

# Integrated Circuit



## Introduction

An Integrated Circuit is a formal name for a component commonly termed chip or IC, that is a small electronic device made out of a semiconductor material.

The first integrated circuit was developed in the 1950s by Jack Kilby of Texas Instruments and Robert Noyce of Fairchild Semiconductor, now a part of Schlumberger.

Integrated circuits are used for a variety of devices, including microprocessors (CPUs), audio and video equipment, and automobiles. Integrated circuits are often classified by the number of transistors and other electronic components they contain:

- **SSI** (small-scale integration): Up to 100 electronic components per chip
- **MSI** (medium-scale integration): From 100 to 3,000 electronic components per chip
- **LSI** (large-scale integration): From 3,000 to 100,000 electronic components per chip
- **VLSI** (very large-scale integration): From 100,000 to 1,000,000 electronic components per chip
- **ULSI** (ultra large-scale integration): More than 1 million electronic components per chip

IC are usually packaged in a plastic or ceramic case with external connector pins. Some ICs used in midibox designs:

Mouser Referenced Datasheets are given for example.

| Description | Type                     | Mouser Ref        | Datasheet Link                |
|-------------|--------------------------|-------------------|-------------------------------|
| 74HC165     | Serial Register          | 595-CD74HC165EE4  | <a href="#">74HC165</a>       |
| 74HC595     | Serial Register          | 595-CD74HC595E    | <a href="#">74HC595</a>       |
| 74HCT541    | Line Driver              | 595-D74HCT541E    | <a href="#">74HCT541</a>      |
| 74HC00      | Logic Gate               | 595-CD74HC00EE4   | <a href="#">74HC00</a>        |
| 6N138       | OptoCoupler              | 512-6N138M        | <a href="#">6N138</a>         |
| MOS4051     | Multiplexer switch       | 595-CD74HC4051M96 | <a href="#">MOS4051</a>       |
| TL072       | Operational Amplifier    | 595-TL072ACP      | <a href="#">TL072</a>         |
| TL074       | Operational Amplifier    | 512-LM324N        | <a href="#">TL074 / LM324</a> |
| MCP6004     | Operational Amplifier    | 579-MCP6004-E/P   | <a href="#">MCP600X</a>       |
| MCP3208     | Analog>Digital converter | 579-MCP3208CIP    | <a href="#">MCP3208</a>       |

| Description | Type                     | Mouser Ref       | Datasheet Link            |
|-------------|--------------------------|------------------|---------------------------|
| MCP3428     | Analog>Digital converter | 579-MCP3428E/SL  | <a href="#">MCP3428</a>   |
| MAX525      | Digital>Analog converter | 700-MAX525BCPP   | <a href="#">MAX525</a>    |
| CD22M3494EZ | Crosspoint switch        | 968-CD22M3494EZ  | <a href="#">CD22M3494</a> |
| PIC16F88    | Microcontroller          | 579-PIC16F88-I/P | <a href="#">PIC16F88</a>  |

## Datasheets

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