Ordering number:ENN676D

PNP/NPN Epitaxial Planar Silicon Transistors

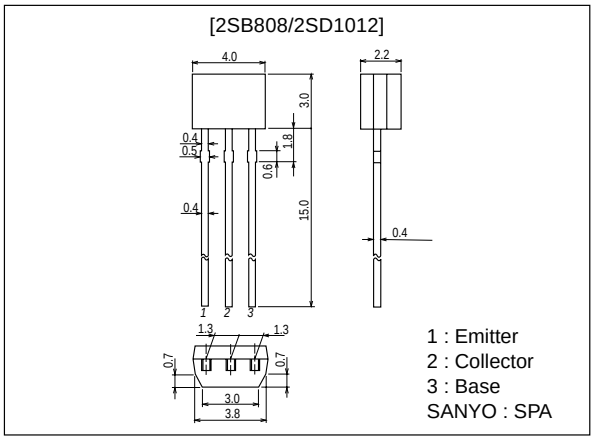
2SB808/2SD1012

Low-Voltage Large-Current Amplifier Applications

Package Dimensions

unit:mm

2033A



( ) : 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
	$V_{CE(sat)}2$	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

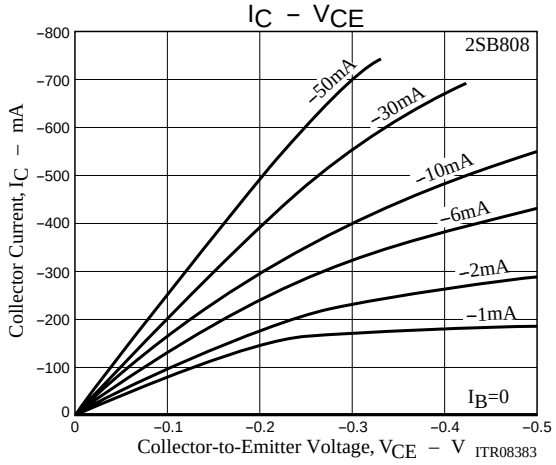
* : The 2SB808/2SD1012 are classified by 50mA h_{FE} as follows :

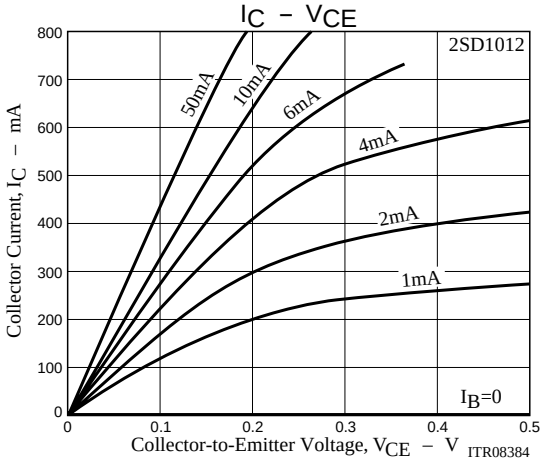
2SB808

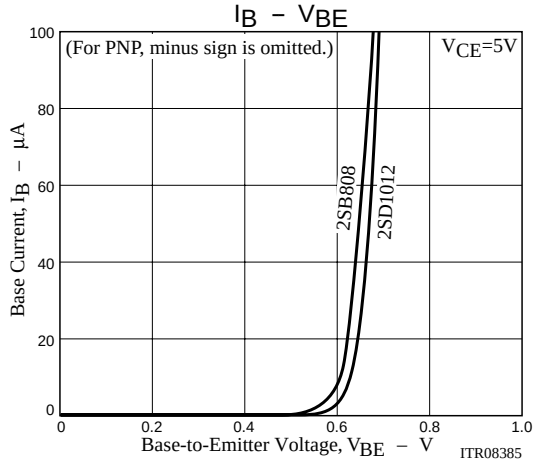
Rank	F	G
h_{FE}	160 to 320	280 to 560

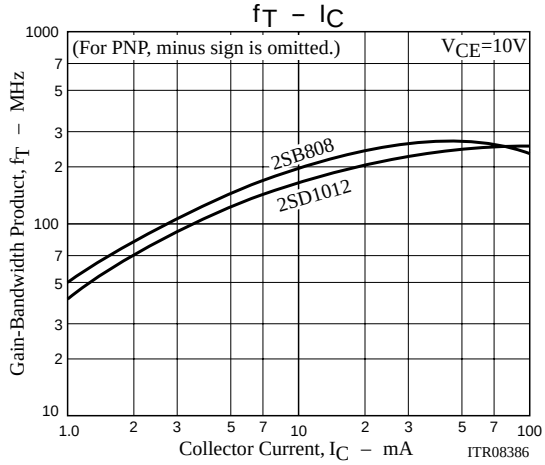
2SD1012

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

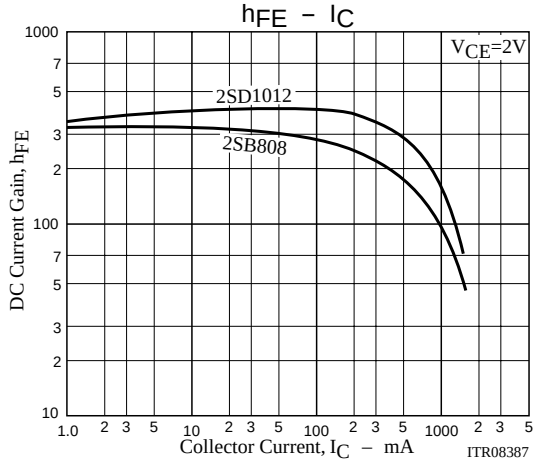




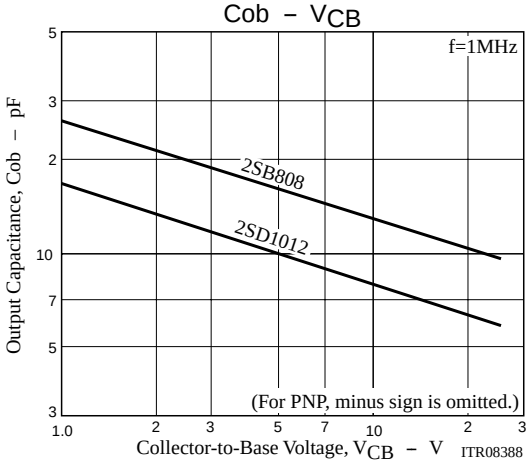




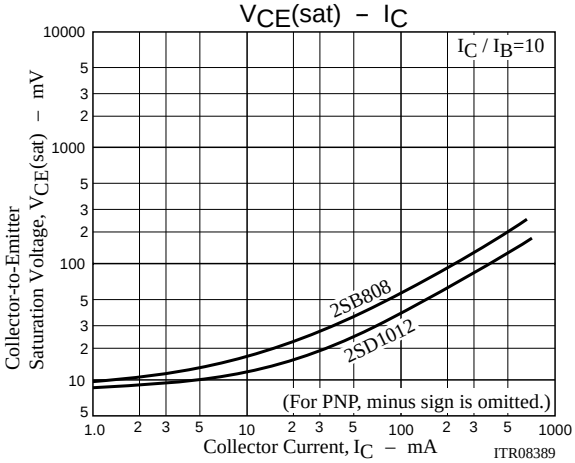
h_{FE} – I_C



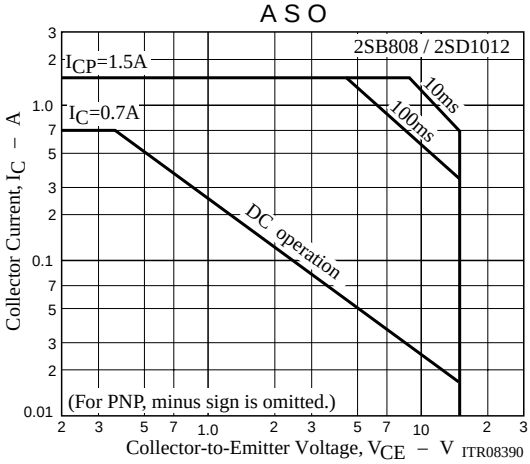
Cob – V_{CB}



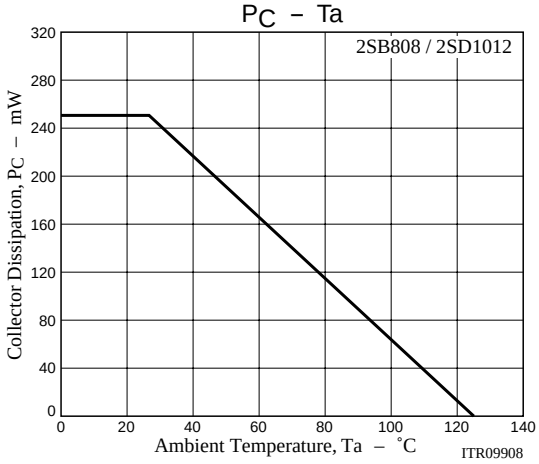
V_{CE}(sat) – I_C



A S O



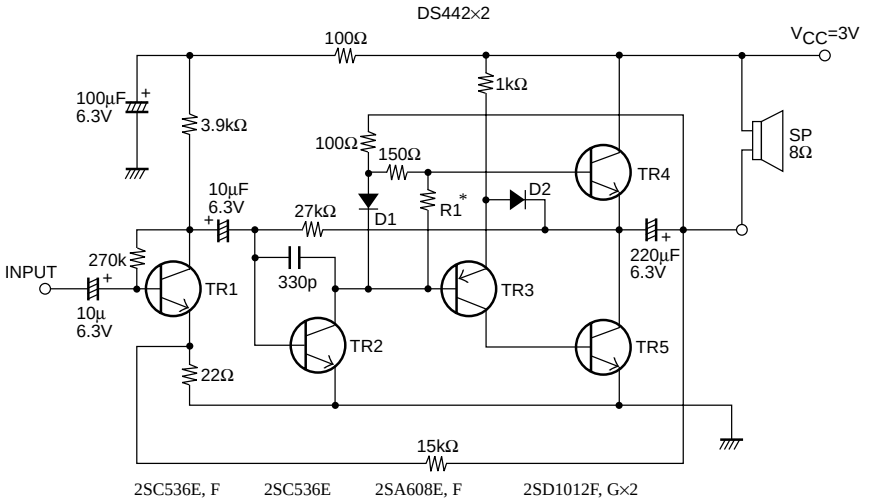
P_C – Ta



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.



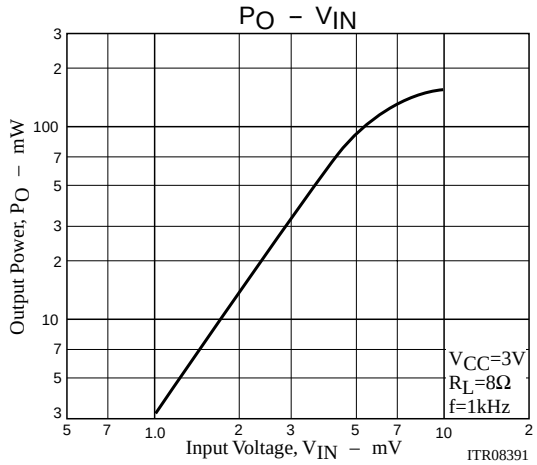
R1 : Used control idele current
For R1=820Ω. use rank F for [TR4, 5(2SD1012)]
For R1=680Ω. use rank G for [TR4, 5(2SD1012)]

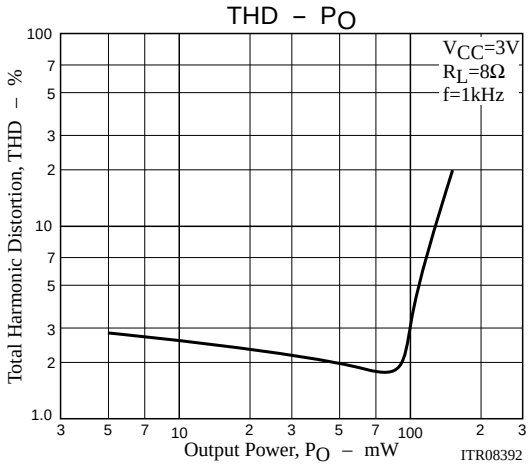
ITR09909

Main Specifications

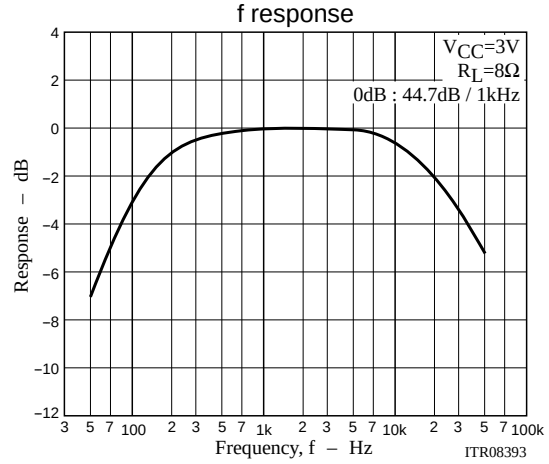
Characteristic	Conditions	f=400Hz	f=1kHz	Unit
Current dissipation	Quiescent, total current dissipation	11.0 to 15.5	11.0 to 15.5	mA
Output power	THD=10%	120 to 125	127 to 130	mW
Votlage gain	P_O=10mW	43.3 to 45.5	43.5 to 45.7	dB
Total harmonic distortion	P_O=50mW	1.4 to 2.6	1.3 to 2.5	%
Input resistance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

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

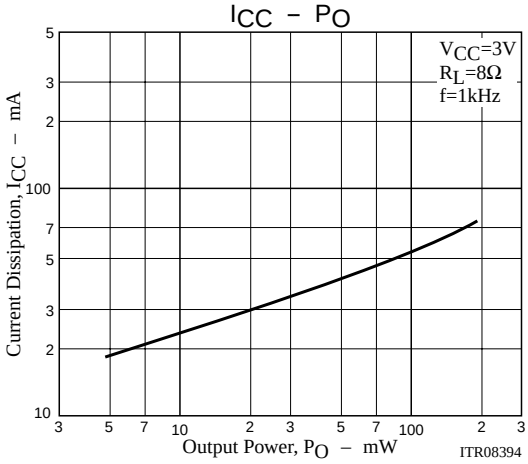




f response



ICC – PO



PO – VCC