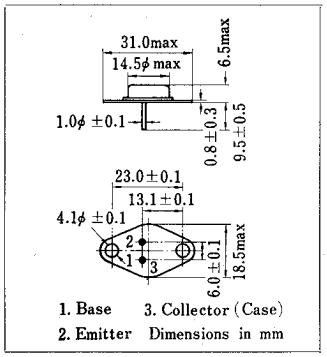
HITACHI TRANSISTORS

—FOR MEDIUM POWER AMPLIFIER USE—

2SB367
2SB368

The Hitachi 2SB367 and 2SB368 are germanium PNP alloyed junction type transistors, featuring high current transfer ratio which can not be attained by conventional alloyed junction power transistors. The dependence of current gain on collector current having been improved, this series is most suitable for the output stage of car radios, and medium power home radio receivers.

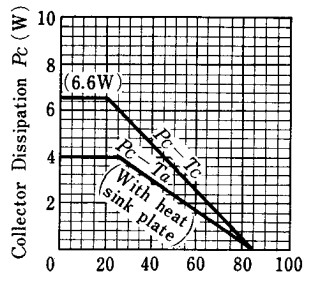


1. Base 3. Collector (Case)
2. Emitter Dimensions in mm

ABSOLUTE MAXIMUM RATINGS (At 25C° Ambient Temperature)

Item	Symbol	2SB367	2SB368	Unit
Collector to Base Voltage	V_{CBO}	−25	−45	V
Collector to Emitter Voltage	V_{CES}	−25	−45	V
	V_{CEO}	−20	−35	V
Emitter to Base Voltage	V_{EBO}	−12	−12	V
Collector Current	I_C	−1	−1	A
Emitter Current	I_E	1	1	A
Base Current	I_B	−0.3	−0.3	A
Collector Dissipation	P_C*	6.6	6.6	W
	P_C**	4	4	W
Junction Temperature	T_j	85	85	℃
Storage Temperature	T_{stg}	−55～+85	−55～+85	℃

* Value at T_C=25℃
** Value with attached on the heat sink plate (150 mm×150 mm×1.5 mm alminum) in natural cooling.



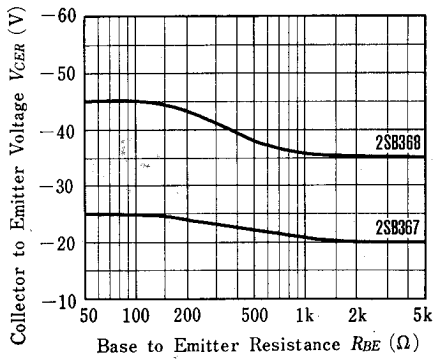
Maximum Collector Dissipation Curve

ELECTRICAL CHARACTERISTICS (Ta=25℃)

Item	Symbol	Condition of Measurement	2SB367 min.	2SB367 typ.	2SB367 max.	2SB368 min.	2SB368 typ.	2SB368 max.	Unit
Collector to Base Breakdown Voltage	$V_{(BR)CBX}$	I_C=−0.4mA, V_{EB}=−1.5V	−25	—	—	−45	—	—	V
Collector to Emitter Breakdown Voltage	$V_{(BR)CES}$	I_C=−10mA, R_{BE}=0	−25	—	—	−45	—	—	V
	$V_{(BR)CEO}$	I_C=−10mA, R_{BE}=∞	−20	—	—	−35	—	—	V
Collector Cut-off Current	I_{CBO}	V_{CB}=−12V, I_E=0	—	−15	−100	—	−15	−100	μA
Emitter Cut-off Current	I_{EBO}	V_{EB}=−12V, I_C=0	—	−15	−100	—	−15	−100	μA
DC Current Transfer Ratio*	h_{FE}	V_{CE}=−1.5V, I_C=0.5A	45	85	170	45	85	170	
Base to Emitter Voltage	V_{BE}	V_{CE}=−1.5V, I_C=−0.5A	—	−0.4	−0.55	—	−0.4	−0.55	V
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=−1A, I_B=−50mA	—	−0.24	—	—	−0.24	—	V
Cut-off Frequency	f_{ab}	V_{CB}=−1.5V, I_E=0.5A	—	500	—	—	500	—	kHz

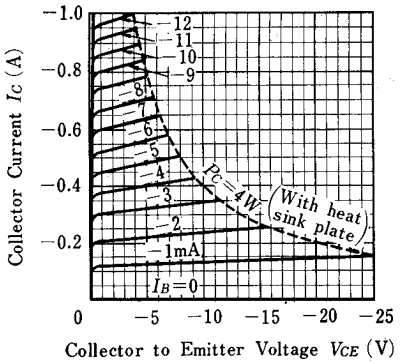
* The 2SB367 and 2SB368 are grouped by h_{FE} as follows.
Ⓐ 45～90 Ⓑ 80～170

MAXIMUM RATINGS

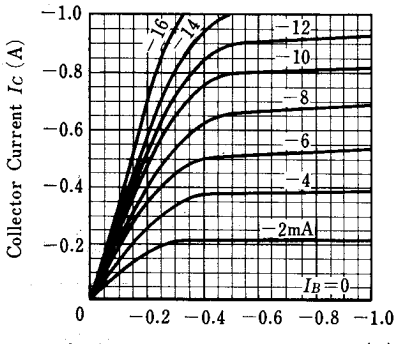


Collector to Emitter Voltage vs. Base to Emitter Resistance

STATIC CHARACTERISTICS



Typical Output Characteristics (1)



Typical Output Characteristics (2)

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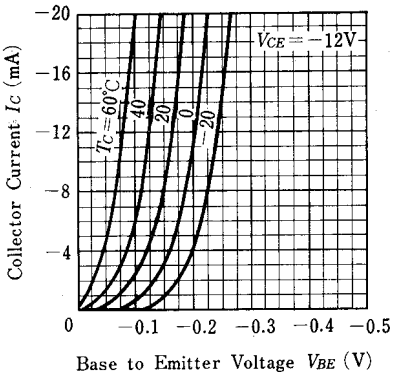
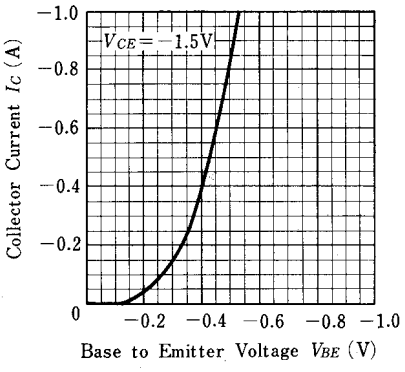
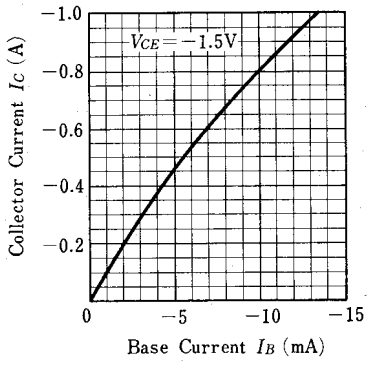


Typical Transfer Characteristics



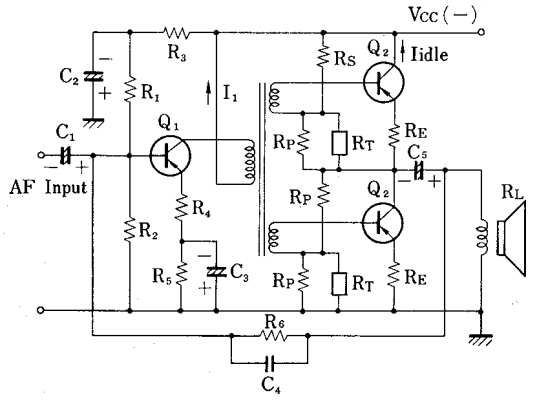
Typical Transfer Characteristics



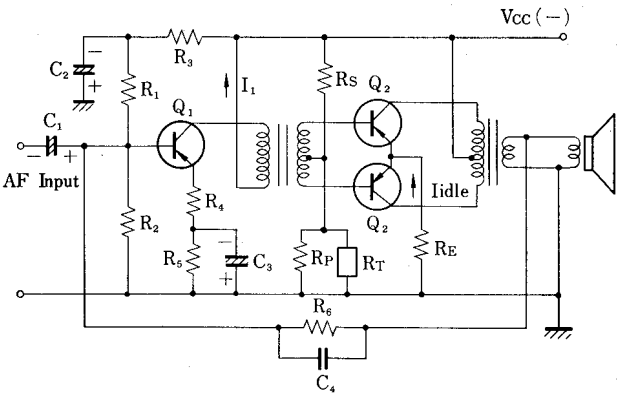
Collector Current vs. Base Current

CIRCUIT EXAMPLES——Audio Frequency Power Amplifiers

Circuit 1—SEPP Class B Amplifier



Circuit 2—Class B Push—Pull Amplifier



Typical Operation

Item				Symbol	Typical Operation				Unit
					Circuit 1		Circuit 2		
Supply Voltage (Note 1)				V_{CC}	−12	−24	−12	−24	V
Performance Data	Maximum Power Output (at 5% Distortion)			P_{om}	2.8	5	3.8	4.5	W
	Power Gain (Output Stage)			PG	26.3	27.2	27.1	33	dB
Parts Spec.	Imput Trans.	Primary	Impedance	Z_i	2	5	1.5	16.5	kΩ
			Max. DC Resistance	R_i	50	100	50	200	Ω
		Secondary (Note 2)	Impedance	Z_O	95	190	980	1050	Ω
			Max. DC Resistance	R_O	10	20	30	30	Ω
			(Note 3)	R_L	4	10	50	220	Ω
	Resistors			R_1	18	16	16	14	kΩ
				R_2	6	8	8	10	kΩ
				R_3	200	200	200	200	Ω
				R_4	10	20	10	20	Ω
				R_5	1000	2000	1000	2000	Ω
				R_6	70	70	70	70	kΩ
				R_E	0.5	1.5	2	2	Ω
				R_S	560	950	695	1400	Ω
				R_T	D-1A	D-1A	D-1A	D-1A	
				R_P	31	27	20	20	Ω
	Capacitors			C_1	10	10	10	10	μF
				C_2	100	100	100	100	μF
				C_3	100	100	50	50	μF
				C_4	200	200	100	100	pF
				C_5	300	300	—	—	μF
Collector Current	Driver Stage			I_1	3	4	4	5	mA
	Output Stage	Zero Signal Bias		I_{idle}	10	10	20	20	mA
		Peak Value		i_{cp}	1150	1000	810	390	mA
		Average (at Pom)		$i_{cp\,(av)}$	366	318	258	124	mA
Transistors				Q_1	2SB77	2SB77A	2SB77	2SB77A	
				Q_2	2SB367	2SB368	2SB367	2SB368	

(Note) 1. When $V_{CC}=-24V$, attach the output transistors on the heat sink plate (150 mm×150 mm×1.5 mm Al—plate) per transistor, and the driver transistor also attach on the heat sink plate (50 mm×50 mm×1.5 mm Al—plate) by heat sink fin NZ1B.
2. Secondary Impedance and Max. DC Resistance of driver transformer are specified as follows.
For Circuit 1: Value of Each Windings (Bifilar Winding)
For Circuit 2: Value of Base to Base
3. For Circuit 2, Load Resistance R_L is specified by primary impedance of output transformer (Collector to Collector).

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