



## SH69P561

### OTP 4-Bit Microcontroller

### With 8bit SAR ADC & LCD Driver

Preliminary

#### Features

- The SH6610D-based single-chip 4-bit microcontroller
- OTPROM: 4096 X 16 bits
- RAM: 274X4bits (58 Register + 216 data RAM)
- Operation voltage:
  - $f_{OSC}=32\text{KHz}$  - 4MHz,  $V_{DD}=2.4\text{V}$  - 5.5V
  - $f_{OSC}=8\text{MHz}$ ,  $V_{DD}=4.5\text{V}$  - 5.5V
- 15 CMOS bi-directional I/O pins
- Build in pull-up/low resistor for I/O
- Zero Cross Detect function for AC Power line
- 8-Level subroutine nesting (include interrupts)
- Two 8-bit auto re-load timer/counter
- Powerful interrupt sources:
  - ADC interrupt
  - Internal interrupt (Timer0)
  - Internal interrupt (Timer1)
  - 4 independent Port's interrupt: PORT B
- LCD driver:
  - 4 X18 (1/4 duty, 1/3 bias)
  - SEG5-8 shared with PORTE.
- LCD shared as LED matrix (OTP option)
- LCD segment 13-26 shared with scan output
- Built-in EL-light driver.
- 5 channels 8-bit resolution A/D converter
- 2 channels 10-bit PWM output
- Read Rom Table function
- Built-in alarm generator (carrier frequency: 0.5KHz, 1KHz, 2KHz or 4KHz.)
- 2 Clock sources
  - OSC:
    - Crystal oscillator: 32.768KHz
    - RC oscillator: 262KHz
  - OSCX:
    - Ceramic/Crystal oscillator 400KHz-8MHz
    - RC oscillator 400KHz-8MHz
- Instruction cycle time:
  - 122.07 $\mu\text{s}$  for 32.768 KHz
  - 15.27 $\mu\text{s}$  for 262 KHz
  - 8.79 $\mu\text{s}$  for 455KHz
  - 0.5 $\mu\text{s}$  for 8.0 MHz
- Built-in watch dog timer
- Warm-up timer for power-on reset
- Two Low Voltage Reset level (OTP option)
  - High level: 4.0V
  - Low level: 2.5V
- Two low power operation modes: HALT and STOP
- OTP type& Code Protect

#### General Description

SH69P561 is a single chip microcontroller integrated with SRAM, 4K OTPROM, timer, watchdog timer and alarm generator, LCD driver, 8-bit A/D converter, 10-bit high speed PWM output, Zero Cross Detect function, EL-light driver and I/O port. This chip builds in a dual-oscillator to enhance the total chip performance.



QFP44 PIN Configuration

