

AKN62321 Series

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131072-Word × 8-Bit CMOS Mask Programmable ROM

AKN62321, AKN62331 Series is a 1-Mbit CMOS mask-programmable ROM organized as 131072-word × 8-Bit. It can be operated with a battery because of low power consumption. The large capacity of 1M bits is optimum for a kanji character generator.

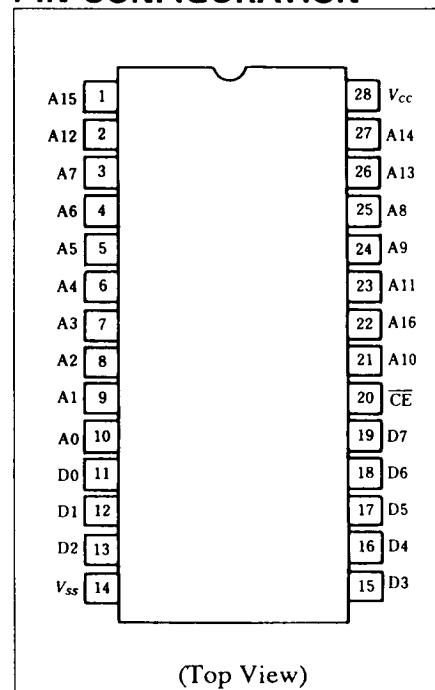
Features

- Single +5V power supply
- Wired OR is permitted for the output in three states
- TTL compatible
- Address access time: 120/150/200 ns (max)
- Low power: Active 100 mW (typ),
Standby 5 μ W (typ)
- Byte-Wide Data Organization

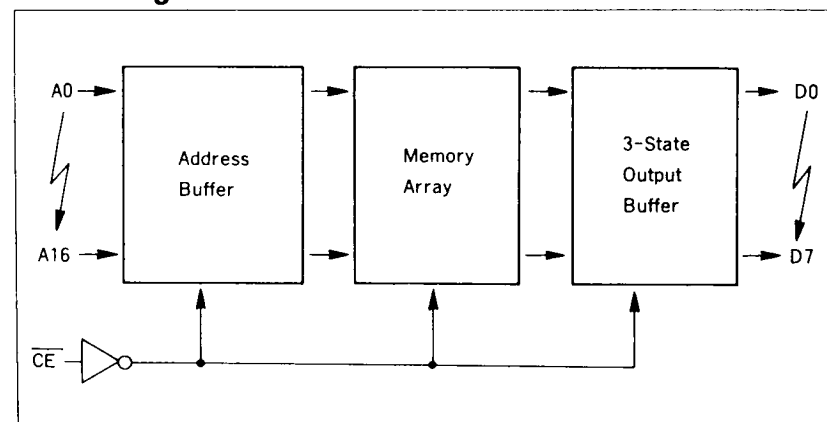
Ordering Information

Type No.	Address Access Time	Package
AKN62321P	150 ns	600 mil
AKN62321BP	200 ns	28-pin
AKN62331P	120 ns	plastic DIP
AKN62321F	150 ns	28-pin
AKN62321BF	200 ns	plastic SOP
AKN62331F	120 ns	

PIN CONFIGURATION



Block Diagram



Absolute Maximum Ratings

Item	Symbol	Rating	Unit
Power supply voltage* ¹	V _{CC}	-0.3 to +7.0	V
Terminal voltage* ¹	V _T	-0.3 to V _{CC} + 0.3	V
Operating temperature	T _{opr}	0 to +70	°C
Storage temperature	T _{stg}	-55 to +125	°C
Bias temperature	T _{bias}	-20 to +85	°C

Note: *1. With respect to V_{SS}.

Recommended Operating Conditions (V_{SS} = 0 V, T_a = 0 to +70°C)

Item	Symbol	Min	Typ	Max	Unit
Power supply voltage	V _{CC}	4.5	5.0	5.5	V
Input voltage	V _{IH}	2.2*	—	V _{CC} + 0.3	V
	V _{IL}	-0.3	—	0.8*	V

* AKN62331 Series is V_{IH}; 2.4 V (min.) and V_{IL}; 0.45 V (max.)

DC Characteristics (V_{CC} = 5 V ± 10%, V_{SS} = 0 V, T_a = 0 to +70°C)

Item		Symbol	Min	Max	Unit	Test Conditions
Power supply current	Active	I _{CC}	—	50	mA	V _{CC} = 5.5 V, I _{DOUT} = 0 mA, t _{RC} = Min
	Standby	I _{SB}	—	30	μA	V _{CC} = 5.5 V, $\overline{CE} \geq V_{CC} - 0.2$ V
Input leak current		I _{LI}	—	10	μA	V _{IN} = 0 to V _{CC}
Output leak current		I _{LO}	—	10	μA	$\overline{CE} = 2.2^* \text{ V}$, V _{OUT} = 0 to V _{CC}
Output voltage		V _{OH}	2.4	—	V	I _{OH} = -205 μA
		V _{OL}	—	0.4	V	I _{OL} = 3.2 mA

* AKN62331 series is 2.4 V.

Capacitance (V_{CC} = 5 V ± 10%, V_{SS} = 0 V, T_a = 25°C, V_{in} = 0 V, f = 1 MHz)

Item	Symbol	Min	Max	Unit
Input capacitance* ¹	C _{in}	—	10	pF
Output capacitance* ¹	C _{out}	—	15	pF

Note: *1. This parameter is sampled and not 100% tested.

AC Operating Characteristics ($V_{CC} = 5\text{ V} \pm 10\%$, $V_{SS} = 0\text{ V}$, $T_a = 0\text{ to }+70^\circ\text{C}$)

Test Conditions

Input pulse level: 0.8 to 2.4 V (AKN62321) Output load: 1 TTL gate + $C_L = 100\text{ pF}$
 0.45 to 2.4 V (AKN62331) (including jig capacitance)

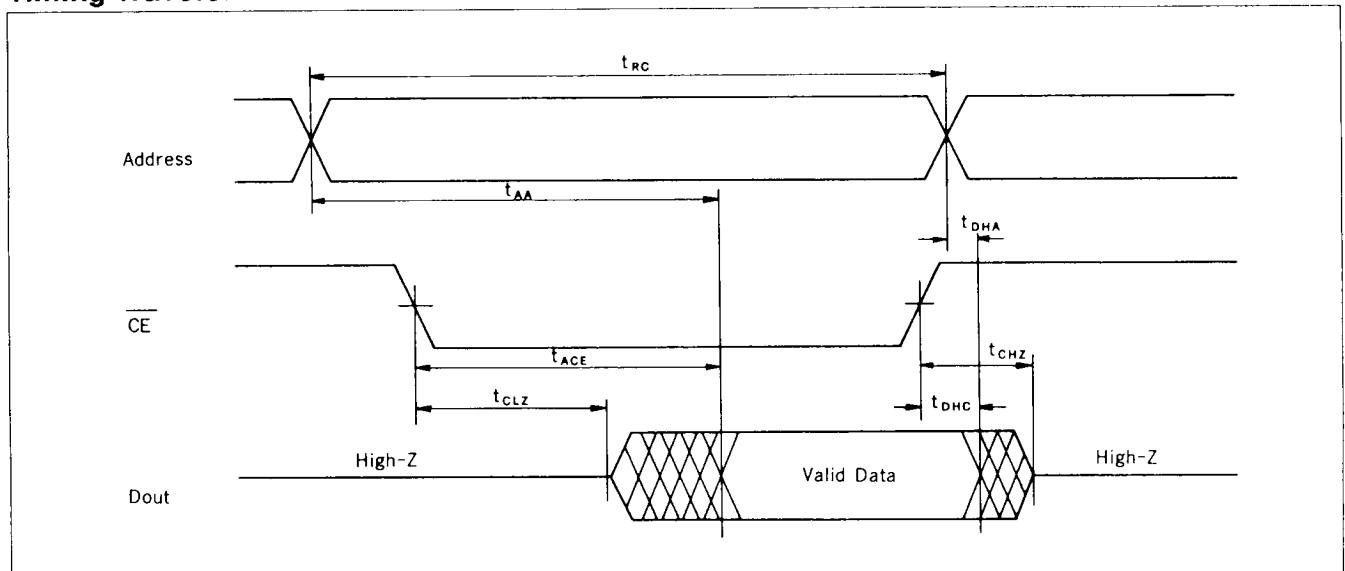
I/O timing reference level: 1.5 V

Input rise/fall time: 10 ns

Item	Symbol	AKN62331		AKN62321		AKN62321B		Unit
		Min	Max	Min	Max	Min	Max	
Cycle time	t_{RC}	120	—	150	—	200	—	ns
Address access time	t_{AA}	—	120	—	150	—	200	ns
CE access time	t_{ACE}	—	120	—	150	—	200	ns
Output Hold Time from Address Change	t_{DHA}	0	—	0	—	0	—	ns
Output Hold Time from CE	t_{DHC}	0	—	0	—	0	—	ns
CE to Output in High Z	t_{CHZ}^{*1}	—	60	—	70	—	100	ns
CE to Output in Low Z	t_{CLZ}	5	—	10	—	10	—	ns

Note: *1 t_{CHZ} define the time at which the output goes to the high impedance state and is not referenced to output voltage levels.

Timing Waveform



- Notes: 1. t_{DHA} , t_{DHC} ; Determined by whichever is faster.
 2. t_{AA} , t_{ACE} ; Determined by whichever is slower.