

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 Ta = 25°C

		2SB632, D612	2SB632K, D612K	unit
Collector-to-Base Voltage	V _{CB0}	(-)25	(-)35	V
Collector-to-Emitter Voltage	V _{CEO}	(-)25	(-)35	V
Emitter-to-Base Voltage	V _{EBO}		(-)5	V
Collector Current	I _C	(-)2		A
Collector Current (Pulse)	I _{CP}	(-)3		A
Collector Dissipation	P _C		1	W
		T _c = 25°C		
Junction Temperature	T _j		10	W
Storage Temperature	T _{stg}		150	°C
			-55 to +150	°C

Electrical Characteristics at Ta = 25°C

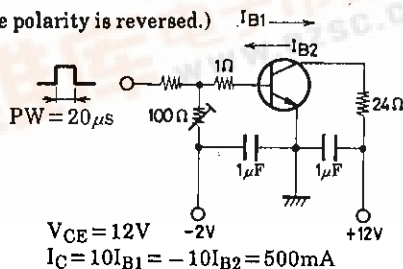
			min	typ	max	unit
C-B Breakdown Voltage	V _{(BR)CBO}	I _C = (-)10μA, I _E = 0	B632, D612 (-)25			V
			B632K, D612K (-)35			V
C-E Breakdown Voltage	V _{(BR)CEO}	I _C = (-)1mA, R _{BE} = ∞	B632, D612 (-)25			V
			B632K, D612K (-)35			V
E-B Breakdown Voltage	V _{(BR)EBO}	I _E = (-)10μA, I _C = 0			(-)5	V
Collector Cutoff Current	I _{CBO}	V _{CB} = (-)20V, I _E = 0			(-)1	μA
Emitter Cutoff Current	I _{EBO}	V _{EB} = (-)4V, I _C = 0			(-)1	μA
DC Current Gain	h _{FE} (1)	V _{CE} = (-)2V, I _C = (-)500mA	60※		320※	
	h _{FE} (2)	V _{CE} = (-)2V, I _C = (-)1.5A	30			
Gain-Bandwidth Product	f _T	V _{CE} = (-)10V, I _C = (-)50mA		100		MHz
Output Capacitance	C _{ob}	V _{CB} = (-)10V, f = 1MHz		(45)30		pF
C-E Saturation Voltage	V _{CE(sat)}	I _C = (-)1.5A, I _B = (-)0.15A		(-0.4)(-0.9)		V
				0.3	0.8	
B-E Saturation Voltage	V _{BE(sat)}	I _C = (-)1.5A, I _B = (-)0.15A		(-)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
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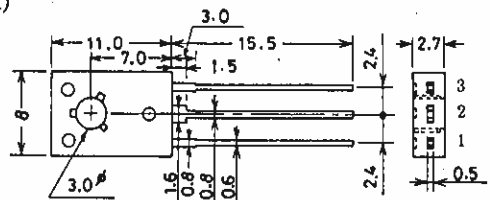
Switching Time Test Circuit

(For PNP, the polarity is reversed.)



Package Dimensions 2009B

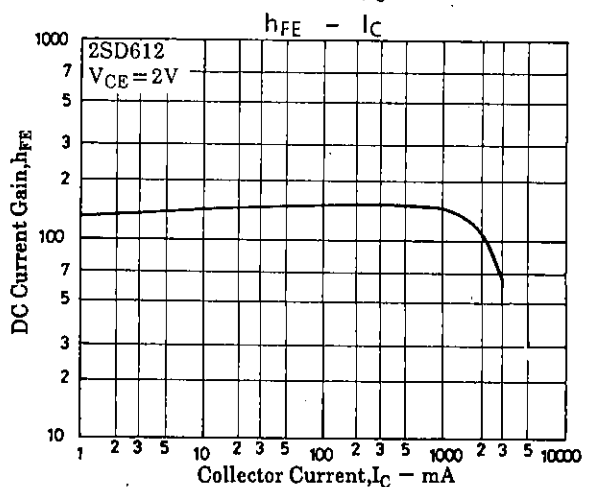
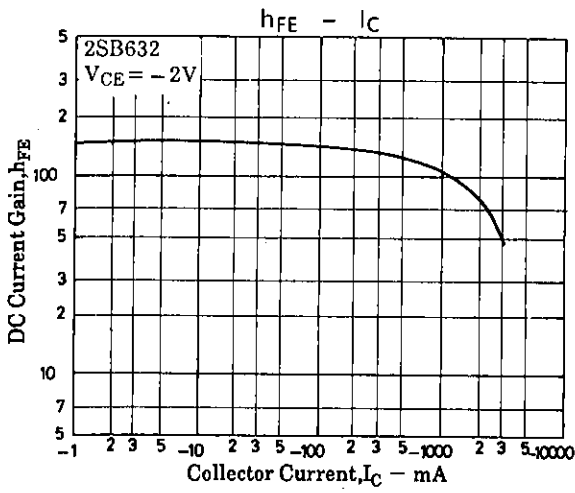
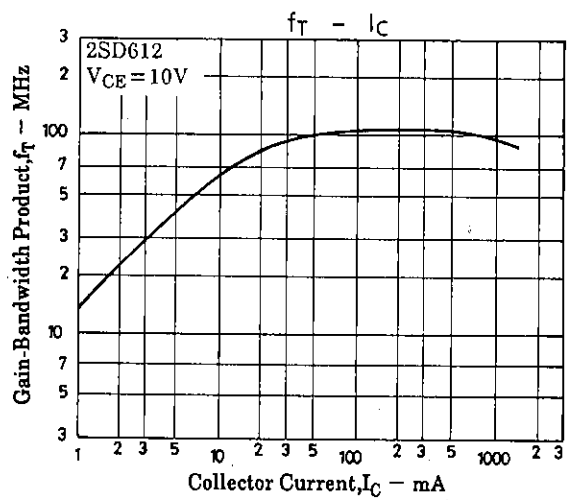
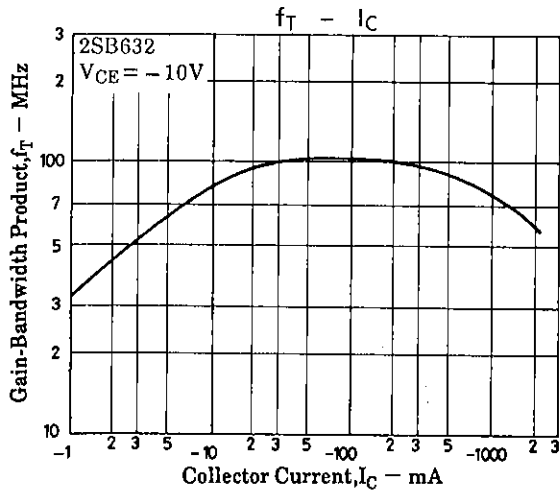
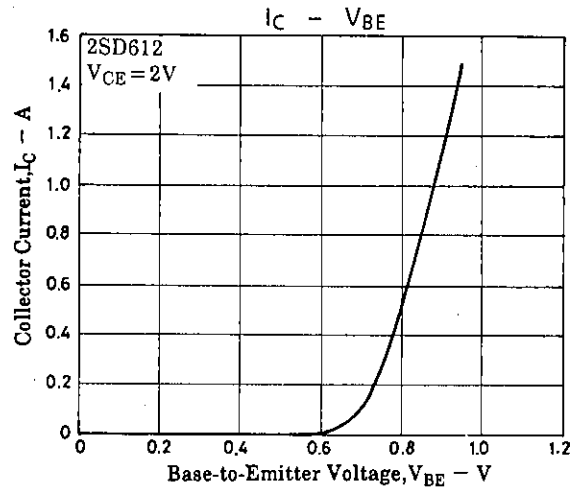
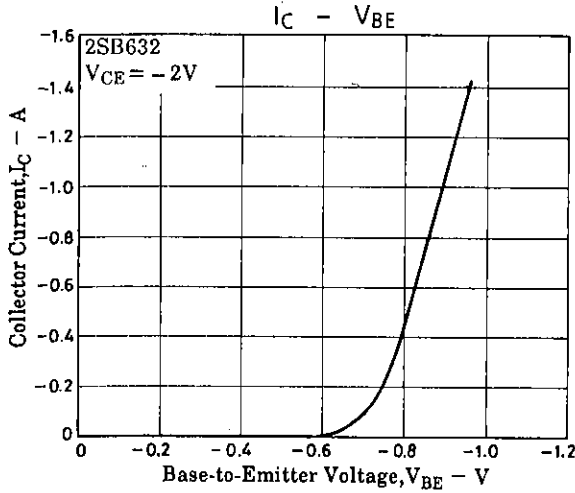
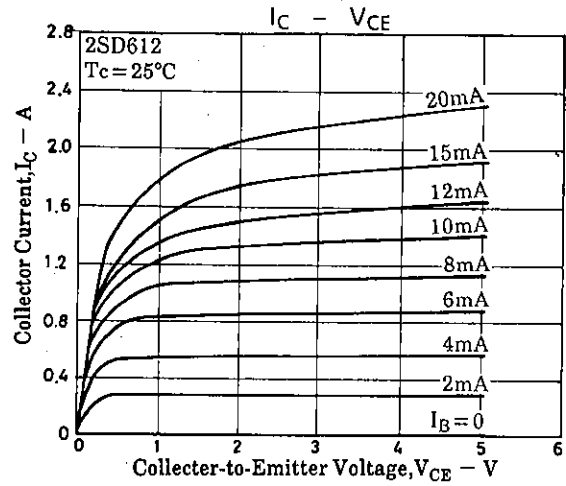
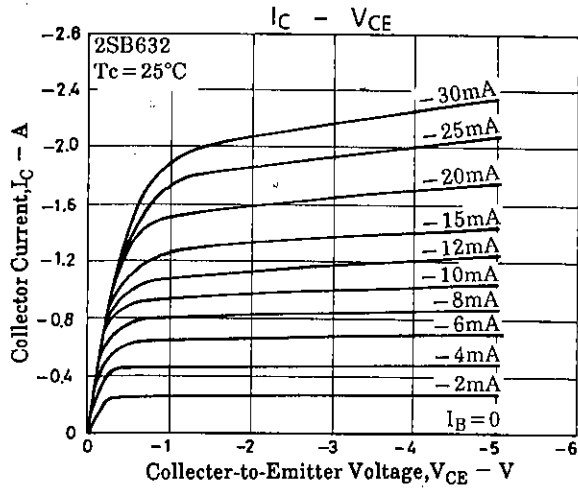
(unit : mm)



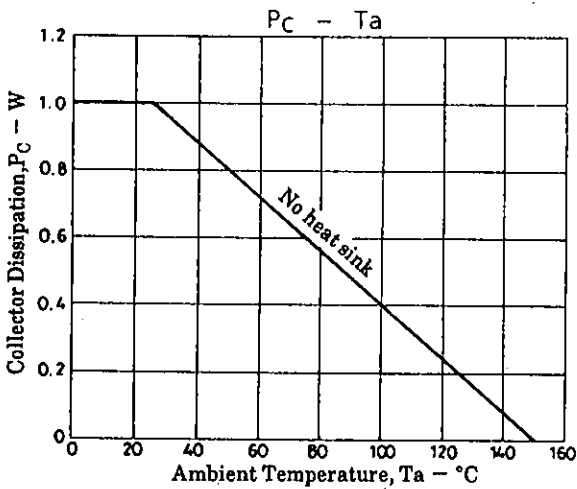
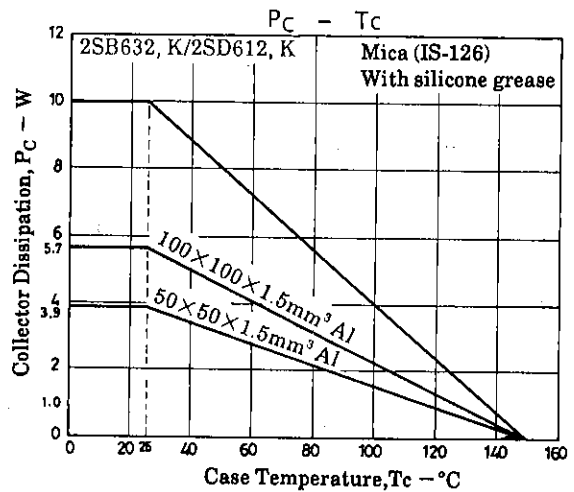
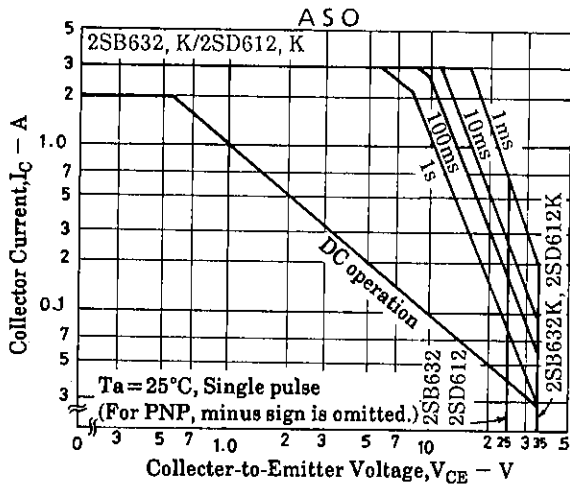
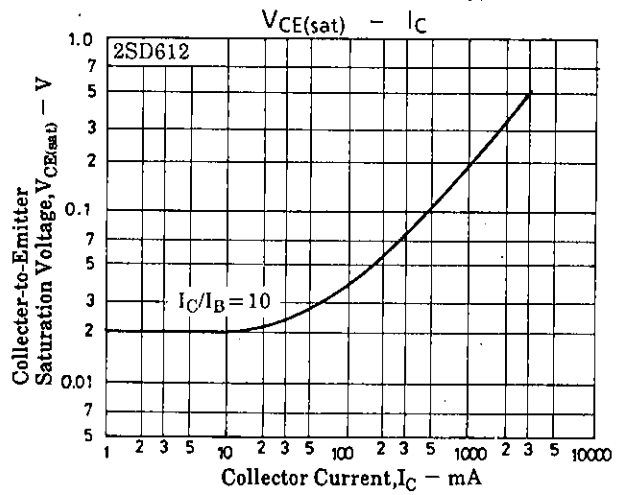
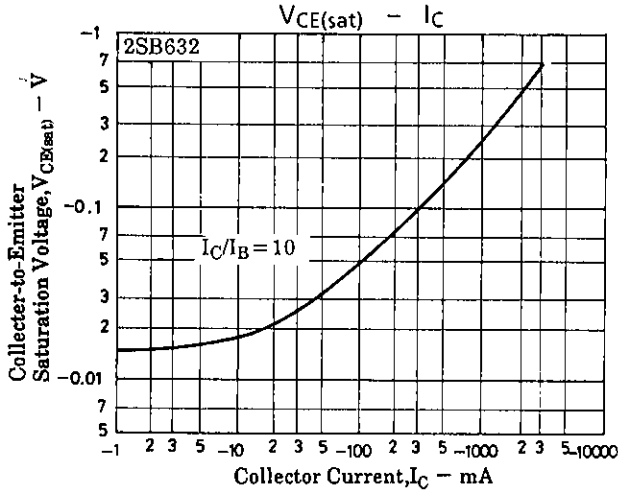
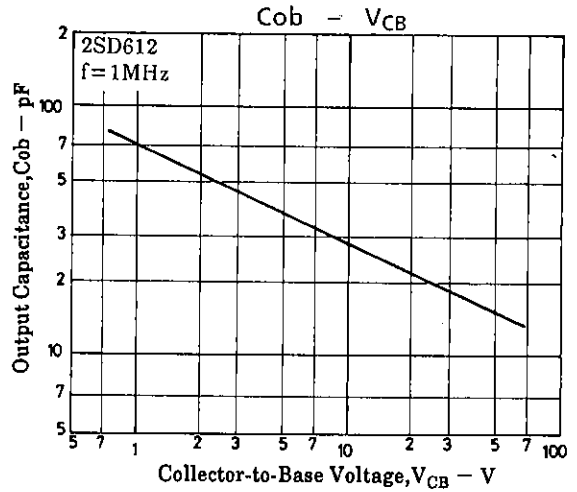
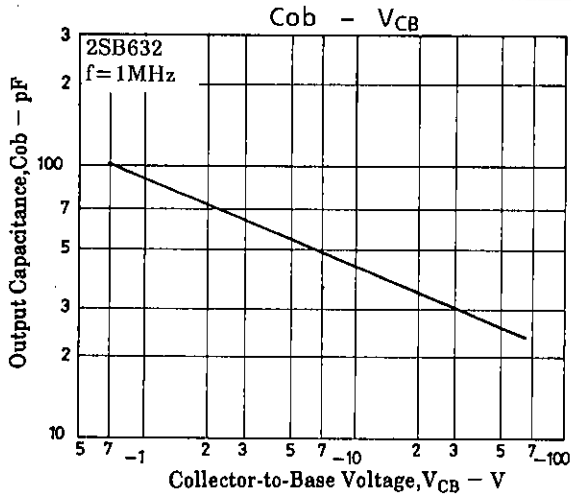
JEDEC: TO-126

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

2SB632, 632K/2SD612, 612K



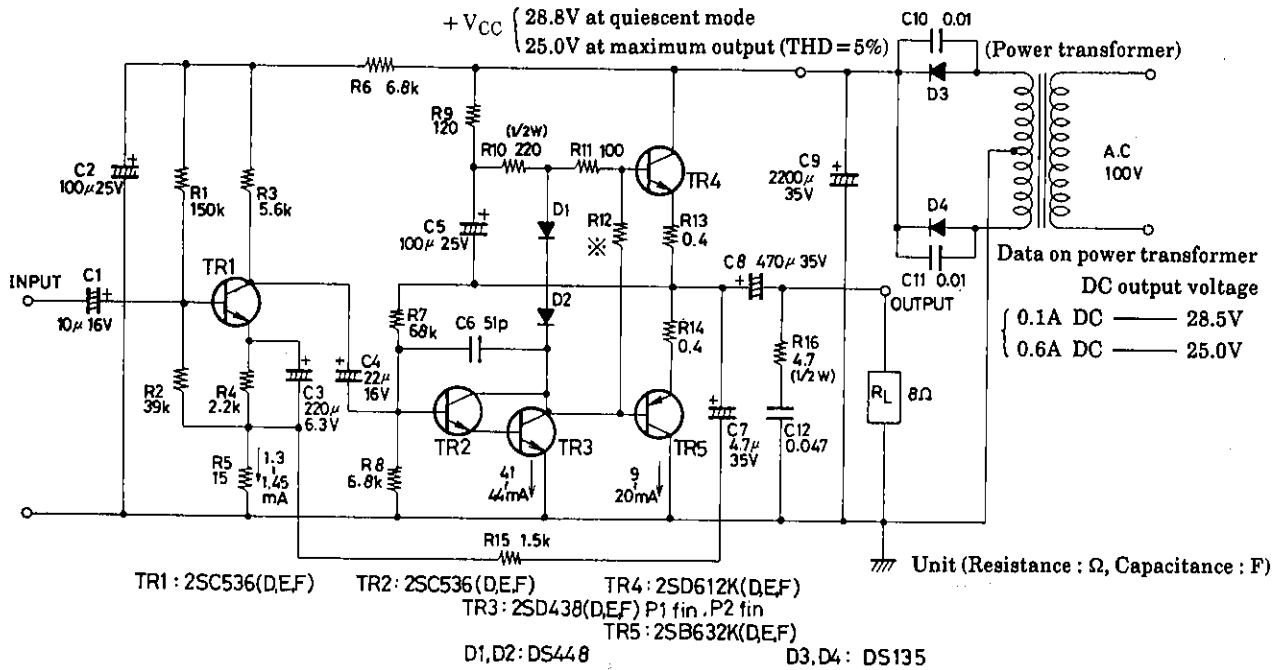
2SB632, 632K/2SD612, 612K



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, $f = 1\text{kHz}$, $R_L = 8\Omega$, $R_g = 600\Omega$

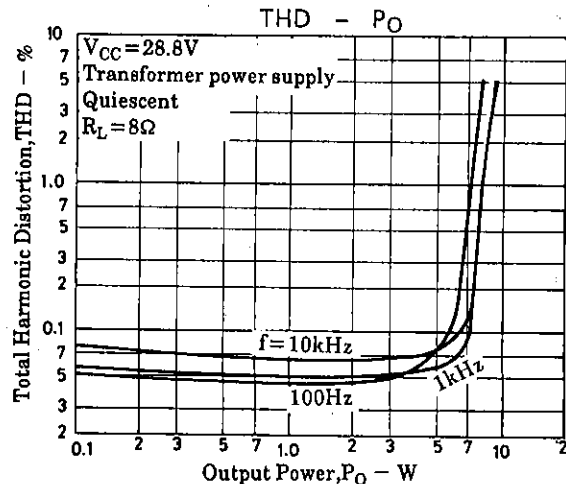
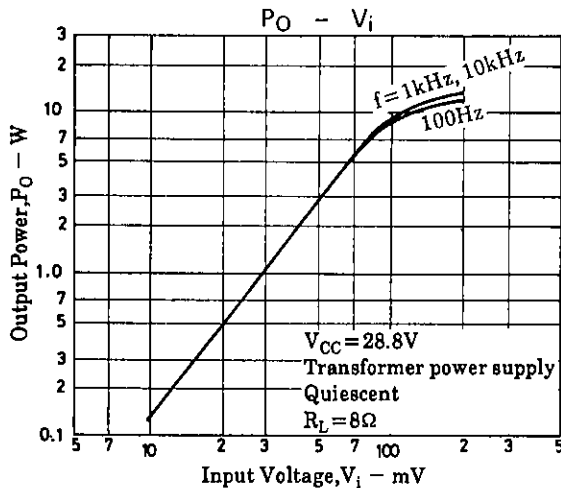
			typ	uint
Quiescent Current (Collector Current)	I_{CC0}	Output stage	14.0	mA
	I_D	Drive stage	42.0	mA
	I_C	First stage	1.4	mA
Voltage Gain	VG	Without NFB	75	dB
	VG	With NFB	40	dB
Output Power	P_O	THD = 5%	8.7	W
Total Harmonic Distortion	THD	$P_O = 1\text{W}$	0.05	%
Input Resistance	r_i	$P_O = 1\text{W}$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



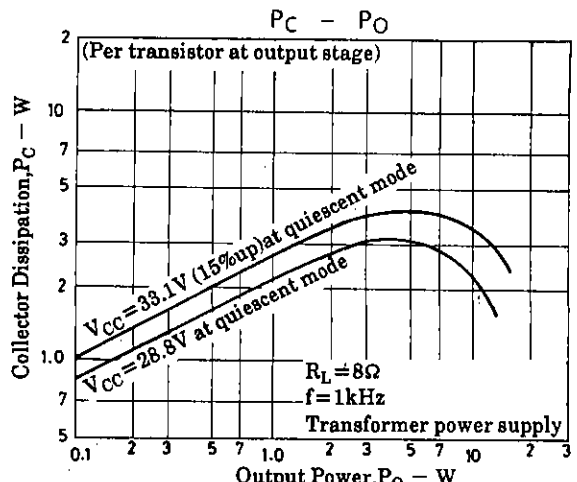
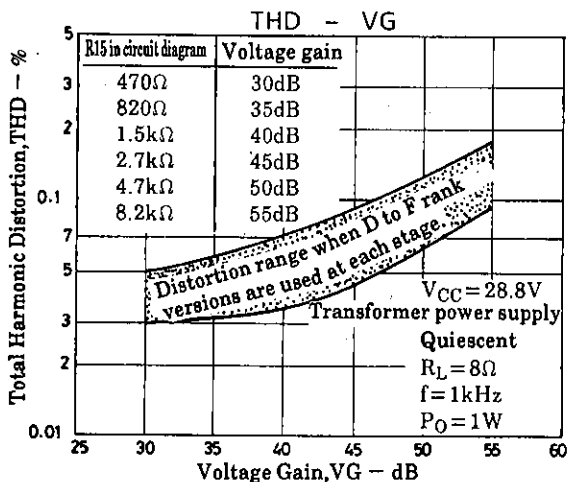
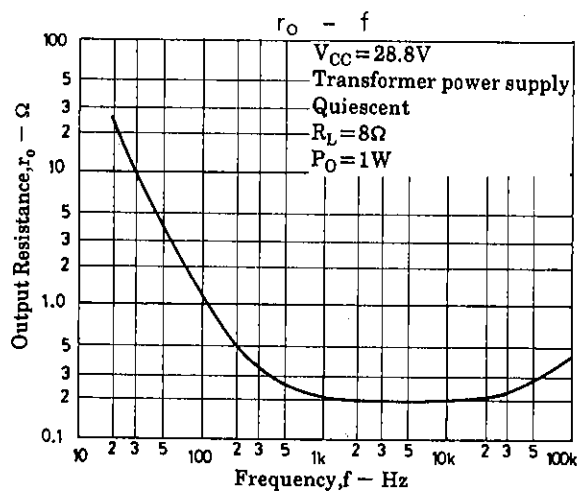
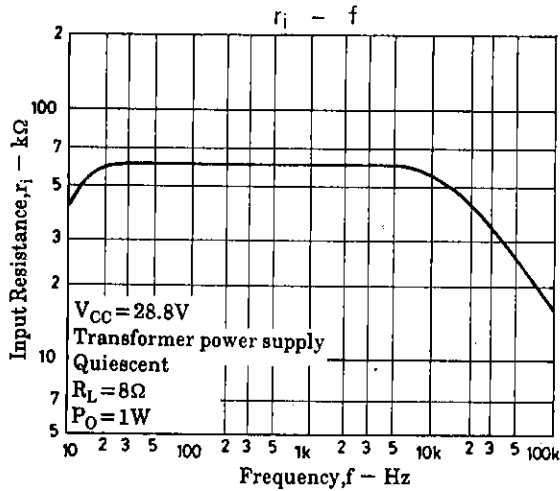
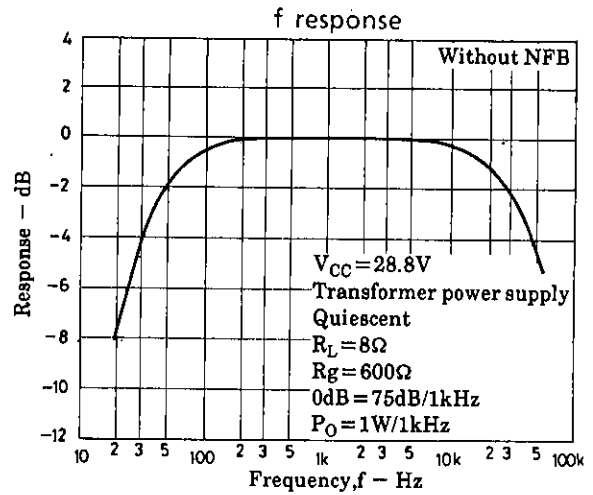
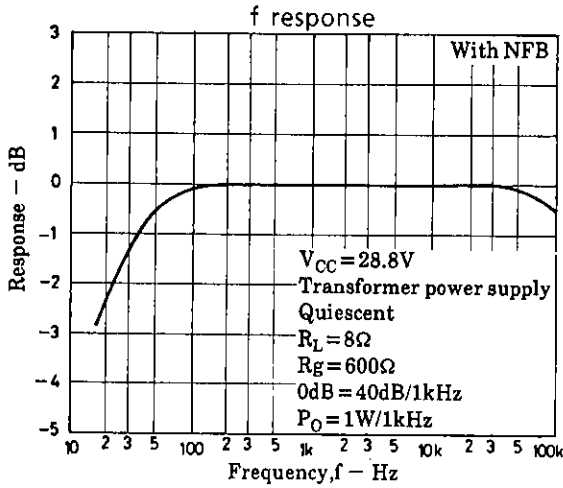
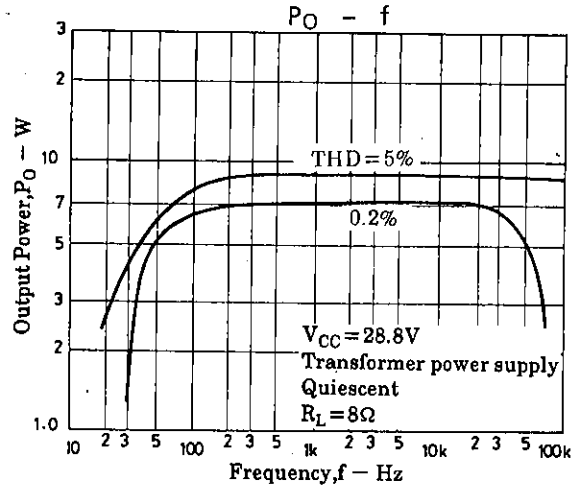
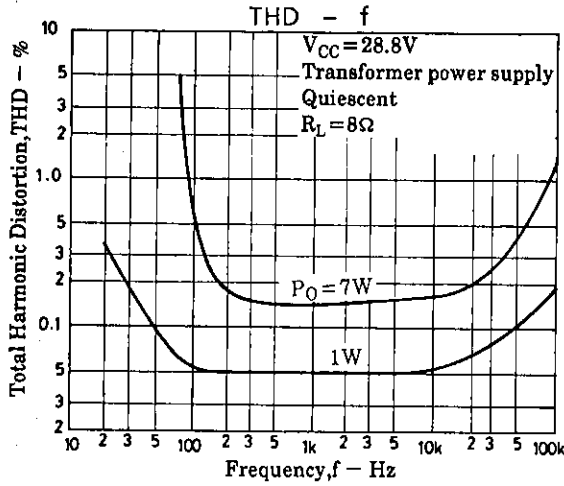
TR1 : 2SC536(DEF) TR2 : 2SC536(DEF) TR4 : 2SD612K(DEF)
 TR3 : 2SD438(DEF) P1 fin, P2 fin
 TR5 : 2SB632K(DEF)
 D1, D2 : DS448 D3, D4 : DS135

Note : TR3 : With P1 fin or P2 fin

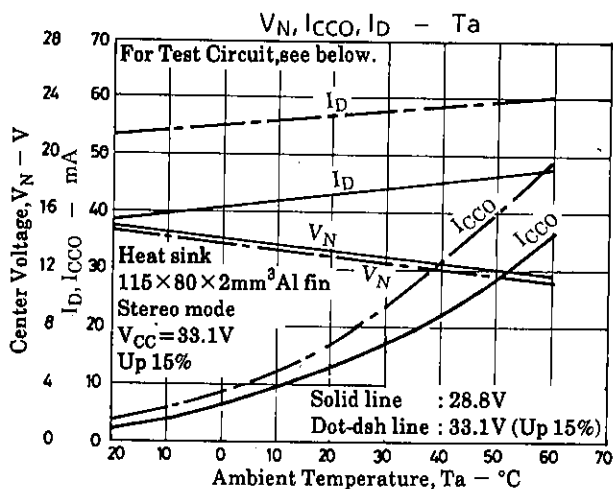
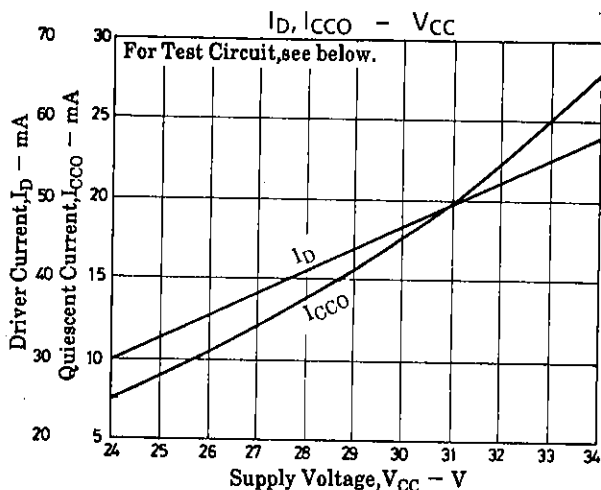
※ TR4, TR5 : D, E rank version $R_{12} = 560\Omega$
 F rank version $R_{12} = 470\Omega$) Must be paired in the same rank.



2SB632, 632K/2SD612, 612K



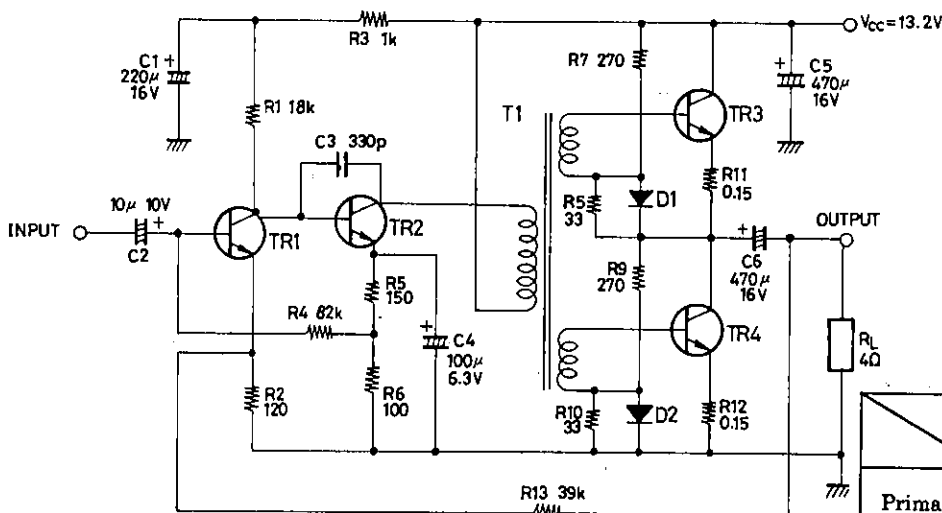
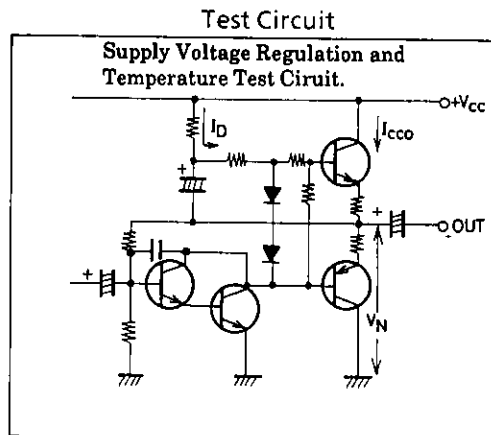
2SB632, 632K/2SD612, 612K



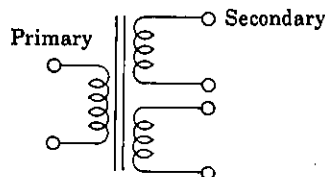
Sample Application Circuit 2 : 2SD612-Used 4W Input Transformer Coupling Amp for Car Use.

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

	typ	uint
Quiescent Current (Collector Current)	I_{CCO} 12.0 mA	
Output stage	I_D 9.0 mA	
Drive stage	V_G Without NFB 66 dB	
Voltage Gain	V_G With NFB 49 dB	
Output Power	P_O THD = 10% 4.7 W	
Total Harmonic Distortion	THD $P_O = 0.5 \text{ W}$ 0.8 %	
Input impedance	r_i $P_O = 0.5 \text{ W}$ 60 k Ω	



Data on transformer (T1)

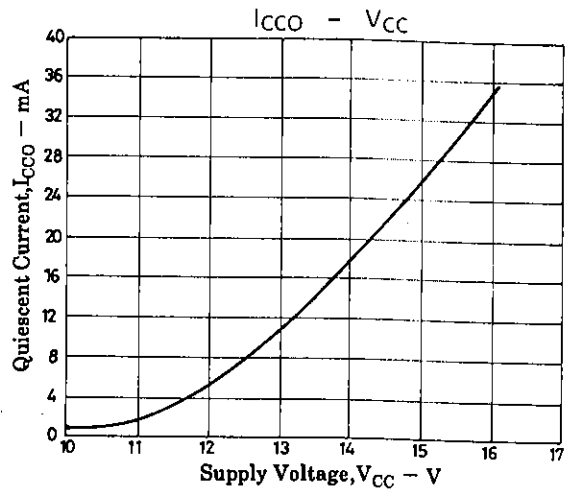
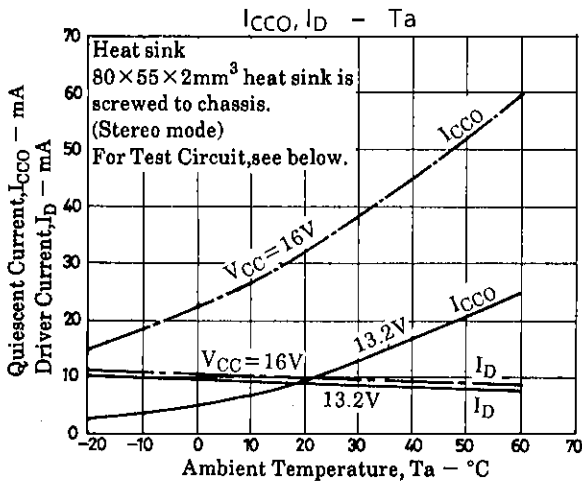
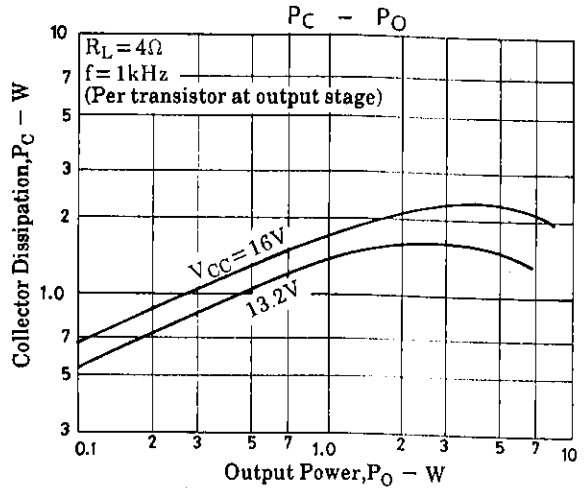
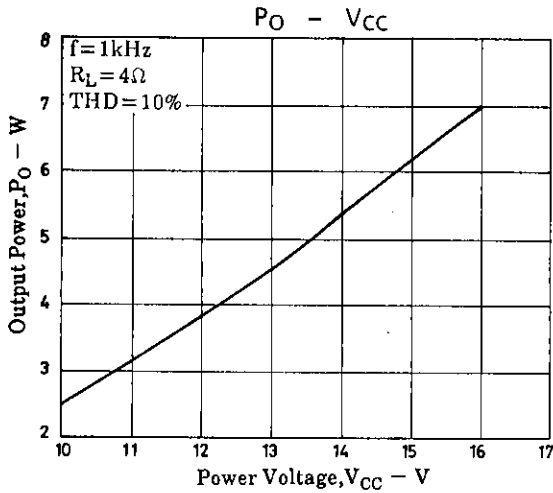
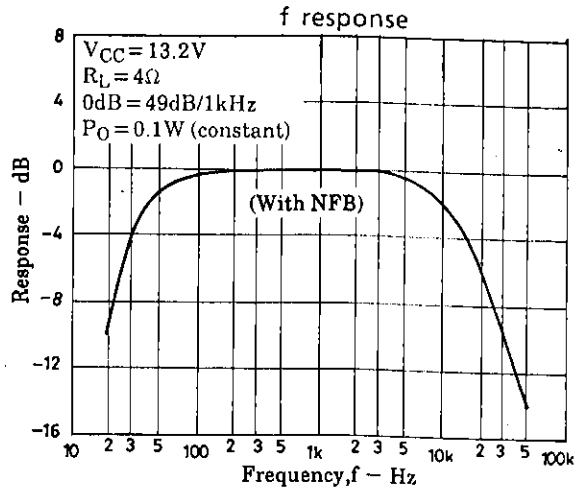
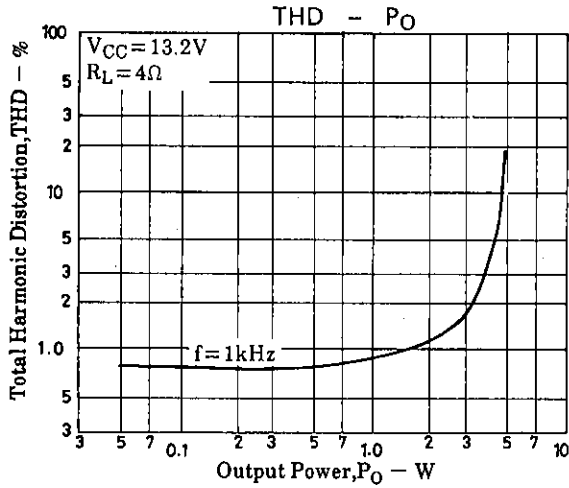


	Impedance	DC resistance
Primary	3k Ω	180 Ω
Secondary	400 Ω	18 Ω

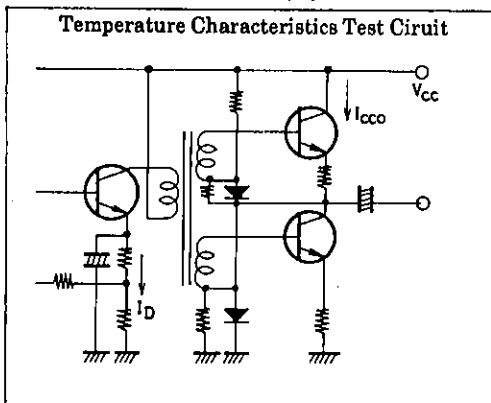
TR1: 2SC536(E,F) TR2: 2SC1175(E,F)
D1, D2: DS442 TR3, 4: 2SD612(E,F)
(Must be paired in the same rank).

Unit (Resistance : Ω , Capacitance : F)

2SB632, 632K/2SD612, 612K



Test Circuit



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