WT5041

8-bit uC with Heart Rate Detect Circuits

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DESCRIPTION

The WT5041 is a high-performance, low-cost, CMOS 8-bit single-chip micro controller with on-chip OP Amp (OPA) for heart rate detect and 128 segments LCD driver. This chip can be used dedicate for applications where heart rate and LCD display are required, for example sports bicycle meter, heart rate meter and heart rate watch.

This chip has 8-bit CPU, RAM, ROM, I/Os, one 16-bit timer/counters, dual 8-bit timer, interrupt controller, three 8-bit PWM D/A output, resister to frequency converter (RFC), heart rate detect circuits, and a LCD driver. To be suitable for portable battery-powered applications, a power saving function is included.

FEATURES

- 8-bit single chip micro controller with 8Kbytes ROM and 256 Bytes SRAM
- Wide voltage operating range from 2.4 V to 5.5 V
- Built-in 32.768KHz OSC circuits.
- 14 interrupt sources, 14 halt mode release sources (warm start), 8 off mode wake up sources (cold start); all sources have independent latches each and multi-control is available.
- I/O port (32 pins)
  - I/O port0 8 pins (shared with SEG25~SEG32)
  - I/O port1 1 pin (shared with OP Amp 1 pins)
  - I/O port1 3 pins (shared with PWM0~2 output)
  - I/O port1 4 pins (shared with RFC 4 pins)
  - I/O port2 8 pins (shared with key detect & event counter inputs)
  - I/O port3 6 pins (shared with OP Amp 6 pins)
  - I/O port3 2 pins (shared with BUZ/BUZB output)
- Providing standby mode
- Key wake up function
- Build-in heart rate detect circuits and one 16-bit counter
- Build-in RFC circuit and one 16-bit counter for thermistor and humidity sensor use
- Dual 8-bit timer & one 16-bit timer/counters

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- 3 Channel 8-bit PWM output
- LCD driver
  - LCD direct drive (max. 16-digit display at 1/4 duty)
  - 1/4, 1/3, 1/2 duties and 1/2, 1/3 biases can be selected by software programming
  - 1/4, 1/3, 1/2 duties and 1/2, 1/3 biases can be selected by software programming
- LCD segments SEG25~32 can be used as 8 I/O pins by software programming
- Real-time emulator
- Package: Die form

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PIN FUNCTION

Name	No.	I/O	Description
COM1	1	O	LCD common 1.
COM2	2	O	LCD common 2.
COM3	3	O	LCD common 3.
COM4	4	O	LCD common 4.
SEG1	5	O	LCD segment 1.
SEG2	6	O	LCD segment 2.
SEG3	7	O	LCD segment 3.
SEG4	8	O	LCD segment 4.
SEG5	9	O	LCD segment 5.
SEG6	10	O	LCD segment 6.
SEG7	11	O	LCD segment 7.
SEG8	12	O	LCD segment 8.
SEG9	13	O	LCD segment 9.
SEG10	14	O	LCD segment 10.
SEG11	15	O	LCD segment 11.
SEG12	16	O	LCD segment 12.
SEG13	17	O	LCD segment 13.
SEG14	18	O	LCD segment 14.
SEG15	19	O	LCD segment 15.
SEG16	20	O	LCD segment 16.
SEG17	21	O	LCD segment 17.
SEG18	22	O	LCD segment 18.
SEG19	23	O	LCD segment 19.
SEG20	24	O	LCD segment 20.
SEG21	25	O	LCD segment 21.
SEG22	26	O	LCD segment 22.
SEG23	27	I/O	LCD segment 23.
SEG24	28	I/O	LCD segment 24.
P00/SEG25	29	I/O	I/O port 00 or LCD segment 25.
P01/SEG26	30	I/O	I/O port 01 or LCD segment 26.
P02/SEG27	31	I/O	I/O port 02 or LCD segment 27.
P03/SEG28	32	I/O	I/O port 03 or LCD segment 28.
P04/SEG29	33	I/O	I/O port 04 or LCD segment 29.
P05/SEG30	34	I/O	I/O port 05 or LCD segment 30.
P06/SEG31	35	I/O	I/O port 06 or LCD segment 31.
P07/SEG32	36	I/O	I/O port 07 or LCD segment 32.
P30/IN1	37	I/O	I/O port 30 or OP function Input1
P31/IN2	38	I/O	I/O port 31 or OP function Input2
P32/IN3	39	I/O	I/O port 32 or OP function Input3
P33/O1	40	I/O	I/O port 33 or OP function Output1

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Name	No.	I/O	Description
P34/O2	41	I/O	I/O port 34 or OP function Output2
P35/O3	42	I/O	I/O port 35 or OP function Output3
P36/BUZ	43	I/O	I/O port 36 or BUZZER function
P37/BUZB	44	I/O	I/O port 37 or BUZZERB function
P20/INT0	45	I/O	I/O port 20 or INT/wake up input 0 pull high, negative edge trigger
P21/INT1	46	I/O	I/O port 21 or INT/wake up input 1 pull high, negative edge trigger
P22/INT2	47	I/O	I/O port 22 or INT/wake up input 2 pull high, negative edge trigger
P23/INT3	48	I/O	I/O port 23 or INT/wake up input 3 pull high, negative edge trigger
P24/INT4	49	I/O	I/O port 24 or INT/wake up input 4 pull high, negative edge trigger
P25/INT5	50	I/O	I/O port 25 or INT/wake up input 5 pull high, negative edge trigger
P26/INT6	51	I/O	I/O port 26 or INT/wake up input 6 pull high, negative edge trigger
P27/INT7/CNT	52	I/O	I/O port 27 or INT/wake up input 7/counter input
GND	53	P	Ground (0V).
XTAL2	54	I/O	32768Hz crystal oscillator.
XTAL1	55	I	32768Hz crystal oscillator.
P10/PWM0	56	I/O	I/O port 10. or PWM0 output
P11/PWM1	57	I/O	I/O port 11. or PWM1 output
P12/PWM2	58	I/O	I/O port 12. or PWM2 output
P13/VR	59	I/O	I/O port 13. OP reference voltage output
P14/Ra	60	I/O	I/O port 14 or RFC R thermistor
P15/Rb	61	I/O	I/O port 15 or RFC R humidity sensor
P16/Rs	62	I/O	I/O port 16 or RFC R standard
P17/Ca	63	I/O	I/O port 17 or RFC Capacitor
/RESET	64	I	Reset. Internal pull high, active low.
BIAS1	65	O	LCD bias voltage 1
BIAS2	66	O	LCD bias voltage 2
VDD	67	P	Power supply.

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