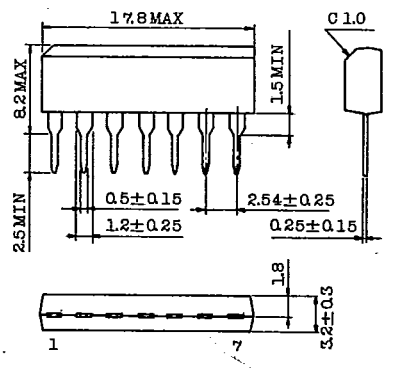
T-77-05-07

TA7130P

FOR FM IF AMPLIFIER AMPLIFIER AND DETECTOR

- 3 Stage Differential IF Amplifier.
- Differential Peak Detector.
- Excellent AM Rejection : AMR=50dB(Typ.)
- High Sensitivity : $V_{IN(lim)}$=50dBμV(Typ.)
- Operating Supply Voltage Range : V_{CC}=8~15V.
- Low Distortion : THD=0.2%(Typ.)
- High Recovered Output Voltage : V_{OD}=430mV(Typ.) at Δf=±75kHz dev.
- Simplified Single Coil Tuning.
- Very Few External Parts.

Unit in mm



Lead pitch is 2.54 and tolerance is ±0.25 against theoretical center of each lead that is obtained on the basis of No.1 lead.

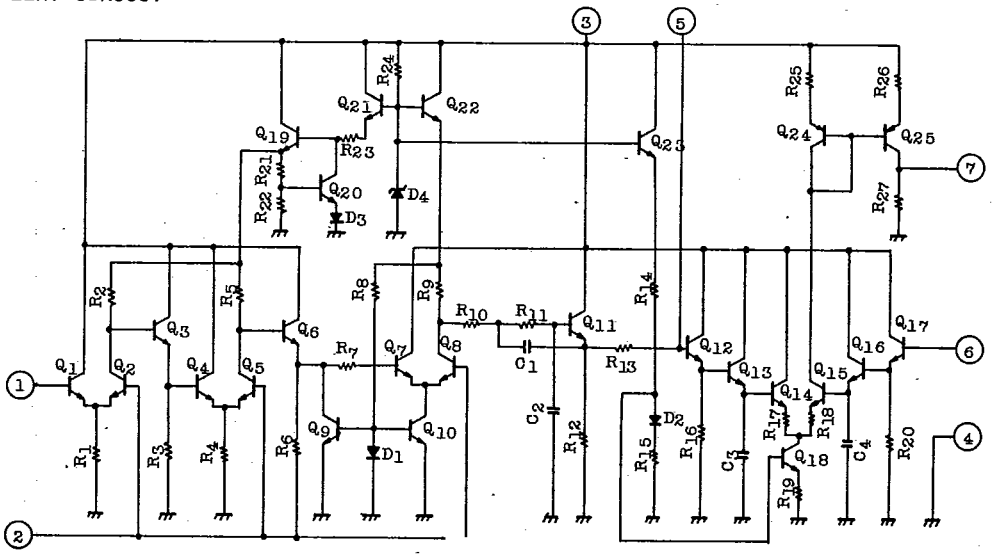
JEDEC	—
TOSHIBA	S7A-P

MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	$V_{CC}(V_3)$	15	V
Input Voltage	$V_{IN}(V_1)$	0.7	V_{rms}
Power Dissipation (Note)	P_D	400	mW
Operating Temperature	T_{opr}	-25~75	°C
Storage Temperature	T_{stg}	-55~125	°C

Note : Derated above Ta=25°C in the proportion of 4mW/°C.

EQUIVALENT CIRCUIT



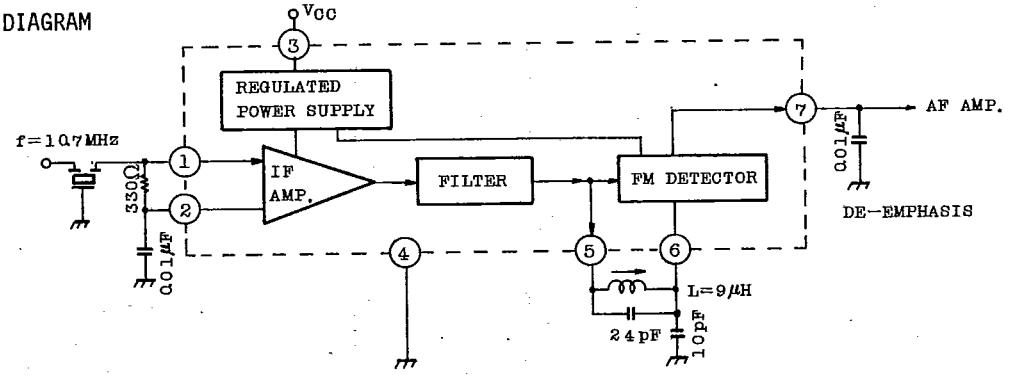
TA7130P

ELECTRICAL CHARACTERISTICS (V_{CC}=12V, Ta=25°)

CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current		I_{CC}	1	V_{IN}=0	8	11	15	mA
Output Terminal DC Voltage (Pin 7)		V_7	-	V_{IN}=0,5,6pin short	4.0	4.8	5.5	V
Recovered Output Voltage (Note)		V_{OD}	1	f=10.7MHz, f_M=400Hz ΔF=±75kHz dev V_{IN}=80dBμV	300	500	700	mV_{rms}
Input Limiting Voltage		$V_{IN(lim)}$	1	f=10.7MHz, f_M=400Hz ΔF=±22.5kHz dev. -3dB Limiting	-	50	55	dBμV
Total Harmonic Distortion		THD	1	f=10.7MHz, f_M=400Hz ΔF=±22.5kHz dev. V_{IN}=80dBμV	-	0.2	-	%
Signal to Noise Ratio		S/N	-	f=10.7MHz, f_M=400Hz ΔF=±22.5kHz →0kHz, V_{IN}=80dBμV	-	60	-	dB
AM Rejection Ratio		AMR	1	f=10.7MHz, f_M=400Hz V_{IN}=80dBμV FM:75kHz dev. AM:30% MOD	-	50	-	dB
Output Resistance		R_O	-	f=400Hz, 7pin-GND	6.2	7.7	9.5	kΩ
Input Impedance	Parallel Input Resistance	r_{ip}	-	f=10.7MHz, 1 pin-GND	-	5	-	kΩ
	Parallel Input Capacitance	c_{ip}			-	4.5	-	pF
Output Impedance	Parallel Output Resistance	r_{op}	-	f=10.7MHz, 5 pin-GND	-	1.3	-	kΩ
	Parallel Output Capacitance	c_{op}			-	4	-	pF

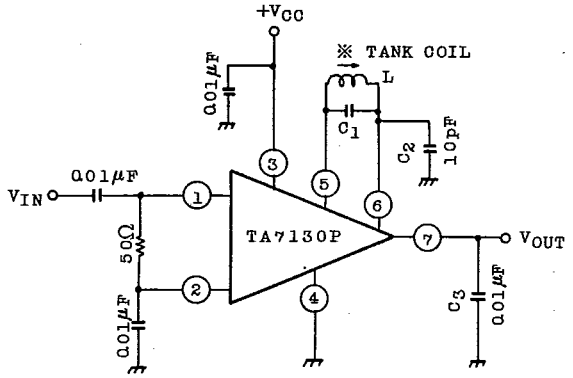
(Note) V_{OD} RANK (Δf=±22.5kHz) : B RANK 90~140mV_{rms}, C RANK 130~200mV_{rms}

BLOCK DIAGRAM



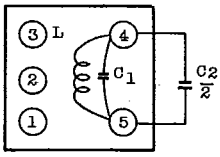
TA7130P

TEST CIRCUIT 1



※ TANK COIL

WIRE	2 UEW 0.08mmφ
TURNS	21
Qu	130±15%



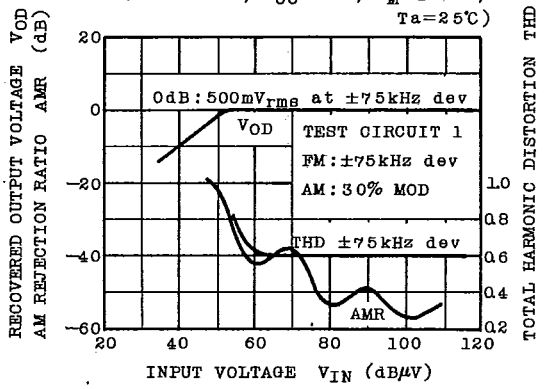
C_1=24pF
C_2=10pF

COVERED RESONANT FREQUENCY : 10.7MHz±250kHz

※ Tuning coil is adjusted to make recovered output voltage maximum at f=10.7MHz.

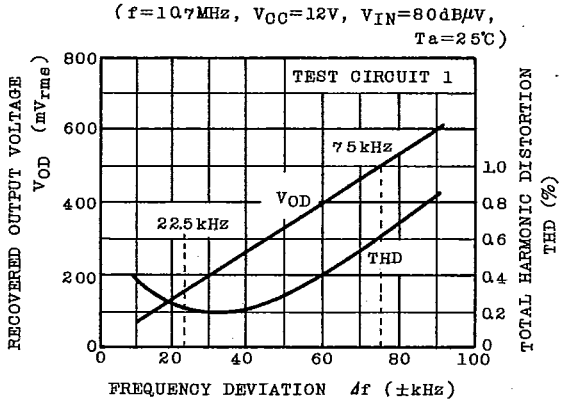
V_{OD}, THD, AMR — V_{IN}

(f=10.7MHz, V_{CC}=12V, f_M=400Hz, Ta=25℃)



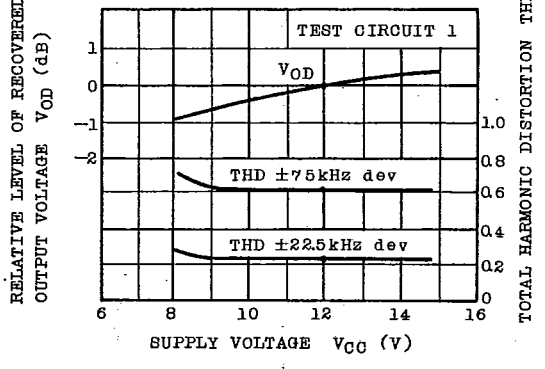
V_{OD}, THD — Δf

(f=10.7MHz, V_{CC}=12V, V_{IN}=80dBμV, Ta=25℃)



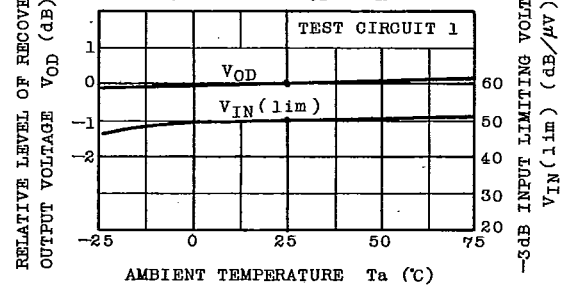
V_{OD}, THD — V_{CC}

(f_o=10.7MHz, V_{IN}=80dBμV, f_M=400Hz, Ta=25℃)



V_{OD}, V_{IN} (lim) — Ta

(f_o=10.7MHz, V_{CC}=12V, V_{IN}=80dBμV(V_{OD}), f_M=400Hz)

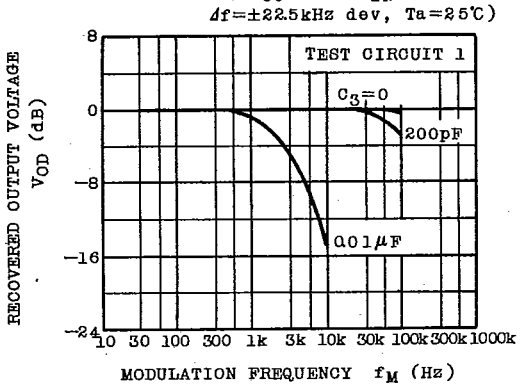


Note: Not includes temperature variation of external components.

TA7130P

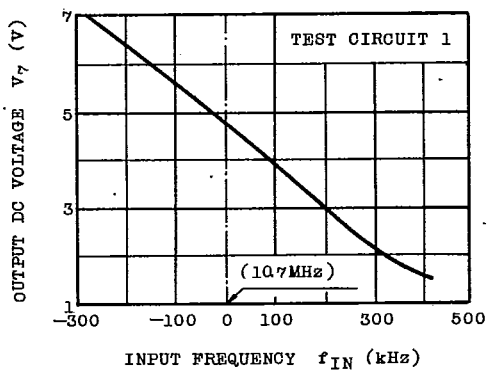
$V_{OD} - f_M$

(f=10.7MHz, V_{CC}=12V, V_{IN}=80dBμV, Δf=±22.5kHz dev, Ta=25℃)

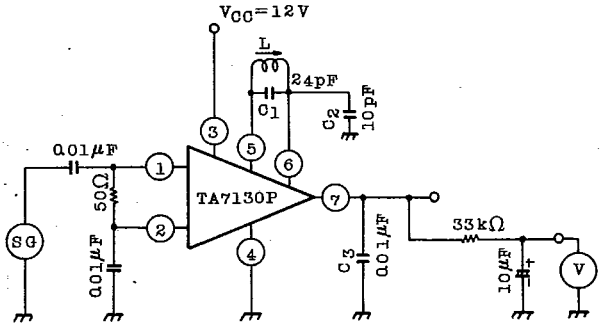


$V_7 - f_{IN}$

(V_{CC}=12V, V_{IN}=80dBμV, Ta=25℃)

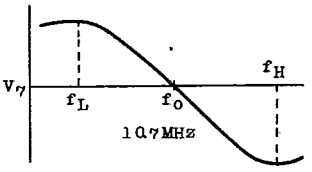


TEST CIRCUIT 2



Output DC voltage (V_7) Can be utilized as control voltage for AFC.

f_L : LOWER PEAK FREQUENCY
f_o : CENTER FREQUENCY
f_H : UPPER PEAK FREQUENCY

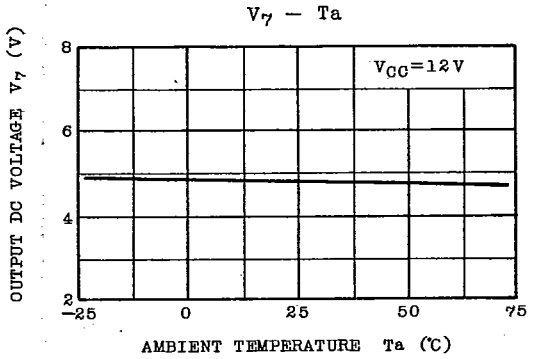


$$f_L = \frac{1}{2\pi\sqrt{L(C_1+C_2)}}$$

$$f_o = \frac{1}{2\pi\sqrt{L(C_1+\frac{C_2}{2})}}$$

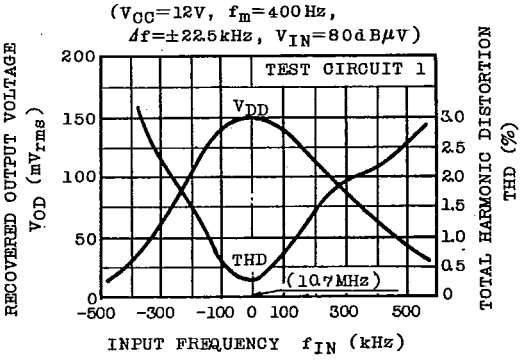
$$f_H = \frac{1}{2\pi\sqrt{LC_1}}$$

V_7 — Ta



V_{OD}, THD — f_{IN}

(V_{CC}=12V, f_m=400Hz, Δf=±22.5kHz, V_{IN}=80dBμV)



APPLICATION CIRCUIT