

# AN7261FBQ

## FM multiplex reception IC

### ■ Overview

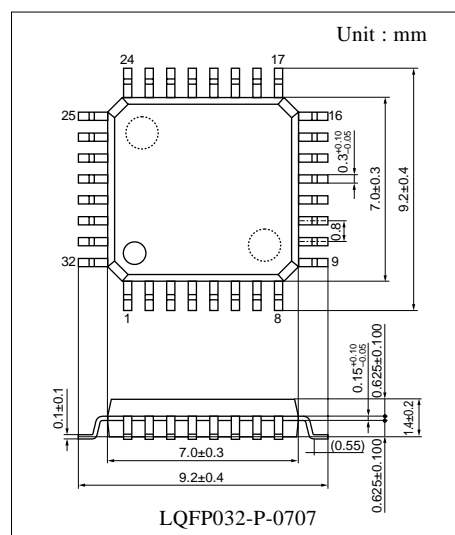
The AN7261FBQ is an FM-multiplex reception IC including a front-end and an IF block for FM tuner. Since the receiving circuit of FM multiplex signal is integrated on a single chip, it is most suitable for saving the space of sets.

### ■ Features

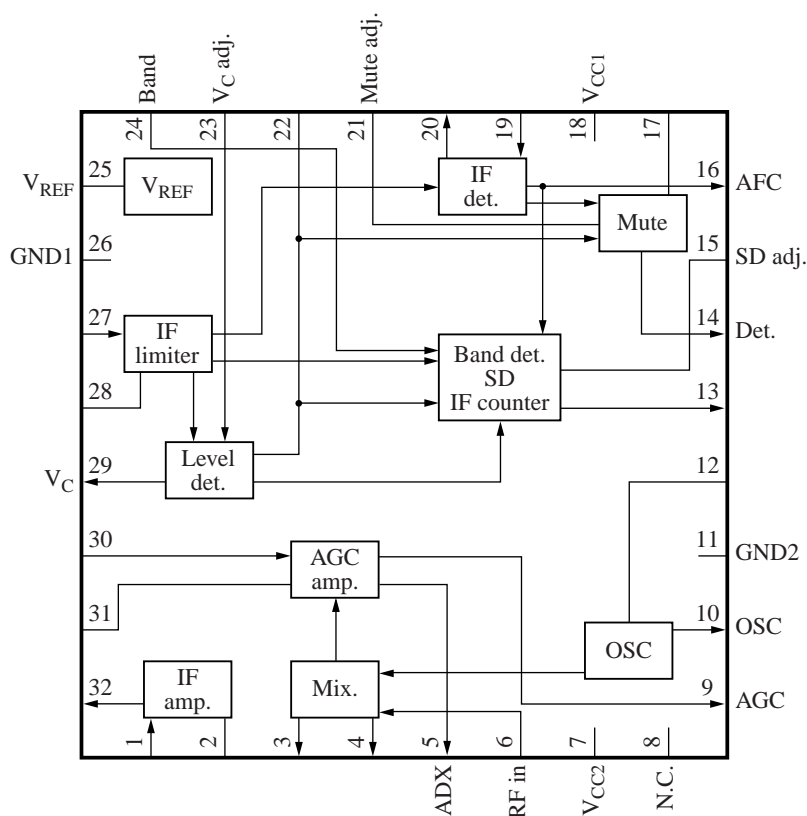
- A single chip IC for an FM-multiplex tuner block, which was conventionally composed of two ICs.
- Fewer external components
- Can be used for 15 MHz IF

### ■ Applications

- VICS, RDS



### ■ Block Diagram



## ■ Pin Descriptions

Pin No.	Description	Pin No.	Description
1	1st IF input	17	Higher frequency correction adjustment
2	GND for 1st IF input	18	V <sub>CC1</sub>
3	Mixer output 1	19	FM detection
4	Mixer output 2	20	2nd IF output
5	PIN diode driver	21	Mute adjustment
6	Mix. Input	22	Mute voltage output
7	V <sub>CC2</sub>	23	Control voltage adjustment
8	N.C.	24	Band mute SW/band signal output
9	AGC output	25	V <sub>REF</sub>
10	OSC buffer output	26	GND1
11	GND2	27	2nd IF input
12	OSC	28	GND for 2nd IF input
13	SD/IF counter output	29	Control voltage output
14	Detection output	30	Keyed-AGC input
15	SD sensitivity adjustment	31	AGC sensitivity adjustment
16	AFC voltage output	32	1st IF output

## ■ Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Supply voltage	V <sub>CC</sub>	9.1	V
Supply current	I <sub>CC</sub>	66	mA
Power dissipation *2	P <sub>D</sub>	343.6	mW
Operating ambient temperature *1	T <sub>opr</sub>	−30 to +80	°C
Storage temperature *1	T <sub>stg</sub>	−55 to +150	°C

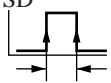
Note) \*1: T<sub>a</sub> = 25°C except power dissipation, operating ambient temperature and storage temperature.

\*2: T<sub>a</sub> = 80°C

## ■ Recommended Operating Range

Parameter	Symbol	Range	Unit
Supply voltage	V <sub>CC</sub>	7.2 to 9.0	V

**■ Electrical Characteristics at  $V_{CC} = 8\text{ V}$ ,  $f_{IN1} = 98\text{ MHz}$ ,  $f_{IN2} = 15\text{ MHz}$ ,  $T_a = 25^\circ\text{C}$** 

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Control voltage 1	$V_{C1}$	No signal input, DC voltage of pin 29	0.0	0.05	0.8	V
Control voltage 2	$V_{C2}$	$V_{IN2} = 60\text{ dB}\mu$ , DC voltage of pin 29	0.7	1.25	1.8	V
Control voltage 3	$V_{C3}$	$V_{IN2} = 80\text{ dB}\mu$ , DC voltage of pin 29	1.8	2.4	3.0	V
Control voltage 4	$V_{C4}$	$V_{IN2} = 100\text{ dB}\mu$ , DC voltage of pin 29	3.0	3.7	4.4	V
Control voltage 5	$V_{C5}$	$V_{C5} = V_{C3} - V_{C2}$	1.0	1.2	1.4	V
Control voltage 6	$V_{C6}$	$V_{C6} = V_{C4} - V_{C3}$	1.05	1.25	1.45	V
Detection output level 1	$V_{O1}$	$V_{IN2} = 80\text{ dB}\mu/1\text{ kHz}$ , 30%FM, AC voltage of pin 14	70	90	110	mV[rms]
Detection output level 2	$V_{O2}$	$V_{IN2} = 80\text{ dB}\mu/76\text{ kHz}$ , 10%FM, AC voltage of pin 14	37	47	57	mV[rms]
Counter output level	$V_{IFC}$	$V_{IN2} = 100\text{ dB}\mu$ , $V_{15} = 2\text{ V}$ , IFC output level	150	180	210	mV[rms]
SD sensitivity	$SD_S$	$V_{IN2}$ when $V_{15} = 2\text{ V}$ , $SD > 4\text{ V}$	61	71	81	$\text{dB}\mu$
SD bandwidth	$SD_W$	Bandwidth when $SD > 4\text{ V}$ , $V_{IN2} = 100\text{ dB}\mu$ 	90	115	140	kHz
Limiting sensitivity	$V_{LIM}$	$V_{IN2}$ level, 30 kHz LPF on, and 1 kHz 30% FM when pin 14 AC voltage drops by 3 dB	40	48	54	$\text{dB}\mu$
Local oscillation buffer output	$V_{OS}$	$f_{OSC} = 113\text{ MHz}$ , without input	110	160	210	mV[rms]
IF output level	$V_{IF}$	$V_{IN1} = 80\text{ dB}\mu$ , IF out level	60	110	170	mV[rms]
AGC sensitivity	$S_{AGC}$	$V_{IN1}$ level when $V_9 = 3\text{ V}$	68	72	76	$\text{dB}\mu$
High-level AGC voltage	$V_{AH}$	$V_{IN1} = 66\text{ dB}\mu$ , $V_9$	5.9	6.3	6.7	V
Low-level AGC voltage	$V_{AL}$	$V_{IN1} = 78\text{ dB}\mu$ , $V_9$	—	0.05	0.5	V
Supply current	$I_{TOT}$	Without input	41	52	65	mA

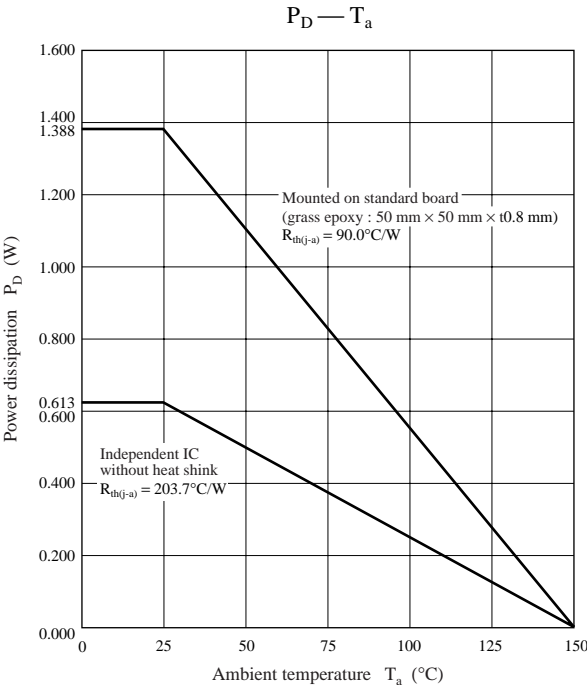
Note) FM tuning condition: Adjust the  $V_T$  of application voltage so that OSC buffer output frequency becomes  $113\text{ MHz} \pm 10\text{ kHz}$ .

**■ Usage Notes**

1. Use less than  $10\text{ k}\Omega$  of external resistor of pin 31
2. Use this IC not to exceed allowable power dissipation value referring to the "■ Technical Information".

■ Technical Information

1.  $P_D$  —  $T_a$  curves of LQFP032-P-0707



2. Specification for special parts

Part	Maker	Maker part number	Connection	Specification			
				Pin No.	Turns	LC value	Q at no load
IF coil	Sumida	4162-T006		4-6	10T	12 pF±10%	50 or more (15 MHz)
				1-2	11T		
				2-3	11T		
Detection coil	Matsushita electronics parts	SQF5EB033A		1-3	11T	0.59 μH ±5.0%	41±20% (15 MHz)

## ■ Application Circuit Example

