

ICs for FM/AM Tuner

Panasonic

AN7243S

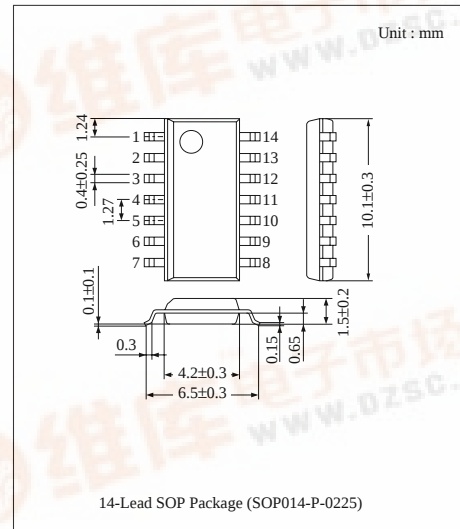
FM Front-end Circuit for Car Radio

■ Overview

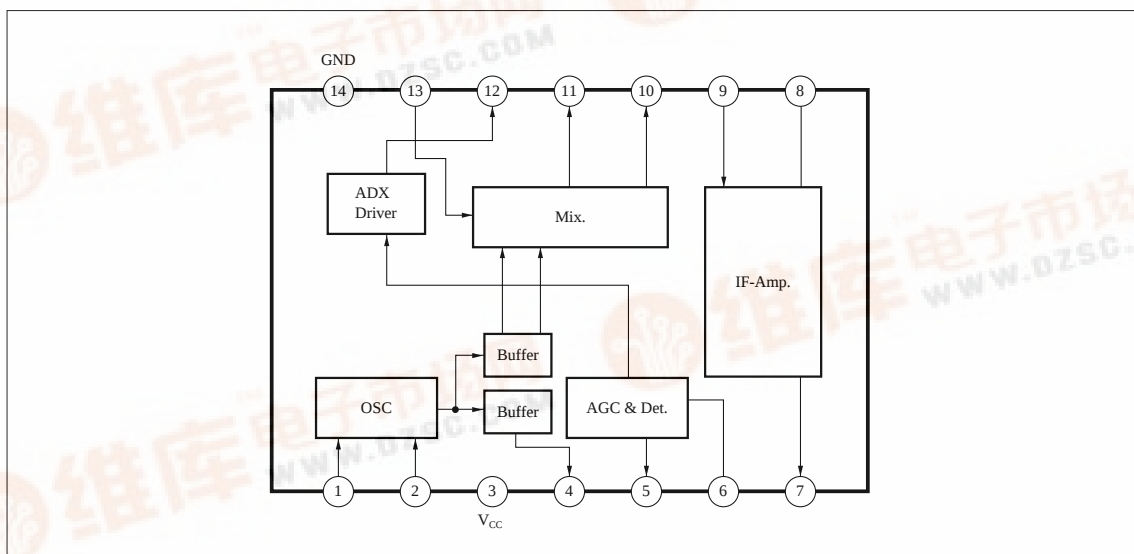
The AN7243S is an FM front-end IC designed for DTS except RF amp. of car radio. It is built-in local oscillation frequency buffer output and PIN diode (ADX) driver for antenna damping.

■ Features

- High sensitivity · High S/N ratio
- Good IM characteristics at strong input
- Timing for AGC input level is variable.
- Built-in pre-IF-Amp. having negative (positive) temperature characteristics to RF amp.



■ Block Diagram



Panasonic

■ Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Supply Voltage	V_{CC}	9.6	V
Supply Current	I_{CC}	50	mA
Power Dissipation	P_D	380	mW
Operating Ambient Temperature	T_{opr}	-40 ~ + 80	°C
Storage Temperature	T_{stg}	-55 ~ + 125	°C

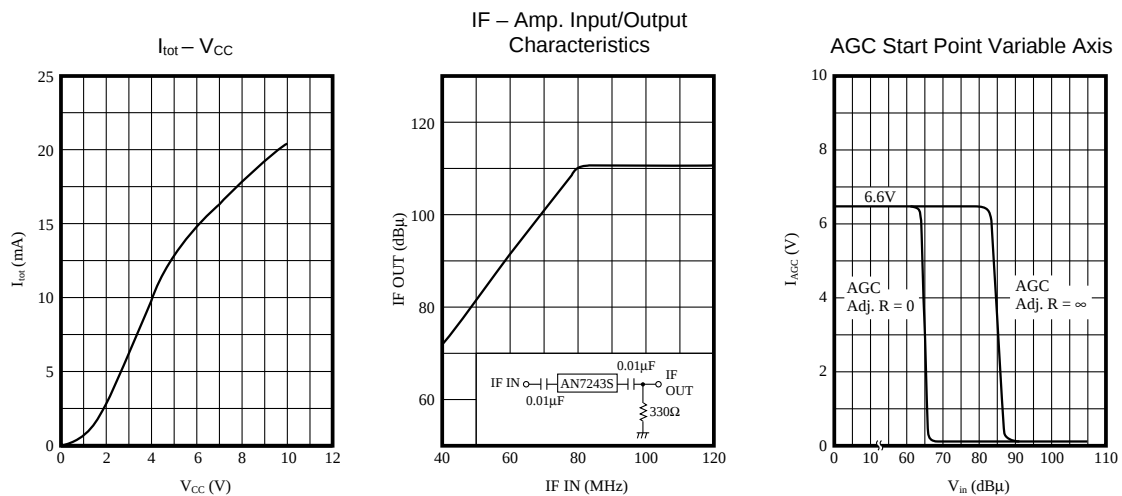
■ Recommended Operating Range (Ta=25°C)

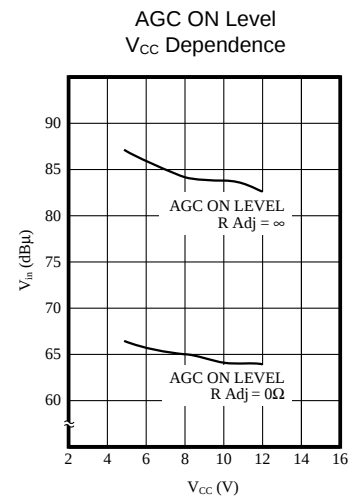
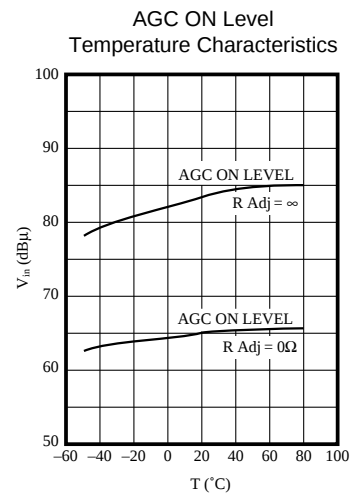
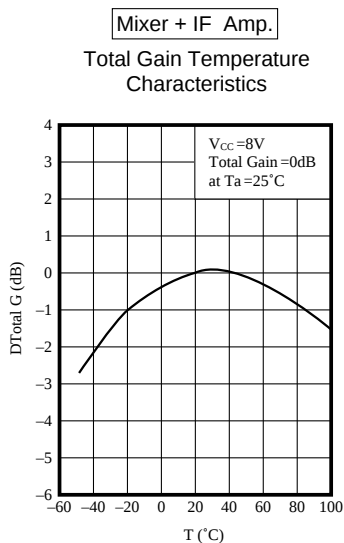
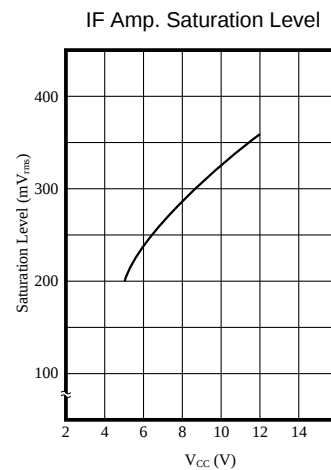
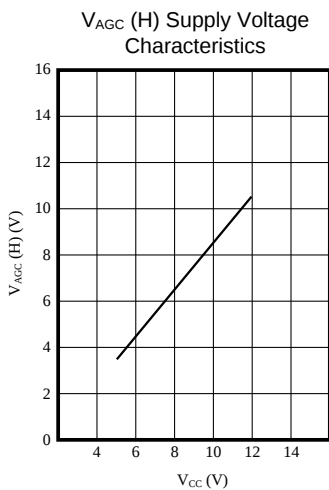
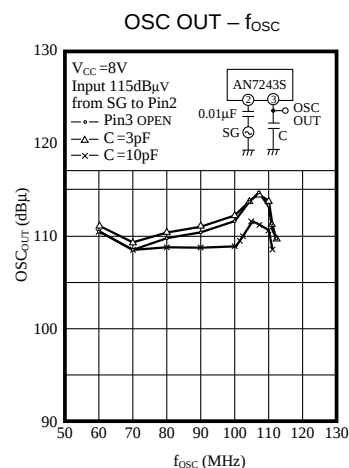
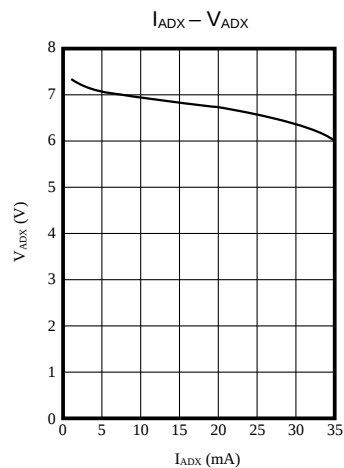
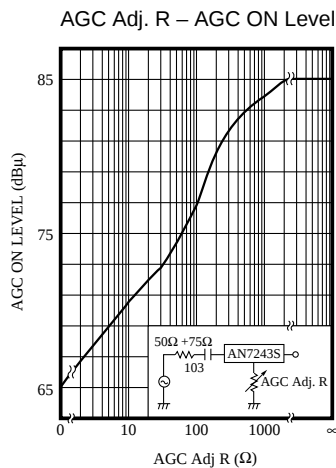
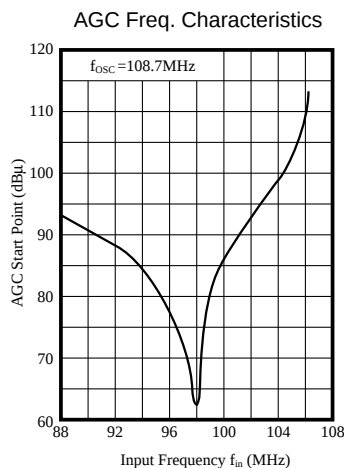
Parameter	Symbol	Range
Operating Supply Voltage Range	V_{CC}	6.5V ~ 9.6V

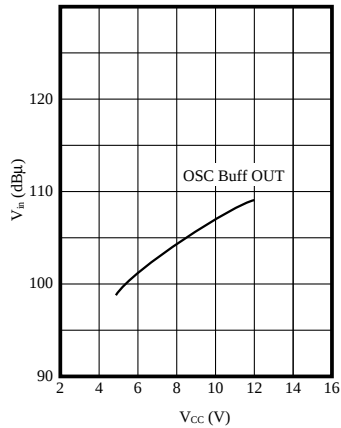
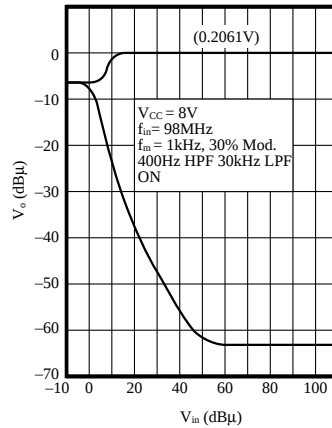
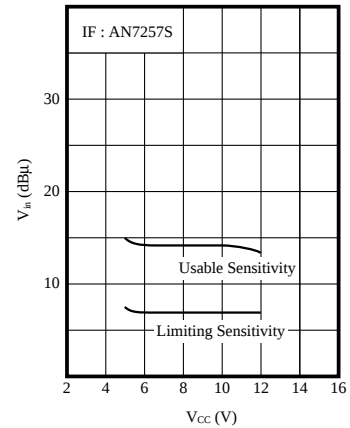
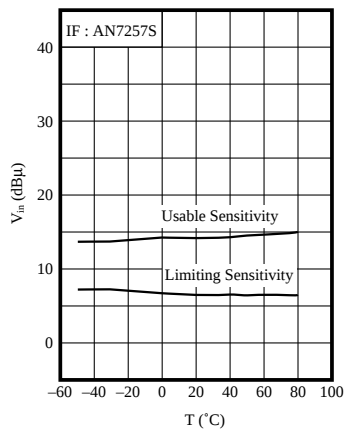
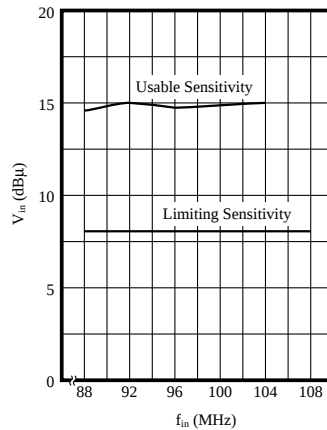
■ Electrical Characteristics ($V_{CC} = 8V$, $f_{in} = 98MHz$, 400Hz 30%Modulation, S_1 : Open, Ta= 25°C)

Parameter	Symbol	Condition	min.	typ.	max.	Unit
S/N Ratio	N_{OUT}	$V_{in} = 17dB\mu$ no conversion However, S= output at 400Hz 30%conversion	22	30	—	dB
Local Oscillation Output Level	V_{OSC}	$f_{OSC} = 108.7MHz$ Measured by Pin4, No signal	160	250	330	mV
IF Output Level	V_{OUT}	No modulation, $V_{in} = 53dB\mu$	41	58	82	mV
AGC Maximum Sensitivity	S_{AGC}	Input level at $V_{AGC} = 3V$	60	65	70	dB μ
AGC Level (L)	$V_{AGC(L)}$	$V_{in} = 72dB\mu$	—	0.02	0.5	V
AGC Level (H)	$V_{AGC(H)}$	$V_{in} = 58dB\mu$	6	6.6	—	V
AGC Sensitivity Variable Range		At S_1 ON, difference between input level at $V_{AGC} = 3V$ and AGC maximum sensitivity	18	—	—	dB
ADX Drive Current	$I_{X(max.)}$	$V_{in} = 72dB\mu$	20	—	—	mA
ADX Leak Current	$I_{X(leak)}$	$V_{in} = 63dB\mu$	—	—	1	μA

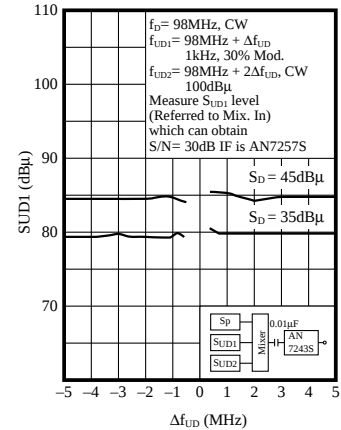
■ Characteristics Curve



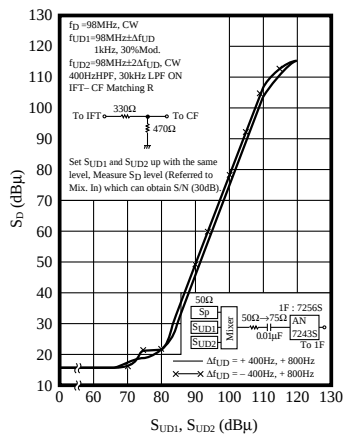


OSC Buff OUT
 V_{CC} DependenceInput/Output Characteristics
ExampleLimiting Sensitivity,
Usable Sensitivity V_{CC} DependenceLimiting Sensitivity,
Usable Sensitivity,
Temperature CharacteristicsLimiting Sensitivity,
Usable Sensitivity,
Frequency Characteristics

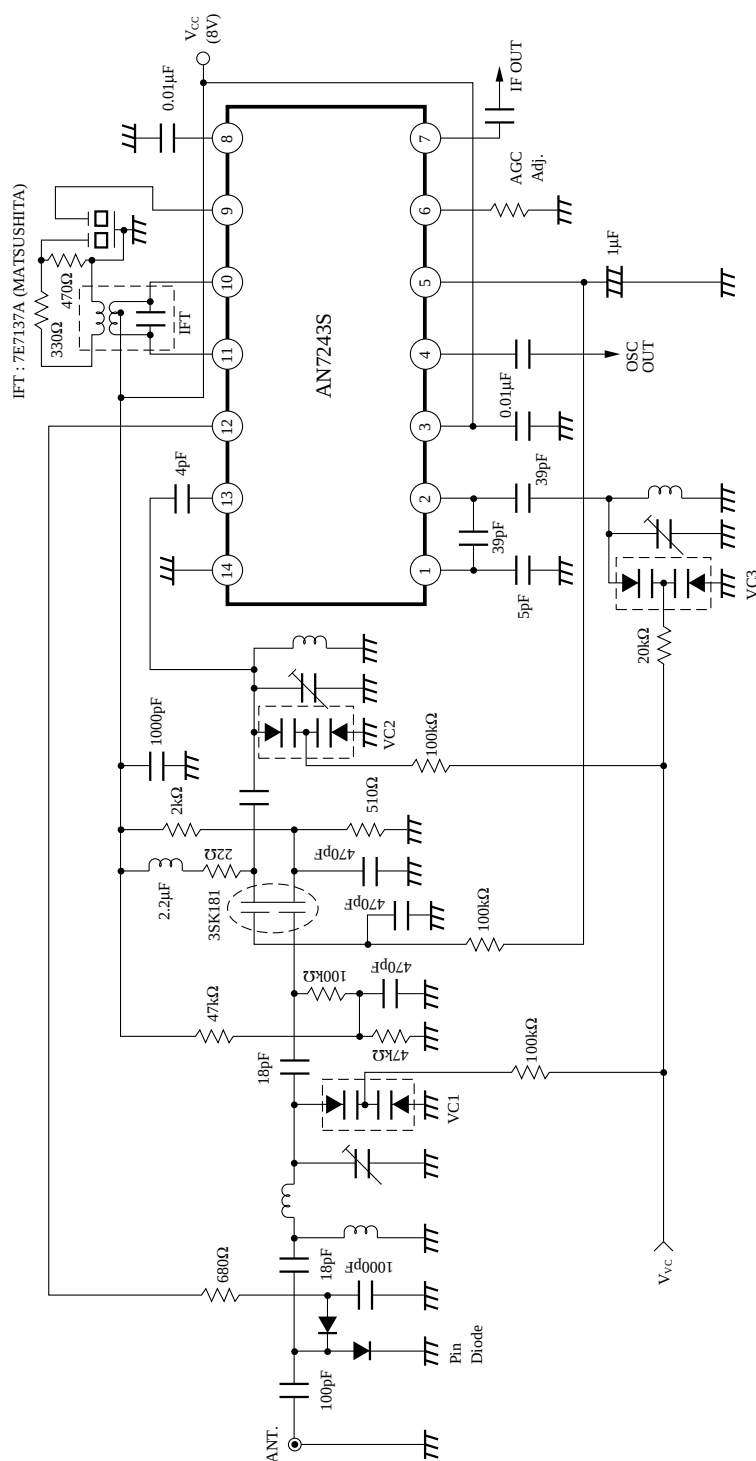
IM Characteristics (1)



IM Characteristics (2)



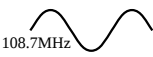
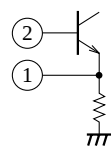
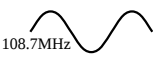
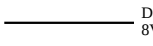
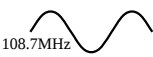
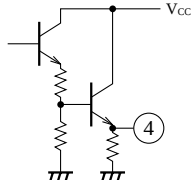
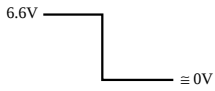
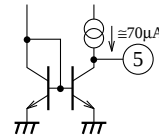
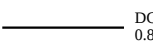
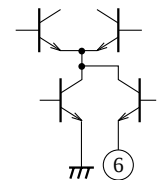
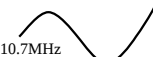
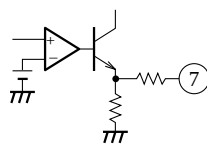
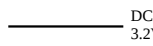
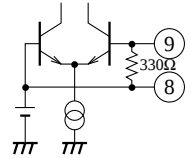
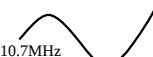
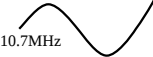
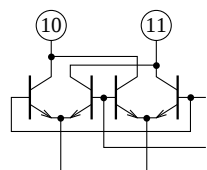
■ Application Circuit



(Above application circuit and circuit constant indicate only an example. It is not assure the design as mass production set.

(Note) VC1 ~ VC3 TOKO KV1340A-3

■ Pin Descriptions

Pin No.	Pin Name	Typ. Waveform	Description	Equivalent Circuit
1	Oscillation Emitter		Oscillation transistor's emitter pin	
2	Oscillation Base		Oscillation transistor's base pin	
3	V _{CC}		Main circuit V _{CC}	
4	OSC Output		Output oscillation signal to microcomputer through buffer.	
5	AGC Output		Output AGC signal according to Mix. output dimensions.	
6	AGC-Amp. Gain Adjustment		Adjust AGC-Amp. gain by external resistance. (Refer to P.275 AGC circuit.)	
7	IF Amp. Output		IF signal (10.7MHz) output pin Z _{out} ≅ 330Ω	
8	IF Amp. By-pass		IF amp. by-pass control	
9	IF Amp. Input		IF signal (10.7MHz) input pin	
10	Mix. Output		Convert RF signal to IF signal and output.	
11				

Note) Typical waveform frequency is the value when tuning receiving frequency to 98.0MHz.

Pin No.	Pin Name	Typ. Waveform	Description	Equivalent Circuit
12	PIN Diode Driver Output		Drive PIN diode for input attenuate of RF-Amp. Determine drive current by Pin12 external resistance.	
13	Mix.Output		Input signal from RF Amp.	
14	GND		Main circuit GND	

■ Supplementary Explanation

AGC used at the AN7243S uses mixer output (IFT primary side) signal and controls AGC output.

