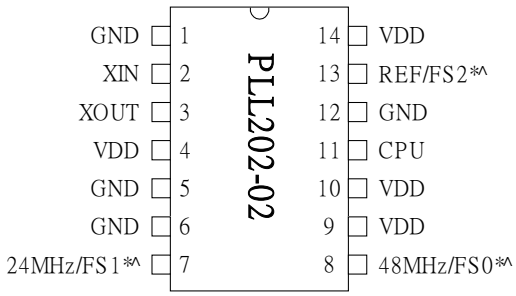
## System Clock Generator for various SOC

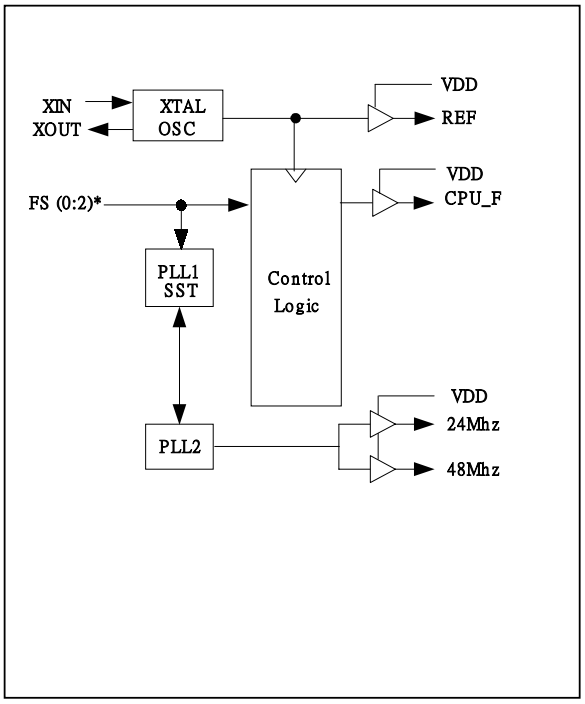
### FEATURES

- Generates all clock frequencies for multiple CPU clocks and various SOC.
- Support one CPU clock.
- One 24MHz clock and one 48MHz clock.
- One 14.318MHz reference clocks.
- 3.3V operation; 50% percent duty cycle.
- Available in 14-pin 300mil DIP.

### PIN CONFIGURATION




### BLOCK DIAGRAM




**Note:** ^: Pull up, v :Pull down
*: Bi-directional latched at power-up

## PIN DESCRIPTIONS

| Name | Number | Type | Description |
|---|---|---|---|
| GND | 1,5,6,12 | P | Ground. |
| XIN | 2 | I | 14.318MHz crystal input to be connected to one end of the crystal. |
| XOUT | 3 | O | 14.318MHz crystal output. |
| REF/F2*<br>24MHz/F1*<br>48MHz/F0* | 7,8,13 | B | At power up, these pins are input pins and will determine the CPU clock frequency. After input sampling, these pins will generate output clocks. FS0, FS1 and FS2 have internal pull up (high by default). |
| 24MHz | 7 | B | 24MHz output for SUPER I/O after input data latched during power-on. |
| 48MHz | 8 | B | 48MHz output for USB after input data latched during power-on. |
| VDD | 4,9,10,14 | P | 3.3V Power supply. |
| CPU | 11 | O | CPU clocks with frequencies defined by Frequency Table. |

## FREQUENCY (MHz) SELECTION TABLE

| FS2 | FS1 | FS0 | CPU |
|---|---|---|---|
| 0 | 0 | 0 | 80 |
| 0 | 0 | 1 | 75 |
| 0 | 1 | 0 | 83.3 |
| 0 | 1 | 1 | 66.8 |
| 1 | 0 | 0 | 103 |
| 1 | 0 | 1 | 112 |
| 1 | 1 | 0 | 68 |
| 1 | 1 | 1 | 100.2 |

## ELECTRICAL SPECIFICATIONS

### 1. Absolute Maximum Ratings

| PARAMETERS | SYMBOL | MIN. | MAX. | UNITS |
|---|---|---|---|---|
| Supply Voltage | $V_{DD}$ | $V_{SS}$-0.5 | 7 | V |
| Input Voltage, dc | $V_I$ | $V_{SS}$-0.5 | $V_{DD}$+0.5 | V |
| Output Voltage, dc | $V_O$ | $V_{SS}$-0.5 | $V_{DD}$+0.5 | V |
| Storage Temperature | $T_S$ | -65 | 150 | °C |
| Ambient Operating Temperature | $T_A$ | 0 | 70 | °C |
| Junction Temperature | $T_J$ | | 115 | °C |
| ESD Voltage | | | 2 | KV |

Exposure of the device under conditions beyond the limits specified by Maximum Ratings for extended periods may cause permanent damage to the device and affect product reliability. These conditions represent a stress rating only, and functional operations of the device at these or any other conditions above the operational limits noted in this specification is not implied.

### 2. AC/DC Electrical Specifications

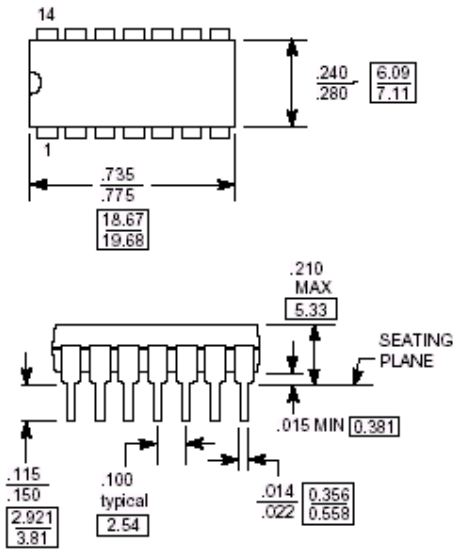
| PARAMETERS | SYMBOL | CONDITIONS | MIN. | TYP. | MAX. | UNITS |
|---|---|---|---|---|---|---|
| Input High Voltage | $V_{IH}$ | All Inputs except XIN | 2 | | $V_{DD}$+0.3 | V |
| Input Low Voltage | $V_{IL}$ | All inputs except XIN | $V_{SS}$-0.3 | | 0.8 | V |
| Input High Current | $I_{IH}$ | $V_{IN} = V_{DD}$ | | | 5 | uA |
| Input Low Current | $I_{IL1}$ | VIN = 0V; Inputs with no pull-up resistors | -5 | | | uA |
| Input Low Current | $I_{IL2}$ | VIN = 0V; Inputs with pull-up resistors | -200 | | | uA |
| Pull-up resistor | $R_{Pu}$ | Pin 7,8,13 | | 240 | | Kohm |
| Input frequency | $F_I$ | $V_{DD}$ = 3.3V | 12 | 14.318 | 16 | Mhz |
| Input Capacitance | $C_{IN}$ | Logic Inputs | | | 5 | PF |
| | $C_{INX}$ | XIN & XOUT pins | 27 | 36 | 45 | PF |

## 3. Output Buffer Electrical Specifications

Unless otherwise stated, all power supplies = 3.3V±5%, and ambient temperature range $T_A$= 0°C to 70°C

| PARAMETERS | SYMBOL | OUTPUTS | CONDITIONS | MIN. | TYP. | MAX. | UNITS |
|---|---|---|---|---|---|---|---|
| Output Rise time | $T_{OR}$ | CPU | Measured @ 0.4V ~ 2.0V, $C_L$=10-20pf | 1 | | 4 | V/ns |
| | | REF, 48MHz, 24MHz | Measured @ 0.4V ~ 2.4V, $C_L$=10-30pf | 1 | | 4 | |
| Output Fall time | $T_{OF}$ | CPU | Measured @ 2.0 ~ 0.4V, $C_L$=10-20pf | 1 | | 4 | V/ns |
| | | REF, 48MHz, 24MHz | Measured @ 2.4V ~ 0.4V, $C_L$=10-30pf | 1 | | 4 | |
| Duty Cycle | $D_T$ | CPU, 48MHz, 24MHz | Measured @ 1.5V $C_L$=20pf | 45 | 50 | 55 | % |
| | | REF | Measured @ 1.5V, $C_L$=20~30pf | 40 | | 60 | |
| Output Impedance | $Z_0$ | CPU | $V_{DD}$=3.3V±5% | | 30 | | Ohm |
| | | REF, 48MHz, 24MHz | $V_{DD}$=3.3V±5% | | 25 | | |
| Output High Current | $I_{OH}$ | REF | $V_{OL}$ = 1.5V | 40 | 50 | 65 | mA |
| | | 48MHz, 24MHz | | 40 | 50 | 65 | |
| | | CPU | $V_{OH}$ = 1.5 | 45 | 60 | 80 | |
| Output Low Current | $I_{OL}$ | REF | $V_{OL}$ = 1.5V | 40 | 50 | 65 | mA |
| | | 48MHz, 24MHz | | 40 | 50 | 65 | |
| | | CPU | $V_{OL}$ = 1.5V | 45 | 60 | 80 | |
| Jitter, One Sigma | $J_{sigma}$ | CPU | Measured @ 1.5V | | | 150 | ps |
| | | REF, 48MHz, 24MHz | Measured @ 1.5V | | | 500 | |
| Jitter, Absolute | $J_{Abs}$ | CPU | Measured @ 1.5V | -0.25 | | 0.25 | ns |
| | | REF, 48MHz, 24MHz | Measured @ 1.5 | -1 | | 1 | |
| Jitter(cycle to cycle) | $J_{cyc-cyc}$ | CPU | Measured @ 1.5V | | | 250 | ps |

## PACKAGE INFORMATION




14 PIN DIP

## ORDERING INFORMATION

***For part ordering, please contact our Sales Department:***
47745 Fremont Blvd., Fremont, CA 94538, USA
Tel: (510) 492-0990 Fax: (510) 492-0991

***PART NUMBER***
The order number for this device is a combination of the following:
Device number, Package type and Operating temperature range

**PLL202-02 PC**

*PART NUMBER*

TEMPERATURATURE
C=COMMERCIAL
M=MILITARY
I=INDUSTRAL

PACKAGE TYPE
P=DIP