HITACHI

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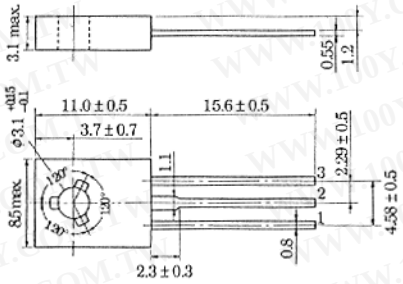
2SB1109, 2SB1110

SILICON PNP EPITAXIAL

LOW FREQUENCY HIGH VOLTAGE AMPLIFIER
COMPLEMENTARY PAIR WITH 2SD1609 AND 2SD1610

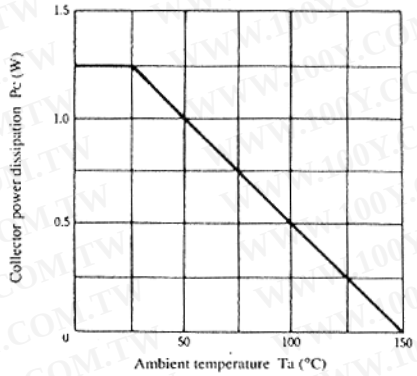


(JEDEC TO-126 MOD.)

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Item	Symbol	2SB1109	2SB1110	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	T_j	150	150	°C
Storage temperature	T_{stg}	−45 to +150	−45 to +150	°C

MAXIMUM COLLECTOR DISSIPATION CURVE



■ ELECTRICAL CHARACTERISTICS (Ta=25°C)

Item	Symbol	Test Condition	2SB1109 min.	2SB1109 typ.	2SB1109 max.	2SB1110 min.	2SB1110 typ.	2SB1110 max.	Unit
Collector to base breakdown voltage	$V_{(BR)CBO}$	I_C = −10μA, I_E = 0	−160	—	—	−200	—	—	V
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	I_C = −1mA, R_{BE} = ∞	−160	—	—	−200	—	—	V
Emitter to base breakdown voltage	$V_{(BR)EBO}$	I_E = −10μA, I_C = 0	−5	—	—	−5	—	—	V
Collector cutoff current	I_{CBO}	V_{CB} = −140V, I_E = 0	—	—	−10	—	—	—	μA
		V_{CB} = −160V, I_E = 0	—	—	—	—	—	−10	μA
DC current transfer ratio	h_{FE1}*	V_{CE} = −5V, I_C = −10mA	60	—	320	60	—	320	
	h_{FE2}	V_{CE} = −5V, I_C = −1mA	30	—	—	30	—	—	
Base to emitter voltage	V_{BE}	V_{CE} = −5V, I_C = −10mA	—	—	−1.5	—	—	−1.5	V
Collector to emitter saturation voltage	$V_{CE(sat)}$	I_C = −30mA, I_B = −3mA	—	—	−2	—	—	−2	V
Gain bandwidth product	f_T	V_{CE} = −5V, I_C = −10mA	—	140	—	—	140	—	MHz
Collector output capacitance	C_{ob}	V_{CB} = −10V, I_E = 0, f = 1MHz	—	5.5	—	—	5.5	—	pF

* The 2SB1109 and 2SB1110 are grouped by h_{FE1} as follows.

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

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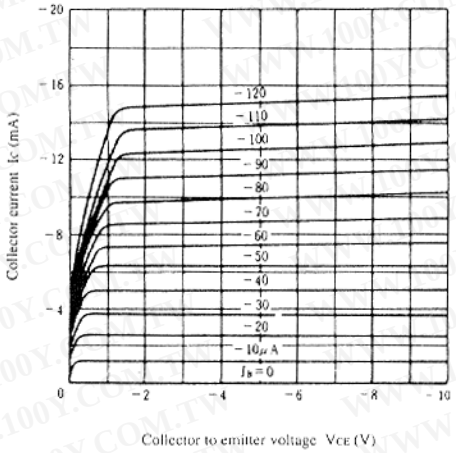
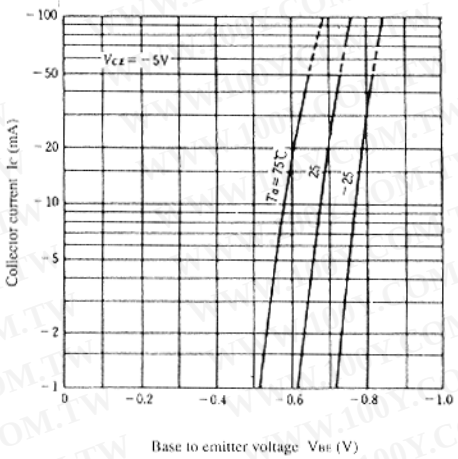
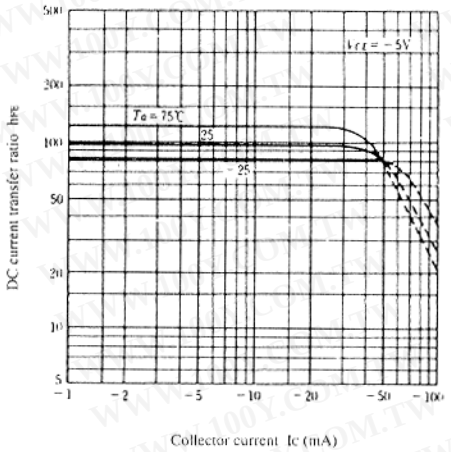
TYPICAL OUTPUT CHARACTERISTICS



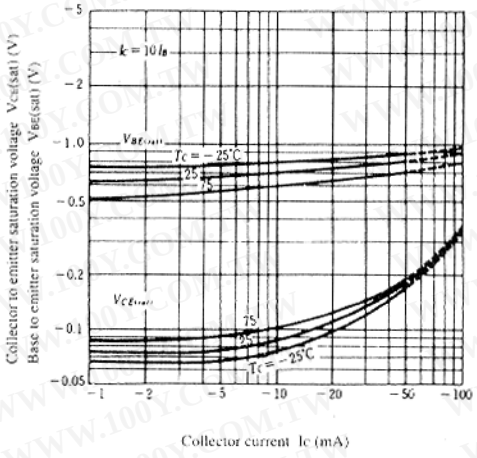
TYPICAL TRANSFER CHARACTERISTICS



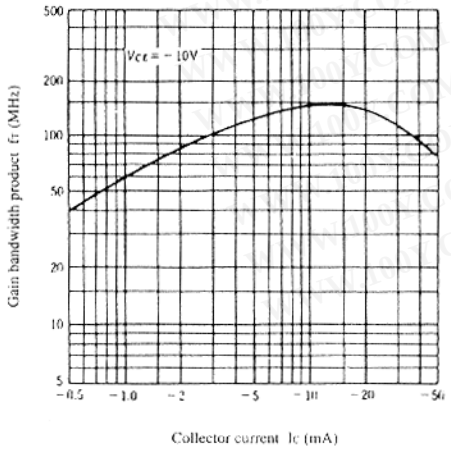
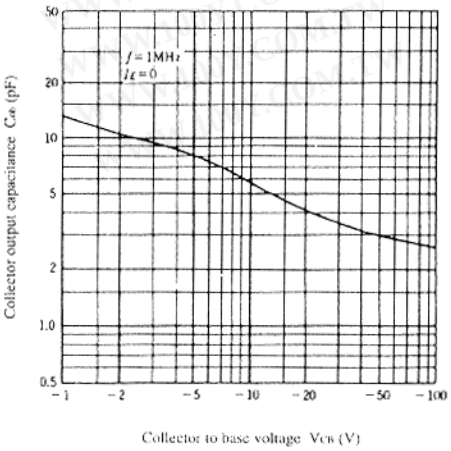
DC CURRENT TRANSFER RATIO VS. COLLECTOR CURRENT



SATURATION VOLTAGE VS. COLLECTOR CURRENT



GAIN GANDWIDTH PRODUCT VS. COLLECTOR CURRENT



COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE