

# CODEC IC for digital mobile phone

## BU8761KV

BU8761KV is a PCM CODEC IC developed for digital mobile phones. This IC incorporates many analog I/O functions such as 14bit precision linear  $\mu$  / A-LAW codec, two systems of microphone, amplifiers for receiver and earphone, and data signal I/O circuit. Tone generator that can output maximum 3 chord is incorporated.

### ●Applications

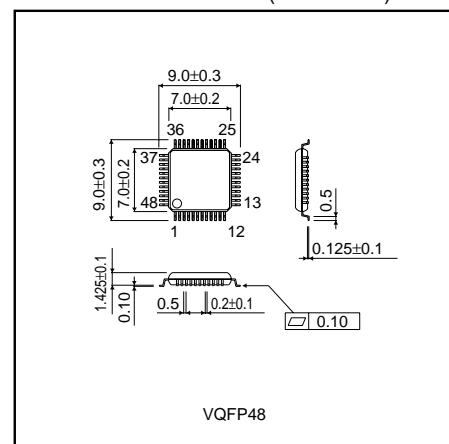
Digital mobile phones

### ●Features

- 1) +3V single power supply. ( $V_{DD}=2.7$  to  $3.3V$ )
- 2) 14bit precision linear  $\mu$  / A-LAW codec.
- 3) Transmission filter of the codec block is in conformity to the ITU-T recommendation G.714.
- 4) Built-in PLL circuit for system clock generation.
- 5) Built-in DSP I/F which is in conformity with digital mobile phones.
- 6) Arbitrary setting of the clock frequency of PCM data transmission is allowed.
 

$\mu$ / A-LAW	64kHz to 2048kHz
Linear	28kHz to 2048kHz
- 7) Plenty of input / output analog functions :
  - Two systems of built-in microphone amplifier. (differential input type, single input type)
  - Built-in speaker amplifier for receiver. ( $32\Omega$ BTL type)
  - Built-in speaker amplifier for earphone. ( $32\Omega$  single type)
  - Built-in speaker amplifier for REXT of call receiving system. ( $600\Omega$ )
  - Built-in electronic volumes for gain adjustment. (Call-receiving system, call sending system, TONE system)
  - Built-in input / output circuit for data signal which allows external connection.
  - Pop noise of REXT earphone and receiver outputs at the time of switching on and off the power supply is reduced by means of soft mute.
- 8) Tone generator building in that maximum 3 chord output is possible.
  - DTMF signal, musical scale tone can be generate.
  - Envelope on/ off the output wave shape can be set up in each part.
  - SIN wave, rectangle wave can be chosen in the output wave shape.
- 9) VQFP48 pin package.

### ●External dimensions (Units : mm)



## Communication ICs

## ●Absolute maximum rating (Unless otherwise noted, Ta = 25°C)

Parameter	Symbol	Limits	Unit
Digital power supply voltage	DV <sub>DD</sub>	-0.3 to +4.5	V
Analog power supply voltage	RXV <sub>DD</sub>	-0.3 to +4.5	V
	TXV <sub>DD</sub>	-0.3 to +4.5	V
Digital pin apply voltage	V <sub>TD</sub>	DV <sub>SS</sub> -0.3 to DV <sub>DD</sub> +0.3	V
Analog pin apply voltage	V <sub>TA</sub>	RXV <sub>SS</sub> -0.3 to RXV <sub>DD</sub> +0.3	V
		TXV <sub>SS</sub> -0.3 to TXV <sub>DD</sub> +0.3	V
Input current	I <sub>IN</sub>	-10 to +10	mA
Power dissipation	P <sub>d</sub>	400 *	mW
Storage temperature range	T <sub>stg</sub>	-50 to +125	°C
Operation temperature range	T <sub>a</sub>	-30 to +85	°C

\* Drops by 4.0mW per 1°C when used at more than Ta=25°C.

## ●Recommendable operation condition (Unless otherwise noted, Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Digital power supply voltage	DV <sub>DD</sub>	2.7	-	3.3	V
Analog power supply voltage	RXV <sub>DD</sub>	2.7	-	3.3	V
	TXV <sub>DD</sub>	2.7	-	3.3	V

\* Radiation resistance is not included design.

## ●Electrical characteristics

(Unless otherwise noted, Ta = 25°C, DV<sub>DD</sub> = RXV<sub>DD</sub> = TXV<sub>DD</sub> = 3.0V, FSYNC = 8kHz, DCLK = 256kHz, Gain of each attenuator = 0dB)

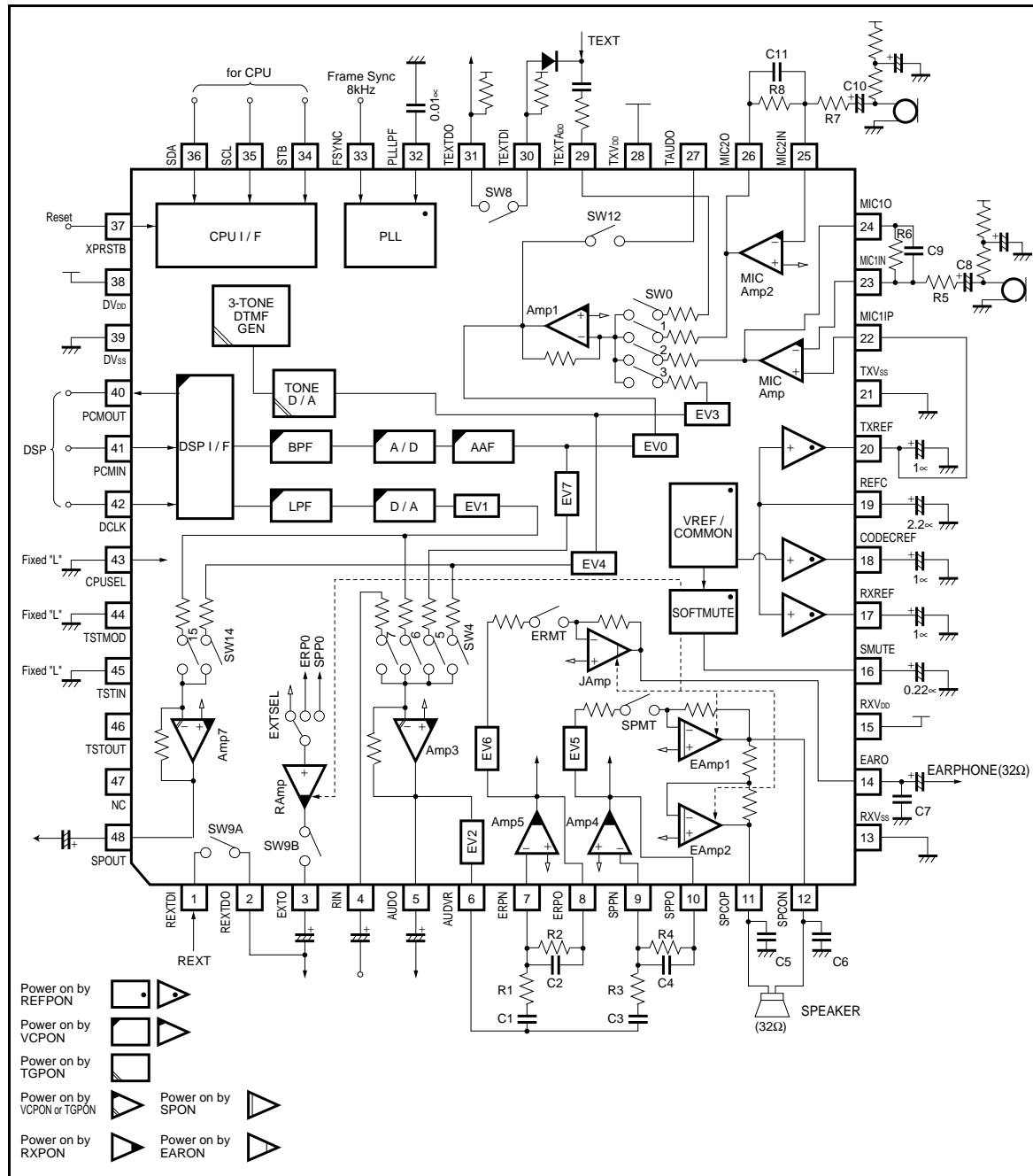
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Current consumption*1	I <sub>DD1</sub>	-	8.0	11.5	mA	When all operating
	I <sub>DD2</sub>	-	7.0	10.2		Reference, Voice, SPC ON
	I <sub>DD3</sub>	-	6.0	8.6		Reference, Voice, EAR ON
	I <sub>DD4</sub>	-	5.4	7.8		Reference, Voice, RAMP ON
	I <sub>DD5</sub>	-	5.1	7.3		Reference, Voice, ON
	I <sub>DD6</sub>	-	3.7	5.3		Reference, Tone, ON
	I <sub>DD7</sub>	-	3.3	4.8		Only Reference ON
	I <sub>DD8</sub>	-	0.1	20	∞A	When all power down, FSYNC, DCLK pin fixed
Digital "H" level input voltage	V <sub>IH</sub>	0.8DV <sub>DD</sub>	-	-	V	
Digital "L" level input voltage	V <sub>IL</sub>	-	-	0.2DV <sub>DD</sub>	V	
Digital "H" level input current	I <sub>IH</sub>	-	-	10	∞A	V <sub>IH</sub> =DV <sub>DD</sub>
Digital "L" level input current	I <sub>IL</sub>	-10	-	-	∞A	V <sub>IL</sub> =0V
Digital "H" level output voltage	V <sub>OH</sub>	DV <sub>DD</sub> -0.5	-	-	V	I <sub>OH</sub> =-1mA
Digital "L" level output voltage	V <sub>OL</sub>	-	-	0.5	V	I <sub>OL</sub> =1mA

\*1 Supply voltage (DV<sub>DD</sub>, RXV<sub>DD</sub>, TXV<sub>DD</sub>) : 3V. No load for digital and analog output pin. Digital input pin except FSYNC. CLK pin should be connected to DV<sub>DD</sub> or DV<sub>SS</sub>. Analog input pin should be connected to TXREF or RXREF with appropriate resistance. Soft mute release voltage (SMUTE="0")

\*2 FSYNC=8kHz, DCLK=256kHz

Communication ICs

●Application circuit



### Notes

- No technical content pages of this document may be reproduced in any form or transmitted by any means without prior permission of ROHM CO.,LTD.
- The contents described herein are subject to change without notice. The specifications for the product described in this document are for reference only. Upon actual use, therefore, please request that specifications to be separately delivered.
- Application circuit diagrams and circuit constants contained herein are shown as examples of standard use and operation. Please pay careful attention to the peripheral conditions when designing circuits and deciding upon circuit constants in the set.
- Any data, including, but not limited to application circuit diagrams information, described herein are intended only as illustrations of such devices and not as the specifications for such devices. ROHM CO.,LTD. disclaims any warranty that any use of such devices shall be free from infringement of any third party's intellectual property rights or other proprietary rights, and further, assumes no liability of whatsoever nature in the event of any such infringement, or arising from or connected with or related to the use of such devices.
- Upon the sale of any such devices, other than for buyer's right to use such devices itself, resell or otherwise dispose of the same, no express or implied right or license to practice or commercially exploit any intellectual property rights or other proprietary rights owned or controlled by
- ROHM CO., LTD. is granted to any such buyer.
- Products listed in this document use silicon as a basic material.  
Products listed in this document are no antiradiation design.

The products listed in this document are designed to be used with ordinary electronic equipment or devices (such as audio visual equipment, office-automation equipment, communications devices, electrical appliances and electronic toys).

Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.

#### About Export Control Order in Japan

Products described herein are the objects of controlled goods in Annex 1 (Item 16) of Export Trade Control Order in Japan.

In case of export from Japan, please confirm if it applies to "objective" criteria or an "informed" (by MITI clause) on the basis of "catch all controls for Non-Proliferation of Weapons of Mass Destruction.