Ordering number:676D

PNP/NPN Epitaxial Planar Silicon Transistors

2SB808/2SD1012

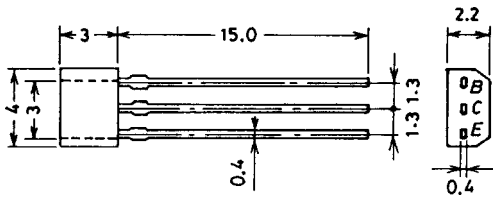
Low-Voltage Large-Current Amplifier Applications

Package Dimensions

unit:mm

2033

[2SB808/2SD1012]



B : Base
C : Collector
E : Emitter

SANYO : SPA

( ) : 2SB808

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)20	V
Collector-to-Emitter Voltage	V_{CEO}		(–)15	V
Emitter-to-Base Voltage	V_{EBO}		(–)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	Tj		125	˚C
Storage Temperature	Tstg		–55 to +125	˚C

Electrical Characteristics at Ta = 25˚C

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

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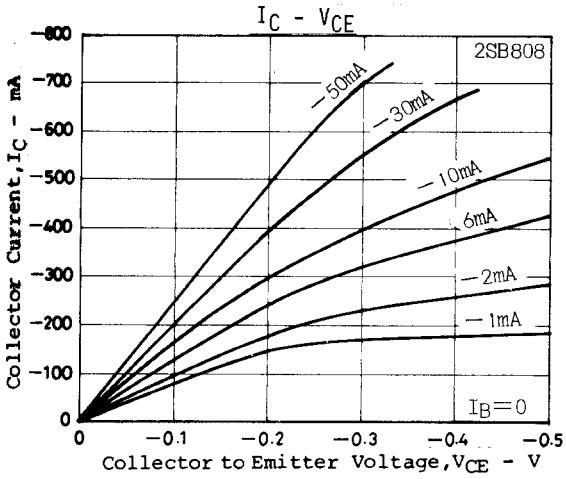
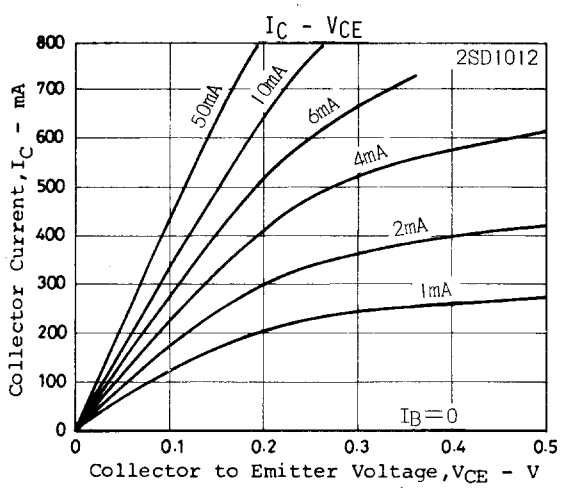
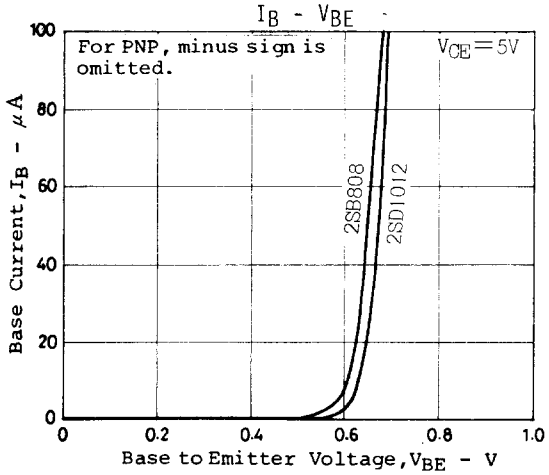
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}1$	I_C=(–)5mA, I_B=(–)0.5mA		(–15)	(–35)	mV
				10	25	mV
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}2$	I_C=(–)100mA, I_B=(–)10mA		(–60)	(–120)	mV
				30	80	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)100mA, I_B=(–)10mA		(–)0.8	(–)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(–)20			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)15			V
Emitter-to-Base Breakdown Votage	$V_{(BR)EBO}$	I_E=(–)10μA, I_C=0	(–)5			V

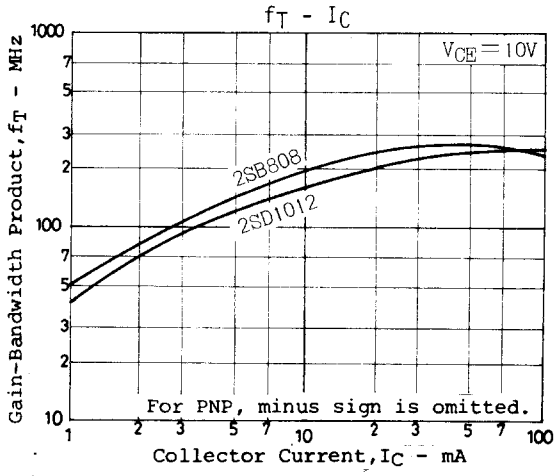
* : The 2SB808/2SD1012 are classified by 50mA h_{FE} as follows :

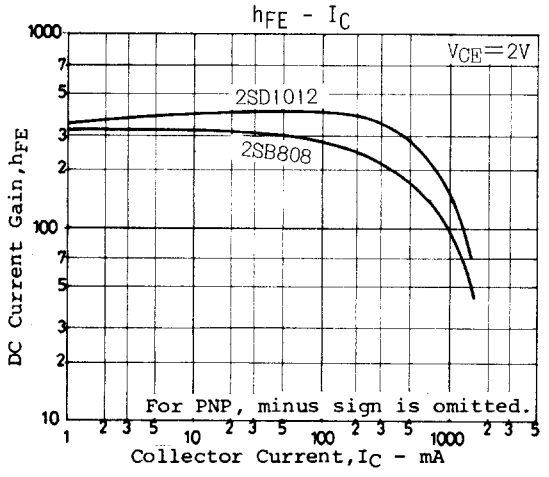
2SB808	160	F	320	280	G	560		
2SD1012	160	F	320	280	G	560	480	H	960

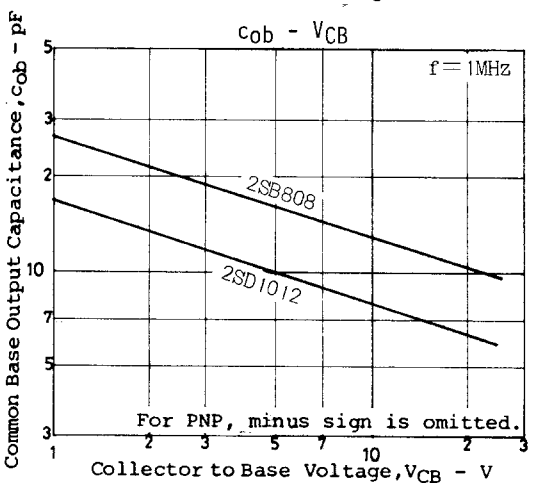


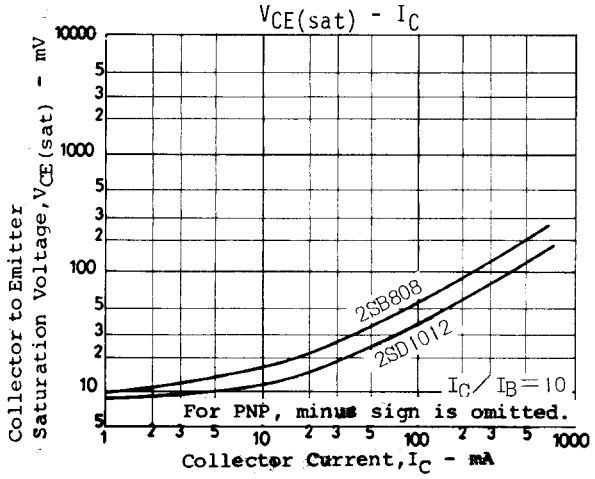


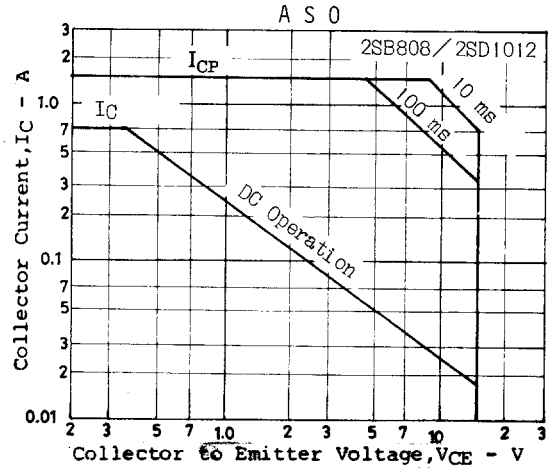








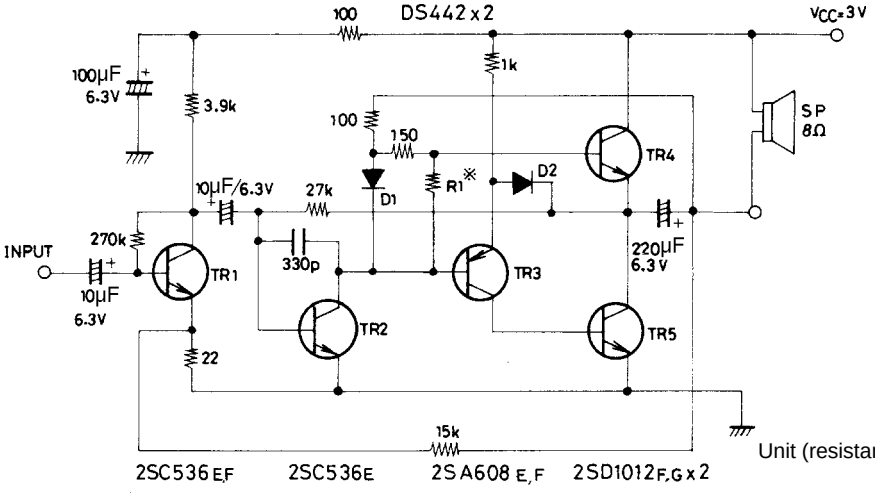




Sample Application Circuit : Low-voltage 3V (P_O 120mW) ITL-OTL power amplifier.

· 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.



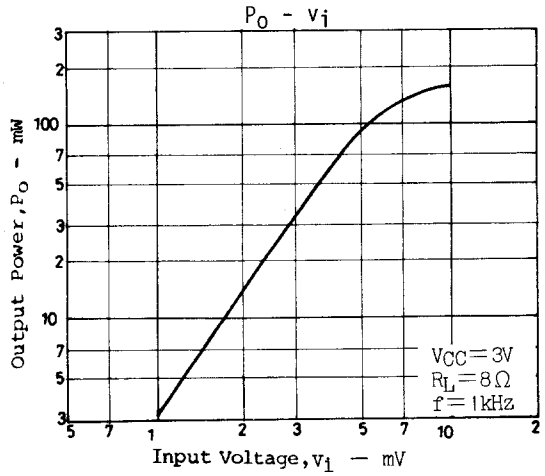
Unit (resistance : Ω, capacitance : F)

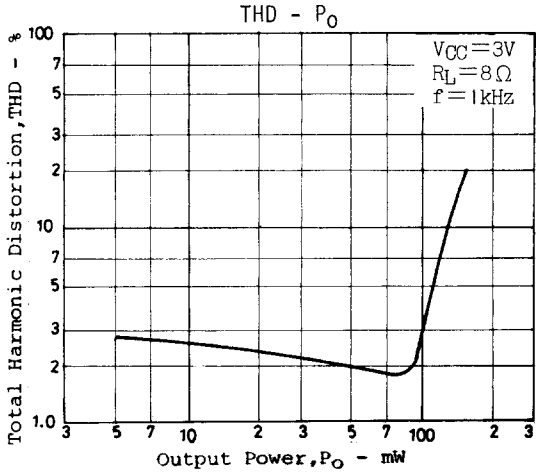
R_1 : Used control idle current
For R_1=820Ω, use rank F for [TR4, 5 (2SD1012)].
For R_1=680Ω, use rank G for [TR4, 5 (2SD1012)].

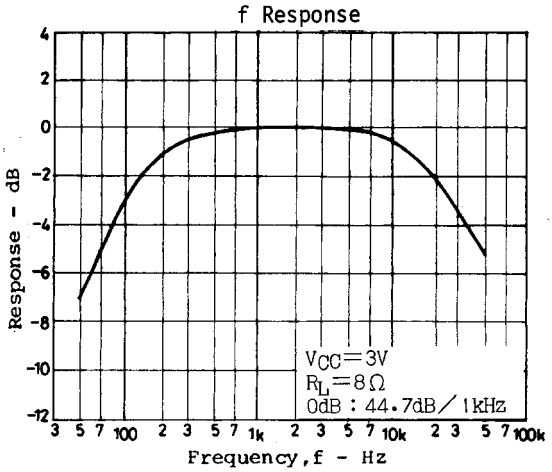
Main Specifications

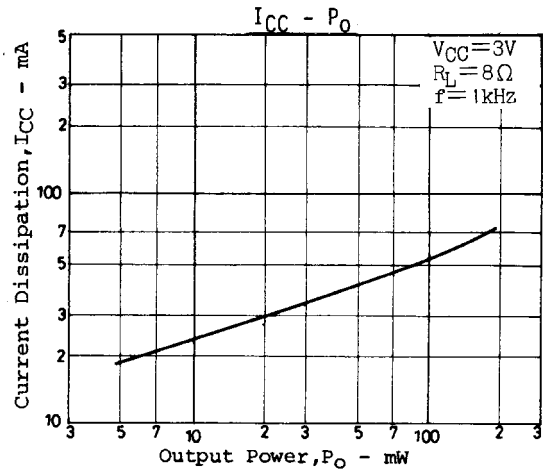
Characteristic	Conditions	f=400Hz	f=1kHz	Unit
Current dissipation	Quiescent, total current dissipation	11.0 to 15.5	11.0 to 15.5	mA
Output power	THD=10%	120 to 125	127 to 130	mW
Votlage gain	P_O=10mW	43.3 to 45.5	43.5 to 45.7	dB
Total harmonic distortion	P_O=50mW	1.4 to 2.6	1.3 to 2.5	%
Input resistance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

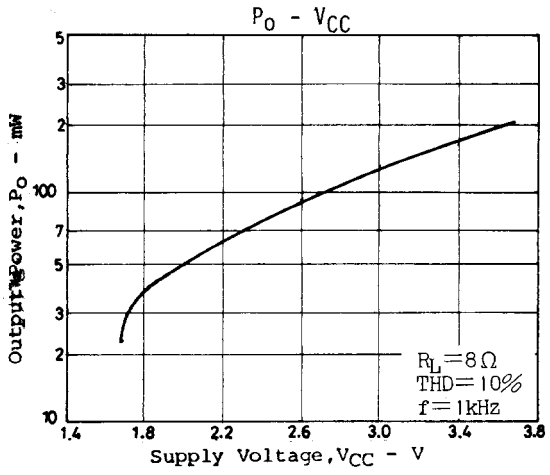
Note : for above-mentioned h_{FE} rank.

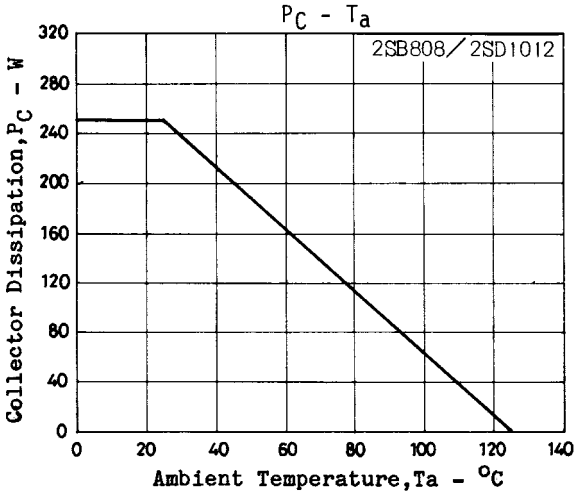

Po - vi
Output Power,Po - mW
Input Voltage,vi — mV
VCC=3V
RL=8Ω
f=1kHz


THD - Po
Total Harmonic Distortion,THD - %
Output Power,Po - mW
VCC=3V
RL=8Ω
f=1kHz


f Response
Response - dB
Frequency,f - Hz
VCC=3V
RL=8Ω
0dB : 44.7dB/1kHz


ICC - Po
Current Dissipation,ICC - mA
Output Power,Po - mW
VCC=3V
RL=8Ω
f=1kHz


Po - VCC
Output Power,Po - mW
Supply Voltage,VCC - V
RL=8Ω
THD=10%
f=1kHz


PC - Ta
Collector Dissipation,PC - W
Ambient Temperature,Ta - °C
2SB808/2SD1012