1. FEATURES :

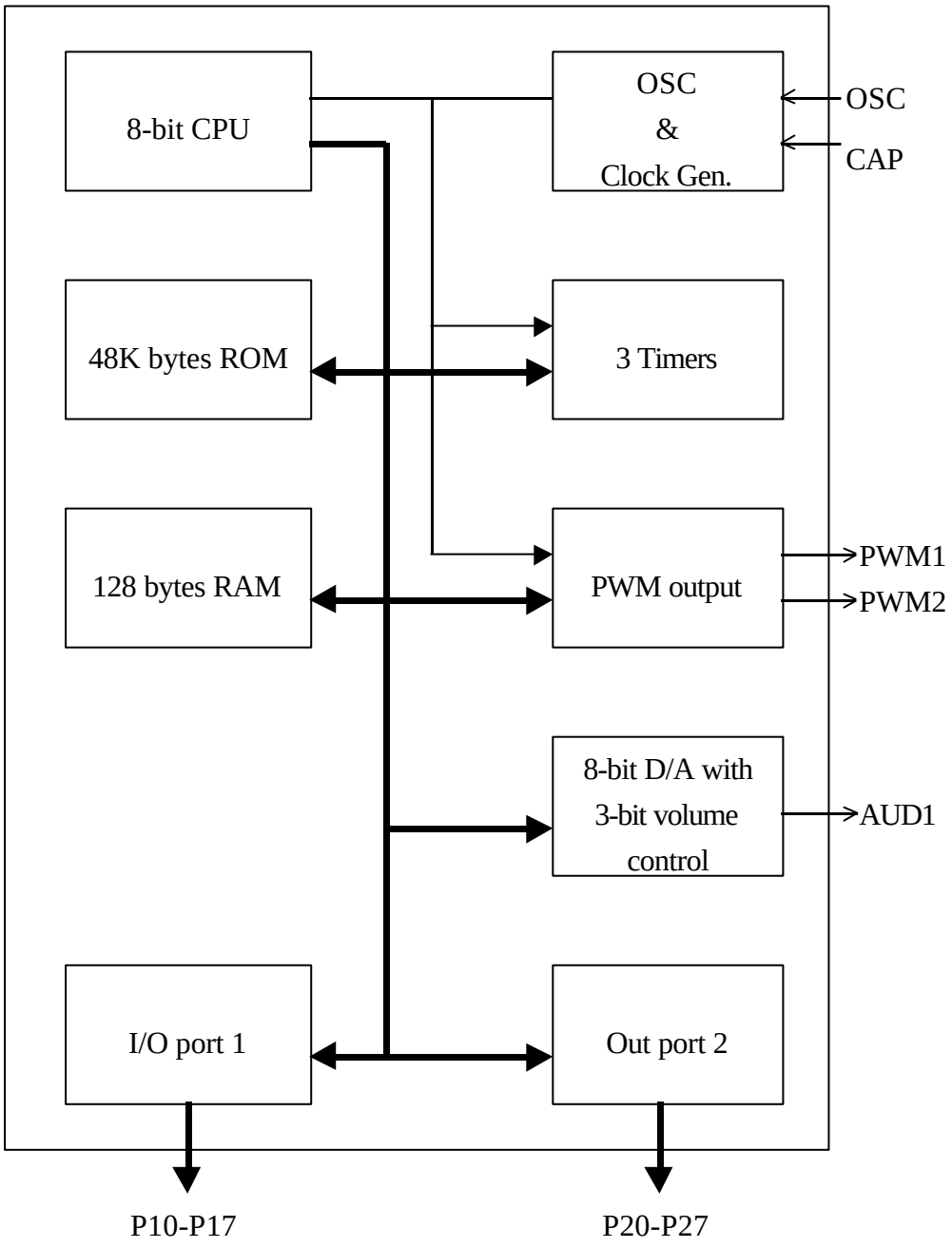
* Operating voltage : 2.5V - 3.5V.
* Maximum CPU operating frequency : 4MHz at 2.7V
* Built-in RC oscillator circuit. The oscillation frequency is controlled by an external resistor.
* Built-in PLL circuit to generate the system clock with 5 times oscillation frequency.
* Audio output ports with 3-bit loudness control
  - One current output port for speaker output.
  - Two PWM output ports can drive 8,16,64 ohm speaker or buzzer directly.
* I/O port.
  - 8 I/O pins.
  - Port 1 with selectable interrupt.
  - Port 1 with 6 CDS interface and 2 schmitt trigger input.
* Output port
  - 8 output pins.
  - port 2 with 8 inverter type output pins.
* Built in 128 bytes RAM
*Built in ROM for program and speech data
  48K bytes for 88C4831
  37K bytes for 88C3731
* Three 8-bit timers.
* Five interrupt sources :
  NMI - Watchdog Timer interrupt
  IRQ1 - Timer 1 interrupt
  IRQ2 - Timer 2 interrupt
  IRQ3 - Timer 3 interrupt
  IRQ4 - External interrupt

2. PIN DESCRIPTION : (Total 25 pads)

Pin name	I/O	Function description
P10-P17	I/O	8-bit I/O pins for port 1 with wake-up interrupt
P20-P27	O	8-bit output pins for port 2
AUD1	O	Audio channel 1 current mode D/A output
PWM1	O	Audio channel 1 PWM output
PWM2	O	Audio channel 2 PWM output
OSC	I	Main system oscillator input pin for chip
RESB	I	System reset
CAP	I	Capacitor for PLL circuit.
TESTB	I	Test pin. Keep floating or connect to Vdd
VDD		Power input
VSS		Power ground

PART		Capacity	
		8-bit Algorithm	5-bit Algorithm
88C4831	48KB	C000h*8 49150*8	13330h*5 78640*5
88C3731	37KB	9000h*8 36860*8	E660h*5 58980*5

3. Block diagram :



4.Data/Control Register Line up

1) Sleep mode register. Write only.
2) IRQ flag register. Read & Write.
3) Port 0 data. Read & write.
4) Port 0 control . Write only.
5) Port 1 data. Write only.
6) Port 0 interrupt control. Write only.
7) Port 1 pull-up control. Write only.
8) Timer 1,2,3 data. Write only.
9) Overall control. Write only.
10) Loudness control. Write only
11) Data for audio. Write only.
12) Watchdog timer clear. Write only.

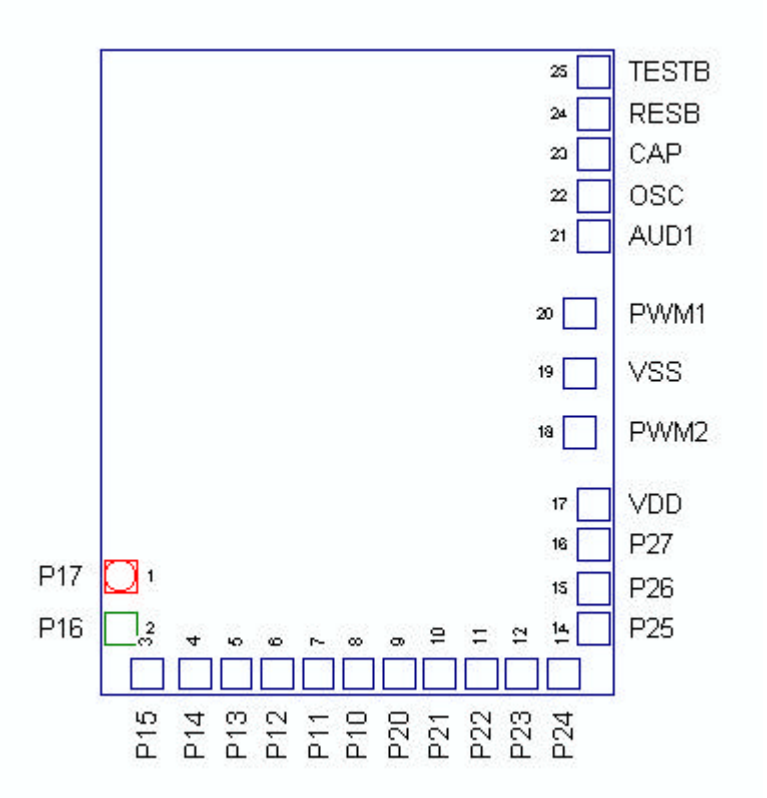
5. ABSOLUTE MAXIMUM RATINGS

Operating temperature ..... 0 to 70 ℃
Storage temperature ..... -65 to 150 ℃
Supply voltage ..... 7 V
Input voltage ..... -0.6 to Vdd+0.6 V

6. ELECTRICAL CHARACTERISTIC :

Parameter	Symbol	Condition	Min	Typ.	Max	Unit
Supply Voltage	Vdd		2.5	3.0	3.5	V
Rosc	Rosc			650		ohm
RC oscillation frequency	∅sys	Vdd=2.7V	400		800	Khz
Operating current	Idd	Vdd=3V,∅sys=4Mhz		1.5		mA
Standby current	Istdby	Vdd=3V,∅sys=4Mhz		1		mA
Sleep mode current	Islp	Vdd=3V			1	μA
Input high voltage	Vih	Vdd=3.0V	2.0			V
Input low voltage	Vil	Vdd=3.0V	-0.6		0.8	V
Input high leakage current	Iih	Vih=Vdd			1	μA
Input low leakage current	Iil	Vil=0			-5	μA
Output high voltage	Voh	Ioh=-2mA	Vdd-0.4		Vdd	V
Output low voltage	Vol	Iol=4mA	0		0.4	V
Output high voltage (PWM1, PWM2)	Voh	Vdd=3V, Ioh=-60mA	Vdd-1		Vdd	V
Output low voltage (PWM1, PWM2)	Vol	Vdd=3V, Iol=75mA	0		1	V
AUD (D/A full scale)	Io	Vdd=3V, Rl=100 OHM		-4.0		mA

7. IC PAD LAYOUT



IC Substrate Connect To: Vss or floating

Customer Information Sheet

1. Customer's Name : _____

2. Project title : _____

3. Syntek part number : _____ (will be filled by Syntek)

4. Package --------- ( ) Chip ( ) QFP

6. Customer code :

Code form ---------- ( ) EPROM ( ) file _____

Checksum ---------- 0000-3FFF _____H

4000-7FFF _____H

8000-BFFF _____H

0000-BFFF _____H

7. Others :

Customer : _____ Date : __/__/__

Salesman : _____ Date : __/__/__