LED_sensor

20131010
This use LED as light-sensor.
At light, LED is off. At dark, LED is on.

Reference;

http:// www.edn.com/design/power-management/4316948/LED-senses-and-displays-ambient-light-intensity
LED_sensor.f

Principle

Adding reverse-bias for LED, capacitance inside LED is charged.
At light, charge-current is small than at dark.
When P1 connected to N-side for LED set to input-mode, Hi-time is measured by counter mode(POS detector).
This Hi-time is proportional to charged amount.
Phsa-value indicate Hi-time.
By compared Phsa-value and threshold-value, LED is ON or OFF.

```
Prop0 Cog6 ok
test
802658    <---- dark
802658
802658
802658
802658
802658
802658
802658
802658
427203
72521     <---- bright
51812
45008
44780
44078
44506
44407
44526
44568
44341
44445
116969    <---- dark
802658
802658
802658
802658
802658
```

```
802658
802658
802658
Prop0 Cog6 ok
test1
****************************************************************************    <---- dark
****************************************************************************
****************************************************************************
****************************************************************************
****************************************************************************
**************************                                    <---- bright
****
****
****
****
****
****
****
****************************************************************************    <---- dark
****************************************************************************
Prop0 Cog6 ok
```

Selection of using LED

Recommended High-bright RED-LED.

Caution for build-up
LED's wire should be short.
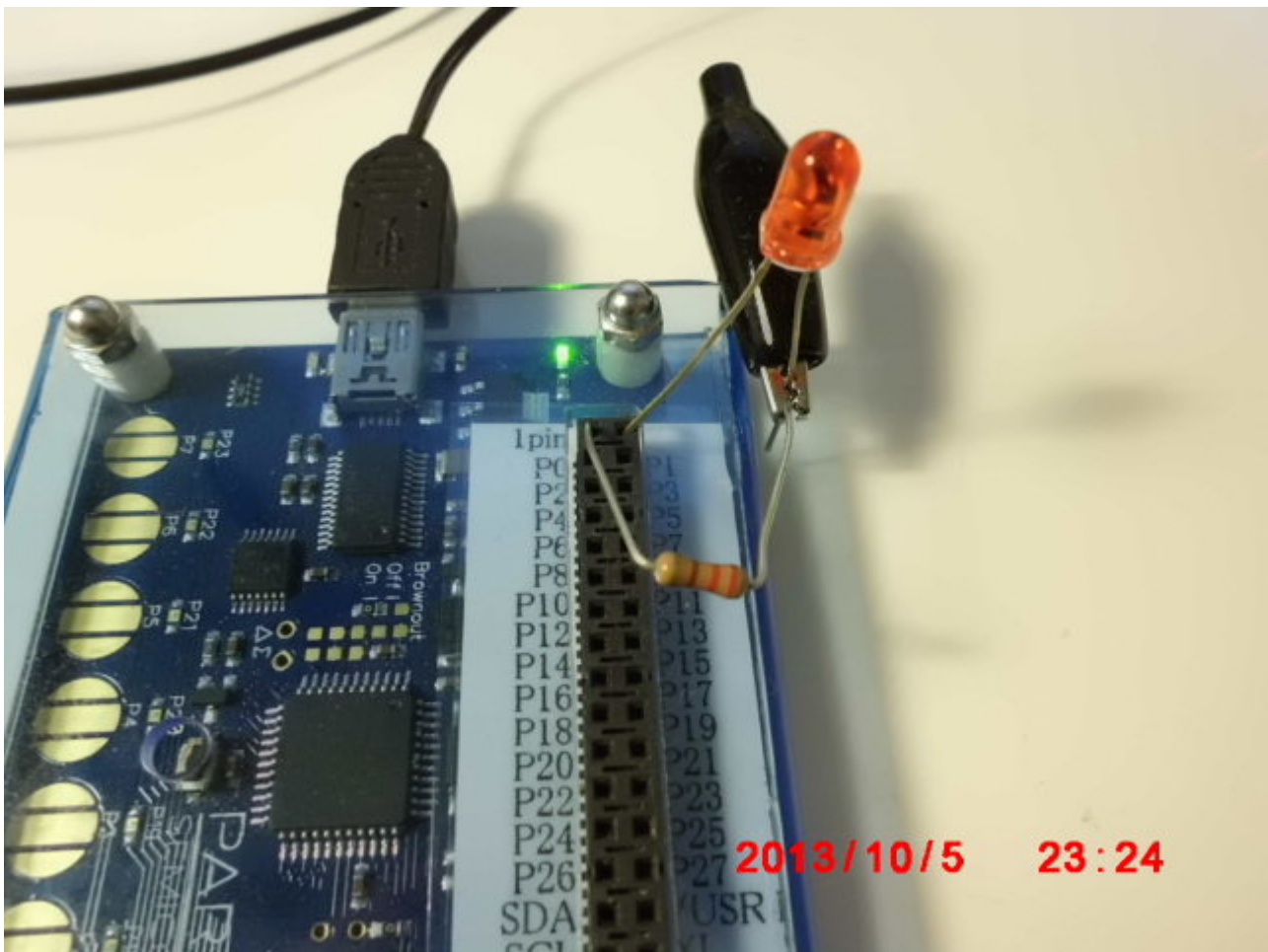
By executing word'test', you get value for using LED at dark and light.
You determin threshold value from these value.
You can change threshold value between 'begin' and 'until' inside word'demo1'.

Executing 'demo1', you watch LED-on at light or LED-off at dark,
Maybe you watch a little blinking at dark.
Because this is caused by Time out(10msec: LED-off) between 'begin' and 'until' inside 'readLED'.

Reducing blinking at dark
Comment out below inside 'readLED'.
 1 3 drop drop   \ Wait 5.6usec
Actually wait-time is longer 5.6usec.
Although commented out this, wait-time is not zero.

Reducing Time out value;
 phsa COG@ d800000 >   ===> phsa COG@ d400000 >

Forth-word is impossible more reducing charge-time.
Needing to make assembler-word whole 'readLED'.