

1 Introduction

OB90R32A2U32VP,
OB90R32A2U32CP,
OB90R32A2U20SP,
OB90R32A2U20EP

The OB90R32A2 is ARM Cortex-M0 based microcontrollers for embedded applications featuring a high level of integration and low power consumption. The ARM Cortex-M0 is a next generation core that offers a simplified instruction set with deterministic behavior.

The OB90R32A2 can run up to 50 MHz, and operate at a wide voltage range of 1.8V ~ 5.5V. Up to 32K bytes flash , 4K bytes RAM, four general purpose timers, two UARTs interfaces, one SPI interface, an 8-channel 12-bit ADC, Watchdog Timer , PWM generators providing six channels, and two I2C Interface.

2 Feature

3.1 System:

- ARM Cortex-M0 processor, running at frequencies of up to 50 MHz.
- ARM Cortex-M0 built-in Nested Vectored Interrupt Controller (NVIC)
- Built-in LDO for wide operating voltage: 1.8V to 5.5V.

3.2 Memory:

- On-chip flash programming memory 32KB.
- 4KB SRAM.
- In-System Programming (ISP) via on-chip bootloader software.

3.3 Serial interfaces:

- UART with fractional baud rate generation, internal FIFO, and RS-485 support.
- SPI controllers with SSP features and with FIFO and multi-protocol capabilities.
- I2C-bus interface supporting full I2C-bus specification and Fast-mode Plus with a data rate of 1 Mbit/s with multiple address recognition.
- Counter/Timer

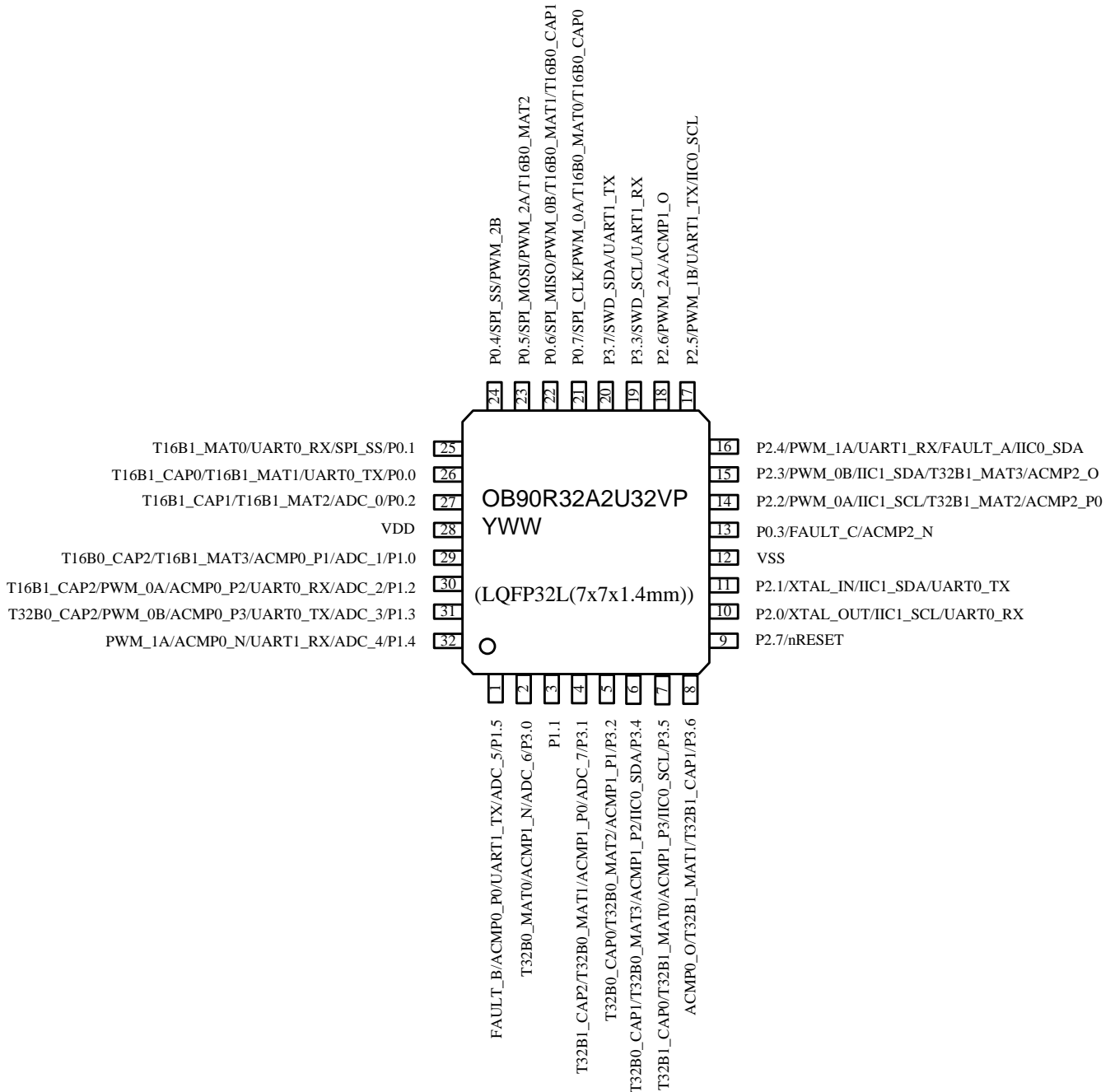
3.4 Other interfaces:

- 12bit ADC with input multiplexing among 8 pins.
- Pulse width Modulation (PWM)
- Watchdog Timer(WDT)
- Multiplication Division Unit (MDU)

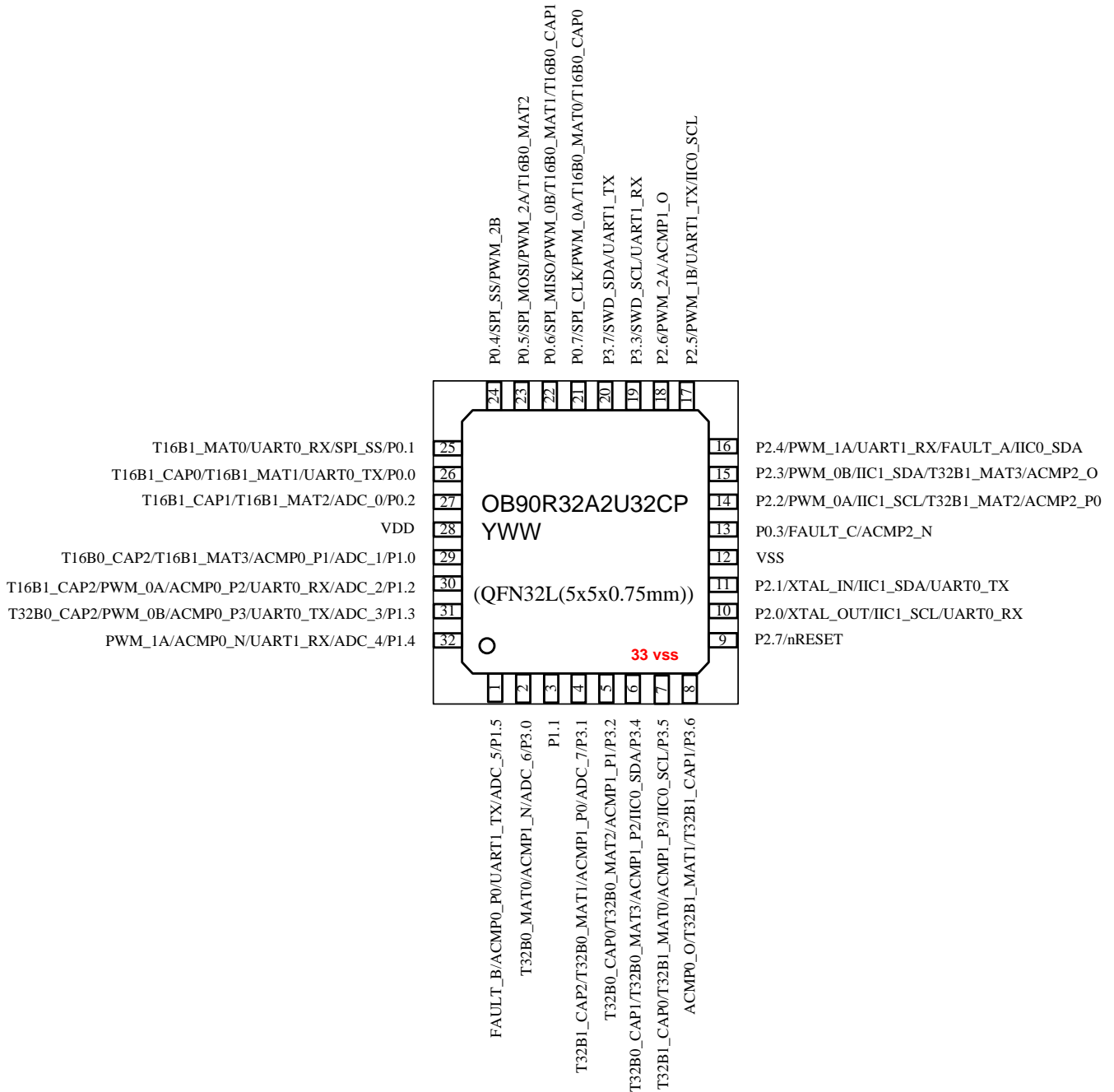
3.5 Serial Wire Debug

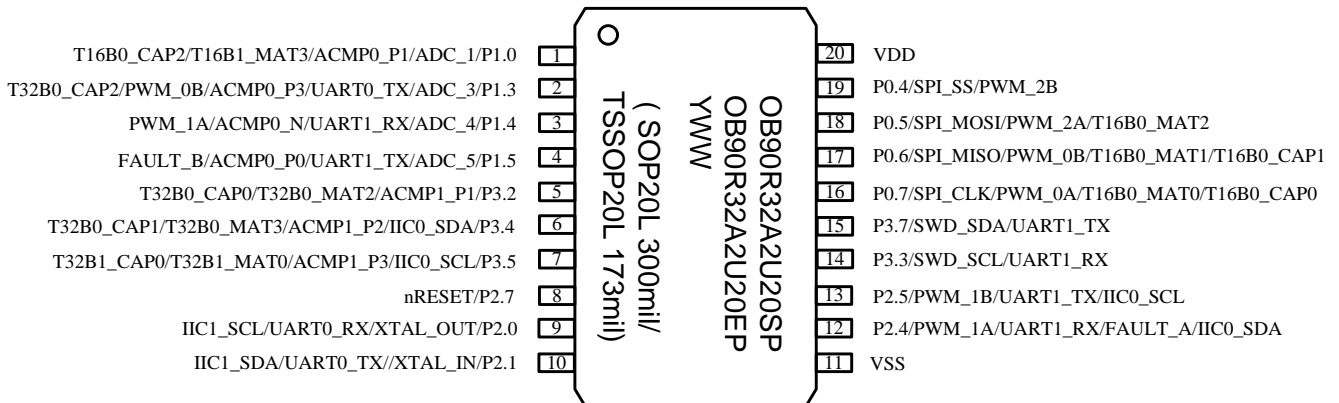
3 Pin Assignment

LQFP32 (7x7x1.4mm)



QFN32(5x5x0.75mm)-2, Substrate connect Vss



SOP20/TSSOP20

3.1 Ordering Information

OB90R32A2 ihhKL

YWW

i: process identifier { U = 1.8V ~ 5.5V}

hh: pin count

k: package type postfix {as table below }

L:PB Free identifier {No text is Non-PB free , "P" is PB free}

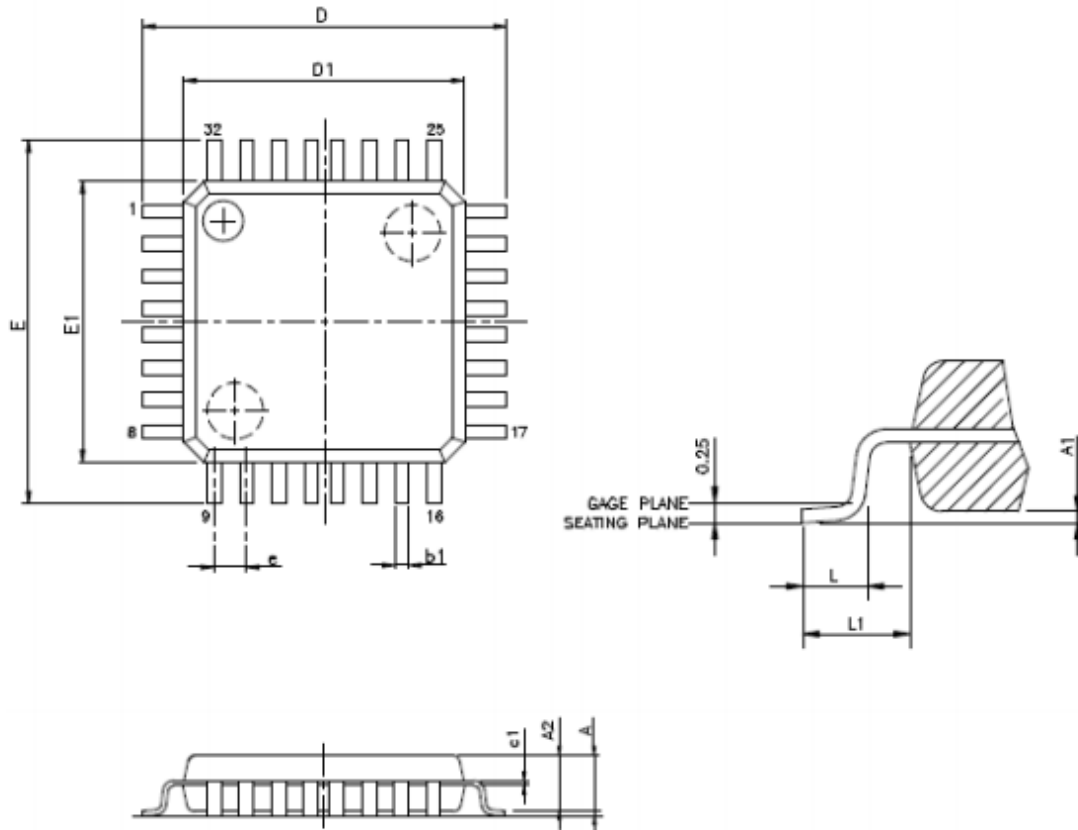
Y: Year Code

WW: Week Code (01-52)

Postfix	Package
V	LQFP (7 * 7 * 1.4 mm)
C	QFN32(5x5x0.75mm)
S	SOP (300 mil)
E	TSSOP (173 mil)

21 Package Dimensions

21.1 32-pin LQFP(7 * 7 * 1.4 mm)

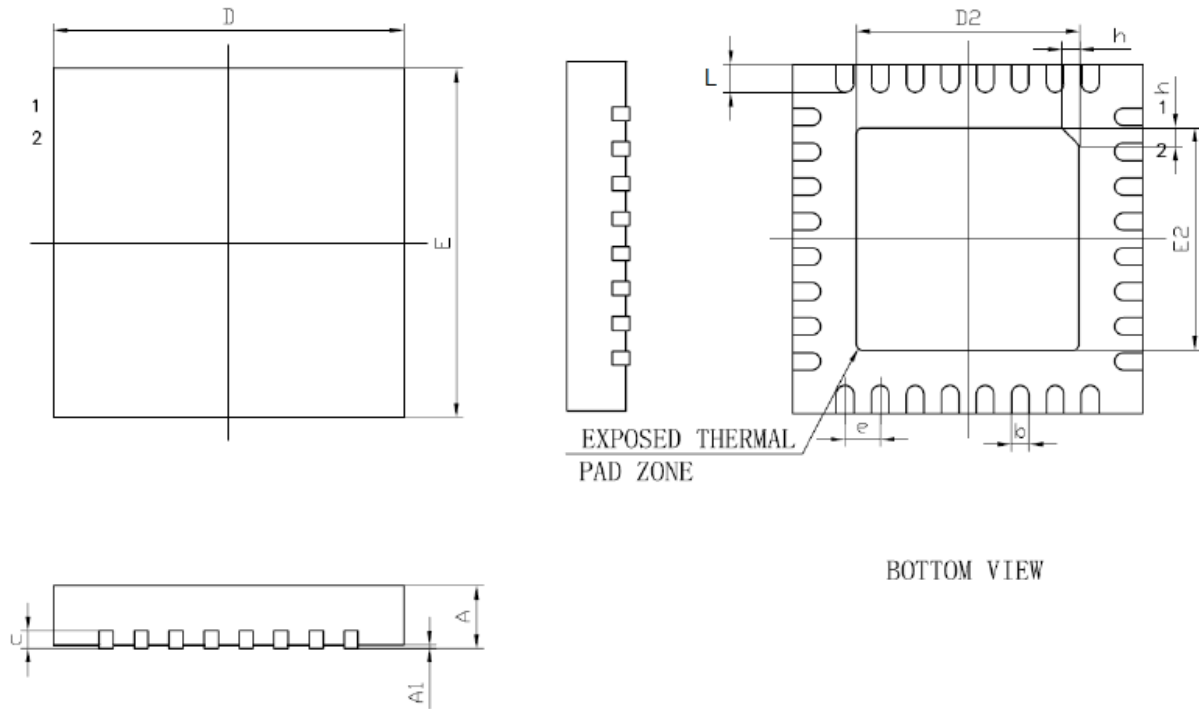


Symbol	Dimension in mm			Dimension in inch		
	Min	Nom	Max	Min	Nom	Max
A	—	—	1.60	—	—	0.063
A1	0.05	—	0.20	0.002	—	0.008
A2	1.35	—	1.45	0.053	—	0.057
b1	0.30	—	0.45	0.012	—	0.018
c	0.09	—	0.18	0.004	—	0.007
D	—	9.00	—	—	0.35	—
D1	—	7.00	—	—	0.28	—
E	—	9.00	—	—	0.35	—
E1	—	7.00	—	—	0.28	—
e	—	0.80	—	—	0.03	—
L	0.40	—	0.75	0.016	—	0.030
L1	—	1.00	—	—	0.039	—

Note :

1. Dimension D1 & E1 do not include mold protrusion.
2. Dimension b1 does not include dambar protrusion.

21.2 32-pin QFN(5x5x0.75mm; e 0.5mm)



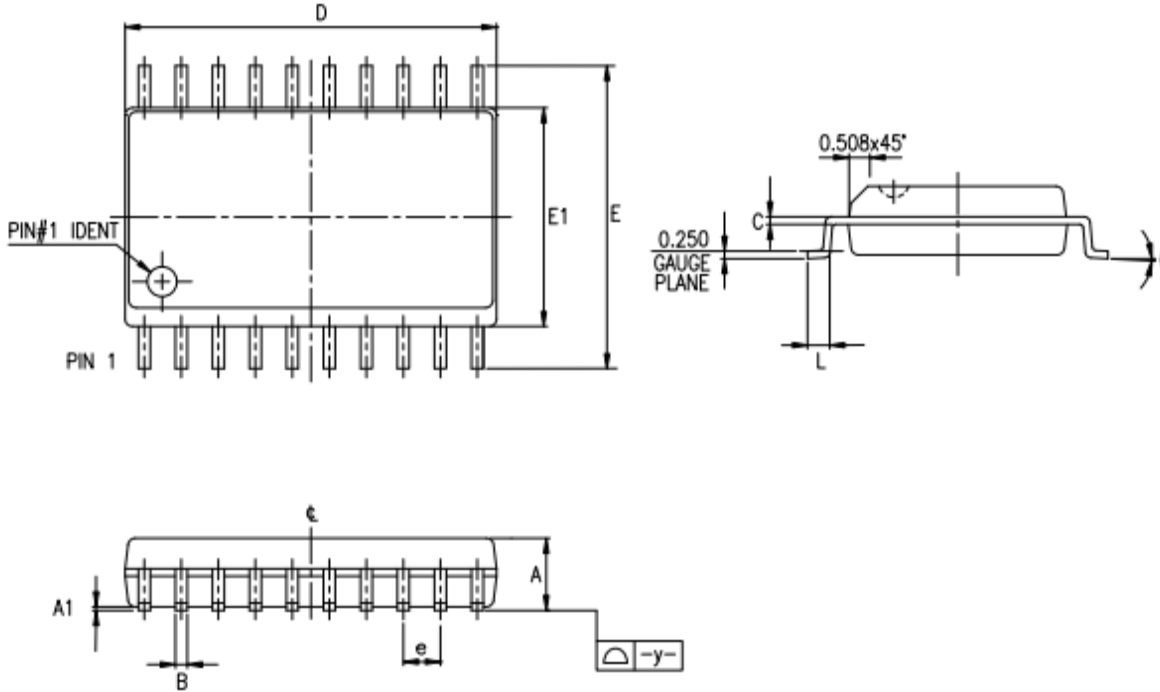
BOTTOM VIEW

Symbol	Dimension in mm			Dimension in inch		
	Min	Nom	Max	Min	Nom	Max
A	0.70	0.75	0.80	0.028	0.030	0.032
A1	0.00	0.02	0.05	0.0000	0.0008	0.0020
c	0.18	0.20	0.25	0.007	0.008	0.010
b	0.18	0.25	0.30	0.007	0.010	0.012
D	4.90	5.00	5.10	0.193	0.197	0.201
E	4.90	5.00	5.10	0.193	0.197	0.201
e	0.50 BSC			0.020 BSC		
h	0.25	0.30	0.35	0.010	0.012	0.014
D2	3.10	3.20	3.30	0.122	0.126	0.130
E2	3.10	3.20	3.30	0.122	0.126	0.130
L	0.35	0.40	0.45	0.014	0.016	0.018

Note :

1. Dimension D & E do not include mold protrusion.
2. Dimension b does not include dambar protrusion.

21.3 20-pin SOP

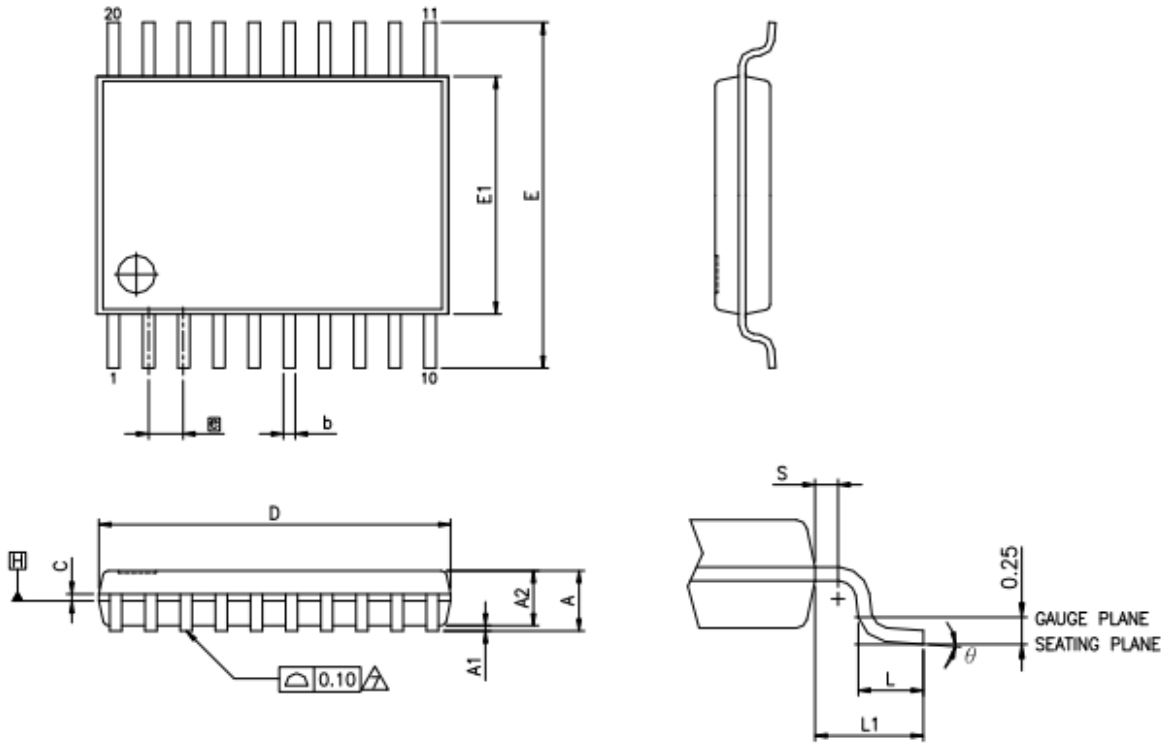


Symbol	Dimension in mm			Dimension in inch		
	Min	Nom	Max	Min	Nom	Max
A	—	—	2.65	—	—	0.104
A1	0.10	—	0.30	0.004	—	—
B	—	0.40	—	—	0.016	—
c	—	0.25	—	—	0.010	—
D	12.45	—	13.00	0.490	—	0.512
E	10.01	—	10.64	0.394	—	0.419
E1	7.30	—	7.70	0.287	—	0.303
e	—	1.27	—	—	0.050	—
L	0.41	—	1.27	0.016	—	0.050
y	—	0.09	—	—	0.004	—
θ	0°	—	8°	0°	—	8°

Note :

1. Dimension D & E1 do not include mold protrusion.
2. Dimension B does not include dambar protrusion.

21.4 20-pin TSSOP (173mil)



Symbol	Dimension in mm			Dimension in inch		
	Min	Nom	Max	Min	Nom	Max
A	—	—	1.20	—	—	0.047
A1	0.05	—	0.15	0.002	—	0.006
A2	0.80	0.90	1.05	0.032	0.035	0.041
b	0.19	—	0.30	0.007	—	0.012
c	0.09	—	0.20	0.004	—	0.008
D	6.40	6.50	6.60	0.252	0.256	0.260
E	6.20	—	6.60	0.244	—	0.260
E1	4.30	4.40	4.50	0.169	0.173	0.177
e	—	0.65	—	—	0.026	—
L	0.45	0.60	0.75	0.018	0.024	0.030
L1	—	1.00	—	—	0.039	—
s	0.20	—	—	0.008	—	—
θ	0°	—	8°	0°	—	8°

Note :

1. Dimension D & E1 do not include mold protrusion.
2. Dimension b does not include dambar protrusion.