



Yxt2104 OTP SERIES

深圳宇芯科技发展有限公司

Shenzhen yuxin Technology Development Limit Corporation

YXT2104_OTP SERIES DATASHEET

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FEATURES

Standard CMOS process.

Embedded EPROM.

Embedded 8-bit MCU.

21sec voice duration at 6 KHz sampling with 4-bit ADPCM compression.

Combination of voice building blocks to extend playback duration.

able entries are available for voice block combinations.

User selectable PCM or ADPCM data compress.

Voice Group Trigger Options: Edge / Level; Hold / Un-hold; Retrigger / Non-retrigger.

Programmable I/Os, Timer Interrupt and Watch Dog Timer.

Built-in oscillator with fixed R_{osc} , software control sampling frequency

2.2V – 3.6V single power supply and < 5uA low stand-by current.

PWM Vout1 and Vout2 drive speaker directly.

D/A COUT with ramp-up ramp-down option to drive speaker through an external BJT.

DESCRIPTION

Yuxin'Yxt2104 is a 8-bit CPU based Voice chip series. It is fabricated with Standard CMOS process

with embedded voice storage memory. It can store from 21sec voice message with 4-bit

ADPCM compression at 6KHz sampling rate. 8-bit PCM is also available as user selectable option to

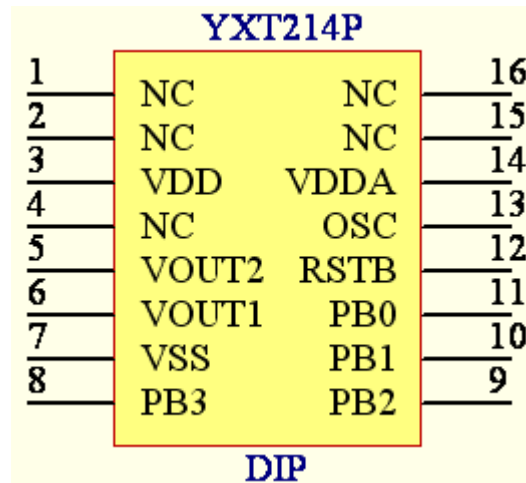
improve sound quality. Depending on IC body, there are up to twelve programmable I/O pins. Key

trigger and Parallel CPU trigger mode can be configured according to different application requirement.

User selectable triggering and output signal options provide maximum flexibility to various applications.

Built-in resistor controlled oscillator, 8-bit current mode D/A output and PWM direct speaker driving

output minimize the number of external components.

PIN CONFIGURATIONS

PIN DESCRIPTIONS

Pin Names	Description
VOUT1	PWM output to drive speaker directly
VOUT2_COUT	PWM output or COUT DAC output select by programmable option
VSS	Power Ground
OSC	Oscillator input
VDDA	Positive Power Supply
VDD	Positive Power Supply
PBn	Programmable I/O pins (n: 0 to 3)
PCn	Programmable I/O pins (n: 0 to 3 for a1VR4208/34112)
PDn	Programmable I/O pins (n: 0 to 3 for a1VR34112)
RSTB	Reset pin, Low active

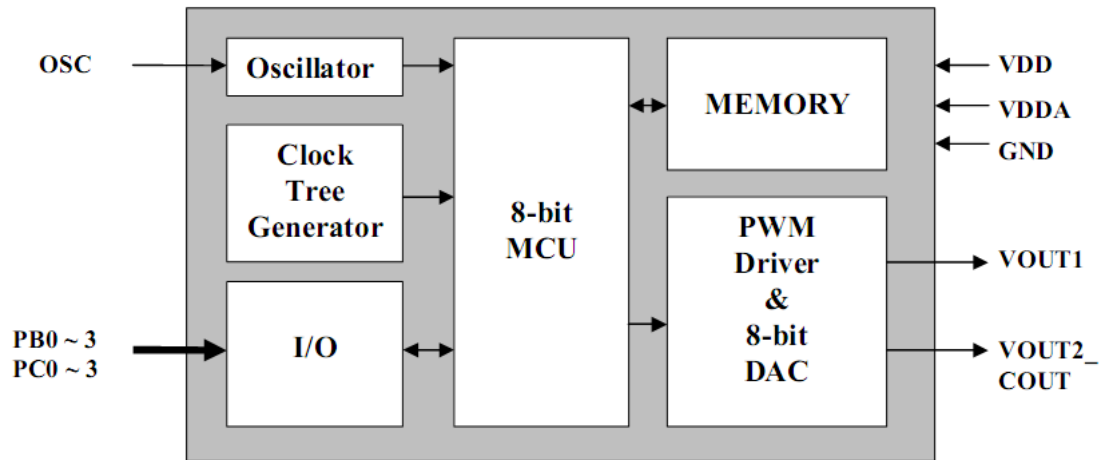
Note:

PBn, PCn and PDn are software programmable I/O pins that can be set to different configurations such as pure input, input with pull-up, input with pull-down and output. The programmable I/O pins set up will take effect immediately after chip RESET is applied.

BLOCK DIAGRAM



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ABSOLUTE MAXIMUM RATINGS

Symbol	Rating	Unit
$V_{DD} - V_{SS}$	-0.5 ~ +3.8	V
V_{IN}	$V_{SS} - 0.3 < V_{IN} < V_{DD} + 0.3$	V
V_{OUT}	$V_{SS} < V_{OUT} < V_{DD}$	V
T (Operating):	-40 ~ +85	°C
T (Junction)	-40 ~ +125	°C
T (Storage)	-55 ~ +125	°C

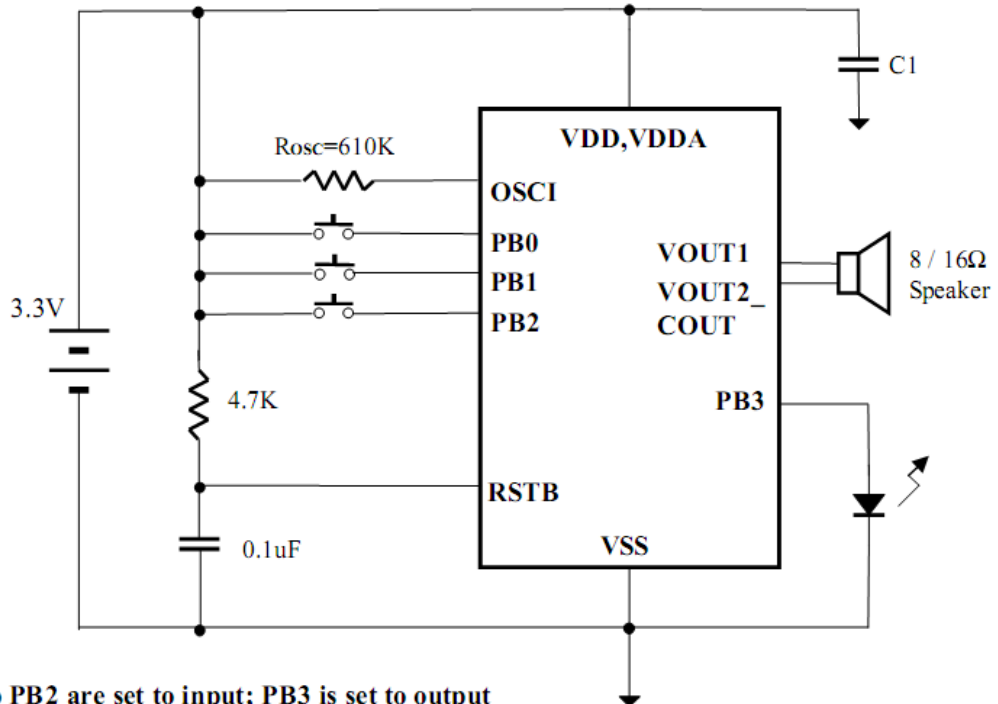
DC CHARACTERISTICS ($T_A = 0$ to 70°C , $V_{DD} = 3.0\text{V}$, $V_{SS} = 0\text{V}$)



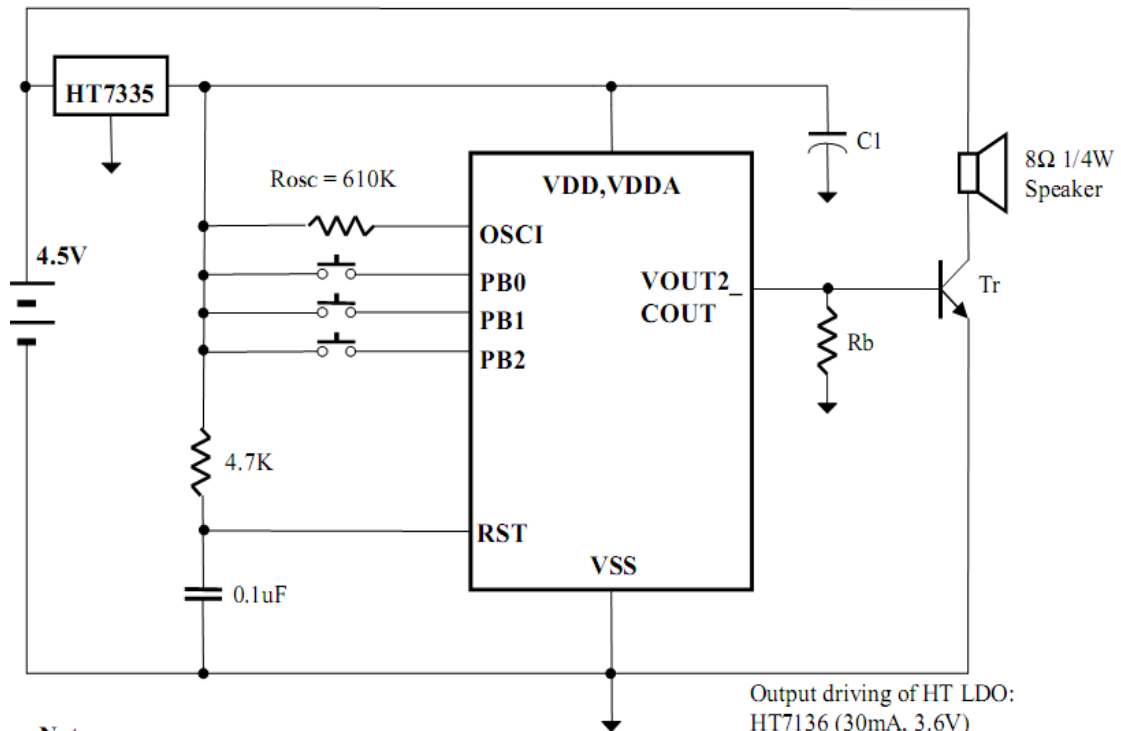
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Symbol	Parameter	Min.	Typ.	Max.	Unit	Conditions
V _{DD}	Operating Voltage	2.2	3.0	3.6	V	
I _{SB}	Standby current	—	1	5	μA	I/O properly terminated
I _{OP}	Operating current	—	—	15	mA	I/O properly terminated
V _{IH}	"H" Input Voltage	2.5	3.0	3.5	V	V _{DD} =3.0V
V _{IL}	"L" Input Voltage	-0.3	0	0.5	V	V _{DD} =3.0V
I _{VOUTL}	V _{OUT} low O/P Current	—	130	—	mA	V _{out} =1.0V
I _{VOUTh}	V _{OUT} high O/P Current	—	-130	—	mA	V _{out} =2.0V
I _{CO}	C _{OUT} O/P Current	—	-2	—	mA	Data = 80h
I _{OH}	O/P High Current	—	-8	—	mA	V _{OH} =2.5V
I _{OL}	O/P Low Current	—	8	—	mA	V _{OL} =0.3V
R _{NVOUT}	V _{OUT} pull-down resistance	—	100K	—	Ω	V _{OUT} pin set to internal pull-down
R _{NPIO}	Programmable IO pin pull-down resistance	—	1M	—	Ω	PBx, PCx, PDx set to internal pull-down
R _{UPIO}	Programmable IO pin pull-up resistance	3.3K	4.7K	—	Ω	PBx, PCx, PDx set to internal pull-up
ΔFs/Fs	Frequency stability	-3	—	+3	%	V _{DD} = 3V +/- 0.4V
ΔFc/Fc	Chip to chip Frequency Variation	-5	—	+5	%	Also apply to lot to lot variation

TYPICAL APPLICATIONS

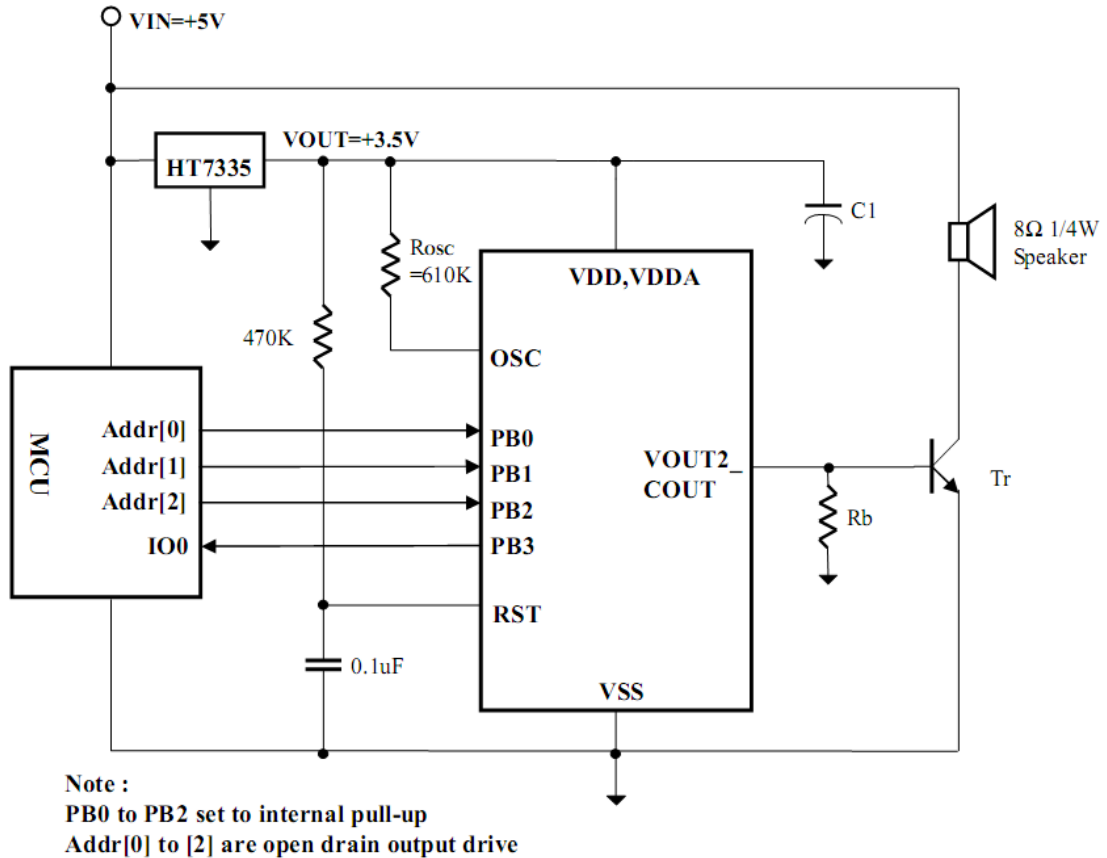


Note :
 PB0 to PB2 are set to input; PB3 is set to output
 C1 = 0.1uF to 2.2uF depend on the kind of power supply.



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Output driving of HT LDO:
 HT7136 (30mA, 3.6V)
 HT7133 (30mA, 3.3V)
 HT7536 (100mA, 3.6V)
 HT7335 (250mA, 3.5V)



Note:

1. C1 is capacitor from 0.1uF to 2.2uF depends on the kind of Vdd source and sound loudness.
 E.g. If COUT is used, C1 can be 0.1uF. However, if PWM direct drive speaker is used, C1 should be at least 2.2uF
2. Rb is base resistor from 120 Ohm to 390 Ohm depends on Vdd value and transistor gain.
3. Tr is an NPN transistor with beta larger than 150, e.g. 8050D.
4. Rosc = 610K Ohm with Vdd=3.0V