

# 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>

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