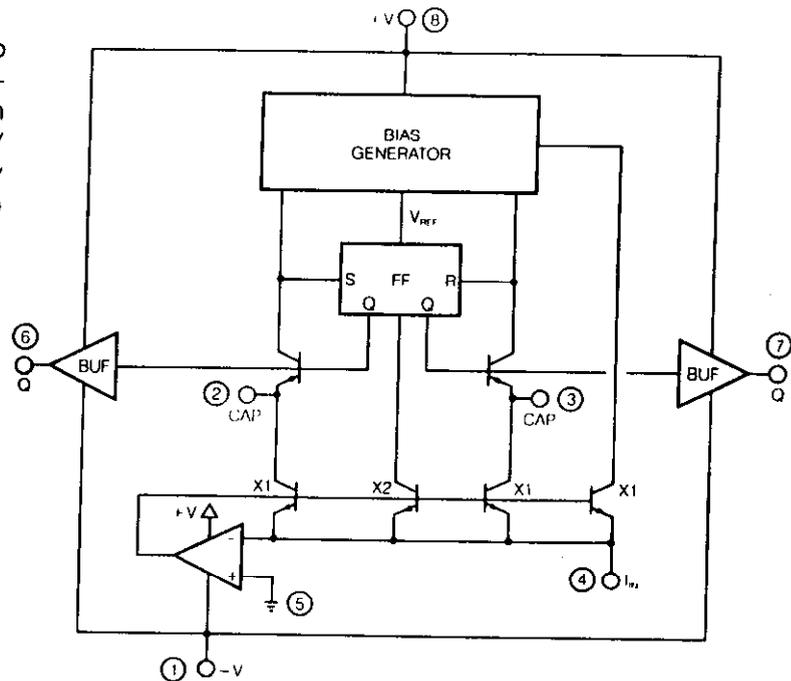


General Purpose Devices

SSM 2031 – HIGH FREQUENCY OSCILLATOR/VOLTAGE TO FREQUENCY CONVERTER

The SSM 2031 is a high frequency oscillator/voltage to frequency converter with wide sweep range, high linearity and temperature stability. The device has a minimum 10,000 to 1 sweep range when operated from $\pm 15V$ supplies and has a 50ppm/degree C temperature stability figure. Complementary outputs are provided for two phase clocking applications. The 2031 is packaged in an 8-pin minidip and requires only one external resistor and capacitor for basic operation.

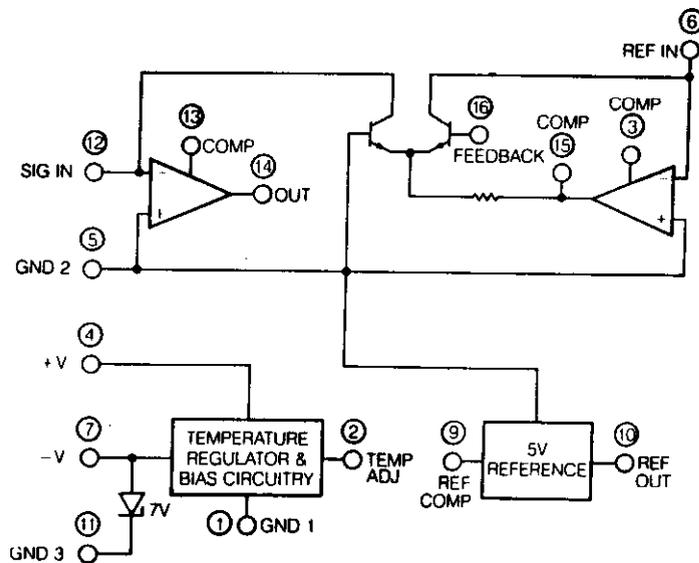
- 0.001Hz to 10MHz Operation
- 0.1% Linearity to 1MHz
- Low Cost
- Outputs TTL Compatible



SSM 2100 – MONOLITHIC LOG/ANTILOG AMPLIFIER

The SSM 2100 is a complete monolithic subsystem for the realization of logarithmic and exponential transfer characteristics. Included are two precision op amps, a high conformance transistor pair and a precision bandgap voltage reference. Additionally, the chip has a substrate temperature regulator which stabilizes the scale factor and greatly attenuates drift of the reference. A negative reference voltage is also available to facilitate external trimming.

- 500pA Input Bias Current (untrimmed)
- 50pA Input Bias Current (trimmed)
- 4mV Input Offset Voltage
- 10ppm/degree C Reference Drift
- 30ppm/degree C Scale Factor Drift
- 0.25% Conformance
- 3 Decade Dynamic Range (Voltage Input)
- 5 Decade Dynamic Range (Current Input)
- Low Cost
- Few External Components Required



VOLTAGE CONTROLLED OSCILLATOR

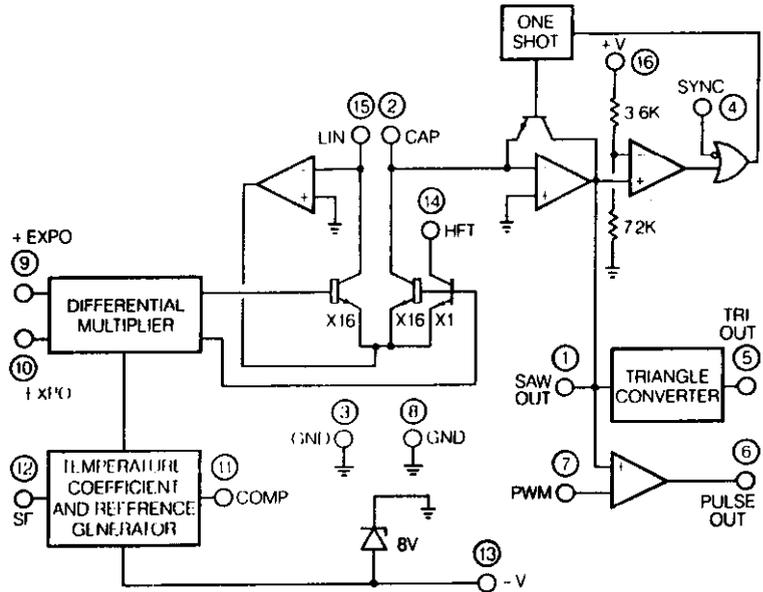
SSM 2038 – VOLTAGE CONTROLLED OSCILLATOR

The SSM 2038 is a precision voltage controlled oscillator designed specifically for electronic music systems. Operating frequency can be swept over a 5,000:1 range by simultaneous linear and exponential control inputs. Additionally, exponential conversion is fully differential yielding both positive and negative inputs which simplifies system design. The 2038 is fully temperature compensated and needs no compensating resistor or continuous computer aided tuning.

Three buffered outputs are provided: saw-tooth, triangle and pulse. The latter has a voltage duty cycle from 0 to 100%, clean edges being guaranteed by a comparator with internal hysteresis.

The 2038 also features provision for synchronization, high frequency track compensation, and voltage controlled scale factor trim.

- Low Scale Factor Drift (75 ppm/C°)
- Excellent Exponential Conformity (0.2%)
- Short Circuit Protected Outputs



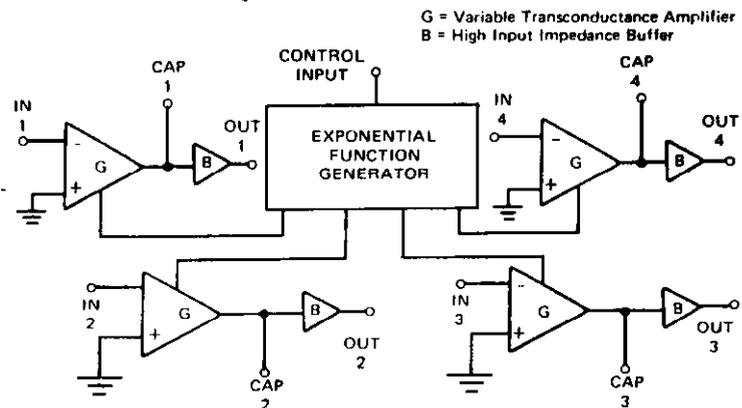
VOLTAGE CONTROLLED FILTERS

SSM 2040 – VOLTAGE CONTROLLED FILTER*

The SSM 2040 is an extremely flexible building block circuit which can be used in virtually any active filter design including lowpass, highpass, bandpass, and notch. The four-section device's cutoff frequency can be exponentially voltage controlled over a 10,000 to 1 range. Roll-off characteristics can be selected to be Butterworth, Bessel, Chebyshev, Cauer, or any other filter type.

Applications include tracking filters, electronic organs, synthesizers, phase shifters, sound effects generators, and audio instrumentation equipment.

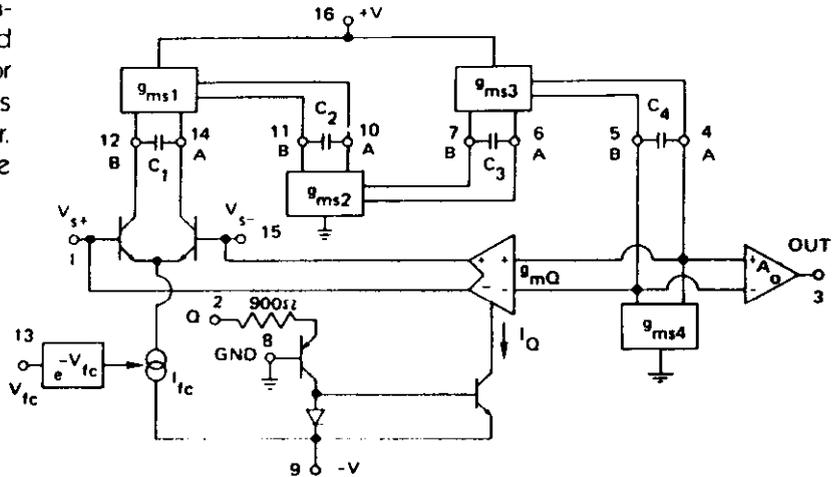
*Protected under United States Patent #3,969,682



SSM 2044 – FOUR POLE VOLTAGE CONTROLLED FILTER*

The SSM 2044 is a low cost 4-pole voltage controlled lowpass filter optimized for use in electronics music systems. On-chip voltage control of resonance allows direct and easy interfacing with programmers and controllers. A novel filtering technique provides extended control range, low noise and high control rejection for "pop"-free performance. The device can also be used as a low distortion sinewave oscillator or anti-aliasing filter. No external ladder network is required making the device a real cost and space saver in polyphonic applications.

- High Control Rejection (36dB typical for 1000 to 1 sweep)
- $\pm 18V$ to $\pm 5V$ Supplies
- Minimum External Components Required
- Stable Resonance Over Frequency Sweep
- No Op Amp Needed Between Output and VCA
- 90dB Dynamic Range
- 10,000 to 1 Minimum Sweep Range
- On-Chip Resonance Control



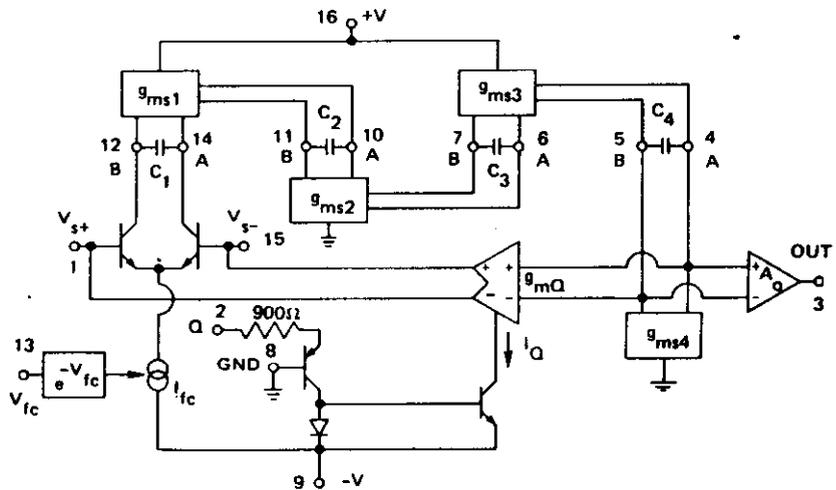
*Protected under United States Patent #4,404,529

SSM 2046 – FOUR POLE VOLTAGE CONTROLLED FILTER* (PRELIMINARY)

The SSM 2046 is an improved pin-for-pin replacement for the extremely popular SSM 2044. The patented true open loop technology employed in both products delivers a characteristic "fat" sound not available from other devices which have local feedback around each filter stage.

The 2046 offers a 10dB improvement in offset, control feedthrough, and signal to noise referred to an input signal level which produces 0.3% THD. The Q feedback amplifier and the frequency control circuit have been upgraded to minimize the in-band loss at high Q settings and to reduce the device-to-device frequency and Q setting variability.

- Low Cost
- Differential Signal Inputs
- Stable Resonance Over Frequency Sweep
- Low Volume Loss with Increasing Q
- No Op Amp Needed Between Output and VCA
- Wide Supply Range ($\pm 5V$ to $\pm 18V$)



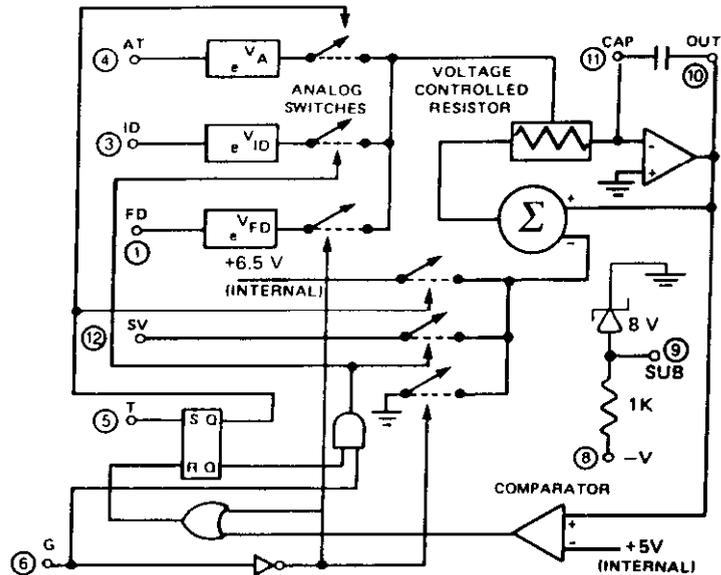
*Protected under United States Patent #4,404,529

ENVELOPE GENERATOR

SSM 2056 – VOLTAGE CONTROLLED TRANSIENT GENERATOR

The SSM 2056 is a precision four-section voltage controlled transient generator designed for easy use in programmable electronic music systems. The device offers near zero offset and control feedthrough, standard 5V peak output, and an exponentially controlled 50,000 to 1 range on all timing inputs. Sustain voltage level can be varied from 0 to 100%. In addition, all control inputs are gangable and referenced from ground up allowing easy interface with electronic controllers and programmers.

- Full ADSR Response
- Low Cost
- Independent Gate and Trigger
- Minimum External Components Required
- True RC Contour
- Output Short Circuit Protected



MUSIC VOICING SYSTEMS

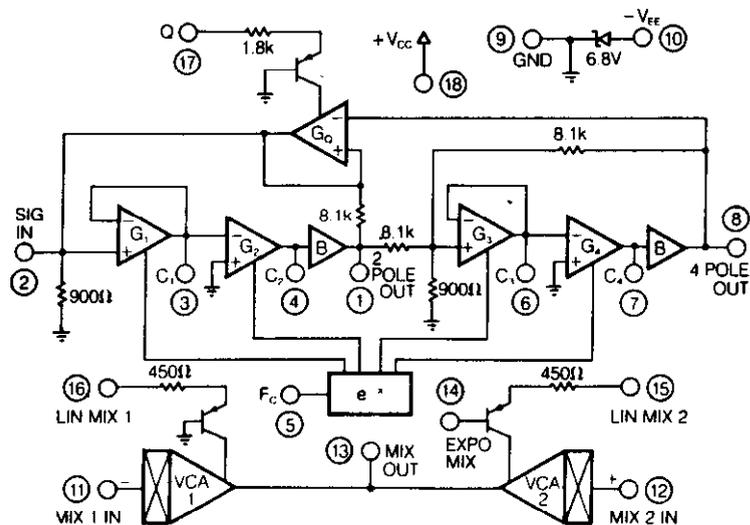
SSM 2045 – MUSIC VOICING SYSTEM®

The SSM 2045 is a flexible high performance building block which offers the designer a maximum of options in the engineering of electronic music systems. Provided on-chip is a VCF with both 2-pole and 4-pole outputs and an uncommitted mixer/VCA combination. Both sections offer exceptionally low noise, offset, and control feedthrough.

The filter section contains a voltage control feedback amplifier which gives built-in electronic Q control with a minimum of in-band loss at the oscillation point, and the mixer/VCA section can either be connected to the filter input for waveform mixing or to the outputs for mixing between 2- and 4-pole responses.

The SSM 2045 system offers a characteristic 'fat' sound and user flexibility.

- On-Chip Q Control
- 92dB VCF Dynamic Range
- Only 6dB Loss At Oscillation



SSM 2047 – MUSIC VOICING SYSTEM™.

The SSM 2047 is a dedicated signal processing array designed to conform to the demands of state-of-the-art electronic music systems. Provided on-chip is a four pole 2045 type low-pass voltage controlled filter and three output VCA's which give individual channel as well as mixable left and right stereo outputs.

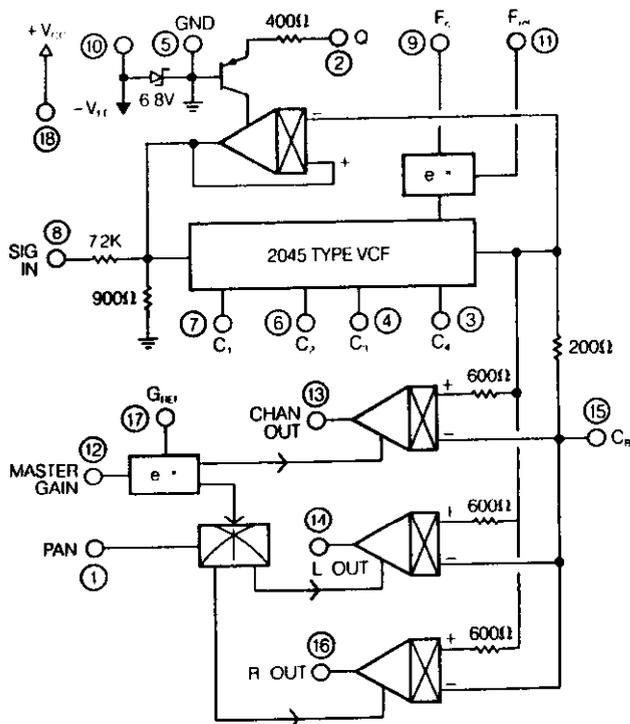
The filter section has been designed for low distortion, wide dynamic range, low offset and has excellent control rejection performance. A voltage controlled feedback amplifier gives built-in electronic Q control with a minimum of in-band loss at the oscillation point.

The output VCA's are low control feedthrough, full class A devices connected in parallel rather than series for less noise and distortion build up. The master gain and stereo pan pins have exponential (dB/volt) control characteristics.

The system as a whole delivers a characteristic "fat" sound and unit to unit frequency and amplitude variability is reduced by external reference resistors.

- 92 dB VCF Dynamic Range
- dB/Volt Master Gain and Pan Controls
- Full Class A Signal Path
- Exceptionally Low Control Feedthrough
- Only 6dB Loss At Oscillation

*Patent applied for

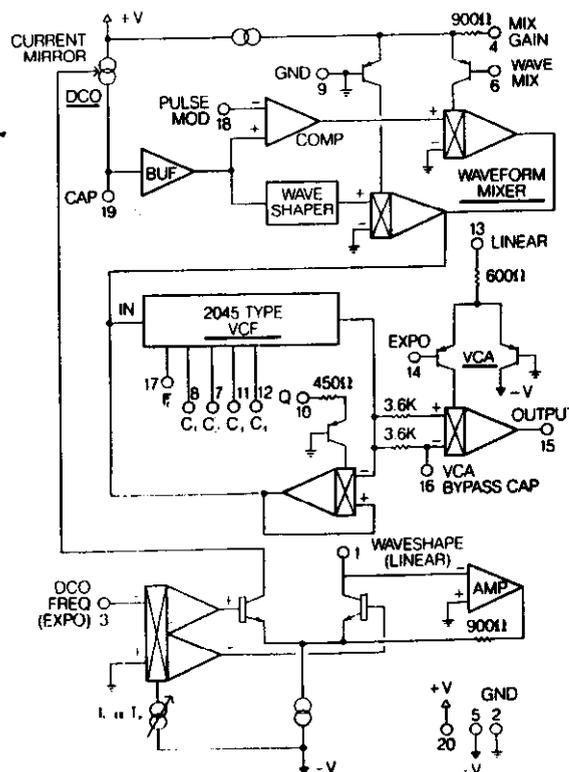


SSM 2060 – DIGITALLY CONTROLLED VOICE®.

The SSM 2060 is a complete digitally controllable analog music voice in a single 20-pin I.C. Included on-chip is a wide range DCO with a rich variety of waveform outputs, a waveform mixer, a high quality four-pole VCF, and a low control feedthrough final VCA with both linear and exponential control ports. The signal path is full class A for low intermodulation distortion, and the eight control inputs were designed to interface directly to the SSM 2300. The SSM 2060's configuration makes it possible to design extremely versatile and cost effective music systems covering the full range of feature and performance capabilities.

- Ten Octave Control Range
- Multiple Waveform Outputs Including all Standard Types
- Multiple Oscillator Capability
- Non-interacting Frequency and Wave Shape Controls
- SSM 2045 Type Four-Pole VCF
- 20-Pin Package
- Low Cost
- Full On-chip Temperature Compensation
- System Design Flexibility
- No Exposed HI-Z Hold Points When Used With SSM 2300

*Patent applied for



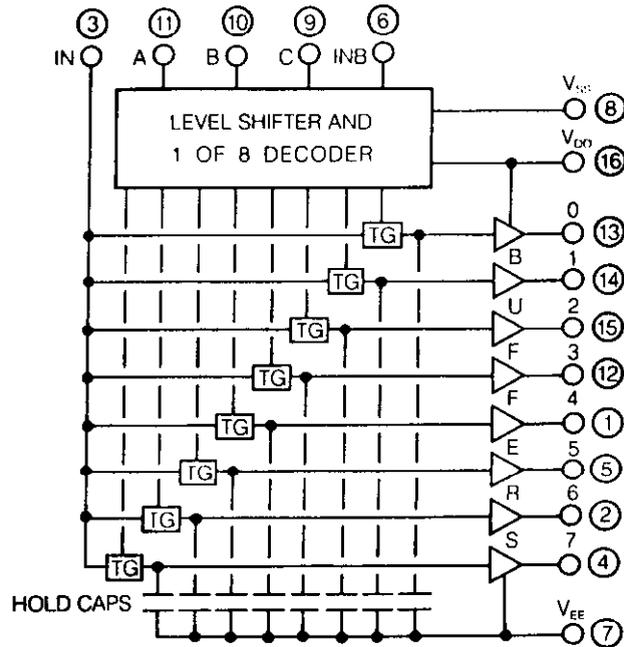
Solid State Micro Technology for Music, Inc., 20768 Walsh Avenue, Santa Clara, CA 95050, USA (408) 797-0917 Telex 171189

SSM 2300 – 8 CHANNEL MULTIPLEXED SAMPLE AND HOLD™.

The SSM 2300 is an eight channel CMOS multiplexed sample and hold IC designed for data distribution in microprocessor controlled systems. The device can be easily retrofitted into an existing 4051 socket used for this application replacing it and its external discretes with the advantage that the high impedance hold points are internal to the IC, eliminating manufacturing and reliability problems. With a 15 volt supply, a channel can acquire an 8 bit input signal to 1/2 LSB in less than one microsecond allowing over 16 full band audio signals to be simultaneously demultiplexed from a single DAC. Near D.C., almost any number of 2300's can be paralleled for process control applications. The output swing includes the negative supply and the chip can operate off single or dual supplies from 5 to 18 volts total. The control inputs are both TTL and CMOS compatible over most of the full supply range.

- High Accuracy (8 Bits Absolute, 12 Bits Linearity)
- Low Droop Rate (<50mV/Second)
- Internal High Z Hold Points
- Output Buffers Stable for CL <500pF
- 1µ. Sec Acquisition Time
- 2µ. Sec Settling Time

Patent applied for



Other SSMT Devices

The following list of products are considered to be obsolete for most applications, but are still available for those interested. Some minimum order requirement may apply. Contact SSMT for further information.

- SSM 2000—DUAL LINEAR-ANTILOG VOLTAGE CONTROLLED AMPLIFIER
- SSM 2010—VOLTAGE CONTROLLED AMPLIFIER
- SSM 2012—VOLTAGE CONTROLLED AMPLIFIER
- SSM 2030—VOLTAGE CONTROLLED OSCILLATOR
- SSM 2033—VOLTAGE CONTROLLED OSCILLATOR
- SSM 2036—VOLTAGE CONTROLLED OSCILLATOR
- SSM 2050—VOLTAGE CONTROLLED TRANSIENT GENERATOR
- SSM 2055—VOLTAGE CONTROLLED TRANSIENT GENERATOR