WT5081

8-bit mC with 4Mb ROM, 6.448Kbytes SRAM, Push-Pull DAC and 48x32/64x32 LCD Driver

v1.11

DESCRIPTION

The WT5081 is a high-performance, low-cost, CMOS 8-bit single-chip microcontroller with 48x32/64x32 dot-matrix LCD driver, which is suitable for variable applications, especially when large number of LCD dots and large ROM space are needed, including edutainment toys, speech synthesizer, Chinese character pagers, databank, handheld games and talking devices.

This chip has 8-bit CPU, RAM, I/Os, dual 16-bit timer/counters, interrupt controller, and a 9-bit push-pull D/A output. To be suitable for portable battery-powered applications, a power saving function is included. And, ESD protection circuitry is included to enhance the capability of ESD resist.

FEATURES

- 8-bit single chip microcontroller with 48x32/64x32 LCD driver
- 6.448Kbytes SRAM and 512 Kbytes ROM
- Voltage operating range from 2.9 V to 3.2 V
- Built-in crystal OSC circuit and RC oscillator with maximum frequency up to 3.0 MHz
- 5 interrupt sources (external:1; internal:4) ; all sources have independent latches each and multiple interrupt control is available
- I/O port (20 pins)
  - I/O port 4 pins
  - I/O port 16 pins
- Watchdog Timer
- Operating current 1*m*A/2MHz@3V; providing standby mode and key wake-up mode
  - RC OSC OFF and 32.768KHz X'tal OSC ON: current consumption < 15 *uA @3V*
- Dual 16-bit timer/counters
- 9-bit push-pull D/A converter
- ESD protection circuitry
- Package: Chip form or 128-pin LQFP (14mm x 14mm x 1.4mm)

PIN FUNCTION (128-pin LQFP)

PIN NAME	PIN#	In/Out	FUNCTIONS
P20~ P23	113~ 110	I/O	4-bit I/O port
NC	104	-	Not connected
NC	105	-	Not connected
NC	106	-	Not connected
P10/SEG56~ P17/SEG63	125~ 118	I/O	8-bit I/O port with latch
P00/SEG48~ P04/SEG52 P05/SEG53~ P07/SEG55	5~ 1 128~ 126	I/O	8-bit I/O port with latch
XTLIN	115	Input	Crystal input
XTLOUT	116	Output	Crystal output
RIN	114	Input	ROSC input; connected to VDD through a resistor
NRESET	108	Input	System reset signal input; low active
NTEST	109	Input	Test pin. "H": Normal; "L": Test
SPKA	100	Output	Current D/A output
SPKB	102	Output	Current D/A output
VDD	52,98,101	Input	Power source
GND	13,99,103,117	Input	Ground
EXTINT	107	Input	External interrupt input
SEG0~SEG2 SEG3~SEG40 SEG41~SEG47	55~53 51~14 12~6	Output	LCD segment output
COM0~COM31	92~61	Output	LCD common output
V_{LCD}	58	Input	LCD voltage supply
BIAS1	60	Output	LCD bias voltage output
BIAS2	57	Output	LCD bias voltage output
BIAS3	56	Output	LCD bias voltage output
BIAS4	59	Output	LCD bias voltage output
Ca	97	Output	LCD pumping capacitor
Cb	95	Output	LCD pumping capacitor
Cc	96	Output	LCD pumping capacitor
Cd	94	Output	LCD pumping capacitor

Output High I (I/O: P1&P0)	Iol		230		*u* A	VDD=3.0V, Vpp=3V Vol=0.3V
Output High I (I/O: P1&P0)	Ioh		230		*u* A	VDD=3.0V, Vpp=7V Voh=2.7V
Output High I (I/O: P1&P0)	Iol		230		*u* A	VDD=3.0V, Vpp=9V Vol=0.3V
Output High I (I/O: P20~P23)	Ioh		0.9		*m* A	VDD=3.0V Voh=2.7V
Output Sink I*(註2) (I/O: P20~P23)	Iol		0.7		*m*A	VDD=3.0V Vol=0.3V
ROSC Resistor	RIN		1.6M		Ω	F_{OSC}=1.5MHz @3.0V
CPU Clock	F_{CPU}	0.03		3.0	MHz	F_{CPU}=F_{OSC} @3.0V