



ST7FLITE2

8-BIT MCU WITH SINGLE VOLTAGE FLASH MEMORY, DATA EEPROM, ADC, TIMERS, SPI, DALI

DATA BRIEFING

■ Memories

- 8 Kbytes single voltage extended Flash (XFlash) Program memory with read-out protection, In-Circuit Programming and In-Application programming (ICP and IAP)
- 384 bytes RAM
- 256 bytes data EEPROM with read-out protection

■ Clock, Reset and Supply Management

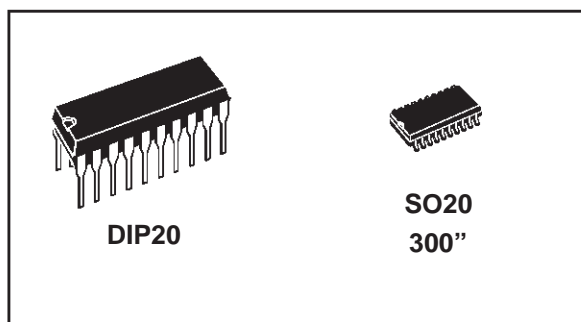
- Enhanced reset system
- Enhanced low voltage supervisor (LVD) for main supply and an auxiliary voltage detector (AVD) with interrupt capability for implementing safe power-down procedures
- Clock sources: Internal 1% RC oscillator, crystal/ceramic resonator or external clock
- Internal 32-MHz input clock for Auto-reload timer
- Optional x4 or x8 PLL for 4 or 8 MHz internal clock
- Four Power Saving Modes: Halt, Active-Halt, Wait and Slow

■ I/O Ports

- Up to 15 multifunctional bidirectional I/O lines
- 7 high sink outputs

■ 2 Timers

- 8-bit Lite Timer with prescaler, watchdog, 1 realtime base and 1 input capture
- One 12-bit Auto-reload Timer with 4 PWM outputs, input capture and output compare functions



■ 2 Communication Interfaces

- SPI synchronous serial interface
- DALI communication interface

■ Interrupt Management

- 10 interrupt vectors plus TRAP and RESET
- 4 external interrupt lines (on 4 vectors)

■ A/D Converter

- 7 input channels
- Fixed gain Op-amp
- 13-bit precision for 0 to 430 mV (@ 5V V_{DD})
- 10-bit precision for 430 mV to 5V (@ 5V V_{DD})

■ Instruction Set

- 8-bit data manipulation
- 63 basic instructions
- 17 main addressing modes
- 8 x 8 unsigned multiply instructions

■ Development Tools

- Full hardware/software development package

Device Summary

| Features | ST7FLITE20 | ST7FLITE25 | ST7FLITE29 | ST7FDALI |
|------------------------|---|---|---|-----------|
| Program memory - bytes | 8K | | | |
| RAM (stack) - bytes | 384 (128) | | | |
| Data EEPROM - bytes | - | - | 256 | |
| Peripherals | Lite Timer with Watchdog, Autoreload Timer, SPI, 10-bit ADC with Op-Amp | Lite Timer with Watchdog, Autoreload Timer with 32-MHz input clock, SPI, 10-bit ADC with Op-Amp | Lite Timer with Watchdog, Autoreload Timer with 32-MHz input clock, SPI, 10-bit ADC with Op-Amp, DALI | |
| Operating Supply | 2.4V to 5.5V | | | |
| CPU Frequency | Up to 8Mhz (w/ ext OSC up to 8MHz) | Up to 8Mhz (w/ ext OSC up to 8MHz and int 1MHz RC 1% PLLx8/4MHz) | Up to 8Mhz (w/ int 1MHz RC 1% PLLx8/4MHz) | |
| Operating Temperature | -40°C to +85°C (-40°C to +105/125°C optional) | | | |
| Packages | SO20 300", DIP20 | | | SO20 300" |

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1/8

This is preliminary information on a new product now in development. Details are subject to change without notice.

1 INTRODUCTION

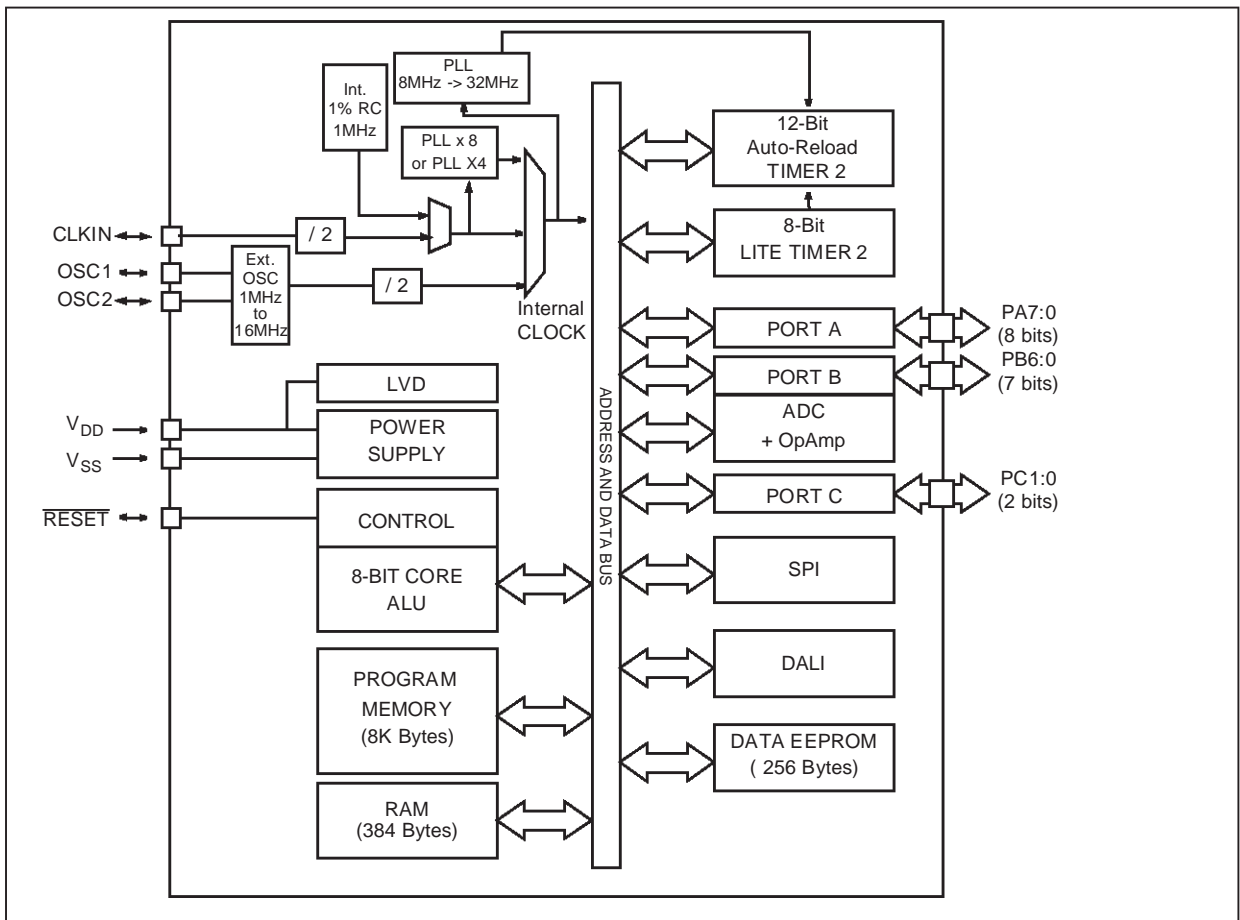
The ST7FLITE2 is a member of the ST7 microcontroller family. All ST7 devices are based on a common industry-standard 8-bit core, featuring an enhanced instruction set.

The ST7FLITE2 features FLASH memory with byte-by-byte In-Circuit Programming (ICP) and In-Application Programming (IAP) capability.

Under software control, the ST7FLITE2 device can be placed in WAIT, SLOW, or HALT mode, reducing power consumption when the application is in idle or standby state.

The enhanced instruction set and addressing modes of the ST7 offer both power and flexibility to software developers, enabling the design of highly efficient and compact application code. In addition to standard 8-bit data management, all ST7 microcontrollers feature true bit manipulation, 8x8 unsigned multiplication and indirect addressing modes.

Figure 1. General Block Diagram



2 PIN DESCRIPTION

Figure 2. 20-Pin SO Package Pinout (ST7FLITE2x)

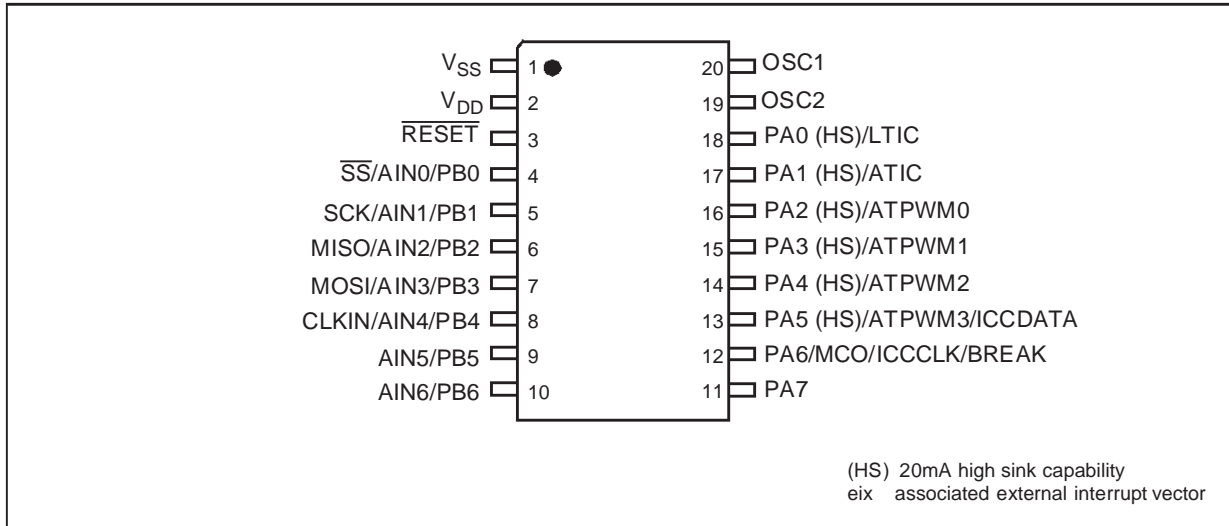


Figure 3. 20-Pin DIP Package Pinout (ST7FLITE2x)

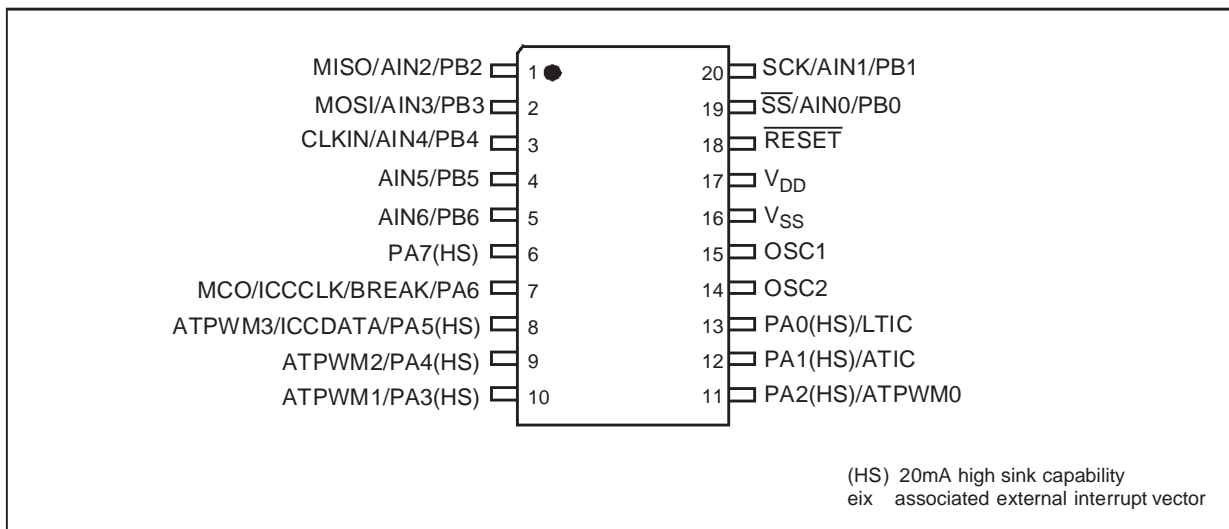
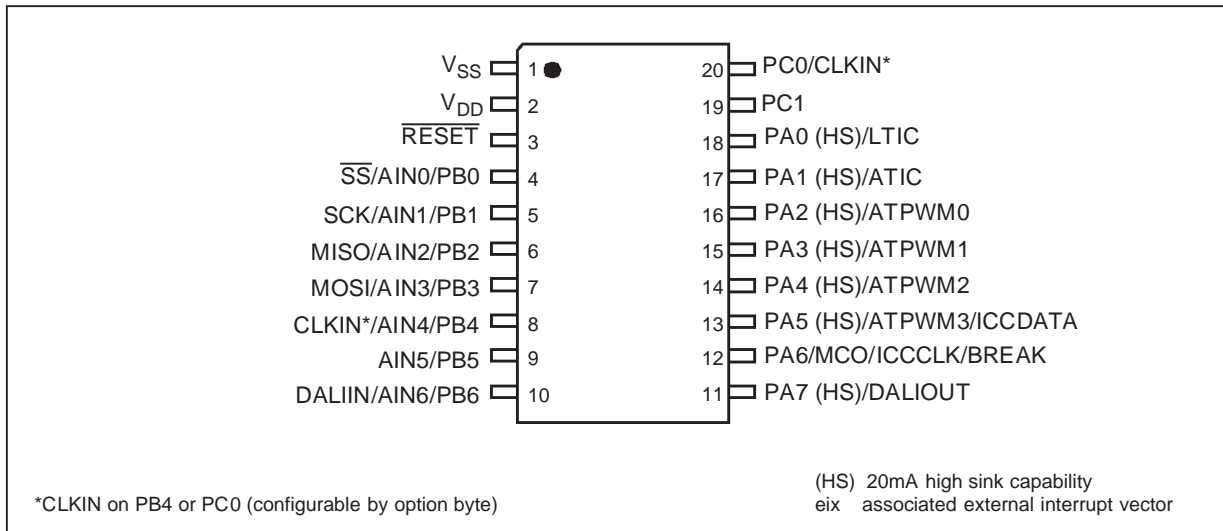


Figure 4. 20-Pin SO Package Pinout (ST7FDALI)



PIN DESCRIPTION (Cont'd)

Legend / Abbreviations for Table 1:

Type: I = input, O = output, S = supply

In/Output level: C_T = CMOS $0.3V_{DD}/0.7V_{DD}$ with input trigger

Output level: HS = 20mA high sink (on N-buffer only)

Port and control configuration:

- Input: float = floating, wpu = weak pull-up, int = interrupt, ana = analog
- Output: OD = open drain, PP = push-pull

The RESET configuration of each pin is shown in bold which is valid as long as the device is in reset state.

Table 1. Device Pin Description

| Pin No. | | Pin Name | Type | Level | | Port / Control | | | | | | Main Function (after reset) | Alternate Function | |
|----------------------|--------------------|---------------------------|------|-----------------------|-------|----------------|-------|-----|-----|-----|--------|-----------------------------|---|----|
| SO20 (ST7FLITE2x) | SO20 (ST7FDALI) | | | DIP20 (ST7FLITE2x) | Input | Output | Input | | | | Output | | | |
| | | | | | | | float | wpu | int | ana | OD | | | PP |
| 1 | 16 | V_{SS} | S | | | | | | | | | | Ground | |
| 2 | 17 | V_{DD} | S | | | | | | | | | | Main power supply | |
| 3 | 18 | RESET | I/O | C_T | | X | | | | X | | | Top priority non maskable interrupt (active low) | |
| 4 | 19 | PB0/AIN0/ \overline{SS} | I/O | C_T | X | X | ei3 | | X | X | X | Port B0 | ADC Analog Input 0 or SPI Slave Select (active low) | |
| 5 | 20 | PB1/AIN1/SCK | I/O | C_T | X | X | | | X | X | X | Port B1 | ADC Analog Input 1 or SPI Serial Clock | |
| 6 | 1 | PB2/AIN2/MISO | I/O | C_T | X | X | | | X | X | X | Port B2 | ADC Analog Input 2 or SPI Master In/ Slave Out Data | |
| 7 | 2 | PB3/AIN3/MOSI | I/O | C_T | X | X | ei2 | | X | X | X | Port B3 | ADC Analog Input 3 or SPI Master Out / Slave In Data | |
| 8 | 3 | PB4/AIN4/CLKIN** | I/O | C_T | X | X | | | X | X | X | Port B4 | ADC Analog Input 4 or External clock input** | |
| 9 | 4 | PB5/AIN5 | I/O | C_T | X | X | | | X | X | X | Port B5 | ADC Analog Input 5 | |
| 10 | 5 | PB6/AIN6/DALI-IN* | I/O | C_T | X | X | | | X | X | X | Port B6 | ADC Analog Input 6 or DALI Input* | |
| 11 | 6 | PA7/DALIOUT* | I/O | C_T | HS | X | ei1 | | | X | X | Port A7 | DALI Output | |
| 12 | 7 | PA6 /MCO/ICCCLK/BREAK | I/O | C_T | X | X | | | | X | X | Port A6 | Main Clock Output or In Circuit Communication Clock or External BREAK | |
| 13 | 8 | PA5 /ATPWM3/ICCDATA | I/O | C_T | HS | X | | | | X | X | Port A5 | Auto-Reload Timer PWM3 or In Circuit Communication Data | |
| 14 | 9 | PA4/ATPWM2 | I/O | C_T | HS | X | | | | X | X | Port A4 | Auto-Reload Timer PWM2 | |

ST7FLITE2

| Pin No. | | | Pin Name | Type | Level | | Port / Control | | | | | | Main Function (after reset) | Alternate Function |
|-------------------|-----------------|--------------------|-------------|------|----------------|--------|----------------|-----|-----|-----|--------|----|--------------------------------------|---------------------------------|
| SO20 (ST7FLITE2x) | SO20 (ST7FDALI) | DIP20 (ST7FLITE2x) | | | Input | Output | Input | | | | Output | | | |
| | | | | | | | float | wpu | int | ana | OD | PP | | |
| 15 | 10 | | PA3/ATPWM1 | I/O | C _T | HS | X | X | ei0 | | X | X | Port A3 | Auto-Reload Timer PWM1 |
| 16 | 11 | | PA2/ATPWM0 | I/O | C _T | HS | X | X | | | X | X | Port A2 | Auto-Reload Timer PWM0 |
| 17 | 12 | | PA1/ATIC | I/O | C _T | HS | X | X | | | X | X | Port A1 | Auto-Reload Timer Input Capture |
| 18 | 13 | | PA0/LTIC | I/O | C _T | HS | X | X | | | X | X | Port A0 | Lite Timer Input Capture |
| 19 | - | 14 | OSC2 | O | | | | | | | | | Resonator oscillator inverter output | |
| 20 | - | 15 | OSC1 | I | | | | | | | | | Resonator oscillator inverter input | |
| - | 19 | - | PC1 | O | | | | | | | | | Port C1 | |
| - | 20 | - | PC0/CLKIN** | I | | | | | | | | | Port C0 | External clock input** |

* available on ST7FDALI only.

** For ST7FDALI, CLKIN on PB4 or PC0 (configurable by option byte). For ST7FLITE2x, CLKIN on PB4.

Note:

In the interrupt input column, "ei_x" defines the associated external interrupt vector which can be assigned to one of the I/O pins using the EISR register. If the weak pull-up column (wpu) is merged with the interrupt column (int), then the I/O configuration is pull-up interrupt input, else the configuration is floating interrupt input.

3 PACKAGE CHARACTERISTICS

3.1 PACKAGE MECHANICAL DATA

Figure 5. 20-Pin Plastic Small Outline Package, 300-mil Width

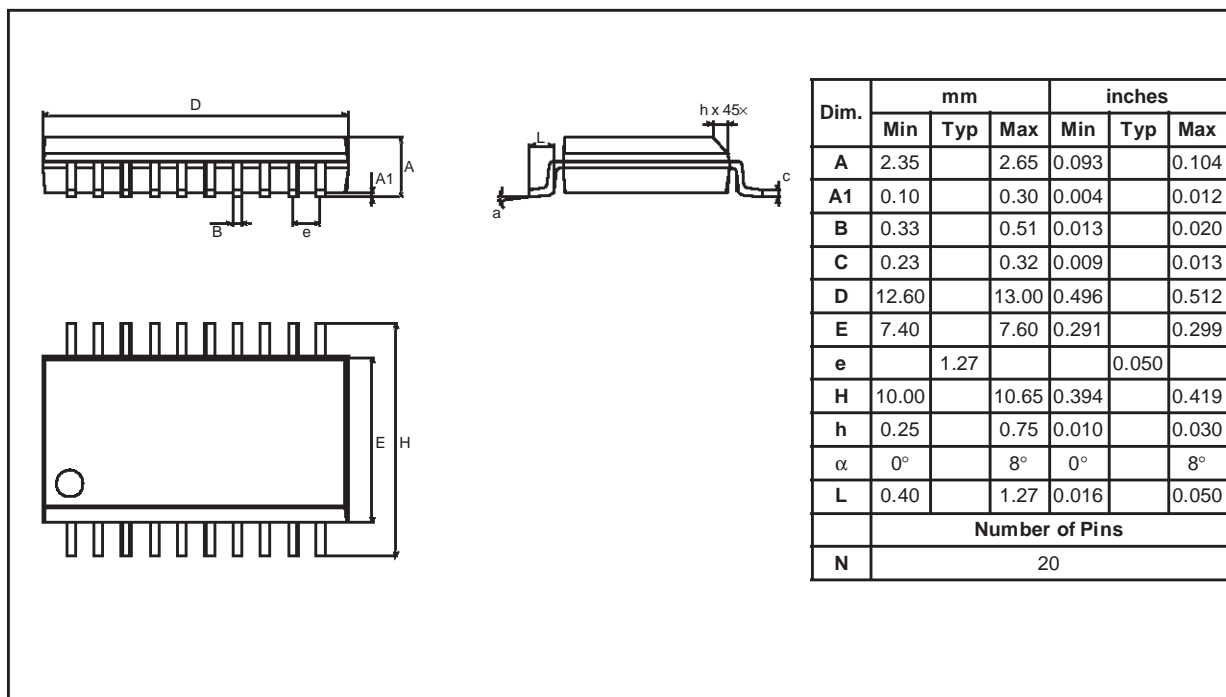
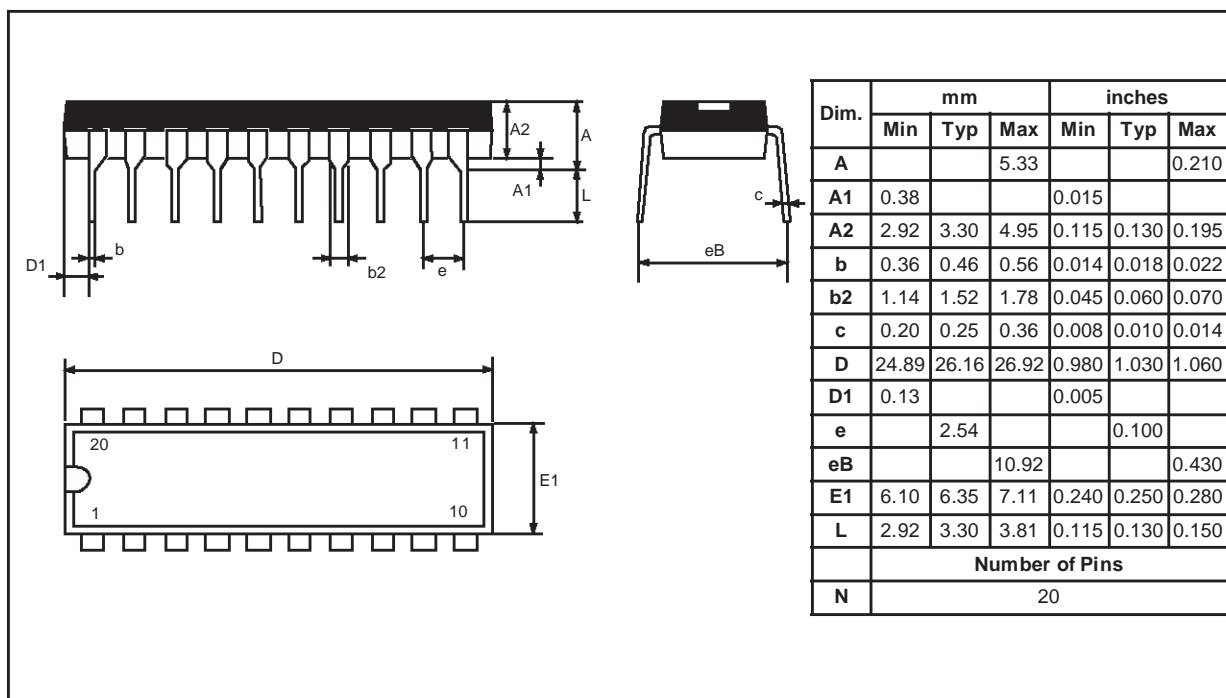


Figure 6. 20-Pin Plastic Dual In-Line Package, 300-mil Width



Notes:

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