

POLYPHONIC SOUND GENERATOR

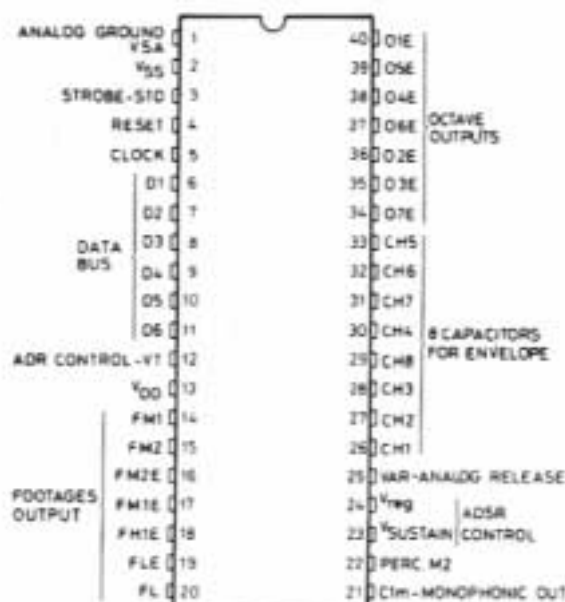
- 8 μ P PROGRAMMABLE SOUND GENERATOR CHANNELS
- 2MHz CLOCK
- INTERNAL TOS WITH POSSIBILITY OF EXTERNAL SYNCHRONIZATION FOR MULTICHIP USE
- 6 COMPLETE OCTAVE KEYBOARDS (72 KEYS)
- FIVE HOMOGENEOUS FOOTAGES μ P PROGRAMMABLE BY ADDING A CONSTANT K TO THE KEYBOARD SITUATION
- SEVEN OCTAVE RELATED OUTPUTS ENVELOPED WITHOUT CONSTANT DC LEVEL (4 FOOTAGES)
- SEVEN FOOTAGE RELATED OUTPUTS WITH DIFFERENT CONFIGURATIONS FOR :
 - FOOTAGES WITH ENVELOPE (WITHOUT CONSTANT DC LEVEL) AND:
 - FOOTAGES WITHOUT ENVELOPE (WITH CONSTANT DC LEVEL) AND:
 - VARIOUS SOUND CHANNEL DIVISIONS (SEE OPTION I, II AND III)
- POSSIBILITY OF EXCLUDING ONE OR MORE SOUND CHANNELS FROM THE NON ENVELOPED FOOTAGE OUTPUTS
- ONE MONOPHONIC OUTPUT NON ENVELOPED RELATED TO SOUND CHANNEL 1 WITH THE POSSIBILITY OF CHOOSING THE FOOTAGE (TWO ADDITIONAL MONOPHONIC OUTPUTS ON OPTION II)
- 50% DUTY CYCLE ON ALL OUTPUTS
- DIGITAL DRAWBAR CONTROL (32 LEVELS)
- ATTACK - DECAY - SUSTAIN - RELEASE (ADSR) ENVELOPE DEFINITION WITH DIGITAL CONTROL ON A.D.R. AND ANALOG CONTROL ON S
- ADDITIONAL ANALOG CONTROL ON RELEASE
- ANALOG PERCUSSION INPUT TO ENVELOPE ONE FOOTAGE (M2) ON THE OCTAVE RELATED OUTPUTS
- SPECIAL EXTERNAL ENVELOPE POSSIBILITY USING HOLD AND/OR RELEASE ∞
 HOLD AND RELEASE ∞ ARE DEDICATED TO DECAY AND PEDAL EFFECT



DIP-40 Plastic

ORDERING NUMBER: M112B1

PIN CONNECTION



- N-CHANNEL TECHNOLOGY - 12V SINGLE SUPPLY.

The M112 is a polyphonic sound generator that combines eight generators with envelope shapers and drawbar circuitry in a single package. This versatile circuit simplifies the design of a wide range of polyphonic instruments and, interfacing directly with a microcomputer chip, gives designers an unprecedented degree of flexibility. The M112 is realized on a single monolithic silicon chip using low threshold N-channel silicon gate MOS technology. It is available in a 40 lead plastic package.

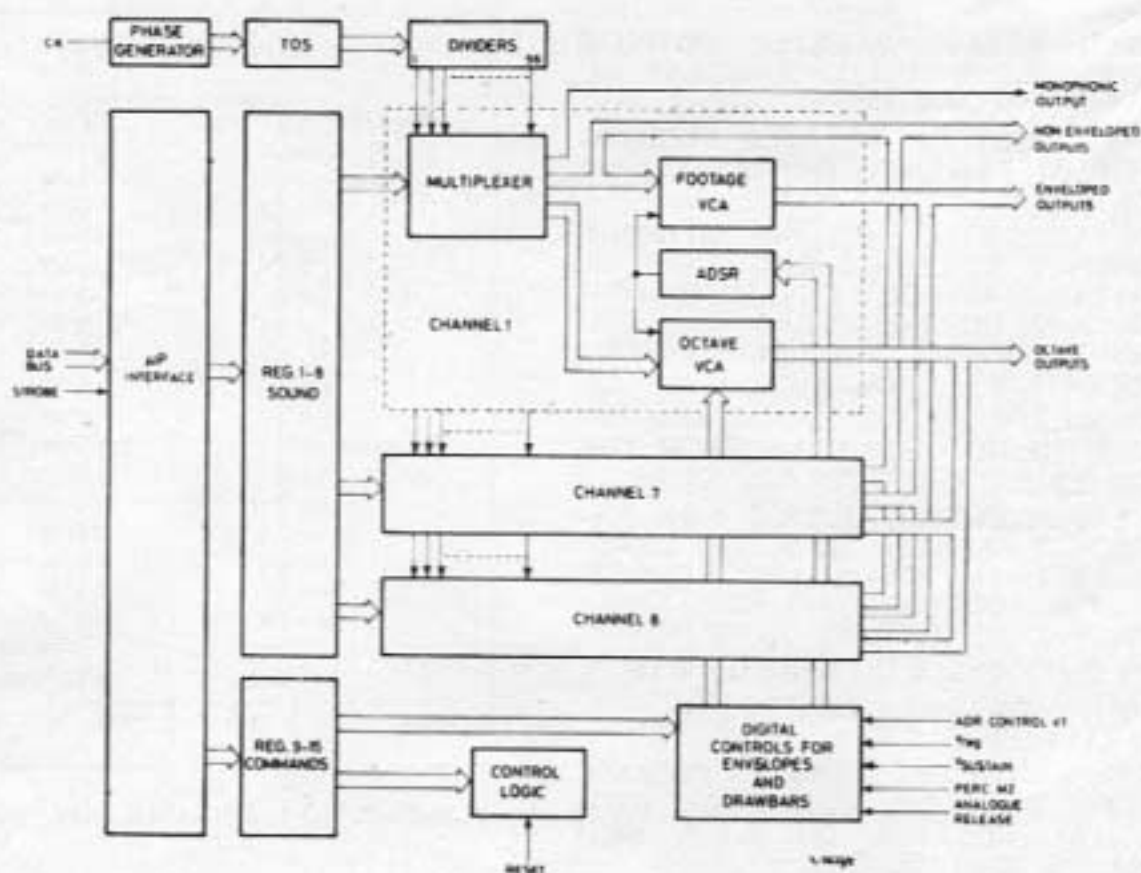
ABSOLUTE MAXIMUM RATINGS

V_{DD}^*	Supply voltage	-0.3 to 20	V
V_i	Input voltage	-0.3 to V_{DD}	V
$V_{O(off)}$	Off state output voltage	-0.3 to 20	V
P_{Tot}	Total power dissipation	500	mW
T_{stg}	Storage temperature	-65 to 150	°C
T_{op}	Operating temperature	0 to 70	°C

Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

* All voltages are with respect to V_{SS} .

BLOCK DIAGRAM



RECOMMENDED OPERATING CONDITIONS

Parameter	Test conditions	Values			Unit
		Min.	Typ.	Max.	
V_{DD} Highest Supply Voltage		11.4	12	12.6	V

STATIC ELECTRICAL CHARACTERISTICS

($V_{DD} = 12V \pm 5\%$, $V_{SS} = 0V$, $T_{amb} = 0$ to $50^\circ C$ unless otherwise specified)

Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_{IH} Input High Voltage	Pins 3, 6 to 11	2.4		V_{DD}	V
	All other inputs	6		V_{DD}	V
V_{IL} Input Low Voltage	Pins 3, 6 to 11	-0.3		0.8	V
	All other inputs	-0.3		1	V
VSA Analog Ground	$R < 10\Omega$ $C = 100\mu F$	0	0	1	V
VT ADR Control Time	$R = 1K$ $C = 1\mu F$ (note 3)	0		V_{DD}	V
VAR Analog Release	$R = 10K$ $C = 0.1\mu$	0		V_{DD}	V
V_{reg} Control OFF Asymptote	$R < 10\Omega$ $C = 100\mu$	0	0	1	V
$V_{SUST.}$ Control Level Sustain	$R = 1K$ $C = 100\mu$ (note 2)	0		V_{DD}	V
Perc. M2 Control Level Percussion	$R = 10K$	0		V_{DD}	V
I_{LI} Input Leakage Current	$V_I = V_{DD}$			1	μA

OUTPUT SIGNALS (One key pressed)

I_{OL} Output Low current	$V_{OL} = V_{DD}/2 - 1V$ (note 1)	10	30	50	μA
I_{OH} Output High Current	$V_{OH} = V_{DD}/2 + 1V$ (note 1)	10	30	50	μA
	$V_{OH} = 10V$ $V_{CHN} = V_{DD}/2$ (*)	100	300	500	μA
	$V_{OH} = 10V$ $V_{CHN} = V_{DD}/2$	10	30	50	μA
$I_{O(off)}$ Off state output current	$V_O = V_{DD}$ (all output pins)			1	μA
	$V_O = V_{SS}$ (pins 14-15-20 in 3 rd state)			-1	μA

POWER DISSIPATION

I_{DD} Supply current	$T_{amb} = 25^\circ C$			50	mA
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Notes: 1. Refers only to FL, FM1, FM2 (pins 20, 15, 14).

2. With a standard ADSR $V_{SUST} < 4.5V$

3. The best region is $V_T - V_{SUST} > 4V$

(*) Refers only to octave outputs with drawbar max.

DYNAMIC ELECTRICAL CHARACTERISTICS

Parameter	Test conditions	Min.	Typ.	Max.	Unit
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CLOCK

f_i Input Clock Frequency		250	2000.24	2.300	kHz
t_r, t_f Rise and Fall Times 10% to 90%				30	ns
t_{on}, t_{off} ON and OFF Times		150			ns

RESET

t_w Pulse Width	Clock = 2 MHz	10			μs
t_f Fall Time				30	ns

OUTPUT SIGNALS

t_{on}, t_{off} Output duty cycle			50		%
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