

# AN7224

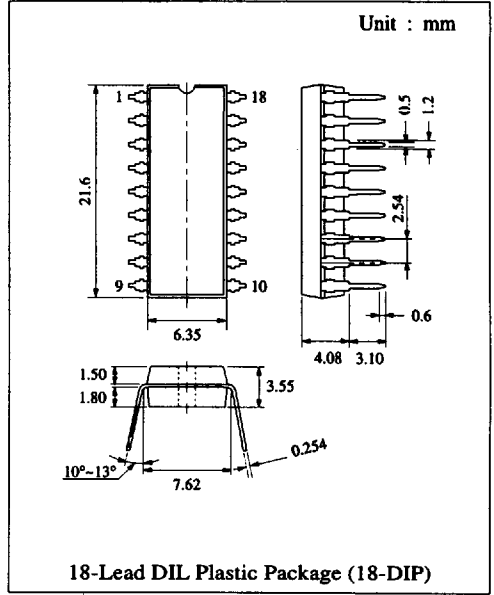
## AM Tuner, FM-AM IF Amplifier Circuit for Radio Cassette Recorders

### ■ Description

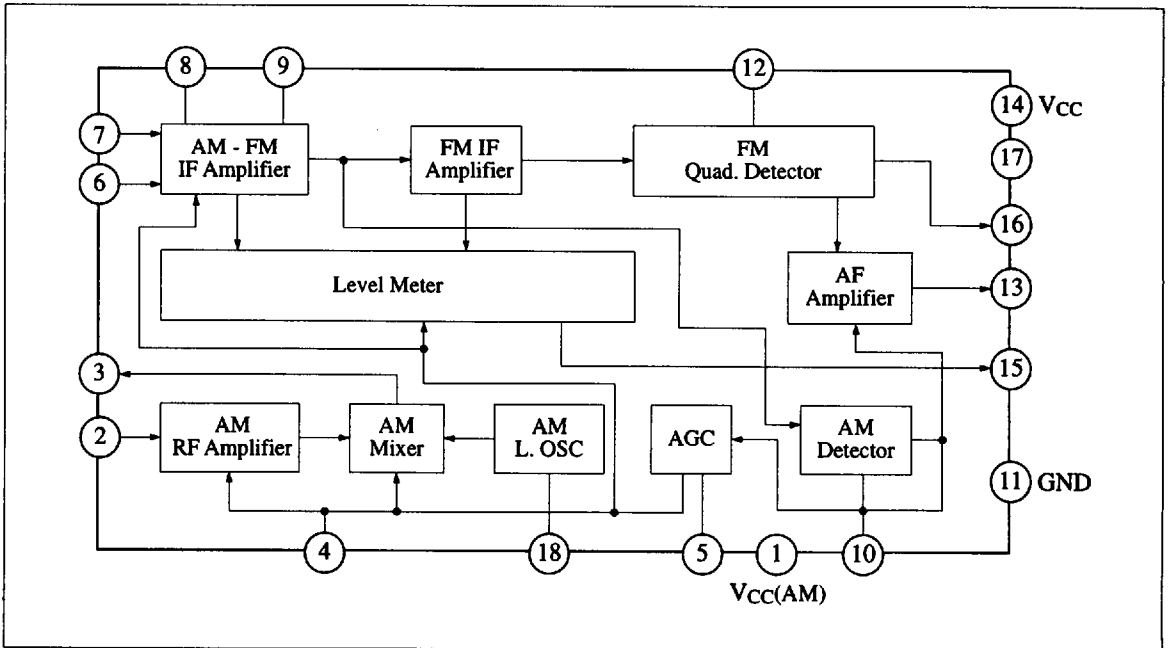
The AN7224 is a monolithic integrated circuit designed for high performance, multi-function FM-AM IF system.

### ■ Features

- Wide operation voltage ( $V_{CC} = 2.8V \sim 9.6V$ )
- Incorporating both FM and AM detectors
- Incorporating a level indicator output (FM / AM common)
- AM : High sensitivity, including RF amplifier
- Low power consumption
- AFC control
- Few external parts



### ■ Block Diagram



## ■ Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Rating	Unit
Supply Voltage	$V_{CC}$	9.6	V
Supply Current	$I_{CC}$	20	mA
Power Dissipation	$P_D$	192	mW
Operating Ambient Temperature	Topr	-20 ~ +75	°C
Storage Temperature	Tstg	-55 ~ +150	°C

Operating Supply Voltage Range:  $V_{CC} = 2.8V \sim 9.6V$

## ■ Electrical Characteristics (VCC=5V, Ta=25°C)

Item		Symbol	Condition	min.	typ.	max.	Unit
FM	Detector Output	$V_{O(FM)}$	$V_{in} = 100dB\mu$	55	71	87	mV
	Limiting Sensitivity	$V_{in(lim)}$	$V_O = -3dB$	38	41	44.5	dB $\mu$
	Meter Output Voltage (1)	$V_{O(15-11)}$	$V_{in} = 50dB\mu$	230	550	880	mV
	Meter Output Voltage (2)	$V_{O(15-11)}$	$V_{in} = 100dB\mu$	1080	1220	1360	mV
	Offset Voltage	$V_{(16-17)}$	$V_{in} = 0dB$	-250	0	250	mV
AM	Detector Output Voltage	$V_{O(AM)}$	$V_{in} = 60dB\mu$	57	73	88	mV
	Sensitivity	$S_{(AM)}$	$V_O = 10mV$	3	8.5	14.5	dB $\mu$

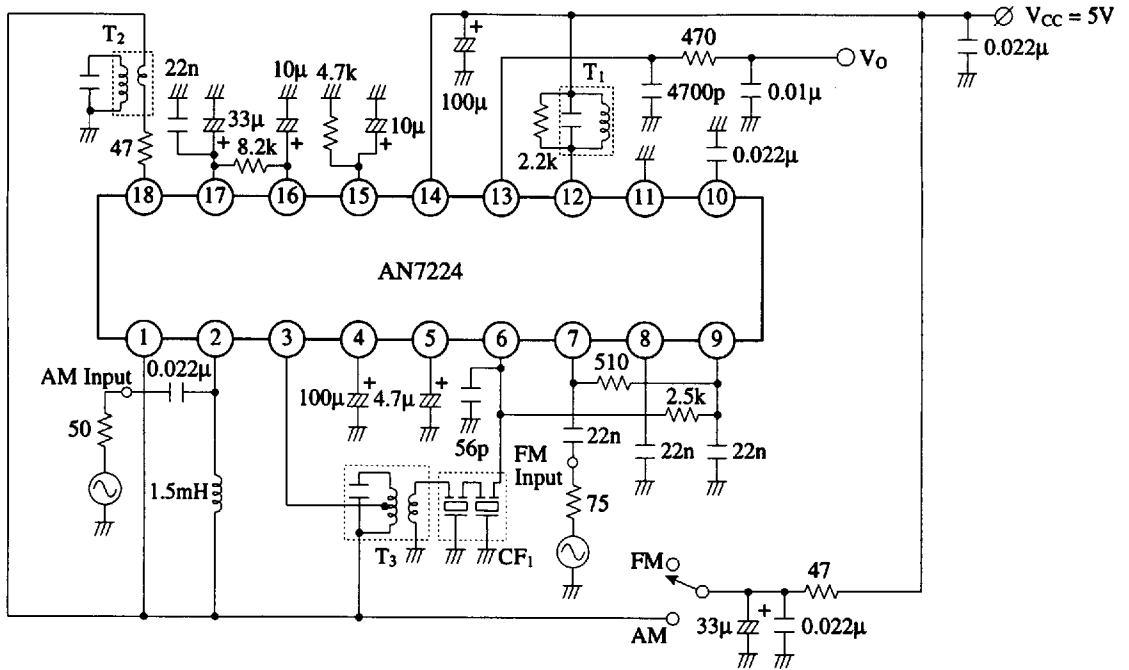
Note) FM :  $f = 10.7MHz$ ,  $f_{dev} = 22.5kHz$ ,  $f_m = 400Hz$

AM :  $f = 1MHz$ ,  $f_m = 400Hz$ , Mod = 30%

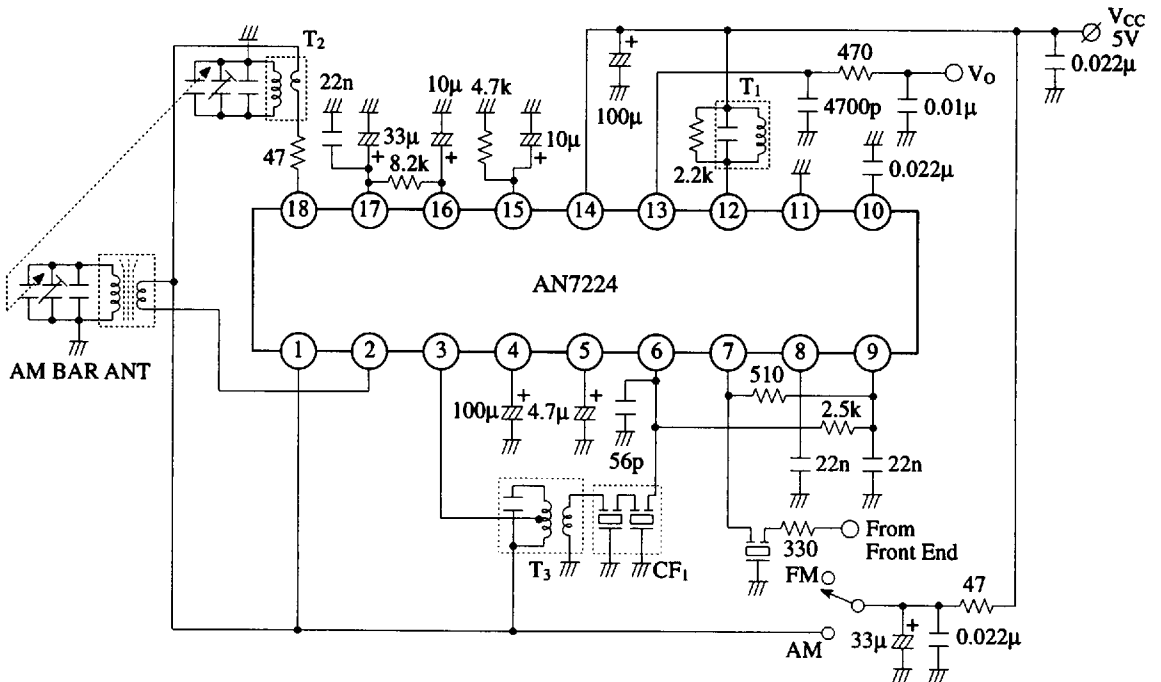
## ■ Pin

Pin No.	Pin Name	Pin No.	Pin Name
1	$V_{CC}$ (AM)	10	AM Detector Output
2	AM RF Amplifier Input	11	GND
3	AM Mixer Output	12	FM Detector Coil
4	AGC Output (2)	13	AF Output
5	AGC Output (1)	14	$V_{CC}$
6	AM IF Amplifier Input	15	Level Meter Output
7	FM IF Amp. Input	16	AFC Output
8	IF By-pass	17	Reference Voltage
9	IF By-pass	18	Local Oscillator

Test Circuit



■ Application Circuit



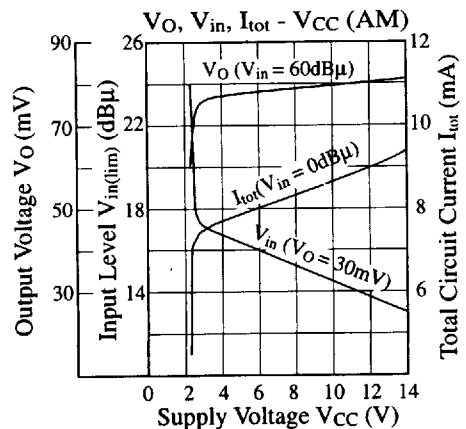
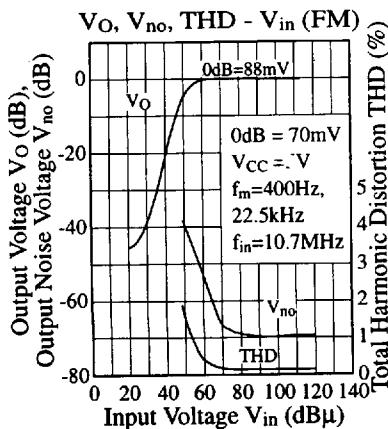
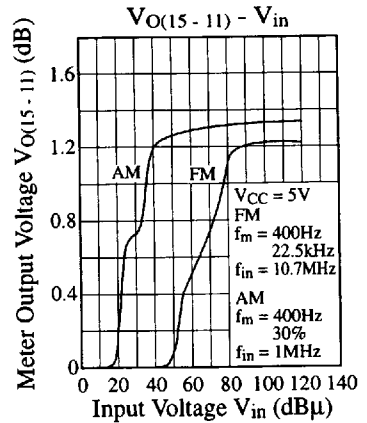
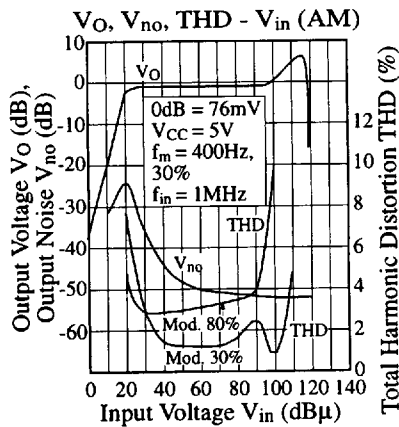
■ Coil Specifications

Symbol	Use, Freq.	Type No.	Maker	Connection Diagram	Number of Turns	Tuning Cap.	Unloaded Q
T <sub>1</sub>	FM Quad Coil 10.7MHz	EIF-7S752A	Matsushita		①...② 8T ②...③ 5T ④...⑥ 3T	100pF	90±20%
T <sub>2</sub>	AM MW Osc. Coil	ELL-7S754	Matsushita		①...② 4T ②...③ 125T ④...⑥ 7T	-	95±20%
T <sub>3</sub>	AM Mixer Output 455kHz	EIA-7S802A	Matsushita		③...② 35T ⑥...④ 10T ②...① 19T	1500pF	60±30%

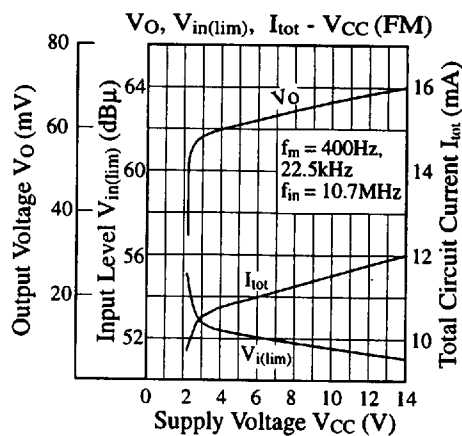
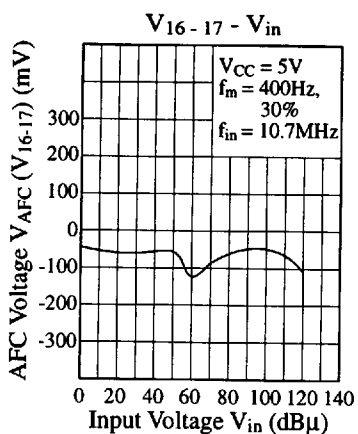
■ Ceramic Filter Specification

Symbol	Use	Type No.	Maker	Center Freq.	Band Width	Loss
CF <sub>1</sub>	AM IF	CFM2-455B	Toko	455kHz	7kHz (-6dB)	2.6dB

■ Characteristics Curve



■ Characteristics Curve (Continue)



■ Printed Circuit Board Layout (Scale: 1:1)

