



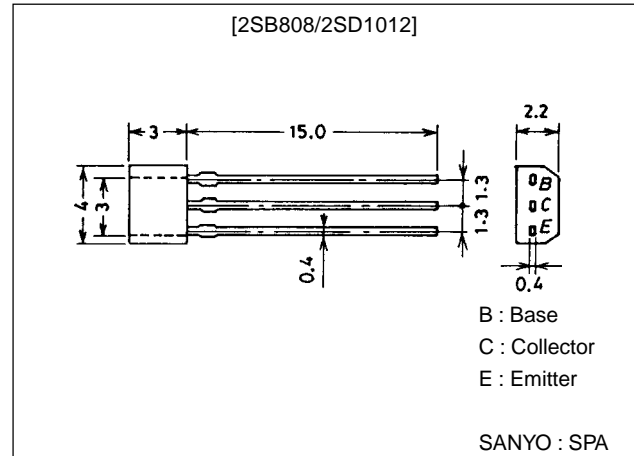
## 2SB808/2SD1012

### Low-Voltage Large-Current Amplifier Applications

#### Package Dimensions

unit:mm

2033



() : 2SB808

#### Specifications

##### Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		(-)-20	V
Collector-to-Emitter Voltage	$V_{CE0}$		(-)-15	V
Emitter-to-Base Voltage	$V_{EB0}$		(-)-5	V
Collector Current	$I_C$		(-)-0.7	A
Collector Current (Pulse)	$I_{CP}$		(-)-1.5	A
Collector Dissipation	$P_C$		250	mW
Junction Temperature	$T_J$		125	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +125	$^\circ\text{C}$

##### Electrical Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CB0}$	$V_{CB} = (-)15\text{V}, I_E = 0$			(-)-1.0	$\mu\text{A}$
Emitter Cutoff Current	$I_{EB0}$	$V_{EB} = (-)4\text{V}, I_C = 0$			(-)-1.0	$\mu\text{A}$
DC Current Gain	$h_{FE1}$	$V_{CE} = (-)2\text{V}, I_C = (-)50\text{mA}$	160*		960*	
	$h_{FE2}$	$V_{CE} = (-)2\text{V}, I_C = (-)500\text{mA Pulse}$	80			
Gain-Bandwidth Product	$f_T$	$V_{CE} = (-)10\text{V}, I_C = (-)50\text{mA}$		250		MHz
Common Base Output Capacitance	$C_{ob}$	$V_{CB} = (-)10\text{V}, f = 1\text{MHz}$		(13)		pF
				8		pF

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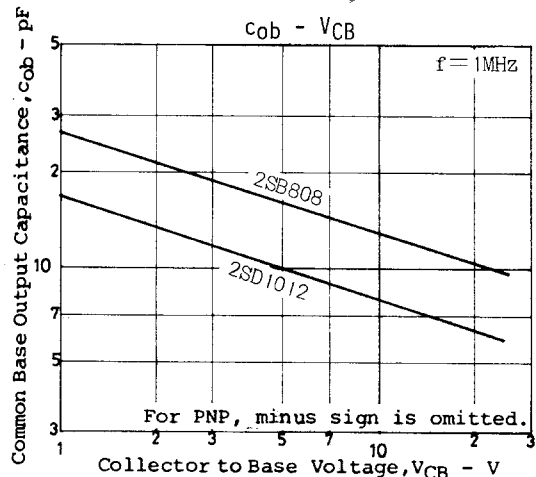
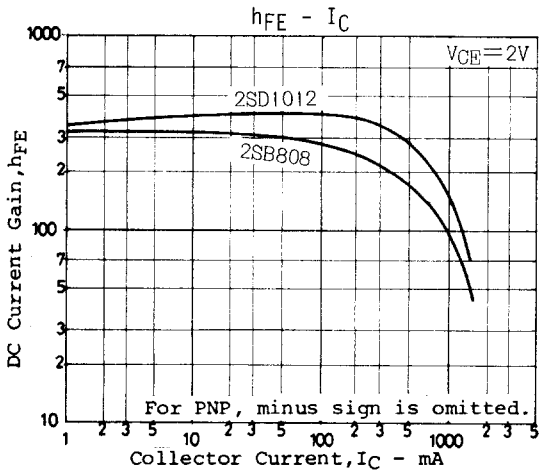
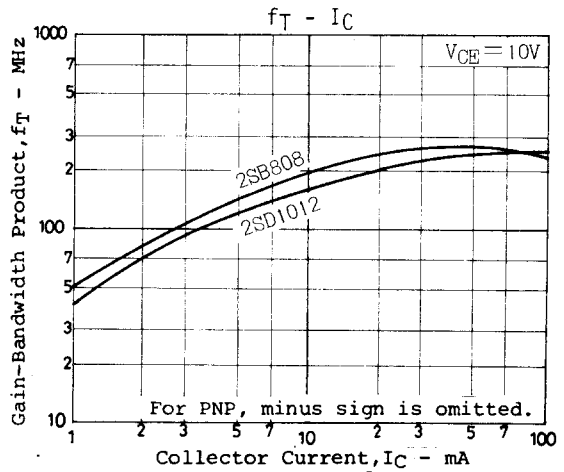
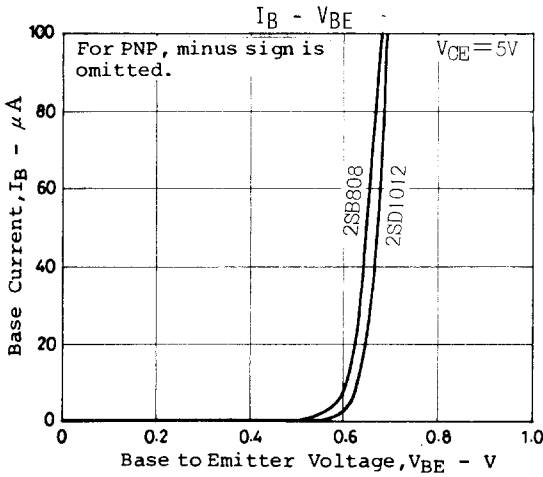
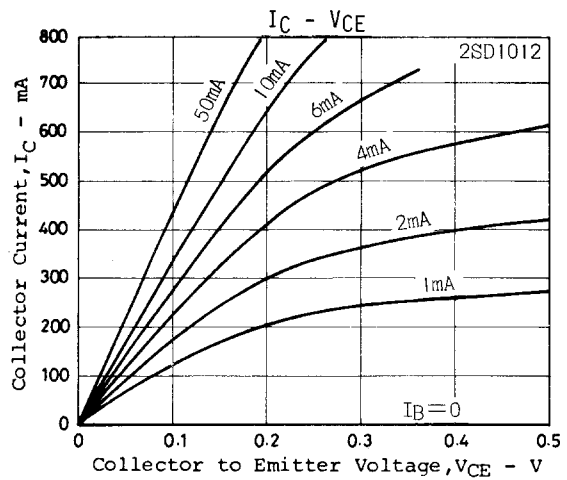
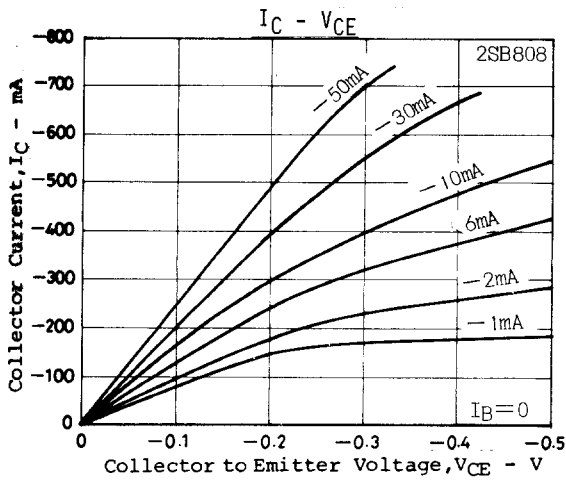
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# 2SB808/2SD1012

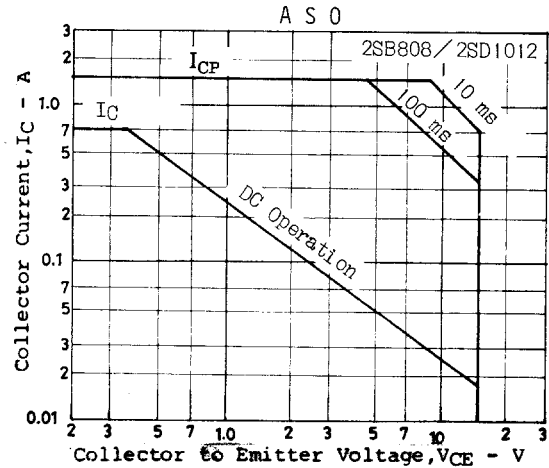
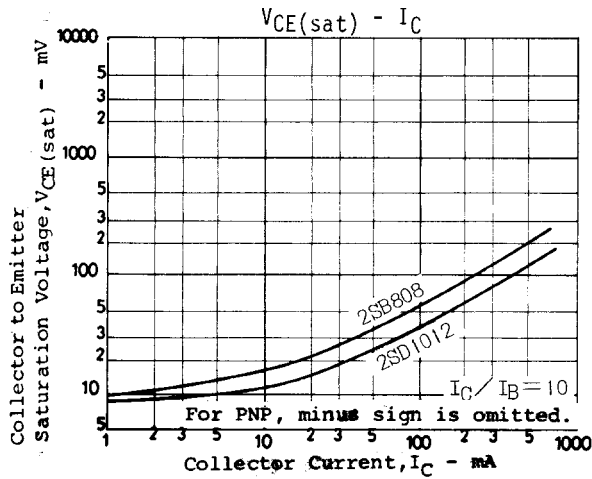
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)1}$	$I_C=(-)5mA, I_B=(-)0.5mA$		(-15)	(-35)	mV
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)2}$	$I_C=(-)100mA, I_B=(-)10mA$		10	25	mV
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)2}$	$I_C=(-)100mA, I_B=(-)10mA$		(-60)	(-120)	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)100mA, I_B=(-)10mA$		30	80	mV
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$		(-20)		V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$		(-15)		V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0$		(-5)		V

\* : The 2SB808/2SD1012 are classified by 50mA  $h_{FE}$  as follows :

2SB808	160 F 320	280 G 560		
2SD1012	160 F 320	280 G 560	480 H 960	



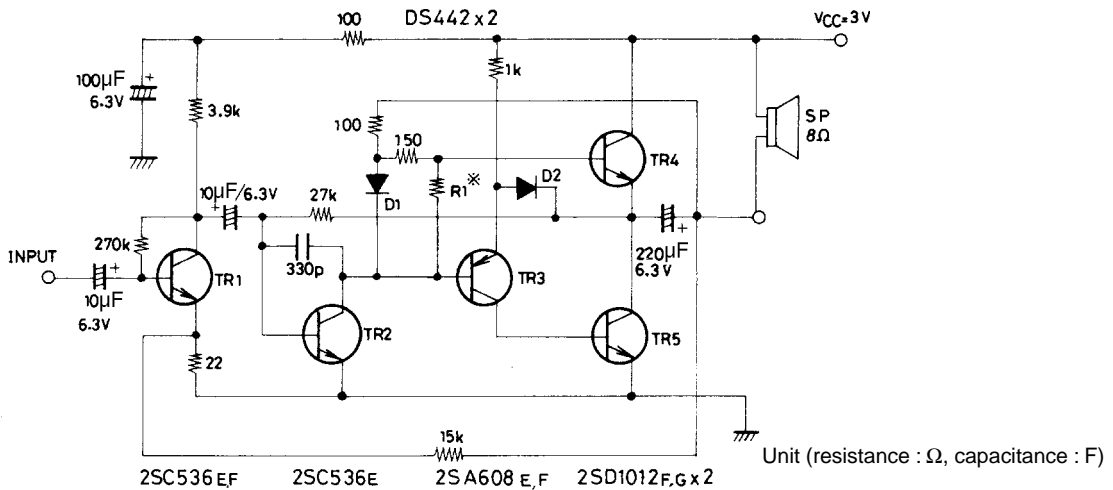
# 2SB808/2SD1012



**Sample Application Circuit :** Low-voltage 3V ( $P_O$  120mW) ITL-OTL power amplifier.

**Circuit configuration**

For obtaining an output of more than 100mW, the middle-point voltage at the output stage and the collector voltage of the driver transistor must be  $V_{CC}/2$ . Therefore, the output stage is of quasi complementary configuration composed of npn/npn transistors. The phase is reversed by the 2SA608 and the middle-point voltage are the output stage and the collector voltage of the driver transistor are more to be  $V_{CC}/2$  so that the output can be maximized.



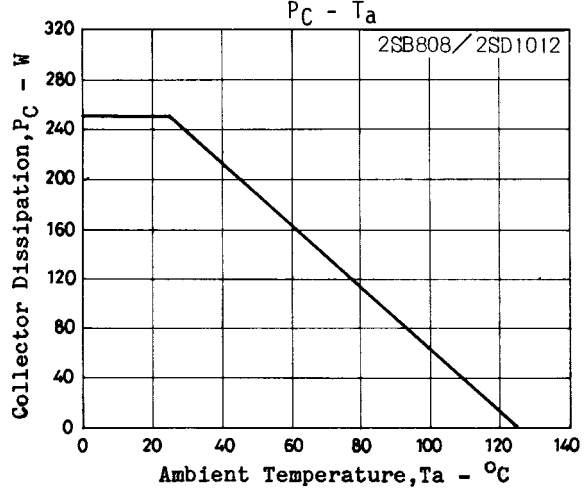
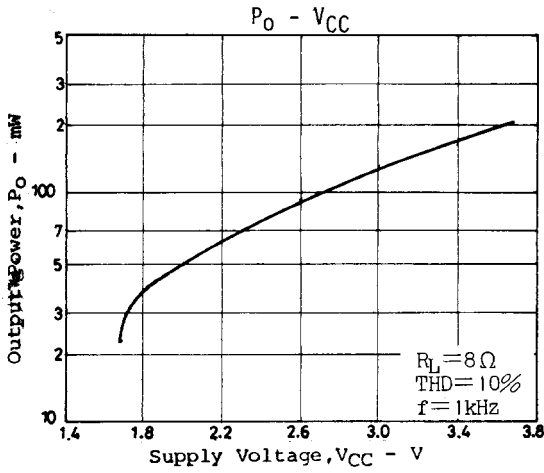
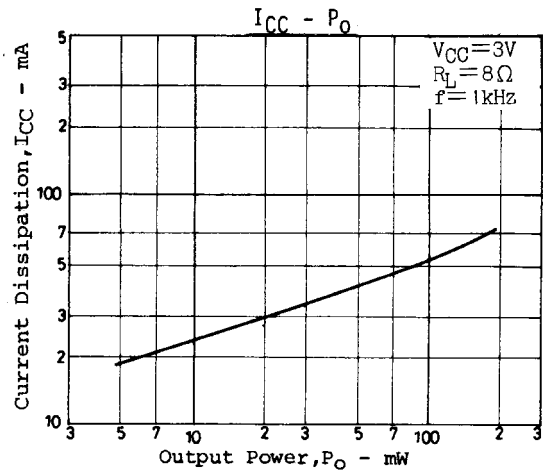
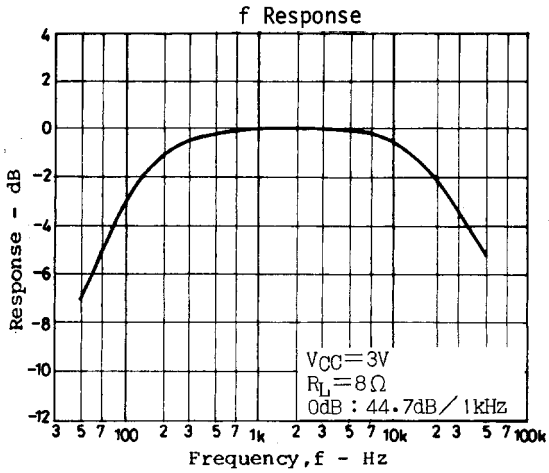
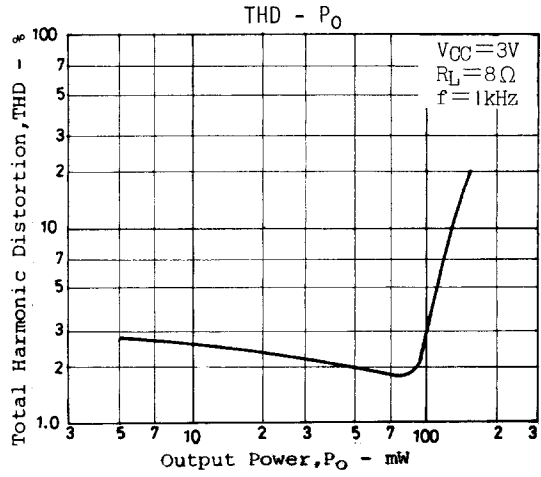
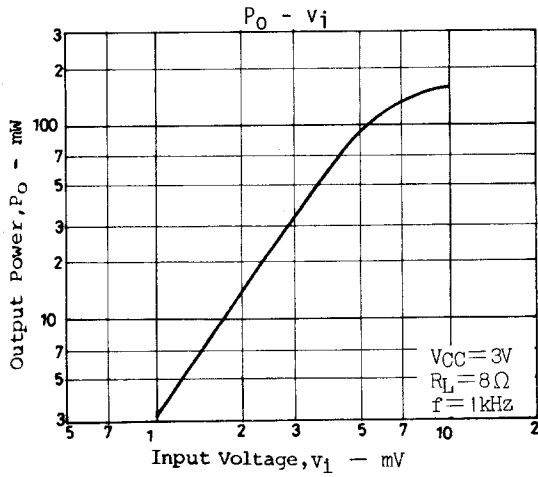
$R_1$  : Used control idle current  
 For  $R_1=820\Omega$ , use rank F for [TR4, 5 (2SD1012)].  
 For  $R_1=680\Omega$ , use rank G for [TR4, 5 (2SD1012)].

**Main Specifications**

Characteristic	Conditions	f=400Hz	f=1kHz	Unit
Current dissipation	Quiescent, total current dissipation	11.0 to 15.5	11.0 to 15.5	mA
Output power	THD=10%	120 to 125	127 to 130	mW
Voltage gain	$P_O=10mW$	43.3 to 45.5	43.5 to 45.7	dB
Total harmonic distortion	$P_O=50mW$	1.4 to 2.6	1.3 to 2.5	%
Input resistance	$P_O=10mW$	10.4 to 20.5	11.0 to 21.0	k $\Omega$

Note : for above-mentioned  $h_{FE}$  rank.

# 2SB808/2SD1012



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