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April 1st, 2010
Renesas Electronics Corporation

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Application Note

# µPD780058 Subseries

## 8-bit Single-Chip Microcontrollers

## Clock Output Control Fundamentals

µPD780053

µPD780054

µPD780055

µPD780056

µPD780058B

µPD78F0058

Document No. U16522EE1V0AN00 (1st edition)
Date Published December 2002

**[MEMO]**

# NOTES FOR CMOS DEVICES

## 1. PRECAUTION AGAINST ESD FOR SEMICONDUCTORS

**Note:**

Strong electric field, when exposed to a MOS device, can cause destruction of the gate oxide and ultimately degrade the device operation. Steps must be taken to stop generation of static electricity as much as possible, and quickly dissipate it once, when it has occurred. Environmental control must be adequate. When it is dry, humidifier should be used. It is recommended to avoid using insulators that easily build static electricity. Semiconductor devices must be stored and transported in an anti-static container, static shielding bag or conductive material. All test and measurement tools including work bench and floor should be grounded. The operator should be grounded using wrist strap. Semiconductor devices must not be touched with bare hands. Similar precautions need to be taken for PW boards with semiconductor devices on it.

## 2. HANDLING OF UNUSED INPUT PINS FOR CMOS

**Note:**

No connection for CMOS device inputs can be cause of malfunction. If no connection is provided to the input pins, it is possible that an internal input level may be generated due to noise, etc., hence causing malfunction. CMOS devices behave differently than Bipolar or NMOS devices. Input levels of CMOS devices must be fixed high or low by using a pull-up or pull-down circuitry. Each unused pin should be connected to VDD or GND with a resistor, if it is considered to have a possibility of being an output pin. All handling related to the unused pins must be judged device by device and related specifications governing the devices.

## 3. STATUS BEFORE INITIALIZATION OF MOS DEVICES

**Note:**

Power-on does not necessarily define initial status of MOS device. Production process of MOS does not define the initial operation status of the device. Immediately after the power source is turned ON, the devices with reset function have not yet been initialized. Hence, power-on does not guarantee out-pin levels, I/O settings or contents of registers. Device is not initialized until the reset signal is received. Reset operation must be executed immediately after power-on for devices having reset function.

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# Contents

## (A) Features of the Clock Output Control

The clock output control circuit in the µPD7805x/78005x subseries is intended for carrier output during remote controlled transmission and clock output for supply to peripheral LSI. Clocks selected with timer clock select register 0 (TCL0) are output to clock output pin (PCL/P35).

## (B) Program Description

Applying a high level at port 0.1 causes the example program to output the subclock frequency (32.768 kHz) to pin PCL/P35. If the level at port 0.1 is low, the output is disabled.

## (C) Program Specifications

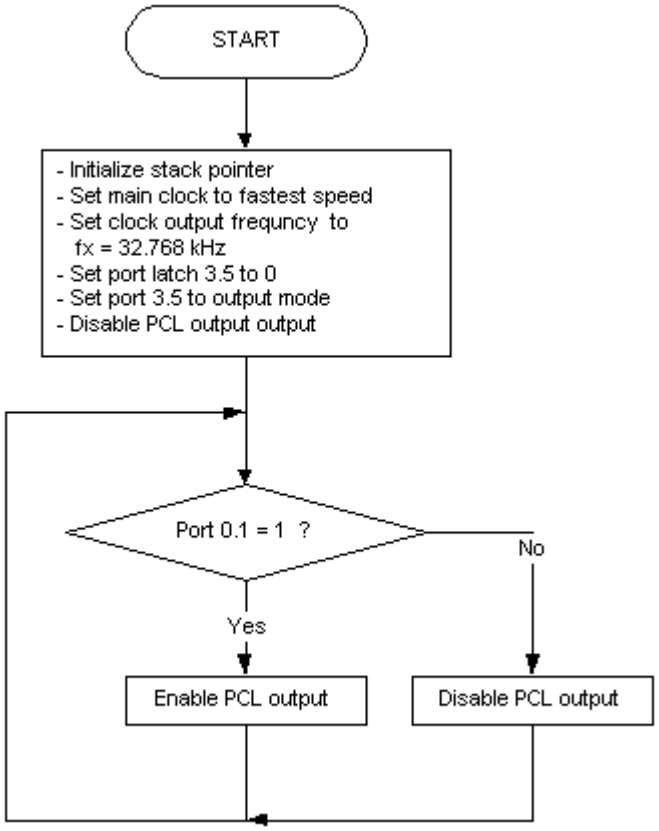
- Clock output frequency: fxt = 32.768 kHz (subsystem clock)
- Output enable: port 0.1 enables or disables the output

## (D) Used pins

- PCL/P35: output of the subsystem clock frequency
- P01/INTP1/TI01:
- P01 = 1: output frequency enabled
- P01 = 0: output frequency disabled

## (E) Software Flow Chart

### Flowchart - Main Program



## (F) Software Listing

```
/*********************************************************************
; Date:      11/15/2002
;
; Parameters: - CPU clock
;             (fx = 5 MHz; 1 CPU clock cycle = 200ns)
;           - Pulse frequency is sub-system clock (32.768 kHz)
;           - Pulse output at pin PCL/P35
;           - Port 0.1 enables or disables the frequency output
;*********************************************************************/

/*=====================================
; Include Files
;=====================================*/
#include <in78000.h>
#include "DF0058.h"

/*;=====================================
;             Constants/Variables     =
;=====================================*/
#define TRUE    1
#define FALSE   0

/*=====================================
;             Main Program            =
;=====================================*/
void main(void)
{

OSMS = 0x01;                    /* Don't use scaler */
PCC = 0x00;                     /* Main system clock at fastest setting */

TCL0 = 0x00;                    /* Set PCL output clock = 32.768 kHz */

P3.5 = 0;                       /* Set port 3.5 to low */
PM3.5 = 0;                      /* Set port 3.5 to output mode */

while(TRUE)
{
if(P0.1 == TRUE )               /* Test port 0.1 state */
CLOE = 1;                       /* Enable PCL output */
else
CLOE = 0;                       /* P0.1 = LOW, Disable PCL output */
}                               /* end of while loop */
}                               /* end of function main() */
```

**[MEMO]**

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