# OKI 16-bit MICROCONTROLLER INFORMATION

**Subject:**
This shows the notice for using ML66525A-xxTB (Mask ROM version) or ML66Q525A-NTB (Flash ROM version).
The description of UDCKEN bit of P5IO register (P13-3 on ML66525 Family User's Manual) is not enough.
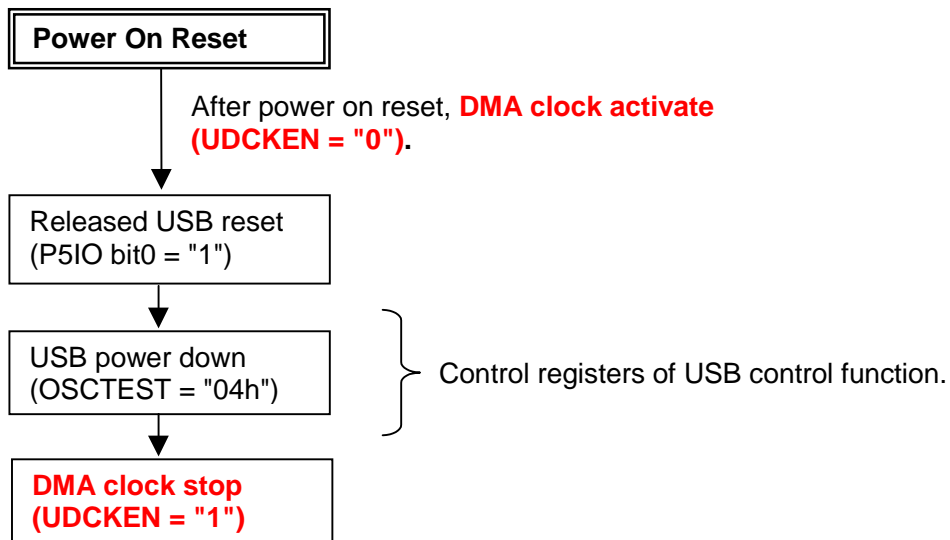Below correct the description of UDCKEN bit.

## 1. Description of UDCKEN bit

UDCKEN bit select clock supply for internal DMA control function.
In case of setting as UDCKEN="0"(DMA clock supply), internal DMA control function is operation.
In case of setting as UDCKEN="1"(DMA clock stop), internal DMA control function stop operation and
CPU can not control USB control function registers (P17-20 and 17-21 on ML66525 Family User's Manual).
When CPU control USB control function registers, UDCKEN bit must be clear (UDCKEN="0").
Below show the control example when need to control USB control function registers at power on reset, start USB communication, and stop USB communication.

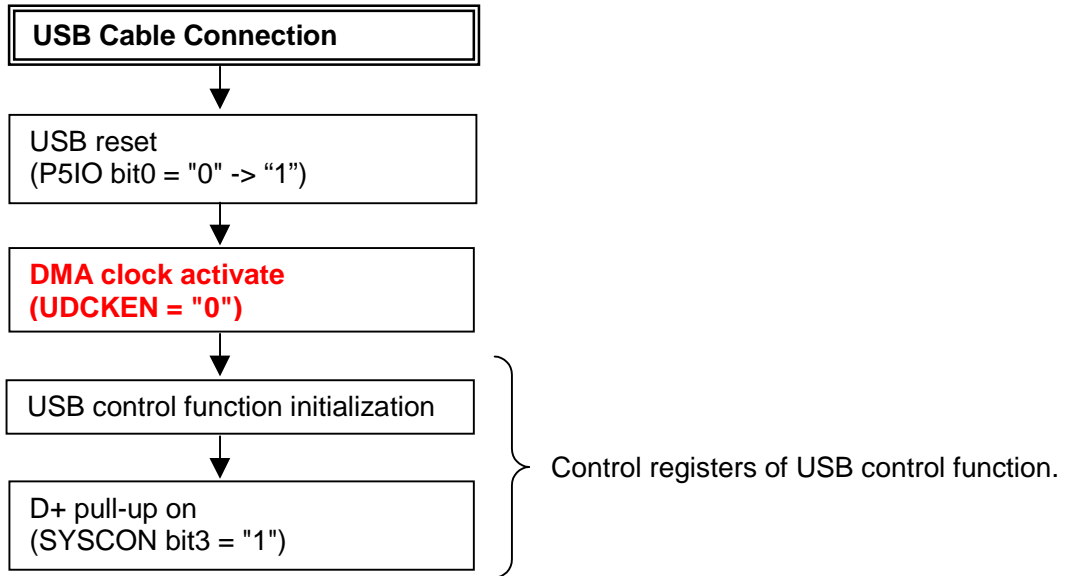## 2. Control example of USB control function register with UDCKEN bit

2-1. In case of "Power On Reset"
To stop operation of USB & Internal DMA control function, CPU control USB control function registers before "DMA clock stop".

2-2. In case of "Start USB Communication"
   To start operation of USB & Internal DMA control function, CPU control USB control function registers after "DMA clock activate".

```
+==============================+
‖  USB Cable Connection        ‖
+==============================+
              |
              v
+------------------------------+
| USB reset                    |
| (P5IO bit0 = "0" -> "1")      |
+------------------------------+
              |
              v
+------------------------------+
| DMA clock activate           |
| (UDCKEN = "0")               |
+------------------------------+
              |
              v
+------------------------------+   ⎫
| USB control function         |   ⎬
| initialization               |   ⎬   Control registers of USB control function.
+------------------------------+   ⎬
              |                    ⎬
              v                    ⎬
+------------------------------+   ⎬
| D+ pull-up on                |   ⎬
| (SYSCON bit3 = "1")          |   ⎭
+------------------------------+
```

2-3. In case of "Stop USB Communication"
   To stop operation of USB & Internal DMA control function, CPU control USB control function registers before "DMA clock stop".

```
+==============================+
‖  USB Cable Disconnection     ‖
+==============================+
              |
              v
+------------------------------+   ⎫
| D+ pull-up off               |   ⎬
| (SYSCON bit3 = "0")          |   ⎬
+------------------------------+   ⎬   Control registers of USB control function.
              |                    ⎬
              v                    ⎬
+------------------------------+   ⎬
| USB power down               |   ⎬
| (OSCTEST = "04h")            |   ⎭
+------------------------------+
              |
              v
+------------------------------+
| DMA clock stop               |
| (UDCKEN = "1")               |
+------------------------------+
```