

AUDIO FREQUENCY
LOW POWER AMPLIFIER

2SB22, 2SD30

Semiconductors

GERMANIUM ALLOY
JUNCTION TYPE

三洋トランジスタ2SB22, 2SD30 はコンプリメンタリ用の合金接合型ゲルマニウムトランジスタです。2SB22はp-n-p, 2SD30はn-p-nで500mW の出力を低歪率で容易に得る事が可能です。

SANYO 2SB22 and 2SD30 are complementary alloy-junction (the former p-n-p, the latter n-p-n) germanium transistors, and suitable for low-level class B power amplifiers, for instance, 500mW class B push-pull power amplifier with low distortion.

絶対最大定格 ABSOLUTE MAXIMUM RATINGS

Ta = 25°C

ITEM	SYMBOL	2SB22	2SD30	UNIT
コレクタ・ベース間電圧 Collector to Base Voltage	V _{CB0}	-25	25	volts
エミッタ・ベース間電圧 Emitter to Base Voltage	V _{EB0}	-12	12	volts
コレクタ・エミッタ間電圧 Collector to Emitter Voltage (R _{BE} =100Ω)	V _{CER}	-25	25	volts
コレクタ電流 Collector Current	I _c	-200	200	mA
コレクタ損失 Collector Power Dissipation	P _c	300*	300*	mW
接合部温度 Junction Temperature	T _j	85	85	°C
保存温度 Storage Temperature	T _{stg}	-55 ~ +85		°C

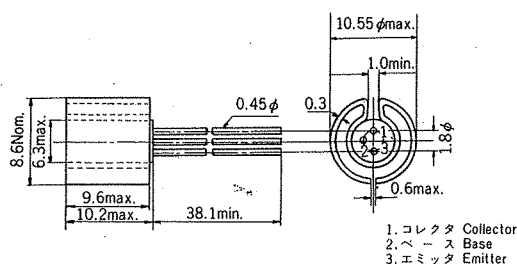
*RIA フィンつき with RIA Fin

電気的特性 ELECTRICAL CHARACTERISTICS

Ta = 25°C

ITEM	SYMBOL	2SB22			2SD30			UNIT
		min.	typ.	max.	min.	typ.	max.	
コレクタ遮断電流 Collector Cutoff Current 条件 Condition (2SB22 V _{CB} =-20V, I _E =0) (2SD30 V _{CB} = 20V, I _E =0)	I _{cBO}		-7	-15		7	15	μA
エミッタ遮断電流 Emitter Cutoff Current 条件 Condition (2SB22 V _{EB} =-6V, I _C =0) (2SD30 V _{EB} = 6V, I _C =0)	I _{eBO}		-4	-12		4	12	μA
遮断周波数 Alpha Cutoff Frequency 条件 Condition (2SB22 V _{CB} =-6V, I _E = 1mA) (2SD30 V _{EB} = 6V, I _E =-1mA)	f _{αb}		1			1		MHz
直流電流増幅率 DC Current Transfer Ratio 条件 Condition (2SB22 V _{CE} =-1.5V, I _C =-0.1A) (2SD30 V _{CE} = 1.5V, I _C = 0.1A)	h _{FE}		100			100		

外形寸法図 (単位: mm) OUTLINE DRAWING (Unit: mm)



ペア条件 Pair Condition

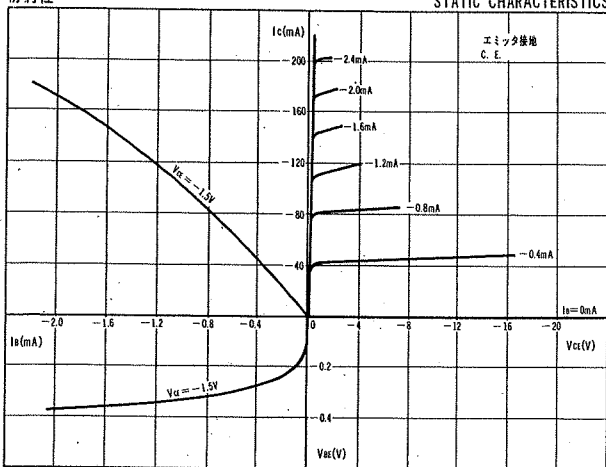
品名 Type	色別 Color	h _{FE} (V _{CE} =1.5V, I _C =0.1A)
2SB22	緑 Green	67~110
	橙 Orange	90~140
	青 Blue	110~165
2SD30	黄 Yellow	135~195
	無印 No Mark	155~220
	赤 Red	180~275

2SB22

2SD30

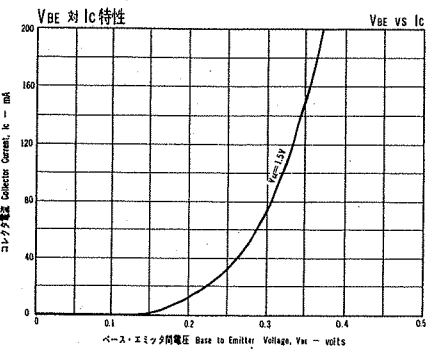
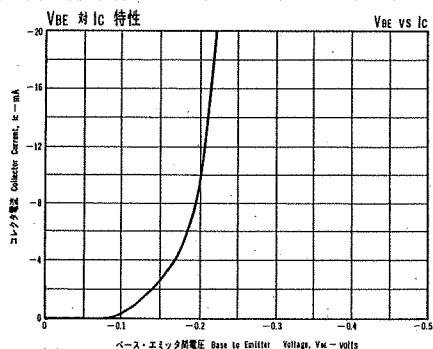
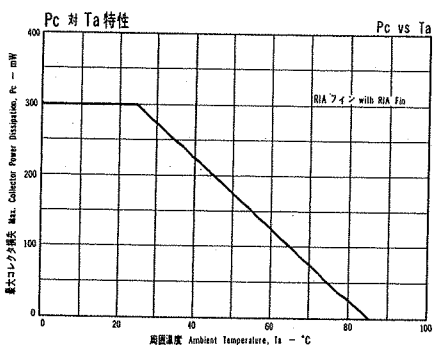
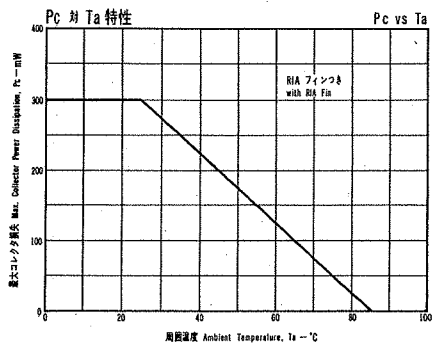
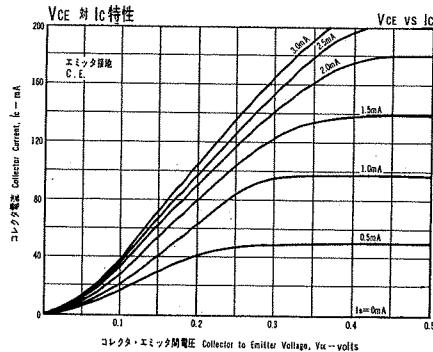
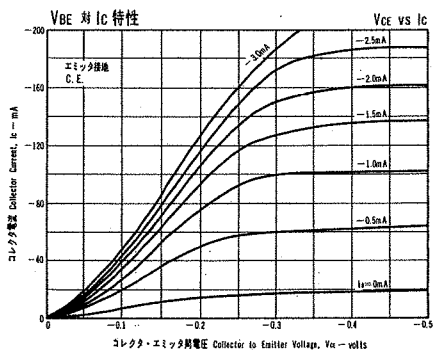
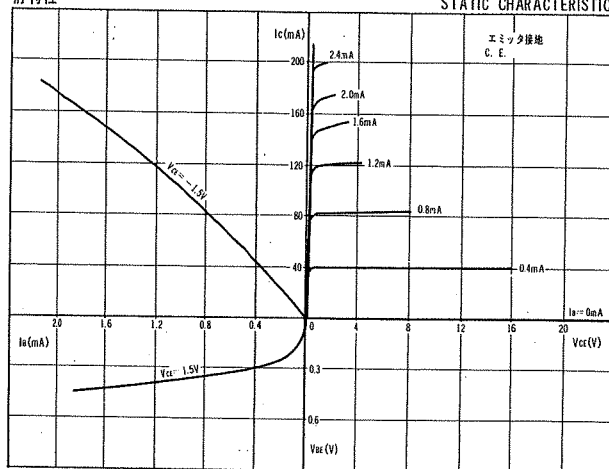
静特性

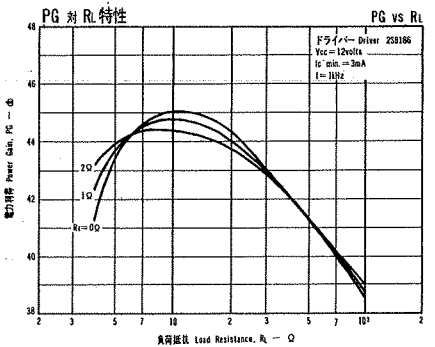
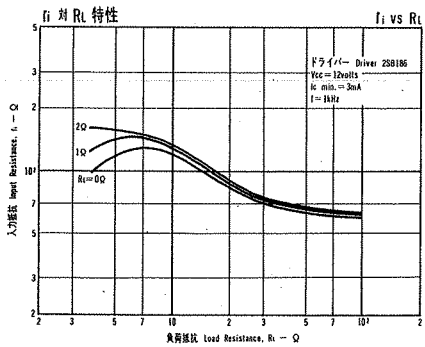
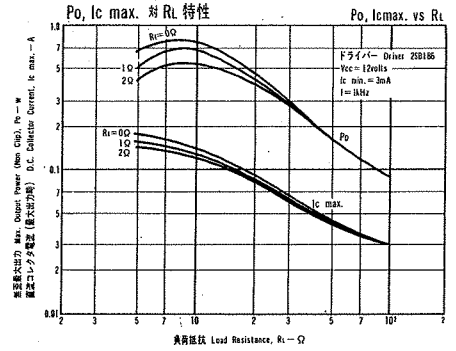
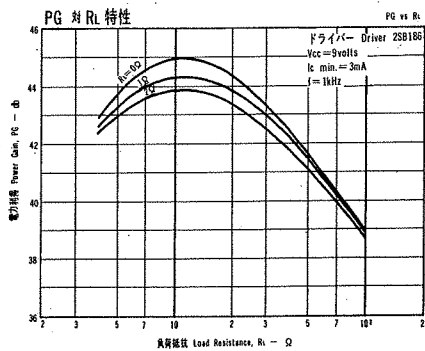
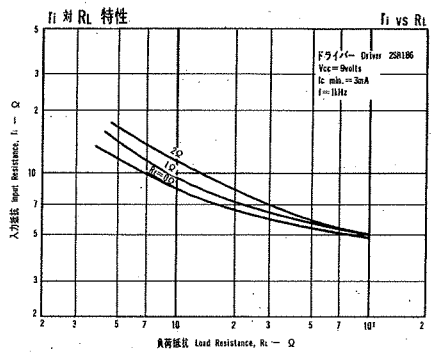
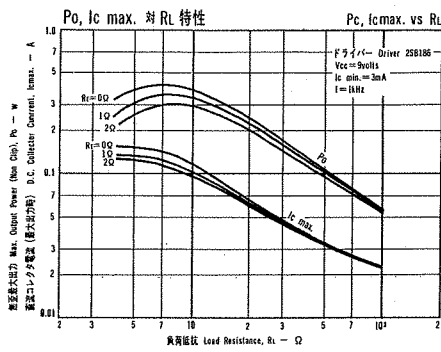
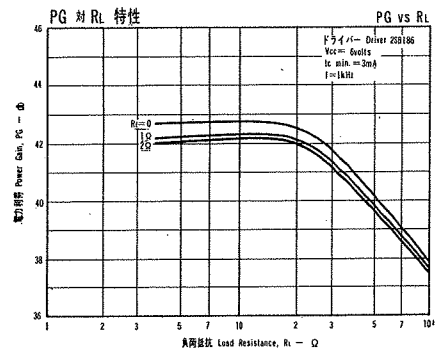
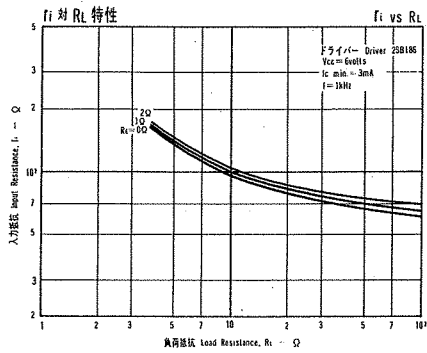
STATIC CHARACTERISTICS

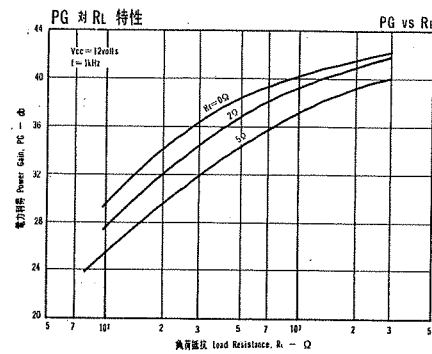
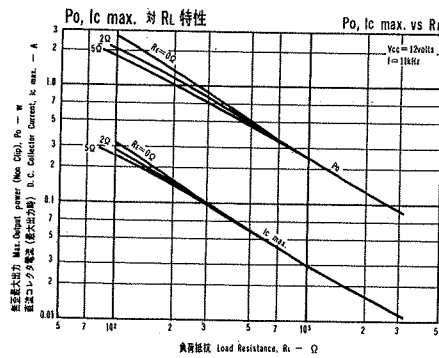


静特性

STATIC CHARACTERISTICS

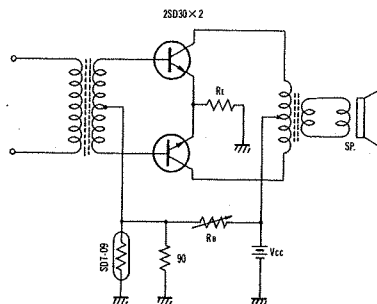






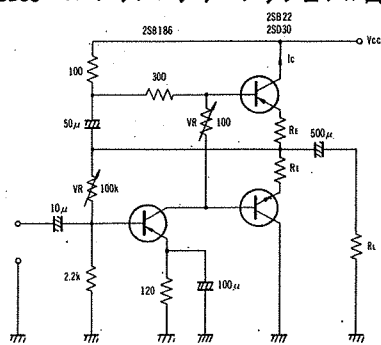
2. B 級プッシュプル増幅回路 (エミッタ接地) Class B Push-Pull Audio Power Amplifier (Common Emitter)

ITEM	SYMBOL	2SD30	UNIT
コレクタ供給電圧 Collector Supply Voltage	Vcc	9	V
エミッタ抵抗 Emitter Resistance	Re	5	Ω
信号周波数 Signal Frequency	f	1	kHz
負荷抵抗(コレクタ・コレクタ間) Load Resistance (Collector to Collector)	Rcc	230	Ω
無信号時直流コレクタ電流 Total D.C. Collector Current at Zero Signal	Ic min	4	mA
最大出力 Maximum Output Power	Po	400	mW
入力電圧 (最大出力時) Input Voltage at Max. Output Power (Base to Base)	Vi	1.5	V
入力抵抗 (最大出力時) Input Resistance at Max. Output Power (Base to Base)	ri	4.4	kΩ
直流コレクタ電流(最大出力時) Total D.C. Collector Current at Max. Output Power	Ic max	81	mA
電力利得(最大出力時) Power Gain at Max. Output Power	PG	29	db
高調波歪(最大出力時) Total Harmonic Distortion at Max. Output Power	KF	5	%

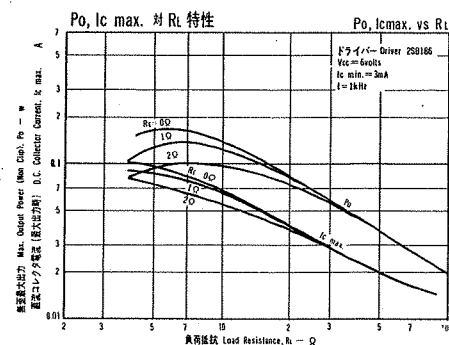


Ro は無信号時コレクタ電流が4 mA になるように調整する。
The resistor Ro is so adjusted that total D.C. collector current at zero signal is 4 mA.

3. 2SB22, 2SD30 コンプリメンタリ・プッシュプル回路 (Complementary Push-Pull Circuit)



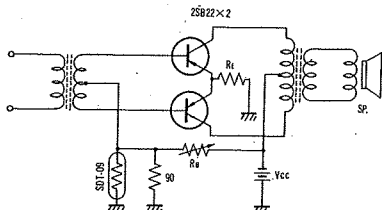
VR は無信号時に Ic = 3mA 一定で最大の出力が得られるように調整する。
VR is set to get the maximum power after idling current is adjusted to 3 mA.



応用例 (周囲温度25°C) APPLICATIONS (Ta=25°C)

1. B級プッシュプル増幅回路 (エミッタ接地) Class B Push-Pull Audio Power Amplifier (Common Emitter)

ITEM	SYMBOL	2SB22	UNIT
コレクタ供給電圧 Collector Supply Voltage	Vcc	-6	V
エミッタ抵抗 Emitter Resistance	Re	2	Ω
信号周波数 Signal Frequency	f	1	kHz
負荷抵抗(コレクタ・コレクタ間) Load Resistance (Collector to Collector)	Rcc	170	Ω
無信号時直流コレクタ電流 Total D.C. Collector Current at Zero Signal	Ic min.	-4	mA
最大出力 Maximum Output Power	Po	250	mW
入力電圧 (最大出力時) Input Voltage at Max. Output Power (Base to Base)	V _i	0.84	V
入力抵抗 (最大出力時) Input Resistance at Max. Output Power (Base to Base)	r _i	2.8	kΩ
直流コレクタ電流(最大出力時) Total D.C. Collector Current at Max. Output Power	Ic max.	-74	mA
電力利得 (最大出力時) Power Gain at Max. Output power	PG	30	db
高調波歪 (最大出力時) Total Harmonic Distortion at Max. Output Power	KF	5	%



R_b は無信号電流が -4mA にならるように調整する。
The resistor R_b is so adjusted that total D.C. collector current at zero signal is -4mA.

