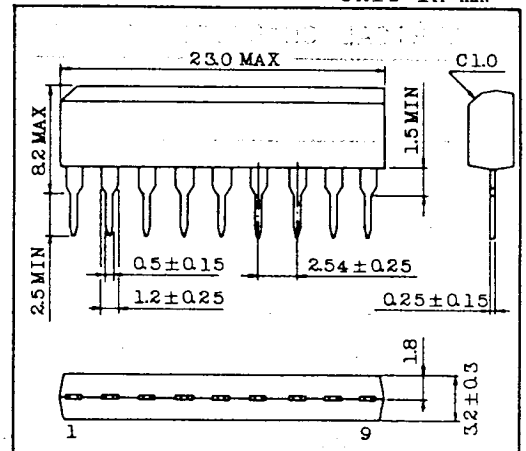
# TA7303P

## FOR FM IF SYSTEM

- 3 Stage Differential IF Amplifier.
- Differential Peak Detector.
- Muting Circuit.
- Signal Meter Drive Circuit.
- Single In-line Package : 9 pin.
- High Recovered Output Voltage : $V_{OD}$=500m$V_{rms}$ (Typ.)
- Low Distortion : THD=0.1% (Typ.)
- Wide Operating Supply Voltage Range : $V_{CC}$=8~15V (Typ.)
- Signal Meter Drive Voltage : $V_3$=4V (Typ.)
- Variable Muting Point.
- Muting Off at Open Terminal.
- 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.

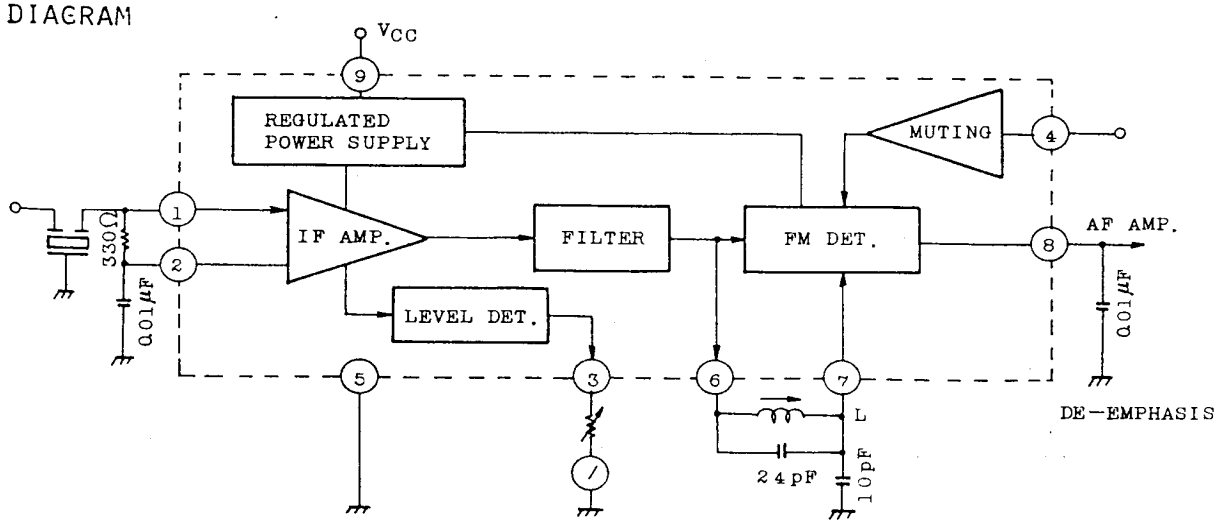
| | |
|---|---|
| JEDEC | — |
| TOSHIBA | S9A-P |

## MAXIMUM RATINGS (Ta=25°)

| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|---|---|---|---|
| Supply Voltage | $V_{CC}$ | 15 | V |
| Input Voltage | $V_{IN}$ | 0.7 | V |
| Power Dissipation (Note) | $P_D$ | 750 | mW |
| Operating Temperature | $T_{opr}$ | -25~75 | °C |
| Storage Temperature | $T_{stg}$ | -55~150 | °C |

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

## BLOCK DIAGRAM



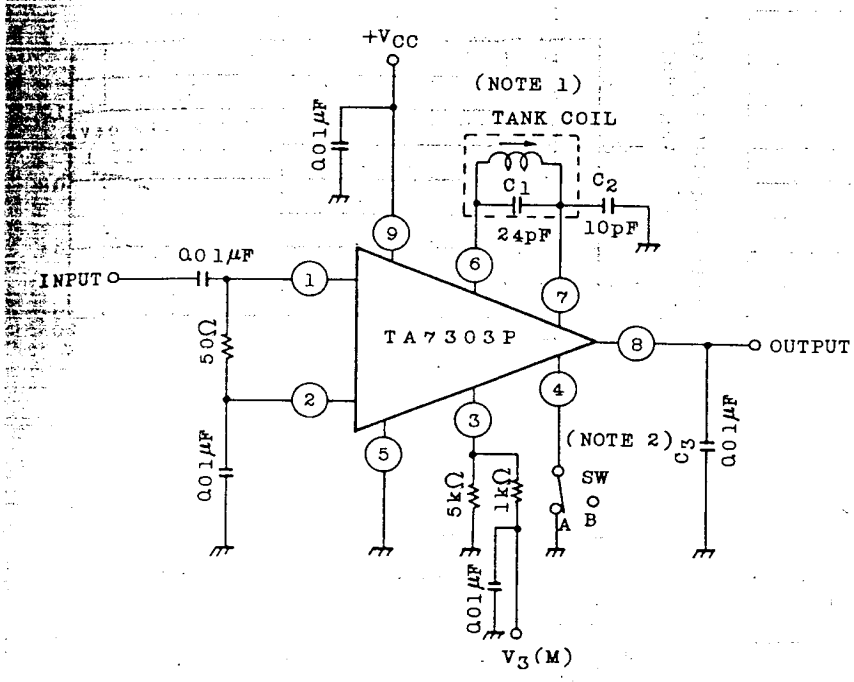
ELECTRICAL CHARACTERISTICS ($V_{CC}$=12V, f=10.7MHz, $f_m$=400Hz, Ta=25°C)

| CHARACTERISTIC | | SYMBOL | TEST CIR-CUIT | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|---|---|
| Supply Current | | $I_{CC}$ | 1 | $V_{IN}$=0 | 10 | 14 | 18 | mA |
| Input Limiting Voltage | | $V_{IN(lim)}$ | 1 | ⊿F=±75kHz dev. -3dB LIMITING | - | 50 | 55 | dBμV |
| AM Rejection Ratio | | AMR | 1 | FM: ⊿F=±75kHz dev. AM: 30% Mod. $V_{IN}$=80dBμV | - | 50 | - | dB |
| Recovered Output Voltage | | $V_{OD}$ | 1 | ⊿F=±75kHz dev. $V_{IN}$=80dBμV | 300 | 500 | 700 | $mV_{rms}$ |
| Total Harmonic Distortion | | THD | 1 | ⊿F=±22.5kHz dev. $V_{IN}$=80dBμV | - | 0.1 | - | % |
| Signal to Noise Ratio | | S/N | 1 | ⊿F=±75kHz dev. $V_{IN}$=80dBμV | - | 75 | - | dB |
| Muting Attenuation | | MA | 1 | ⊿F=±75kHz dev. $V_{IN}$=80dBμV, $V_4$=0 | - | 70 | - | dB |
| Meter Drive Voltage | | $V_{3(Max.)}$ | 1 | $V_{IN}$=110dBμV | - | 4 | - | V |
| 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, 6 pin-GND | - | 1.3 | - | kΩ |
| | Parallel Output Capacitance | $c_{op}$ | - | | - | 4 | - | pF |
| Output Resistance | | $R_O$ | - | f=400Hz, 8 pin-GND | - | 7.7 | - | kΩ |

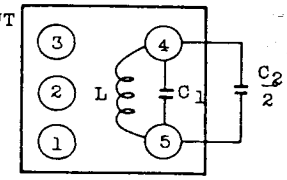
Note: $V_{OD}$ Ranck (at ⊿f=±22.5kHz)

| RANK | MIN. | MAX. | UNIT |
|---|---|---|---|
| B | 90 | 150 | $mV_{rms}$ |
| C | 130 | 210 | $mV_{rms}$ |

## TEST CIRCUIT 1




(NOTE 1)
TANK COIL
WIRE 2 UEW 0.08mmØ
TURNS 21
Qu 130±15%




$C_1 = 24pF$
$C_2 = 10pF$

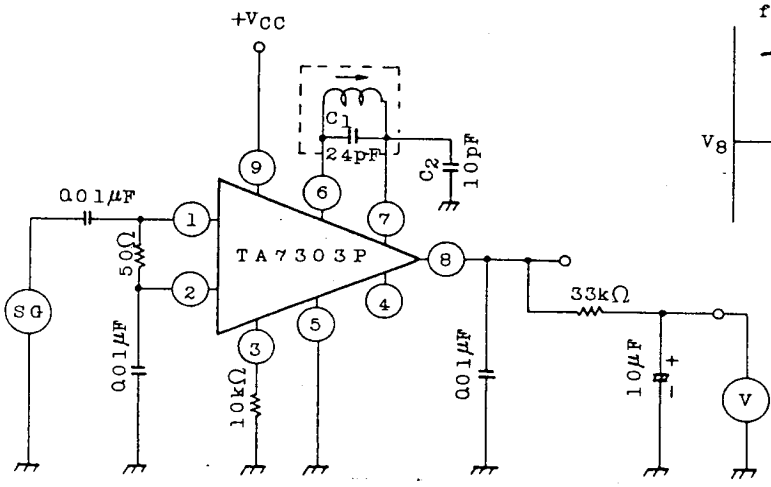
COVERED RESONANT FREQUENCY
10.7MHz±250kHz

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

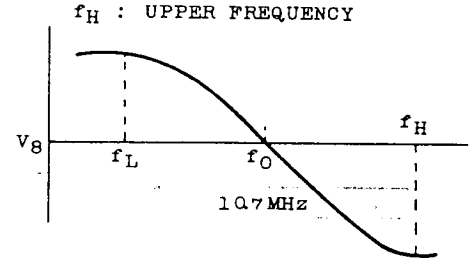
(Note 1) Tuning coil is adjusted to make recovered output voltage maximum at f=10.7MHz

(Note 2) SW ; To A for muting attenuation test only.

## TEST CIRCUIT 2




$f_L$ : LOWER PEAK FREQUENCY
$f_O$ : CENTER FREQUENCY
$f_H$ : UPPER FREQUENCY

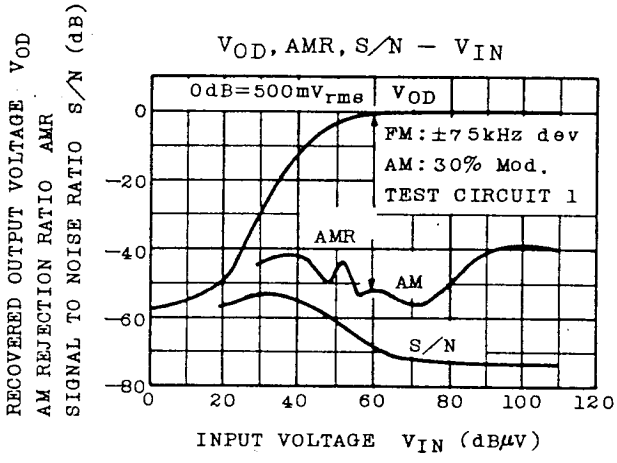



$$f_L = \frac{1}{2\pi\sqrt{L(C_1+C_2)}}$$

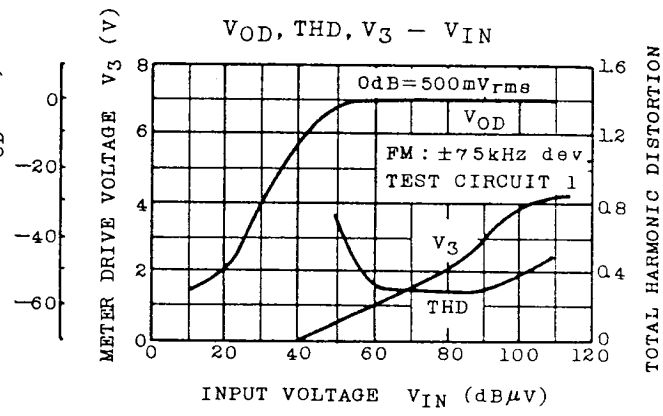
$$f_O = \frac{1}{2\pi\sqrt{L\left(C_1+\frac{C_2}{2}\right)}}$$

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

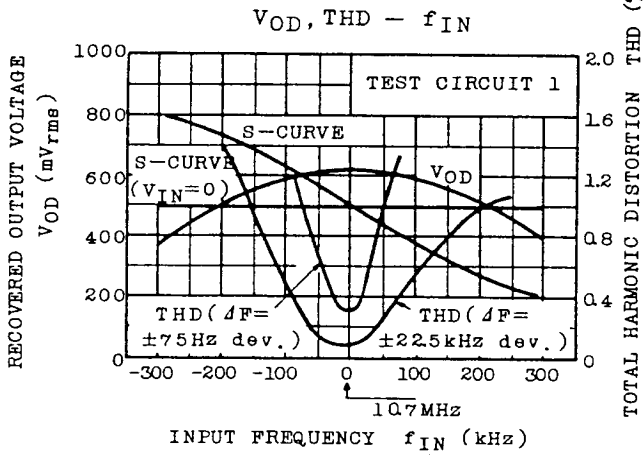
$V_{OD}$, AMR, S/N – $V_{IN}$



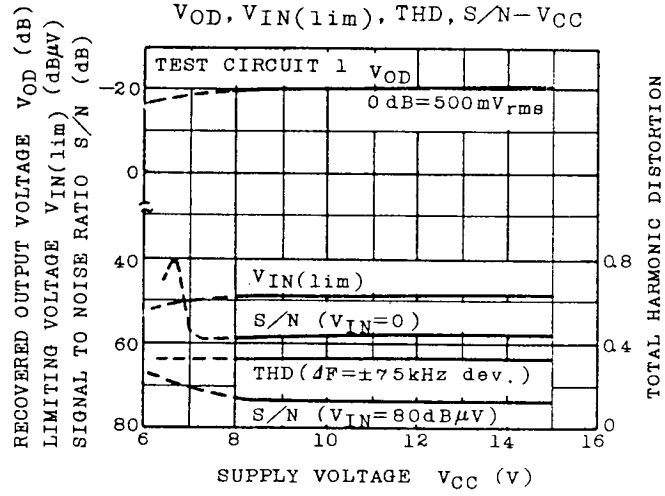

$V_{OD}$, THD, $V_3$ – $V_{IN}$



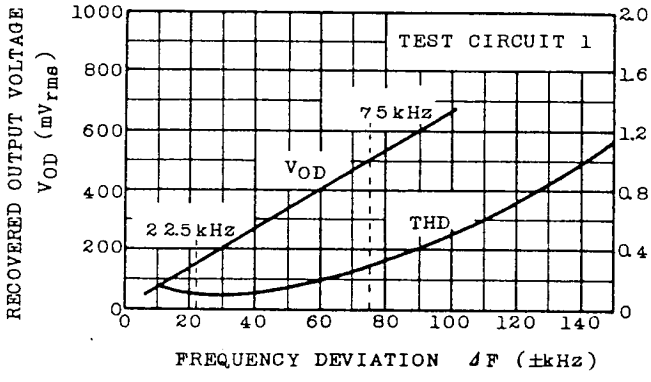

$V_{OD}$, THD – $f_{IN}$



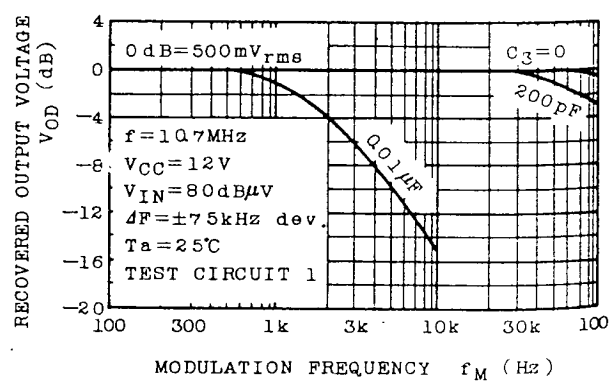

$V_{OD}$, $V_{IN(lim)}$, THD, S/N – $V_{CC}$



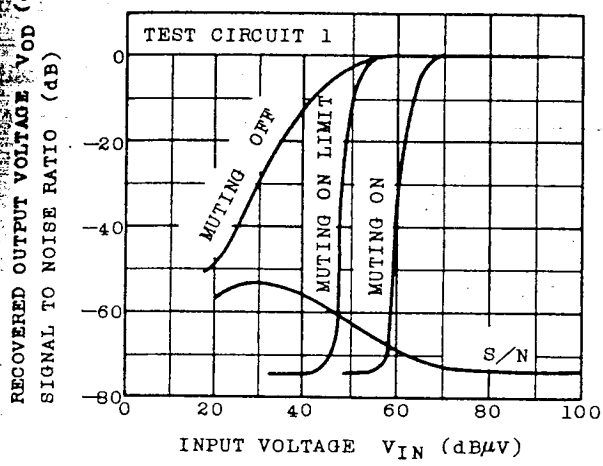

$V_{OD}$, THD – $\Delta F$



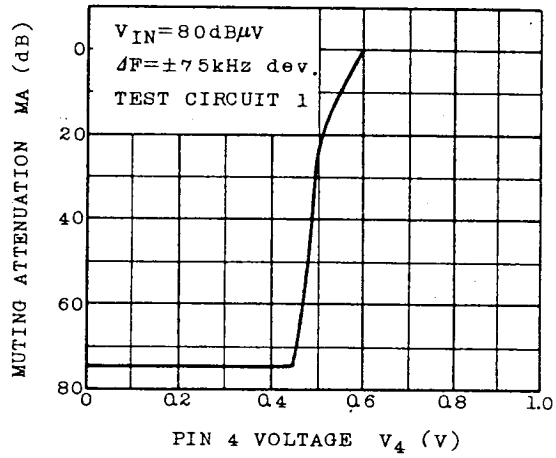

$V_{OD}$ – $f_M$



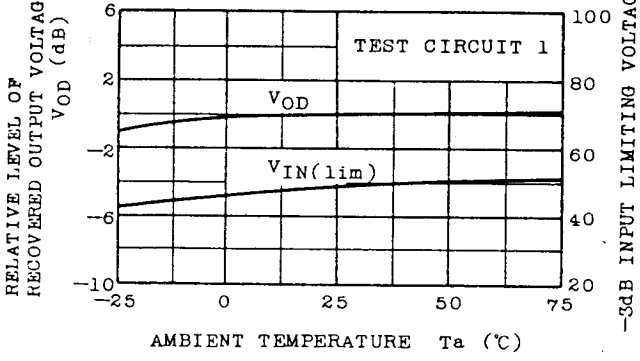
$V_{OD}$, S/N – $V_{IN}$ (MUTING)



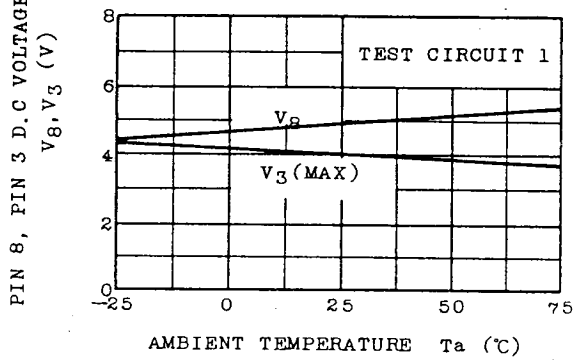

MA – $V_4$



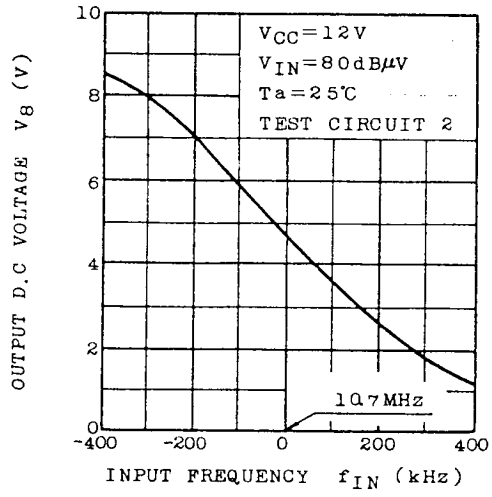

$V_{OD}$, $V_{IN(lim)}$ – Ta



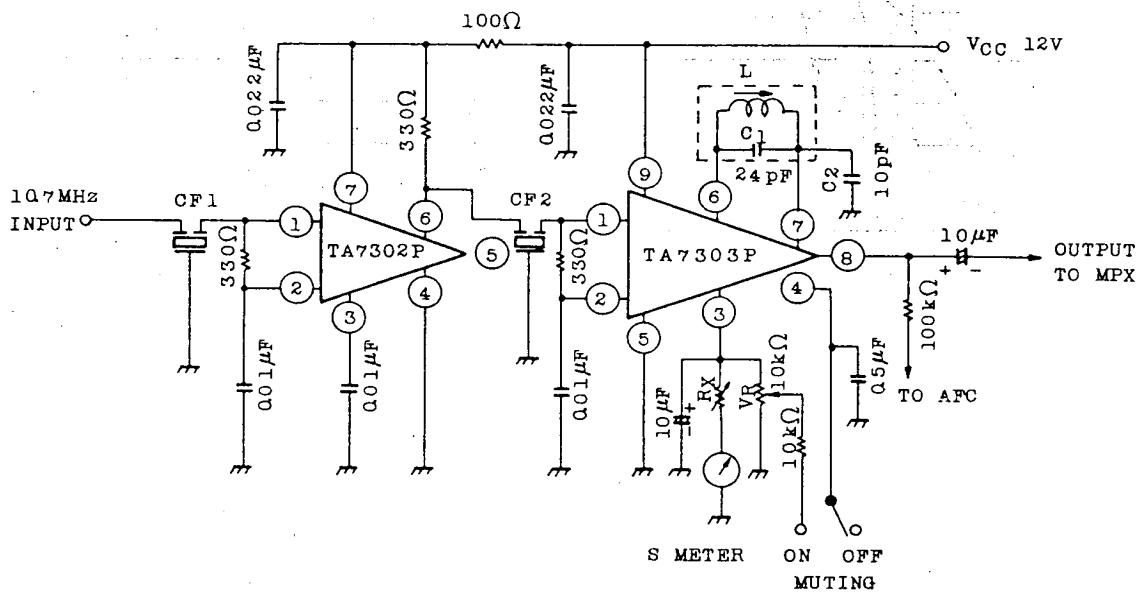

$V_8$, $V_3$ – Ta




$V_8$ – $f_{IN}$



## APPLICATION CIRCUIT




$V_{OD}$, S/N, $V_3$ — $V_{IN}$