

# AN7238K

## Single Chip IC for FM-AM IF, AM Tuner, FM MPX

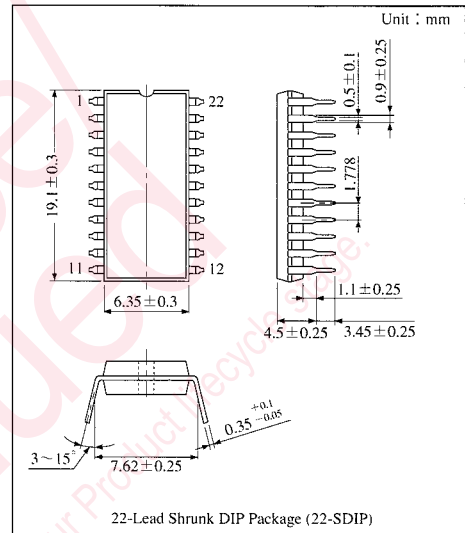
### Overview

The AN7238K is a single chip IC integrating the circuits for FM-AM, IF-Tuner and FM-MPX demodulation which are most suitable for DTS radio cassette recorder.

The chip is encapsulated into 24-pin · shrunk DIP package.

### Features

- On a single chip (FM-AM IF-Tuner, FM MPX)
- With tuning indicator pin which can utilize as stop signal.
- Stop sensitivity variable
- Stop width variable (Only FM)

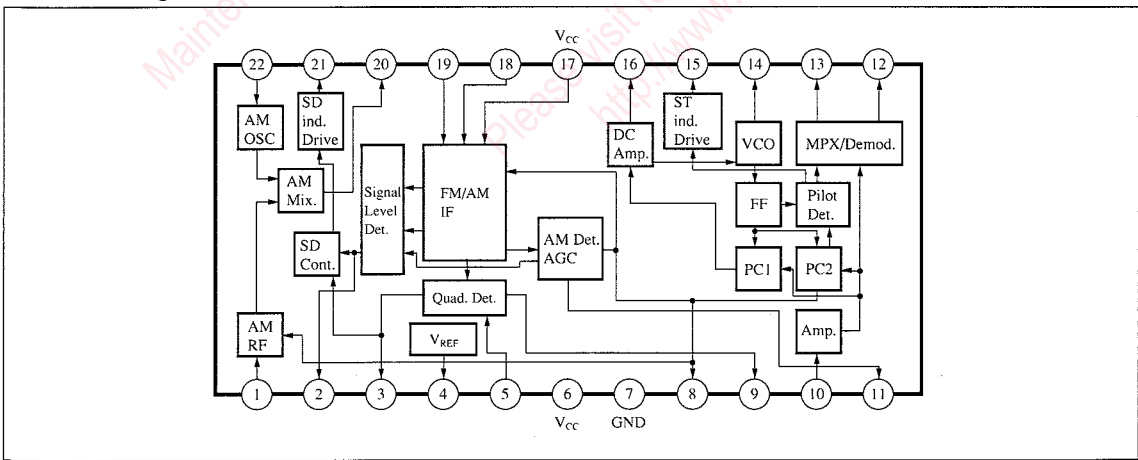


### Pin Descriptions

Pin No.	Pin Name	Pin No.	Pin Name
1	AM RF IN	12	Rch. OUT
2	SD Level Adjustment	13	Lch. OUT
3	SD Width Adjustment	14	VCO
4	V <sub>REF</sub>	15	Stereo Indicator
5	FM Detection Coil	16	MPX Phase Detector/Mode Switch
6	V <sub>cc</sub>	17	V <sub>cc</sub>
7	GND	18	AM IF IN
8	AGC/MPX Pilot Signal Detector	19	FM IF IN
9	FM Detection Output	20	AM Mix. OUT
10	MPX IN	21	SD OUT
11	AM Detection Output/Forced Mono.	22	AM OSC

ICs for Tuner

### Block Diagram



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

Parameter	Symbol	Rating	Unit
Supply Voltage	V <sub>CC</sub>	7	V
Supply Current	I <sub>CC</sub>	25	mA
Power Dissipation	P <sub>D</sub>	175	mW
Operating Ambient Temperature	T <sub>opr</sub>	-20 ~ +75	°C
Storage Temperature	T <sub>stg</sub>	-55 ~ +150	°C

Note) Surge withstand voltage of Pin⑧ is about 200V under the condition of 200pF, 0Ω. Take consideration for the static electricity.

### ■ Recommended Operating Range (Ta=25°C)

Parameter	Symbol	Range
Operating Supply Voltage Range	V <sub>CC</sub>	3.8V ~ 7.0V

### ■ Electrical Characteristics (V<sub>CC</sub>=5V, Ta=25°C)

Parameter	Symbol	Condition	min.	typ.	max.	Unit
<b>FM</b>						
Detection Output Voltage	V <sub>O(FM)</sub>	V <sub>in</sub> =80dBμ Monaural	48	69	90	mVrms
Limiting Sensitivity	V <sub>i(lim)</sub>	Input monaural decreasing V <sub>O</sub> (FM) by 3dB	33	36	39	dBμ
SD Lamp ON Level	V <sub>i(FMSD)</sub>	No modulation	41	51	61	dBμ
SD Lamp ON Level	B <sub>W(FMSD)</sub>	No modulation	±5	±25	±45	kHz
Channel Balance	CB	V <sub>in</sub> =80dBμ, Monaural	-2	0	2	dB
No Signal Current *	I <sub>tot(FM)</sub>	Stereo mode	(—)	(19)	(—)	mA
Signal to Noise Ratio *	S/N <sub>(FM)</sub>	V <sub>in</sub> =80dBμ, 30% Mod.	(—)	(63)	(—)	dB
<b>MPX</b>						
Separation	Sep.	V <sub>in</sub> =80dBμ Stereo	36	46	—	dB
Total Harmonics Distortion Ratio	THD	V <sub>in</sub> =80dBμ Stereo	—	0.5	1.5	%
Stereo Lamp ON Level	V <sub>p(ON)</sub>	V <sub>in</sub> =80dBμ, Stereo modulation, Only pilot signal	—	3.5	7.0	%
Stereo Lamp OFF Level	V <sub>p(OFF)</sub>	V <sub>in</sub> =80dBμ, Stereo modulation, Only pilot signal	0.9	2.3	—	%
Capture Range *	CR	V <sub>in</sub> =80dBμ, Stereo	(—)	(±2.9)	(—)	%
Carrier Leak *	CL	V <sub>in</sub> =80dBμ, Stereo	(—)	(31)	(—)	dB
<b>AM</b>						
Detection Output Voltage	V <sub>O(AM)</sub>	V <sub>in</sub> =60dBμ	52	74	96	mVrms
Maximum Sensitivity	S <sub>max.</sub>	Input for V <sub>O(AM)</sub> =20mV	4	13	22	dBμ
SD Lamp ON Level	V <sub>i(AMSD)</sub>	No modulation	12	22	32	dBμ
No Signal Current *	I <sub>tot(AM)</sub>	MPX section also included	(—)	(14)	(—)	mA
Signal to Noise Ratio *	S/N <sub>(AM)</sub>	V <sub>in</sub> =80dBμ, 30% Mod.	(—)	(43)	(—)	dB

Note) FM : f<sub>in</sub> = 10.7MHz, f<sub>Mod.</sub> = 1kHz, 30% modulation (However, 100% stereo modulation at MPX measurement)

AM : f<sub>in</sub> = 1MHz, f<sub>Mod.</sub> = 400Hz, 30% modulation

\* The characteristic value shown in parentheses is a reference value but not guaranteed value.

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