



WT50F5

**8-bit μ C with 8KB Flash Memory, an 8-CH
12-bit A/D Converter and 16x4 LCD Driver**

DESCRIPTION

The WT50F5 is a high-performance, low-cost, CMOS 8-bit single-chip microcontroller with 8Kbytes on-chip flash memory, an 8-channel 12-bit analog to digital converter and 16x4 LCD driver. This chip is suitable for variable applications, especially where analog signal (sensor output) to digital signal conversion, LCD display and short development cycle are required, including industrial control, consumer, communications, and security products.

This chip has 8-bit CPU, RAM, flash memory, I/Os, dual 16-bit timer/counters, interrupt controller, 16x4 LCD driver and an 8-channel 12-bit A/D converter. To be suitable for portable battery-powered applications, a power saving function is included.

FEATURES

- ◆ 8-bit single chip microcontroller with 8K bytes flash memory and 384bytes SRAM
- ◆ Wide voltage operating range from 2.7 V to 5.5 V
- ◆ On-chip RC oscillator runs at 2MHz and crystal oscillator can run up to 6.0 MHz
- ◆ 6 interrupt sources (external:1; internal:5) ; all sources have independent latches each and multiple interrupt control is available
- ◆ I/O port (32 pins)
 - ◆ Port P0 8 pins (shared with analog inputs; 4 pins with 20 mA sink current)
 - ◆ Port P1 8 pins (20 mA sink current)
 - ◆ Port P2 8 pins (shared with SEG9~SEG16)
 - ◆ Port P3 8 pins (shared with SEG1~SEG8)
- ◆ Interval Timer (Internal time base generator)
- ◆ Operating current 2mA/4MHz@5V; providing standby mode (OSC is stopped and current consumption < 1 uA@5V) and key wake-up mode
- ◆ Watchdog timer
- ◆ Dual PWM
- ◆ Dual 16-bit timer/counters
- ◆ A/D converter module
 - ◆ 8 analog inputs multiplexed into one A/D converter
 - ◆ Sample and hold
 - ◆ 20 μ S conversion time/per channel



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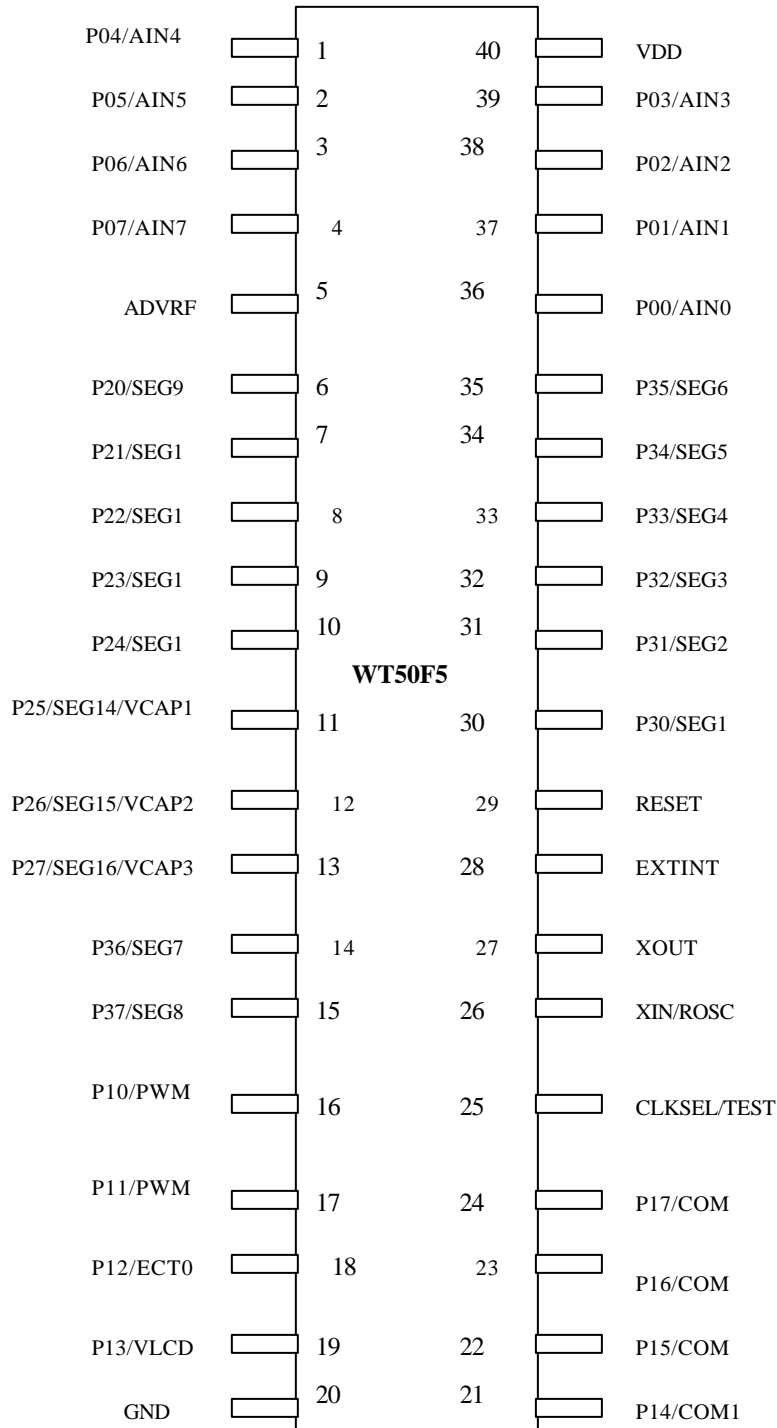
- ◆ 12-bit resolution with ± 2 LSB accuracy
- ◆ External reference input, AD_{VRF}
- ◆ LCD driver (automatically display)
 - ◆ LCD direct drive (max. 8-digit display at 1/4 duty)
 - ◆ 1/4, 1/3, 1/2 duties and 1/2, 1/3 biases can be selected by programming
- ◆ Programming lock for software security; read/write protection (signature compare)
- ◆ Package: 40-pin PDIP



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PACKAGE PIN ASSIGNMENT





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Preliminary

PIN FUNCTION

PIN NAME	40-pin	In/Out	FUNCTIONS
P00/AIN0~ P03/AIN3 P04/AIN4~P07/AIN7	36 ~ 39 1~4	I/O	8-bit I/O port; internal pull-up; o/p: sink 20mA(P04~P07); i/p: external pull-low (shared with analog inputs)
P10/PWM0 P11/PWM1 P12/ECT0 P13/V _{LCD} P14/COM1 P15/COM2 P16/COM3 P17/COM4	16 17 18 19 21 22 23 24	I/O	(shared with PWM output); 8-bit I/O port; internal pull-up; o/p: sink 20mA; i/p: external pull-low (External counter) (Bias voltage to LCD) (LCD common output) (LCD common output) (LCD common output) (LCD common output)
P20/SEG9 P21/SEG10 P22/SEG11 P23/SEG12 P24/SEG13 P25/SEG14/VCAP1 P26/SEG15/VCAP2 P27/SEG16/VCAP3	6 7 8 9 10 11 12 13	I/O	8-bit I/O port; internal pull-up; i/p: external pull-low (shared with LCD segment output) P20~P23 support key wake-up
P30/SEG1 P31/SEG2 P32/SEG3 P33/SEG4 P34/SEG5 P35/SEG6 P36/SEG7 P37/SEG8	30 31 32 33 34 35 14 15	I/O	8-bit I/O port; internal pull-up; i/p: external pull-low (shared with LCD segment output)
XIN/ROSC	26	Input	Crystal input/ROSC input
XOUT	27	Output	Crystal output
RESET	29	Input	System reset signal input; low active
VDD	40	Input	Power source
GND	20	Input	Ground
AD _{VRF}	5	Input	Reference voltage input to A/D
EXTINT	28	Input	External interrupt input
CLKSEL/TEST	25	Input	Clock sources select, connected to VDD for ROSC or to GND for Crystal (Test Pin)