



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



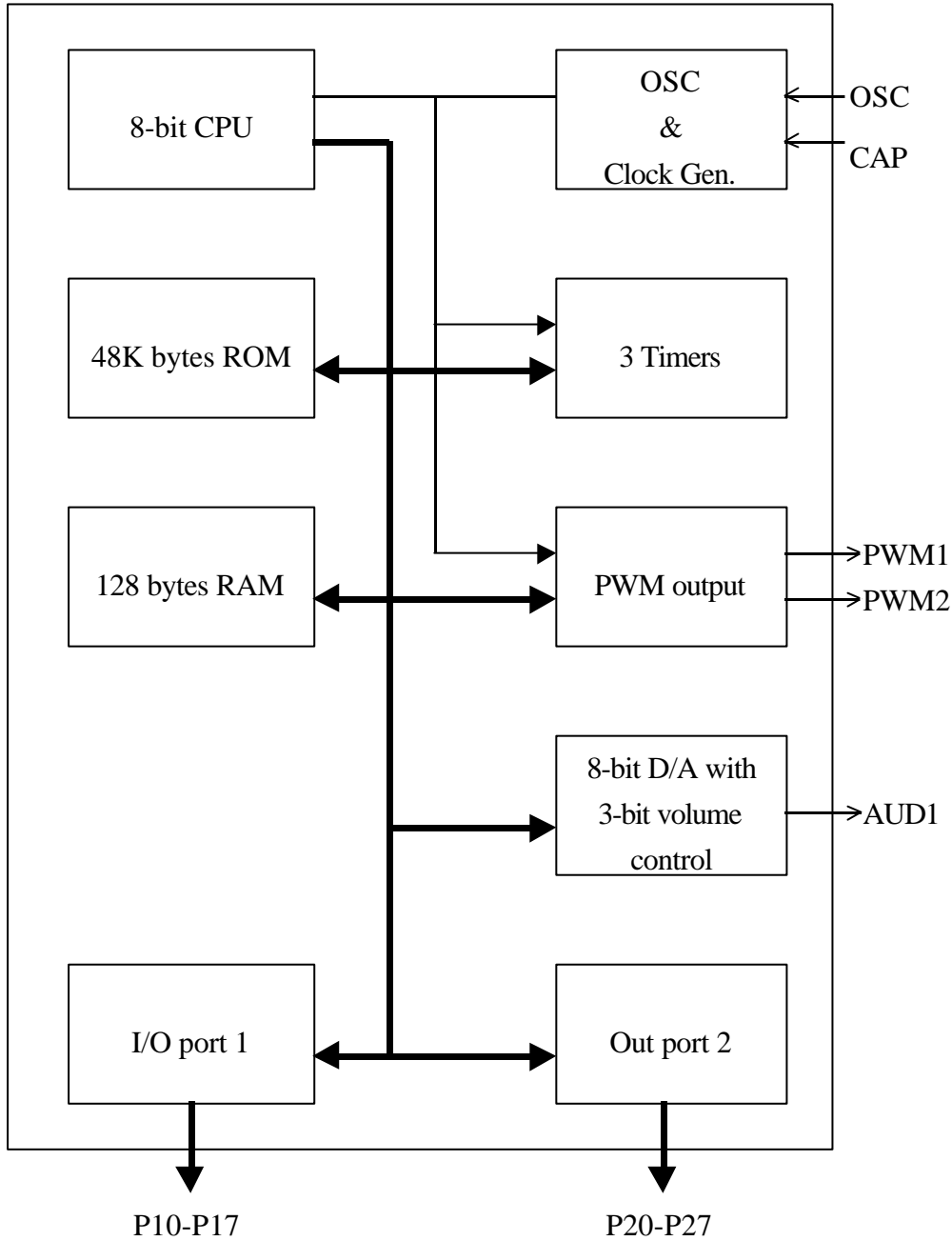
2. PIN DESCRIPTION : (Total 25 pads)

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

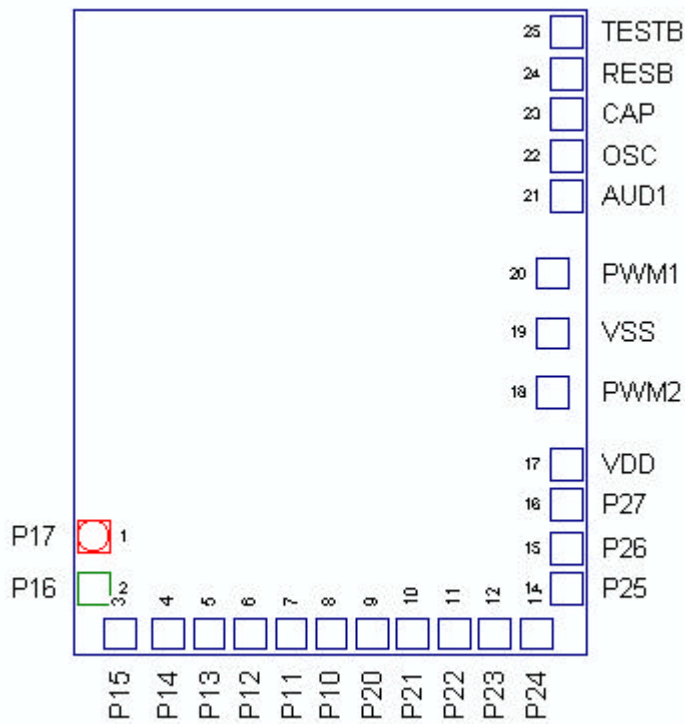
Operating temperature 0 to 70
 Storage temperature -65 to 150
 Supply voltage 7 V
 Input voltage -0.6 to Vdd+0.6 V

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	I _{dd}	Vdd=3V, ∅ _{sys} =4Mhz		1.5		mA
Standby current	I _{stdby}	Vdd=3V, ∅ _{sys} =4Mhz		1		mA
Sleep mode current	I _{slp}	Vdd=3V			1	μA
Input high voltage	V _{ih}	Vdd=3.0V	2.0			V
Input low voltage	V _{il}	Vdd=3.0V	-0.6		0.8	V
Input high leakage current	I _{ih}	V _{ih} =Vdd			1	μA
Input low leakage current	I _{il}	V _{il} =0			-5	μA
Output high voltage	V _{oh}	I _{oh} =-2mA	Vdd-0.4		Vdd	V
Output low voltage	V _{ol}	I _{ol} =4mA	0		0.4	V
Output high voltage (PWM1, PWM2)	V _{oh}	Vdd=3V, I _{oh} =-60mA	Vdd-1		Vdd	V
Output low voltage (PWM1, PWM2)	V _{ol}	Vdd=3V, I _{ol} =75mA	0		1	V
AUD (D/A full scale)	I _o	Vdd=3V, R _l =100 OHM		-4.0		mA



7. IC PAD LAYOUT



IC Substrate Connect To: Vss or floating

