M37532 / M37536 8-bit MCU
1.5Mbps USB
USB Human Interface Device Controller

This slide presentation includes:

- *Attractive Features for USB System design*
- *Pin Configuration*
- *Block Diagram*
- *Enabling Quick System Development*

MITSUBISHI 8-Bit Single-chip Microcomputer
740 Family / 7532/7536 Group

M37532/M37536 Attractive Features For USB System Design

- A low speed (1.5Mpbs) HID USB controller and transceiver are built-in.
- The low pin count package reduces system cost.
- A 10-bit x 8-channels successive-approximation A/D opens up the application possibilities.
- The Watchdog timer enables chip recovery.
- 7 LED Drivers ease board design.
- 8 Key-on Wake-up pins provide a way of returning from a STOP or WAIT mode by the touch of a key pad.
- The built-in DC-to-DC converter eliminates the need of an external 3.3V power supply (converts from 4.4V~5.25V to 3.0~3.6V).

M37532 Highlights (SSOP Package)

*Clock synchronous serial I/O

*CNTR function

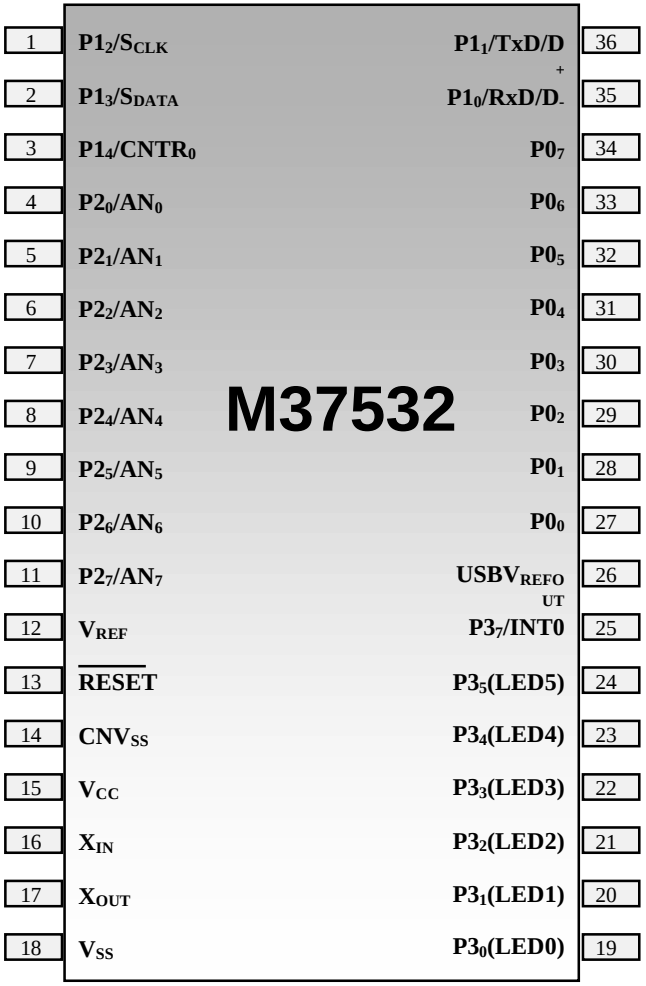
*A-D converter.....10bit resolution

*Timer.....8bit x 3 (Timer1,2,X) with 8bit prescaler

*Watch-dog timer.....16bit x 1 (built -in)

*OTP version
(**S/W development support)**

*Built-in Clock generating circuit 6MHz



36pin SSOP (0.8mm pitch)

USB Low Speed function
(or UART)

*Built-in programmable pull-up resistor

*Key-on wake up function

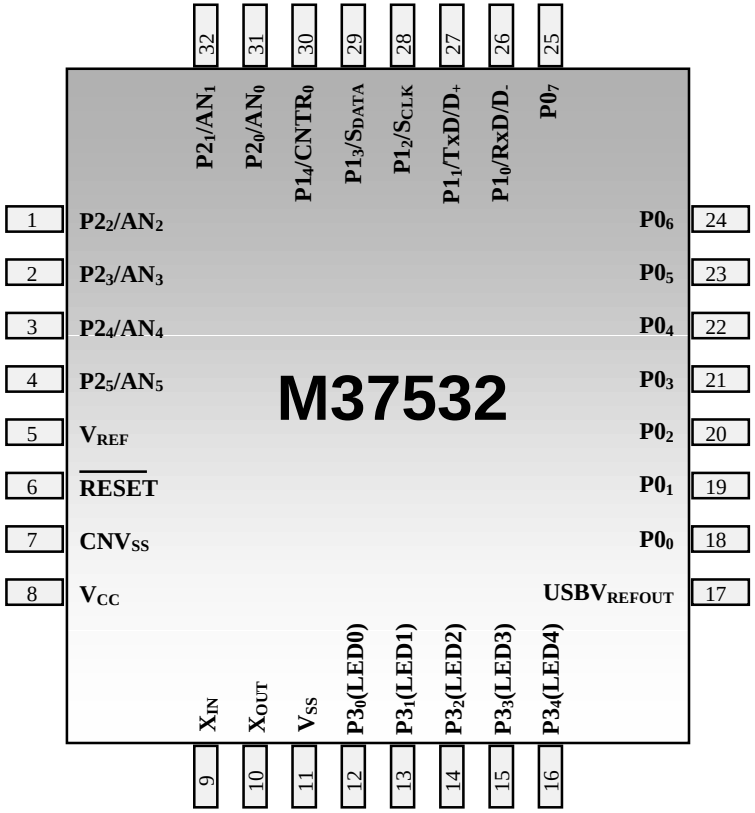
USB D- line pull-up voltage; output.....V_O=3.3V
(No need for Voltage converter)

***INT input function**

*LED direct drive.....I_{OL}=15mA
(**Static LED output)**

M37532 SSOP vs. LQFP package: Feature comparisons

Both packages are fit for USB mouse or pointing device applications. LQFP has less functionality, but is desirable when the package type is a constraint.



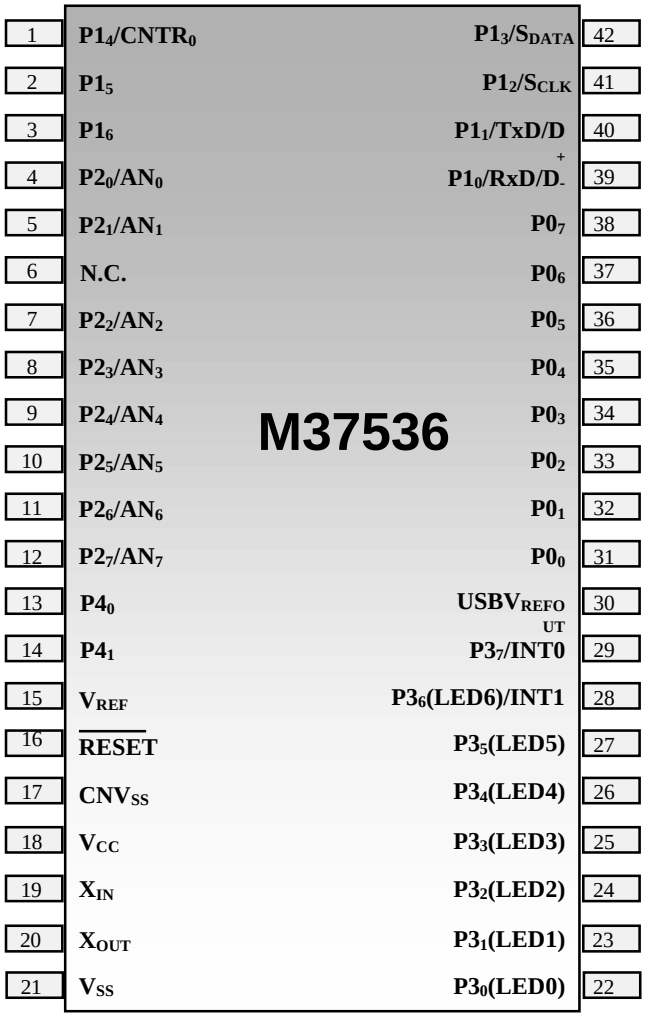
32pin LQFP(0.8mm pitch)

A-D converter
SSOP: 8Channel; LQFP: 6Channel
(Mouse and Pointing device usually need only 4 Channel)

LED direct drive
SSOP: 6 I/O ports; LQFP: 5 I/O ports
(Mouse and Pointing device usually need only 4)

INT input function
SSOP:1 input; LQFP: Nothing
(LQFP can use CNTR function instead of INT input function)

M37532 (SSOP) vs. M37536 Feature comparison



42pin SDIP (1.778mm pitch)

M37536 has added functionality and is well suited for (especially) keyboard applications..

I/O ports

M37532: 28 I/O ports; M37536: 33 I/O ports

(Keyboard usually needs 16+8 key scan ports the minimum.)

LED direct drive

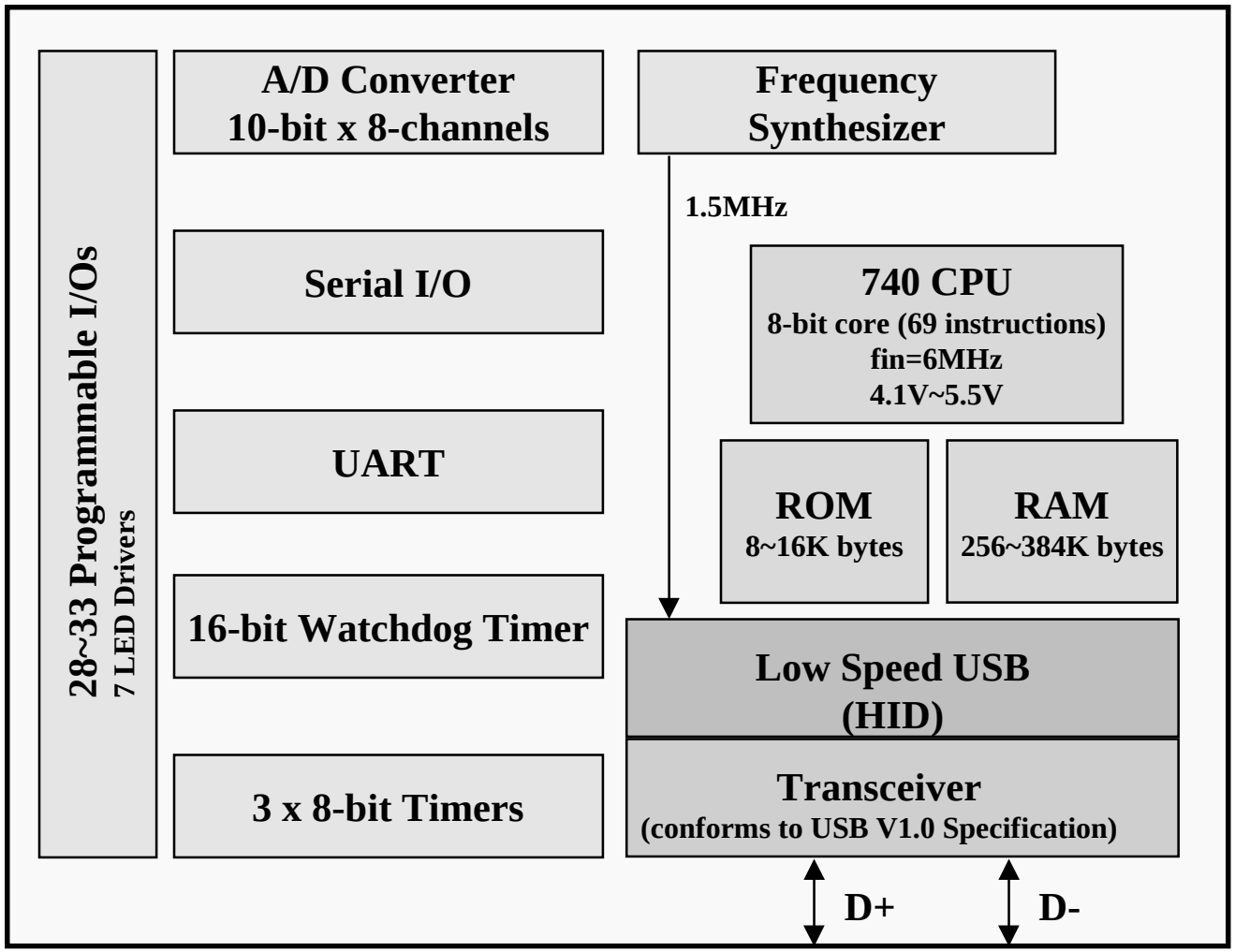
M37532: 6 I/O ports; M37536:7 I/O ports

(Keyboard need 5 LED ports the minimum.)

INT input function

M37532:1 input; M37536:2 input

M37532/M37536 USB MCU Block Diagram



Enabling Quick System Development

- Peripheral Initialization S/W Routines
- Various Application Notes/Diagrams
- Erasable EPROM and OTP Devices
- Programming adapter
- In Circuit Emulator