

HN62454BN Series

262144-word × 16-bit CMOS Mask Programmable ROM

HITACHI

ADE-203-470A (Z)

Rev. 1.1

Jun. 21, 1996

Description

The HN62454BN is a 262144 words by 16 bits CMOS Mask Programmable ROM, featuring page access mode to get very high speed 4-word serial access. A high speed access of 85/100 ns (max) and page access of 40 ns (max) is the most suitable to the system using a high speed micro-computer by 16 bits.

Features

- Single 5 V supply
- High speed
 - Normal access time: 85/100 ns (max)
 - Page access time: 40 ns (max)
- Low power
 - Active: 660 mW (max)
 - Standby: 165 μ W (max)
- 4 word page access on word-wide mode
- Directly TTL compatible
 - All inputs and outputs
- Pin compatible with 4 Mbit EPROM (HN27C4096AG/ACC/ACP)

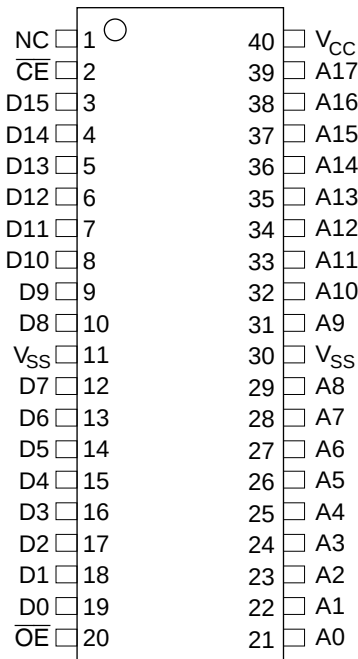
Ordering Information

Type No.	Access time	Package
HN62454BNP-85	85 ns	600 mil 40-pin plastic DIP (DP-40)
HN62454BNP-10	100 ns	
HN62454BNCP-85	85 ns	44-pin plastic PLCC (CP-44)
HN62454BNCP-10	100 ns	

HN62454BN Series

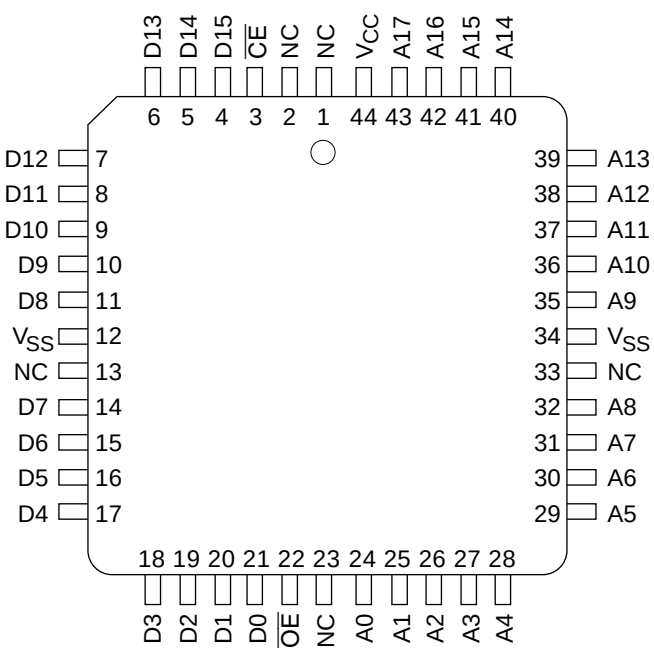
Pin Arrangement

HN62454BNP Series



(Top View)

HN62454BNCP Series

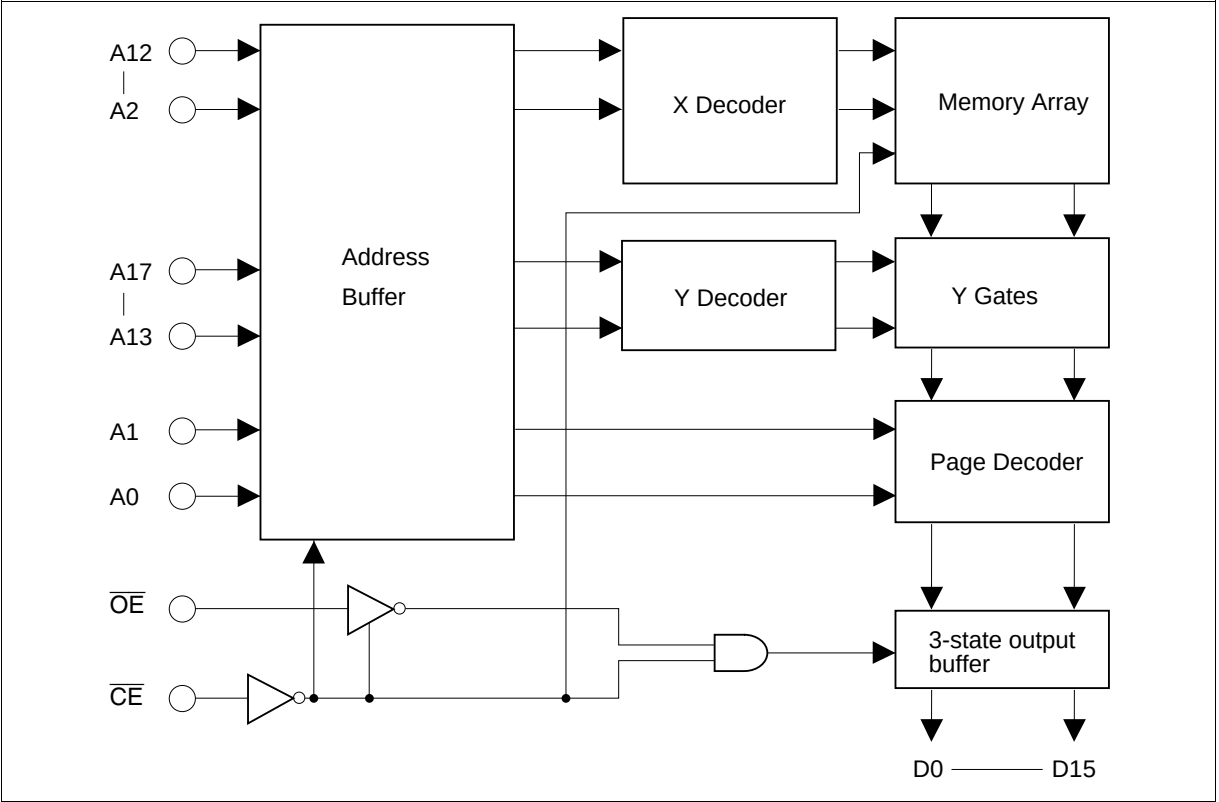


(Top View)

Pin Description

Pin name	Function
A2 to A17	Address inputs
A0, A1	Page address inputs
D0 to D15	Data outputs
$\overline{CE}$	Chip enable
$\overline{OE}$	Output enable
NC	No connection
V_{CC}	Power supply
V_{SS}	Ground

Block Diagram



Mode Selection

Mode	Pin		Data output	Address input	
	$\overline{CE}$	$\overline{OE}$		LSB	MSB
Standby	H	$\times^{*1}$	High-Z ^{*2}	—	—
Output disable	L	H	High-Z	—	—
Read	L	L	Dout	A0	A17

Notes: 1. $\times$: Don't care.
2. High-Z: High impedance

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Supply voltage ^{*1}	V _{CC}	−0.3 to + 7.0	V
All input and output voltage ^{*1}	V _{in} , V _{out}	−0.3 to V _{CC} + 0.3	V
Operating temperature range	T _{opr}	0 to + 70	°C
Storage temperature range	T _{stg}	−55 to + 125	°C
Temperature under bias	T _{bias}	−20 to + 85	°C

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

Recommended DC Operating Conditions (Ta = 0 to + 70°C)

Parameter	Symbol	Min	Typ	Max	Unit
Supply voltage	V _{CC}	4.5	5.0	5.5	V
	V _{SS}	0	0	0	V
Input voltage	V _{IH}	2.2	—	V _{CC} + 0.3	V
	V _{IL}	−0.3	—	0.8	V

DC Characteristics (V_{CC} = 5.0 V ± 10%, V_{SS} = 0 V, Ta = 0 to + 70°C)

Parameter		Symbol	Min	Max	Unit	Test conditions
Supply current	Active	I _{CC}	—	120/100	mA	V _{CC} = 5.5 V, I _{DOUT} = 0 mA, t _{RC} = 85/100 ns
	Standby	I _{SB1}	—	30	μA	V _{CC} = 5.5 V, $\overline{CE} \geq V_{CC} - 0.2$ V
	Standby	I _{SB2}	—	3	mA	V _{CC} = 5.5 V, $\overline{CE} \geq 2.2$ V
Input leakage current		I _{IL}	—	10	μA	V _{in} = 0 to V _{CC}
Output leakage current		I _{OL}	—	10	μA	$\overline{CE} = 2.2$ V, V _{out} = 0 to V _{CC}
Output voltage		V _{OH}	2.4	—	V	I _{OH} = −400 μA
		V _{OL}	—	0.4	V	I _{OL} = 2.1 mA

Capacitance (V_{CC} = 5.0 V ± 10%, V_{SS} = 0 V, Ta = 25°C, V_{in} = 0 V, f = 1MHz)

Parameter	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 Characteristics (V_{CC} = 5.0 V ± 10%, V_{SS} = 0 V, Ta = 0 to + 70°C)

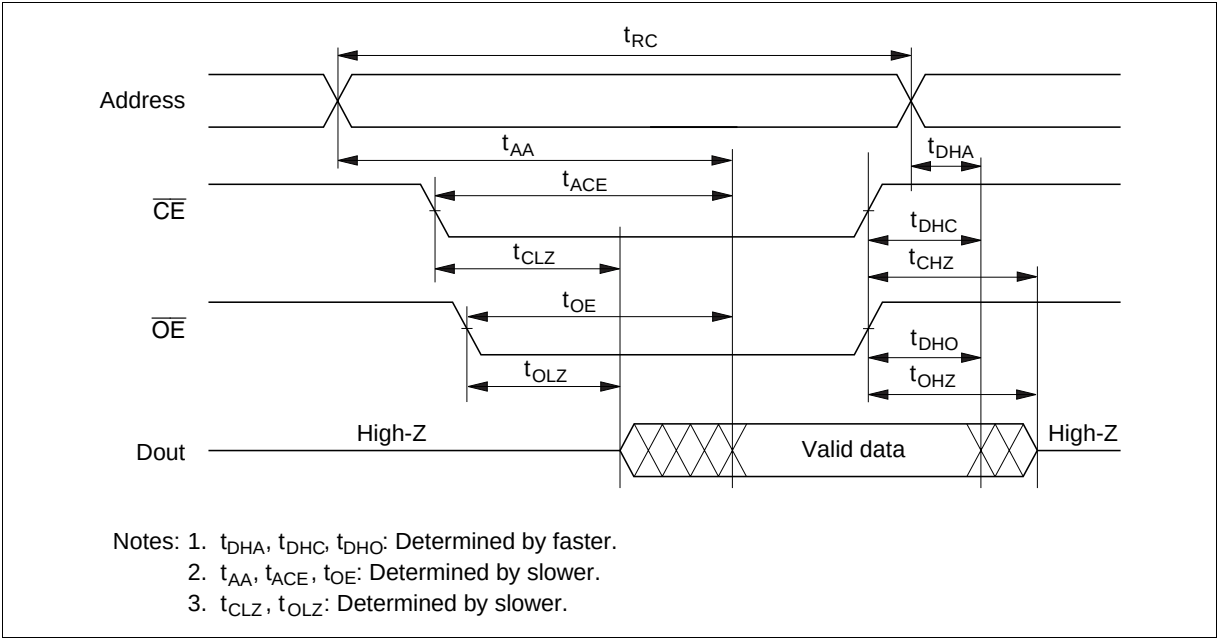
- Output load: 1TTL + C_L = 100 pF (including jig)
- Input pulse level: 0.45 to 2.8 V
- Input and output timing reference level: 1.5 V
- Input rise and fall time: 5 ns

Parameter	Symbol	HN62454BN-85		HN62454BN-10		Unit	Note
		Min	Max	Min	Max		
Read cycle time	t _{RC}	85	—	100	—	ns	
Page read cycle time	t _{PC}	40	—	40	—	ns	
Address access	t _{AA}	—	85	—	100	ns	
Page address access time	t _{PA}	—	40	—	40	ns	
$\overline{\text{CE}}$ access time	t _{ACE}	—	85	—	100	ns	
$\overline{\text{OE}}$ access time	t _{OE}	—	40	—	40	ns	
Output hold time from address change	t _{DHA}	5	—	5	—	ns	
Output hold time from $\overline{\text{CE}}$	t _{DHC}	0	—	0	—	ns	
Output hold time from $\overline{\text{OE}}$	t _{DHO}	0	—	0	—	ns	
$\overline{\text{CE}}$ to output in high-Z	t _{CHZ}	—	30	—	30	ns	1
$\overline{\text{OE}}$ to output in high-Z	t _{OHZ}	—	30	—	30	ns	1
$\overline{\text{CE}}$ to output in low-Z	t _{CLZ}	5	—	5	—	ns	
$\overline{\text{OE}}$ to output in low-Z	t _{OLZ}	5	—	5	—	ns	

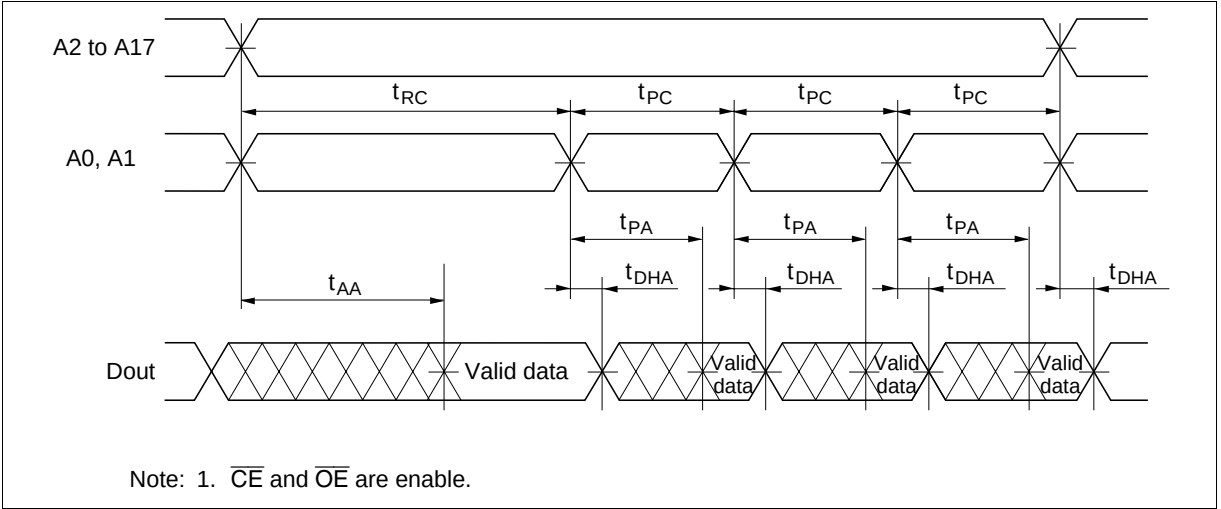
Note: 1. t_{CHZ} and t_{OHZ} are defined as the time at which the output achieves the open circuit conditions and are not referred to output voltage levels.

Timing Waveforms

Normal Mode



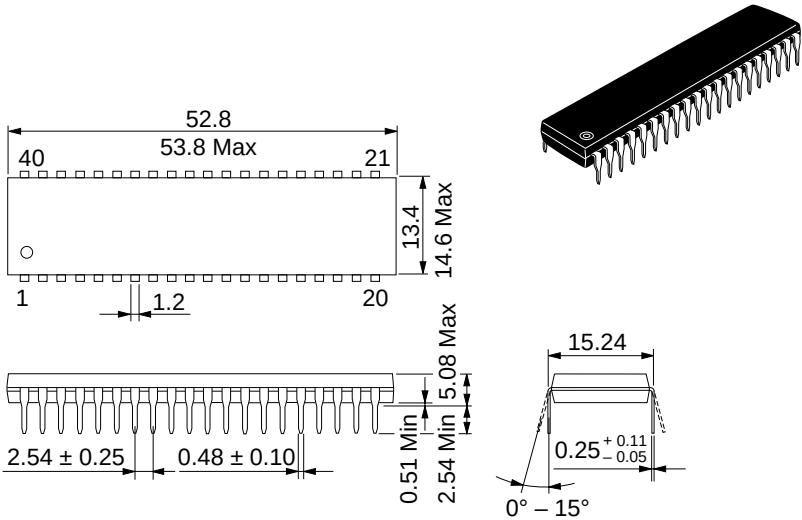
Page Mode



Package Dimensions

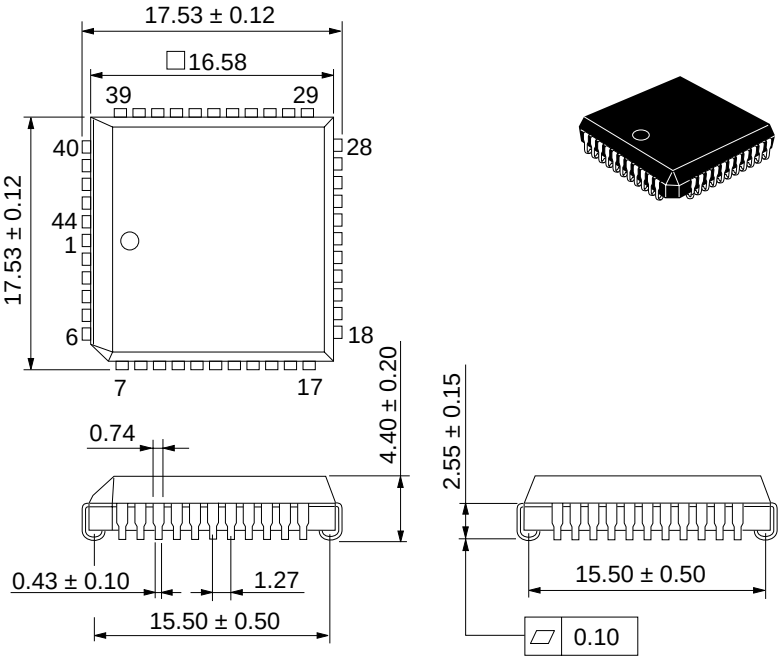
HN62454BNP Series (DP-40)

Unit: mm



HN62454BNCP Series (CP-44)

Unit: mm



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HITACHI

Hitachi, Ltd.

Semiconductor & IC Div.
Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100, Japan
Tel: Tokyo (03) 3270-2111
Fax: (03) 3270-5109

For further information write to:

Hitachi America, Ltd.
Semiconductor & IC Div.
2000 Sierra Point Parkway
Brisbane, CA. 94005-1835
U S A
Tel: 415-589-8300
Fax: 415-583-4207

Hitachi Europe GmbH
Electronic Components Group
Continental Europe
Dornacher Straße 3
D-85622 Feldkirchen
München
Tel: 089-9 91 80-0
Fax: 089-9 29 30 00

Hitachi Europe Ltd.
Electronic Components Div.
Northern Europe Headquarters
Whitebrook Park
Lower Cookham Road
Maidenhead
Berkshire SL6 8YA
United Kingdom
Tel: 0628-585000
Fax: 0628-778322

Hitachi Asia Pte. Ltd.
16 Collyer Quay #20-00
Hitachi Tower
Singapore 0104
Tel: 535-2100
Fax: 535-1533

Hitachi Asia (Hong Kong) Ltd.
Unit 706, North Tower,
World Finance Centre,
Harbour City, Canton Road
Tsim Sha Tsui, Kowloon
Hong Kong
Tel: 27359218
Fax: 27306071

Revision Record

Rev.	Date	Contents of Modification	Drawn by	Approved by
0.0	Oct. 25, 1995	Initial issue	M. Shirai	H. Moriuchi
1.0	May. 21, 1996	Change of format AC Characteristics Input pulse level: 0.45 to 2.4 V to 0.45 to 2.8 V t _{PC} (max): 35 ns to 40 ns t _{PA} (max): 35 ns to 40 ns t _{OE} (max): 35 ns to 40 ns	M. Shirai	T. Wada
1.1	Jun. 21, 1996	Correct error		