



AY-1-0212

AY-1-0212A

Top Octave Generators

FEATURES

- Wide Input Frequency Range:
 - 1) AY-1-0212—250kHz to 1.5MHz
 - 2) AY-1-0212A—250kHz to 2.5MHz
- Low Impedance Push-Pull Outputs
- Full Musical Scale in One Chip
- Zener Protected Input

DESCRIPTION

The AY-1-0212/0212A Top Octave Generators are digital tone generators which produce, from a single input frequency, a full octave of twelve frequencies on twelve separate output terminals.

The AY-1-0212/0212A each consist of twelve divider circuits which divide the input by an exact integer to produce a chromatic scale of twelve notes. When used in conjunction with an oscillator and frequency dividers, a system may be configured which generates all the frequencies required by an electronic music synthesizer.

The AY-1-0212 operates with input frequencies of up to 1.5MHz. The AY-1-0212A operates up to 2.5MHz.

PIN CONFIGURATION

16 LEAD DUAL IN LINE

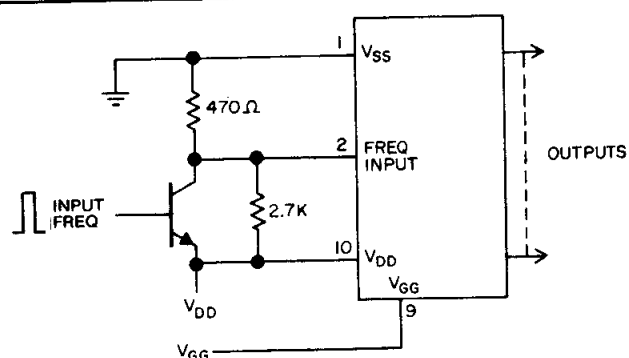
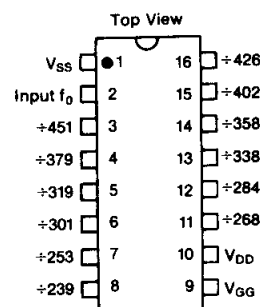
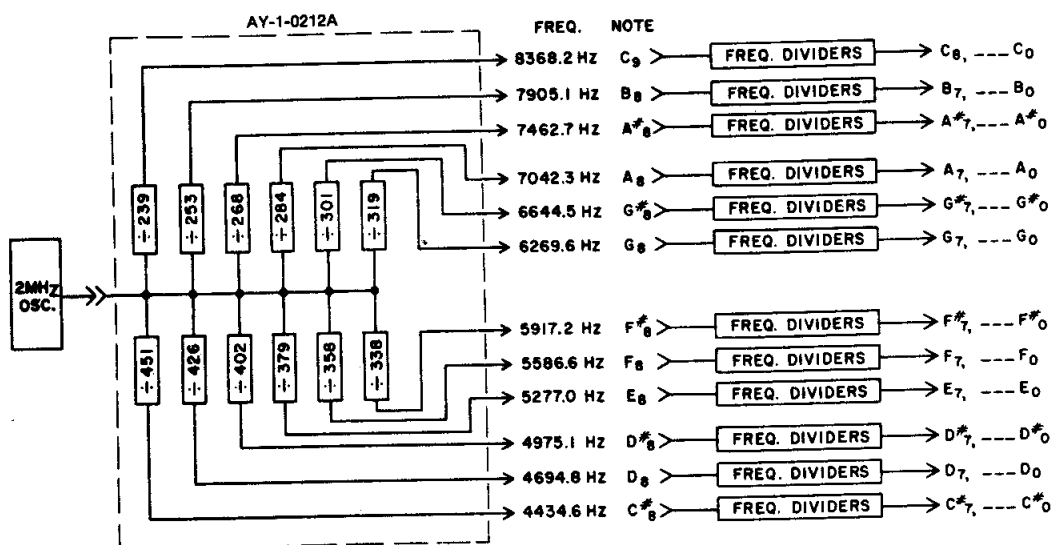


Fig. 1 TYPICAL INPUT BUFFER (IF REQUIRED)

BLOCK DIAGRAM / TYPICAL APPLICATION





ELECTRICAL CHARACTERISTICS

Maximum Ratings*

All Pin Voltages with respect to V_{SS} -30V to +0.3V
 Storage Temperature -55°C to +150°C
 Operating Temperature (T_A) 0°C to +70°C

Standard Conditions (unless otherwise noted)

$V_{SS} = \text{GND}$

See Fig. 2 for V_{DD} and V_{GG} Operating Voltages

*Exceeding these ratings could cause permanent damage. Functional operation of these devices at these conditions is not implied—operating ranges are specified below.

Characteristic	Min	Typ**	Max	Units	Conditions
DC CHARACTERISTICS					
Input Leakage	—	—	10	μA	at 27V
Input Positive Level	+0.3	—	-2.0	Volts	
Input Negative Level	-10.0	—	V_{DD}	Volts	
Output on Impedance to V_{DD}	—	—	3500	Ω	1.0V across the device with 17K load to -6V.
Output on Impedance to V_{SS}	—	—	3500	Ω	
I_{GG} Supply Current	—	—	16	mA	
I_{DD} Supply Current	—	—	20	mA	
AC CHARACTERISTICS					
AY-1-0212 Input Frequency f_o	.25	—	1.5	MHz	See Fig.3
AY-1-0212A Input Frequency f_o	.25	—	2.5	MHz	
Input Capacitance	—	5	10	pF	1 MHz
Input Positive Level Width t_p	.33	—	—	μs	AY-1-0212
Input Negative Level Width t_n	.33	—	—	μs	AY-1-0212
Input Positive Level Width t_p	.2	—	—	μs	AY-1-0212A
Input Negative Level Width t_n	.2	—	—	μs	AY-1-0212A
Output Rise Time t_r	—	1	—	μs	no load
Output Fall Time t_f	—	1	—	μs	no load

** Typical values are at +25°C and nominal voltages.

TIMING DIAGRAMS

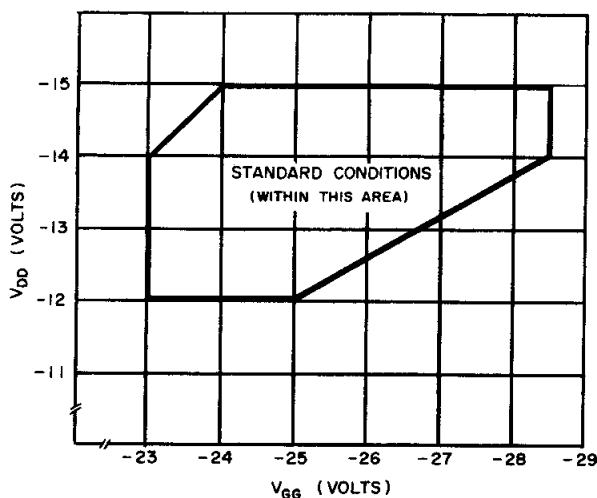
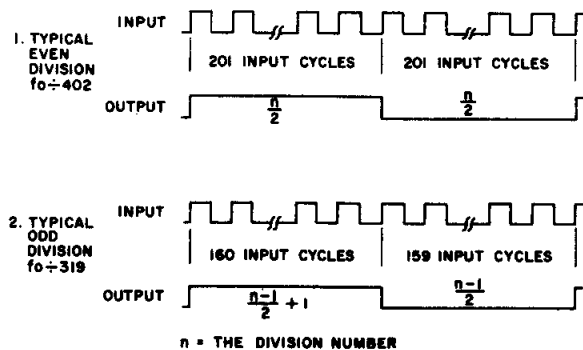
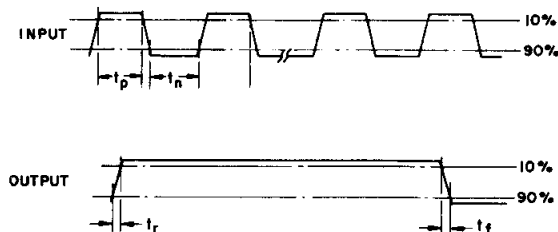


Fig. 2 OPERATING VOLTAGES

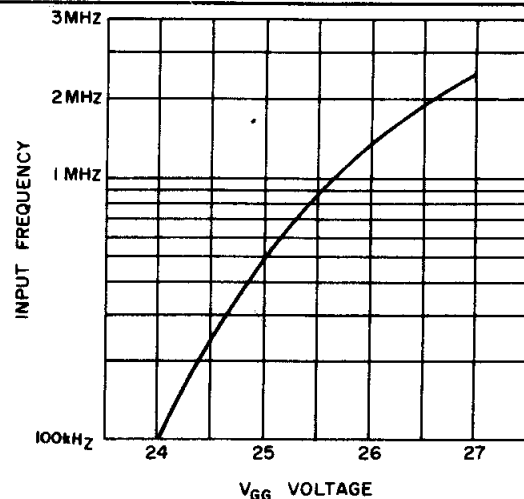


Fig. 3 TYPICAL FREQUENCY vs. V_{GG}
VOLTAGE OPERATION