

DM7130 Magnitude Comparators

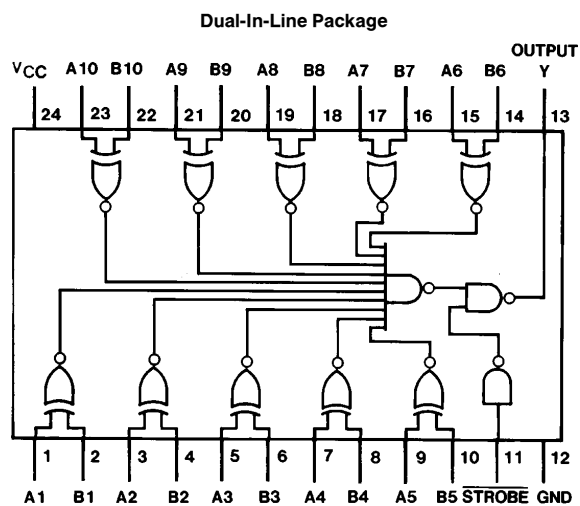
General Description

This device offers comparisons to determine equality between two binary words. The DM7130 compares two ten-bit words. A strobe override is provided. When the strobe is taken to a high logic level, the output is forced to a high logic level. The device also features open collector outputs for expansion.

Features

- Typical propagation delay 21 ns
- Typical power dissipation 240 mW
- Open-collector outputs for expansion

Connection Diagram



TL/F/6575-1

Function Table

Condition	STROBE S	Output Y
A = B, A ≠ B	H	H
A = B	L	H
A ≠ B	L	L

H = High Logic Level
L = Low Logic Level

Absolute Maximum Ratings (Note)

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

Supply Voltage	7V
Input Voltage	5.5V
Operating Free Air Temperature Range	
DM71	– 55°C to + 125°C
Storage Temperature Range	– 65°C to + 150°C

Note: The “Absolute Maximum Ratings” are those values beyond which the safety of the device cannot be guaranteed. The device should not be operated at these limits. The parametric values defined in the “Electrical Characteristics” table are not guaranteed at the absolute maximum ratings. The “Recommended Operating Conditions” table will define the conditions for actual device operation.

Recommended Operating Conditions

Symbol	Parameter	DM7130			Units
		Min	Nom	Max	
V _{CC}	Supply Voltage	4.5	5	5.5	V
V _{IH}	High Level Input Voltage	2			V
V _{IL}	Low Level Input Voltage			0.8	V
V _{OH}	High Level Output Voltage			5.5	V
I _{OL}	Low Level Output Current			16	mA
T _A	Free Air Operating Temperature	– 55		125	°C

Electrical Characteristics over recommended operating free air temperature range (unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ (Note 1)	Max	Units
V _I	Input Clamp Voltage	V _{CC} = Min, I _I = – 12 mA			– 1.5	V
I _{CEX}	High Level Output Current	V _{CC} = Min, V _O = 5.5V V _{IH} = Min			100	μA
V _{OL}	Low Level Output Voltage	V _{CC} = Min, I _{OL} = Max V _{IL} = Max		0.2	0.4	V
I _I	Input Current @ Max Input Voltage	V _{CC} = Max, V _I = 5.5V			1	mA
I _{IH}	High Level Input Current	V _{CC} = Max, V _I = 2.4V			40	μA
I _{IL}	Low Level Input Current	V _{CC} = Max, V _I = 0.4V			– 1.6	mA
I _{CC}	Supply Current	V _{CC} = Max (Note 2)		48	70	mA

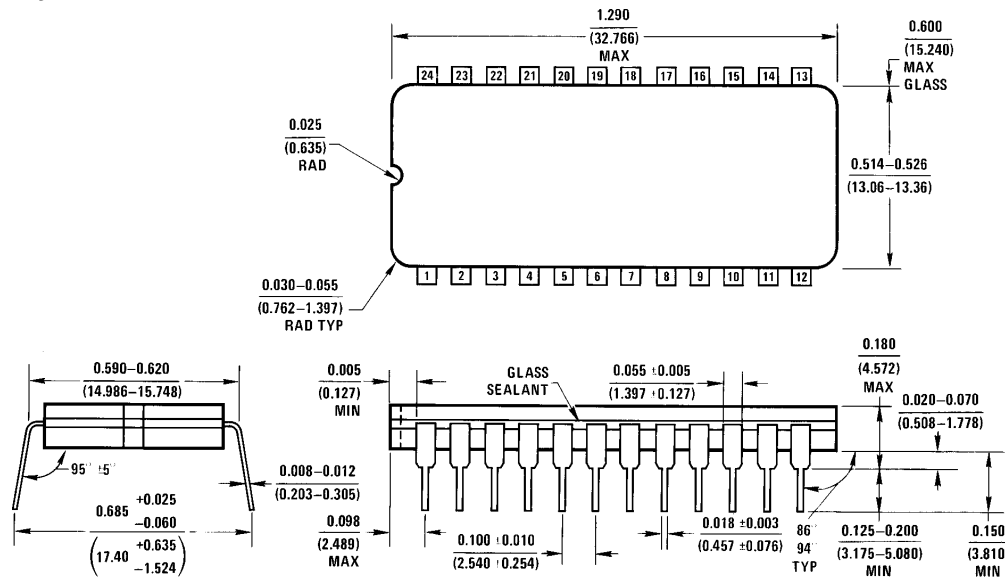
Switching Characteristics at V_{CC} = 5V and T_A = 25°C (See Section 1 for Test Waveforms and Output Load)

Symbol	Parameter	From (Input) To (Output)	R _L = 400Ω, C _L = 15 pF		Units
			Min	Max	
t _{PLH}	Propagation Delay Time Low to High Level Output	Data to Output		25	ns
t _{PHL}	Propagation Delay Time High to Low Level Output	Data to Output		40	ns
t _{PLH}	Propagation Delay Time Low to High Level Output	Strobe to Output		18	ns
t _{PHL}	Propagation Delay Time High to Low Level Output	Strobe to Output		30	ns

Note 1: All typicals are at V_{CC} = 5V, T_A = 25°C.

Note 2: I_{CC} is measured with all inputs grounded and all outputs open.

Physical Dimensions inches (millimeters)



J24A (REV H)

24-Lead Ceramic Dual-In-Line Package (J)
Order Number DM7130J
NS Package Number J24A

LIFE SUPPORT POLICY

NATIONAL'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF NATIONAL SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.



National Semiconductor Corporation
 1111 West Bardin Road
 Arlington, TX 76017
 Tel: (800) 272-9959
 Fax: (800) 737-7018

National Semiconductor Europe
 Fax: (+49) 0-180-530 85 86
 Email: cnjwge@tevm2.nsc.com
 Deutsch Tel: (+49) 0-180-530 85 85
 English Tel: (+49) 0-180-532 78 32
 Français Tel: (+49) 0-180-532 93 58
 Italiano Tel: (+49) 0-180-534 16 80

National Semiconductor Hong Kong Ltd.
 19th Floor, Straight Block,
 Ocean Centre, 5 Canton Rd.
 Tsimshatsui, Kowloon
 Hong Kong
 Tel: (852) 2737-1600
 Fax: (852) 2736-9960

National Semiconductor Japan Ltd.
 Tel: 81-043-299-2309
 Fax: 81-043-299-2408

National does not assume any responsibility for use of any circuitry described, no circuit patent licenses are implied and National reserves the right at any time without notice to change said circuitry and specifications.