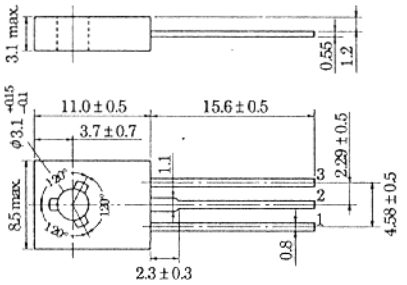
HITACHI

2SB648, 2SB648A

SILICON PNP EPITAXIAL

LOW FREQUENCY HIGH VOLTAGE AMPLIFIER
COMPLEMENTARY PAIR WITH 2SD668/A

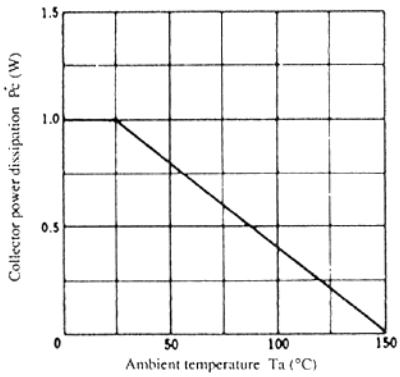


(JEDEC TO-126 MOD.)

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Item	Symbol	2SB648	2SB648A	Unit
Collector to base voltage	V_{CBO}	−180	−180	V
Collector to emitter voltage	V_{CEO}	−120	−160	V
Emitter to base voltage	V_{EBO}	−5	−5	V
Collector current	I_C	−50	−50	mA
Collector peak current	$i_{C(peak)}$	−100	−100	mA
Collector power dissipation	P_C	1	1	W
Junction temperature	T_j	150	150	°C
Storage temperature	T_{stg}	−55 to +150	−55 to +150	°C

MAXIMUM COLLECTOR DISSIPATION CURVE



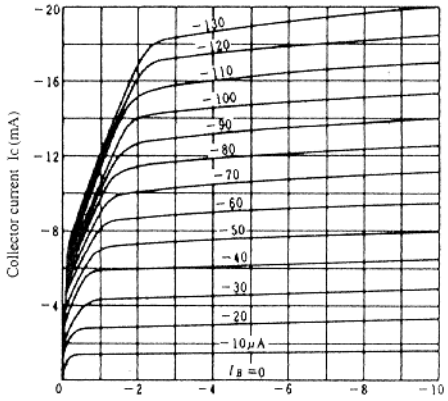
■ ELECTRICAL CHARACTERISTICS (Ta=25°C)

Item	Symbol	Test Condition	2SB648			2SB648A			Unit
			min.	typ.	max.	min.	typ.	max.	
Collector to base breakdown voltage	$V_{(BR)CBO}$	I_C = −10μA, I_E = 0	−180	—	—	−180	—	—	V
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	I_C = −1mA, R_{BE} = ∞	−120	—	—	−160	—	—	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} = −160V, I_E = 0	—	—	−10	—	—	−10	μA
DC current transfer ratio	$h_{FE\,1}$*	V_{CE} = −5V, I_C = −10mA	60	—	320	60	—	200	
	$h_{FE\,2}$	V_{CE} = −5V, I_C = −1mA	30	—	—	30	—	—	
Collector to emitter saturation voltage	$V_{CE(sat)}$	I_C = −30mA, I_B = −3mA	—	—	−2	—	—	−2	V
Base to emitter voltage	V_{BE}	V_{CE} = −5V, I_C = −10mA	—	—	−1.5	—	—	−1.5	V
Gain bandwidth product	f_T	V_{CE} = −10V, I_C = −10mA	—	140	—	—	140	—	MHz
Collector output capacitance	C_{ob}	V_{CB} = −10V, I_E = 0, f=1MHz	—	4.5	—	—	4.5	—	pF

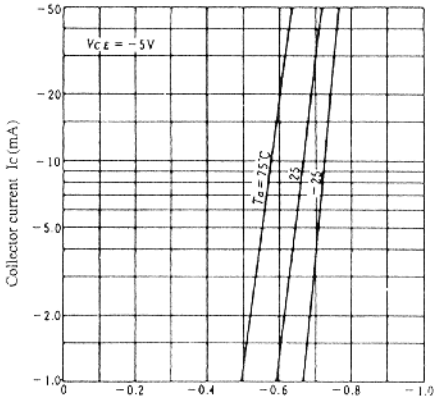
* The 2SB648 and 2SB648A are grouped by h_{FE1} as follows.

	B	C	D
2SB648	60 to 120	100 to 200	160 to 320
2SB648A	60 to 120	100 to 200	—

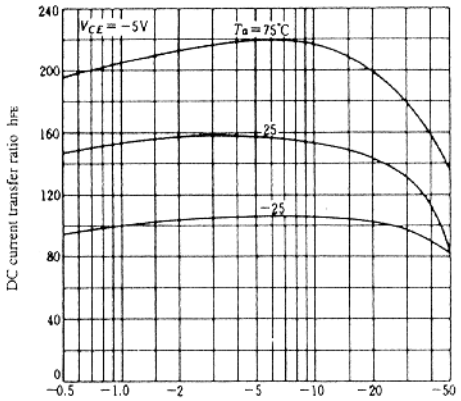
TYPICAL OUTPUT CHARACTERISTICS



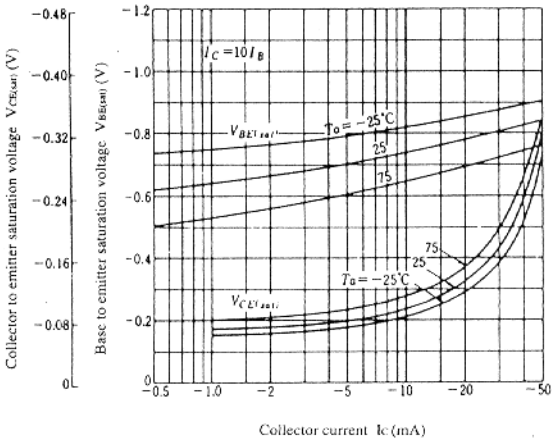
TYPICAL TRANSFER CHARACTERISTICS



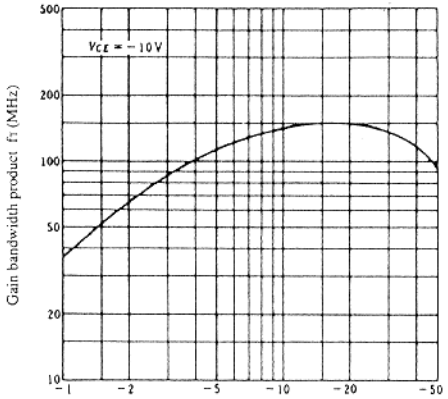
DC CURRENT TRANSFER RATIO VS. COLLECTOR CURRENT



SATURATION VOLTAGE VS. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT VS. COLLECTOR CURRENT



COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE

