

9097247 TOSHIBA. ELECTRONIC

02E 17137 D

**TA7335P**  
**TA7335F**

T-77-05-05

FM FRONT END IC

The TA7335P is a front end IC suitable for Portable Radio and Radio Cassette applications. This IC contains RF amplifier, MIX, local oscillator and varicap for AFC. This IC simplify the design of front end circuit.

- . Operating Supply Voltage
  - :  $V_{CC}=2\sim 5V$ .....TA7335F
  - $V_{CC}=2\sim 6V$ .....TA7335P, TA7335P-LB
- . Local OSC Stop Voltage:  $V_{CC}=1.5V$ (Typ.)
- . Varicap for AFC
- . Japan/U Band Available
- . The Item is Different Each Outlines
  - : TA7335P : Single in Line Package....Outline 1
  - TA7335P-LB: Lead Forming.....Outline 2
  - TA7335F : Flat Package.....Outline 3

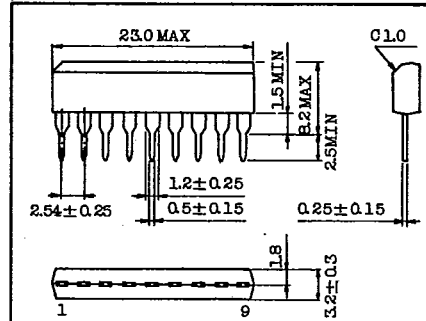
MAXIMUM RATINGS ( $T_a=25^{\circ}C$ )

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage	TA7335P TA7335P-LB	$V_{CC}$	8	V
	TA7335F		6	
Power Dissipation (Note)	TA7335P TA7335P-LB	$P_D$	500	mW
	TA7335F		300	
Operating Temperature		$T_{opr}$	-25 ~ 75	$^{\circ}C$
Storage Temperature		$T_{stg}$	-55 ~ 150	$^{\circ}C$

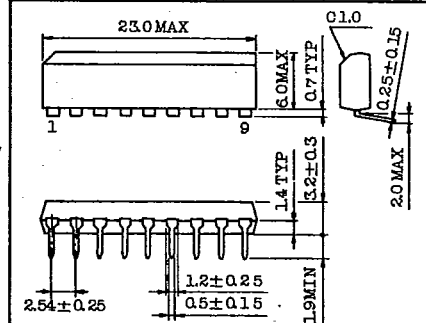
Note : TA7335P, TA7335P-LB : Derated above  $T_a=25^{\circ}C$  in the proportion of 5.6mW/ $^{\circ}C$ .

TA7335F : Derated above  $T_a=25^{\circ}C$  in the proportion of 2.8mW/ $^{\circ}C$ .

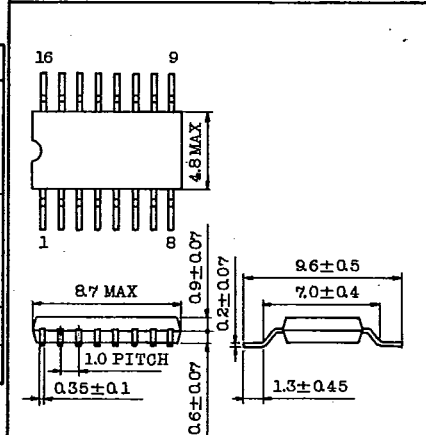
Unit in mm



JEDEC -  
TOSHIBA S9A-P OUTLINE(1)



JEDEC -  
TOSHIBA S9B-P OUTLINE(2)



JEDEC -  
TOSHIBA F16GA1-P OUTLINE(3)

**TOSHIBA**

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## ELECTRICAL CHARACTERISTICS

(Unless otherwise specified  $V_{CC}=4V$ ,  $T_a=25^{\circ}C$ )

CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Supply Current		ICC	1	$V_{IN}=0$	-	2.5	4	mA	
Local OSC Voltage		VOSC	1	$SW_1=A$ , $f_{osc}=60MHz$	40	75	200	mV <sub>rms</sub>	
Conversion Gain		GC	2	$f=83MHz$	-	20	-	dB	
Recovered Output Voltage		VOD	2	$f=83MHz$ , $\Delta F=\pm 22.5kHz$ dev. $V_{IN}=12dB\mu V$	40	60	-	mV <sub>rms</sub>	
Capacitance of AFC Diode		CAFC	3	$V_{AFC}=1V$	-	3.8	-	pF	
Q of AFC Diode		Q	3	$V_{AFC}=1V$	-	100	-	-	
Capacitance VAFC Dependence		K	3	$K = \frac{C(V_{AFC}=1V) - C(V_{AFC}=3V)}{C(V_{AFC}=3V)}$	-	0.23	-	-	
3 Pin Impedance	Parallel Output Resistance	$r_{op3}$	3	$f=83MHz$	-	24	-	k $\Omega$	
	Parallel Output Capacitance	$c_{op3}$	3		-	3	-	pF	
4 Pin Impedance	Parallel Input Resistance	$r_{ip4}$	3		-	20	-	k $\Omega$	
	Parallel Input Capacitance	$c_{ip4}$	3		-	3.2	-	pF	
6 Pin Impedance	Parallel Output Resistance	$r_{op6}$	3		$f=10.7MHz$	-	44	-	k $\Omega$
	Parallel Output Capacitance	$c_{op6}$	3			-	3.7	-	pF
Local OSC Stop Voltage		V <sub>stp</sub>	1	$SW_1=A$ , $f_{osc}=60MHz$	-	1.5	-	V	

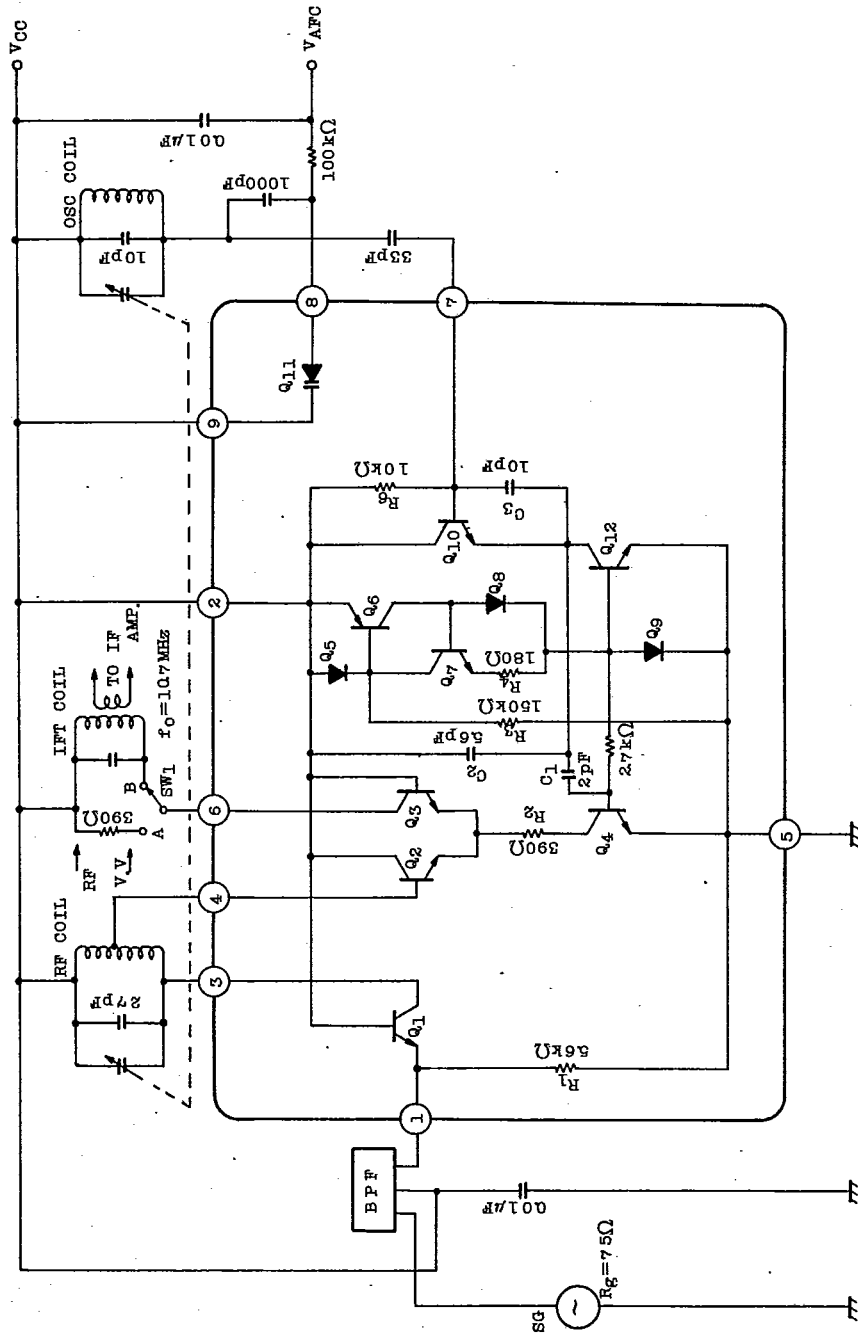
AUDIO LINEAR IC

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EQUIVALENT CIRCUIT AND TEST CIRCUIT (1)

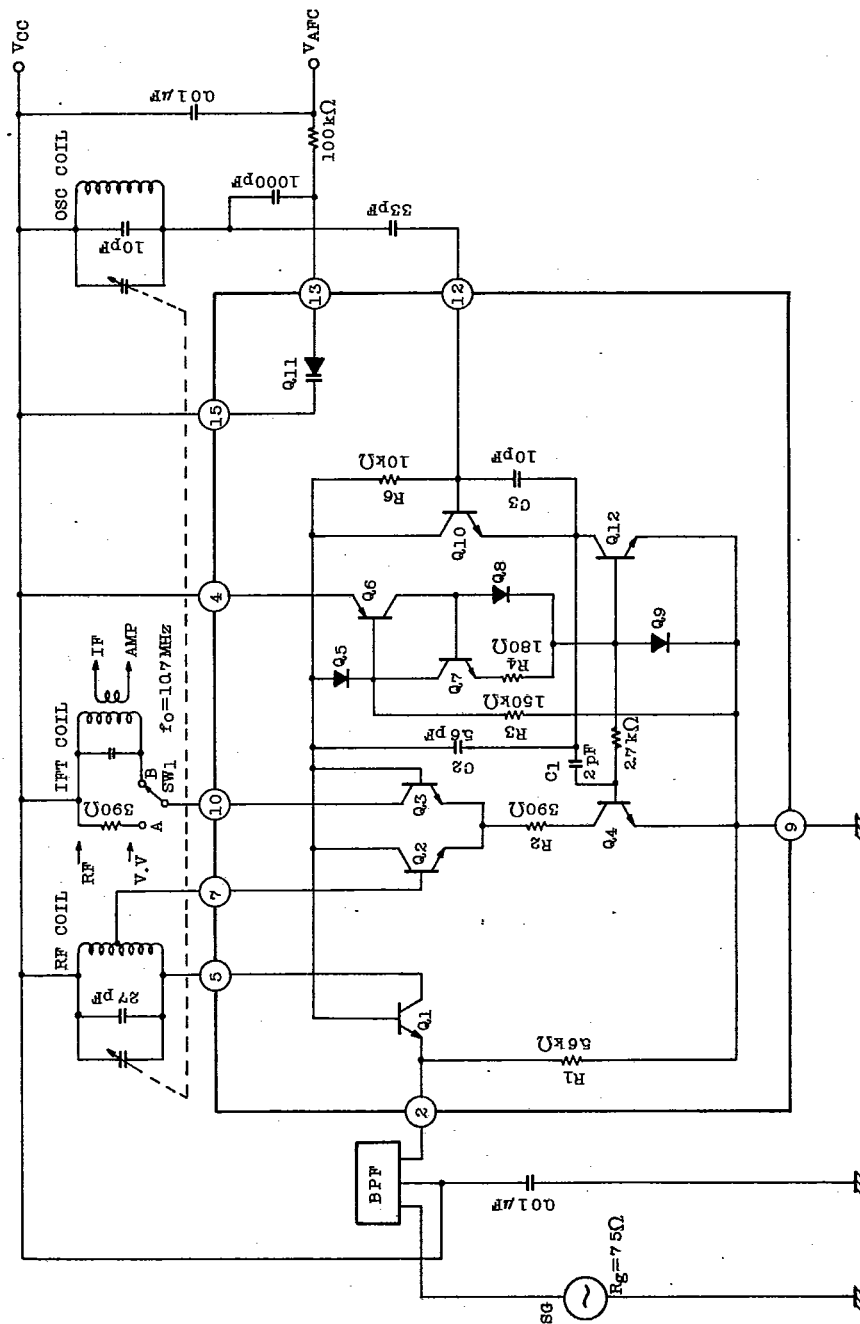
TA7335P, TA7335F-LB



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TA7335F



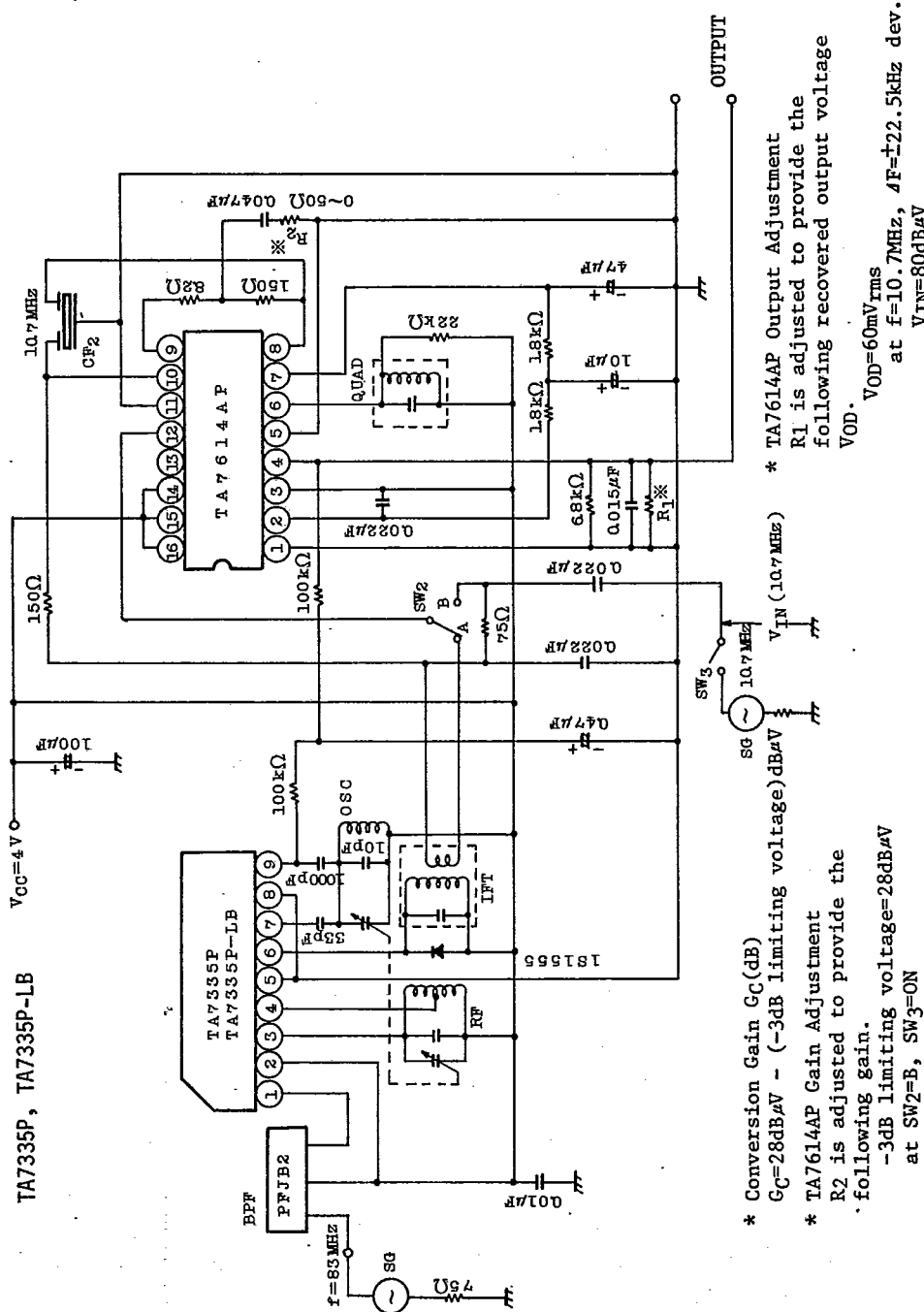
**AUDIO LINEAR IC**

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TEST CIRCUIT (2)

TA7335P, TA7335P-LB



\* Conversion Gain  $G_C$  (dB)  
 $G_C = 28 \text{ dB}/\mu\text{V}$  - (-3dB limiting voltage)  $\mu\text{B}/\mu\text{V}$

\* TA7614AP Gain Adjustment  
R2 is adjusted to provide the following gain.

-3dB limiting voltage =  $28 \text{ dB}/\mu\text{V}$   
at SW2=B, SW3=ON

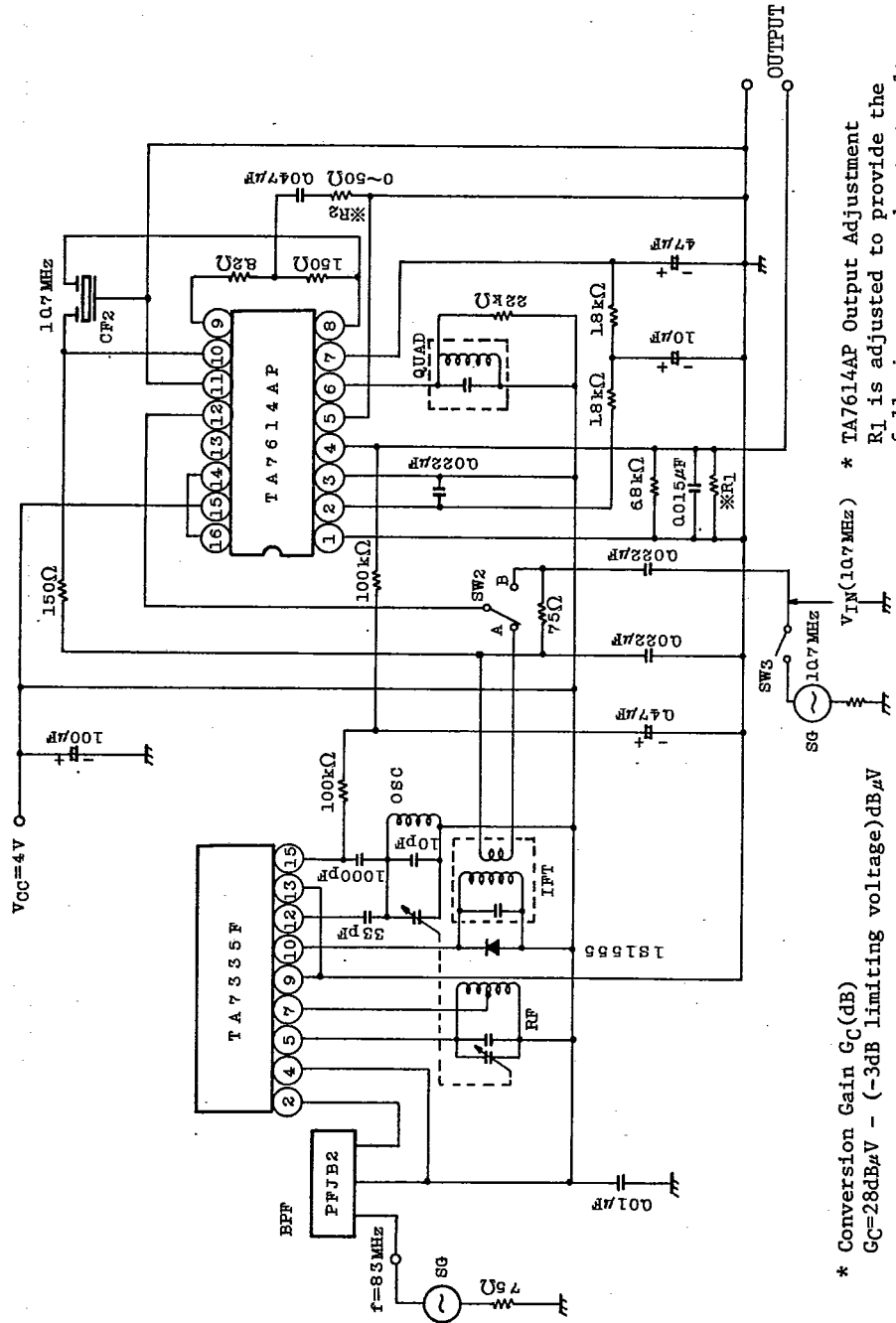
\* TA7614AP Output Adjustment  
R1 is adjusted to provide the following recovered output voltage

VOD.  
VOD =  $60 \text{ mV}_{\text{rms}}$   
at  $f = 10.7 \text{ MHz}$ ,  $\Delta f = \pm 22.5 \text{ kHz}$  dev.  
VIN =  $80 \text{ dB}/\mu\text{V}$

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TA7335F



\* Conversion Gain  $G_c$  (dB)  
 $G_c = 28 \text{ dB} \mu\text{V} - (-3 \text{ dB limiting voltage}) \text{ dB} \mu\text{V}$

\* TA7614AP Gain Adjustment  
 $R_2$  is adjusted to provide the following gain.  
 -3dB limiting Voltage = 28dB $\mu\text{V}$   
 at  $SW_2 = B$ ,  $SW_3 = ON$

\* TA7614AP Output Adjustment  
 $R_1$  is adjusted to provide the following recovered output voltage  $V_{OD}$ .  
 $V_{OD} = 60 \text{ mV}_{\text{Rms}}$   
 at  $f = 10.7 \text{ MHz}$ ,  $\Delta f = \pm 22.5 \text{ kHz dev.}$   
 $V_{IN} = 80 \text{ dB} \mu\text{V}$

AUDIO LINEAR IC

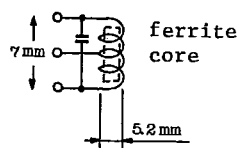
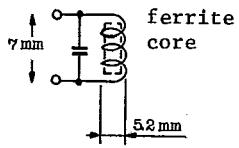
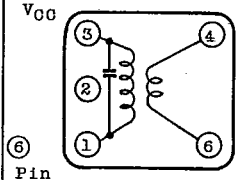
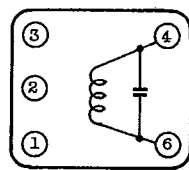
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## COIL DATA (TEST CIRCUIT 1,2, APPLICATION CIRCUIT)

	$f_0$	$Q_0$	TURNS	CAPACITANCE	
RF Coil	83MHz	-	0.7mm $\phi$ 2 $\frac{1}{2}$ T Center Tap (JAPAN Band)	27pF	
OSC Coil	72.5MHz	-	0.7mm $\phi$ 3 $\frac{1}{2}$ T (JAPAN Band)	10pF	
IFT	10.7MHz	115	① - ③ 12T ④ - ⑥ 1T WIRE 0.12mm $\phi$ UEW SUMIDA ELECTRIC Co., LTD. S193-001 or (5764) or Equivalent	75pF	 (BOTTOM VIEW)
Quad Coil	10.7MHz	150	④ - ⑥ 14T WIRE 0.12mm $\phi$ UEW SUMIDA ELECTRIC Co., LTD. 44M-933A or Equivalent	47pF	 (BOTTOM VIEW)

Band Pass Filter (B.P.F.)

SOSHIN ELECTRIC Co., LTD. PFJB2 or Equivalent

TOSHIBA

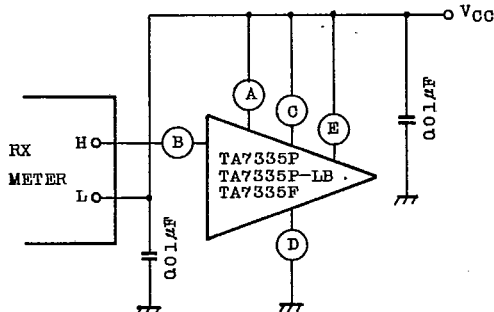
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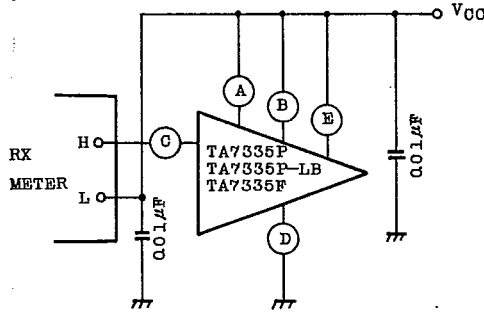
TEST CIRCUIT 3

INPUT, OUTPUT IMPEDANCE, K

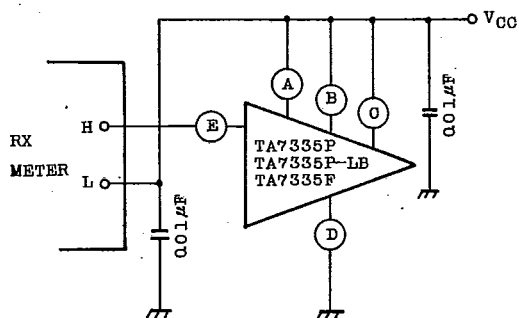
(1)  $r_{op3}$ ,  $c_{op3}$



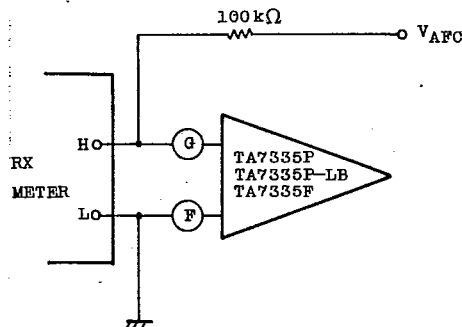
(2)  $r_{ip4}$ ,  $c_{ip4}$



(3)  $r_{op6}$ ,  $c_{op6}$



(4)  $C_{AFC}$ , K



K (Capacitance  $V_{AFC}$  dependence)  
is defined by following equation

$$K = \frac{C(V_{AFC}=1V) - C(V_{AFC}=3V)}{C(V_{AFC}=3V)}$$

CONTRASTIVE A TABLE

ITEM	PIN No.	A	B	C	D	E	F	G
TA7335P/P-LB		2	3	4	5	6	8	9
TA7335F		4	5	7	9	10	13	15

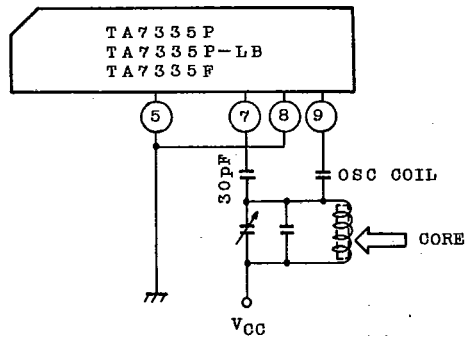


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## APPLICATION PRECAUTION

- (1) A core of local oscillation coil must be ferrite. If you use aluminium or brass core in stead of ferrite core,  $Q_0$  becomes so small that there is a case of oscillation stop at low frequency.



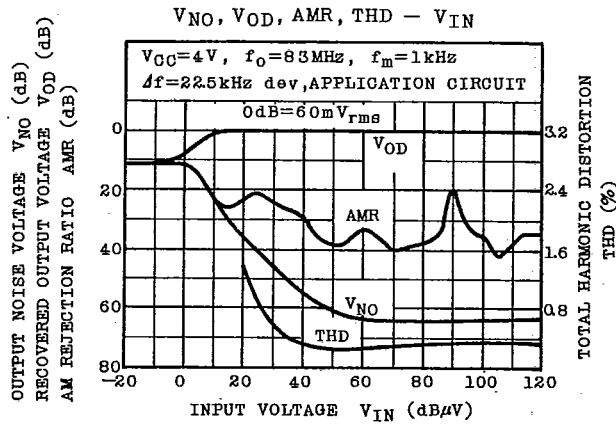
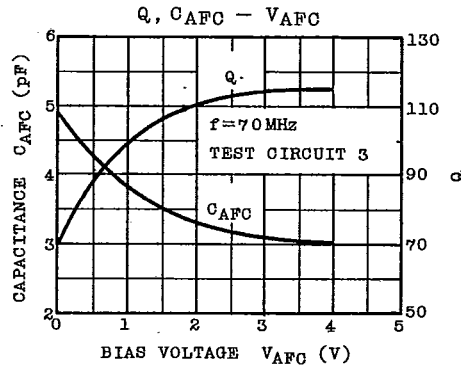
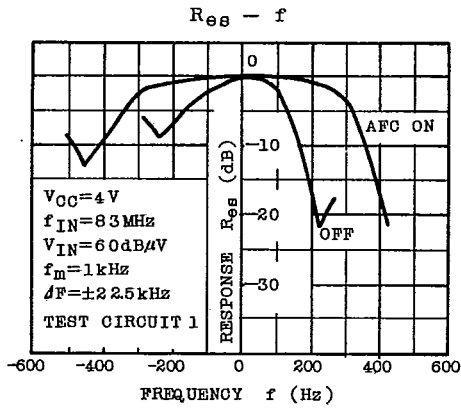
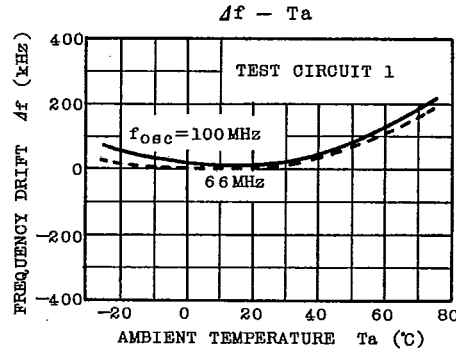
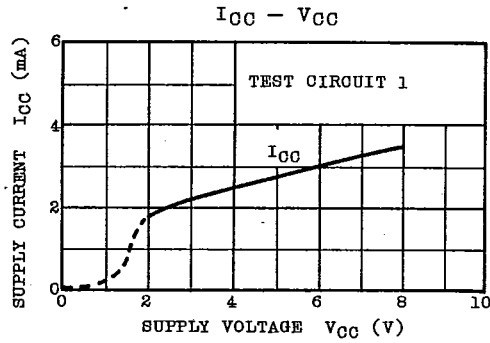
- (2) A capacitance between oscillation coil and ⑦ pin of IC is recommended to be more than 30pF. When this capacitance is so small, oscillation level at low frequency is small.

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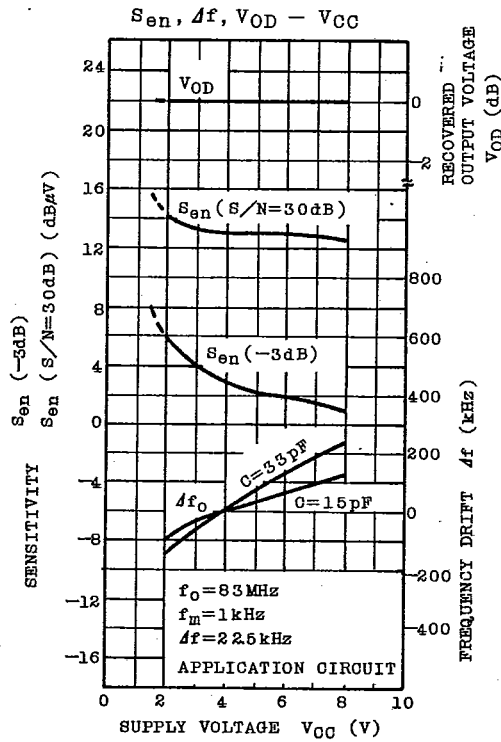
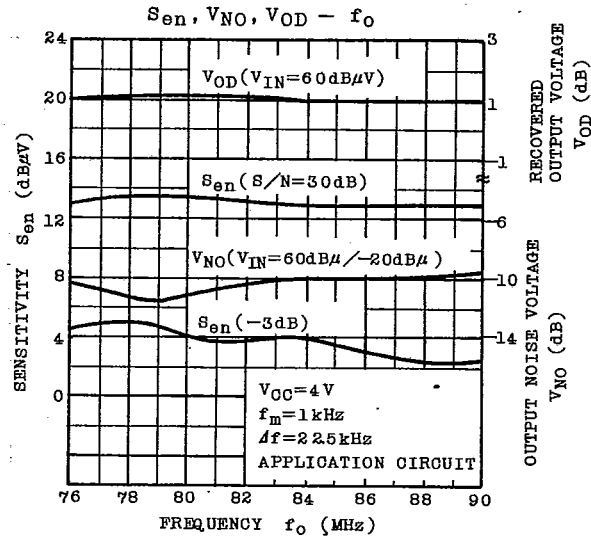
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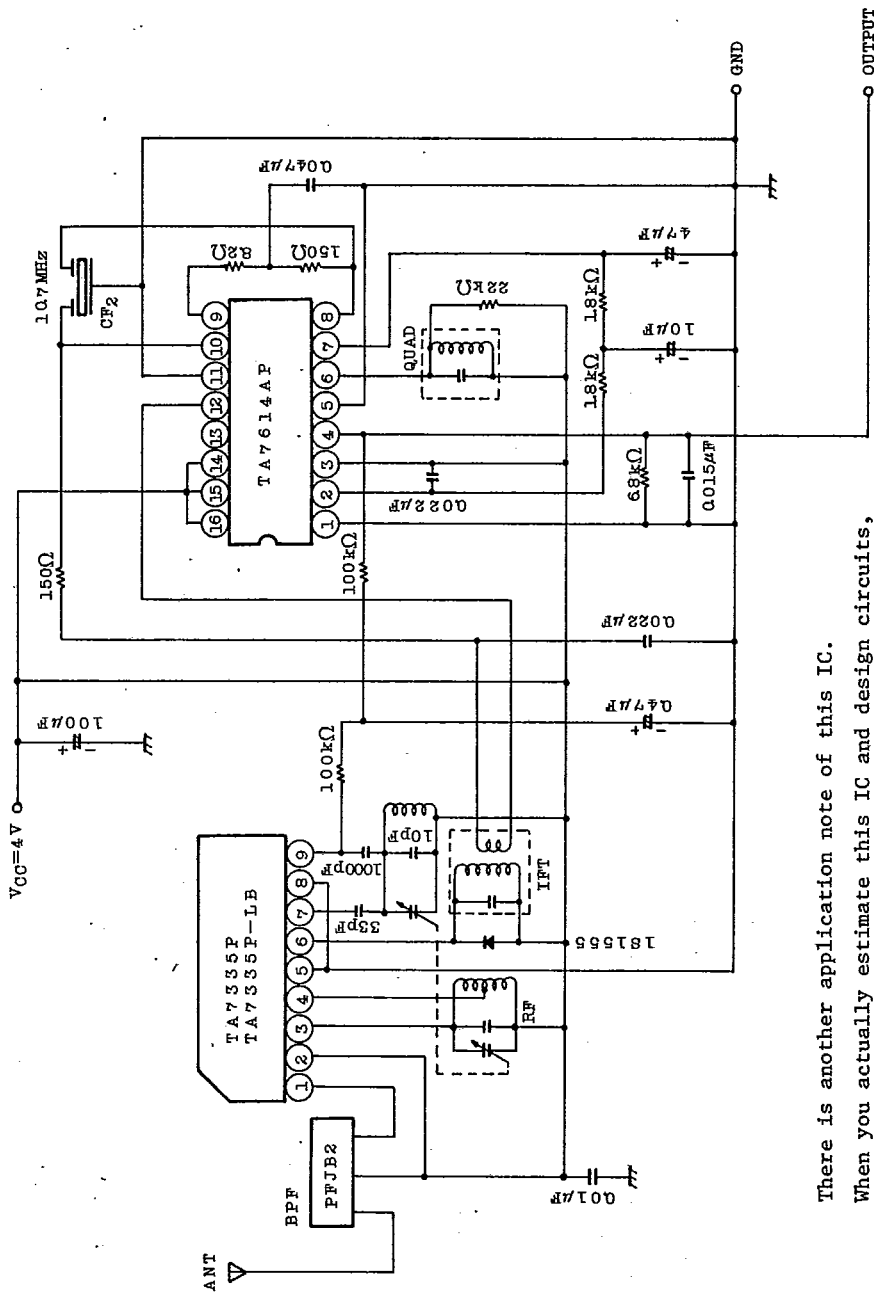
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# TA7335P TA7335F

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## APPLICATION CIRCUIT TA7335P, TA7335P-LB



There is another application note of this IC.  
When you actually estimate this IC and design circuits,  
please request us it.

