H1832/1834
H1832C/1834C

1800 CMOS Microprocessor Family
Static ROM

HUGHES AIRCRAFT COMPANY

MICROELECTRONICS CENTER

512x8 Static ROM – 1832
1024x8 Static ROM – 1834

DESCRIPTION

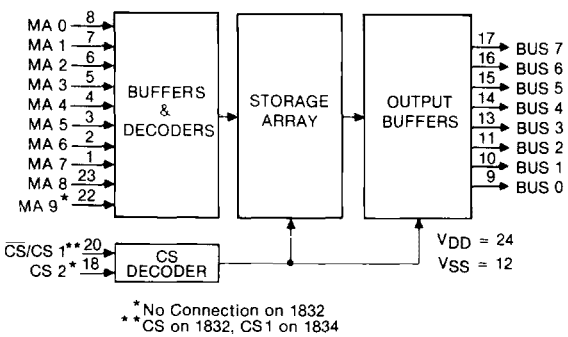
Hughes 1832 and 1834 are static CMOS Mask Programmable Read Only Memories. When an address is presented on lines MA 0-MA 8 (1832) or MA 0-MA 9 (1834) the decoded word location is accessed and presented to the output sense amplifiers. This 8-bit word is enabled onto the lines by the CS signal in the 1832, or the CS 1 and CS 2 signals in the 1834, which can be used for memory expansion. The 1832 is a pin-for-pin compatible replacement for the 2704/8704 PROMs while the 1834 is a pin-for-pin compatible replacement for the 2708 PROM or 2308 ROM.

The 1832 and 1834 operate over a 4-10.5 voltage range while the 1832C and 1834C operate over a 4-6.5 voltage range. The ROMs are available in a 24 lead hermetic dual-in-line ceramic package (D suffix), plastic package (P suffix), cerdip (Y suffix) or leadless chip carrier (L suffix). Devices in chip form (H suffix) are available upon request.

FEATURES

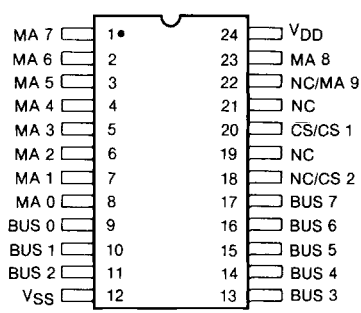
- Static Silicon Gate CMOS Circuitry
- Compatible with 1802A microprocessor at maximum speed
- Access Time – 1832
  950ns Typical at V_{DD} = 5V
  500ns Typical at V_{DD} = 10V
- Access Time – 1834
  640ns Typical at V_{DD} = 5V
  360ns Typical at V_{DD} = 10V
- Single Voltage Supply
- Low Quiescent and Operating Power
- Static – No Clocks Required
- Functional Replacement for Industry Standard 2704 (512 x 8) PROM or 2708 (1024 x 8) PROM

FUNCTIONAL DIAGRAM



*No Connection on 1832
**CS on 1832, CS1 on 1834

PIN CONFIGURATION



ABSOLUTE MAXIMUM RATINGS

Operating Temperature Range (T_A)
- Ceramic Package ..... −55 to +125°C
- Plastic Package ..... −40 to + 85°C

DC Supply-Voltage Range (V_{DD})
(All voltage values referenced to V_{SS} terminal)
- 1832/1834 ..... −0.5 to +13V
- 1832C/1834C ..... −0.5 to + 7V

Input Voltage Range ..... V_{SS} −0.3V to V_{DD} +0.3V

Storage Temperature Range (T_{stg}) .... −65 to +150°C

NOTE: Operating the device above the "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

OPERATING CONDITIONS at T_A = Full package temperature range unless otherwise specified

CHARACTERISTICS	CONDITIONS V_{DD} (V)	LIMITS 1832 Min.	1832 Max.	1832C Min.	1832C Max.	1834 Min.	1834 Max.	1834C Min.	1834C Max.	UNITS
STATIC										
Supply Voltage Range (At T_A = Full Package Temperature Range)	–	4	10.5	4	6.5	4	10.5	4	6.5	V
Recommended Input Voltage Range	–	V_{SS}	V_{DD}	V_{SS}	V_{DD}	V_{SS}	V_{DD}	V_{SS}	V_{DD}	V

ELECTRICAL CHARACTERISTICS at T_A = −55 to 125°C, V_{DD} = ±5% except as noted

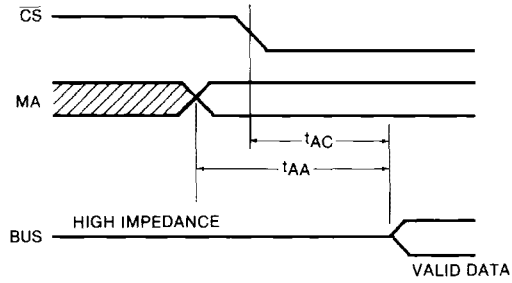
CHARACTERISTICS	CONDITIONS V_O (V)	V_{DD} (V)	1832 Min.	1832 Typ.*	1832 Max.	1832C Min.	1832C Typ.*	1832C Max.	1834 Min.	1834 Typ.*	1834 Max.	1834C Min.	1834C Typ.*	1834C Max.	UNITS
STATIC															
Quiescent Device Current, I_L [2]	–	5	–	200	1000	–	200	1000	–	200	1000	–	200	1000	µA
	–	10	–	200	1000	–	–	–	–	200	1000	–	–	–	
Output Drive Current	0.4	5	.28	.4	–	.28	.4	–	.67	.94	–	.67	.94	–	mA
N-Channel (Sink), I_{DN}	0.5	10	.56	.8	–	–	–	–	1.51	2.16	–	–	–	–	
P-Channel (Source), I_{DP}	4.6	5	−.28	−.4	–	−.28	−.4	–	−.67	−.94	–	−0.8	–	–	
	9.5	10	−.56	−.8	–	–	–	–	−1.51	−2.16	–	–	–	–	
Output Voltage	–	5	–	0	0.1	–	0	0.1	–	0	0.1	–	0	0.1	V
Low Level, V_{OL} [1]	–	10	–	0	0.1	–	–	–	–	0	0.1	–	–	–	
Output Voltage	–	5	4.9	5	–	4.9	5	–	4.9	5	–	4.9	5	–	V
High Level, V_{OH} [1]	–	10	9.9	10	–	–	–	–	9.9	10	–	–	–	–	
Input Leakage Current	–	5	–	±1	±10	–	±1	±10	–	–	±1	–	–	±1	µA
I_{IL}, I_{IH} [2]	–	10	–	±1	±10	–	–	–	–	–	±1	–	–	–	
3 State Ouput Leakage	0.5	5	–	±1	±20	–	±1	±20	–	–	±1	–	–	±1	µA
Current, I_{OUT} [2]	0.10	10	–	±1	±20	–	–	–	–	–	±1	–	–	–	
DYNAMIC: T_A = −55 to 125°C, C_L = 50pF, R_L > 10MΩ															
Access Time From Address	–	5	–	950	1330	–	950	1330	–	640	895	–	640	895	ns
Change, t_{AA}	–	10	–	500	700	–	–	–	–	360	505	–	–	–	
Access Time From Chip	–	5	–	850	1190	–	850	1190	–	595	835	–	595	835	ns
Select, t_{AC}	–	10	–	450	630	–	–	–	–	350	490	–	–	–	

* Typical values are for T_A = 25°C and nominal V_{DD}

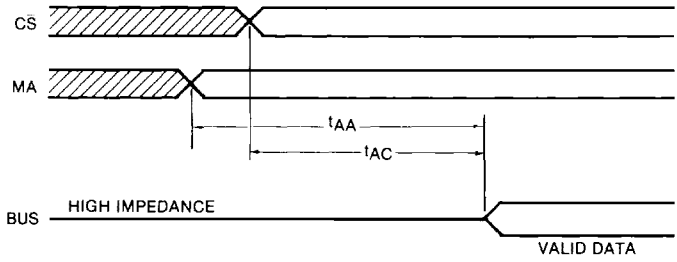
Note 1: Design assured but not tested.

Note 2: Parameters guaranteed by other tests at −55 C.

1832



1834

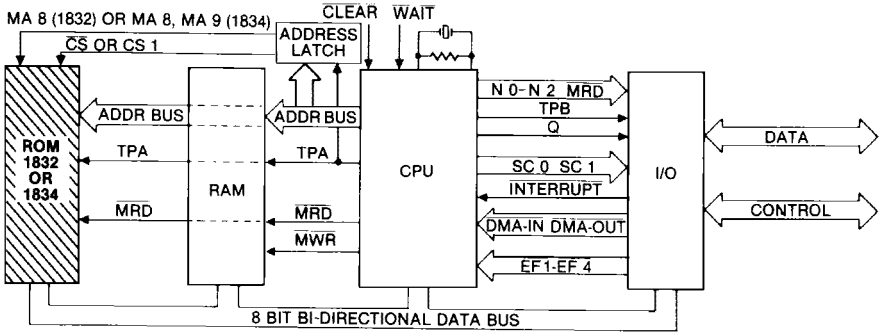


▨ INVALID OR DON'T CARE CONDITIONS

FUNCTIONAL OPERATION

These ROMs are completely static (no clocks are required). Decode of the input address selects a word from the storage array. The chip select signal enables the selected word to appear on the output bus line.

SYSTEM INTERCONNECT



SIGNAL DESCRIPTION

MA0-MA9: These address lines, MA0-MA8 (1832) or MA0-MA9 (1834), select a decoded word.

BUS0-BUS7: These eight bi-directional three-state data lines form a common bus with the 1802A microprocessor.

$\overline{CS}$, CS1, CS2: These chip select signals are provided for memory expansion. Outputs are enabled when $\overline{CS}$ = 0 in the 1832, while the polarity of CS1 and CS2 are user mask programmable in the 1834.

ORDERING INFORMATION:

Contact Hughes for prices and other information relating to ROMs. ROM order forms and instructions concerning means of data conveyance are available from Hughes Microelectronics Center or Hughes' Representatives.

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