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# HN62V454B Series

262144-word × 16-bit CMOS Mask Programmable ROM

# HITACHI

ADE-203-681 (Z)  
Preliminary  
Rev. 0.0  
Nov. 20, 1996

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## Description

The HN62V454B is a 262144 words by 16 bits CMOS Mask Programmable ROM. Low voltage operating of 2.7 V (min) is the most suitable to the system handy terminal.

## Features

- Low voltage operation: 2.7 V to 3.6 V
- High speed
  - Access time: 200 ns (max)
- Low power
  - Active: 72 mW (max)
  - Standby: 72  $\mu$ W (max)
- Directly LVTTL compatible
- All inputs and outputs

## Ordering Information

Type No.	Access time	Package
HN62V454BP-20	200 ns	600 mil 40-pin plastic DIP (DP-40)
HN62V454BCP-20	200 ns	44-pin plastic PLCC (CP-44)

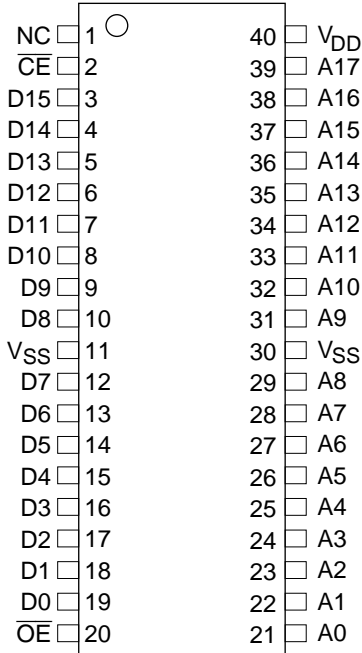
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Preliminary: The specification of this device are subject to change without notice. Please contact your nearest Hitachi's Sales Dept. regarding specification.

# HN62V454B Series

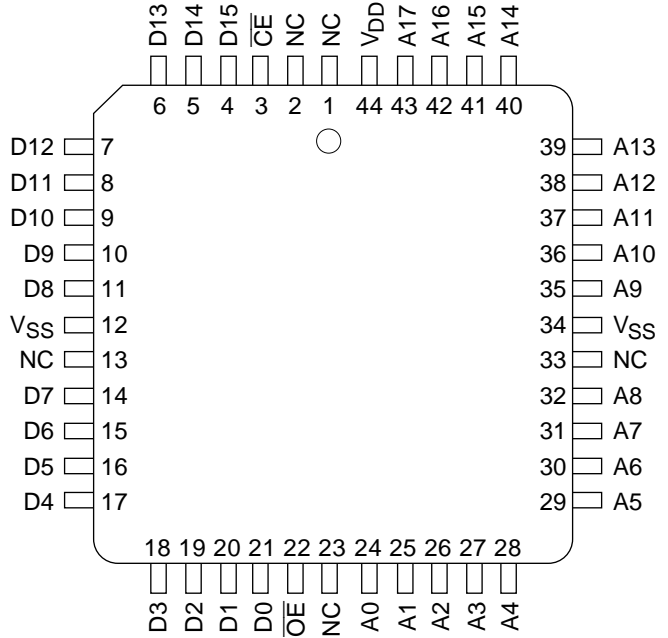
## Pin Arrangement

HN62V454BP Series



(Top View)

HN62V454BCP Series

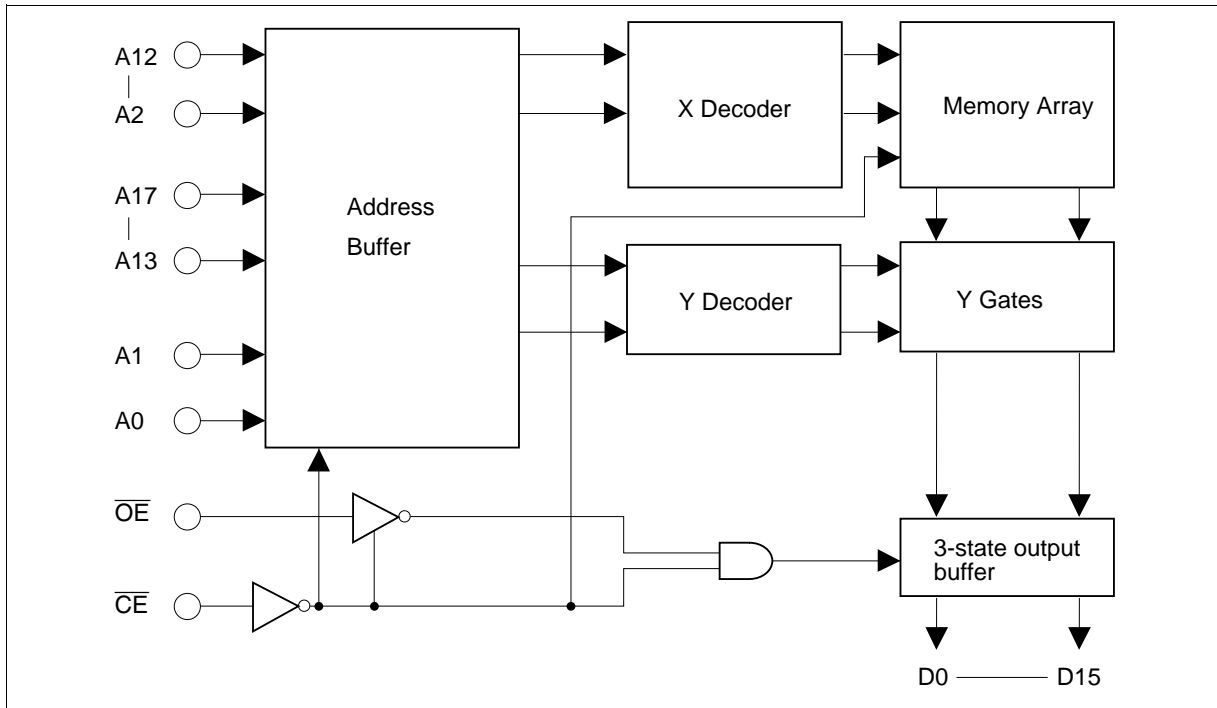


(Top View)

## Pin Description

Pin name	Function
A0 to A17	Address inputs
D0 to D15	Data outputs
$\overline{CE}$	Chip enable
$\overline{OE}$	Output enable
NC	No connection
V <sub>DD</sub>	Power supply
V <sub>SS</sub>	Ground

**Block Diagram**



**Mode Selection**

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

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

# HN62V454B Series

## Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Supply voltage*1	$V_{DD}$	-0.3 to + 5.5	V
All input and output voltage*1	$V_{in}, V_{out}$	-0.3 to $V_{DD} + 0.3$	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 ( $T_a = 0$ to + 70°C)

Parameter	Symbol	Min	Typ	Max	Unit
Supply voltage	$V_{DD}$	2.7	3.0	3.6	V
	$V_{SS}$	0	0	0	V
Input voltage	$V_{IH}$	2.2	—	$V_{DD} + 0.3$	V
	$V_{IL}$	-0.3	—	0.8	V

## DC Characteristics ( $V_{DD} = 2.7$ V to 3.6 V, $V_{SS} = 0$ V, $T_a = 0$ to + 70°C)

Parameter		Symbol	Min	Max	Unit	Test conditions
Supply current	Active	$I_{DD}$	—	20	mA	$V_{DD} = 3.6$ V, $I_{DOUT} = 0$ mA, $t_{RC} = 200$ ns
	Standby	$I_{SB1}$	—	20	μA	$V_{DD} = 3.6$ V, $\overline{CE} \geq V_{DD} - 0.2$ V
	Standby	$I_{SB2}$	—	3	mA	$V_{DD} = 3.6$ V, $\overline{CE} \geq 2.2$ V
Input leakage current		$ I_{IL} $	—	2	μA	$V_{in} = 0$ to $V_{DD}$
Output leakage current		$ I_{OL} $	—	2	μA	$\overline{CE} = 2.2$ V, $V_{out} = 0$ to $V_{DD}$
Output voltage		$V_{OH}$	$V_{DD} - 0.2$	—	V	$I_{OH} = -100$ μA
		$V_{OL}$	—	0.2	V	$I_{OL} = 100$ μA

## Capacitance ( $V_{DD} = 2.7$ V to 3.6 V, $V_{SS} = 0$ V, $T_a = 25$ °C, $V_{in} = 0$ V, $f = 1$ MHz)

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.

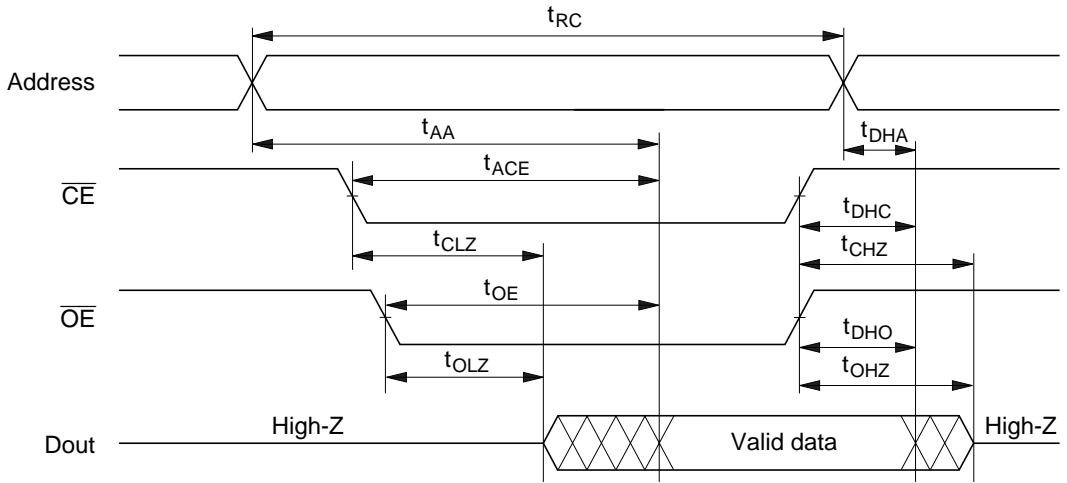
**AC Characteristics** ( $V_{DD} = 2.7 \text{ V to } 3.6 \text{ V}$ ,  $V_{SS} = 0 \text{ V}$ ,  $T_a = 0 \text{ to } +70^\circ\text{C}$ )

- Output load:  $C_L = 50 \text{ pF}$  (including jig)
- Input pulse level: 0.4 to 2.4 V
- Input and output timing reference levels: 1.4 V
- Input rise and fall time: 5 ns

Parameter	Symbol	HN62V454B-20		Unit	Note
		Min	Max		
Read cycle time	$t_{RC}$	200	—	ns	
Address access	$t_{AA}$	—	200	ns	
$\overline{CE}$ access time	$t_{ACE}$	—	200	ns	
$\overline{OE}$ access time	$t_{OE}$	—	70	ns	
Output hold time from address change	$t_{DHA}$	0	—	ns	
Output hold time from $\overline{CE}$	$t_{DHC}$	0	—	ns	
Output hold time from $\overline{OE}$	$t_{DHO}$	0	—	ns	
$\overline{CE}$ to output in high-Z	$t_{CHZ}$	—	70	ns	1
$\overline{OE}$ to output in high-Z	$t_{OHZ}$	—	70	ns	1
$\overline{CE}$ to output in low-Z	$t_{CLZ}$	5	—	ns	
$\overline{OE}$ to output in low-Z	$t_{OLZ}$	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 Waveform

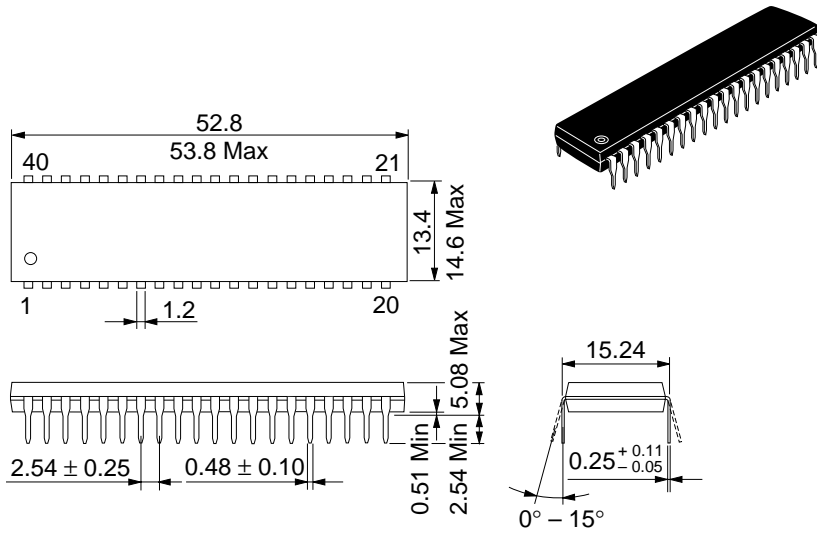


- Notes: 1.  $t_{DHA}$ ,  $t_{DHC}$ ,  $t_{DHO}$ : Determined by faster.  
2.  $t_{AA}$ ,  $t_{ACE}$ ,  $t_{OE}$ : Determined by slower.  
3.  $t_{CLZ}$ ,  $t_{OLZ}$ : Determined by slower.

Package Dimensions

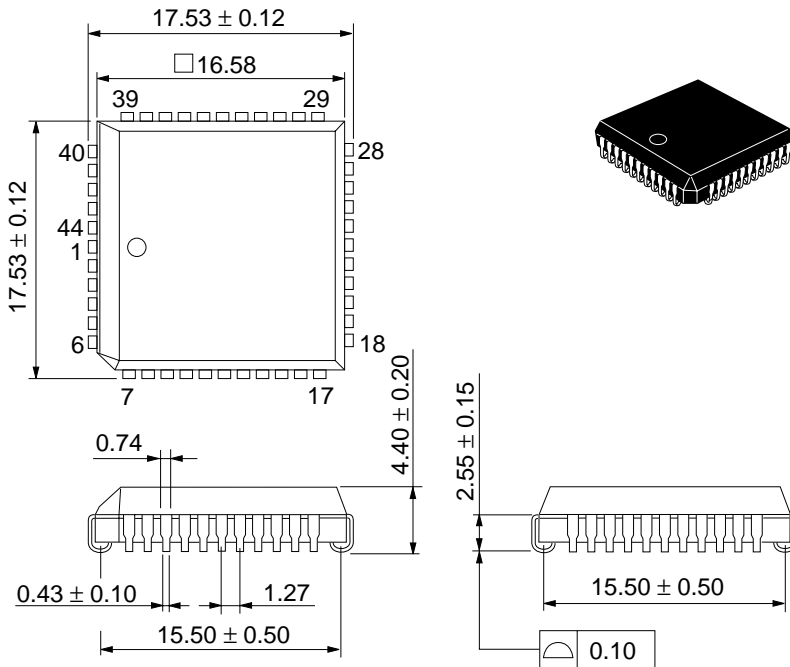
HN62V454BP Series (DP-40)

Unit: mm



HN62V454BCP Series (CP-44)

Unit: mm



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**Revision Record**

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0.0	Nov. 20, 1996	Initial issue		

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