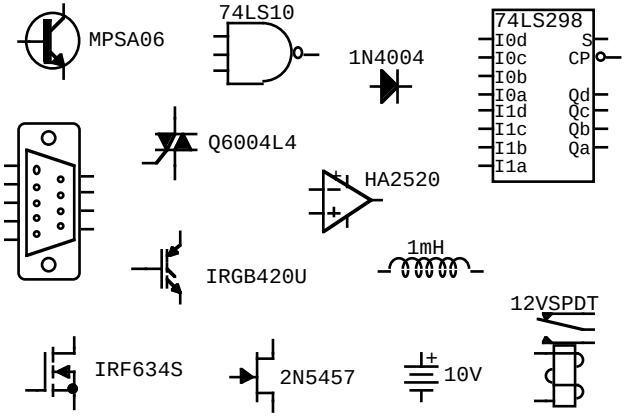
CircuitMaker ¤

for Windows



Device Library Guide

CircuitMaker 6

CircuitMaker PRO

Revision C

Table of Contents

Device Symbols

The device symbols are stored in two files: DEVICE.LIB and USER.LIB. All macro devices created by the user are stored in USER.LIB.

Devices can be selected from the libraries in various ways (refer to *Chapter 4: Drawing and Editing Schematics* in the User Manual). Once you have selected a device, it will follow the mouse to any position within the drawing window. If the portion of the work area where you need to position the device is not currently visible, move the device to the border of the window and the circuit will automatically scroll.

To place the device, click the mouse and the device will be placed at its present position. To cancel placement of the device press the spacebar or double-click the mouse. Devices can be mirrored and/or rotated prior to placing them. To rotate a device, press the R key or click the right mouse button. To mirror a device, press the M key.

The "Auto Repeat" option in the Options menu determines whether the same device can be placed in the work area multiple times, or if you must select each device separately to place it (refer to *Chapter 12: Options Menu* in the User Manual).

The devices and instruments are described in this section. They are classified into the following categories:

Analog Only	Can only be used in Analog simulation mode.
Digital Only	Can only be used in Digital simulation mode.
Analog/Digital	Can be used in either Analog or Digital simulation modes.
Schematic	These devices are intended for drawing schematics and are not functional.

To assist you in finding the items in the library, each of the following device descriptions include the location in the parts browser. The location is displayed in the following format:

[Major Device Class/Minor Device Class] (Default Hotkey)

CircuitMaker is by no means limited to the devices provided in the device library. New devices can be created as macros or by importing Spice-compatible subcircuits. User defined devices are permanently stored in the library files and can be used just like any other device. Refer to *Chapter 16: Creating New Devices* in the user manual for more information.

+V

Analog/Digital [Analog/Power] (1)

In analog simulation mode, this device provides a fully programmable DC power supply. It can be programmed for either a positive or negative voltage. It always uses the ground node as a reference. In digital simulation mode it provides a fixed High state. By removing the Spice Data and Spice Prefix, the Bus Data can be used to link nodes together. Example circuits: LOCK.CKT, ANALOG.CKT.

.IC

Analog Only [Analog/SPICE Controls] (I)

Wire an .IC device to any node that needs .IC (Initial Conditions) programmed. Double-click on the device and set the Label-Value field to the desired initial value. Example circuit: 555.CKT.

.NODESET

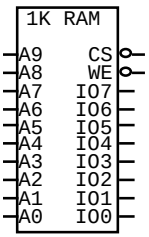
Analog Only [Analog/SPICE Controls] (N)

Wire a .NODESET device to any node that needs Nodeset programmed. Double-click on the device and set the Label-Value field to the desired Nodeset value. Example circuit: BISTABLE.CKT.

1K RAM

Analog/Digital [Digital/RAM-PROM]

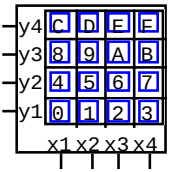
This is a 1024 x 8 Random Access Memory. Multiple RAM chips may be used in a single circuit or macro. However, RAM data is not saved with the circuit or macro. Both the CS and WE pins must be pulled low to write into the RAM. To read from the RAM, keep the WE pin high and pull the CS pin low. For debugging purposes, you can edit the contents of the RAM.



4x4 Switch

Analog/Digital [Switches/Matrix]

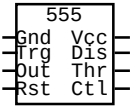
This is a 4x4 switch matrix. Clicking on one of the buttons closes a switch which connects one of the horizontal pins to one of the vertical pins. The switch remains closed until another button is clicked. If you try to activate the switch while running an analog simulation, CircuitMaker will ask if you want to rerun the simulation with the switch in the new position. Example circuit: 4X4.CKT.



555 Timer

Analog Only [Linear ICs/Timers]

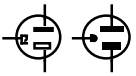
This device includes the SPICE data for simulating a 555 Timer. Timers may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit. When creating astable circuits, initial conditions will be required on the timing capacitor in order for SPICE to converge on a solution. For monostable operation, the component model subcircuit should be used rather than the macromodel subcircuit. Example circuit: 555.CKT.



AC Outlet, AC Plug

Analog Only/Schematic [Connectors/Misc]

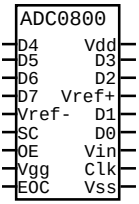
These devices are included for schematic purposes, however, the AC Outlet may be included during Analog simulations. Each contact is treated as having a very high shunt resistance (1E+12) to ground.



ADC0800

Analog Only [Data Converters/A/D]

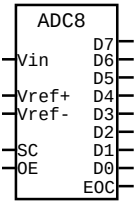
The ADC0800 includes a Digital Simcode model to simulate an ADC0800 Analog-to-Digital Converter. Conversion is performed using a successive approximation technique. The minimum and maximum voltage of Vin are determined by the Vref+ and Vref- pins. The minimum resolution of the measurable voltage on Vin is determined by the Spice option ADCSTEP (by default, this is set to 10mV). When SC (Start Conversion) goes from low to high the conversion begins and, following a 200ns delay, EOC (End Of Conversion) goes low. Each conversion requires 40 clock cycles and the clock frequency must be in the range of 50kHz to 800kHz. When conversion is complete, EOC is set high. Example circuit: ADC0800.CKT.



ADC8

Analog Only [Data Converters/A/D]

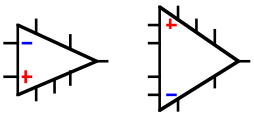
The ADC8 includes a Digital Simcode model to simulate a generic 8-bit Analog-to-Digital Converter. Conversion is performed using a successive approximation technique. The minimum and maximum voltage of Vin are determined by the Vref+ and Vref- pins. The minimum resolution of the measurable voltage on Vin is determined by the Spice option ADCSTEP (by default, this is set to 10mV). When SC (Start Conversion) goes from low to high the conversion begins and, following a 200ns delay, EOC (End Of Conversion) goes low. After 1us, the conversion is complete and EOC is set high. Example circuit: ADC8.CKT.



Amp8, Amp10

Analog Only [Linear ICs/Buffers-Amps]

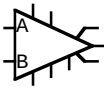
This device includes the SPICE data for simulating amplifiers. Amplifiers may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit.



Analog Mux2

Analog Only [Linear ICs/Buffers-Amps]

This device includes the SPICE data for simulating an analog multiplexer. Muxes may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit.



Antenna

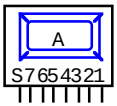
Analog Only [Schematic Symbols/Antennas]

This device includes an internal 50 ohm resistor to ground. The resistance can be changed by editing its Label-Value field.

ASCII Key

Digital Only [Digital/Input Device] (A)

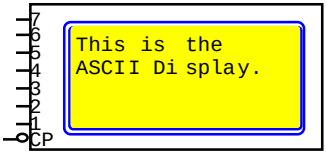
The ASCII Key operates like the Hex Key with one addition: A strobe pulse (low, high, low level) is generated and appears on the pin labeled "S". The binary code for any ASCII character can be generated by this device. This device simulates a keyboard. Example circuit: DISPLAY.CKT.



ASCII Display

Analog/Digital [Displays/Digital Only] (a)

This represents a 16X4 LCD display intended mainly for use in Digital simulation mode. Up to 4 lines of 16 ASCII characters per line can be displayed on this device. The character, determined by the binary code applied to pins 1-7, is sent to the display when the level on the /CP pin changes from high to low. NOTE: <RETURN> will start a new line, <BACKSPACE> will delete a previously entered character, CTRL+G (bell) will send a beep to the PC's speaker, and CTRL+L (form-feed) will clear the display. The background color of the display can be changed. The text is always the Device Text color. This device can be used in Analog simulation mode as well, but no characters will be displayed. Example circuit: DISPLAY.CKT.



Battery

Analog/Digital [Analog/Power] (b)

In analog simulation mode, this device includes the SPICE data for simulating a DC voltage source. The voltage is specified in the Label/ Value field. In digital simulation mode it provides a fixed High state on the "+" pin and a fixed Low state on the "-" pin. Example circuit: CEAMP.CKT.

Buffer/Amp

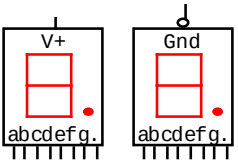
Analog Only [Linear ICs/Buffers-Amps]

This device includes the SPICE data for simulating buffers and amplifiers. Buffers/amps may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit.

CA 7-Seg, CC 7-Seg

Analog/Digital [Displays/7-Segment LEDs]

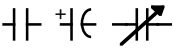
These are Common-anode and Common-cathode 7-Segment LED Displays intended mainly for use in Digital simulation mode. They will display each of 7 segments plus the decimal point, corresponding to the input pins as they are pulled low. Different colors can be selected for each display. If the Prop Delay for this device is set to greater than 1, the display will remain visible even when power is removed. This allows the display to be multiplexed without causing a flash each time the display is addressed. This allows the display to better simulate real-time operation. In a real circuit the flashes are not usually noticeable because of the high repetition rate of the multiplexing circuit. These devices can be used in Analog simulation mode as well, but the segments will not light up. Example circuit: DISPLAY.CKT.



Capacitor, Polar Cap, Var Capacitor

Analog Only [Passive Components/Capacitors] (c, C)

These devices include the SPICE data for simulating a capacitor. The value of the capacitor is specified in the Label/Value field. It is drawn as a "variable" capacitor for schematic purposes only. Example circuit: 555.CKT.



SemiCapacitor

Analog Only [Passive Components/Capacitors]

This device includes the SPICE data for simulating a semiconductor capacitor. Semiconductor capacitors may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit.

Car

Analog/Digital [Digital/Output Device]

This is an animated device with a Start input, a Finish output and a Reset button. It is intended mainly for use in Digital simulation mode. Multiple cars may be placed in the circuit. The number of simulation ticks it takes for a car to reach the finish is random for each car. A new random number is generated each time the Reset button *in the Toolbar* is pressed. The reset button on the car returns the car to its starting position. Double-click on the car to program the travel distance (up to 1000 units). Different colors can be selected for each car. This device can also be used in Analog simulation mode, but there will be no animation and the Finish output will never go true. Example circuit: CARS.CKT.

Caution

Schematic [Schematic Symbols/Misc]

This device is included for schematic purposes.

CDA-5

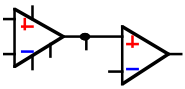
Analog Only [Linear ICs/Buffers-Amps]

This device includes the SPICE data for simulating current differencing amplifiers. Amplifiers may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit.

CFA-Amp8

Analog Only [Linear ICs/Buffers-Amps]

This device includes the SPICE data for simulating a current feedback amplifier. Amplifiers may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit.



Coax, TwinLead, TwistedPair

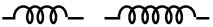
Schematic [Schematic Symbols/Cables]

These devices are included for schematic purposes. SPICE data may be added by the user to simulate the lossless, lossy or URC transmission lines.

Coil 3T, Coil 5T

Analog Only [Passive Components/Inductors]

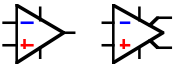
These devices include the SPICE data for simulating an inductor. The inductance of the coil is specified in the Label/Value field. Example circuit: RESONANT.CKT.



Comparator5, Comparator6

Analog Only [Linear ICs/Comparators]

These devices include the SPICE data for simulating 5-pin and 6-pin voltage comparators. Comparators may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit.



Connector

Analog/Digital [Connectors/Misc]

This device has an internal wire that connects the two sides, so it behaves just like a wire during simulation.

Crystal

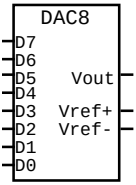
Analog Only [Crystals/Standard]

This device includes the SPICE data for simulating a crystal. Crystals may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit. Example circuit: XTAL_OSC.CKT.

DAC8

Analog Only [Data Converters/D/A]

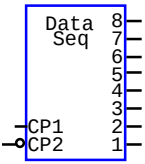
The DAC8 includes a Digital Simcode model to simulate a generic 8-bit Digital-to-Analog Converter. The minimum and maximum voltage of Vout are determined by the Vref+ and Vref- pins. Example circuit: DAC8.CKT.



Data Seq

Analog/Digital [Digital/Instrument]

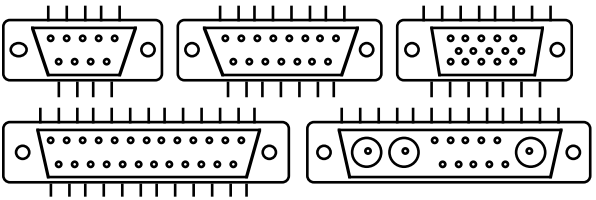
The Data Sequencer allows the user to specify up to 32k bytes which can be output in a defined sequence. Multiple Data Sequencers may be individually programmed. Refer to *Chapter 5: Digital Logic Simulation* in the user manual to program this device. Example circuit: BUSWIRE.CKT.



DB-9, DB-15, DB-15HD, DB-25, 13W3

Schematic [Connectors/DB Type, Misc]

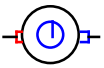
These devices are included for schematic purposes. Example circuit: DB9.CKT.



DC Motor

Analog/Digital [Motors/DC]

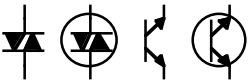
In digital simulation mode, the DC Motor is an animated device. The armature will rotate clockwise when there is a high on the positive terminal and a low on the negative terminal. It will rotate counter clockwise when there is a high on the negative terminal and a low on the positive terminal. In analog mode, the DC Motor is not animated, but it acts as an inductor and a resistor in series. Example circuit: LADDER.CKT.



Diac:A, Diac:B, Diac:C, Diac:D

Schematic [Schematic Symbols/Diacs]

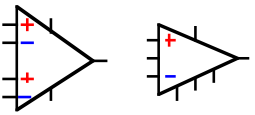
This device is included for schematic purposes.



Diff-Amp7, Diff-Amp8

Analog Only [Linear ICs/Buffers-Amps]

This device includes the SPICE data for simulating differential amplifiers. Amplifiers may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit.



Diode

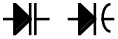
Analog Only [Active Components/Diodes] (d)

This device includes the SPICE data for simulating a junction diode. Diodes may be selected from a list of available models or new models may be added by the user. Double-click on the device to select the desired model. Example circuit: ASTABLE.CKT.

Varactor, Varactor:A

Analog Only [Active Components/Diodes]

This device includes the SPICE data for simulating a variable capacitance diode. Diodes may be selected from a list of available models or new models may be added by the user. Double-click on the device to select the desired model.



Zener Diode

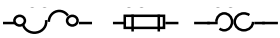
Analog Only [Active Components/Diodes] (D)

This device includes the SPICE data for simulating a zener diode. Diodes may be selected from a list of available models or new models may be added by the user. Double-click on the device to select the desired model. Example circuit: PS1.CKT.

Fuse, Fuse:A, Thermal Fuse

Analog Only [Fuses/Electronic] (f) [Fuses/Thermal]

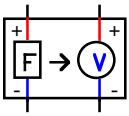
These devices include the SPICE data for simulating a current fuse. Fuses may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit.



F->V Source

Analog Only [Analog/Power]

This is a linear frequency-controlled voltage source. The voltage on the output (right-hand side) is controlled by the frequency of the signal on the input (left-hand side). Double-click on the device to change its characteristics. Adjustable characteristics include VIL, VIH and Cycles/Volt. Example circuit: FCVS.CKT.

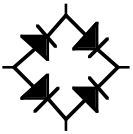


FW Bridge

Analog Only [Active Components/Diodes]

This device includes the SPICE data for simulating a full-wave bridge rectifier. Bridges may be selected from a list of available subcircuits or

new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit. Example circuit: PS1.CKT.



Ground

Analog/Digital [Analog/Power], [Digital/Power] (0 (zero))

In analog simulation mode, this device provides a ground reference node for the circuit. **Every analog circuit must have a ground reference.** In digital simulation mode it provides a fixed Low state.

Hex Display

Analog/Digital [Displays/Digital Only] (h)

This is a Hexadecimal 7-Segment Display with a built in decoder. It is intended mainly for use in Digital simulation mode. It will display a hexadecimal number (0-9 and A-F) based on the binary code applied to the pins 1-4. Different colors can be selected for each display. This device can also be used in Analog simulation mode, but the segements will not light up. Example circuit: SIM.CKT.

Hex Key

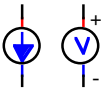
Digital Only [Digital/Input Device] (H)

This is a hexadecimal key. It will generate the binary code associated with the hexadecimal number displayed on the key. After the hex key has been selected (single click on the hex number shown in the middle of the device), the hex number displayed can be changed in two ways: 1) click on the number displayed to increment it, or 2) press a hexadecimal key (0-9 and A-F) on the keyboard. Multiple Keys may be used in a circuit; only the selected key will accept input from the keyboard. Example circuit: LOCK.CKT.

I Source, V Source

Analog/Digital [Analog/Power] (i, v)

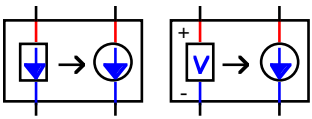
In analog simulation mode, these are independent DC current and voltage sources. Enter the current or voltage in the Label-Value field. In digital simulation mode, they provide a fixed High state on the "+" terminal and a fixed Low state on the "-" terminal (the arrow points away from the "+" terminal, toward the "-" terminal on the I Source). Example circuit: 741.CKT.



I->I Source, V->I Source

Analog Only [Analog/Power]

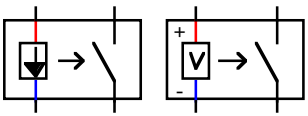
These are linear current-controlled and voltage controlled current sources. The current on the output (right-hand side) is controlled by the current or voltage on the input (left-hand side). Use the Label-Value to set the input-to-output transfer ratio. Example circuit: 741.CKT.



I->Switch, V->Switch

Analog Only [Switches/Controlled]

These devices include the SPICE data for simulating a current-controlled and voltage-controlled switch. Specific models may be added by the user. Example circuit: SWITCHES.CKT.

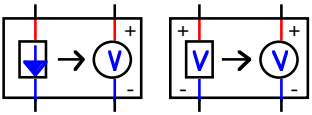


I->V Source, V->V Source

Analog Only [Analog/Power]

These are linear current-controlled and voltage-controlled voltage sources. The voltage on the output (right-hand side) is controlled by the

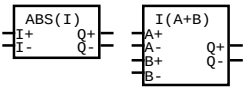
current or voltage on the input (left-hand side). Use the Label-Value to set the input-to-output transfer ratio. Example circuit: 741.CKT.



I-Math1, I-Math2

Analog Only [Math Functions/Current]

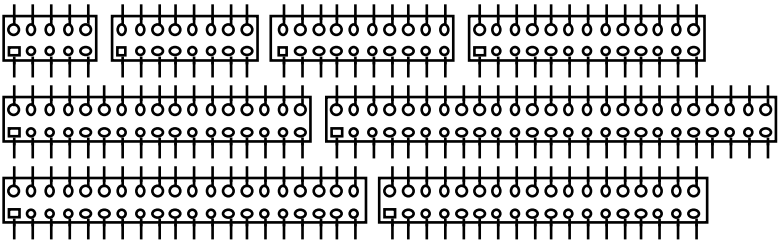
These devices provide direct access to SPICE's nonlinear dependent source math functions. They are set up in subcircuit format to provide easy selection of the math functions. I-Math1 provides access to the single-variable current functions (abs, cos, sqrt, etc.) I-Math2 provides access to the dual-variable current operations (+, -, *, / and ^).



IDC10, IDC16, IDC20, IDC26, IDC34, IDC36, IDC40, IDC50

Schematic [Connectors/IDC Type]

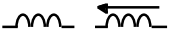
These devices are included for schematic purposes. Bus wires may be added internally to the macro to connect two of them together for simulation. Be sure to use a unique bus wire number for each pair of connectors.



Inductor, Var Inductor

Analog Only [Passive Components/Inductors] (l, L)

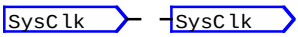
This device includes the SPICE data for simulating an inductor. The inductance of the coil is specified in the Label/Value field. It is drawn as a "variable" inductor for schematic purposes only.



Input, Output

Analog/Digital [Connectors/Misc]

These are schematic symbols of page connectors in a circuit. All “Input” and “Output” devices that have the same name will operate as though they were connected together. Double-click on the device to edit the name. Example circuit: INOUTPUT.CKT.



Lamp

Analog/Digital [Displays/Incandescent]

This device includes the SPICE data for simulating a resistor in analog mode. The value of the resistor is specified in the Label/Value field. In digital simulation mode, the lamp will light when one terminal is high and the other terminal is low. Each lamp may be a different color.

LED

Analog/Digital [Displays/Diode]

This is a Light Emitting Diode. In digital mode, it will “light” when a low level is applied to its cathode and a high level is applied to its anode. Different colors can be selected for each LED. This device also includes the SPICE data for simulating an LED. LEDs may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit. Example circuit: OPTO.CKT.

Logic Display

Analog/Digital [Displays/Digital Only]

This is a simple logic state indicator intended for use mainly in Digital simulation mode. It has only one pin and indicates whether the state is low (display off) or high (display on). Double-click on the Logic Display to change its color. This device can also be used in Analog simulation mode, but it does not light. Example circuit: LED.CKT.

Logic Switch

Analog/Digital [Switches/Digital]

This is a switch which provides either a Low or a High logic level when in digital simulation mode and two programmable voltage levels while in analog simulation mode. When in analog mode, the default voltages levels are 0v and 5v. To change the voltage levels, select the switch by dragging a selection rectangle around it, double-click on it, and then enter a SPICE comment of the following form into the SPICE Data field: *0=1v 1=10v. This comment will make the switch output 1v for a low level and 10v for a high level. While digital simulation is running a single click on the switch will cause its output to immediately change states. If you click on the switch while running an analog simulation, CircuitMaker will ask if you want to rerun the simulation with the switch in the new position. To move a switch to a new location you must first drag a selection rectangle over the switch to select it. Example circuit: SIM.CKT.

LossLessLine

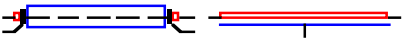
Analog Only [Transmission Lines/SPICE Simulation]

This device includes the SPICE data for simulating a lossless transmission line. Characteristic impedance is specified in the Label/Value field. Time delay or frequency/normalized length are specified in the Spice Data field. Example circuit: LLTRAN.CKT.

LossyLine, URC-Line

Analog Only [Transmission Lines/SPICE Simulation]

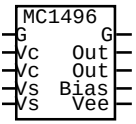
These devices include the SPICE data for simulating lossy and uniform distributed RC transmission lines. Specific models may be added by the user.



MC1496

Analog Only [Linear ICs/Modulators]

This device includes the SPICE data for simulating an MC1496 Balanced Modulator/Demodulator. Devices may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit. Example circuit: AMMOD.CKT.



Mono Jack, Stereo Jack, Phone Jack, Phone Plug

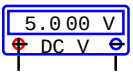
Schematic [Connectors/Misc]

These devices are included for schematic purposes. Bus wires may be added internally to the macro to connect two of them together for simulation. Be sure to use a unique bus wire number for each pair of connectors.

Multimeter

Analog Only [Analog/Instruments]

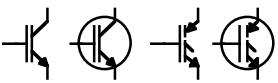
Multimeters can be wired directly into the circuit to measure resistance, voltage or current. DC voltage and current can only be measured if Operating Point Analysis is enabled. To measure DC AVG or AC RMS voltage or current, Transient Analysis must be enabled and must simulate enough cycles of transient data to make the measurements meaningful. Multiple multimeters may be individually programmed. Refer to *Chapter 6: Analog/Mixed-Signal Simulation* in the user manual to program this device. Example circuit: SWITCHES.CKT.



N-IGBT, N-IGBT:A, N-IGBT:B, N-IGBT:C

Analog Only [Active Components/IGBTs]

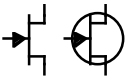
These devices include the SPICE data for simulating N-channel Insulated Gate Bipolar Transistors. Transistors may be selected from a list of available models or new models may be added by the user. Double-click on the device to select the desired model.



N-JFET, N-JFET:A

Analog Only [Active Components/JFETs] (j)

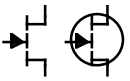
This device includes the SPICE data for simulating an N-channel junction field-effect transistor. JFETs may be selected from a list of available models or new models may be added by the user. Double-click on the device to select the desired model. Example circuit: CSJFAMP.CKT.



N-MESFET, N-MESFET:A

Analog Only [Active Components/MESFETs] (z)

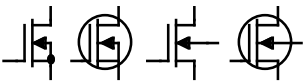
This device includes the SPICE data for simulating an N-channel MESFET (GaAsFET). MESFETs may be selected from a list of available models or new models may be added by the user. Double-click on the device to select the desired model.



N-DMOS 3T, N-DMOS 3T:A, N-DMOS 4T, N-DMOS 4T:A

Analog Only [Active Components/MOSFETs Depl]

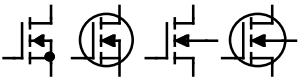
These devices include the SPICE data for simulating 3-terminal and 4-terminal N-channel Depletion Mode MOSFETs. MOSFETs may be selected from a list of available models or new models may be added by the user. Double-click on the device to select the desired model.



N-EMOS 3T, N-EMOS 3T:A, N-EMOS 4T, N-EMOS 4T:A

Analog Only [Active Components/MOSFETs Enh] (m)

These devices include the SPICE data for simulating 3-terminal and 4-terminal N-channel Enhancement Mode MOSFETs. MOSFETs may be selected from a list of available models or new models may be added by the user. Double-click on the device to select the desired model.



N-UJT

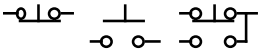
Analog Only [Active Components/Unijunction]

This device includes the SPICE data for simulating an N-channel unijunction transistor. Transistors may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit. See also: Subcircuits.

NC Push-button, NO Push-button, SPDT PB

Analog/Digital [Switches/Push Button]

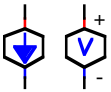
These are Normally-Closed, Normally-Open and Single-Pole Double-Throw Push-Button switches. While digital simulation is running, the switch may be activated by clicking on it with the left mouse button and will remain in the activated position as long as the mouse button is held down. Multiple switches *of the same type* may be activated simultaneously if they have the same label in the Label-Value field. These switches cannot be activated while running an analog simulation, but simply act as a short or an open. Example circuit: CARS.CKT.



NLI Source, NLV Source

Analog Only [Analog/Power]

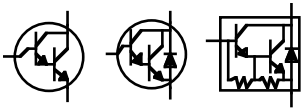
These are nonlinear current and voltage sources. Example circuit: 741.CKT.



NPN Darling1, NPN Darling2, NPN Darling3

Analog Only [Active Components/Darlingtons]

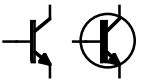
These devices include the SPICE data for simulating an NPN Darlington Transistor. Transistors may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit.



NPN Trans:B, NPN Trans:C

Analog Only [Active Components/BJTs] (q)

These devices include the SPICE data for simulating an NPN bipolar junction transistor. Transistors may be selected from a list of available models or new models may be added by the user. Double-click on the device to select the desired model. Example circuit: CEAMP.CKT.



Op-Amp3

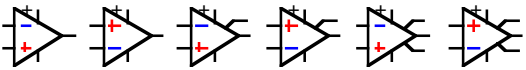
Analog Only [Linear ICs/OPAMPs]

This device is primarily intended for schematic purposes, but it includes SPICE data for simulating an ideal operational amplifier.

Op-Amp5, Op-Amp5:A, Op-Amp6, Op-Amp6:A, Op-Amp7, Op-Amp7:A

Analog Only [Linear ICs/OPAMPs] (o)

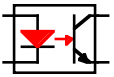
These devices include the SPICE data for simulating operational amplifiers. Op amps may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit. Example circuit: ANALOG.CKT.



OptoIsolator

Analog/Digital [Optical Devices/Coupler]

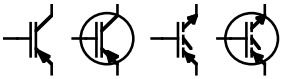
This is an NPN optical isolator. In digital mode, the LED in this device operates exactly like a regular LED. When the LED is “on”, the logic level applied to the NPN transistor's emitter will appear on its collector. When the LED is “off”, a 3-state level will appear on the transistor's collector. In analog mode, the LED does not light, but the SPICE subcircuit information will be used for simulation. Double-click on the device to select the desired subcircuit. Example circuits: OPTO.CKT, STEPPER.CKT.



P-IGBT, P-IGBT:A, P-IGBT:B, P-IGBT:C

Analog Only [Active Components/IGBTs]

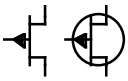
These devices include the SPICE data for simulating P-channel Insulated Gate Bipolar Transistors. Transistors may be selected from a list of available models or new models may be added by the user. Double-click on the device to select the desired model.



P-JFET, P-JFET:A

Analog Only [Active Components/JFETs] (J)

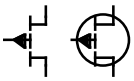
This device includes the SPICE data for simulating a P-channel junction field-effect transistor. JFETs may be selected from a list of available models or new models may be added by the user. Double-click on the device to select the desired model.



P-MESFET, P-MESFET:A

Analog Only [Active Components/MESFETs] (Z)

These devices include the SPICE data for simulating a P-channel MESFET (GaAsFET). MESFETs may be selected from a list of available models or new models may be added by the user. Double-click on the device to select the desired model.



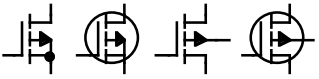
P-DMOS 3T, P-DMOS 3T:A, P-DMOS 4T, P-DMOS 4T:A

Analog Only [Active Components/MOSFETs Depl]

These devices include the SPICE data for simulating 3-terminal and 4-terminal P-channel Depletion Mode MOSFETs. MOSFETs may be selected from a list of available models or new models may be added by the user. Double-click on the device to select the desired model.

P-EMOS 3T, P-EMOS 3T:A, P-EMOS 4T, P-EMOS 4T:A

Analog Only [Active Components/MOSFETs Enh] (M)
These devices include the SPICE data for simulating 3-terminal and 4-terminal P-channel Enhancement Mode MOSFETs. MOSFETs may be selected from a list of available models or new models may be added by the user. Double-click on the device to select the desired model.



Pentode, Pentode:H

Schematic [Active Components/Vacuum Tubes]
These devices are included for schematic purposes.

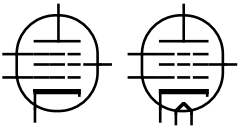


Photo Diode

Schematic [Optical Devices/Sensors]
This device is included for schematic purposes.

Photo NPN

Schematic [Optical Devices/Sensors]
This device is included for schematic purposes.

Photo Resist

Analog Only [Optical Devices/Sensors]
This device includes the SPICE data for simulating a standard resistor. The value of the resistor is specified in the Label/Value field.

PLL

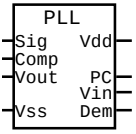
Analog Only [Linear ICs/Phase-Locked Loops]

This device includes Digital Simcode and XSpice data for simulating a Phase-Locked Loop (PLL). Double-click on the device to select an appropriate model based on the center frequency of the FM signal. The center frequency and frequency range of the model is determined by its Fc and Fr parameters, respectively. The PLL consists of a Voltage-Controlled Oscillator (VCO), and an XOR phase comparator. An external low pass filter is added by wiring a resistor and capacitor to the appropriate pins, as shown in the example circuit PLL.CKT.

The VCO outputs a square wave whose frequency corresponds to the input voltage at Vin. For example, suppose the center frequency (Fc) is set at 10kHz, and the range (Fr) is set at 5kHz, with Vdd and Vss at 5V and 0V respectively. Then a voltage of 2.5V at Vin would cause an output frequency of 10kHz at Vout, while 0V at Vin would result in 5kHz at Vout, and 5V at Vin would result in 15kHz at Vout. If the available PLL models do not cover the desired frequency range, you can edit one of the models, change the parameters, and save it with a new name. The PLL device can lock on frequencies that are within the range specified by Fc +/- Fr

To achieve phase lock, Vout is wired to Comp, which is one of the phase comparator inputs. The other phase comparator input (Sig) is wired to the incoming reference signal. A phase difference in the two signals will cause the phase compare output (PC) to be high more than it is low, which causes the external capacitor to be charged, more than it is discharged, resulting in a higher input voltage at Vin. This increases the frequency at Vout, thus bringing the two signals into phase. When in the locked state, the Vout will lag the input signal (Sig) by 0 degrees at the low end of the VCO's frequency range, 90 degrees at the center frequency (Fc), and 180 degrees at the high end.

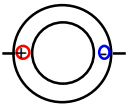
The Vin signal is internally connected to the Dem pin through a source follower. Thus the demodulated signal can be accessed at the Dem pin so that the Vin pin is not loaded down. Example circuit: PLL.CKT.



Piezo Buzzer

Analog/Digital [Transducers/Sound Device]

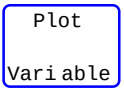
In digital simulation mode, the piezo buzzer will send a continuous stream of beeps to the PC's speaker when a low level is applied to its "-" terminal and a high level is applied to its "+" terminal. It contains SPICE data for use in analog mode as a capacitor. Example circuit: SOUND.CKT.



Plot Var

Analog Only [Analog/SPICE Controls]

This device provides a list of all of the plot variables for which data has been collected for the circuit. Place this device anywhere in the drawing window; no wires are needed. Click on the device with the Probe Tool, then select the variable you wish to plot from the list. To view multiple waveforms, SHIFT-click on the Plot Var device.



PNP Darling1, PNP Darling2, PNP Darling3

Analog Only [Active Components/Darlingtons]

This device includes the SPICE data for simulating an PNP Darlington Transistor. Transistors may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit.

PNP Trans:B, PNP Trans:C

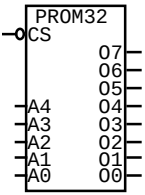
Analog Only [Active Components/BJTs] (Q)

These devices include the SPICE data for simulating an PNP bipolar junction transistor. Transistors may be selected from a list of available models or new models may be added by the user. Double-click on the device to select the desired model. Example circuit: PUSHPULL.CKT.

PROM32

Analog/Digital [Digital/RAM-PROM]

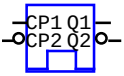
This is a 32 x 8 PROM. Multiple PROMs may be individually programmed. Refer to *Chapter 10: Edit Menu* in the user manual to program this device. PROM data is saved with the circuit and in macros. Example circuit: STEPPER.CKT.



Pulser

Digital Only [Digital/Instrument] (p)

The Pulser is a programmable pulse generator. Multiple Pulsers may be individually programmed. Refer to *Chapter 5: Digital Logic Simulation* in the user manual to program this device. Example circuit: SIM.CKT.



PUT

Analog Only [Active Components/Unijunction]

This device includes the SPICE data for simulating a programmable unijunction transistor. PUTs may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit.

Reference3

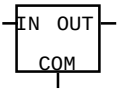
Analog Only [Linear ICs/References]

This device includes the SPICE data for simulating a 3-pin programmable reference. References may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit.

Regulator3

Analog Only [Linear ICs/Regulators]

This device includes the SPICE data for simulating a 3-pin voltage regulator. Regulators may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit.



Relays

Relays are available in two forms. The SPDT Relay is a complete unit, containing both the coil and the contacts in a single device. Other relay devices are available in separate sections, allowing you to create your own relays with multiple pairs of contacts. By assigning the same text in the Description field of the coil and the contacts, the coil can be assigned to switch any number of contacts.

SPDT Relay

Analog/Digital [Relays/Complete]

This device includes the SPICE data for simulating a Single-Pole Double-Throw relay. Relays may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit. In digital mode, it switches the contact connections when a low level is applied to one terminal of the coil and a high level is applied to the other terminal. Example circuit: ALARM.CKT, ANRELAY.CKT.

Circle, Polar Coil, Rectangle, Solenoid, Standard

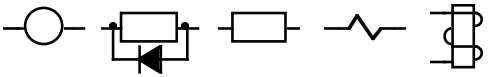
Analog/Digital [Relays/Coil] (k)

These relay coils can be used in conjunction with any of the relay contacts. In order to control contacts with a given coil, set the Description field to the same string for both the coil and all contacts which the coil should control.

In **digital** simulation mode, the coils switch when a low level is applied to one terminal of the coil and a high level is applied to the other terminal. The pickup and release times for a coil can be individually programmed.

The pickup time is the time delay following activation of the coil until the contacts close while the release time is the time following deactivation of the coil until the contacts open. To change the pickup and release times, double-click on a coil and then enter a SPICE comment of the following form into the SPICE Data field: *p=2 r=3. This comment will set the digital simulation mode pickup time to be 2 ticks and the release time to be 3 ticks.

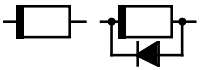
In **analog** simulation mode the coil may be selected from a list of available models or new models may be added by the user. Double-click on the device to select the desired model. Note: No SPICE data is included for the Latch Coil or the Polar Latch. Example circuit: LADDER.CKT.



Latch Coil, Polar Latch

Digital Only [Relays/Coil] (k)

These relay coils are similar to those described above with the following exceptions: 1) they do not contain SPICE simulation data for use in analog simulation and 2) being latched coils, they latch the contacts into the opposite position with a single pulse.



SPDT:A, SPDT:B, SPDT:C, SPST-NC, SPST-NO

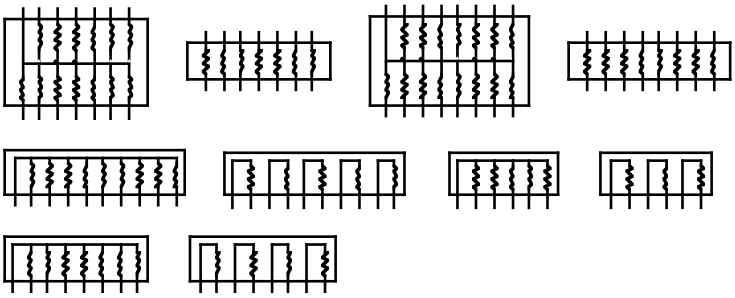
Analog/Digital [Relays/Contacts] (K)

These relay contacts can be used in conjunction with any of the relay coils. In order to control contacts with a given coil, set the Description field to the same string for both the coil and all contacts which the coil should control. In analog simulation mode, the contacts may be selected from a list of available models or new models may be added by the user. Double-click on the device to select the desired model. Example circuit: LADDER.CKT.

RDIP14, RDIP14:A, RDIP16, RDIP16:A
RSIP10, RSIP10:A, RSIP6, RSIP6:A
RSIP8, RSIP8:A

Analog Only [Passive Components/Resistors]

These devices include the SPICE data for simulating resistor packs. The value of the resistors is specified in the Label/Value field.



Resistor, Resistor:A

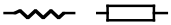
Analog/Digital [Passive Components/Resistors] (r)

These devices include the SPICE data for simulating a resistor. The value of the resistor is specified in the Label/Value field. In digital simulation mode, when connected directly to a +V or a Ground, it acts like a standard pull-up or pull-down resistor. Otherwise, it acts as an open in digital simulation mode. Example circuits: ROCKET.CKT, ANALOG.CKT.

SemiResistor, SemiResistorA

Analog Only [Passive Components/Resistors]

This device includes the SPICE data for simulating a semiconductor resistor. Semiconductor resistors may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit.



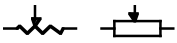
Var Resistor, Var ResistorA

Analog Only [Passive Components/Resistors] (R)

These devices include the SPICE data for simulating two fixed resistors by setting the following defaults:

Label/Value:	10k 40%
Spice Data:	%DA %1 %2 4k
	%DB %2 %3 6k

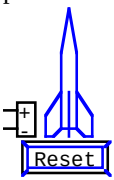
where the total resistance is 4k + 6k = 10k. The values in the Spice Data field are adjusted automatically by changing the Label-Value.



Rocket

Analog/Digital [Digital/Output Devices]

This is an animated device similar to the Car, but with + and - input pins. When a high state is placed on the + input and a low state is placed on the - input, the rocket will fire. The reset button on the rocket returns the rocket to its starting position. Double-click on the rocket to program the travel distance (up to 1000 units). Different colors can be selected for each rocket. This device can also be used in Analog simulation mode, but is not animated. In this mode, a 1kW resistor is placed across the + and - input pins. Example circuit: ROCKET.CKT.



Schottky

Analog Only [Active Components/Diodes]

This device includes the SPICE data for simulating a schottky diode. Diodes may be selected from a list of available models or new models may be added by the user. Double-click on the device to select the desired model.

SCOPE

Digital Only [Digital/Instrument] (T)

A "SCOPE" is actually a tool which allows you to look at simulation waveforms as they are charted in the Waveforms window. Connect a scope (each scope must have a unique name) at each point in the circuit where you wish to see the states charted. Double-click on the device to edit the name. SCOPEs are also used to identify the connecting nodes when creating a subcircuit drawing for use in exporting a SPICE subcircuit. Example circuit: SCOPE.CKT.

SCR

Analog Only [Active Components/SCRs]

This device includes the SPICE data for simulating an SCR (thyristor). SCRs may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit. Example circuit: SCR.CKT.

Shockley

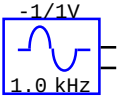
Schematic [Schematic Symbols/Diodes]

This device is included for schematic purposes.

Signal Gen

Analog Only [Analog/Instruments] (g)

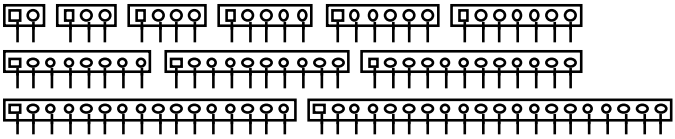
This is a fully programmable, multifunction analog signal generator which offers a variety of output waveforms. Multiple generators may be individually programmed. The minimum and maximum amplitudes of the waveform are stored in the Label-Value field and by default are displayed above the device symbol. Refer to *Chapter 6: Analog/Mixed-Signal Simulation* in the user manual to program this device. Example circuit: ANALOG.CKT.



SIP2, SIP3, SIP4, SIP5, SIP6, SIP7, SIP8, SIP10, SIP12, SIP16, SIP20

Schematic [Connectors/SIP Type]

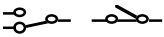
These devices are included for schematic purposes.



SPDT Switch, SPST Switch

Analog/Digital [Switches/Toggle] (S)

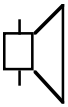
These are functional Single-Pole Double-Throw and Single-Pole Single-Throw switches. Multiple switches *of the same type* may be activated simultaneously (creating double-pole or triple-pole switches, etc.) if they have the same label in the Label-Value field. If you try to activate the switch while running an analog simulation, CircuitMaker will ask if you want to rerun the simulation with the switch in the new position. Example circuit: ALARM.CKT.



Speaker

Analog/Digital [Transducers/Sound Device]

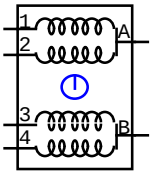
In digital simulation mode, the speaker will send a single beep to the PC's speaker when a low level is applied to one of its terminals and a high level is applied to its other terminal. It will also send a single beep each time the high and low level are reversed or removed and then applied. It contains SPICE data for use in analog mode as a resistor. Example circuit: SOUND.CKT.



Stepper

Analog/Digital [Digital/Output Device]

This device simulates an eight position stepper motor. It is intended mainly for Digital simulation mode. It can be connected in unipolar or bipolar mode and can be driven in full or half steps. The following tables show how the motor is driven in unipolar mode with the A and B terminals connected to a logic high. In analog simulation mode, it is not animated, but treated as inductors and resistors in series. Example circuit: STEPPER.CKT.



Half Steps

1	2	3	4
0	x	0	0
0	x	x	0
0	0	x	0
x	0	x	0
x	0	0	0
x	0	0	x
0	0	0	x
0	x	0	x

Counter Clockwise Rotation

Full Steps

1	2	3	4
0	x	0	x
0	x	x	0
x	0	x	0
x	0	0	x

CW Rotation

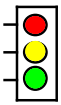
CCW Rotation

x = Off (3-state)
0 = Logic Low

Stoplight

Analog/Digital [Digital/Output Device]

This device has 3 lights—red, yellow and green—with one input for each light. It is intended mainly for use in Digital simulation mode. The light will be on when its associated pin is in the high state and off when its pin is in the low state. In analog simulation mode, the lights do not light. Example circuit: DISPLAY.CKT.



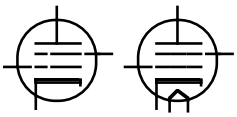
Terminal

Analog/Digital [Connectors/Misc] (t)

This is a schematic symbol of a generic connector terminal point. It can be used in Analog simulations to connect digital simcode devices to a power bus. To do so, enter the name of the bus as the name of the Terminal. The Terminal can also be used to connect a circuit node to any other circuit node by using giving multiple terminals the same name. See *Chapter 4: Drawing and Editing Schematics* in the user manual.

Tetrode, Tetrode:H

Schematic [Active Components/Vacuum Tubes]
This device includes the SPICE data for simulating a vacuum tube tetrode. Tetrodes may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit. Example circuit: VTPWRAMP.CKT.



Transformers

CircuitMaker provides two different types of transformer simulation. The first method which most closely represents the functionality of actual transformers uses subcircuits, consisting of a voltage-controlled voltage supply, a current-controlled current supply, winding resistances and leakage and magnetization inductors. The turns ratios for these devices is determined by the voltage and current gains of the supplies. The Trans1, Trans2 and Trans3 devices use this method.

The second method uses coupled (mutual) inductors. This method is described in detail in the Analog Simulation chapter. The drawback to this method is that the impedance of the secondary winding is not reflected back into the primary. The Transformer and CTTransformer devices use this method. See Coupled Inductors for more information.

Note: For SPICE to operate properly, all nodes in a circuit require a DC path to ground. In circuits that use transformers, *both* sides of the transformer need a DC path to ground. This can be accomplished in various ways:

1. Ground can be connected directly to both sides of the transformer (see example circuit PS1.CKT).

2. Ground can be connected indirectly to both sides of the transformer through a resistor (see example circuit PS2.CKT).

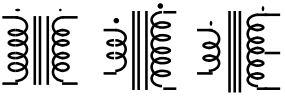
3. Enable the RSHUNT option in the Analog Options dialog box which is accessed from the Options menu.

For in-depth information on creating your own SPICE subcircuit transformers, refer to the article *Improved Spice model simulates transformer's physical processes*, EDN Magazine, August 19, 1993, pg. 105.

Trans1, Trans2, Trans3

Analog Only [Transformers/Subcircuit]

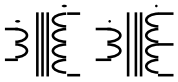
These devices include the SPICE data for simulating a transformer. Transformers may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit. Example circuits: PS1.CKT, PS2.CKT.



Transformer, CTTransformer

Analog Only [Transformers/Coupled Inductors]

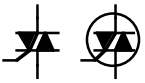
These devices include the SPICE data for simulating a pair and a trio of coupled inductors. Example circuit: VTPWRAMP.CKT.



Triac:A, Triac:B

Analog Only [Active Components/Triacs]

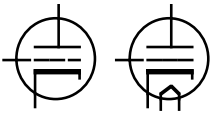
This device includes the SPICE data for simulating a triac (thyristor). Triacs may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit. Example circuit: TRIAC.CKT.



Triode, Triode:H

Analog Only [Active Components/Vacuum Tubes]

This device includes the SPICE data for simulating a vacuum tube triode. Triodes may be selected from a list of available subcircuits or new subcircuits may be added by the user. Double-click on the device to select the desired subcircuit. Example circuit: RIAAAMP.CKT.

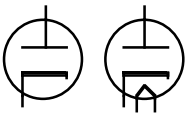


Tunnel

Schematic [Schematic Symbols/Diodes]
This device is included for schematic purposes.

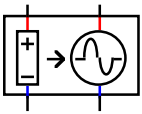
Vac Diode, Vac Diode:H

Schematic [Active Components/Vacuum Tubes]
These devices are included for schematic purposes.



VCO

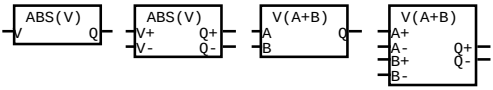
Analog Only [Analog/Power]
This device includes XSpice data for simulating a Voltage-Controlled Oscillator. Output signal can be a sine, square or triangle wave. Double-click on the device to change its characteristics. Output frequency is controlled by the input voltage. Characteristics which can be adjusted by the user include low and high output voltage levels, duty cycle (for square and triangle waves), rise and fall times (for square waves) and the input control voltage vs. output frequency point arrays. The input control voltage vs. output frequency point arrays are used to define a line which, when extrapolated determines the frequency produced by any given input voltage. By default, a 1V DC input produces an 1kHz signal on the output; a 2V DC input produces an 2kHz signal on the output, etc. Example circuit: VCO.CKT.



V-Math1, V-Math1 Ref, V-Math2, V-Math2 Ref

Analog Only [Math Functions/Voltage]
These devices provide direct access to SPICE's nonlinear dependent source math functions. They are set up in subcircuit format to provide easy selection of the math functions. V-Math1 and V-Math1 Ref provides access to the single-variable voltage functions (abs, cos, sqrt, etc.) V-Math2 and V-Math2 Ref provides access to the dual-variable voltage operations (+, -, *, / and ^). V-Math1 and V-Math2 require only a single

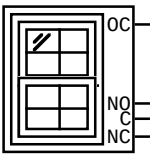
input for each variable which is then referenced to ground. V-Math1 Ref and V-Math 2 Ref require both + and - inputs for each variable and provide both a + and - output. Example circuit: MATH1.CKT.



Window

Digital Only [Digital/I/O Device]

This is an animated device which simulates the opening and closing of a window. It has a single input (OC) which opens the window when high and closes it when low, or, it can be opened or closed by clicking on the window pane with the mouse. It also contains a single-pole double-throw switch that is activated when the window is opened or closed. Example circuit: ALARM.CKT.



Basic Logic Devices

*Analog/Digital [Digital/*the minor class varies*]*

Basic logic devices include a variety of common gates and flip-flops. Most of the gates are provided with their DeMorgan equivalents. Example circuit: 4X4.CKT.

Buffers:	Output will follow the input.
3-State Buffers:	If the output is enabled, output will follow the input.
Inverters:	If the input is high, output will be low.
AND gates:	If all inputs high, output will be high. 2, 3 and 4 inputs.
OR gates:	If any input high, output will be high. 2, 3 and 4 inputs.
NAND gates:	If all inputs high, output will be low. 2, 3, 4 and 8 inputs.
NOR gates:	If any input high, output will be low. 2, 3, 4 and 8 inputs.
XOR gates:	If only one input is high, output will be high. 2 inputs.
XNOR gates:	If only one input is high, output will be low. 2 inputs.
D Flip-flops:	Output follows the input when clock occurs.
JK Flip-flops:	Output based on J and K inputs when the clock occurs.
SR Flip-flops:	Output is high when set, low when reset.

Digital ICs

Analog/Digital [Digital ICs by Number/the minor class varies]

CircuitMaker provides a comprehensive library of commonly used Digital integrated circuits. Pin names are based on the HE4000 and 74LS00 families as defined by Philips Semiconductors, an international manufacturer of integrated circuits. The device number listed below indicates the logical function of the device. In digital simulation mode, the logic function of all families (74xx, 74LSxx, 74Sxx, 74Fxx, 74HCxx, etc.) is the same. In analog simulation mode, the characteristics of each family is unique. Characteristics of each part can be adjusted only within the min, max and typical databook values.

Note: *O.C. = Open Collector outputs.*

4000	Dual 3-Input NOR Gate and Inverter
4001	Quad 2-Input NOR Gate
4002	Dual 4-Input NOR Gate
4006	18-Stage Static Shift Register
4008	4-Bit Binary Full Adder
4011	Quad 2-Input NAND Gate
4012	Dual 4-Input NAND Gate
4013	Dual D Flip Flop
4014	8-Bit Static Shift Register
4015	Dual 4-bit Static Shift Register
4017	5-Stage Johnson Counter
4018	Presettable Divide-by-n Counter
4019	Quad 2-Input Multiplexer
4020	14-Stage Binary Counter
4021	8-Bit Static Shift Register
4022	4-Stage Divide-by-8 Johnson Counter
4023	Triple 3-Input NAND Gate
4024	7-Stage Binary Counter
4025	Triple 3-Input NOR Gate
4027	Dual JK Flip Flop
4028	1-of-10 Decoder
4029	Synchronous Up/Down Binary/Decade Counter
4030	Quad Exclusive-OR Gate
4031	64-Stage Static Shift Register
4035	4-Bit Universal Shift Register
4040	12-Stage Binary Counter
4041	Quad True/Complement Buffer
4042	Quad D-Latch
4043	Quad R/S Latch (3-State)
4044	Quad R/S Latch (3-State)
4049	Hex Inverter
4050	Hex Buffer
4068	8-Input NAND Gate
4069	Hex Inverter
4070	Quad Exclusive-OR Gate
4071	Quad 2-Input OR Gate
4072	Dual 4-Input OR Gate
4073	Triple 3-Input AND Gate

4075 Triple 3-Input OR Gate
4076 Quad D Register (3-State)
4077 Quad Exclusive-NOR Gate
4078 8-Input NOR Gate
4081 Quad 2-Input AND Gate
4082 Dual 4-Input AND Gate
4085 Dual 2-Wide 2-Input AND-OR-Invert Gate
4086 4-Wide 2-Input AND-OR-Invert Gate
4093 Quad 2-Input NAND Schmitt Trigger
4094 8-Stage Shift-and-Store Bus Register
4104 Quad Low-to-High Voltage Translator (3-State)
4502 Strobed Hex Inverter/Buffer
4505 64-Bit, 1-Bit per Word Random Access Read/Write Memory
4508 Dual 4-Bit Latch
4510 BCD Up/Down Counter
4511 BCD to 7-Segment Latch/Decoder/Driver
4512 8-Input Multiplexer (3-State)
4514 1-of-16 Decoder/Demultiplexer with Input Latches
4515 1-of-16 Decoder/Demultiplexer with Input Latches
4516 Binary Up/Down Counter
4517 Dual 64-Bit Static Shift Register
4518 Dual BCD Counter
4519 Quad 2-Input Multiplexer
4520 Dual 4-Bit Binary Counter
4522 Programmable 4-Bit BCD Down Counter
4526 Programmable 4-Bit Binary Down Counter
4531 13-Input Parity Checker/Generator
4532 8-Input Priority Encoder
4539 Dual 4-Input Multiplexer
4543 BCD to 7-Segment Latch/Decoder/Driver
4555 Dual 1-or-4 Decoder/Demultiplexer
4556 Dual 1-of-4 Decoder/Demultiplexer
4585 4-Bit Magnitude Comparator
4731 Quad 64-Bit Static Shift Register

7400 Quad 2-Input NAND Gate
7401 Quad 2-Input NAND Gate (O.C.)
7402 Quad 2-Input NOR Gate
7403 Quad 2-Input NAND Gate (O.C.)
7404 Hex Inverter
7405 Hex Inverter (O.C.)
7406 Hex Inverter Buffer/Driver (O.C.)
7407 Hex Inverter/Driver (O.C.)
7408 Quad 2-Input AND Gate
7409 Quad 2-Input AND Gate (O.C.)
7410 Triple 3-Input NAND Gate
7411 Triple 3-Input AND Gate
7412 Triple 3-Input NAND Gate (O.C.)
7413 Dual 4-Input NAND Schmitt Trigger
7414 Hex Inverter Schmitt Trigger
7415 Triple 3-Input AND Gate (O.C.)
7416 Hex Inverter Buffer/Driver (O.C.)
7417 Hex Buffer/Driver (O.C.)
7420 Dual 4-Input NAND Gate
7421 Dual 4-Input AND Gate
7422 Dual 4-Input NAND Gate (O.C.)

7425	Dual 4-Input NOR Gate with Strobe
7426	Quad 2-Input NAND Gate (O.C.)
7427	Triple 3-Input NOR Gate
7428	Quad 2-Input NOR Buffer
7430	8-Input NAND Gate
7432	Quad 2-Input OR Gate
7433	Quad 2-Input NOR Buffer (O.C.)
7437	Quad 2-Input NAND Buffer
7438	Quad 2-Input NAND Buffer (O.C.)
7439	Quad 2-Input NAND Buffer (O.C.)
7440	Dual 4-Input NAND Buffer
7442	BCD-to-Decimal Decoder (1-of-10)
7445	BCD-to-Decimal Decoder/Driver (O.C.)
7447	BCD-to-Seven-Segment Decoder/Driver (O.C.)
7448	BCD-to-Seven-Segment Decoder/Driver w/Pullups
7473	Dual J-K Flip-Flop
7474	Dual D Flip-Flop
7475	Quad Bistable Latch
7476	Dual J-K Flip-Flop
7483	4-Bit Full Adder
7485	4-Bit Magnitude Comparator
7486	Quad 2-Input Exclusive-OR Gate
7490	Decade Counter
7492	Divide-by-Twelve Counter
7493	4-Bit Binary Ripple Counter
7495	4-Bit Shift Register
7496	5-Bit Shift Register
74107	Dual J-K Flip-Flop
74109	Dual J-K Positive Edge-Trigger Flip-Flop
74112	Dual J-K Edge-Triggered Flip-Flop
74113	Dual J-K Edge-Triggered Flip-Flop
74125	Quad Buffer (3-State)
74126	Quad Buffer (3-State)
74133	13-Input NAND Gate
74136	Quad 2-Input Exclusive-OR Gate (O.C.)
74138	1-of-8 Decoder/Demultiplexer
74139	Dual 1-of-4 Decoder/Demultiplexer
74147	10-Line to 4-Line Priority Encoder
74148	8-Input Priority Encoder
74151	8-Input Multiplexer
74153	Dual 4-Line to 1-Line Multiplexer
74154	1-of-16 Decoder/Demultiplexer
74155	Dual 2-Line to 4-Line Decoder/Demultiplexer
74157	Quad 2-Input Data Selector/Multiplexer
74158	Quad 2-Input Data Selector/Multiplexer (Inverting)
74160A	BCD Decade Counter
74161A	4-Bit Binary Counter
74162A	BCD Decade Counter
74163A	4-Bit Binary Counter
74164	8-Bit Serial-In Parallel-Out Shift Register
74165	8-Bit Serial/Parallel-In, Serial-Out Shift Register
74166	8-Bit Serial/Parallel-In, Serial-Out Shift Register
74168	Synchronous BCD Decade Up/Down Counter
74169	Synchronous 4-Bit Binary Up/Down Counter
74173	Quad D Flip-Flop (3-State)
74174	Hex D Flip-Flop

74175	Quad D Flip-Flop
74181	4-Bit Arithmetic Logic Unit
7482	Lookahead Carry Generator
74190	Presettable BCD/Decade Up/Down Counter
74191	Presettable 4-Bit Binary Up/Down Counter
74192	Presettable BCD/Decade Up/Down Counter
74193	Presettable 4-Bit Binary Up/Down Counter
74194	4-Bit Bidirectional Universal Shift Register
74195	4-Bit Parallel Access Shift Register
74197	Presettable 4-Bit Binary Ripple Counter
74199	8-Bit Parallel Access Shift Register
74240	Octal Inverter Buffer (3-State)
74241	Octal Buffer (3-State)
74242	Quad Inverting Transceiver (3-State)
74243	Quad Bus Transceiver (3-State)
74244	Octal Buffer (3-State)
74245	Octal Bus Transceiver (3-State)
74247	BCD-to-Seven-Segment Decoder/Driver (O.C.)
74248	BCD-to-Seven-Segment Decoder/Driver w/Pullups
74251	8-Input Multiplexer (3-State)
74253	Dual 4-Input Multiplexer (3-State)
74256	Dual 4-Bit Addressable Latch
74257	Quad 2-Line to 1-Line Data Selector/Multiplexer (3-State)
74258	Quad 2-Line to 1-Line Data Selector/Multiplexer (3-State)
74259	8-Bit Addressable Latch
74266	Quad 2-Input Exclusive-NOR Gate (O.C.)
74273	Octal D Flip-Flop
74280	9-Bit Odd/Even Parity Generator/Checker
74283	4-Bit Full Adder with Fast Carry
74290	BCD Decade Counter
74293	4-Bit Binary Ripple Counter
74298	Quad 2-Port Register
74352	Dual 4-Line to 1-Line Multiplexer
74353	Dual 4-Input Multiplexer (3-State)
74373	Octal Transparent Latch (3-State)
74374	Octal D Flip-Flop (3-State)
74375	Quad Bistable Latch
74377	Octal D Flip-Flop with Clock Enable
74378	Hex D Flip-Flop with Clock Enable
74568	BCD Decade Up/Down Synchronous Counter (3-State)
74569	4-Bit Binary Up/Down Synchronous Counter (3-State)

SPICE Models

The SPICE models listed on the following pages are for use in CircuitMaker's Analog simulation mode. The models in this section were created by MicroCode Engineering, Inc. Those models marked with an asterisk (*) are only available in CircuitMaker PRO.

Diodes

(785 Devices)

100HF100PV	150KS20	1N1187A	1N34	1N462A	25CTQ035	30CTQ050
100HF120PV	150KS40	1N1188	1N3670A	1N463A	25CTQ035S	30CTQ050S
100HF140PV	150KS5	1N1188A	1N3671A	1N4934	25CTQ040	30CTQ060
100HF160PV	150KS60	1N1189	1N3672A	1N4938	25CTQ045	30CTQ060S
100HF20PV	150KS80A	1N1189A	1N3673A	1N5162*	25CTQ045S	32CTQ030
100HF40PV	150L100A*	1N1190	1N3735*	1N5282	25F10	32CTQ030S
100HF60PV	150L10A*	1N1190A	1N3736*	1N5400	25F100	400CNQ035
100HF80PV	150L20A*	1N1199A	1N3737*	1N5401	25F120	400CNQ040
10CTQ150	150L40A*	1N1200A	1N3738*	1N5402	25F20	400CNQ045
10CTQ150S	150L5A*	1N1201A	1N3739*	1N5404	25F40	401CMQ045
12CTQ035	150L60A*	1N1202A	1N3740*	1N5406	25F60	401CNQ035
12CTQ035S	150L80A*	1N1203A	1N3741*	1N5407	25F80	401CNQ040
12CTQ040	151CMQ035	1N1204A	1N3742*	1N5408	300CNQ035	401CNQ045
12CTQ045	151CMQ040	1N1205A	1N3743*	1N914	300CNQ040	403CMQ100
12CTQ045S	151CMQ045	1N1206A	1N3765	1N914A	300CNQ045	403CNQ080
12F10	151CNQ045	1N2054*	1N3766	1N914B	300HF100*	403CNQ100
12F100	152CMQ030	1N2055*	1N3767	1N916	300HF120*	408CMQ060
12F100B	153CMQ080	1N2057*	1N3768	1N916A	300HF140*	408CNQ060
12F10B	153CMQ100	1N2059*	1N4001	1N916B	300HF160*	409CNQ150
12F120	153CNQ100	1N2061*	1N4002	200CNQ035	300HF20*	40CDQ035
12F120B	15CTQ035	1N2064*	1N4003	200CNQ040	300HF40*	40CDQ040
12F20	15CTQ035S	1N2066*	1N4004	200CNQ045	300HF60*	40CDQ045
12F20B	15CTQ040	1N2067*	1N4005	200HF100PV*	300HF80*	40CPQ035
12F40	15CTQ045	1N2068*	1N4006	200HF120PV*	300U100A*	40CPQ040
12F40B	15CTQ045S	1N2128A	1N4007	200HF140PV*	300U10A*	40CPQ045
12F60	160CMQ035	1N2129A	1N4044*	200HF160PV*	300U20A*	40CPQ050
12F60B	160CMQ040	1N2130	1N4045*	200HF20PV*	300U40A*	40CPQ060
12F80	160CMQ045	1N2131A	1N4046*	200HF40PV*	300U60A*	40CPQ080
12F80B	160CNQ045	1N2133A	1N4047*	200HF60PV*	300U80A*	40CPQ100
130HF100PV	161CMQ035	1N2135A	1N4048*	200HF80PV*	301CNQ035	40HF10
130HF120PV	161CMQ040	1N2137A	1N4049*	201CMQ045	301CNQ040	40HF100
130HF140PV	161CMQ045	1N2138A	1N4050*	201CNQ035	301CNQ045	40HF120
130HF160PV	161CNQ045	1N3064	1N4051*	201CNQ040	301CNQ050	40HF140
130HF20PV	162CMQ030	1N3070	1N4052*	201CNQ045	301U100 D	40HF160
130HF40PV	162CNQ030	1N3085*	1N4053*	201CNQ050	301U120*	40HF20
130HF60PV	163CMQ080	1N3086*	1N4054*	203CMQ100	301U140*	40HF40
130HF80PV	163CMQ100	1N3087*	1N4055*	203CNQ080	301U160*	40HF60
150CMQ035	163CNQ100	1N3088*	1N4056*	203CNQ100	301U180*	40HF80
150CMQ040	168CMQ060	1N3089*	1N4148	208CMQ060	301U200*	440CMQ030
150CMQ045	16CTQ080	1N3090*	1N4149	208CNQ060	301U220*	440CNQ030
150CNQ045	16CTQ080S	1N3091*	1N4150	209CMQ150	301U240*	444CNQ035
150HF100PV	16CTQ100	1N3092*	1N4151	209CNQ150	301U250*	444CNQ040
150HF120PV	16CTQ100S	1N3111*	1N4152	20CTQ035	301U80 D	444CNQ045
150HF140PV	16F10	1N3208	1N4153	20CTQ035S	303CNQ080	445CNQ015
150HF160PV	16F100	1N3209	1N4154	20CTQ040	303CNQ100	45L10*
150HF20PV	16F120	1N3210	1N4244	20CTQ045	309CNQ150	45L100*
150HF40PV	16F20	1N3211	1N4305	20CTQ045S	30CPQ035	45L120*
150HF60PV	16F40	1N3212	1N4446	21PT10	30CPQ040	45L140*
150HF80PV	16F60	1N3213	1N4447	21PT20	30CPQ045	45L160*
150K100A	16F80	1N3214	1N4448	21PT40	30CPQ050	45L20*
150K10A	1N1183	1N3288A	1N4454	21PT5	30CPQ060	45L40*
150K20A	1N1183A	1N3289A	1N456	21PT60	30CPQ080	45L60*
150K30A	1N1184	1N3290A	1N456A	220CMQ030	30CPQ100	45L80*
150K40A	1N1184A	1N3291A	1N457	220CNQ025	30CPQ150	470PDA10*
150K5A	1N1185	1N3292B	1N457A	220CNQ030	30CTQ035	470PDA20*
150K60A	1N1185A	1N3293A	1N458	224CNQ035	30CTQ035S	470PDA40*
150K80A	1N1186	1N3294A	1N458A	224CNQ040	30CTQ040	470PDA60*
150KS10	1N1186A	1N3295A	1N459	224CNQ045	30CTQ045	470PDAR10*
150KS100A	1N1187	1N3296A	1N459A	225CNQ015	30CTQ045S	470PDAR20*

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470PDAR40*	80CNQ040	FDH333	SD1100C18L*	SD200N06PV*	SD400N12PV*
470PDAR60*	80CNQ045	FDH3595	SD1100C20C*	SD200N08PV*	SD400N14PV*
60CDQ035	80CNQ045SL	FDH400	SD1100C20L*	SD200N10PV*	SD400N16PV*
60CDQ040	80CNQ045SM	FDH444	SD1100C22C*	SD200N12PV*	SD400N18PC*
60CDQ045	81CNQ035	FDH600	SD1100C22L*	SD200N14PV*	SD400N20PC*
60CNQ035	81CNQ040	FJT1100	SD1100C24C*	SD200N16PV*	SD400N22PC*
60CNQ040	81CNQ045	FJT1101	SD1100C24L*	SD200N18PC*	SD400N24PC*
60CNQ045	81CNQ045SL	FJT1102	SD1100C25C*	SD200N20PC*	SD500N30PC*
60CNQ045	81CNQ045SM	MAD1108	SD1100C25L*	SD200N22PC*	SD500N32PC*
60CNQ045SL	81CNQ050	MAD1109	SD1100C26C*	SD200N24PC*	SD500N34PC*
60CNQ045SM	81CNQ050SL	MBR1535CT	SD1100C26L*	SD241	SD500N36PC*
61CNQ035	81CNQ050SM	MBR1545CT	SD1100C28C*	SD300C02C*	SD500N38PC*
61CNQ040	82CNQ030	MBR2035CT	SD1100C28L*	SD300C04C*	SD500N40PC*
61CNQ045	82CNQ030SL	MBR2045CT	SD1100C30C*	SD300C06C*	SD500N42PC*
61CNQ045SL	82CNQ030SM	MBR2080CT	SD1100C30L*	SD300C08C*	SD500N44PC*
61CNQ045SM	83CNQ080	MBR2090CT	SD1100C32C*	SD300C10C*	SD500N45PC*
62CNQ030	83CNQ100	MBR2100CT	SD1100C32L*	SD300C12C*	SD600N02PC*
62CNQ030SL	83CNQ100SL	MBR2535CT	SD1500C02L*	SD300C14C*	SD600N04PC*
62CNQ030SM	83CNQ100SM	MBR2545CT	SD1500C04L*	SD300C16C*	SD600N06PC*
63CNQ080	84CNQ035	MBR3035CT	SD1500C06L*	SD300C18C*	SD600N08PC*
63CNQ100	84CNQ040	MBR3035PT	SD1500C08L*	SD300C20C*	SD600N10PC*
63CNQ100SL	84CNQ045	MBR3045CT	SD1500C10L*	SD300C22C*	SD600N12PC*
63CNQ100SM	84CNQ045SL	MBR3045PT	SD1500C12L*	SD300C24C*	SD600N14PC*
6CWQ03F	84CNQ045SM	MBR4045PT	SD1500C14L*	SD300C25C*	SD600N16PC*
6CWQ04F	85CNQ015	MBR4060PT	SD1500C16L*	SD300C26C*	SD600N18PC*
6CWQ05F	85CNQ015SL	MBR6045WT	SD1500C18L*	SD300C28C*	SD600N20PC*
6CWQ06F	85CNQ015SM	MBRB1535CTS	SD1500C20L*	SD300C30C*	SD600N22PC*
6CWQ09F	85HF10	MBRB1545CTS	SD1500C22L*	SD300C32C*	SD600N24PC*
6CWQ10F	85HF100	MBRB2080CTS	SD1500C24L*	SD300N02PV*	SD600N25PC*
6F10	85HF120	MBRB2090CTS	SD150N02PV*	SD300N04PV*	SD600N26PC*
6F100	85HF140	MBRB2100CTS	SD150N04PV*	SD300N06PV*	SD600N28PC*
6F120	85HF160	MMAD1108	SD150N06PV*	SD300N08PV*	SD600N30PC*
6F20	85HF20	MMAD1109	SD150N08PV*	SD300N10PV*	SD600N32PC*
6F40	85HF40	MMBD2835	SD150N10PV*	SD300N12PV*	SD700C30L*
6F60	85HF60	MMBD2836	SD150N12PV*	SD300N14PV*	SD700C32L*
6F80	85HF80	MMBD6050	SD150N14PV*	SD300N16PV*	SD700C34L*
70HF10	88CNQ060	MMBD6100	SD150N16PV*	SD300N18PC*	SD700C36L*
70HF100	88HF10	MMBD7000	SD150N18PC*	SD300N20PC*	SD700C38L*
70HF120	88HF100	MMBD914	SD150N20PC*	SD300N22PC*	SD700C40L*
70HF140	88HF120	MSD6100	SD150N22PC*	SD300N24PC*	SD700C42L*
70HF160	88HF20	MSD6150	SD150N24PC*	SD300N25PC*	SD700C44L*
70HF20	88HF40	SC1500C25L*	SD150N25PC*	SD300N26PC*	SD700C45L*
70HF40	88HF60	SC1500C26L*	SD1700C24K*	SD300N28PC*	SD800C24L*
70HF60	88HF80	SC1500C28L*	SD1700C25K	SD300N30PC*	SD800C25L*
70HF80	89CNQ150	SC1500C30L*	SD1700C26K*	SD300N32PC*	SD800C26L*
70U10*	8AF05NPP	SD1100C02C*	SD1700C28K*	SD400C02C*	SD800C28L*
70U100*	8AF1NPP	SD1100C02L*	SD1700C30K*	SD400C04C*	SD800C30L*
70U120*	8AF2NPP	SD1100C04C*	SD1700C32K*	SD400C06C*	SD800C32L*
70U140*	8AF4NPP	SD1100C04L*	SD1700C34K*	SD400C08C*	SD800C34L*
70U160*	BAS116	SD1100C06C*	SD1700C36K*	SD400C10C*	SD800C36L*
70U20*	BAV170	SD1100C06L*	SD1700C38K*	SD400C12C*	SD800C38L*
70U40*	BAV199	SD1100C08C*	SD1700C40K*	SD400C14C*	SD800C40L*
70U60*	BAV70	SD1100C08L*	SD1700C42K*	SD400C16C*	SD800C42L*
70U80*	BAV74	SD1100C10C*	SD1700C44K*	SD400C18C*	SD800C44L*
73HF10	BAV99	SD1100C10L*	SD1700C45K*	SD400C20C*	SD800C45L*
73HF100	BAW156	SD1100C12C*	SD2000C02L*	SD400C22C*	SM4001TR
73HF120	BAW56	SD1100C12L*	SD2000C04L*	SD400C24C*	SM4002TR
73HF20	DIODE	SD1100C14C*	SD2000C06L*	SD400N02PV*	SM4003TR
73HF40	FD700	SD1100C14L*	SD2000C08L*	SD400N04PV*	SM4004TR
73HF60	FD777	SD1100C16C*	SD2000C10L*	SD400N06PV*	SM4005TR
73HF80	FDH300	SD1100C16L*	SD200N02PV*	SD400N08PV*	SM4006TR
80CNQ035	FDH300A	SD1100C18C*	SD200N04PV*	SD400N10PV*	SM4007TR

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Zener Diodes

(730 Devices)

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DZ23C20

*CircuitMaker PRO only

DZ23C22
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Schottky Diodes

(185 Devices)

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MBR1645*
MBR735*
MBR745*
MBR7535*
MBR7545*
SD41*
SD51*
SKYDIODE

* CircuitMaker PRO only

Diode Bridge Rectifiers

(53 Devices)

18DB05	1BQ40	2KBB10	2KBP01	DF01	KBPC101	KBPC601
18DB1	1KAB10	2KBB100	2KBP02	DF02	KBPC102	KBPC602
18DB10	1KAB100	2KBB20	2KBP04	DF04	KBPC104	KBPC604
18DB2	1KAB20	2KBB40	2KBP06	DF06	KBPC106	KBPC606
18DB4	1KAB40	2KBB5	2KBP08	DF08	KBPC108	KBPC608
18DB6	1KAB5	2KBB60	2KBP10	DF10	KBPC110	KBPC610
18DB8	1KAB60	2KBB80	BRIDGE	KBPC1005	KBPC6005	MDA2500
1BQ20	1KAB80	2KBP005	DF005			

Bipolar Junction Transistors (NPN)

(507 Devices)

2N1893	BC368	BDC01D	ECG186*	ECG241	ECG26	ECG473*
2N2102	BC394	BDC05	ECG186A*	ECG2428*	ECG278	ECG474*
2N2218A	BC489	BF199	ECG188	ECG2430*	ECG280	ECG479*
2N2219	BC489A	BF224	ECG190*	ECG2501*	ECG283	ECG486*
2N2219A	BC489B	BF240	ECG191	ECG2503*	ECG284*	ECG487*
2N2222	BC546A	BF258	ECG194	ECG2504*	ECG286*	ECG488*
2N2222A	BC546B	BF374	ECG196*	ECG2505*	ECG287	ECG49*
2N2270	BC547A	BF391	ECG198	ECG2506*	ECG29*	ECG51
2N2369	BC547B	BF392	ECG199	ECG2507*	ECG291*	ECG52
2N2369A	BC547C	BF393	ECG20	ECG2508*	ECG295	ECG53
2N2484	BC548A	BF420	ECG210	ECG2510*	ECG300	ECG54*
2N2895	BC548B	BF422	ECG216	ECG2511*	ECG31	ECG56*
2N2896	BC548C	BF720	ECG22	ECG2513*	ECG311	ECG58
2N3019	BC635	BF844	ECG224*	ECG2515*	ECG313*	ECG60*
2N3020	BC637	BF959	ECG225	ECG2517*	ECG315	ECG63*
2N3053	BC639	BSP19AT1	ECG227	ECG2519*	ECG316*	ECG64*
2N3053A	BC817-16LT1	BSP20AT1	ECG228A	ECG2521*	ECG317*	ECG69
2N3055	BC817-25	BSS64LT1	ECG229	ECG2522*	ECG318*	ECG70*
2N3500	BC817-40	BSS71	ECG23	ECG2524*	ECG319P*	ECG71
2N3501	BC818-25	BSS72	ECG2300*	ECG2526*	ECG320*	ECG72
2N3507	BC818-40	BSS73	ECG2301*	ECG2528*	ECG320F*	ECG74
2N3700	BC846A	BSV52LT1	ECG2302*	ECG2530*	ECG321	ECG75*
2N3903	BC846ALT1	BSX20	ECG2303*	ECG2533*	ECG327*	ECG76*
2N3904	BC846BLT1	CV12253	ECG2304*	ECG2534*	ECG328*	ECG77
2N3947	BC847A	D44H8	ECG2305*	ECG2536*	ECG331*	ECG78
2N4014	BC847ALT1	ECG10	ECG2307*	ECG2538*	ECG340*	ECG79
2N4123	BC847BLT1	ECG101	ECG2308*	ECG2539*	ECG341*	ECG81
2N4124	BC847C	ECG103	ECG2309*	ECG255	ECG342*	ECG85
2N4264	BC847CLT1	ECG103A	ECG2310*	ECG2561*	ECG343*	ECG86
2N4265	BC848ALT1	ECG107	ECG2311*	ECG2562*	ECG346*	ECG87
2N4400	BC848BLT1	ECG108	ECG2312*	ECG2564*	ECG36*	ECG89
2N4401	BC848CLT1	ECG11	ECG2313*	ECG2566*	ECG360*	ECG90
2N4410	BC849ALT1	ECG123	ECG2318*	ECG2568*	ECG369*	ECG92*
2N5088	BC849BLT1	ECG123A	ECG2319*	ECG2570*	ECG373*	ECG94
2N5089	BC849C	ECG123AP	ECG2321*	ECG2572*	ECG375	ECG95
2N5209	BC850ALT1	ECG124	ECG2323*	ECG2574*	ECG376	ECG96*
2N5210	BC850BLT1	ECG128	ECG2324*	ECG2576*	ECG377*	MJE15030
2N5550	BC850CLT1	ECG128P	ECG2325*	ECG2578*	ECG379*	MJE340
2N5551	BCP54	ECG13	ECG2327*	ECG2579*	ECG382*	MM3001
2N6431	BCP56-10T1	ECG130*	ECG2328*	ECG2580*	ECG384*	MM3725
2N6515	BCP56-16T1	ECG15	ECG233	ECG2581*	ECG385*	MMBT100
2N6516	BCP56T1	ECG152*	ECG2330*	ECG2582*	ECG386*	MMBT100A
2N6517	BCP68T1	ECG154	ECG2331*	ECG2583*	ECG387*	MMBT2222ALT1
2N930	BCW31	ECG157*	ECG2333*	ECG2584*	ECG388	MMBT2222LT1
2N930A	BCW33	ECG16	ECG2337*	ECG2585*	ECG389*	MMBT2369ALT1
BC140-10	BCW60ALT1	ECG161	ECG2339*	ECG2586*	ECG390*	MMBT2369LT1
BC140-16	BCW60BLT1	ECG162	ECG2347*	ECG2588*	ECG392*	MMBT2484LT1
BC141-10	BCW60DLT1	ECG163A*	ECG2348*	ECG2590*	ECG394*	MMBT3904
BC141-16	BCW65C	ECG164	ECG2353*	ECG2591*	ECG396*	MMBT4124
BC337-16	BCW71	ECG165	ECG2354*	ECG2592*	ECG399*	MMBT4401
BC337-25	BCX19LT1	ECG171*	ECG2363*	ECG2593*	ECG40	MMBT5088
BC337-40	BCX20LT1	ECG175	ECG2365*	ECG2594*	ECG42	MMBT5089
BC338-16	BCX70GLT1	ECG18	ECG237*	ECG2596*	ECG44	MMBT5179
BC338-25	BCX70JLT1	ECG181	ECG238*	ECG2597*	ECG47	MMBT5550LT1
BC338-40	BCX70KLT1	ECG184*	ECG24	ECG2598	ECG472*	MMBT5551

* CircuitMaker PRO only

MMBT6428LT1
MMBT6429LT1
MMBT6517
MMBT918
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MMBTA06
MMBTA20LT1
MMBTA42
MMBTA43
MMBTA43LT1
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MMBTH20
MMBTH24
MMPQ2222
MMPQ2222A
MMPQ2369
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MPQ2369
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MPQ3904
MPQ7041
MPQ7042
MPQ7043
MPS2222
MPS2222A
MPS2369
MPS2369A
MPS2711
MPS2712
MPS2713
MPS2714
MPS3563
MPS3646
MPS3866
MPS3904
MPS4123
MPS4124
MPS5179
MPS650
MPS6507
MPS651
MPS6520
MPS6521
MPS6530
MPS6531
MPS6560
MPS6568A
MPS6571
MPS6595
MPS6601
MPS6602
MPS6714
MPS6715
MPS6717
MPS8050
MPS8098
MPS8099
MPS918
MPSA05
MPSA06
MPSA16
MPSA17
MPSA18
MPSA42
MPSA43
MPSA44
MPSH04
MPSH10
MPSH11
MPSH20
MPSH24
MPSH34
MPSL01
MPSW01
MPSW01A
MPSW05
MPSW06
MPSW10
MPSW42
MSC1621
MSC2295B
MSC2295C
MSC2404C
MSC3130
MSD1328R
MSD1819A-RT1
MSD1819A-ST1
MSD601R
MSD601-ST1
MSD602R
NPN
NZT44H8
NZT651
NZT6714
NZT6715
NZT6717
P2N2222A
PBF259
PBF259RS
PBF259S
PN100
PN100A
PN3563
PN918
PZT3904
PZT651T1
PZTA06
PZTA42
QNPN
TN3019A
TN3440A
TN3725A
TN6714A
TN6715A
TN6717A

Bipolar Junction Transistors (PNP)

(341 Devices)

2N2904
2N2904A
2N2905
2N2905A
2N2906
2N2906A
2N2907
2N2907A
2N2955*
2N3244
2N3250
2N3251
2N3251A
2N3467
2N3468
2N3497
2N3546
2N3634
2N3635
2N3636
2N3637
2N3799
2N3905
2N3906
2N3963
2N3964
2N4032
2N4033
2N4036
2N4037
2N4125
2N4126
2N4258
2N4402
2N4403
2N4405
2N4407
2N4931
2N5086
2N5087
2N5087
2N5400
2N5401
2N5771
2N6433
2N6519
2N6520
BC160-16
BC161-16
BC177
BC177A
BC177B
BC212
BC212B
BC213
BC214
BC307
BC307B
BC307C
BC308C
BC309B
BC327
BC327-16
BC327-25
BC328
BC328-16
BC328-25
BC369
BC393
BC450
BC450A
BC490
BC490A
BC556
BC556B
BC557
BC557A
BC557B
BC557C
BC558B
BC559
BC559B
BC559C
BC560B
BC560C
BC636
BC638
BC640
BC807-16
BC807-25
BC807-40
BC856ALT1
BC856BLT1
BC857ALT1
BC857B
BC857C
BC858ALT1
BC858BLT1
BC858CLT1
BCP52
BCP53T1
BCP69T1
BCW29LT1
BCW30LT1
BCW61BLT1
BCW61CLT1
BCW61DLT1
BCW68G
BCW69LT1
BCW70LT1
BCX17LT1
BCX18LT1
BCX71K
BCY70
BCY71
BCY72
BDB02C
BDB02D
BDC02D
BF421
BF423
BF492
BF493
BF493S
BF721
BFW43
BSP16
BSS63LT1
BSS74
BSS75
BSS76
BSV16-10
D45H8
ECG100*
ECG102*
ECG102A*
ECG106*
ECG12*
ECG126A*
ECG129*
ECG129P*
ECG14*
ECG153*
ECG159*
ECG160*
ECG17*
ECG180*
ECG185*
ECG187*
ECG187A*
ECG189
ECG19*
ECG193*
ECG193A*
ECG197*
ECG21*
ECG211*
ECG213*
ECG217*
ECG218
ECG219*
ECG2306*
ECG2314*
ECG2322*
ECG2329*
ECG234*
ECG2364*
ECG2366*
ECG240
ECG242*
ECG2429*
ECG2431*
ECG25*
ECG2502*
ECG2509*
ECG2512*
ECG2514*
ECG2516*
ECG2518*
ECG2520*
ECG2523*
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ECG2565*
ECG2567*
ECG2569*
ECG2571*
ECG2575*
ECG2577*
ECG27*
ECG28*
ECG281*
ECG285*
ECG288*
ECG292*
ECG30*
ECG307*
ECG32*
ECG332*
ECG353*
ECG354*
ECG355*
ECG356*
ECG37*
ECG374*
ECG378*
ECG38
ECG381*
ECG383*
ECG39*
ECG391*
ECG393*
ECG395*
ECG397*
ECG398
ECG41*
ECG43*
ECG45*
ECG50*
ECG55*
ECG59*
ECG61*
ECG68
ECG82*
ECG88
ECG91*
ECG93*
MM4001
MMBT200
MMBT200A
MMBT2907A
MMBT2907LT1
MMBT3640
MMBT3906
MMBT404A
MMBT4126
MMBT4258
MMBT4403
MMBT5086
MMBT5087
MMBT5401
MMBT5771
MMBT6520
MMBT8599
MMBTA55LT1
MMBTA56
MMBTA70LT1
MMBTA92
MMBTA93LT1
MMBTH81
MMPQ2907
MMPQ3467
MMPQ3799
MMPQ3906
MPQ2906
MPQ2907
MPQ2907A
MPQ3467
MPQ3762
MPQ3798
MPQ3799
MPQ3906
MPQ7091
MPQ7093
MPS2907
MPS2907A
MPS3638
MPS3638A
MPS3640
MPS3906
MPS404A
MPS4125
MPS4126
MPS4258
MPS536
MPS5771
MPS6523
MPS6562
MPS6651
MPS6652
MPS6726
MPS6727
MPS750
MPS751
MPS8093
MPS8550
MPS8598
MPS8599
MPSA55
MPSA56
MPSA70
MPSA92
MPSA93
MPSH81
MPSL51
MPSW51
MPSW51A
MPSW55
MPSW56
MPSW92
MSA1022B
MSA1022C
MSB1218A-RT1
MSB1218A-ST1
MSB709R
MSB709-ST1
MSB710-QT1
MSB710R
NZT45H8
NZT6726
NZT6728
NZT6729
NZT751
P2N2907A
PBF493
PBF493R
PBF493RS
PBF493S
PN200
PN200A
PN2907A
PN3640
PN4356
PNP
PZT2907A
PZT3906
PZT751T1
PZTA56
PZTA92
PZTA96
TN2905A
TN3467A
TN4033A
TN6726A
TN6728A
TN6729A

*CircuitMaker PRO only

Darlington BJTs

(106 Devices)

2N6040
2N6042
2N6426
2N6427
2N6427
2N7052
2N7053
BC372
BC373
BC517
BC618
BCV26
BCV27
BSP52T1
BSP62T1
ECG214*
ECG215*
ECG2316*
ECG2317*
ECG2326*
ECG2343*
ECG2344*
ECG2345*
ECG2346*
ECG2349*
ECG2350*
ECG2351*
ECG2352*
ECG243*
ECG244*
ECG245*
ECG246*
ECG247*
ECG248*
ECG249*
ECG250*
ECG251*
ECG252*
ECG253*
ECG254*
ECG2540*
ECG2541*
ECG2542*
ECG2544*
ECG2545*
ECG2546*
ECG2547*
ECG2548*
ECG2551*
ECG2552*
ECG2553*
ECG2554*
ECG2555*
ECG2556*
ECG2559*
ECG2560*
ECG258*
ECG261*
ECG262*
ECG263*
ECG264*
ECG265*
ECG266*
ECG267*
ECG268*
ECG269*
ECG272*
ECG273*
ECG274*
ECG275*
MMBT6427LT1
MMBTA13LT1
MMBTA14LT1
MMBTA63LT1
MMBTA64LT1
MPQ6426
MPS6724
MPS6725
MPSA13
MPSA14
MPSA25
MPSA26
MPSA27
MPSA28
MPSA29
MPSA62
MPSA63
MPSA64
MPSA64
MPSA75
MPSA77
MPSW13
MPSW14
MPSW45
MPSW45A
MPSW63
MPSW64
NPN1
NPN2
NPN3
PNP1
PNP2
PNP3
PZTA14T1
PZTA64T1
TIP141

Silicon-Controlled Rectifiers

(441 Devices)

10RIA10*
10RIA100*
10RIA120*
10RIA20*
10RIA40*
10RIA60*
10RIA80*
110RKI10*
110RKI100*
110RKI120*
110RKI20*
110RKI40*
110RKI60*
110RKI80*
16RIA10*
16RIA100*
16RIA120*
16RIA140*
16RIA160*
16RIA20*
16RIA40*
16RIA60*
16RIA80*
180RKI100*
180RKI20*
180RKI40*
180RKI60*
180RKI80*
22RIA10*
22RIA100*
22RIA120*
22RIA140*
22RIA160*
22RIA20*
22RIA40*
22RIA60*
22RIA80*
25RIA10*
25RIA100*
25RIA120*
25RIA140*
25RIA160*
25RIA20*
25RIA40*
25RIA60*
25RIA80*
2N1792*
2N1793*
2N1794*
2N1795*
2N1796*
2N1797*
2N1798*
2N1799*
2N1800*
2N1801*
2N1802*
2N1803*
2N1804*
2N1805*
2N1806*
2N1807*
2N1909*
2N1910*
2N1911*
2N1912*
2N1913*
2N1914*
2N1915*
2N1916*
2N2023*
2N2024*
2N2025*
2N2026*
2N2027*
2N2028*
2N2029*
2N2030*
2N2326
2N3091*
2N3092*
2N3093*
2N3094*
2N3095*
2N3096*
2N3097*
2N3098*
2N4171
2N5060
2N5061
2N5062
2N5063
2N5064
2N5204*
2N5205*
2N5206*
2N5207*
2N6237
2N6238
2N6239
2N6240
2N6241
2N6564
2N6565
2N681*
2N682*
2N683*
2N684*
2N685*
2N686*
2N687*
2N688*
2N689*
2N690*
2N691*
2N692*
50RIA10*
50RIA100*
50RIA120*
50RIA140*
50RIA160*
50RIA20*
50RIA40*
50RIA60*
50RIA80*
70RIA10*
70RIA100*
70RIA120*
70RIA20*
70RIA40*
70RIA60*
70RIA80*
80RIA10*
80RIA100*
80RIA120*
80RIA20*
80RIA40*
80RIA60*
80RIA80*
80RKI10*
80RKI100*
80RKI120*
80RKI20*
80RKI40*
80RKI60*
80RKI80*
BRX44
BRX45
BRX46
BRX47
BRX49
BRY55-100
BRY55-200
BRY55-30
BRY55-400
BRY55-500
BRY55-60
BRY55-600
C106A
C106B
C106D
C106F
C106M
C149M10
EC103A
EC103A1
EC103A2
EC103A3
EC103B
EC103B1
EC103B2
EC103B3
EC103C
EC103C1
EC103C2
EC103C3
EC103D
EC103D1
EC103D2
EC103D3
EC103E
EC103E1
EC103E2
EC103E3
EC103M
EC103M1
EC103M2
EC103M3
EC113A
EC113A3
EC113B
EC113B3
EC113C
EC113C3
EC113D
EC113D3
EC113E
EC113E3
EC113M
EC113M3
MCR100-3
MCR100-4
MCR100-6
MCR100-8
MCR102
MCR103
MCR106-2
MCR106-3
MCR106-4
MCR22-2
MCR22-3
MCR22-4
MCR22-6
MCR22-8
MCR506-2
MCR506-3
MCR506-4
MCR506-6
MCR506-8
MRC106-6
MRC106-8
S0503LS1
S0503LS2
S0503LS3
S1003LS1
S1003LS2
S1003LS3
S19CF
S2003LS1
S2003LS2
S2003LS3
S4003LS1
S4003LS2
S4003LS3
S6003LS1
S6003LS2
S6003LS3
SCR
ST110C02C0*
ST110C04C0*
ST110C06C0*
ST110C08C0*
ST110C10C0*
ST110C12C0*
ST110C14C0*
ST110C16C0*
ST110S02P0V*
ST110S04P0V*
ST110S06P0V*
ST110S08P0V*
ST110S10P0V*
ST110S12P0V*
ST110S14P0*
ST110S16P0*
ST1200C04K0*
ST1200C06K0*
ST1200C08K0*
ST1200C10K0*
ST1200C12K0*
ST1200C14K0*
ST1200C16K0*
ST1200C18K0*
ST1200C20K0*
ST1230C04K0*
ST1230C06K0*
ST1230C08K0*
ST1230C10K0*
ST1230C12K0*
ST1230C14K0*
ST1230C16K0*
ST1280C02K0*
ST1280C04K0*
ST1280C06K0*
ST180C02C0*
ST180C04C0*
ST180C06C0*
ST180C08C0*
ST180C10C0*
ST180C12C0*
ST180C14C0*
ST180C16C0*
ST180C18C0*
ST180C20C0*
ST180S02P0V*
ST180S04P0V*
ST180S06P0V*
ST180S08P0V*
ST180S10P0V*
ST180S12P0V*
ST180S14P0*
ST180S16P0*
ST180S18P0*
ST180S20P0*
ST1900C45R0*
ST1900C46R0*
ST1900C48R0*
ST1900C50R0*
ST1900C52R0*
ST2100C35R0*
ST2100C36R0*
ST2100C38R0*
ST2100C40R0*
ST2100C42R0*
ST2100C44R0*
ST2100C45R0*
ST230C02C0*
ST230C04C0*
ST230C06C0*
ST230C08C0*
ST230C10C0*
ST230C12C0*
ST230C14C0*
ST230C16C0*
ST230S02P0V*
ST230S04P0V*
ST230S06P0V*
ST230S08P0V*
ST230S10P0V*
ST230S12P0V*
ST230S14P0*
ST230S16P0*
ST2600C20R0*
ST2600C22R0*
ST2600C24R0*
ST2600C26R0*
ST2600C28R0*
ST2600C30R0*
ST280C02C0*
ST280C04C0*
ST280C06C0*
ST280CH02C0*
ST280CH04C0*
ST280CH06C0*
ST280S02P0V*
ST280S04P0V*
ST280S06P0V*

* CircuitMaker PRO only

ST300C02C0*	ST300C20C0*	ST330C02L0*	ST330S08P0*	ST700C16L0*	T106C1
ST300C02L0*	ST300C20L0*	ST330C04C0*	ST330S10P0*	ST700C18L0*	T106D1
ST300C04C0*	ST300S02P0*	ST330C04L0*	ST330S12P0*	ST700C20L0*	T106E1
ST300C04L0*	ST300S04P0*	ST330C06C0*	ST330S14P0*	ST700C22L0*	T106F1
ST300C06C0*	ST300S06P0*	ST330C06L0*	ST330S16P0*	ST730C04L0*	T106M1
ST300C06L0*	ST300S08P0*	ST330C08C0*	ST380C02C0*	ST730C06L0*	T107A1
ST300C08C0*	ST300S10P0*	ST330C08L0*	ST380C04C0*	ST730C08L0*	T107B1
ST300C08L0*	ST300S12P0*	ST330C10C0*	ST380C06C0*	ST730C10L0*	T107C1
ST300C10C0*	ST300S14P0*	ST330C10L0*	ST380CH02C0*	ST730C12L0*	T107D1
ST300C10L0*	ST300S16P0*	ST330C12C0*	ST380CH04C0*	ST730C14L0*	T107E1
ST300C12C0*	ST300S18P0*	ST330C12L0*	ST380CH06C0*	ST730C16L0*	T107F1
ST300C12L0*	ST300S20P0*	ST330C14C0*	ST700C04L0*	ST730C18L0*	T107M1
ST300C14C0*	ST3230C10R0*	ST330C14L0*	ST700C06L0*	ST780C02L0*	TCR22-2
ST300C14L0*	ST3230C12R0*	ST330C16C0*	ST700C08L0*	ST780C04L0*	TCR22-3
ST300C16C0*	ST3230C14R0*	ST330C16L0*	ST700C10L0*	ST780C06L0*	TCR22-4
ST300C16L0*	ST3230C16R0*	ST330S02P0*	ST700C12L0*	T106A1	TCR22-6
ST300C18C0*	ST3230C18R0*	ST330S04P0*	ST700C14L0*	T106B1	TCR22-8
ST300C18L0*	ST330C02C0*	ST330S06P0*			

Triacs

(54 Devices)

MAC15A6	Q2006L4	Q4004L4	Q5004L3	Q5025R5	Q601E4	Q7025R5
MAC15A8	Q2008L4	Q4006L4	Q5004L4	Q6004L3	Q6025R5	Q8004L4
MAC210-10	Q2010L5	Q4008L4	Q5006L4	Q6004L4	Q7004L4	Q8006L5
MAC210-4	Q2015L5	Q4010L5	Q5008L4	Q6006L5	Q7006L5	Q8008L5
MAC210-6	Q201E3	Q4015L5	Q5010L5	Q6008L5	Q7008L5	Q8010L5
MAC210-8	Q201E4	Q401E3	Q5015L5	Q6010L5	Q7010L5	Q8015L5
Q2004L3	Q2025R5	Q401E4	Q501E3	Q6015L5	Q7015L5	Q8025R5
Q2004L4	Q4004L3	Q4025R5	Q501E4	Q601E3		

Junction Field-Effect Transistors

(167 Devices)

2N2608	2N3970*	2N4381*	2N5047*	2N5516*	2N5909*	J410*
2N2609*	2N3971*	2N4391*	2N5078*	2N5517*	2N5911*	J411*
2N3370*	2N3972*	2N4392*	2N5103*	2N5518*	2N5912*	J412*
2N3458*	2N4084*	2N4393	2N5105*	2N5519*	2N6483*	MPF3821*
2N3459*	2N4091*	2N4416	2N5114*	2N5520*	2N6484*	MPF3822*
2N3684*	2N4092*	2N4416A*	2N5115*	2N5521*	2N6485*	NDF9406*
2N3685*	2N4093*	2N4856*	2N5116*	2N5522*	BF244A	NDF9407*
2N3686*	2N4117*	2N4856A*	2N5196*	2N5523*	BF244B	NDF9409*
2N3687*	2N4117A*	2N4857*	2N5197*	2N5524*	BF244C	NDF9410*
2N3821*	2N4118*	2N4857A*	2N5199*	2N5545*	BF245*	NJFET
2N3822*	2N4118A*	2N4858*	2N5358*	2N5556*	BF245A*	PJFET
2N3823*	2N4119*	2N4858A*	2N5397*	2N5557*	BF245B*	U257*
2N3824*	2N4119A*	2N4859*	2N5398*	2N5558*	BF245C*	U308*
2N3921*	2N4220*	2N4859A*	2N5432*	2N5565*	BF246A*	U309*
2N3922*	2N4220A*	2N4860*	2N5433*	2N5566*	BF246B*	U310*
2N3954*	2N4221*	2N4860A*	2N5434*	2N5640	BF247B*	U401*
2N3954A*	2N4221A*	2N4861*	2N5452*	2N5668	BF256B*	U402*
2N3955*	2N4222*	2N4861A*	2N5454*	2N5669	BF256C*	U403*
2N3955A*	2N4222A*	2N5018*	2N5457	2N5670	J401*	U404*
2N3956*	2N4223*	2N5019*	2N5459	2N5902*	J402*	U405*
2N3957*	2N4338*	2N5020*	2N5460	2N5904*	J403*	U406*
2N3958*	2N4339*	2N5021*	2N5484	2N5905*	J404*	U440*
2N3966*	2N4340*	2N5045*	2N5486	2N5906*	J405*	U441*
2N3967*	2N4341*	2N5046*	2N5515*	2N5907*	J406*	

* CircuitMaker PRO only

IGBTs

(65 Devices)

ECG3300
ECG3300*
ECG3301*
ECG3302*
ECG3303*
ECG3310*
ECG3311*
ECG3312*
ECG3320*
ECG3321*
ECG3322*
ECG3323*
IRGAC30F*
IRGAC30U*
IRGAC40F*
IRGAC40U*
IRGAC50F*
IRGAC50U*
IRGB420U
IRGB430U
IRGB440U
IRGBC20F
IRGBC20S
IRGBC20U
IRGBC30F
IRGBC30S
IRGBC30U
IRGBC40F
IRGBC40S
IRGBC40U
IRGBF20F
IRGBF30F
IRGBH50F
IRGIH50F*
IRGMC30F*
IRGMC30U*
IRGMC40F*
IRGMC40U*
IRGMC50F*
IRGMC50U*
IRGP420U
IRGP430U
IRGP440U
IRGPC40F
IRGPC40S
IRGPC40U
IRGPC50F
IRGPC50K
IRGPC50M
IRGPC50S
IRGPC50U
IRGPF20F
IRGPF30F
IRGPF40F
IRGPF50F
IRGPH40F
IRGPH40M
IRGPH50M
IRGPH50U
IRGVH50F*
MGW12N120
MGW20N120
MGW30N60
MGY25N120
MGY40N60
PIGBT

MOSFETs (N-Channel)

(682 Devices)

2N3796
2N3797
2N4351
IRF1010
IRF1010S
IRF120*
IRF121*
IRF122*
IRF123*
IRF130*
IRF131*
IRF1310
IRF1310S
IRF132*
IRF133*
IRF150*
IRF151*
IRF152*
IRF153*
IRF1740GLC
IRF1840GLC
IRF220*
IRF221*
IRF222*
IRF223*
IRF230*
IRF231*
IRF232*
IRF233*
IRF234*
IRF235*
IRF236*
IRF237*
IRF244*
IRF245*
IRF246*
IRF247*
IRF320*
IRF321*
IRF322*
IRF323*
IRF330*
IRF331*
IRF332*
IRF333*
IRF420*
IRF421*
IRF422*
IRF423*
IRF430*
IRF431*
IRF432*
IRF433*
IRF450*
IRF451*
IRF452*
IRF453*
IRF510
IRF510S
IRF511*
IRF512*
IRF513*
IRF520
IRF520S
IRF521*
IRF522*
IRF523*
IRF530
IRF530S
IRF540
IRF540S
IRF541*
IRF542*
IRF543*
IRF610
IRF610S
IRF611*
IRF612*
IRF613*
IRF614
IRF614S
IRF620
IRF620S
IRF621*
IRF622*
IRF623*
IRF624
IRF624S
IRF630
IRF630S
IRF634
IRF634S
IRF640
IRF640S
IRF641*
IRF642*
IRF643*
IRF644
IRF644S
IRF645*
IRF646*
IRF647*
IRF710
IRF7101
IRF7102
IRF7103
IRF710S
IRF720
IRF7201
IRF720S
IRF721*
IRF722*
IRF723*
IRF730
IRF730S
IRF731*
IRF732*
IRF733*
IRF734
IRF740
IRF740LC
IRF740S
IRF744
IRF820
IRF820S
IRF821*
IRF822*
IRF823*
IRF830
IRF830S
IRF840
IRF840LC
IRF840S
IRFAC40*
IRFAC42*
IRFBC10LC
IRFBC20
IRFBC30
IRFBC40
IRFBC40LC
IRFBC42*
IRFBE20
IRFBE30
IRFBF20
IRFBF30
IRFBG20
IRFBG30
IRFD014
IRFD024
IRFD110
IRFD120
IRFD1Z0
IRFD210
IRFD214
IRFD220
IRFD221*
IRFD222*
IRFD223*
IRFD224
IRFD310
IRFD311*
IRFD312*
IRFD313*
IRFD320
IRFD321*
IRFD322*
IRFD323*
IRFD420
IRFD620
IRFDC10LC
IRFF110*
IRFF111*
IRFF112*
IRFF113*
IRFF120*
IRFF121*
IRFF122*
IRFF123*
IRFF130*
IRFF131*
IRFF132*
IRFF133*
IRFF210*
IRFF211*
IRFF212*
IRFF213*
IRFF220*
IRFF221*
IRFF222*
IRFF223*
IRFF230*
IRFF231*
IRFF232*
IRFF233*
IRFF320*
IRFF321*
IRFF322*
IRFF323*
IRFF420*
IRFF421*
IRFF422*
IRFF423*
IRFF430*
IRFF431*
IRFF432*
IRFF433*
IRFI1010G
IRFI1310G
IRFI510G
IRFI520G
IRFI530G
IRFI540G
IRFI614G
IRFI620G
IRFI624G
IRFI630G
IRFI634G
IRFI640G
IRFI644G
IRFI720G
IRFI730G
IRFI734G
IRFI740G
IRFI744G
IRFI820G
IRFI830G
IRFI840G
IRFIBC20G
IRFIBC30G
IRFIBC40G
IRFIBC40GLC
IRFIBE20G
IRFIBE30G
IRFIBF20G
IRFIBF30G
IRFIP044
IRFIP054
IRFIP140
IRFIP150
IRFIP240
IRFIP244
IRFIP250
IRFIP254
IRFIP340
IRFIP350
IRFIP440
IRFIP448
IRFIP450
IRFIZ14G
IRFIZ24G
IRFIZ34G
IRFIZ44G
IRFIZ48G
IRFK20350
IRFK20450
IRFK2D054
IRFK2D150
IRFK2D250
IRFK2DC50
IRFK2DE50
IRFK2F054
IRFK2F150
IRFK2F250
IRFK2F350
IRFK2F450
IRFK2FC50
IRFK2FE50
IRFK3D150
IRFK3D250
IRFK3D350
IRFK3D450
IRFK3DC50
IRFK3F150
IRFK3F250
IRFK3F350
IRFK3F450
IRFK3FC50
IRFK4H054
IRFK4H150
IRFK4H250
IRFK4H350
IRFK4H450
IRFK4HC50
IRFK4HE50
IRFK4J054
IRFK4J150
IRFK4J250
IRFK4J350
IRFK4J450
IRFK4JC50
IRFK4JE50
IRFK6H054
IRFK6H150
IRFK6H250
IRFK6H350
IRFK6H450
IRFK6HC50
IRFK6J054
IRFK6J150
IRFK6J250
IRFK6J350
IRFK6J450
IRFK6JC50
IRFL014
IRFL110
IRFL210
IRFL214
IRFP044
IRFP048
IRFP054
IRFP064
IRFP140
IRFP141*
IRFP142*
IRFP143*
IRFP150
IRFP240
IRFP241*
IRFP242*
IRFP243*
IRFP244
IRFP250
IRFP251*
IRFP252*
IRFP253*
IRFP254
IRFP260
IRFP264
IRFP340
IRFP344
IRFP350
IRFP350LC
IRFP351*
IRFP352*
IRFP353*
IRFP354
IRFP360
IRFP360LC
IRFP362*
IRFP440
IRFP448
IRFP450
IRFP450LC
IRFP451*
IRFP452*
IRFP453*
IRFP460
IRFP460LC
IRFP462*
IRFPC30
IRFPC40
IRFPC48
IRFPC50
IRFPC50LC
IRFPC60LC
IRFPE30
IRFPE40
IRFPE50
IRFPF30
IRFPF40
IRFPF50
IRFPG30
IRFPG40
IRFPG42*
IRFPG50
IRFPG60
IRFR014
IRFR024
IRFR110
IRFR120
IRFR210
IRFR214
IRFR220
IRFR221*
IRFR222*
IRFR224
IRFR310
IRFR320

* CircuitMaker PRO only

IRFR321* IRL510S IRLZ44 MTD1N80E MTP35N06ZL MTY14N100E RFF70N06*
IRFR322* IRL520 IRLZ44S MTD20N03HDL MTP36N06V MTY16N80E RFG40N10*
IRFR410* IRL520S MMDF1N05E MTD20N06HD MTP3N100E MTY20N50E RFG45N06*
IRFR420 IRL530 MMDF2N02E MTD20N06HDL MTP3N120E MTY25N60E RFG50N06*
IRFR421* IRL530S MMDF3N02HD MTD20N06V MTP3N50E MTY30N50E RFG70N06*
IRFR422* IRL540 MMDF3N03HD MTD2N40E MTP3N60E MTY55N20E RFK70N06*
IRFRC20 IRL540S MMDF4N01HD MTD2N50E MTP4N40E NMOS RFL1N12*
IRFS1Z0 IRL620S MMFT1N10E MTD3055V MTP4N50E RF1S22N10* RFL1N15*
IRFU014 IRL630S MMFT2N02EL MTD3055VL MTP4N80E RF1S22N10SM* RFL1N18*
IRFU024 IRL640S MMFT3055V MTD3N25E MTP52N06V RF1S25N06* RFL1N20*
IRFU110 IRL9705S MMFT3055VL MTD4N20E MTP52N06VL RF1S25N06SM* RFL2N05*
IRFU120 IRLD014 MMSF5N02HD MTD5N25E MTP55N06Z RF1S40N10* RFL2N06*
IRFU210 IRLD024 MMSF5N03HD MTD6N10E MTP5N40E RF1S40N10SM* RFP14N05*
IRFU214 IRLD110 MMSF7N03HD MTD6N15 MTP60N06HD RF1S42N03* RFP14N06*
IRFU220 IRLD120 MP15N06E MTD6N20E MTP6N60E RF1S42N03L* RFP22N10*
IRFU221* IRLI2203G MTB10N40E MTD9N10E MTP75N03HDL RF1S42N03LSM* RFP25N05*
IRFU222* IRLI3705G MTB15N06V MTDF1N02HD MTP75N05HD RF1S42N03SM* RFP25N06*
IRFU224 IRLI520G MTB16N25E MTDF1N03HD MTP75N06HD RF1S45N02L* RFP3055*
IRFU310 IRLI530G MTB1N100E MTE125N20E MTP7N20E RF1S45N02LSM* RFP40N10*
IRFU320 IRLI540G MTB20N20E MTE215N10E MTP8N50E RF1S45N06* RFP42N03*
IRFU321* IRLI620G MTB2N40E MTE30N50E MTP9N25E RF1S45N06SM* RFP42N03L*
IRFU322* IRLI630G MTB2N60E MTE53N50E MTSF3N02HD RF1S50N06* RFP45N02L*
IRFU410* IRLI640G MTB30N06VL MTP10N10E MTSF3N03HD RF1S50N06SM* RFP45N06*
IRFU420 IRLIZ14G MTB33N10E MTP10N10EL MTV10N100E RF1S540* RFP50N06*
IRFU421* IRLIZ24G MTB35N06ZL MTP10N40E MTV16N50E RF1S540SM* RFP70N03*
IRFU422* IRLIZ34G MTB36N06V MTP12N10E MTV20N50E RF1S640* RFP70N06*
IRFUC20 IRLIZ44G MTB3N100E MTP15N06V MTV25N50E RF1S640SM* SI3442DV
IRFZ14 IRLL014 MTB3N120E MTP15N06VL MTV32N20E RF1S644* SI4420DY
IRFZ14S IRLL110 MTB4N80E MTP16N25E MTV32N25E RF1S644SM* SI4450DY
IRFZ20 IRLR014 MTB52N06V MTP1N100E MTV6N100E RF1S70N03* SI4480DY
IRFZ24 IRLR024 MTB52N06VL MTP1N50E MTW10N100E RF1S70N03SM* SI4946EY
IRFZ24S IRLR110 MTB55N06Z MTP1N60E MTW14N50E RF1S70N06* SI4980DY
IRFZ34 IRLR120 MTB60N06HD MTP1N80E MTW16N40E RF1S70N06SM* SI6331DQ
IRFZ34S IRLS0Z0 MTB6N60E MTP20N06V MTW20N50E RFD14N05* SI6434DQ
IRFZ44 IRLU014 MTB75N03HDL MTP20N20E MTW24N40E RFD14N05SM* SI6802DQ
IRFZ44S IRLU024 MTB75N05HD MTP27N10E MTW32N20E RFD14N06* SI6925DQ
IRFZ46 IRLU110 MTB8N50E MTP2N40E MTW32N25E RFD14N06SM* SI6926DQ
IRFZ46S IRLU120 MTB9N25E MTP2N50E MTW35N15E RFD16N05* SI6954DQ
IRFZ48 IRLZ14 MTD10N10EL MTP2N60E MTW45N10E RFD16N05SM* SI9426DY
IRFZ48S IRLZ14S MTD12N06EZL MTP3055V MTW6N100E RFD16N06* SI9802DY
IRL2203 IRLZ24 MTD15N06V MTP3055VL MTW7N80E RFD16N06SM* SI9804DY
IRL2203S IRLZ24S MTD15N06VL MTP30N06VL MTW8N60E RFD3055* SI9925DY
IRL3705 IRLZ34 MTD1N50E MTP33N10E MTY100N10E RFD3055SM* SI9926DY
IRL510 IRLZ34S MTD1N60E

MOSFETs (P-Channel)

(166 Devices)

IRF7104 IRF9530S IRF9Z34 IRFP9241* MMSF3P02HD RF1S30P05* RFG60P03*
IRF7202 IRF9531* IRF9Z34S IRFP9242* MMSF3P03HD RF1S30P05SM* RFG60P05E*
IRF7203 IRF9532* IRFD9014 IRFP9243* MMSF4P01HD RF1S30P06* RFG60P06E*
IRF7204 IRF9533* IRFD9024 IRFR9014 MTB23P06V RF1S30P06SM* RFP15P05*
IRF7205 IRF9540 IRFD9110 IRFR9024 MTB2P50E RF1S60P03* RFP15P06*
IRF9140* IRF9540S IRFD9113* IRFR9110 MTB30P06V RF1S60P03SM* RFP30P05*
IRF9141* IRF9541* IRFD9120 IRFR9120 MTB50P03HDL RF1S9530* RFP30P06*
IRF9142* IRF9542* IRFD9210 IRFR9210 MTD1P50E RF1S9530SM* RFP60P03*
IRF9143* IRF9543* IRFD9220 IRFR9220 MTD20P03HDL RF1S9540* RFP8P06E*
IRF9230* IRF9610 IRFI9520G IRFU9014 MTD20P06HDL RF1S9540SM* RFP8P06LE*
IRF9231* IRF9610S IRFI9530G IRFU9024 MTD2955V RF1S9640* RFT1P06E*
IRF9232* IRF9620 IRFI9540G IRFU9110* MTD5P06V RF1S9640SM* SI3455DV
IRF9233* IRF9620S IRFI9620G IRFU9110* MTD6P10E RFD15P05* SI3457DV
IRF9240* IRF9630 IRFI9630G IRFU9120* MTP12P10 RFD15P05SM* SI4425DY
IRF9241* IRF9630S IRFI9640G IRFU9120* MTP23P06V RFD15P06* SI4925DY
IRF9242* IRF9640 IRFI9Z14G IRFU9210 MTP2955V RFD15P06SM* SI4948EY
IRF9243* IRF9640S IRFI9Z24G IRFU9220* MTP2P50E RFD8P06E* SI6332DQ
IRF9510 IRF9641* IRFI9Z34G IRFU9220* MTP30P06V RFD8P06ESM* SI6415DQ
IRF9510S IRF9642* IRFIP9140 MMDF2P01HD MTP50P03HDL RFD8P06LE* SI6459DQ
IRF9511* IRF9643* IRFIP9240 MMDF2P02E MTP5P06V RFD8P06LESM* SI6933DQ
IRF9512* IRF9Z14 IRFL9014 MMDF2P02HD MTP6P20E RFF60P06* SI9424DY
IRF9513* IRF9Z14S IRFL9110 MMDF2P03HD MTSF1P02HD RFG30P05* SI9803DY
IRF9520 IRF9Z24 IRFP9140 MMFT2955E MTSF2P02HD RFG30P06* SI9934DY
IRF9520S IRF9Z24S IRFP9240 MMSF2P02E PMOS

* CircuitMaker PRO only

Operational Amplifiers

(46 Devices)

LF347	LM324	OPAMP5	TL052	TL070	TL081	TL088
LF351	LM348	TL022C	TL054	TL071	TL082	TL321
LF353	LM358	TL031	TL060	TL072	TL083	TL322
LF411C	LM3900	TL032	TL061	TL074	TL084	UA741
LF412C	MC1458	TL034	TL062	TL075	TL085	UA747
LM2902	MC3403	TL044C	TL064	TL080	TL087	UA748
LM307	NE5534	TL051	TL066			

Voltage Comparators

(5 Devices)

LM111	LP111	LP211	LM339	SWCOMP

Crystals

(103 Devices)

1.000MHZ	6.144MHZ	ECS-200-20-1	ECS-35-17-1	ECS-42-12-1	ECS-60-32-1
1.8432MHZ	8.000MHZ	ECS-200-20-4	ECS-35-17-4	ECS-42-12-4	ECS-60-32-4
10.000MHZ	ECS.3271213	ECS-200-20-7	ECS-35-17-7	ECS-44-20-1	ECS-61-32-1
11.000MHZ	ECS.327814	ECS-20-20-1	ECS-35-2	ECS-44-20-4	ECS-61-32-4
12.000MHZ	ECS-10-13-1	ECS-20-20-2	ECS36.4322P	ECS-44-20-7	ECS-61-32-7
15.000MHZ	ECS-10-13-2	ECS-21-32-2	ECS-36-18-1	ECS-44-32-2P	ECS-65-12-1
16.000MHZ	ECS-10-8-14	ECS-240-16-4	ECS-36-18-4	ECS-49-20-1	ECS-65-20-4
2.000MHZ	ECS110.5201	ECS-240-16-7	ECS-36-20-7	ECS-49-20-4	ECS-73-20-1
2.4576MHZ	ECS110.5204	ECS-240-20-1	ECS-37-32-2P	ECS-49-20-7	ECS-73-20-4
20.000MHZ	ECS110.5207	ECS-240-20-4	ECS38.59202	ECS498.6201	ECS76.8201
24.000MHZ	ECS-120-32-1	ECS-240-20-7	ECS-39-17-1	ECS-50-20-1	ECS-80-20-1
3.000MHZ	ECS129.6184	ECS-24-32-1	ECS-3X8	ECS-50-20-4	ECS98.3201
3.2768MHZ	ECS-153-20-4	ECS-24-32-2	ECS40.3201	ECS-51-20-1	ECS98.3207
3.5795MHZ	ECS162.5204	ECS25.6322P	ECS-40-20-1	ECS-51-20-4	R145-32.768
3.6864MHZ	ECS-18-13-1	ECS-29.4322P	ECS-40-20-4	ECS-52-32-1	R26-32.768
4.000MHZ	ECS-18-13-2	ECS-30-32-2	ECS-40-20-7	ECS-52-32-4	R38-32.768
5.000MHZ	ECS196.6201	ECS-32-17-1	ECS-41-20-1	ECS59.9201	RSM200S32.76
6.000MHZ					

Vacuum Tubes

(7 Devices)

12AU7	12AX7	5879	6L6GC	6SN7	7199P	7199T

Transformers

(11 Devices)

10to1	1to1	1to1CT	1to5	2to1CT	5to1	5to1CT
10to1CT	1to10	1to2	2to1			

Math Functions

(63 Devices)

ABSI	ADDI	ATANHI	COSI	LNI	SINHI	SUBI
ABSV	ADDV	ATANHV	COSV	LNV	SINHV	SUBV
ABSVR	ADDVR	ATANHVR	COSVR	LNVR	SINHVR	SUBVR
ACOSHI	ASINHI	ATANI	DIVI	LOGI	SINI	TANI
ACOSHV	ASINHV	ATANV	DIVV	LOGV	SINV	TANV
ACOSHVR	ASINHVR	ATANVR	DIVVR	LOGVR	SINVR	TANVR
ACOSI	ASINI	COSHI	EXPI	MULTI	SQRTI	UNARYI
ACOSV	ASINV	COSHV	EXPV	MULTV	SQRTV	UNARYV
ACOSVR	ASINVR	COSHVR	EXPVR	MULTVR	SQRTVR	UNARYVR

Relay Coils/Contacts

(5 Devices)

120VCOIL 12VCOIL 24VCOIL 5VCOIL NORMAL

Misc. Analog Devices

(17 Devices)

10to1 1to1 1to1CT 1to5 2to1CT 5to1 5to1CT
10to1CT 1to10 1to2 2to1

7400-series TTL

(9 Devices)

7406 7425 7439 7445 74147 74148 74199
7407 7428

FAST

(92 Devices)

74F00 74F37 74F125x4 74F157 74F174 74F242 74F273
74F02 74F40 74F126 74F157A 74F175 74F243 74F280A
74F04 74F74 74F126x4 74F158 74F181 74F244 74F280B
74F06 74F83 74F132 74F158A 74F182 74F245 74F283
74F07 74F85 74F133 74F160 74F190 74F251 74F298
74F08 74F86 74F138 74F161 74F191 74F251A 74F352
74F10 74F109 74F139 74F162 74F192 74F253 74F353
74F11 74F109x2 74F139x2 74F163 74F193 74F256 74F373
74F13 74F112 74F148 74F164 74F194 74F257 74F374
74F14 74F112x2 74F151 74F166 74F195 74F257A 74F377
74F20 74F113 74F151A 74F168 74F199 74F258 74F378
74F27 74F113x2 74F153 74F169 74F240 74F258A 74F568
74F30 74F125 74F154 74F173 74F241 74F259 74F569
74F32

Low-power Schottky TTL

(128 Devices)

74LS00 74LS30 74LS83A 74LS136 74LS165 74LS242 74LS298
74LS01 74LS32 74LS85 74LS138 74LS166 74LS243 74LS352
74LS02 74LS33 74LS86 74LS139 74LS168 74LS244 74LS353
74LS04 74LS37 74LS90 74LS139x2 74LS169 74LS245 74LS373
74LS05 74LS38 74LS92 74LS147 74LS173 74LS247 74LS374
74LS08 74LS40 74LS93 74LS148 74LS174 74LS248 74LS375
74LS09 74LS42 74LS95 74LS151 74LS175 74LS249 74LS377
74LS10 74LS47 74LS96 74LS153 74LS181 74LS251 74LS378
74LS11 74LS48 74LS109A 74LS154 74LS190 74LS253 74LS568
74LS12 74LS49 74LS109Ax2 74LS155 74LS191 74LS256 74LS569
74LS13 74LS73 74LS112 74LS156 74LS192 74LS257 buffer3s
74LS14 74LS73A 74LS112x2 74LS157 74LS193 74LS258 buffa3s
74LS15 74LS73x2 74LS113 74LS158 74LS194 74LS259 lssrff
74LS20 74LS74 74LS113x2 74LS160 74LS195 74LS260 lsqdff
74LS21 74LS74x2 74LS113A 74LS161 74LS197 74LS266 lsdff
74LS22 74LS75 74LS125 74LS162 74LS199 74LS273 lsram1k
74LS25 74LS76 74LS126x4 74LS163 74LS240 74LS280 lsprom32
74LS26 74LS76A 74LS132 74LS164 74LS241 74LS283 quad3sta
74LS27 74LS76x2

Schottky TTL

(3 Devices)

74S133 74S182 74S280

4000-series CMOS

(72 Devices)

4000	4015	4025	4042	4072	4086	4514	4526
4001	4017	4027	4043	4073	4093	4515	4531
4002	4018	4028	4044	4075	4094	4516	4532
4006	4019	4029	4049	4076	4502	4517	4539
4008	4020	4030	4050	4077	4505	4518	4543
4011	4021	4031	4068	4078	4508	4519	4555
4012	4022	4035	4069	4081	4510	4520	4556
4013	4023	4040	4070	4082	4511	4520x2	4585
4014	4024	4041	4071	4085	4512	4522	4731

Vendor Supplied SPICE Models

The SPICE models listed on the following pages are for use in CircuitMaker's Analog simulation mode. The models in this section were originally supplied by various hardware vendors. In some cases, the models have been modified slightly to conform to the standard Berkeley SPICE format.

Comlinear

(26 Devices)

CLC109	CLC404	CLC409	CLC414	CLC425	CLC430	CLC449	CLC505
CLC111	CLC405	CLC410	CLC415	CLC426	CLC432	CLC501	CLC522
CLC400	CLC406	CLC412	CLC420	CLC428	CLC440	CLC502	CLC532
CLC402	CLC407						

lantec

(47 Devices)

EL2020/EL	EL2041/EL	EL2075/EL	EL2176/EL	EL2224/EL	EL2360/EL	EL2460/EL
EL2028/EL	EL2044/EL	EL2099/EL	EL2180/EL	EL2232/EL	EL2386/EL	EL2539/EL
EL2029/EL	EL2045/EL	EL2120/EL	EL2186/EL	EL2242/EL	EL2423/EL	EL2540/EL
EL2030/EL	EL2070/EL	EL2160/EL	EL2190/EL	EL2243/EL	EL2424/EL	EL400/EL
EL2038/EL	EL2071/EL	EL2166/EL	EL2210/EL	EL2244/EL	EL2444/EL	EL4393/EL
EL2039/EL	EL2073/EL	EL2170/EL	EL2211/EL	EL2245/EL	EL2445/EL	EL5190/EL
EL2040/EL	EL2074/EL	EL2175/EL	EL2223/EL	EL2260/EL		

Harris Semiconductor

(39 Devices)

HA2500	HA2539	HA2600	HA2841	HA5102	HA5137	HFA3046
HA2502	HA2540	HA2602	HA2842	HA5104	HA5147	HFA3096
HA2510	HA2541	HA2620	HA2850	HA5112	HA5190	HFA3127
HA2512	HA2542	HA2622	HA5004	HA5114	HA5221	HFA3128
HA2520	HA2544	HA2839	HA5020	HA5127	HA5222	IRF9530
HA2522	HA2548	HA2840	HA5101			

Linear Technology

(168 Devices)

LF155	LM308A	LT1012S8	LT1056	LT1190	LT1253	LTC1051
LF155A	LM318	LT1013	LT1056A	LT1191	LT1254	LTC1052
LF156	LM318S8	LT1013A	LT1056S8	LT1192	LT1259	LTC1052CS
LF156A	LT118A	LT1013D	LT1057	LT1195	LT1260	LTC1053
LF355	LT318A	LT1014	LT1057A	LT1200	LT1354	LTC1150
LF355A	LT1001	LT1014A	LT1057S	LT1201	LT1355	LTC7652
LF356	LT1002	LT1014D	LT1058	LT1202	LT1356	OP05
LF356A	LT1001S8	LT1022	LT1058A	LT1208	LT1357	OP05A
LF412	LT1001A	LT1022A	LT1077	LT1209	LT1358	OP05C
LF412A	LT1002A	LT1024	LT1078	LT1217	LT1359	OP05E
LH2108	LT1006	LT1024A	LT1078A	LT1220	LT1360	OP07
LH2108A	LT1006A	LT1028	LT1079	LT1221	LT1361	OP07A
LM10C	LT1006S8	LT1028A	LT1079A	LT1223	LT1362	OP07C
LM101A	LT1007	LT1028CS	LT1097	LT1224	LT1363	OP07CS8
LM107	LT1007CS	LT1037	LT1115	LT1225	LT1364	OP07E
LM108	LT1007A	LT1037A	LT1122	LT1226	LT1365	OP15A
LM108A	LT1008	LT1037CS	LT1178	LT1227	LTC1047	OP15B
LM118	LT1012	LT1055	LT1178A	LT1229	LTC1049	OP15C
LM301A	LT1012A	LT1055A	LT1179	LT1230	LTC1050	OP15E
LM308	LT1012D	LT1055S8	LT1179A	LT1252	LTC1050A	OP15F

OP15G
OP16A
OP16B
OP16C
OP16E
OP16F
OP16G
OP27A
OP27C
OP27E
OP27G
OP37A
OP37C
OP37E
OP37G
OP97
OP215A
OP215C
OP215E
OP215G
OP227A
OP227C
OP227E
OP227G
OP237A
OP237C
OP237E
OP237G

Maxim

(92 Devices)

MAX406Ac
MAX406Bc
MAX406Ad
MAX406Bd
MAX407
MAX409A
MAX409B
MAX417
MAX418
MAX419
MAX410
MAX410B
MAX412
MAX412B
MAX414
MAX414B
MAX4100
MAX4101
MAX4106
MAX4107
MAX4108
MAX4109
MAX4112
MAX4113
MAX4122
MAX4126
MAX4129
MAX4124
MAX4128
MAX4130
MAX4132
MAX4134
MAX4144
MAX4158
MAX4159
MAX4258
MAX4259
MAX4162
MAX4163
MAX4164
MAX4165
MAX4167
MAX4169
MAX4178
MAX4182
MAX4184
MAX4186
MAX4187
MAX4212
MAX4216
MAX4220
MAX4223
MAX4224
MAX4225
MAX4226
MAX4227
MAX4228
MAX4278
MAX427
MAX437
MAX4330
MAX4332
MAX4334
MAX473
MAX474
MAX475
MAX477
MAX47815
MAX4785
MAX4783
MAX47915
MAX4795
MAX4793
MAX492
MAX494
MAX495
MAX496
MAX497
MAX498
MAX499
MAX907
MAX908
MAX922
MAX924
MAX934
MAX941
MAX942
MAX944
MAX975LP
MAX975HS
MAX977LP
MAX977HS

Motorola

(49 Devices)

BFS17
LF441
LF442
LF444
LM11
LM833
LM2904
MC1536
MC1747
MC3458
MC4558
MC4741
MC33071
MC33072
MC33074
MC33076
MC33077
MC33078
MC33079
MC33171
MC33172
MC33174
MC33178
MC33179
MC33181
MC33182
MC33184
MC33204
MC33272
MC33274
MC33282
MC33284
MC34001
MC34084
MC34184
MMBR521
MMBR571
MMBR901
MMBR931
MMBR941
MMBR951
MRF5711
MRF5812
MRF9011
MRF9331
MRF9411
MRF947
MRF9511
TCA0372

National Semiconductor

(182 Devices)

2N3904/NS
2N3906/NS
2N5086/NS
2N5088/NS
2N5401/NS
2N5551/NS
BSR14/NS
BSR15/NS
BSR17A/NS
BSR18A/NS
BSS63/NS
BSS64/NS
BSV52/NS
LF155/NS
LF156/NS
LF157/NS
LF255/NS
LF256/NS
LF257/NS
LF351/NS
LF353/NS
LF355/NS
LF356/NS
LF357/NS
LF411/NS
LF412/NS
LF441A/NS
LF441B/NS
LF442A/NS
LF442B/NS
LF444A/NS
LF444B/NS
LF451/NS
LF453/NS
LM111/NS
LM118/NS
LM124/NS
LM158/NS
LM218/NS
LM224/NS
LM258/NS
LM2902/NS
LM2904/NS
LM318/NS
LM324/NS
LM358/NS
LM6118/NS
LM6132A/NS
LM6132B/NS
LM6142A/NS
LM6142B/NS
LM6152A/NS
LM6152B/NS
LM6161/NS
LM6162/NS
LM6164/NS
LM6165/NS
LM6171A/NS
LM6171B/NS
LM6172/NS
LM6181/NS
LM6218/NS
LM6262/NS
LM6264/NS
LM6265/NS
LM6317/NS
LM6361/NS
LM6362/NS
LM6364/NS
LM6365/NS
LM7121/NS
LM7131A/NS
LM7131B/NS
LM7171A/NS
LM7171B/NS
LM7301/NS
LM741/NS
LMC6001A/NS
LMC6001B/NS
LMC6022/NS
LMC6024/NS
LMC6032/NS
LMC6034/NS
LMC6035/NS
LMC6036/NS
LMC6041A/NS
LMC6041B/NS
LMC6042A/NS
LMC6042B/NS
LMC6044A/NS
LMC6044B/NS
LMC6061A/NS
LMC6061B/NS
LMC6062A/NS
LMC6062B/NS
LMC6064A/NS
LMC6064B/NS
LMC6081A/NS
LMC6081B/NS
LMC6082A/NS
LMC6082B/NS
LMC6084A/NS
LMC6084B/NS
LMC6462A/NS
LMC6462B/NS
LMC6464A/NS
LMC6464B/NS
LMC6482A/NS
LMC6484A/NS
LMC6492A/NS
LMC6492B/NS
LMC6494A/NS
LMC6494B/NS
LMC6572A/NS
LMC6572B/NS
LMC6574A/NS
LMC6574B/NS
LMC6582A/NS
LMC6582B/NS
LMC6584A/NS
LMC6584B/NS
LMC660A/NS
LMC660B/NS
LMC662/NS
LMC662A/NS
LMC6762A/NS
LMC6762B/NS
LMC6772A/NS
LMC6772B/NS
LMC7101A/NS
LMC7101B/NS
LMC7111A/NS
LMC7111B/NS
LMC7211A/NS
LMC7211B/NS
LMC7221A/NS
LMC7221B/NS
LPC660A/NS
LPC660B/NS
LPC661A/NS
LPC661B/NS
LPC662A/NS
LPC662B/NS
MMBT2222A/NS
MMBT2369A/NS
MMBT2907A/NS
MMBT3904/NS
MMBT3906/NS
MMBT4258/NS
MMBT5086/NS
MMBT5088/NS
MMBT5179/NS
MMBT5401/NS
MMBT5551/NS
MMBTA06/NS
MMBTA42/NS
MMBTA56/NS
MMBTA92/NS
MMBTH10/NS
MMPQ2222/NS
MMPQ2369A/NS
MMPQ2907/NS
MMPQ3904/NS
MMPQ3906/NS
MPS5179/NS
MPSA06/NS
MPSA42/NS
MPSA56/NS
MPSA92/NS
MPSH10/NS
PN2222A/NS
PN2369A/NS
PN2907A/NS
PN4258/NS
PZT2222A/NS
PZT2907A/NS
PZT3904/NS
PZT3906/NS
PZTA06/NS
PZTA42/NS
PZTA56/NS
PZTA92/NS

Polyfet

(27 Devices)

F1007
F1008
F1020
F1021
F1022
F1027
F1072
F1074
F1120
F1174
F1214
F1240
F1260
F2001
F2002
F2012
F2021
F2201S
F2202S
L88008
L88012
L88016
L88081
L88082
L88083
P121
P123

Siliconix

(26 Devices)

Si3441DV
Si3454DV
Si4410DY
Si4412DY
Si4431DY
Si4435DY
Si4936DY
Si4947DY
Si4953DY
Si6426DQ
Si6433DQ
Si6435DQ
Si6447DQ
Si6943DQ
Si6946DQ
Si6953DQ
Si6955DQ
Si6956DQ
Si9434DY
Si9933DY
Si9936DY
Si9947DY
SUP60N06-18
SUP65P06-20
SUP70N06-14
SUP75N06-08

Texas Instruments

(16 Devices)

LP239
LP2901
LP311
LP339
TLC339
TLC352
TLC354
TLC3702
TLC3704
TLC372
TLC374
TLC393
TLV2352I3
TLV2352I5
TLV2354I3
TLV2354I5

Zetex

(169 Devices)

2N6715
2N6727
2SA1213
2SC2873
BAL74
BAL99
BAR74
BAR99
BAS16
BAS19
BAS20
BAS21
BC107BP
BC108BP
BC109BP
BC177AP
BC178AP
BC182BP
BC183BP
BC184BP
BC212AP
BC213AP
BC237BP
BC238BP
BC239BP
BC307AP
BC308AP
BC337AP
BC338AP
BC413BP
BC414BP
BC415AP
BC416AP
BC546BP
BC547BP
BC548BP
BC549BP
BC550BP
BC556AP
BC557AP
BC558AP
BC559AP
BC560AP
BC846B
BC847B
BC848B
BC849B
BC850B
BC856A
BC857A
BC858A
BC859A
BC860A
BCV72
BCW29
BCW32
BCW60C
BCW61A
BCW65A
BCW66F
BCW67A
BCW68F
BCW69
BCW72
BCW89
BCX38B
BCX70J
BCX71G
BFQ31
BFS60
FCX458
FCX558
FCX649
FCX749
FMMD6050
FMMD914
FMMT38B
FMMT597
FMMT918
FMMTA20
FMMTA70
FZT604
FZT605
FZT649
FZT651
FZT657
FZT658
FZT688B
FZT689B
FZT690B
FZT692B
FZT694B
FZT696B
FZT705
FZT749
FZT751
FZT757
FZT758
FZT788A
FZT788B
FZT789A
FZT790A
FZT792A
HD3A
MPSA20
ZTX107
ZTX107B
ZTX108
ZTX108B
ZTX109
ZTX109B
ZTX212
ZTX212A
ZTX213
ZTX214
ZTX214A
ZTX231A
ZTX237
ZTX237B
ZTX238
ZTX238B
ZTX239
ZTX239B
ZTX320
ZTX321
ZTX337A
ZTX338A
ZTX450
ZTX454
ZTX455
ZTX458
ZTX550
ZTX558
ZTX604
ZTX605
ZTX649
ZTX650
ZTX651
ZTX657
ZTX658
ZTX688B
ZTX689B
ZTX690B
ZTX692B
ZTX694B
ZTX696B
ZTX704
ZTX705
ZTX749
ZTX750
ZTX751
ZTX757
ZTX758
ZTX788A
ZTX788B
ZTX789A
ZTX790A
ZTX792A
ZTX795A
ZTX796A
ZTX948
ZTX949
ZTX951
ZTX953
ZTX955
ZTX956
ZTX957
ZTX958
ZTX968

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