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1 Overview

1.1 Features

Microcontroller Core Features:

- High-performance RISC CPU
- Only 35 single word instructions
- 8K x 14 of OTP program memory
- 256 x 8 of data memory
- All single cycle instructions except for program branches which are two cycle
- Interrupt capability (up to 12 internal/external interrupt sources)
- Eight level deep hardware stack
- Direct, indirect and relative addressing modes
- Power-on Reset (POR)
- Power-up Timer (PWRT) and Oscillator Start-up Timer (OST)
- Watchdog Timer (WDT) with its own on-chip RC oscillator for reliable operation
- Brown-out detection circuitry for Brown-out Reset (BOR)
- Programmable code-protection
- Power saving SLEEP mode
- Selectable oscillator options
 - HS - Crystal/Resonator (Max. 24 MHz)
 - EC - External Clock (Max. 24 MHz)
 - INTOSC - Internal Oscillator (12 MHz \pm 1.5%)
- Fully static low-power, high-speed CMOS
- In-Circuit Programming (ICP)
- Operating voltage range: 2.7 V to 5.5 V
- Operating temperature range: -40 °C to 85 °C
- High Sink/Source Current 16/16 mA
- Low-power consumption:
 - ~16 mA @ 5 V, 24 MHz
 - 100 μ A typical standby current



Peripheral Features:

- Universal Serial Bus (USB 1.1)
 - Soft attach/detach
 - Interface can configure to operate as PS/2 or USB
- 64 bytes of USB dual port RAM
- 22 I/O pins
 - Individual direction control
 - 1 high voltage open drain (RA4)
 - 8 PORTB pins with:
 - Interrupt-on-change control (RB[7:4] only)
 - Weak pull-up control
 - 3 pins dedicated to USB and PS/2
- Timer0: 8-bit timer/counter with 8-bit prescaler
- Timer1: 16-bit timer/counter with prescaler can be incremented during SLEEP via external crystal/clock
- Timer2: 8-bit timer/counter with 8-bit period register, prescaler and postscaler
- 2 Capture, Compare and PWM modules
 - Capture is 16-bit, max. resolution is 10.4 ns
 - Compare is 16-bit, max. resolution is 167 ns
 - PWM maximum resolution is 10-bit
- 12-bit 5-channel Analog-to-Digital converter
- Universal Synchronous Asynchronous Receiver Transmitter (USART/SCI)



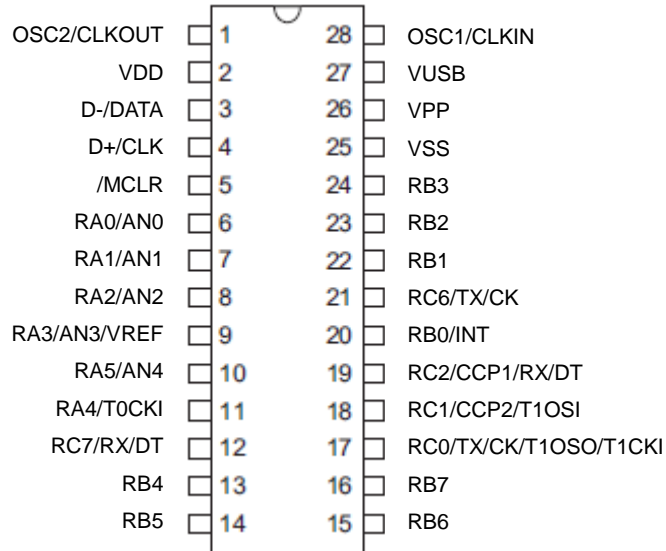
1.2 Product Selection Guide

Part Number	MIPS (Peak)	Program ROM x 14	RAM (Bytes)	Digital Port I/O Pins	Capture/Compare/PWM Modules	Timer Modules	A/D Channels (12-bit)	Serial Communication	Interrupt Sources	12 MHz ±3% Internal Oscillator	Package
IN6008P00	6	8K	256	21	2	3	5	USART USB	11	√	LQFP32
IN6008P01	6	8K	256	21	2	3	5	USART USB	11	√	SSOP28
IN6008P03	6	8K	256	14	2	3	2	USART USB	11	√	SOP/DIP20
IN6008P04	6	8K	256	12	2	3	1	USART USB	11	√	SOP/DIP18
IN6008P11	6	8K	256	17	2	3	4	USART USB	11	√	QFN28
IN6008P12	6	8K	256	15	2	3	3	USART USB	11	√	QFN24

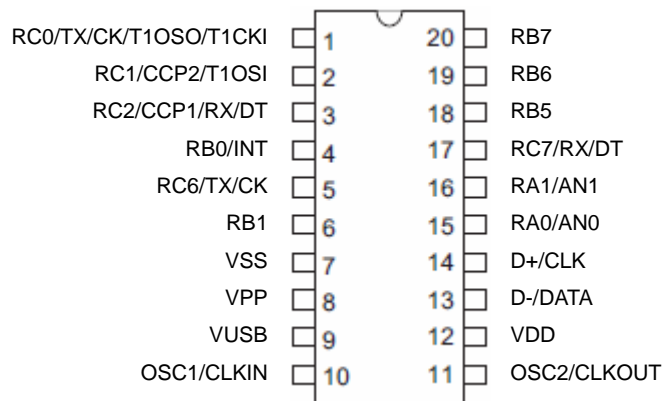


1.3 Pin Configuration

28-Pin SSOP (IN6008P01)

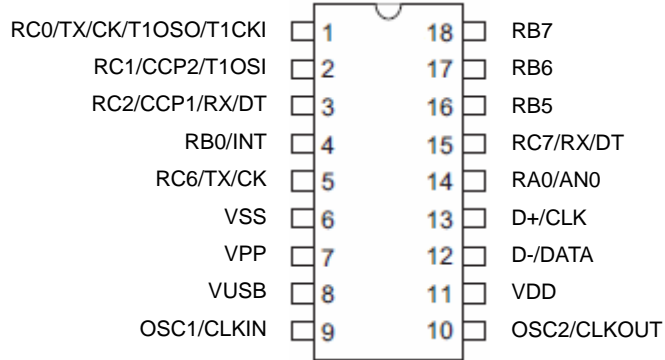


20-Pin SOP/DIP (IN6008P03)





18-Pin SOP/DIP (IN6008P04)





1.4 General Description

The IN6008 is low cost, high-performance, CMOS, fully-static, 8-bit microcontroller. The device has enhanced core features, eight-level deep stack and multiple internal and external interrupt sources. The separate instruction and data buses of the Harvard architecture allow a 14-bit wide instruction word with the separate 8-bit wide data. The two stage instruction pipeline allows all instructions to execute in a single cycle, except for program branches, which require two cycles. A total of 35 instructions (reduced instruction set) are available. Additionally, a large register set gives some of the architectural innovations used to achieve a very high performance.

The device has 22 I/O pins, 256 bytes of RAM. In addition, several peripheral features are available including: three timer/counters, two Capture/Compare/PWM modules and two serial ports. The Universal Serial Bus (USB 1.1) low speed peripheral provides bus communications. The Universal Synchronous Asynchronous Receiver Transmitter (USART) is also known as the Serial Communications Interface or SCI. Also, a 5-channel high-speed 12-bit A/D is provided. The 12-bit resolution is ideally suited for applications requiring a low cost analog interface (e.g., thermostat control, pressure sensing, etc.).

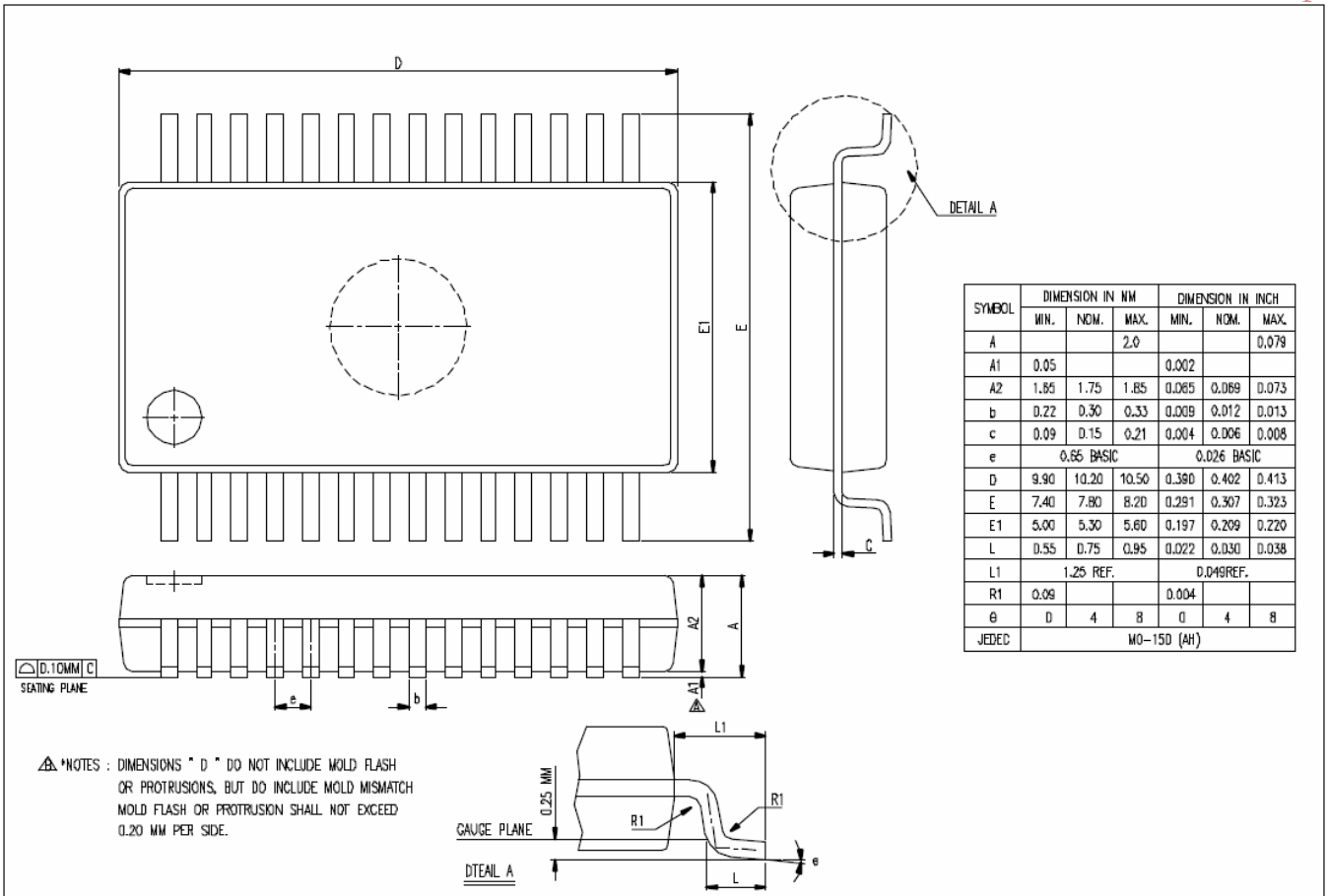
The device has special features to reduce external components, thus reducing cost, enhancing system reliability and reducing power consumption. There are 3 oscillator options, of which EC is for the external regulated clock source, HS is for the high speed crystals/resonators and INTOSC is for internal oscillator.

The SLEEP (power-down) feature provides a power-saving mode. The user can wake-up the chip from SLEEP through several external and internal interrupts and RESETS.

A highly reliable Watchdog Timer (WDT), with a dedicated on-chip RC oscillator, provides protection against software lock-up, and also provides one way of waking the device from SLEEP

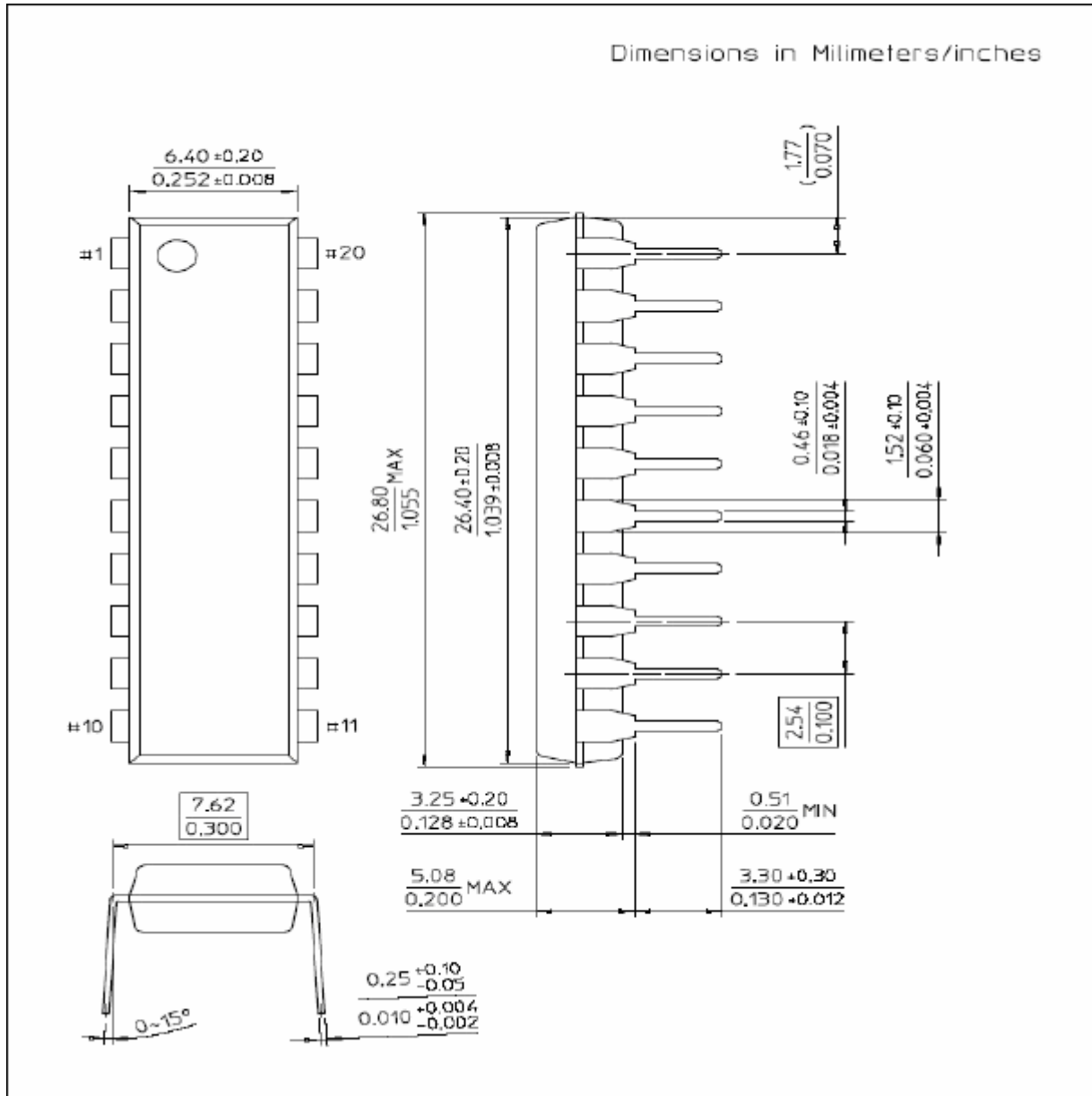
2 Packaging Information

2.1 28-Pin SSOP



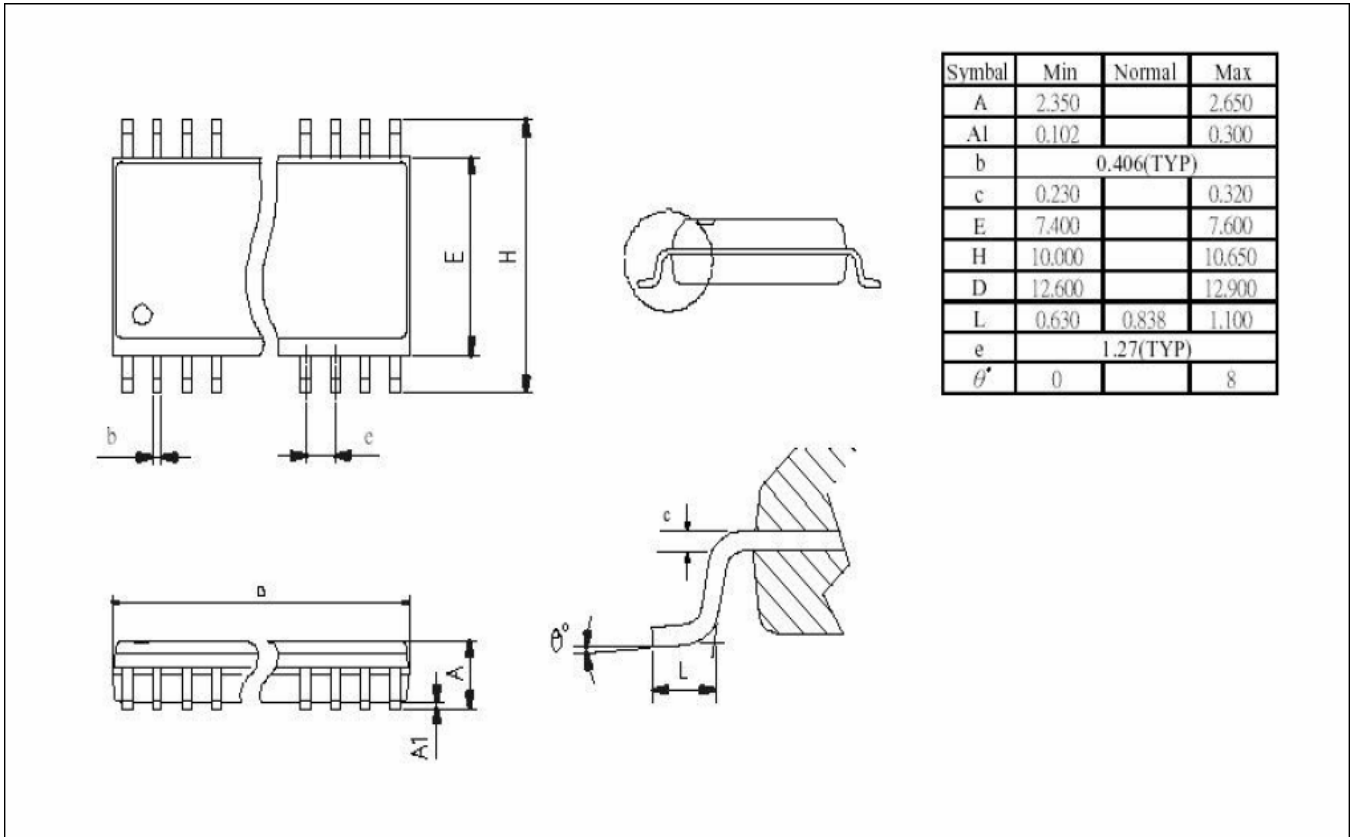


2.2 20-Pin DIP



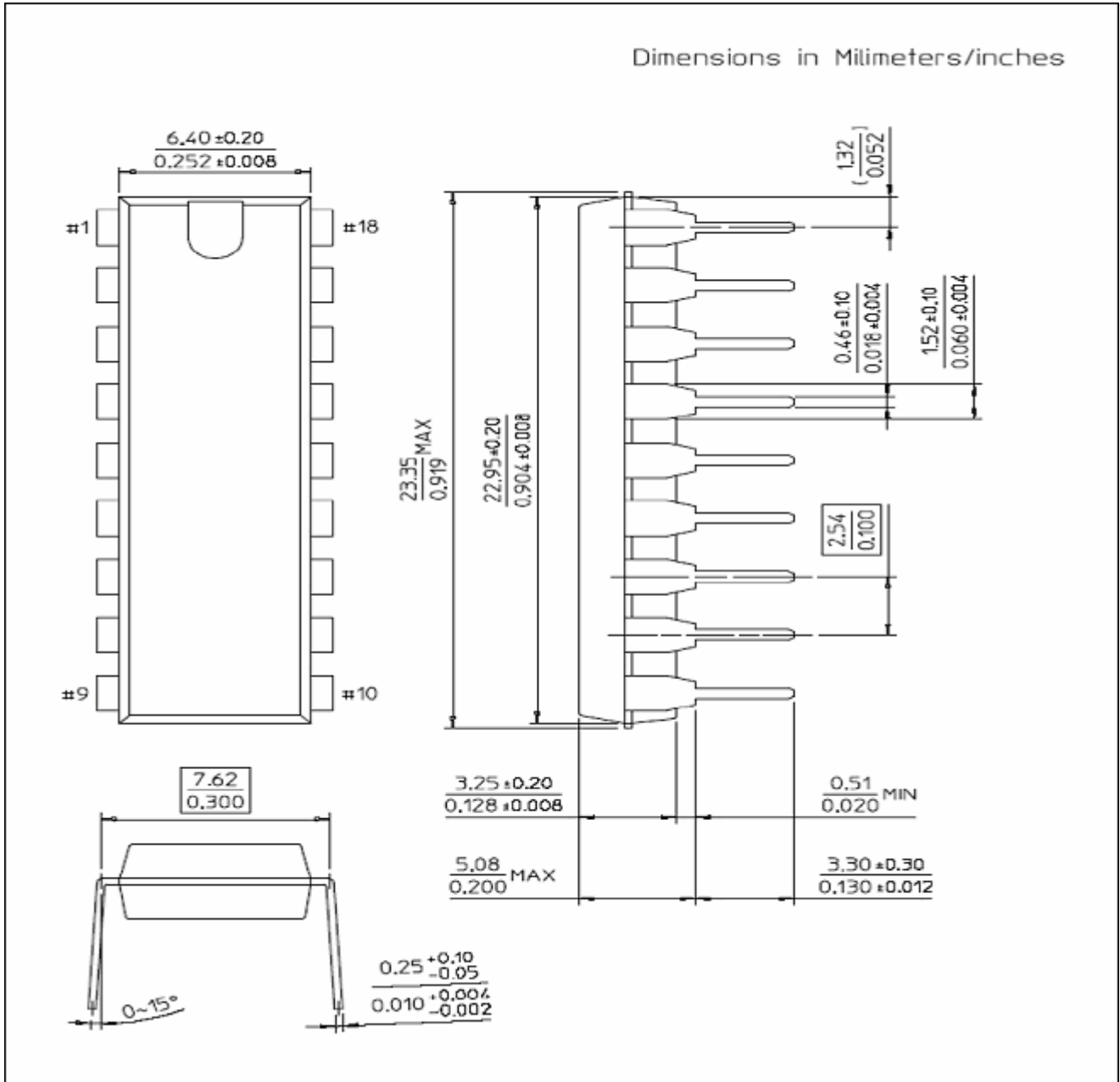


2.3 20-Pin SOP





2.4 18-Pin DIP



2.5 18-Pin SOP

