SmartElex

IOIO OTG for Android

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1. Description :-

The SmartElex IOIO-OTG is a board which allows you to quickly and easily interface electronic circuits to an Android device:

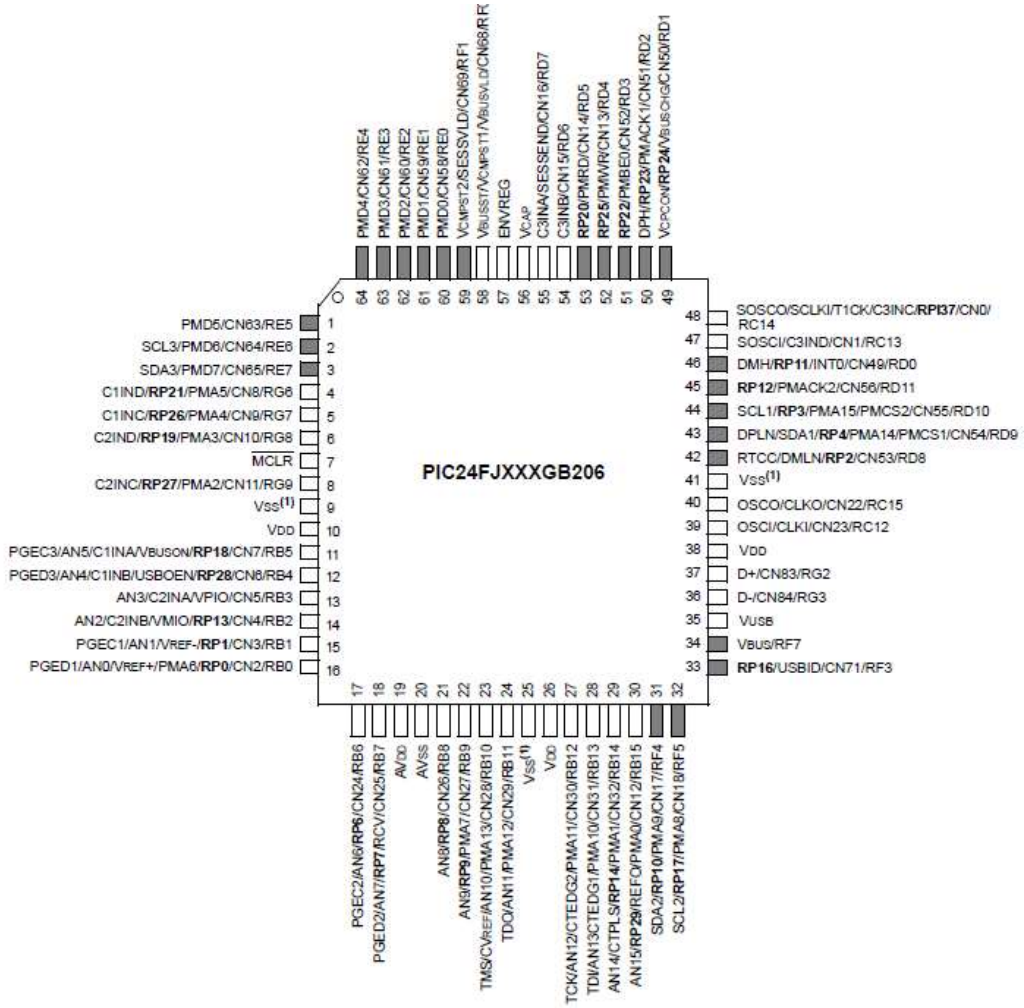
- Connect the IOIO-OTG to the Android using USB or Bluetooth.
- Power the IOIO-OTG (not required if operating in USB device mode).
- Connect your circuits to any of the 46 I/O pins available on the IOIO-OTG. You can power your circuits off of the IOIO-OTG too.

Write a Java program to control the I/O pins, using a high-level API using the provided libraries.

2. Features:

1. Recommended Input Voltage: 12V
2. Min-Max Input Voltage: 5-15V
3. 2 Pin 2mm SMD JST Right angle Connector for Input supply
4. On-board TPS62133RGTT Synchronous step down DC-DC converter.
5. Power Status LED (RED)
6. Micro USB for Communication with Android.
7. One start LED connected to boot pin (RC12 =Pin no. 39).
8. User Switch SW1, SW2 connected to any port pin through SW1, SW2 Jumper respectively.
9. Port extensions for all ports with detailed pin labelling for easy identification of pins
10. Vin, 5V, 3.3V and GND bus provided for external peripheral.
11. Four 3mm mounting hole for easy mounting

3. PIC24FJ256GB206 Pin Diagram & Features:-



PIC24FJ256GB210 FAMILY Features :-

High-Performance CPU

• Modified Harvard Architecture
• Up to 16 MIPS Operation at 32 MHz
• 8 MHz Internal Oscillator
• 17-Bit x 17-Bit Single-Cycle Hardware Multiplier
• 32-Bit by 16-Bit Hardware Divider
• 16 x 16-Bit Working Register Array
• C Compiler Optimized Instruction Set Architecture with Flexible Addressing modes
• Linear Program Memory Addressing, up to 12 Mbytes
• Data Memory Addressing, up to 16 Mbytes:
    - 2K SFR space
    - 30K linear data memory
    - 66K extended data memory
    - Remaining (from 16 Mbytes) memory (external) can be accessed using extended data Memory EDS) and EPMP (EDS is divided into 32-Kbyte pages)
• Two Address Generation Units for Separate Read and Write Addressing of Data Memory

Power Management:

• On-Chip Voltage Regulator of 1.8V
• Switch between Clock Sources in Real Time
• Idle, Sleep and Doze modes with Fast Wake-up and Two-Speed Start-up
• Run Mode: 800 μA/MIPS, 3.3V Typical
• Sleep mode Current Down to 20 μA, 3.3V Typical
• Standby Current with 32 kHz Oscillator: 22μA, 3.3V Typical

Analog Features:

• 10-Bit, up to 24-Channel Analog-to-Digital (A/D) Converter at 500 ksps

• Three Analog Comparators with Programmable Input/Output Configuration

• Charge Time Measurement Unit (CTMU):

- Supports capacitive touch sensing for touch screens and capacitive switches

- Minimum time measurement setting at 100 ps

• Available LVD Interrupt VLVD Level Special Microcontroller Features:

• Operating Voltage Range of 2.2V to 3.6V

• 5.5V Tolerant Input (digital pins only)

• Configurable Open-Drain Outputs on Digital I/O Ports

• High-Current Sink/Source (18 mA/18 mA) on all I/O Ports

• Selectable Power Management modes:

Sleep, Idle and Doze modes with fast wake-up

• Fail-Safe Clock Monitor (FSCM) Operation:

- Detects clock failure and switches to on-chip, FRC oscillator

• On-Chip LDO Regulator

• Power-on Reset (POR) and Oscillator Start-up Timer (OST)

• Brown-out Reset (BOR)

• Flexible Watchdog Timer (WDT) with On-Chip Low-Power RC Oscillator for Reliable Operation

• In-Circuit Serial Programming™ (ICSP™) and In-Circuit Debug (ICD) via 2 Pins

• JTAG Boundary Scan Support

• Flash Program Memory:

- 10,000 erase/write cycle endurance (minimum)

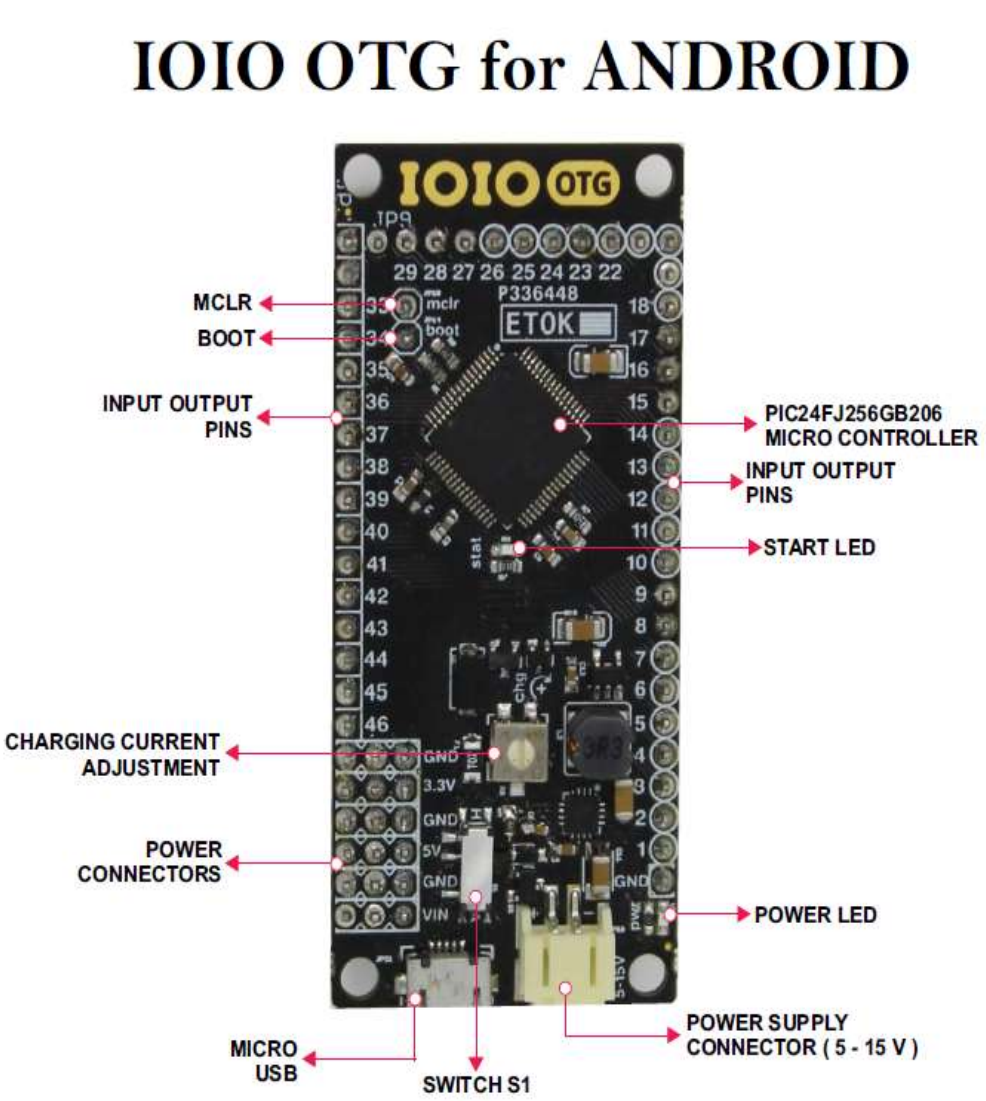
- 20-year data retention minimum

- Selectable write protection boundary

- Self-reprogrammable under software control

- Write protection option for Configuration Words

4. Product Layout :-



5. Connecting to Android

- All the following connection modes are supported:
- Connecting to Android, IOIO acting as a USB host. Connect the included USB-OTG cable to the IOIO, then use a standard USB cable to connect the Android device. For working with older Android devices (down to Android V1.5!), make sure to enable USB debugging on the Android. In this mode, the IOIO charges the Android.
- Connecting to Android over Bluetooth. Plug the USB-OTG cable into the IOIO and connect a standard Bluetooth dongle to its other end. Go to the Bluetooth settings on your Android, find the IOIO and pair with it.
- Connecting to Android, IOIO acting as a USB device. This is only supported by newer Android devices, which have the capability to act as a USB host. Connect a USB-OTG cable to the Android device, and a standard USB cable to the IOIO. In this mode, the Android powers the IOIO.

Whichever connection mode you use has ZERO impact on the application code that you have to write. In fact, any program you write will automatically support all connection modes and you can even change the connection while the program is running.

I/O Capabilities

- The IOIO supports a wide range of commonly used hardware interfaces, all of which can be use concurrently:
- 46 GPIO pins (digital input / output). Internal pull-ups / pull-downs / open drain mode are supported on all pins. 21 of which are 5V-tolerant.
- 16 analog inputs (use on designated pins).
- 9 PWM outputs (use on any pin marked “P”).
- 3 UART buses (use on any pin marked “P”).
- 3 I²C buses (use on designated pins).
- 3 SPI buses (use on any pin marked “P”).

- 6 pulse input channels for measuring pulse width and frequency - 3 single-precision + 3-double precision (use on any pin marked “P”).
- 16 capacitive sensing inputs (use on analog pins).
- Precision motor control - up to 9 steppers / servos / DC motors and digital outputs with precise timing, pulse counts and synchronization (coming soon with a firmware upgrade).

Firmware Upgrades:

- New firmware bundles are occasionally published with improvements and new features. The firmware upgrade process is fast as simple and accomplished by connecting the IOIO to a PC and starting it in bootloader mode.

Open Source:

- The software and hardware of the IOIO board are developed and maintained by Ytai Ben-Tsvi with the help of the community and are all open source.

External Links:

- IOIO Wiki - All the information about the IOIO hardware and the software APIs.
- Downloads - This is where you can get drivers, software libraries, sample applications and firmware bundles. The software APIs are fully documented using the Javadoc standard.
- IOIO Pinterest gallery - Many projects that people have done with the IOIO, to spark your imagination!
- The ioio-users forum - Search for answers to questions or ask new ones.

6. Warranty

1. Standard warranty of product is 6 months.
2. Warranty only applies to manufacturing defect.
3. No warranty will apply if the Product has been subject to misuse, static discharge, neglect, accident, modification, or has been soldered or altered in any way.