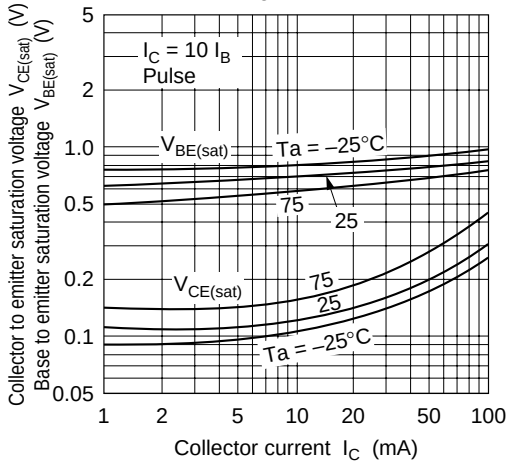
Typical Transfer Characteristics



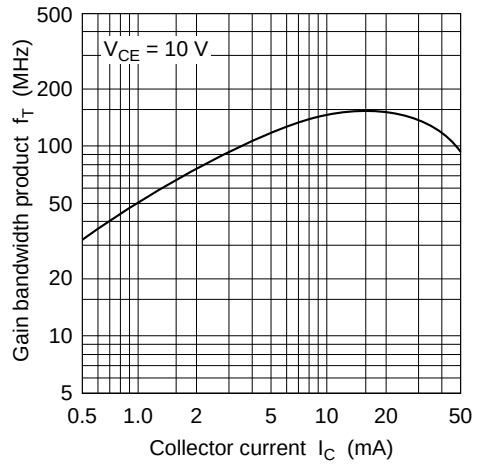
DC Current Transfer Ratio vs. Collector Current



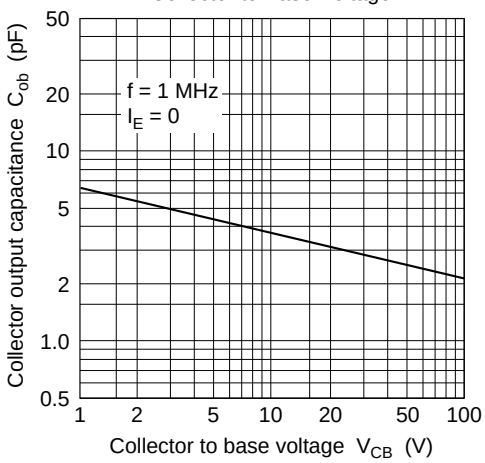
Saturation Voltage vs. Collector Current



Gain Bandwidth Product vs. Collector Current

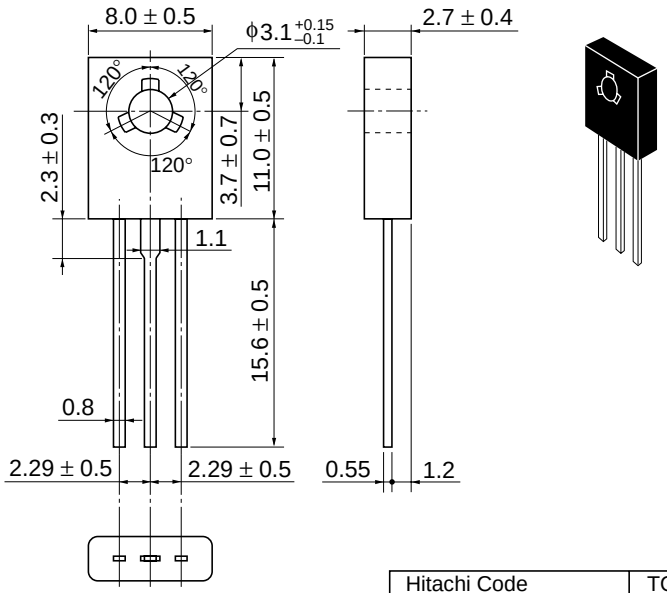


Collector Output Capacitance vs.
Collector to Base Voltage



Package Dimensions

Unit: mm



Hitachi Code	TO-126 Mod
JEDEC	—
EIAJ	—
Mass (reference value)	0.67 g

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