

AN6408SA

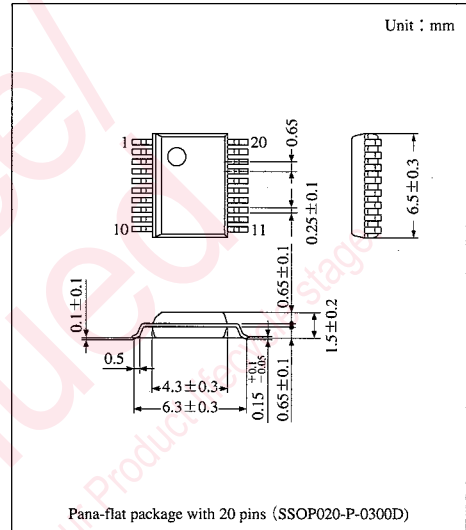
Digital Cordless Telephone (PHS) IF Amplifier IC

Overview

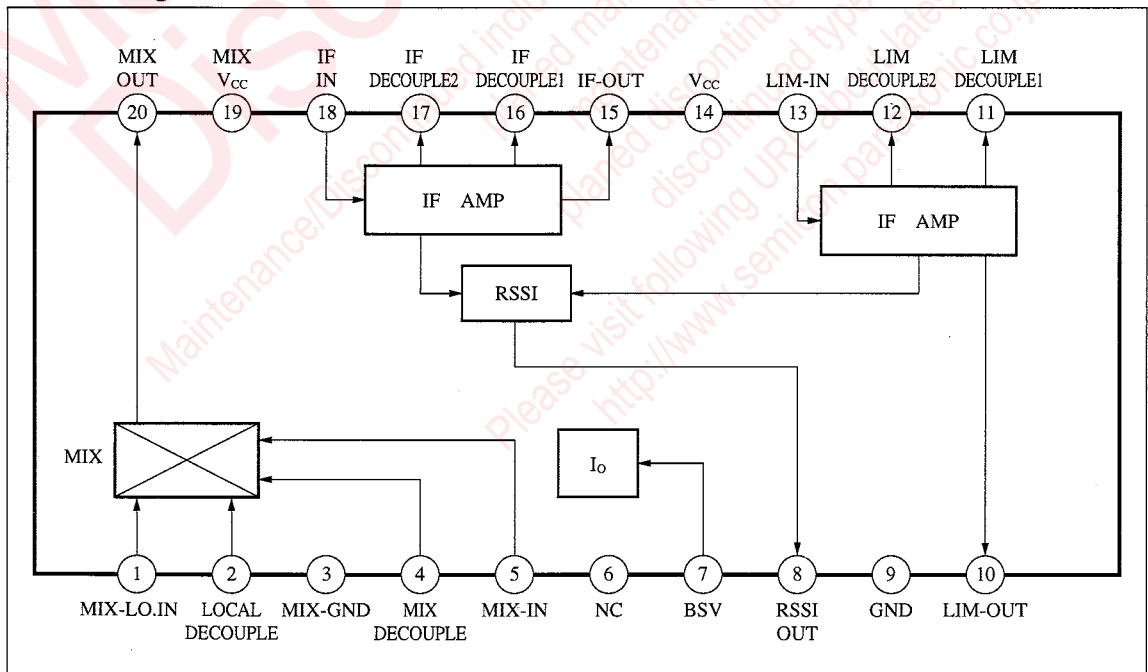
As cordless telephones are now widely used, the trend is toward higher frequency and digital technology to accommodate for more channels and better speech quality. The AN6408SA is a best PHS IF amplifier IC satisfying these technical demands. It supports 300 MHz input.

Features

- Input frequency: Up to 300MHz
- RSSI dynamic range: 80dB
- Low current consumption: $I_{CC} = 5.9\text{mA}$
- Operating supply voltage range: 2.7 to 5V



Block Diagram



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■ Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Supply voltage	V _{CC}	5.5	V
Supply current	I _{CC}	8.0	mA
Power dissipation	P _D	44.0	mW
Operating ambient temperature	T _{opr}	-10 to +60	°C
Storage temperature	T _{stg}	-55 to +125	°C

Note) Protect from electrostatic discharge (see Usage Notes).

■ Operating Supply Voltage Range

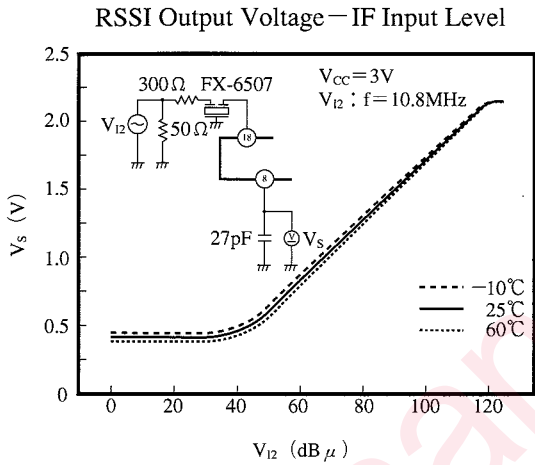
Parameter	Symbol	Range
Operating supply voltage range	V _{CC}	2.7 to 5.0V

■ Electrical Characteristics (Ta=25±2°C)

Parameter	Symbol	Condition	min	typ	max	Unit
Current consumption	I _{CC}	With no signal	4.4	5.9	7.4	mA
Current consumption (at BS)	I _{CBS}	With no signal, SW1, 2=b	—	1.5	2.0	mA
IF-amp. voltage gain	G _{IF}	V _{I2} =50dBμ, G _{IF} =V _{IF} -V _{I2}	27	30	33	dB
LIM-amp. voltage gain	G _{LIM}	V _{I3} =30dBμ, G _{LIM} =V _{LM} -V _{I3}	51	54	57	dB
LIM-amp. max output amplitude	V _{LIM}	V _{I3} =70dBμ, V _{LIM} =V _{LM}	0.27	0.34	0.41	V _{P-P}
RSSI output voltage (1)	V _{S(1)}	V _{I2} =0dBμ, SW3, 4=b	—	0.4	0.6	V
RSSI output voltage (2)	V _{S(2)}	V _{I2} =115dBμ, SW3,4=b	1.8	2.1	2.4	V
Level detection ref. input	V _{IS}	V _{S(VIS)} = V _{I2} as V _{S(1)} + 0.15V SW3, 4=b	42	47	52	dBμ
Level detection output gradient	D _S	D _S = V _{S(VIS+60dBμ)} - V _{S(VIS)} SW3, 4=b	1.05	1.35	1.65	V
Level detection output gradient (1)	ΔD _{S(1)}	ΔD _{S(1)} = 5{V _{S(VIS+12dBμ)} - V _{S(VIS)} }/D _S SW3, 4=b	0.7	—	1.3	—
Level detection output gradient (2)	ΔD _{S(2)}	ΔD _{S(2)} = 5{V _{S(VIS+24dBμ)} - V _{S(VIS+12dBμ)} }/D _S SW3, 4=b	0.7	—	1.3	—
Level detection output gradient (3)	ΔD _{S(3)}	ΔD _{S(3)} = 5{V _{S(VIS+36dBμ)} - V _{S(VIS+24dBμ)} }/D _S SW3, 4=b	0.8	—	1.4	—
Level detection output gradient (4)	ΔD _{S(4)}	ΔD _{S(4)} = 5{V _{S(VIS+48dBμ)} - V _{S(VIS+36dBμ)} }/D _S SW3, 4=b	0.6	—	1.2	—
Level detection output gradient (5)	ΔD _{S(5)}	ΔD _{S(5)} = 5{V _{S(VIS+60dBμ)} - V _{S(VIS+48dBμ)} }/D _S SW3, 4=b	0.6	—	1.2	—
MIX conversion gain	G _{MIX}	V _{I1} = 70dBμ, G _{MIX} = V _{MX} - V _{I1} + 3dB	16.5	19.5	22.5	dB
MIX max output voltage	V _{MIX}	V _{I1} = 110dBμ, V _{MIX} = V _{MX} + 3dB	105	—	—	dBμ

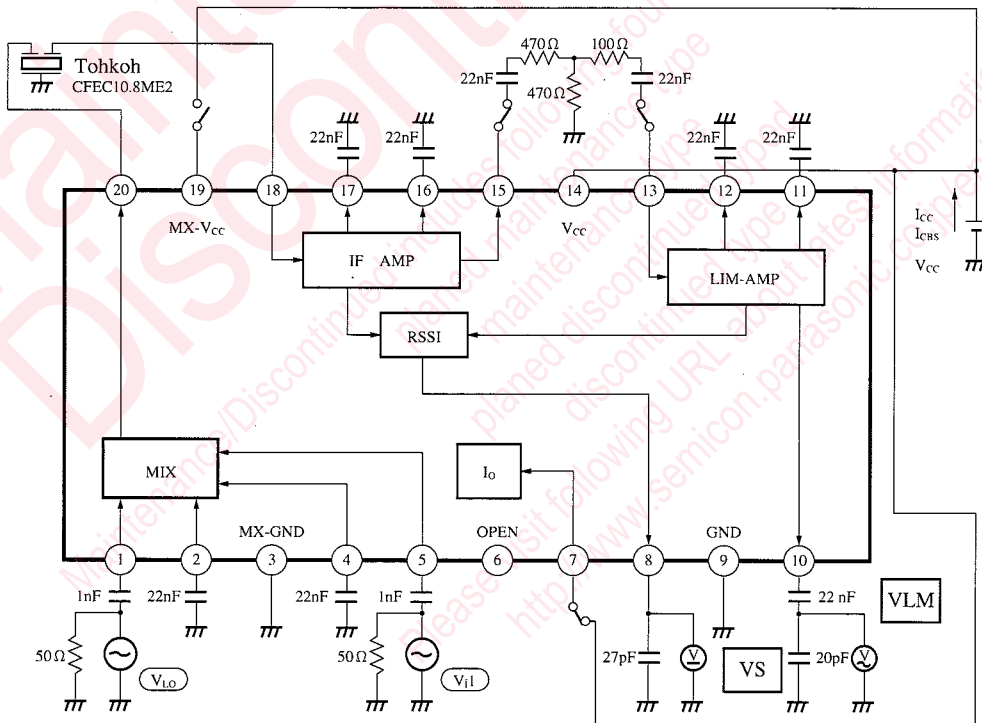
Note) Unless otherwise specified, V_{CC}=3.0V, SW1, 2, 3, 4=a
 V_{I1}:f=243.95MHz, 50Ω output impedance
 V_{L0}:f=101dBμ, f=233.15MHz, 50Ω output impedance
 V_{I2}:f=10.8MHz, 50Ω output impedance
 V_{I3}:f=10.8MHz, 50Ω output impedance
 V_{MX}, V_{IF}, and V_{LM} were measured with a high-impedance voltmeter. V_S was measured with a digital voltmeter.

■ Characteristics Curve



The characteristics shown are design values for reference only (not guaranteed)

■ Application Circuit



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Pin Descriptions

Pin No.	Description	Pin No.	Description
1	LOCAL - in	11	LIM - decouple1
2	LOCAL - decouple	12	LIM - decouple2
3	MIX - GND	13	LIM - in
4	MIX - decouple	14	V _{cc}
5	MIX - in	15	IF - out
6	NC	16	IF - decouple1
7	BSV	17	IF - decouple2
8	RSSI - out	18	IF - in
9	GND	19	MIX - V _{cc}
10	LIM - out	20	MIX - out

Usage Note

Protect from electrostatic discharge as follows
: (measured with C=200pF, and R=0Ω)

(The following are design values for reference only.)

Pin No.	Positive breakdown level (V)	Pin No.	Positive breakdown level (V)
1	130	8	180
2	180	10	180
4	180	11	180
5	180	19	200
6	170	20	210
7	170		

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