

SANYO

No.341G

2SB632,632K/2SD612,612K

PNP/NPN Epitaxial Planar Silicon Transistors

25V/35V, 2A Low-Frequency Power Amp Applications**Features**

- High collector dissipation and wide ASO.

(): 2SB632, 632K

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

		2SB632, D612	2SB632K, D612K	unit
Collector-to-Base Voltage	V_{CB0}	(-)25	(-)35	V
Collector-to-Emitter Voltage	V_{CE0}	(-)25	(-)35	V
Emitter-to-Base Voltage	V_{EB0}		(-)5	V
Collector Current	I_C	(-)2		A
Collector Current (Pulse)	I_{CP}	(-)3		A
Collector Dissipation	P_C	1		W
		10		W
Junction Temperature	T_j	150		$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +150		$^\circ\text{C}$

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

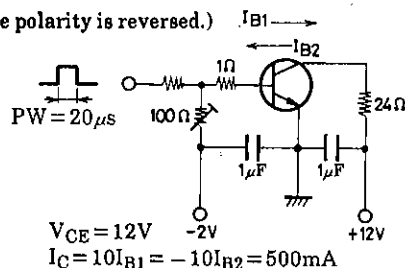
			min	typ	max	unit
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C = (-)10\mu\text{A}, I_E = 0$	B632, D612 (-)25			V
			B632K, D612K (-)35			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C = (-)1\text{mA}, R_{BE} = \infty$	B632, D612 (-)25			V
			B632K, D612K (-)35			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E = (-)10\mu\text{A}, I_C = 0$	(-)5			V
Collector Cutoff Current	I_{CBO}	$V_{CB} = (-)20\text{V}, I_E = 0$			(-)1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = (-)4\text{V}, I_C = 0$			(-)1	μA
DC Current Gain	$h_{FE}(1)$	$V_{CE} = (-)2\text{V}, I_C = (-)500\text{mA}$	60※		320※	
	$h_{FE}(2)$	$V_{CE} = (-)2\text{V}, I_C = (-)1.5\text{A}$	30			
Gain-Bandwidth Product	f_T	$V_{CE} = (-)10\text{V}, I_C = (-)50\text{mA}$		100		MHz
Output Capacitance	C_{ob}	$V_{CB} = (-)10\text{V}, f = 1\text{MHz}$		(45)30		pF
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C = (-)1.5\text{A}, I_B = (-)0.15\text{A}$		(-0.4)(-0.9)		V
				0.3 0.8		
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C = (-)1.5\text{A}, I_B = (-)0.15\text{A}$		(-)1.1(-)1.5		V
Turn-ON Time	t_{on}	See specified Test Circuit.		(60)50		ns
Fall Time	t_f	"		(80)100		ns
Storage Time	t_{stg}	"		400		ns

※ : The 2SB632/2SD612 are classified by 500mA h_{FE} as follows.

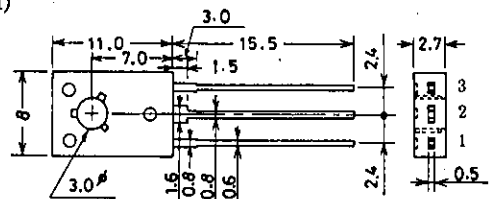
60	D	120	100	E	200	160	F	320
----	---	-----	-----	---	-----	-----	---	-----

Switching Time Test Circuit

(For PNP, the polarity is reversed.)

**Package Dimensions 2009B**

(unit : mm)



JEDEC: TO-126

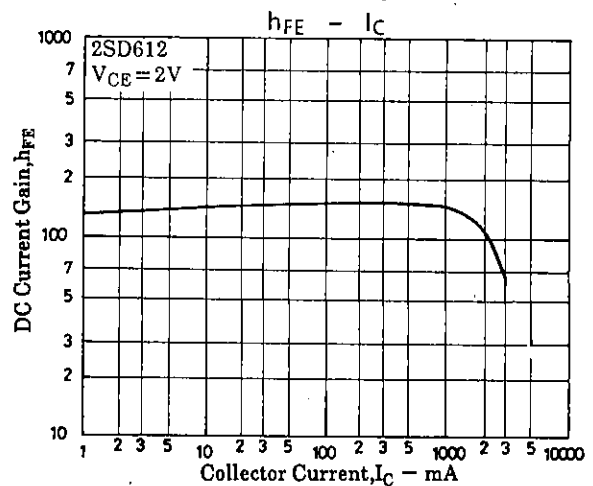
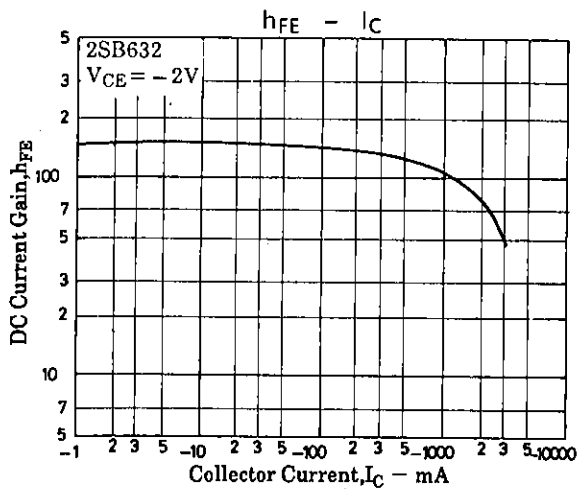
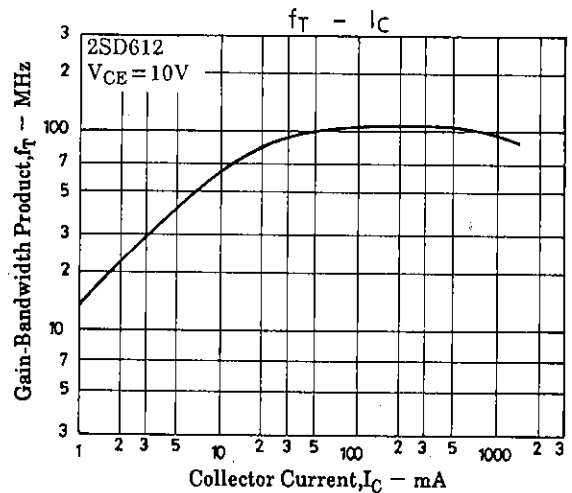
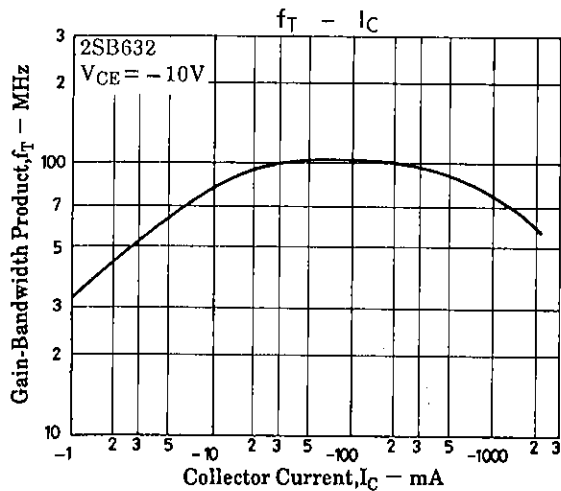
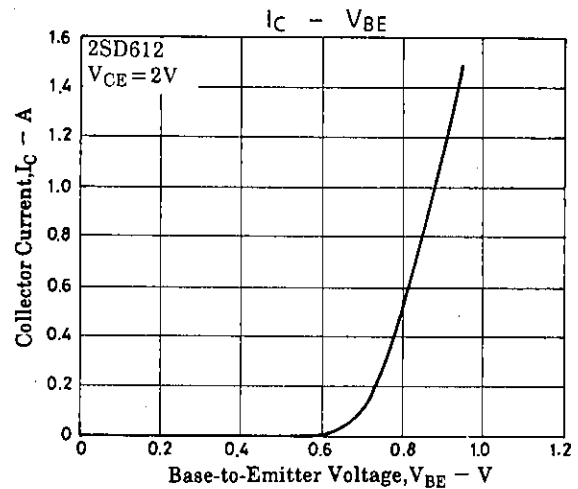
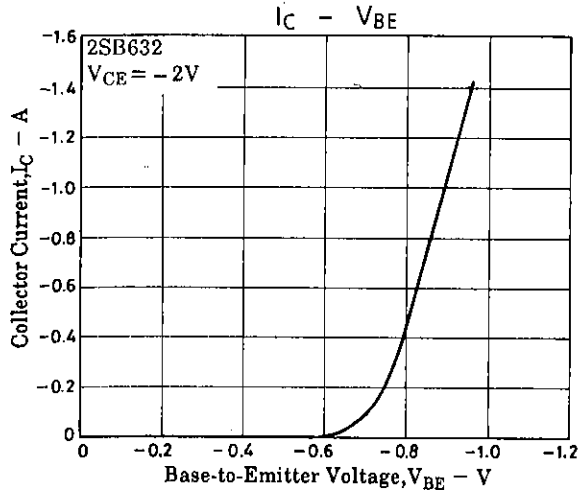
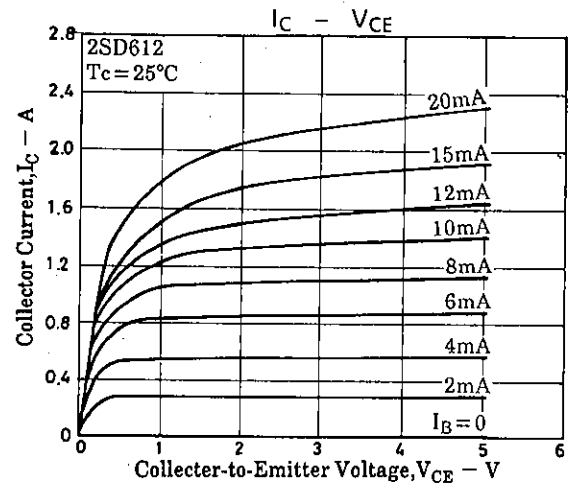
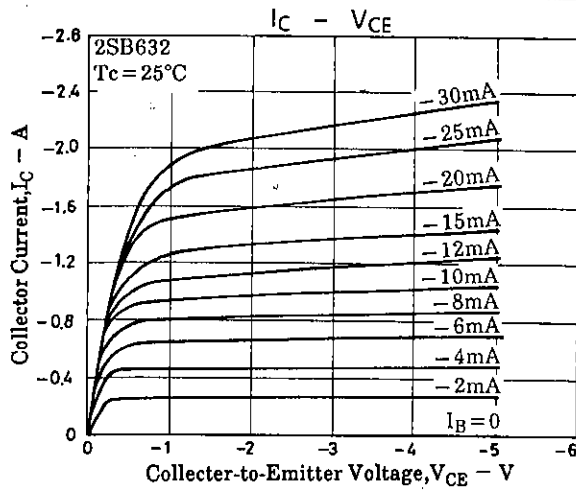
- 1: Emitter
- 2: Collector
- 3: Base

SANYO Electric Co., Ltd. Semiconductor Business Headquarters

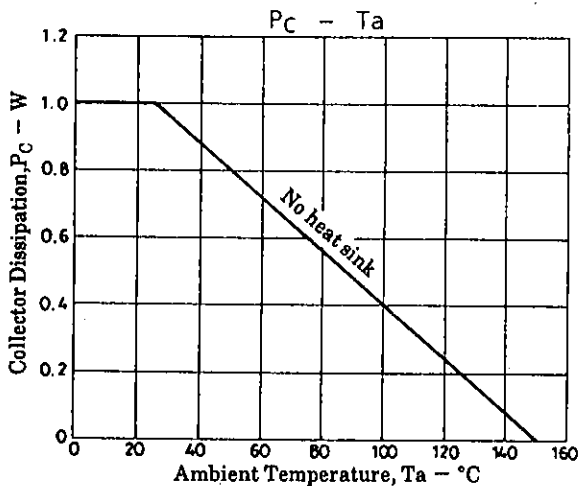
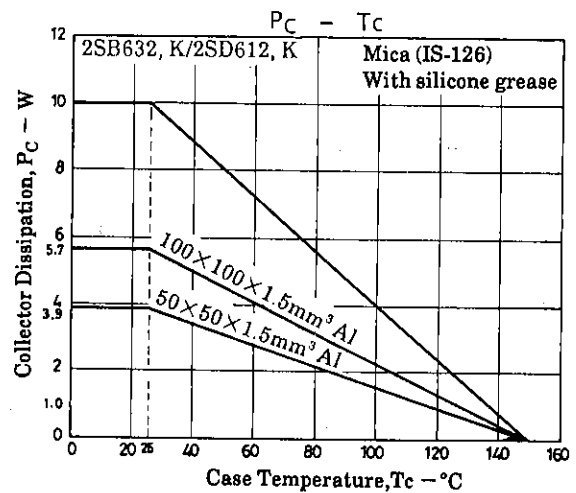
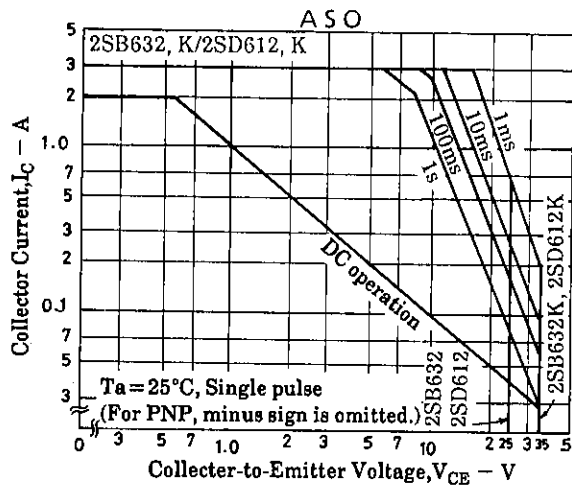
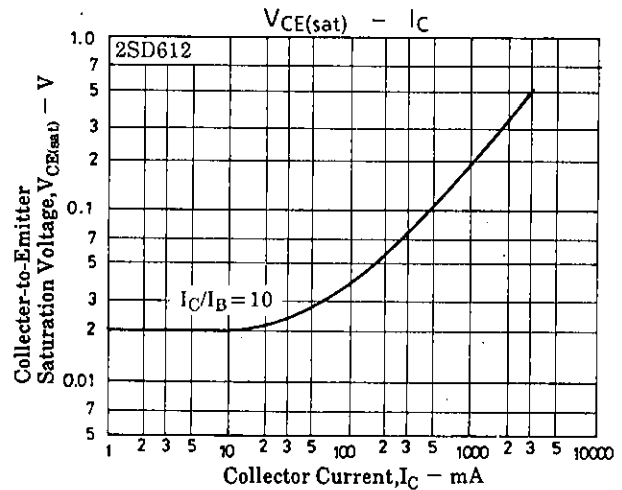
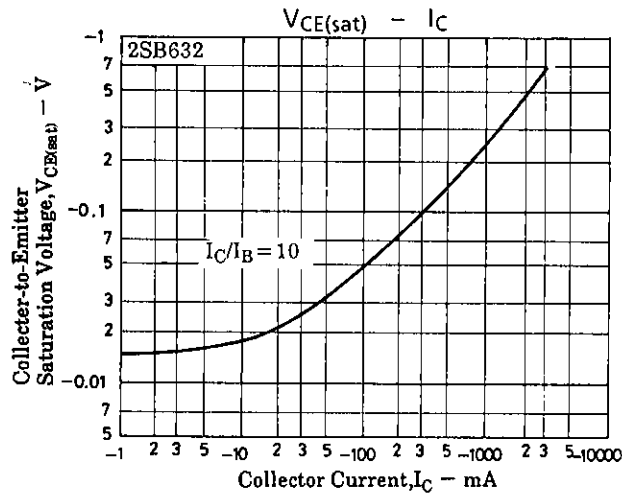
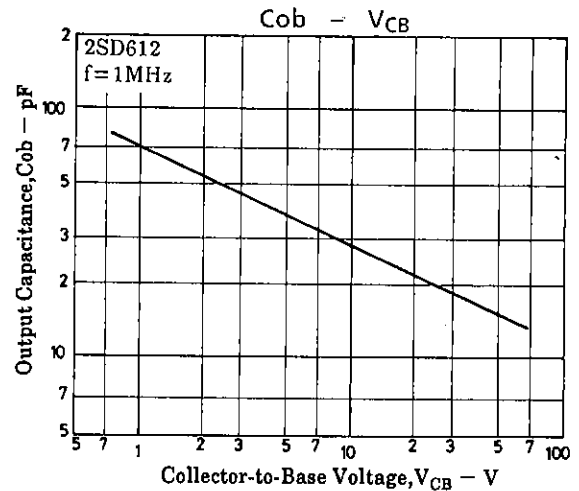
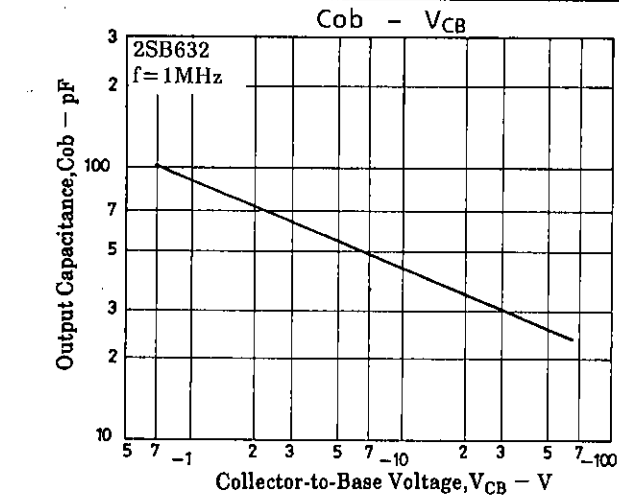
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110 JAPAN

90595MO (KOTO)/4017KI/D174MW, TS/E108, 8-2338/7076, 8-2176 No.341-1/8

2SB632, 632K/2SD612, 612K

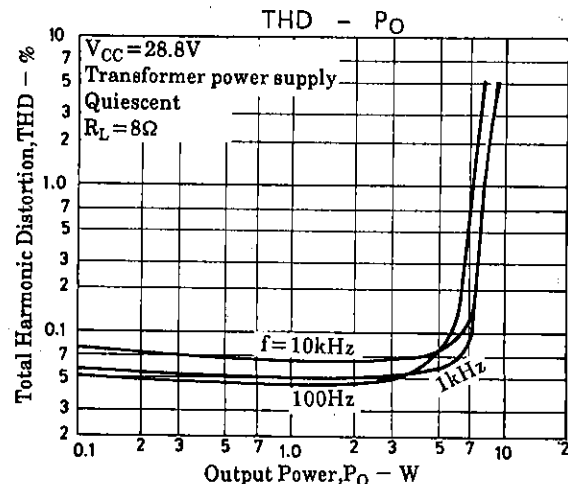
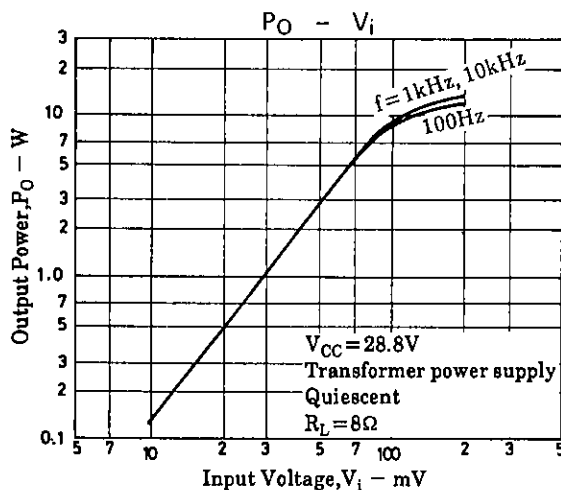
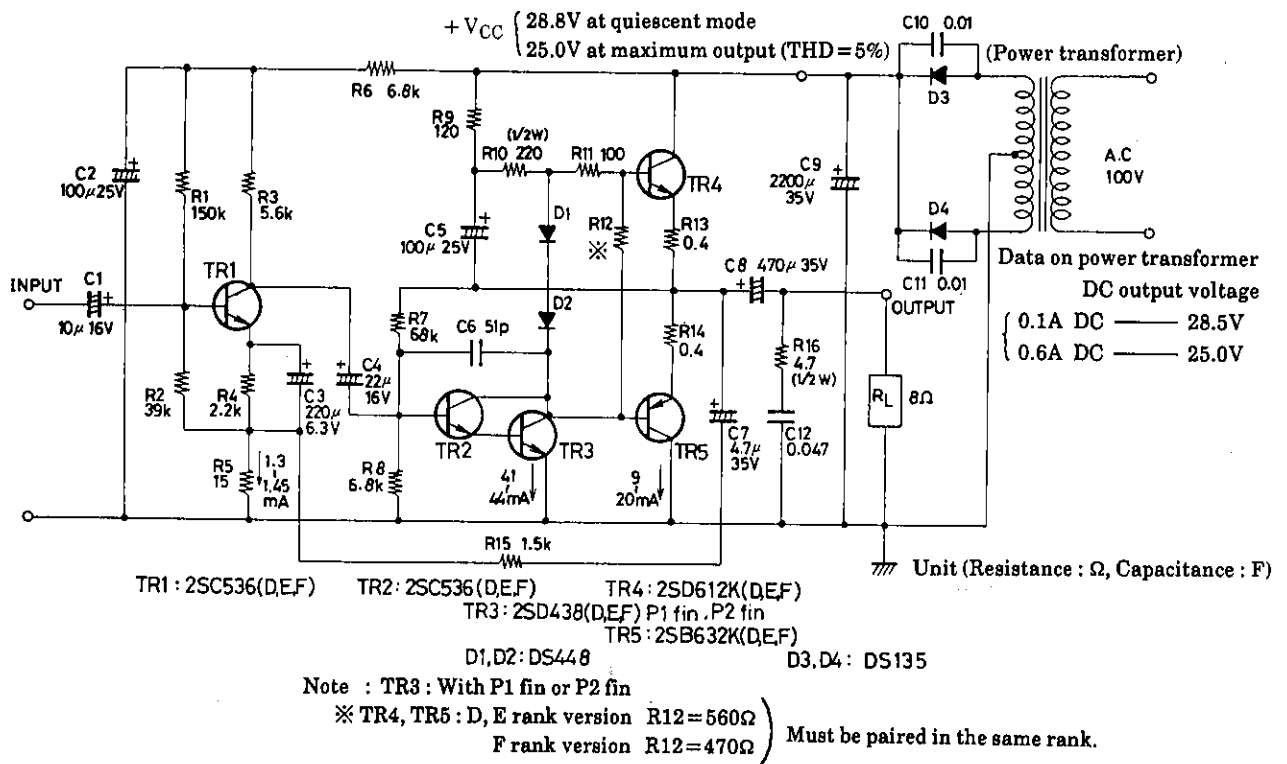


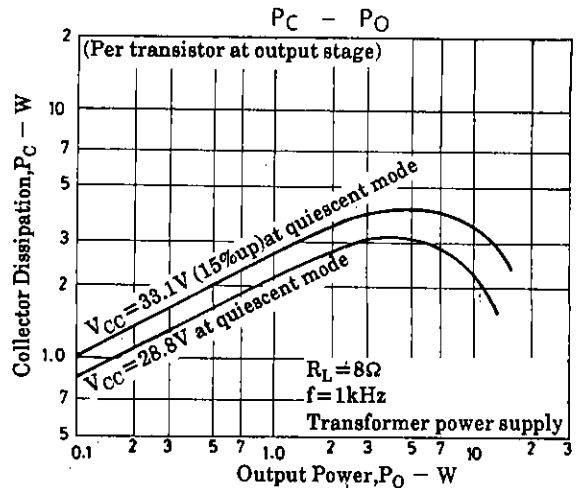
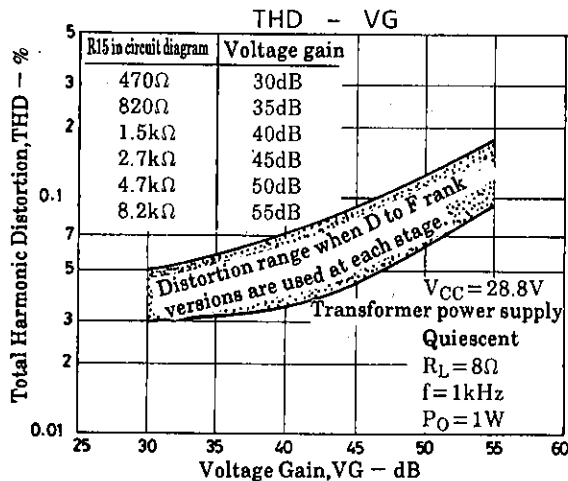
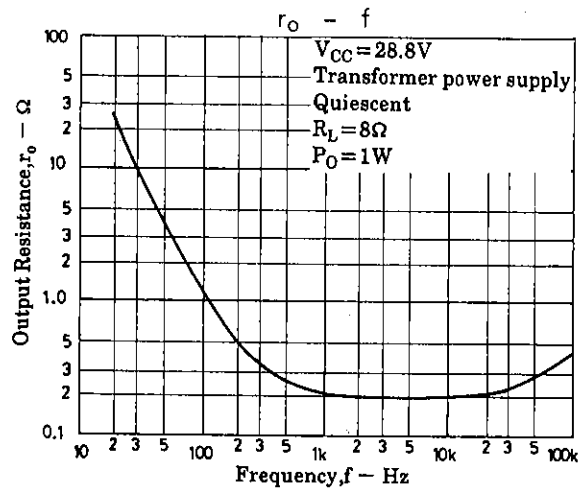
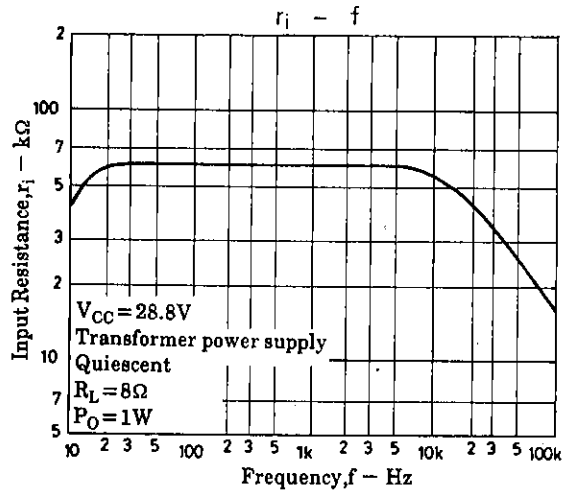
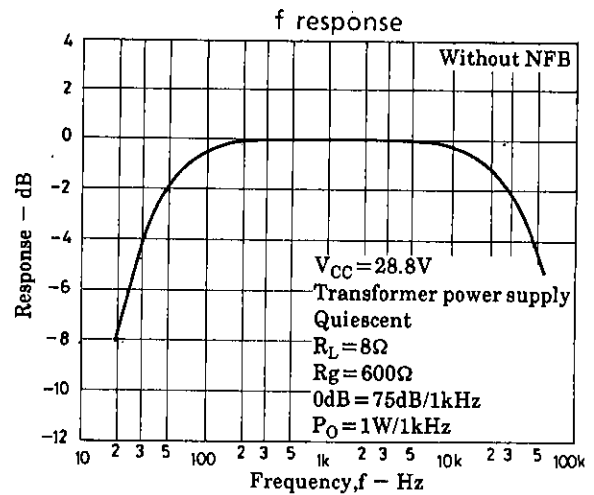
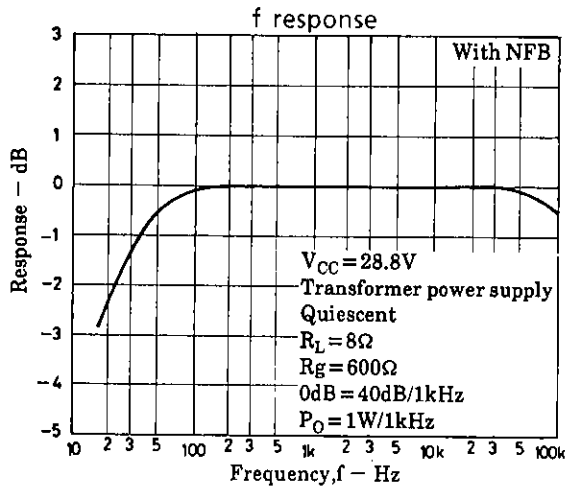
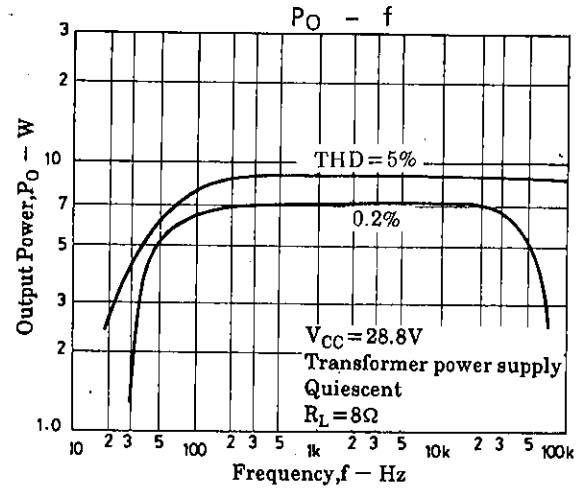
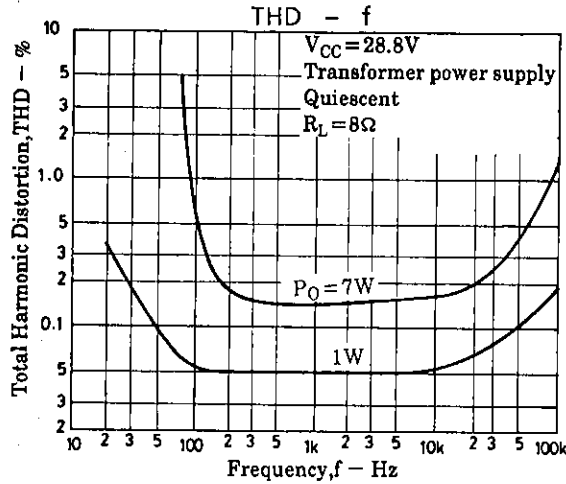
2SB632, 632K/2SD612, 612K

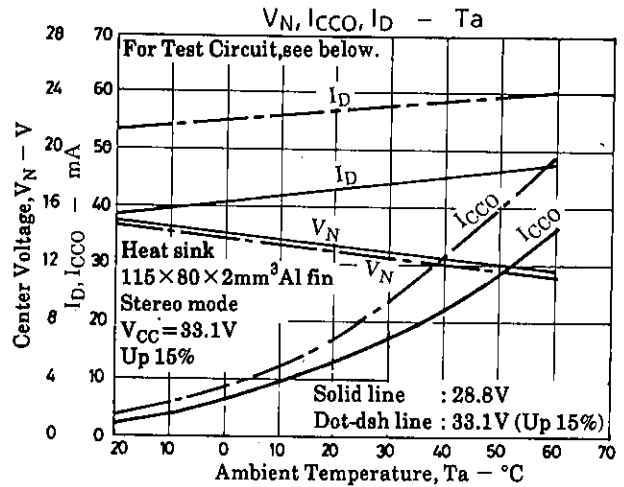
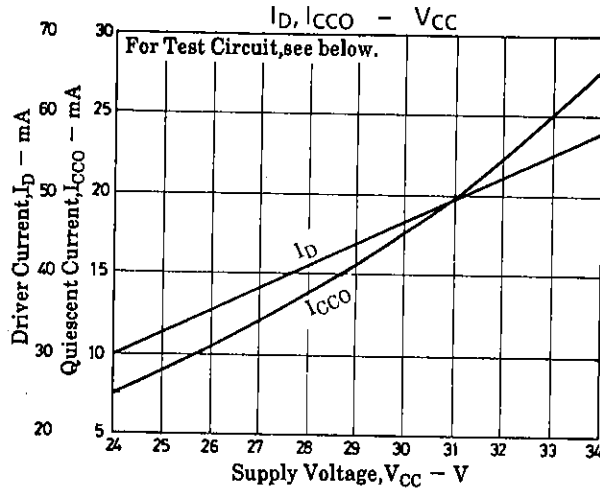


Sample Application Circuit 1 : 8W pure complementary amplifier using the 2SB632K/2SD612K
 [Specifications] Power supply : 100V AC supply transformer with no signal = 28.8V,
 Maximum output = (THD = 5%) = 25V, $f = 1\text{kHz}$, $R_L = 8\Omega$, $R_g = 600\Omega$

Quiescent Current (Collector Current)	I_{CC0}	Output stage	typ	uint
	I_D	Drive stage	14.0	mA
	I_C	First stage	42.0	mA
Voltage Gain	V_G	Without NFB	1.4	mA
	V_G	With NFB	75	dB
Output Power	P_O	THD = 5%	40	dB
	$P_O = 1\text{W}$		8.7	W
Total Harmonic Distortion	THD	$P_O = 1\text{W}$	0.05	%
Input Resistance	r_i	$P_O = 1\text{W}$	60	k Ω
Output Resistance	r_o	$P_O = 1\text{W}$	0.2	Ω



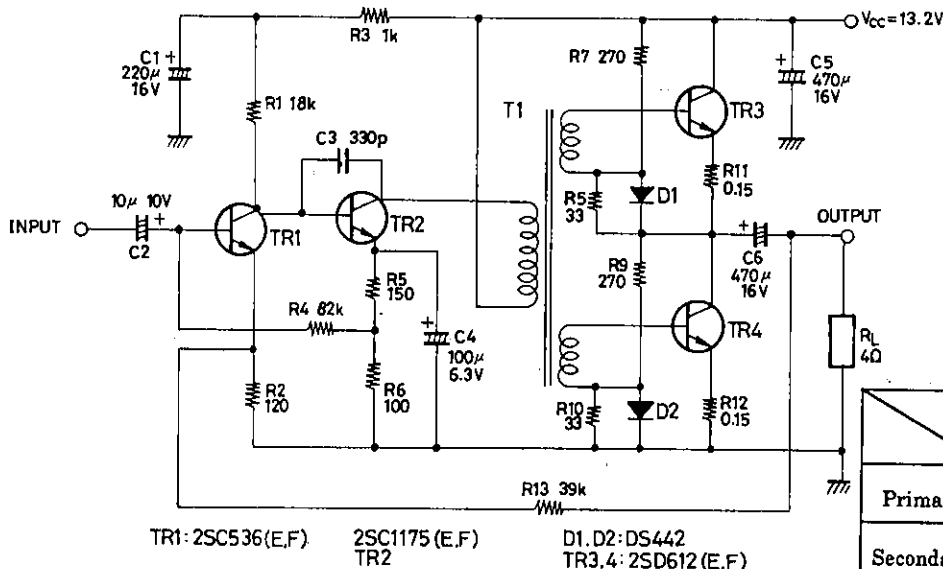
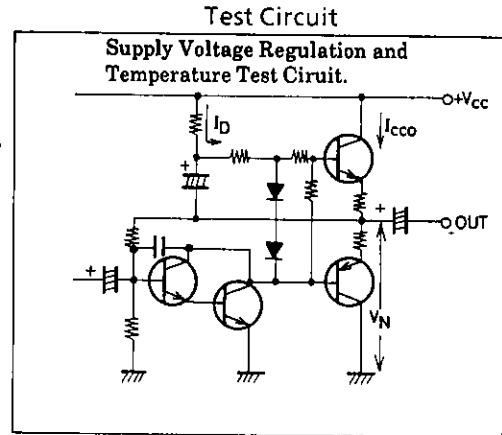




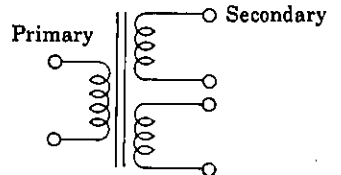
Sample Application Circuit 2 : 2SD612-Used 4W Input Transformer Coupling Amp for Car Use.

[Specifications] $V_{CC}=13.2V$, $R_L=4\Omega$, $R_g=600\Omega$, $f=1kHz$

Quiescent Current (Collector Current)	I_{CCO}	Output stage	typ	unt
	I_D	Drive stage	12.0	mA
Voltage Gain	V_G	Without NFB	66	dB
	V_G	With NFB	49	dB
Output Power	P_O	THD = 10%	4.7	W
Total Harmonic Distortion	THD	$P_O=0.5W$	0.8	%
Input impedance	r_i	$P_O=0.5W$	60	k Ω

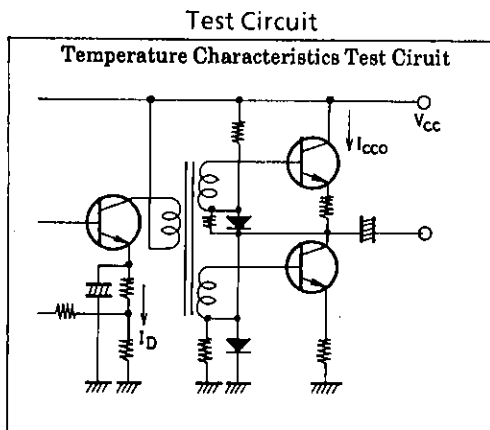
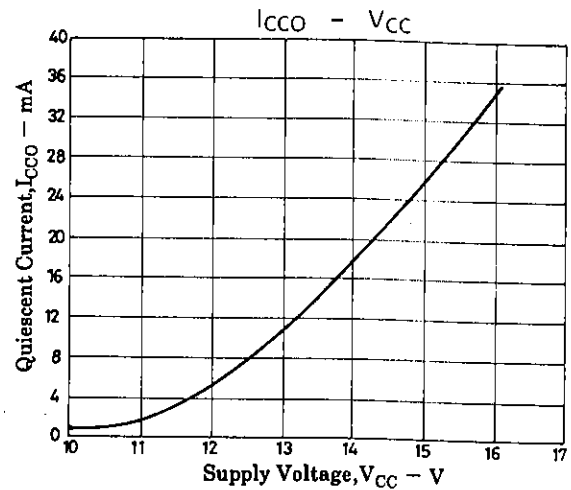
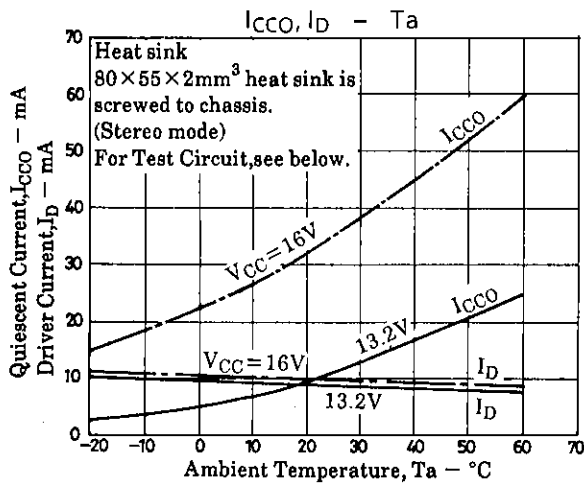
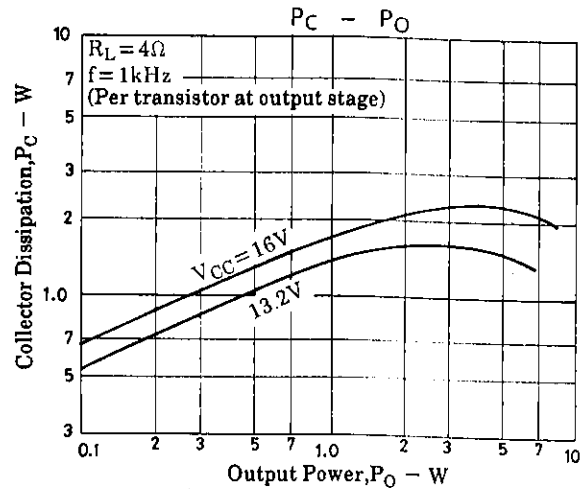
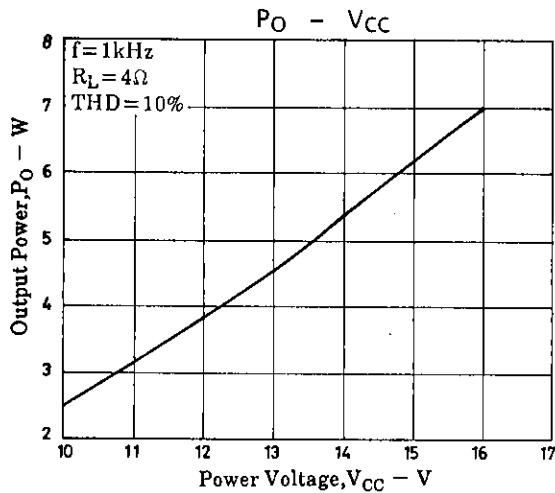
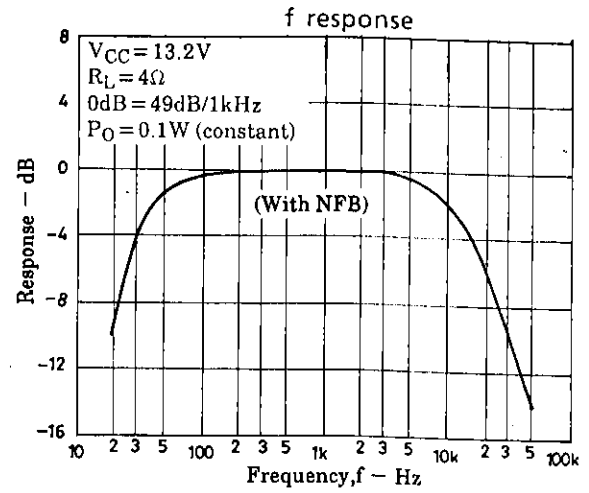
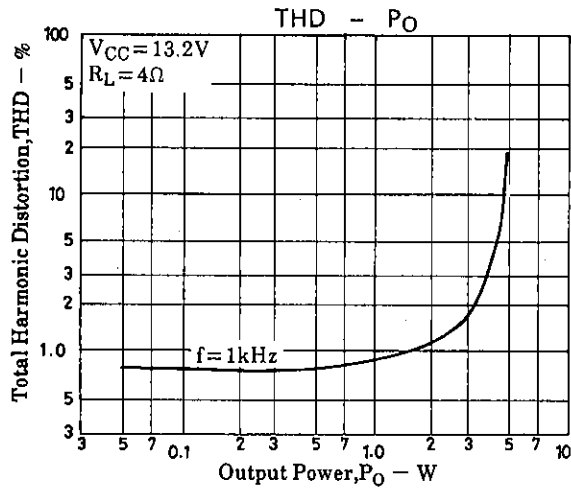


Data on transformer (T1)



	Impedance	DC resistance
Primary	3k Ω	180 Ω
Secondary	400 Ω	18 Ω

Unit (Resistance : Ω , Capacitance : F)



- No products described or contained herein are intended for use in surgical implants, life-support systems, aerospace equipment, nuclear power control systems, vehicles, disaster/crime-prevention equipment and the like, the failure of which may directly or indirectly cause injury, death or property loss.
- Anyone purchasing any products described or contained herein for an above-mentioned use shall:
 - ① Accept full responsibility and indemnify and defend SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors and all their officers and employees, jointly and severally, against any and all claims and litigation and all damages, cost and expenses associated with such use;
 - ② Not impose any responsibility for any fault or negligence which may be cited in any such claim or litigation on SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors or any of their officers and employees jointly or severally.
- Information (including circuit diagrams and circuit parameters) herein is for example only; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

This catalog provides information as of September, 1995. Specifications and information herein are subject to change without notice.