AY-1-5050 **AY-1-6721/5**
AY-1-5051 **AY-1-6721/6**

4-5-6-7 Stage Frequency Dividers

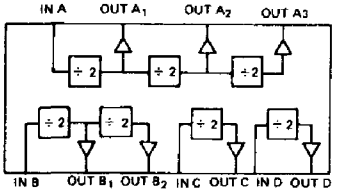
FEATURES

- DC to 1 MHz operating frequency range.
- Diode protection on all inputs.
- Low output impedance in both states.
- Choice of configurations:
  1) AY-1-5050: 7-Stage Frequency Divider, 3+2+1+1
  2) AY-1-5051: 4-Stage Frequency Divider, 2+1+1
  3) AY-1-6721/5: 5-Stage Frequency Divider, 3+2
  4) AY-1-6721/6: 6-Stage Frequency Divider, 3+2+1

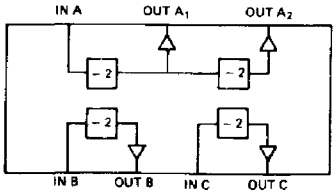
DESCRIPTION

The AY-1-5050, AY-1-5051, AY-1-6721/5 and the AY-1-6721/6 are constructed on monolithic silicon chips using MTOS (Metal-Thick-Oxide-Silicon) P-Channel Enhancement Mode Field Effect Transistors. All circuits can be driven from a sine or square wave input. The different types all have the same specifications and are fully compatible with one another.

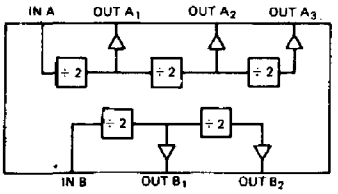
BLOCK DIAGRAMS



AY-1-5050



AY-1-5051



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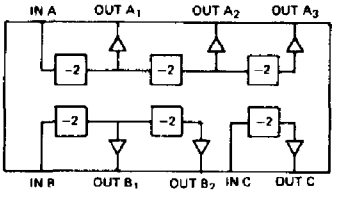
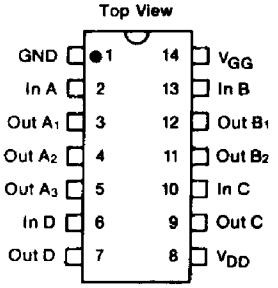


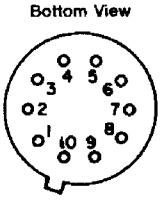
AY-1-6721/6

PIN CONFIGURATIONS

14 LEAD DUAL IN LINE
AY-1-5050

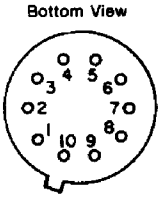


10 LEAD
AY-1-5051



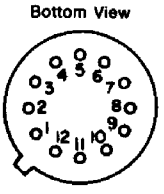
1	Out A_1	6	In C
2	Out A_2	7	Out C
3	In B	8	V_{GG}
4	Out B	9	V_{DD}
5	GND	10	In A

10 LEAD
AY-1-6721/5



1	GND	6	In A
2	Out B_2	7	Out A_1
3	Out B_1	8	Out A_2
4	In B	9	Out A_3
5	V_{GG}	10	V_{DD}

12 LEAD
AY-1-6721/6



1	GND	7	Out C
2	In A	8	V_{DD}
3	Out A_1	9	Out B_2
4	Out A_2	10	Out B_1
5	Out A_3	11	In B
6	In C	12	V_{GG}

ELECTRICAL CHARACTERISTICS

Maximum Ratings*

Drain Voltage	−30V to +0.3V
Gate Voltage	−30V to +0.3V
Data Input Voltage	−30V to +0.3V
Storage Temperature	−55°C to +150°C
Operating Temperature (T_A)	0°C to +70°C

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

Standard Conditions (unless otherwise noted)

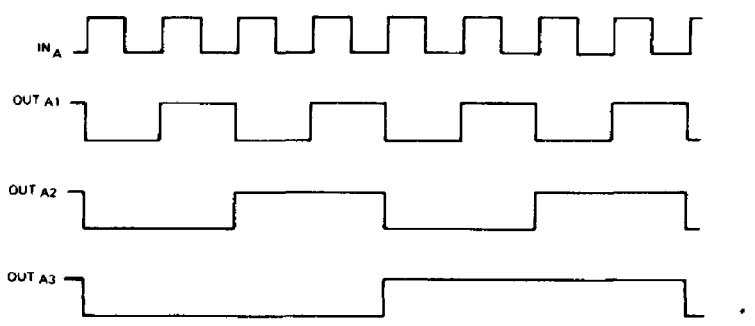
$V_{DD} = -13V \pm 1V$ $C_L = 10$ pF
$V_{GG} = -27V \pm 1V$ Operating Temperature (T_A) = +25°C
$R_L = 1M\Omega$

Characteristics	Min.	Typ**	Max	Units	Conditions
Data Input					
Logic "0" level	—	—	−2	V	
Logic "1" level	−10	—	—	V	
Data Input operating freq.	DC	—	1	MHz	Sine or square wave
Data Input Pulse width					
— "0" level	300	—	—	ns	
— "1" level	300	—	—	ns	
Input Leakage	—	—	5	μA	$V_{in} = -20VDC$
Output Parameters					
Logic "0" level	—	—	−1	V	
Logic "1" level	−11	—	—	V	
Drive Capability					
— "0" level	—	−1	−1.5	V	Sinking current = 0.5 mA
— "1" level	−11	—	—	V	$R_L = 100$ KΩ
— "1" level	−8	—	—	V	$R_L = 10$ KΩ
Data output Rise and Fall time	—	0.6	—	μs	
Current Drain					
I_{GG}	—	3	—	mA	$V_{GG} = -27$ V
I_{DD}	—	***	—		

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

*** V_{DD} is only used for the push-pull outputs therefore I_{DD} is equal to the sum of load currents. This separate V_{DD} enables tremulant to be introduced in the electronic organ application.

TIMING DIAGRAM



CONSUMER