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:

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		
MCP3208	Analog>Digital converter	579-MCP3208CIP		
MCP3428	Analog>Digital converter	579-MCP3428E/SL		

Description	Type	Mouser Ref	Reichelt ref	Digikey ref
MAX525	Digital>Analog converter	700-MAX525BCPP		
CD22M3494EZ	Crosspoint switch	968-CD22M3494EZ		
PIC16F88	Microcontroller	579-PIC16F88-I/P		

Datasheets

Mouser Referenced Datasheets are given for example.

- 74HC165
- 74HC595
- 74HCT541
- 74HC00
- 6N138
- MOS4051
- TL072
- TL074 / LM324
- MCP600X
- MCP3208
- MCP3428
- MAX525
- CD22M3494
- PIC16F88

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