

# AN7213

## FM Front-end Circuit for Radio

### Description

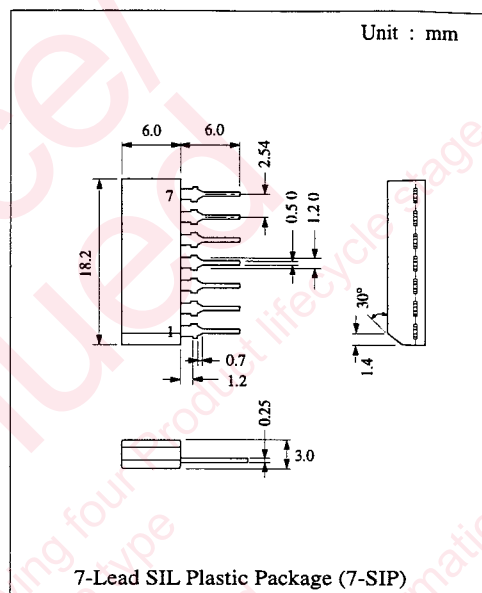
The AN7213 is a monolithic integrated circuit designed for FM front-end of the portable radio.

### Features

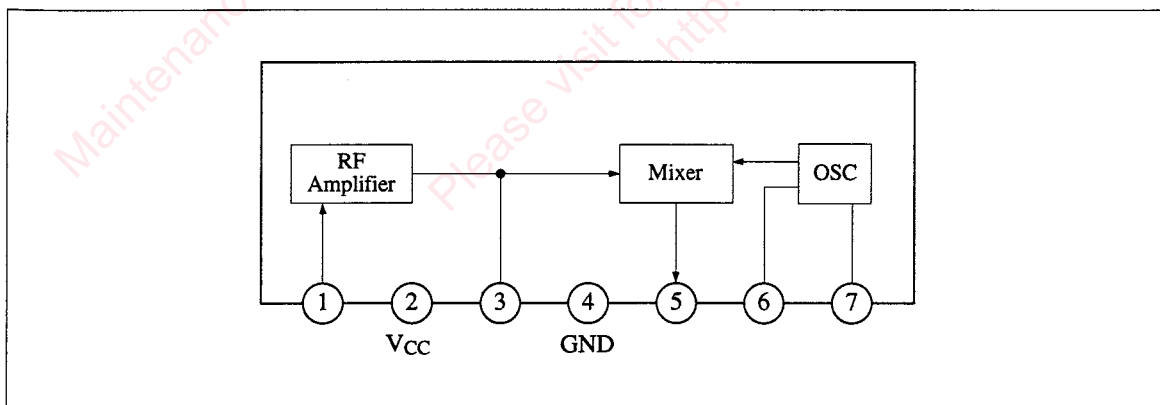
- Built-in RF amplifier, frequency converter, local oscillator
- Wide operating voltage range: 2V~ 7V
- Low current consumption: 2mA ( $V_{CC} = 4V$ )

### Pin

Pin No.	Pin Name
1	RF Input
2	V <sub>CC</sub>
3	RF Output
4	GND
5	Mixer Output
6	Oscillator Collector
7	Oscillator Emitter



### Block Diagram



■ Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Rating	Unit
Supply Voltage	V <sub>CC</sub>	7	V
Terminal Voltage	V <sub>3-4</sub>	14	V
	V <sub>5-4</sub>	14	V
	V <sub>6-4</sub>	14	V
Power Dissipation	P <sub>D</sub>	30	mW
Operating Ambient Temperature	T <sub>opr</sub>	-20 ~ +75	°C
Storage Temperature	T <sub>stg</sub>	-55 ~ +125	°C

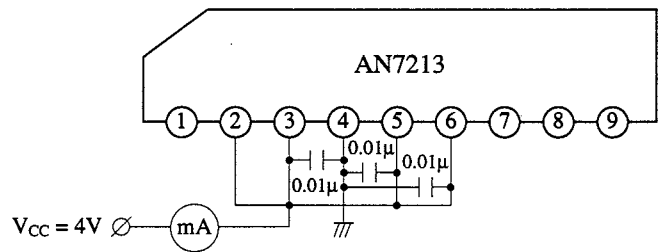
Operating Supply Voltage Range: V<sub>CC</sub> = 2.0V ~ 7.0V

■ Electrical Characteristics (Ta=25°C)

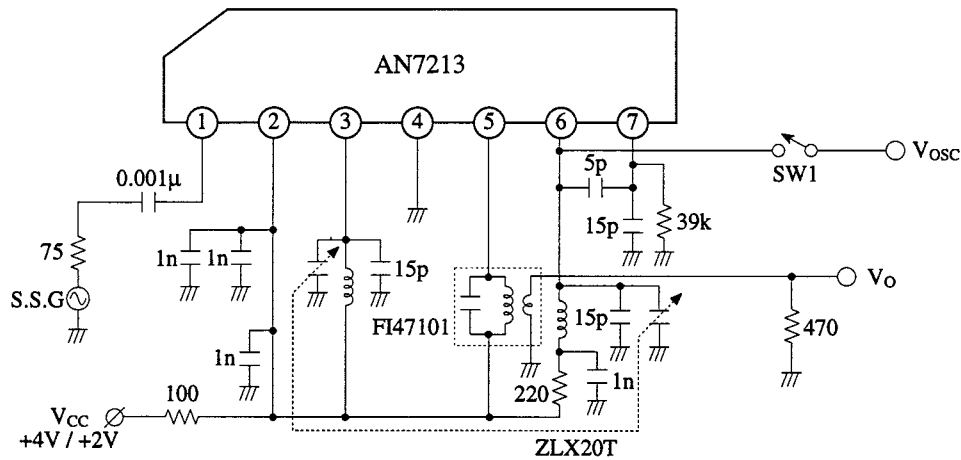
Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
Quiescent Current	I <sub>CQ</sub>	1	V <sub>CC</sub> = 4V, without signal	1.4		2.55	mA
Output Voltage	V <sub>O</sub>	2	V <sub>CC</sub> = 4V, V <sub>in</sub> = 70dBμ, 106MHz*	30.5		68.5	mV
Local Oscillation Voltage	V <sub>OSC</sub>	2	V <sub>CC</sub> = 2V	130			mV

\* Max. output voltage value is obtained by changing input signal frequency  $\pm\Delta f$  at 106MHz

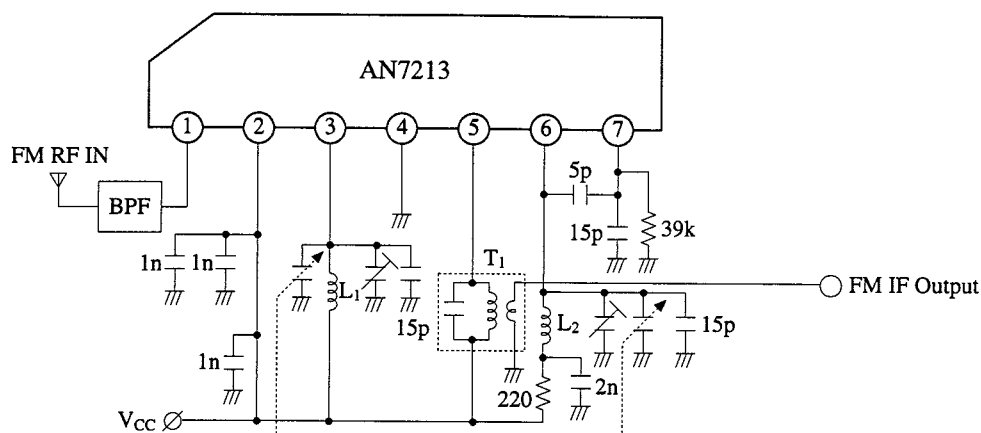
Test Circuit 1 (I<sub>tot</sub>)



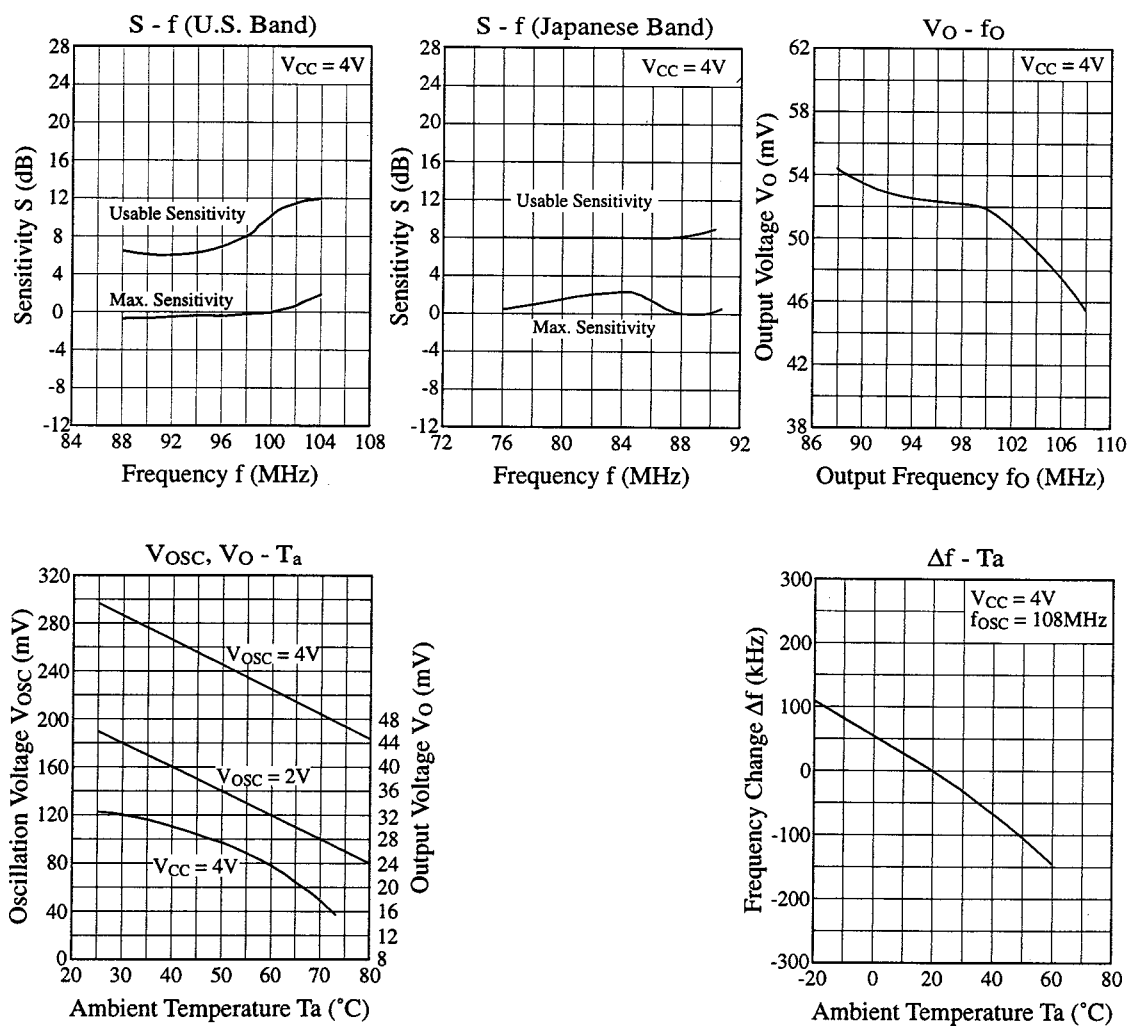
Test Circuit 2 (V<sub>O</sub>, V<sub>OSC</sub>)



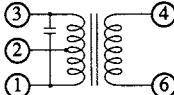
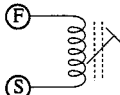
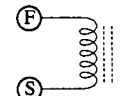
## ■ Application Circuit



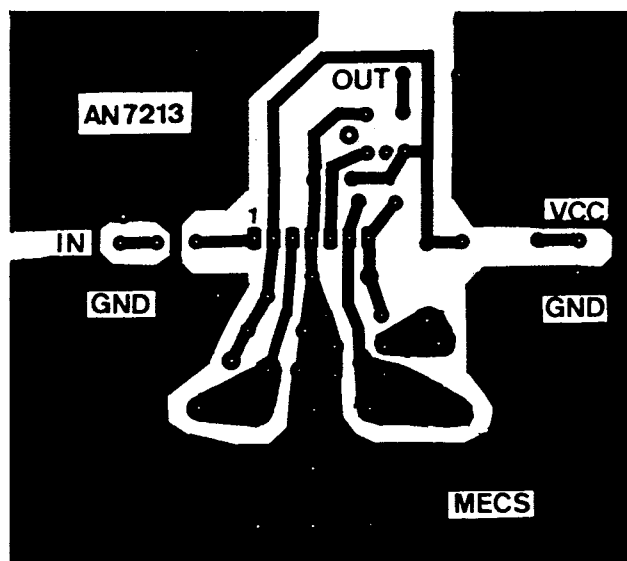
## ■ Characteristics Curve



## ■ Coil Specifications

Symbol	Use, Freq.	Type No.	Maker	Connection Diagram	Number of Turns	Tuning Cap.	Unloaded Q
$T_1$	FM Quad Coil 10.7MHz	EIF-7S752A	Matsushita		①...② 8T ②...③ 5T ④...⑥ 2T	100pF	90
$L_1$	RF Coil 76 ~ 108MHz	ELQ-5N53	Matsushita		⑤...⑥ 2.5T	0.0986μH	110 (at 25.2MHz)
$L_2$	OSC Coil	ELQ-5N111	Matsushita		⑤...⑥ 1.75T	0.0495μH	150 (at 25.2MHz)

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



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