



SANYO Semiconductors

DATA SHEET

LA74320FN — Monolithic Linear IC Audio I/O Interface for Cell Phone

Overview

The LA74320FN is an audio I/O interface IC for cell phones that integrates, on a single chip, amplifiers for a stereo speaker, EVR stereo headphone, internal and external microphones, and a receiver speaker.

Features

- INT & EXT MIC amplifiers selectable (MIC power supply built-in)
- ALC amplifier (ALC level: 3 levels selectable)
- Base band/audio source input selector switch
- ALC (through switch, ALC level: 4 levels selectable)
- EVR stereo headphone amplifier
- Stereo speaker amplifier
- Receiver speaker amplifier (mono) standby control
- I²C bus supported (first mode)

Specifications

Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	V _{CC} max		5.5	V
Allowable power dissipation	P _d max	Ta≤70°C, Mounted on a specified board *1	TBD	mW
Operating temperature	Topr		-20 to +70	°C
Storage temperature	Tstg		-55 to +150	°C

*1: Mounted on a specified board: TBD

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LA74320FN

Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage (V _{CCA})	V _{CCA}		3.0	V
Recommended supply voltage (V _{CCHP})	V _{CCHP}		3.0	V
Recommended supply voltage (V _{CCSP})	V _{CCSP}		3.6	V
Allowable operating voltage range (V _{CCA})	V _{CCAop}		2.7 to 3.6	V
Allowable operating voltage range (V _{CCHP})	V _{CCHPop}		2.7 to 3.6	V
Allowable operating voltage range (V _{CCSP})	V _{CCSPop}	*2	2.7 to 5.0	V

*2: Take care not to exceed Pd max.

Electrical Characteristics at Ta=25°C, V_{CCA}=V_{CCHP}=3.0V, V_{CCSP}=5.0V, f=1kHz, ALC1 LEVEL=-17dBV MODE, ALC2 LEVEL=-11dBV MODE

No.	Parameter	Symbol	Conditions	Ratings			Unit
				min	typ	max	
Circuit current							
1	V _{CCA} current dissipation	I _{CCA}	V _{CCA} =3.0V, MIC1 ON, audio source system (stereo) OFF, receiver system ON		9.5		mA
2	V _{CCA} STANDBY current dissipation	I _{CCAS}	V _{CCA} =3.0V, 0V applied to STANBDY pin		0		μA
3	V _{CCHP} current dissipation 1	I _{CCHP1}	V _{CCHP} =3.0V: Receiver SPK AMP POWER SAVE MODE		8.5		mA
4	V _{CCHP} current dissipation 2	I _{CCHP2}	V _{CCHP} =3.0V: H/P AMP POWER SAVE MODE		2.7		mA
5	V _{CCHP} STANDBY current dissipation	I _{CCHPS}	V _{CCHP} =3.0V, 0V applied to STANBDY pin		0		μA
6	V _{CCSP} current dissipation 1	I _{CCSP1}	V _{CCSP} =5.0V: SPK POWER ON MODE		12.1		mA
7	V _{CCSP} current dissipation 2	I _{CCSP2}	V _{CCSP} =5.0V: SPK POWER SAVE MODE		0.3		mA
8	V _{CCSP} STANDBY current dissipation	I _{CCSPS}	V _{CCSP} =5.0V, 0V applied to STANBDY pin		0		μA
MIC output system							
9	INT MIC voltage gain	VGIMIC	INT MIC input, V _{IN} =-29dBV		10		dB
10	INT MIC output distortion	HDIMIC	INT MIC input, V _{IN} =-29dBV, THD: from 2nd to 5th harmonic		0.03		%
11	INT MIC output noise voltage	VNIMIC	INT MIC no input, JIS-A Filter		-100		dBV
12	INT MIC maximum input level	VMIMIC	INT MIC input, INT MIC input level at which up to 5th order distortions of MIC output are reduced to 3% or less			-20	dBV
13	INT MIC supply voltage	VVIMIC	At 6.2kΩ load		1.7		V
14	EXT MIC voltage gain	VGEMIC	EXT MIC input, V _{IN} =-29dBV		10		dB
15	EXT MIC output distortion	HDEMIC	EXT MIC input, V _{IN} =-29dBV, THD: from 2nd to 5th harmonic		0.03		%
16	EXT MIC output noise voltage	VNEMIC	EXT MIC no input, JIS-A Filter		-100		dBV
17	EXT MIC maximum input level	VMEMIC	EXT MIC input, EXT MIC input level at which up to 5th order distortions of MIC output are reduced to 3% or less			-20	dBV
18	EXT MIC supply voltage	VVEMIC	At 6.2kΩ load		1.7		V
REC output system: ALC1 level=-17dBV mode							
19	REC reference output level	VOREC	ALC1 input, V _{IN} =-40dBV		-16.5		dBV
20	REC reference output distortion	HDREC	ALC1 input, V _{IN} =-40dBV, THD: from 2nd to 5th harmonic		0.03		%
21	ALC1 level characteristics	VOALC1	ALC1 input, V _{IN} =-14dBV (reference+26dB)		-10		dBV
22	ALC1 distortion characteristics	VDALC1	ALC1 input, V _{IN} =-14dBV (reference+26dB), THD: from 2nd to 5th harmonic		0.3		%
23	REC output noise voltage	VNOR	ALC1 no input, JIS-A Filter		-83		dBV
24	ALC1 maximum input level	VMXALC	ALC1 input, ALC1 input level at which up to 5th order distortions of REC output are reduced to 3% or less			-10	dBV

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No.	Parameter	Symbol	Conditions	Ratings			unit
				min	typ	max	
EVR output system: ALC2 level=-11dBV mode							
25	EVR reference output level 1 (V _{OL} =Max)	VOEVR1	Audio source pin input, V _{IN} =-25dBV, EVR=Max		-17.3		dBV
26	EVR reference output distortion	HDEVR	Audio source pin input, V _{IN} =-25dBV, EVR=Max, THD: from 2nd to 5th harmonic		0.003		%
27	EVR reference output level 2 (V _{OL} =Typ)	VOEVR2	Audio source pin input, V _{IN} =-25dBV, EVR=Typ (5Bit: 11011)		-22.5		dBV
28	EVR reference output level 3 (V _{OL} =Min)	VOEVR3	Audio source pin input, V _{IN} =-25dBV, EVR=Min, JIS-A Filter		-96		dBV
29	EVR maximum input level	VMXEVR	ALC2=Through MODE, audio source input level at which up to 5th order distortions of EVR output are reduced to 3% or less l			-3	dBV
H/P output system: Measured at HP load = 16Ω, ALC2=Through mode							
30	H/P reference output level	VOHP	Base band input, V _{IN} =-11dBV, EVR=Max		-19		dBV
31	H/P reference output distortion	HDHP	Base band input, V _{IN} =-11dBV, THD: from 2nd to 5th harmonic		0.1		%
32	H/P output noise voltage	VNHP	No base band input, EVR=Max, JIS-A Filter		-100		dBV
33	H/P maximum input level	VMXHP	Base band input, base band input level at which up to 5th order distortions of H/P output are reduced to 3% or less			-10	dBV
SPK output system: Measured at SPK load = 8Ω, ALC2 level=-11dBV mode							
34	SPK reference output level	VOSPK	Audio source pin input, V _{IN} =-30dBV, V _{OL} =Max		-4		dBV
35	SPK reference output distortion	VDSPK	Audio source pin input, V _{IN} =-30dBV, V _{OL} =Max, THD: from 2nd to 5th harmonic		0.9		%
36	SPK output noise voltage	VNSPK	No input at audio source pin, EVR=Max, JIS-A Filter		-70		dBV
37	SPK maximum output power	VMXSPK	Audio source pin input, SPK output power at which up to 5th order distortions of SPK output are reduced to 3% or less, ALC2=Through MODE		1000		mW
38	SPK ALC level 1	VOSPK1	Audio source pin input, V _{IN} =-10dBV, V _{OL} =Max, LC2=-13dBV MODE		4.5		dBV
39	SPK ALC level 2	VOSPK2	Audio source pin input, V _{IN} =-10dBV, V _{OL} =Max, ALC2=-12dBV MODE		5.5		dBV
40	SPK ALC level 3	VOSPK3	Audio source pin input, V _{IN} =-10dBV, V _{OL} =Max, ALC2=-11dBV MODE		6.4		dBV
41	SPK ALC level 4	VOSPK4	Audio source pin input, V _{IN} =-10dBV, V _{OL} =Max, ALC2=-10.5dBV MODE		7		dBV
Receiver SPK output system: Measured at SPK load = 32Ω							
42	Receiver SPK reference output level 1 (V _{OL} =Max)	VORSP1	Base band input, V _{IN} =-22dBV, V _{OL} =Max		-4		dBV
43	Receiver SPK reference output distortion	VDRSP	Base band input, V _{IN} =-22dBV, V _{OL} =Max, THD: from 2nd to 5th harmonic		0.9		%
44	Receiver SPK reference output level 2 (V _{OL} =Typ)	VORSP2	Base band input, V _{IN} =-22dBV, V _{OL} =Typ (5Bit: 11011)		-10		dBV
45	EVR reference output level 3 (V _{OL} =Min)	VORSP3	Base band input, V _{IN} =-22dBV, EVR=Min, JIS-A Filter		-80		dBV
46	Receiver SPK output noise voltage	VNRSP	Base band no input, EVR=Max, JIS-A Filter		-80		dBV
47	Receiver SPK maximum output power	VMXRSP	Base band input, SPK output power at which up to 5th order distortions of SPK output are reduced to 3% or less		110		mW
Control system							
48	Serial CLOCK frequency	FCLK	I ² C bus first mode			400	kHz
49	Serial input LOW level	SERLO		0		0.6	V
50	Serial input HIGH level	SERHI		2.4		3.5	V

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Electrical Characteristic: Serial Communication Condition Table

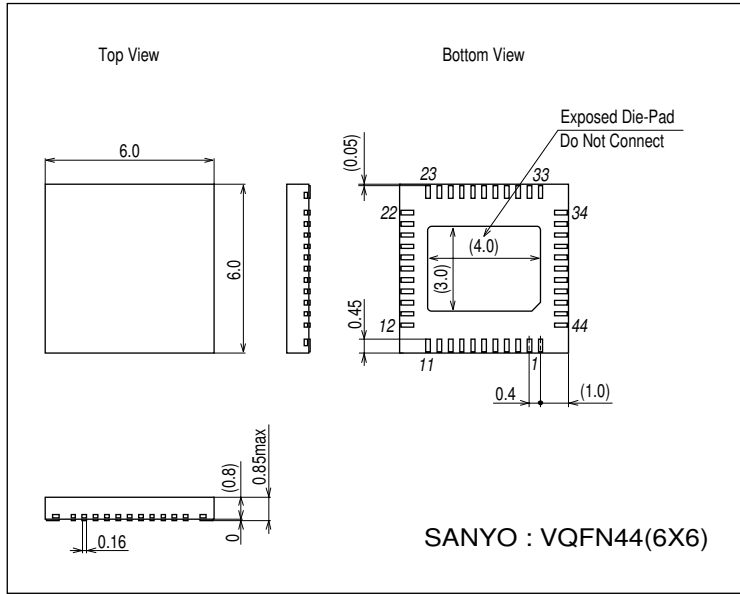
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		D8	D7	D6	D5	D4	D3	D2	D1	D8	D7	D6	D5	D4	D3	D2	D1	D8	D7	D6	D5	D4	D3	D2	D1	D8	D7	D6	D5	D4	D3	D2	D1	
1	ICCA	0	0	1	0	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0		
2	ICCAS	0	0	1	0	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0		
3	ICCHP1	1	1	1	1	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0		
4	ICCHP2	1	1	1	1	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0		
5	ICCHPS	1	1	1	1	0	0	0	0	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0		
6	ICCSP1	1	1	1	1	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0		
7	ICCSP2	1	1	1	1	0	0	1	1	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0		
8	ICCSPS	1	1	1	1	0	0	1	1	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0		
9	VGIMIC	0	0	1	0	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	1	1	1	0	0	0	0		
10	HDIMIC	0	0	1	0	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	1	1	1	0	0	0	0		
11	VNIMIC	0	0	1	0	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	1	1	1	0	0	0	0		
12	VMIMIC	0	0	1	0	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	1	1	1	0	0	0	0		
13	VVIMIC	0	0	1	0	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	1	1	1	0	0	0	0		
14	VGEMIC	0	1	1	0	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	1	1	1	0	0	0	0		
15	HDEMIC	0	1	1	0	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	1	1	1	0	0	0	0		
16	VNEMIC	0	1	1	0	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	1	1	1	0	0	0	0		
17	VMEMIC	0	1	1	0	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	1	1	1	0	0	0	0		
18	VVEMIC	0	1	1	0	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	1	1	1	0	0	0	0		
19	VOREC	1	1	1	0	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	1	1	1	0	0	0	0		
20	HDREC	1	1	1	0	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	1	1	1	0	0	0	0		
21	VOALC1	1	1	1	0	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	1	1	1	0	0	0	0		
22	VDALC1	1	1	1	0	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	1	1	1	0	0	0	0		
23	VNOR	1	1	1	0	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	1	1	1	0	0	0	0		
24	VMXALC	1	1	1	0	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	1	1	1	0	0	0	0		
25	VOEVR1	1	1	1	1	0	0	1	1	0	0	1	0	0	0	1	1	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0		
26	HDEV1	1	1	1	1	0	0	1	1	0	0	1	0	0	0	1	1	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0		
27	VOEVR2	1	1	1	1	0	0	1	1	0	0	1	0	0	0	1	1	0	0	0	1	1	0	1	1	1	1	1	0	0	0	0		
28	VOEVR3	1	1	1	1	0	0	1	1	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0		
29	VMXEVR	1	1	1	1	0	0	1	1	0	0	1	0	1	1	1	1	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0		
30	VOHP	1	1	1	1	0	0	0	0	1	1	1	0	1	1	1	1	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0		
31	HDHP	1	1	1	1	0	0	0	0	1	1	1	0	1	1	1	1	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0		
32	VNHP	1	1	1	1	0	0	0	0	1	1	1	0	1	1	1	1	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0		
33	VMXHP	1	1	1	1	0	0	0	0	1	1	1	0	1	1	1	1	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0		
34	VOSPK	1	1	1	1	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0		
35	VDSPK	1	1	1	1	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0		
36	VNSPK	1	1	1	1	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0		
37	VMXSPK	1	1	1	1	0	0	1	1	0	0	1	0	1	1	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0		
38	VOSPK1	1	1	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0		
39	VOSPK2	1	1	1	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0		
40	VOSPK3	1	1	1	1	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0		
41	VOSPK4	1	1	1	1	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0		
42	VORSP1	1	1	1	1	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	
43	VDRSP	1	1	1	1	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	0	0	0	1	1	1	1		
44	VORSP2	1	1	1	1	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1	1	
45	VORSP3	1	1	1	1	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
46	VNRSP	1	1	1	1	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	
47	VMXRSP	1	1	1	1	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	

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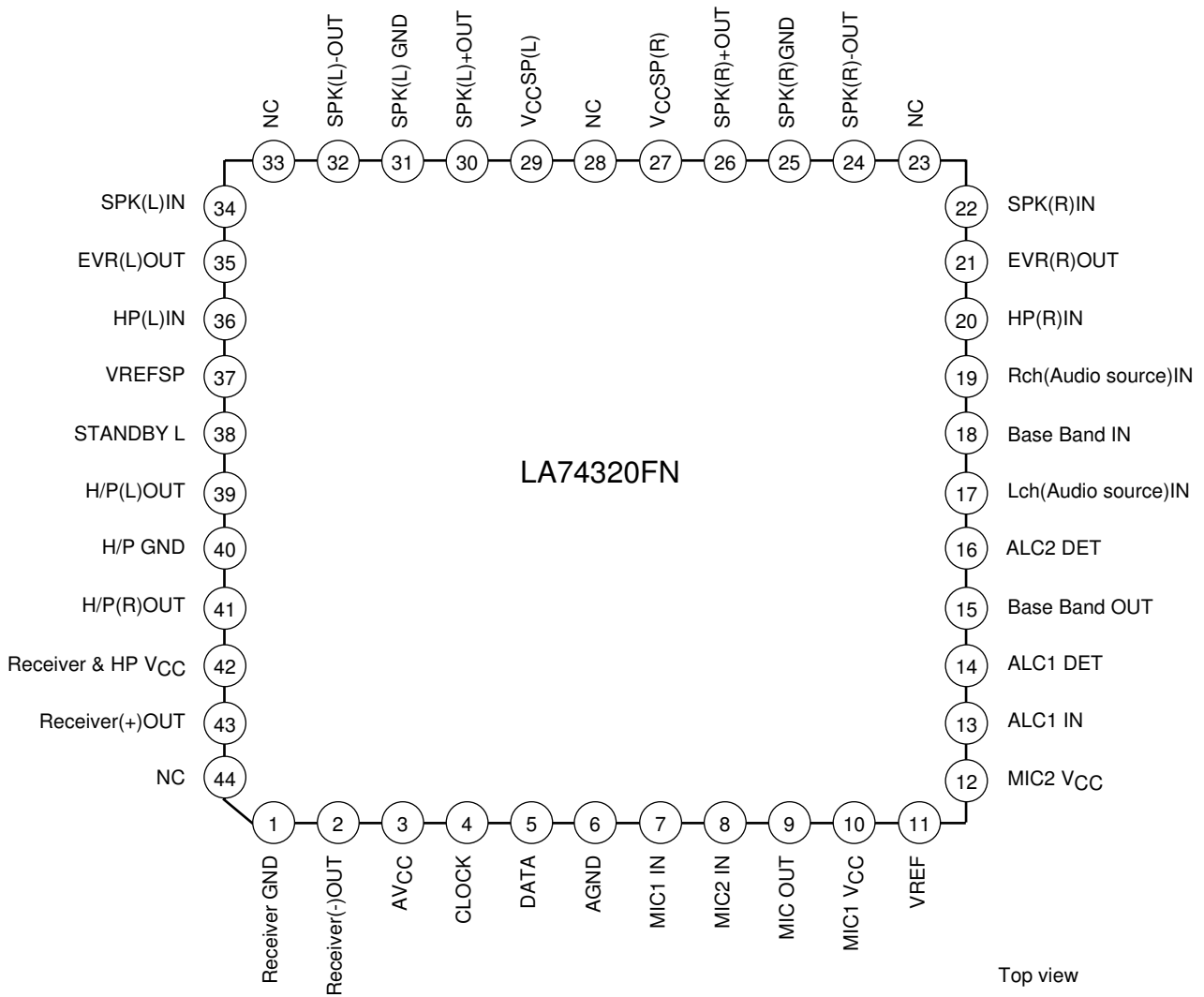
Address	Data byte (Underline is initial setting)																													
	MSB D8		D7				D6		D5				D4			D3			D2			LSB D1								
(0 1) 00000001	MIC1 & 2 Power Save CTL MIC1 or 2 Input Select					ALC1 & REC AMP Power Save CTL ALC1 LEVEL=-21/-19/-17dBV CTL					ALC1 DET Discharge CTL			ALC2 DET Discharge CTL			Lch H/P Power Save CTL			Rch H/P Power Save CTL										
	D8,D7		0,0	0,1	1,0	<u>1,1</u>	D6,D5		0,0	0,1	1,0	<u>1,1</u>	D4	0	<u>1</u>	D3	0	<u>1</u>	D2	0	<u>1</u>	D1	0	<u>1</u>						
	MIC1		ON	OFF	OFF	<u>OFF</u>	-21dBV		ON	-	-	-	ALC1 DET discharge	OFF	<u>ON</u>	ALC2 DET discharge	OFF	<u>ON</u>	Lch H/P	ON	<u>OFF</u>	Rch H/P	ON	<u>OFF</u>						
	MIC2		OFF	ON	OFF	<u>OFF</u>	-19dBV		-	ON	-	-																		
						-17dBV		-	-	ON	-																			
						<u>OFF</u>		-	-	-	<u>ON</u>																			
(0 2) 00000010	Sound source & Base Band (B.B.) Input Select					ALC2 LEVEL =-13/-12/-11/-10.5dBV CTL					Lch ALC2 CTL Power Save & Through SW			Rch ALC2 CTL Power Save & Through SW			Lch Speaker Power Save CTL			Rch Speaker Power Save CTL										
	D8,D7		0,0	0,1	1,0	<u>1,1</u>	D6,D5		0,0	0,1	1,0	<u>1,1</u>	D4	0	<u>1</u>	D3	0	<u>1</u>	D2	0	<u>1</u>	D1	0	<u>1</u>						
	Lch Input SW		ON	ON	OFF	<u>OFF</u>	-13dBV		ON	-	-	-	ALC2	ON	<u>OFF</u>	ALC2	ON	<u>OFF</u>	Lch SPK Power	ON	<u>OFF</u>	Rch SPK Power	ON	<u>OFF</u>						
	Rch Input SW		ON	OFF	ON	<u>OFF</u>	-12dBV		-	ON	-	-	Through SW	OFF	<u>ON</u>	Through SW	OFF	<u>ON</u>												
	B.B. input SW		OFF	OFF	OFF	<u>ON</u>	-11dBV		-	-	ON	-																		
							<u>-10.5dBV</u>		-	-	-	<u>ON</u>																		
(0 3) 00000011	VREF Charge CTL		Lch EVR Power Save CTL			Rch EVR Power Save CTL			EVR Setting (Sound source & Base Band) 5bit																					
									D16(10000)			D08(01000)				D04(00100)			D02(00010)			D01(00001)								
	D8	0	<u>1</u>	D7	0	<u>1</u>	D6	0	<u>1</u>	D5	<u>0</u>	<u>1</u>	D4	<u>0</u>	<u>1</u>	D3	<u>0</u>	<u>1</u>	D2	<u>0</u>	<u>1</u>	D1	<u>0</u>	<u>1</u>						
	VREF charge SW	OFF	<u>ON</u>	Lch EVR Power	ON	<u>OFF</u>	Rch EVR Power	ON	<u>OFF</u>	EVR D16 Gain	<u>ATT</u>	AMP	EVR D08 Gain	<u>ATT</u>	AMP	EVR D04 Gain	<u>ATT</u>	AMP	EVR D2 Gain	<u>ATT</u>	AMP	EVR D1 Gain	<u>ATT</u>	AMP						
(0 4) 00000100	Receiver Speaker Power Save CTL		Receiver Input Select SW			Receiver EVR Power Save CTL			EVR Setting (Receiver) 5bit																					
									D16(10000)			D08(01000)			D04(00100)			D02(00010)			D01(00001)									
	D8	0	<u>1</u>	D7	0	<u>1</u>	D6	0	<u>1</u>	D5	<u>0</u>	<u>1</u>	D4	<u>0</u>	<u>1</u>	D3	<u>0</u>	<u>1</u>	D2	<u>0</u>	<u>1</u>	D1	<u>0</u>	<u>1</u>						
	Receiver Speaker	ON	<u>OFF</u>	Input Select SW	ON	<u>OFF</u>	Receiver EVR	ON	<u>OFF</u>	EVR D16 Gain	<u>ATT</u>	AMP	EVR D08 Gain	<u>ATT</u>	AMP	EVR D04 Gain	<u>ATT</u>	AMP	EVR D2 Gain	<u>ATT</u>	AMP	EVR D1 Gain	<u>ATT</u>	AMP						

Package Dimensions

unit : mm (typ)
3293



Pin Assignment



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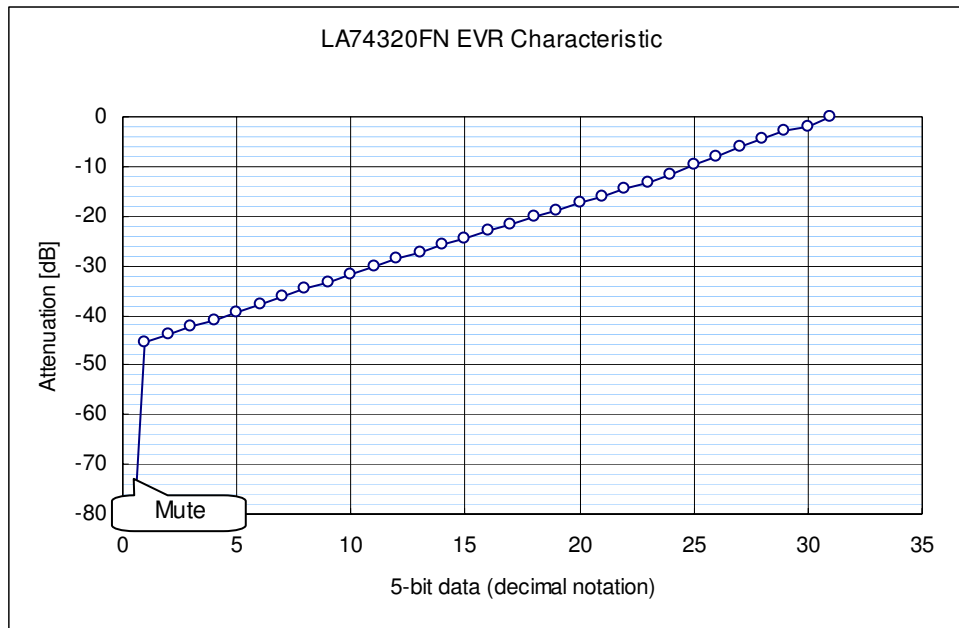


Table of Input/Output Forms

PIN	Pin Name	DC voltage	AC voltage	Description of functions	Equivalent circuit diagram in pin
1	Receiver GND	0V		Receiver GND	
2	Receiver (-) output	1.65V	Reference output level =-10dBV (@ EVR=Max. audio source input =-30dBV)	Receiver reverse phase output pin	
3	VCC A	3.0V		Power pin for analog signal part	
4	CLOCK			CLOCK input pin	
5	DATA			DATA input pin	
6	A GND	0V		GND pin for analog signal part	

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PIN	Pin Name	DC voltage	AC voltage	Description of functions	Equivalent circuit diagram in pin
7	MIC1 IN	1.5V	Reference input level =-50dBV Maximum input level =-20dBV	MIC1 input pin	
8	MIC2 IN	1.5V	Reference input level =-50dBV Maximum input level =-20dBV	MIC2 input pin	
9	MIC OUT	1.5V	Reference output level =-40dBV Maximum output level =-10dBV	MIC output pin	
10	MIC1 V _{CC}	2.3V		MIC1 power pin	
11	VREF	2.3V		MIC V _{CC} and VREF ripple rejection pin	

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PIN	Pin Name	DC voltage	AC voltage	Description of functions	Equivalent circuit diagram in pin
12	MIC2 V _{CC}	2.3V		MIC2 power pin	
13	ALC1 IN		Reference output level =-40dBV Maximum output level =-10dBV	ALC1 input pin	
14	ALC1 DET			ALC1 detection pin	
15	Base_Band OUT	1.5V	Reference output level =-16dBV Maximum input level =-3dBV	Base band output pin	
16	ALC2 DET			ALC2 detection pin	

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PIN	Pin Name	DC voltage	AC voltage	Description of functions	Equivalent circuit diagram in pin
17	Lch audio source IN	1.5V	Reference output level =-15dBV Maximum input level =-3dBV	Lch audio input pin	
18	Base Band IN	1.5V	Reference output level =-16dBV Maximum output level =-10dBV	Base band input pin	
19	Rch audio source IN	1.5V	Reference output level =-15dBV Maximum input level =-3dBV	Rch audio source input pin	
20	Rch HP IN	1.5V	Reference output level =-16dBV (@Base band input) =-21dBV (@audio source input) Maximum input level =-10dBV (@Base band input) =-9dBV (@audio source input)	Rch HP input pin	
21	Rch EVR OUT	1.5V	Reference output level =-16dBV (@Base band input) =-21dBV (@audio source input) Maximum input level =-10dBV (@Base band input) =-9dBV (@audio source input)	Rch EVR output pin	

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PIN	Pin Name	DC voltage	AC voltage	Description of functions	Equivalent circuit diagram in pin
22	Rch SPK IN	1.65V	Reference output level =-16dBV (@Base band input) =-21dBV (@audio source input) Maximum input level =-10dBV (@Base band input) =-9dBV (@audio source input)	Rch Speaker input pin	
23	NC			NC pin	
24	Rch SPK(-)OUT	1.65V	Reference output level =-1dBV (@audio source input =-15dBV)	Rch speaker reverse phase output pin	
25	GND SPK(R)	0V		Rch speaker GND pin	
26	Rch SPK(+)OUT	1.65V	Reference output level =-1dBV (@audio source input =-15dBV)	Rch speaker normal phase output pin	
27	V _{CC} SP(R)	3.6V		Rch speaker power pin	
28	NC			NC pin	
29	V _{CC} SP(L)	3.6V		Lch speaker power pin	
30	Lch SPK(+)OUT	1.65V	Reference output level =-1dBV (@audio source input =-15dBV)	Lch speaker normal phase output pin	

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PIN	Pin Name	DC voltage	AC voltage	Description of functions	Equivalent circuit diagram in pin
31	GND SPK(L)	0V		Lch speaker GND	
32	Lch SPK(-)OUT	1.65V	Reference output level =-1dBV (@audio source input =-15dBV)	Lch speaker reverse phase output pin	
33	NC			NC pin	
34	Lch SPK IN	1.65V	Reference output level =-1dBV (@audio source input =-15dBV)	Lch speaker input pin	
35	Lch EVR OUT	1.5V	Reference output level =-16dBV (@Base band input) =-21dBV (@audio source input) Maximum input level =-10dBV (@Base band input) =-9dBV (@audio source input)	Lch EVR output pin	
36	Lch HP IN	1.5V	Reference output level =-16dBV (@Base band input) =-21dBV (@audio source input) Maximum input level =-10dBV (@Base band input) =-9dBV (@audio source input)	Lch HP input pin	

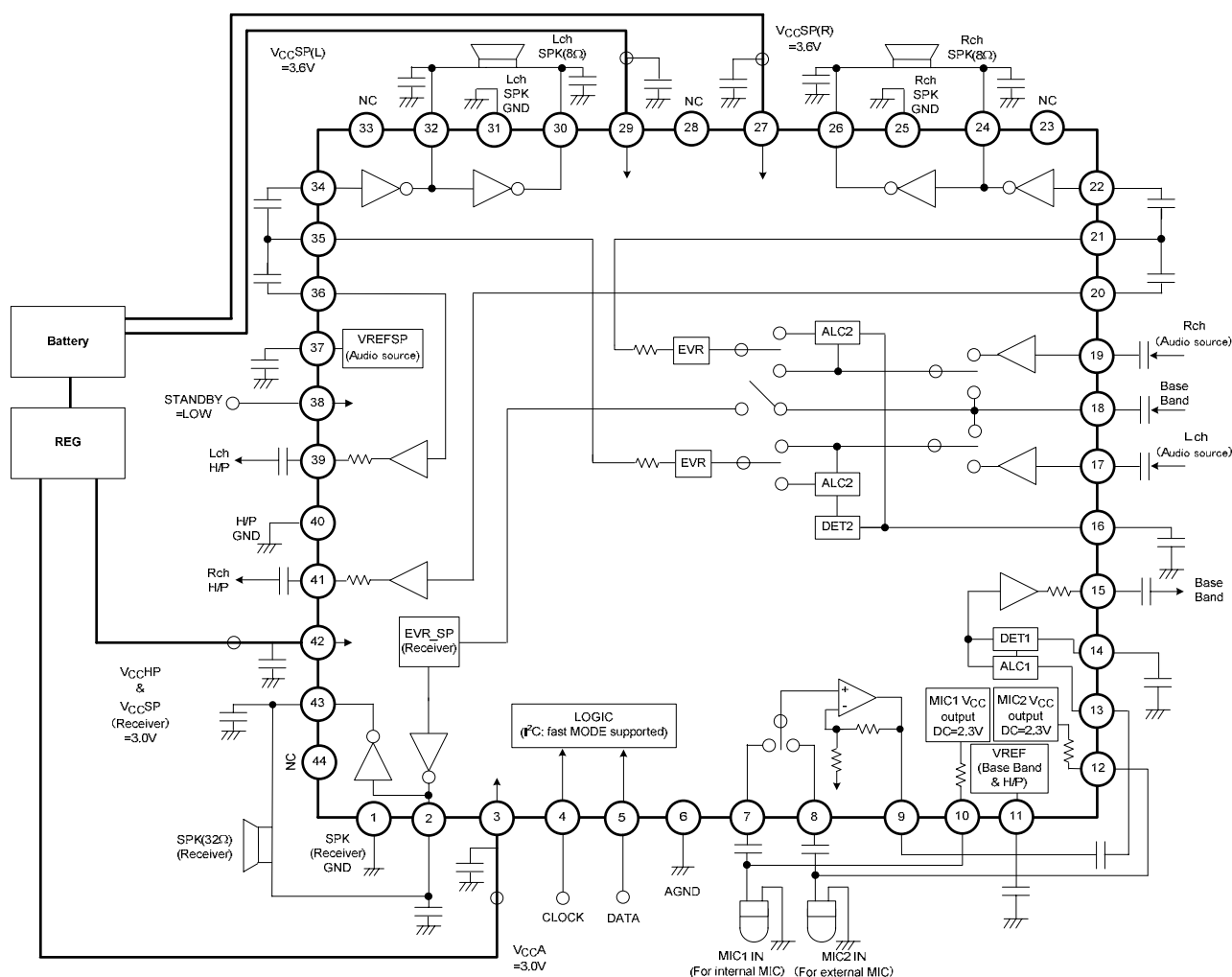
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PIN	Pin Name	DC voltage	AC voltage	Description of functions	Equivalent circuit diagram in pin
37	VREFSP	1.65V		SPK VREF and ripple rejection pin	
38	STANDBY L			STANDBY control pin	
39	Lch HP OUT	1.5V	Reference output level =-23.5dBV Maximum output level =-3dBV	Lch HP output pin	
40	GND HP	0V		HP GND pin	
41	Rch HP OUT	1.5V	Reference output level =-23.5dBV Maximum output level =-3dBV	Rch HP output pin	
42	VCCHP	3.0V		HP & receiver speaker power pin	
43	Receiver (+) OUT	1.5V	Reference output level =-10dBV (@ EVR=Max audio source input =-30dBV)	Receiver speaker normal phase output pin	
44	NC			NC pin	

Internal Equivalent Circuit Diagram



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