# LSI *LS3010*

***LED 4-bit MCU***

## Features

* 5 LED direct drive.
* 4KHz/2KHz buzzer output.
* 6 input.
* 256 word program control.
* 16 x 4 bit RAM.
* Low power consumption
* 32768 Crystal oscillator/RC oscillator
* 1.5V or 3.0V operation.

## General Description

The LS3010 is a simple micro-controller for LED application. Internal ROM of 256x12, RAM 16x4. It has 5 direct LED output. Oscillator is RC/Crystal selected bonding option. Direct buzzer output.

## Pin Assignment

| DESIGNATION | TYPE | DESCRIPTION |
|---|---|---|
| B0, B1 | OUTPUT | Buzzer output |
| T1, T2, | INPUT | TEST pin |
| RO/OO | OUTPUT | RC / 32KHz oscillator output (mask option) |
| RI/OI | INPUT | RC / 32KHz oscillator input (mask option) |
| VDD | POWER | +3.0V power supply |
| GND | POWER | Ground |
| I[0:5] | INPUT(PL) | Input key |
| PB | INPUT(PH) | Power up reset |
| S[1:5] | OUTPUT | LED output |
| | | |
| | | |
| | | |
| | | |

Note: (PH) - pull high; (OD) – open drain;

## D.C. Characteristic

(GND = 0V, Vdd = 3.0V, Ta = 25°C unless otherwise specified)

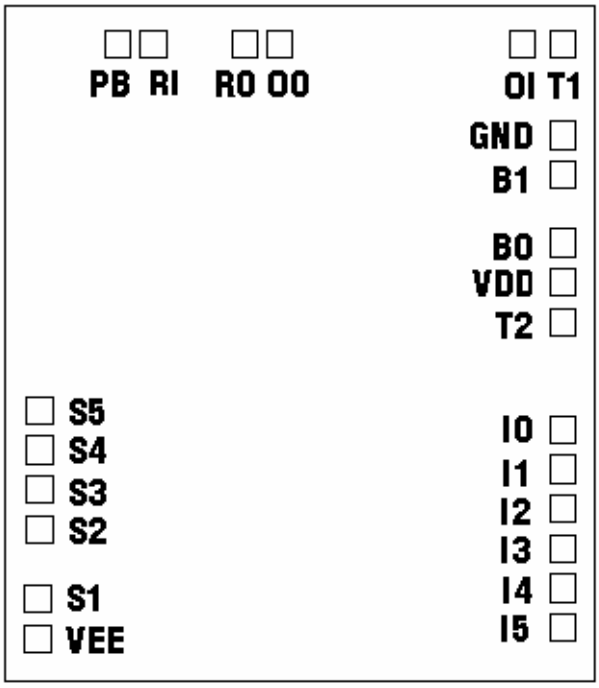
| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|---|---|---|---|---|---|---|
| Supply Voltage | Vdd | 1.2 | 3.0 | 3.6 | V | |
| Standby current | Istby | | | 2 | µA | Osc. stop |
| Operating current | Idd | - | 20 | 50 | µA | No load |
| OSC. built-in cap | Cd | - | 20 | - | pF | |
| OSC. Trimmer cap | Ctrim | 5 | - | 35 | pF | |
| Frequency stability | ^f/f | - | - | 10 | ppM | Vdd=3.0 |
| Buzzer output current | Ib | 500 | - | - | µA | Vbd-Vss=0.5 |
| LED current | Iled | 15.0 | - | - | mA | VLED=1.5V |

## Pad Coordinate

| PIN | X | Y |
|---|---|---|
| S5 | -1101 | -159 |
| S4 | -1101 | -300 |
| S3 | -1101 | -438 |
| S2 | -1101 | -576 |
| S1 | -1101 | -839 |
| VEE | -1101 | -989 |
| I5 | 1204 | -947.5 |
| I4 | 1204 | -809.5 |
| I3 | 1204 | -671.5 |
| I2 | 1204 | -533.5 |
| I1 | 1204 | -395.5 |
| I0 | 1204 | -257.5 |
| T2 | 1196.5 | 146 |
| VDD | 1195.5 | 284 |
| B0 | 1195 | 430 |
| B1 | 1195 | 737 |
| GND | 1193 | 890.5 |
| T1 | 1194 | 1090.5 |
| OI | 1053 | 1089 |
| O0 | -127.5 | 1100 |
| R0 | -278 | 1100 |
| RI | -643 | 1100 |
| PB | -782 | 1100 |

## Pad Coordinate

Note : Substrate connected to VDD, Chip Size : 2500um x 2600 um



**Application Circuit**

