

AN7213

FM Front-end Circuit for Radio

Description

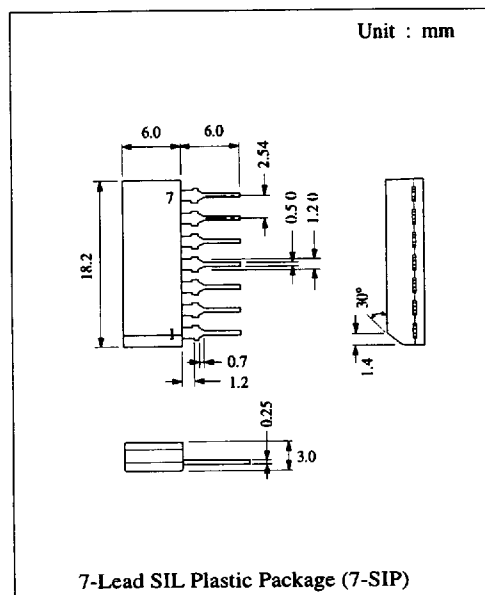
The AN7213 is a monolithic integrated circuit designed for FM front-end of the portable radio.

Features

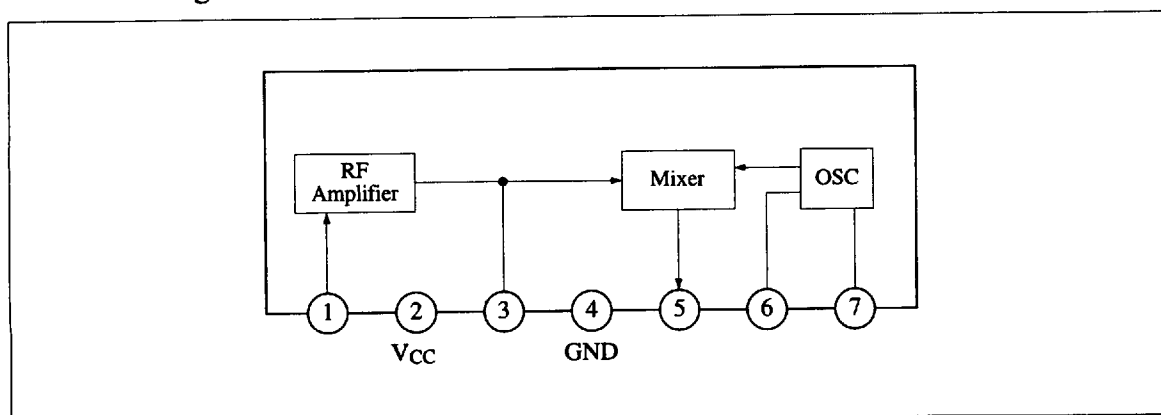
- Built-in RF amplifier, frequency converter, local oscillator
- Wide operating voltage range: 2V~ 7V
- Low current consumption: 2mA ($V_{CC} = 4V$)

Pin

Pin No.	Pin Name
1	RF Input
2	V_{CC}
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_{CC}	7	V
Terminal Voltage	V_{3-4}	14	V
	V_{5-4}	14	V
	V_{6-4}	14	V
Power Dissipation	P_D	30	mW
Operating Ambient Temperature	T_{opr}	-20 ~ +75	°C
Storage Temperature	T_{stg}	-55 ~ +125	°C

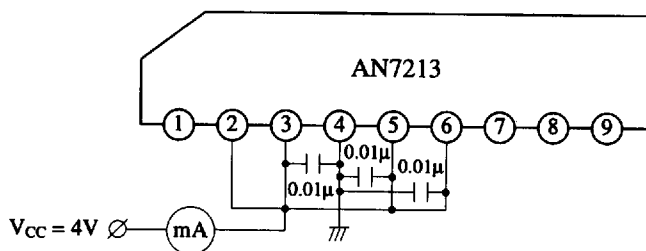
Operating Supply Voltage Range: $V_{CC} = 2.0V \sim 7.0V$

■ Electrical Characteristics (Ta=25°C)

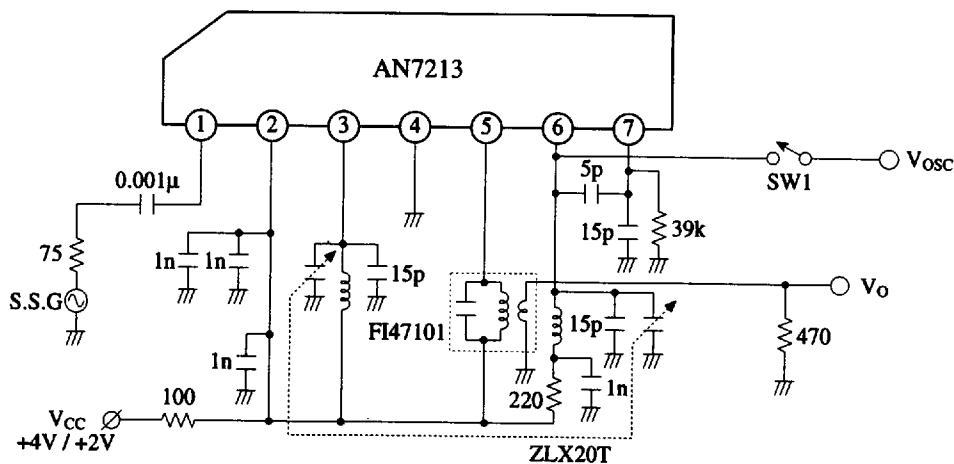
Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
Quiescent Current	I_{CQ}	1	$V_{CC} = 4V$, without signal	1.4		2.55	mA
Output Voltage	V_O	2	$V_{CC} = 4V$, $V_{in} = 70dB\mu$, 106MHz*	30.5		68.5	mV
Local Oscillation Voltage	V_{osc}	2	$V_{CC} = 2V$	130			mV

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

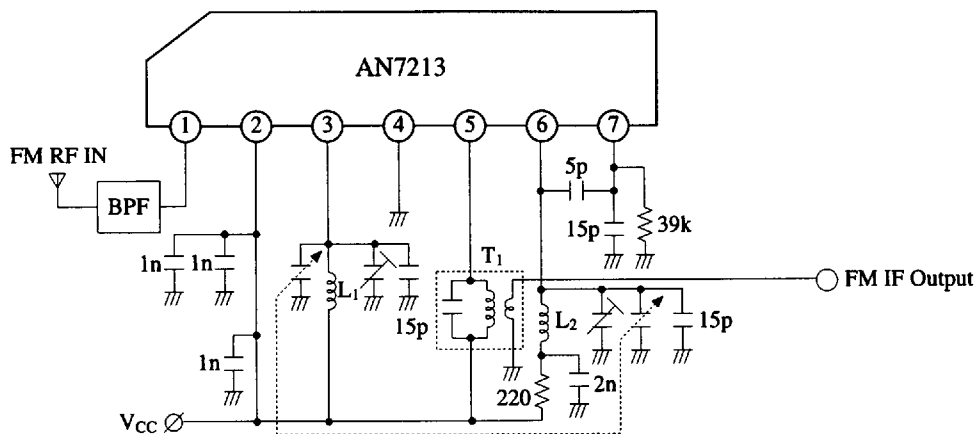
Test Circuit 1 (I_{tot})



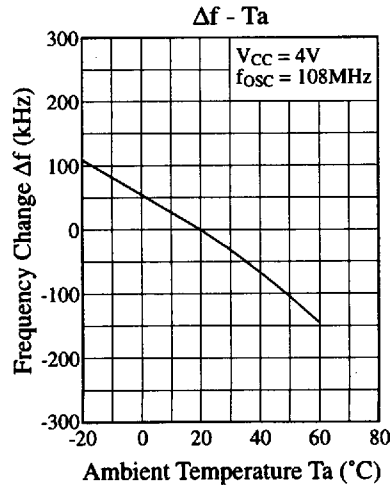
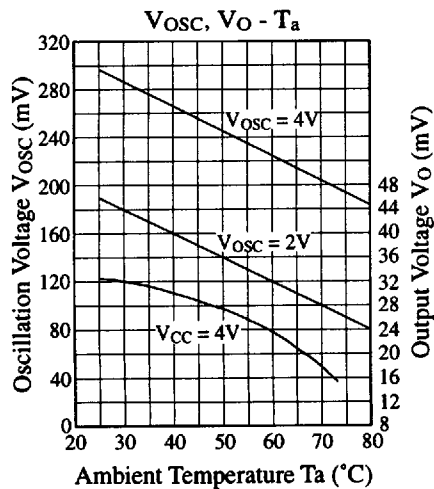
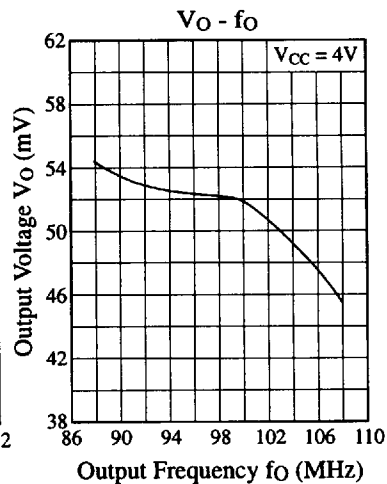
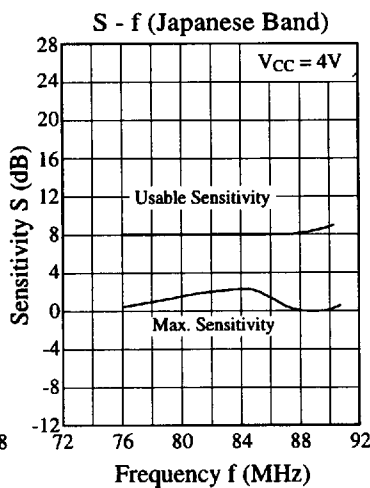
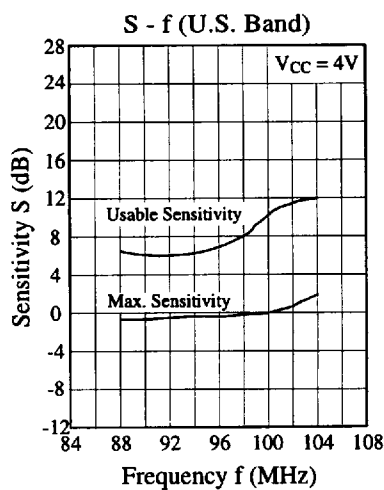
Test Circuit 2 (V_O , V_{OSC})



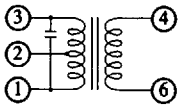
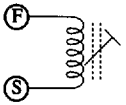
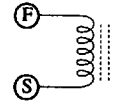
■ Application Circuit



■ 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)

