

**TA7640AP**  
**TA7640AF**

T-77-05-07

FM/AM IF SYSTEM

The TA7640AP and TA7640AF are FM/AM IF system IC designed for portable use. As compared with conventional IC, this IC is greatly improved in external parts counts and electrical characteristics, especially tweet and overload distortion.

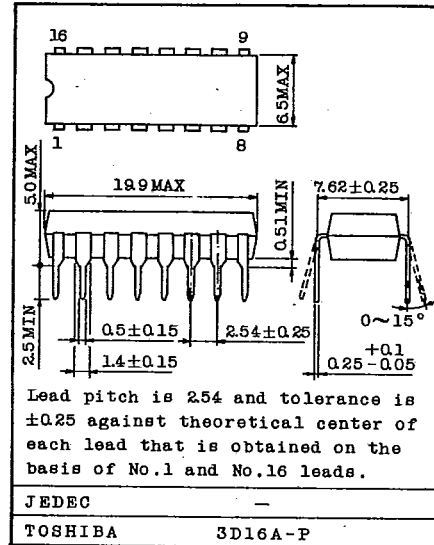
- Low Supply Current, AM:7mA, FM:10mA (Typ.)
- Few External Parts Counts
- Excellent Tweet
- Low Overload Distortion
- Tuning Indicator LED Driving Capability  
:  $I_{LAMP}=10mA$  (Max.)
- FM/AM Mode Switch Built-in
- Common Output for AM/FM
- Operating Supply Voltage Range :  $V_{CC(opr)}=3 \sim 8V$

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

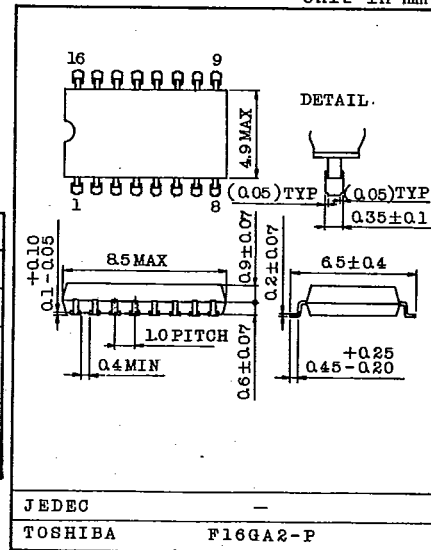
CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	$V_{CC}$	8	V
Lamp Current	$I_{LAMP}$	10	mA
Power Dissipation (Note)	TA7640AP	750	mW
	TA7640AF	350	
Operating Temperature	$T_{opr}$	-25 ~ 75	$^\circ C$
Storage Temperature	$T_{stg}$	-55 ~ 150	$^\circ C$

Note : Derated above  $T_a=25^\circ C$  in the proportion of  $6mW/^\circ C$  for TA7640AP and  $2.8mW/^\circ C$  for TA7640AF.

Unit in mm



Unit in mm



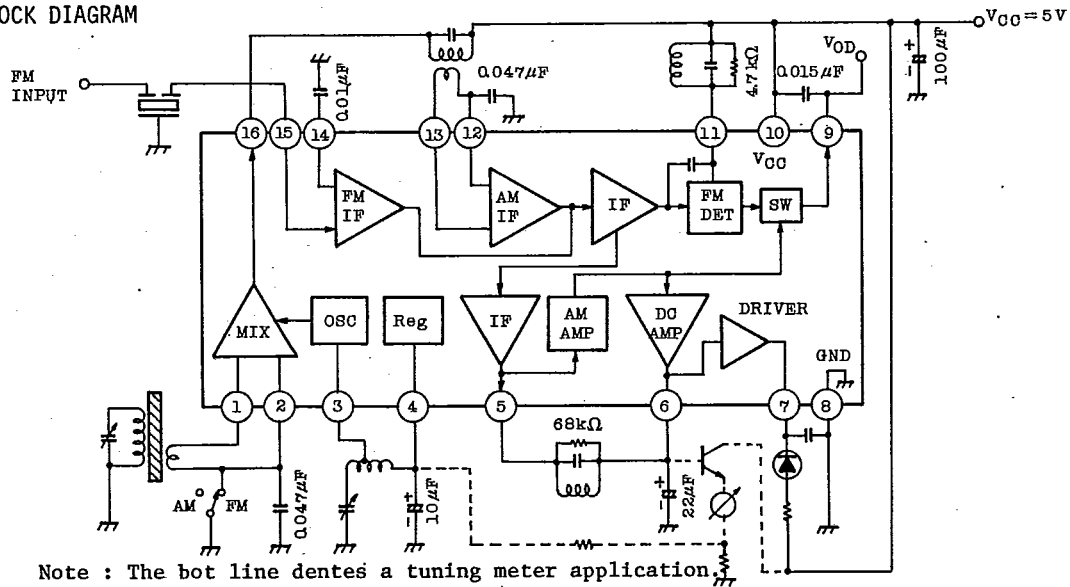
9097247 TOSHIBA. ELECTRONIC

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BLOCK DIAGRAM



Note : The bot line dentes a tuning meter application.

## ELECTRICAL CHARACTERISTICS

1. DC CHARACTERISTICS ( $V_{CC}=5V$ , Terminal voltage at no signal)

ITEM	SYMBOL	TYP.		UNIT
		AM	FM	
Terminal 1 Voltage (AM MIX IN)	V <sub>1</sub>	1.5	0	V
" 2 " (AM MIX BYPASS)	V <sub>2</sub>	1.5	0	V
" 3 " (AM OSC)	V <sub>3</sub>	2.3	2.3	V
" 4 " (Reg)	V <sub>4</sub>	2.3	2.3	V
" 5 " (AM IF OUT)	V <sub>5</sub>	1.0	0.9	V
" 6 " (Meter OUT)	V <sub>6</sub>	1.0	0.9	V
" 7 " (LED)	V <sub>7</sub>	-	-	V
" 8 " (GND)	V <sub>8</sub>	0	0	V
" 9 " (DET OUT)	V <sub>9</sub>	1.4	1.5	V
" 10 " (VCC)	V <sub>10</sub>	5.0	5.0	V
" 11 " (FM DET)	V <sub>11</sub>	5.0	5.0	V
" 12 " (AM IF BYPASS)	V <sub>12</sub>	1.5	1.5	V
" 13 " (AM IF IN)	V <sub>13</sub>	1.5	1.5	V
" 14 " (FM IF BYPASS)	V <sub>14</sub>	1.5	1.5	V
" 15 " (FM IF IN)	V <sub>15</sub>	1.5	1.5	V
" 16 " (AM MIX OUT)	V <sub>16</sub>	5.0	5.0	V

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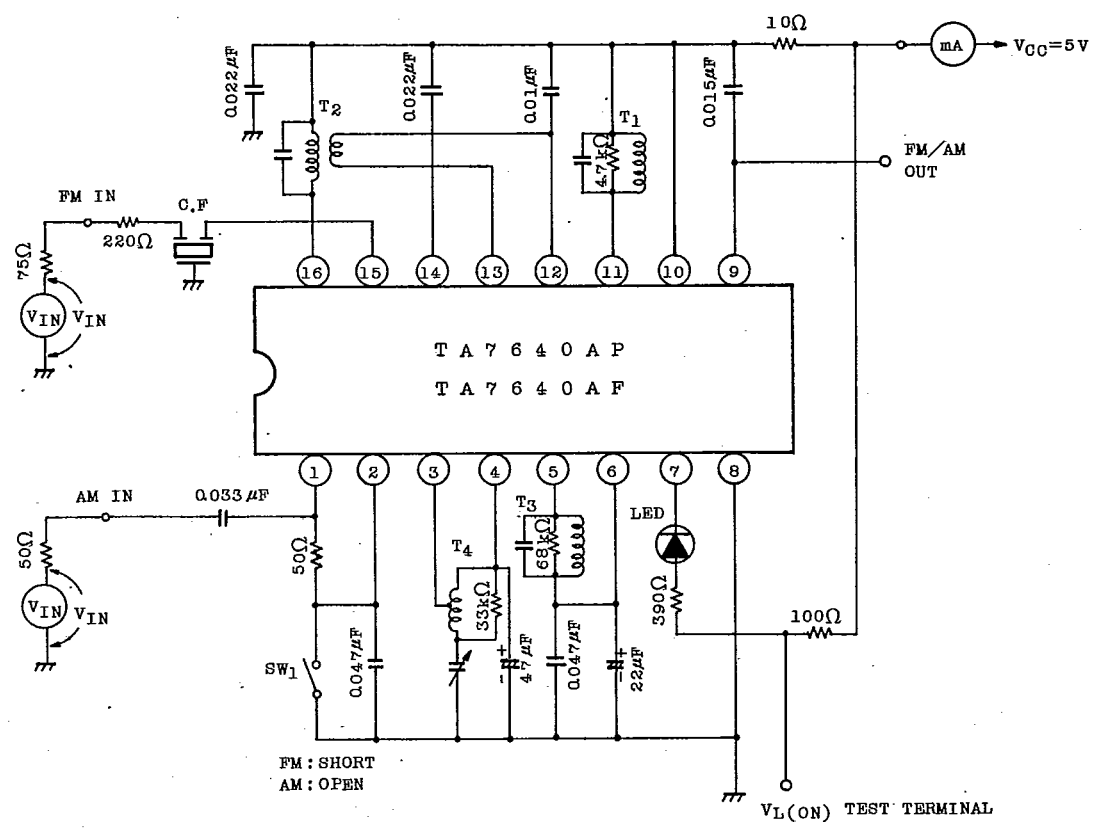
2. AC CHARACTERISTICS (Ta=25°C, VCC=5V, FM : f=10.7MHz, Δf=±22.5kHz, fm=400Hz)  
 AM : f=1MHz, Mod=30%, fm=400Hz

CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current		I <sub>CC(1)</sub>	1	FM V <sub>IN</sub> =0	-	10	15	mA
		I <sub>CC(2)</sub>		AM V <sub>IN</sub> =0	-	7	10	
F M	Input Limiting Voltage	V <sub>IN(1im)</sub>	1	-3dB Limiting	-	40	46	dBμ
	Recovered Output Voltage	V <sub>OD</sub>	1	V <sub>IN</sub> =66dBμV	57	85	114	mV <sub>rms</sub>
	Signal to Noise Ratio	S/N	1	V <sub>IN</sub> =80dBμV	-	65	-	dB
	Total Harmonic Distortion	THD	1	V <sub>IN</sub> =80dBμV	-	0.05	-	%
	AM Rejection Ratio	AMR	1	V <sub>IN</sub> =80dBμV	-	38	-	dBμ
	Meter Drive Voltage	V <sub>M</sub>	1	V <sub>IN</sub> =100dBμV	1.6	1.75	1.9	V
	Lamp ON Sensitivity	V <sub>L</sub>	1	I <sub>L</sub> =1mA	-	46	52	dBμ
A M	Gain	G <sub>v</sub>	1	V <sub>IN</sub> =26dBμV	20	30	60	mV <sub>rms</sub>
	Recovered Output Voltage	V <sub>OD</sub>	1	V <sub>IN</sub> =60dBμV	65	95	125	mV <sub>rms</sub>
	Signal to Noise Ratio	S/N	1	V <sub>IN</sub> =60dBμV	-	47	-	dB
	Total Harmonic Distortion	THD	1	V <sub>IN</sub> =60dBμV	-	1.0	-	%
	Meter Drive Voltage	V <sub>M</sub>	1	V <sub>IN</sub> =100dBμV	1.6	1.75	1.9	V
	Lamp ON Sensitivity	V <sub>L</sub>	1	I <sub>L</sub> =1mA	-	32	-	dBμ
	Local OSC Stop Voltage	V <sub>stop</sub>	1	RDUMP=∞	-	1.5	-	V
Pin 5 Output Resistance		R <sub>O9</sub>	-	f=1kHz	-	3.0	-	kΩ

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## TEST CIRCUIT



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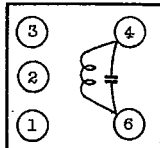
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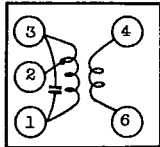
## COIL DATA (TEST CIRCUIT)

T<sub>1</sub> FM DETECTOR COIL

(BOTTOM VIEW)

C <sub>0</sub> (pF)	f	Q <sub>0</sub>	TURNS
4-6	(MHz)	4-6	4-6
47	10.7	150	14

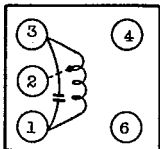
SUMIDA ELECTRIC CO., LTD.  
: 44M-933A or SIMILAR  
WIRE : 0.12mm $\phi$  UEW

T<sub>2</sub> AM IFT (MIX OUT)

(BOTTOM VIEW)

C <sub>0</sub> (pF)	f	Q <sub>0</sub>	TURNS		
1-3	(kHz)	1-3	1-2	2-3	4-6
180	455	110	90	62	8

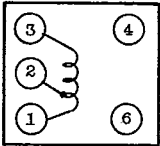
SUMIDA ELECTRIC CO., LTD.  
: 48T-423 or SIMILAR  
WIRE : 0.07mm $\phi$  UEW

T<sub>3</sub> AM IFT (DET)

(BOTTOM VIEW)

C <sub>0</sub> (pF)	f	Q <sub>0</sub>	TURNS
1-3	(kHz)	1-3	1-
180	455	110	152

SUMIDA ELECTRIC CO., LTD.  
: 44M-935C or SIMILAR  
WIRE : 0.07mm $\phi$  UEW

T<sub>4</sub> MW OSC

(BOTTOM VIEW)

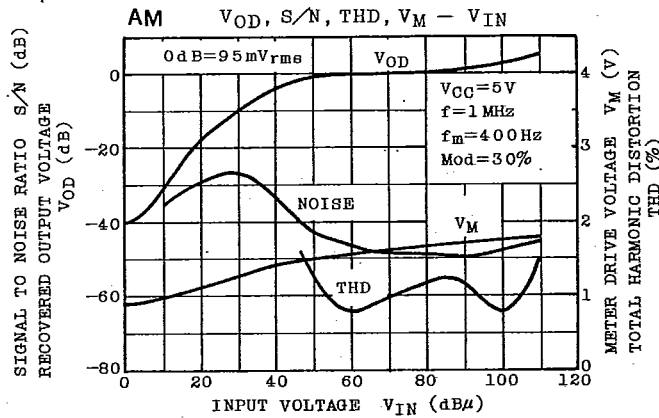
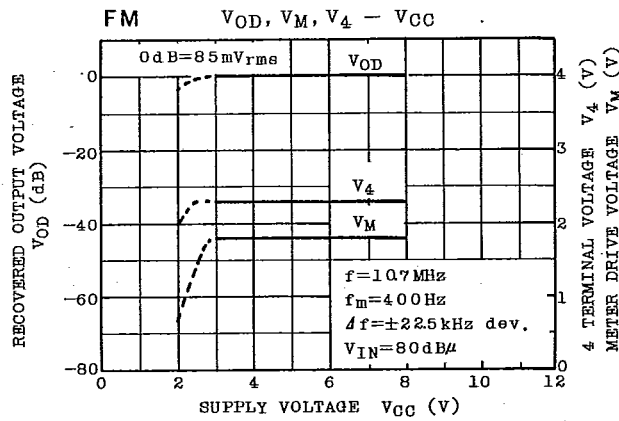
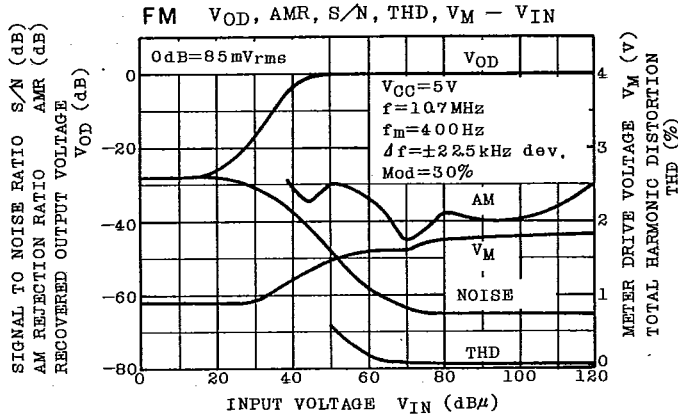
f	L( $\mu$ H)	Q <sub>0</sub>	TURNS	
(kHz)	1-3	1-3	1-2	2-3
796	288	120	13	75

SUMIDA ELECTRIC CO., LTD.  
: 0137-262 or SIMILAR  
WIRE : 0.08mm $\phi$  UEW

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