



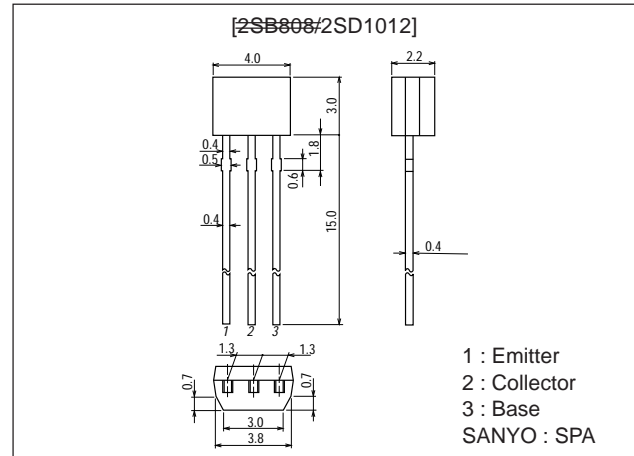
2SB808/2SD1012

Low-Voltage Large-Current Amplifier Applications

Package Dimensions

unit:mm

2033A



(-) : 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_{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	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_{CBO}	$V_{CB} = \approx 15\text{V}, I_E = 0$			≈ 1.0	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = \approx 4\text{V}, I_C = 0$			≈ 1.0	μA
DC Current Gain	h_{FE1}	$V_{CE} = \approx 2\text{V}, I_C = \approx 50\text{mA}$	160*		960*	
	h_{FE2}	$V_{CE} = \approx 2\text{V}, I_C = \approx 500\text{mA}$ Pulse	80			
Gain-Bandwidth Product	f_T	$V_{CE} = \approx 10\text{V}, I_C = \approx 50\text{mA}$		250		MHz
Common Base Output Capacitance	C_{ob}	$V_{CB} = \approx 10\text{V}, f = 1\text{MHz}$		≈ 13		pF
				8		pF

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~~2SB808~~/2SD1012

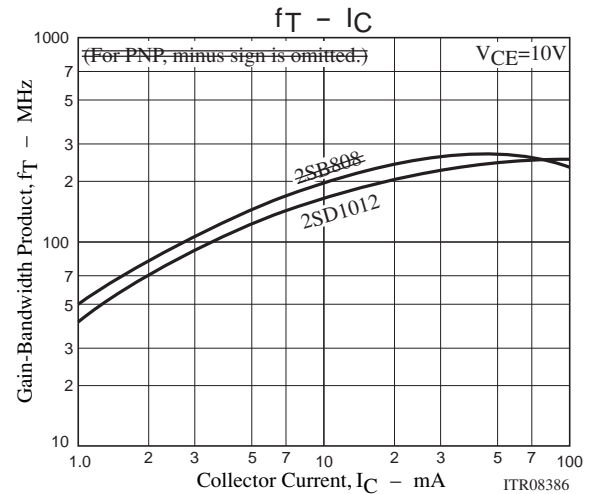
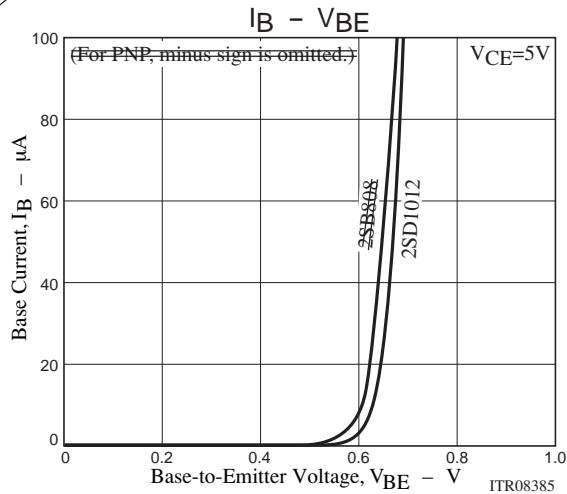
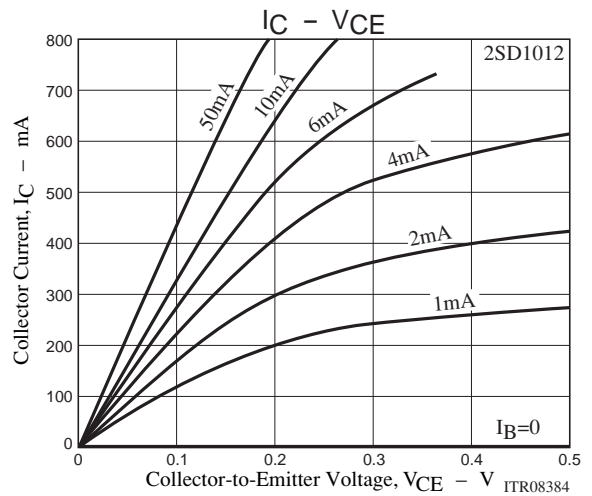
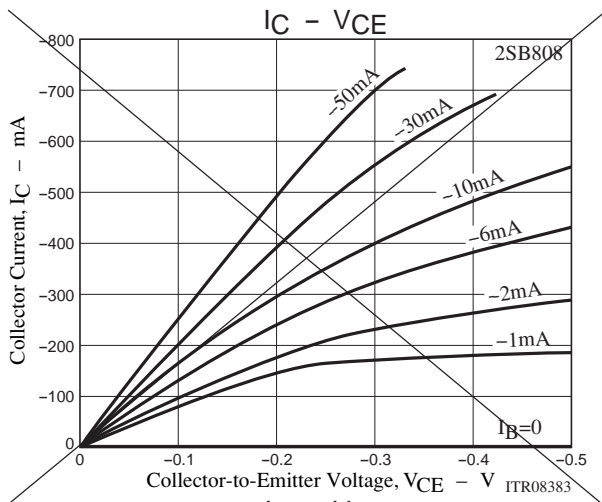
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)1}$	$I_C = (\rightarrow) 5\text{mA}, I_B = (\rightarrow) 0.5\text{mA}$		$(\leftarrow) 15$	$(\leftarrow) 35$	mV
	$V_{CE(sat)2}$	$I_C = (\rightarrow)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

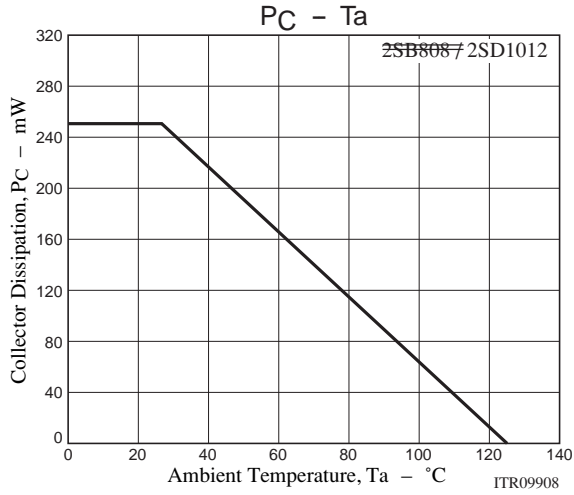
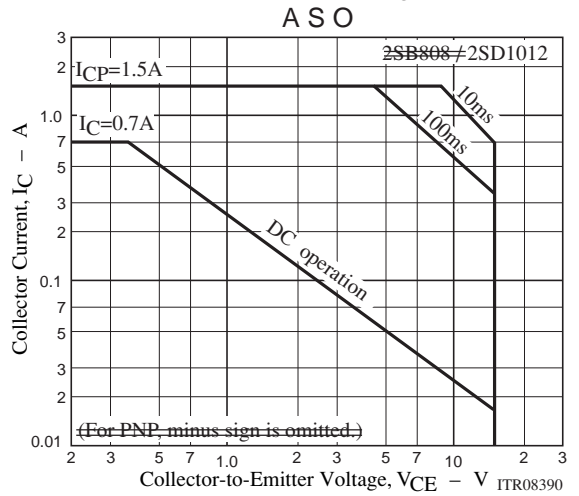
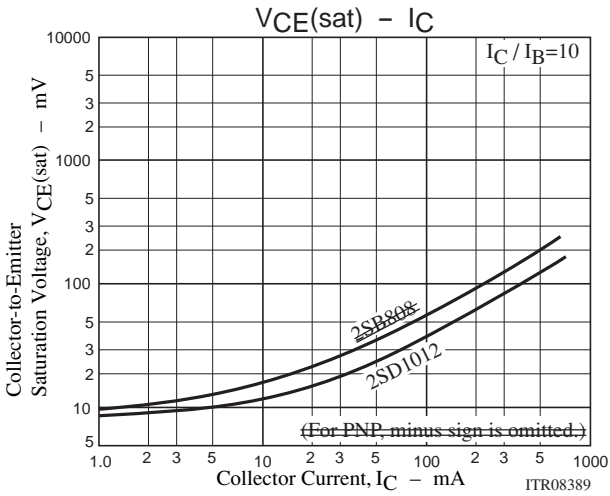
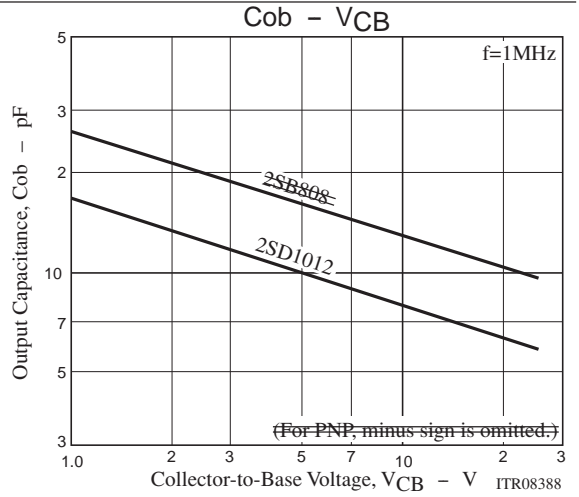
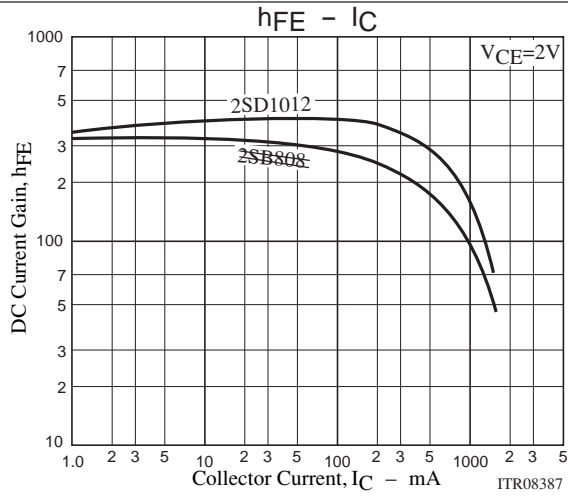
* : The ~~2SB808~~/2SD1012 are classified by 50mA h_{FE} as follows :

2SB808	Rank	F	G
	h_{FE}	160 to 320	280 to 560

Rank	F	G	H
h_{FE}	160 to 320	280 to 560	480 to 960



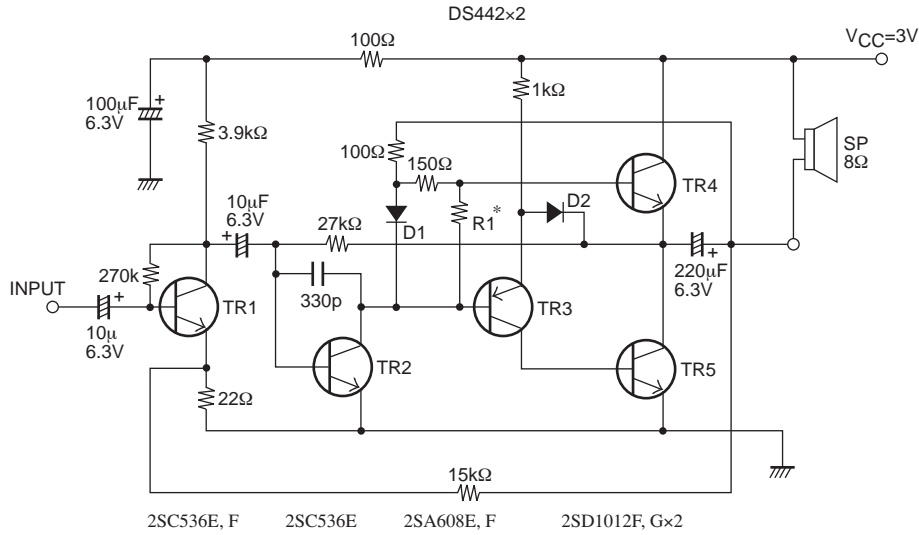
2SB808/2SD1012



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.



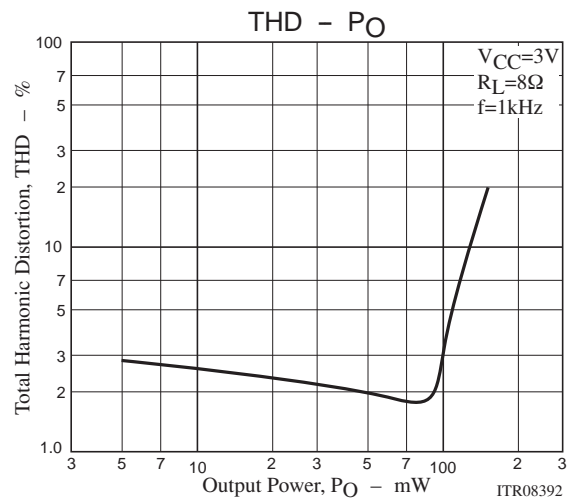
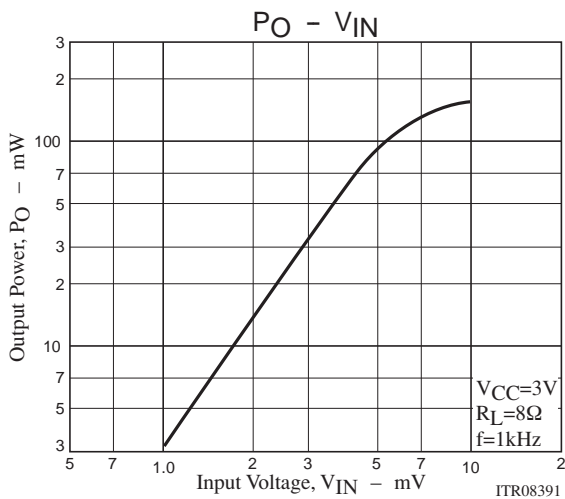
R1 : Used control idele current
 For R1=820Ω. use rank F for [TR4, 5(2SD1012)]
 For R1=680Ω. use rank G for [TR4, 5(2SD1012)]

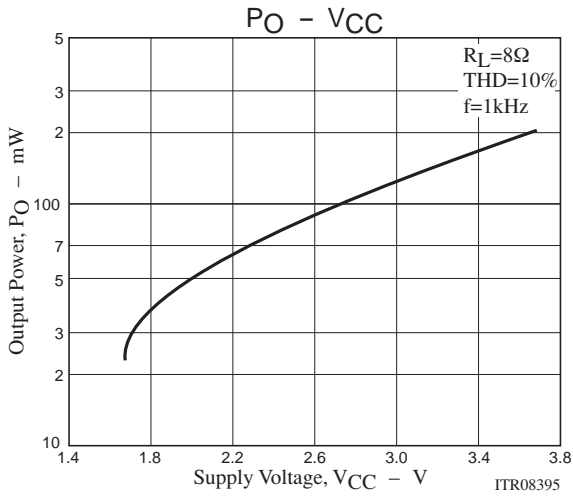
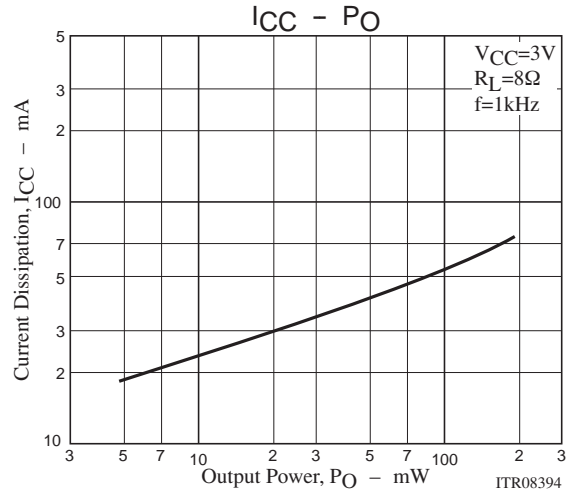
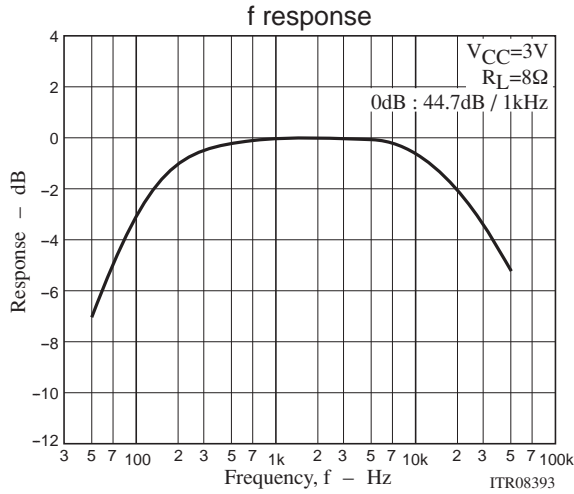
ITR09909

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	kΩ

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





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