

# 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.

## MIDIbox-related ICs

| Description | Type                  | Mouser Ref        | Reichelt ref | Digikey ref |
|-------------|-----------------------|-------------------|--------------|-------------|
| 74HC165     | Serial Register       | 595-CD74HC165EE4  |              |             |
| 74HC595     | Serial Register       | 595-CD74HC595E    |              |             |
| 74HCT541    | Line Driver           | 595-D74HCT541E    |              |             |
| 74HC00      | Logic Gate            | 595-CD74HC00EE4   |              |             |
| 6N138       | OptoCoupler           | 512-6N138M        |              |             |
| MOS4051     | Multiplexer switch    | 595-CD74HC4051M96 |              |             |
| TL072       | Operational Amplifier | 595-TL072ACP      |              |             |
| TL074       | Operational Amplifier | 512-LM324N        |              |             |
| MCP6004     | Operational Amplifier | 579-MCP6004-E/P   |              |             |

| Description | Type                     | Mouser Ref      | Reichelt ref | Digikey ref |
|-------------|--------------------------|-----------------|--------------|-------------|
| MCP3208     | Analog>Digital converter | 579-MCP3208CIP  |              |             |
| MCP3428     | Analog>Digital converter | 579-MCP3428E/SL |              |             |
| MAX525      | Digital>Analog converter | 700-MAX525BCPP  |              |             |
| CD22M3494EZ | Crosspoint switch        | 968-CD22M3494EZ |              |             |

## Datasheets

Mouser Referenced Datasheets are given as example.

- [74HC595](#)
- [74HC165](#)
- [74HCT541](#)
- [74HC00](#)
- [6N138](#)
- [MOS4051](#)
- [TL072](#)
- [TL074 / LM324](#)
- [MCP6004](#)
- [MCP3208](#)
- [MCP3428](#)

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