- **Compares Two 8-Bit Words**
- **Package Options Include Plastic Small-Outline Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs**

description

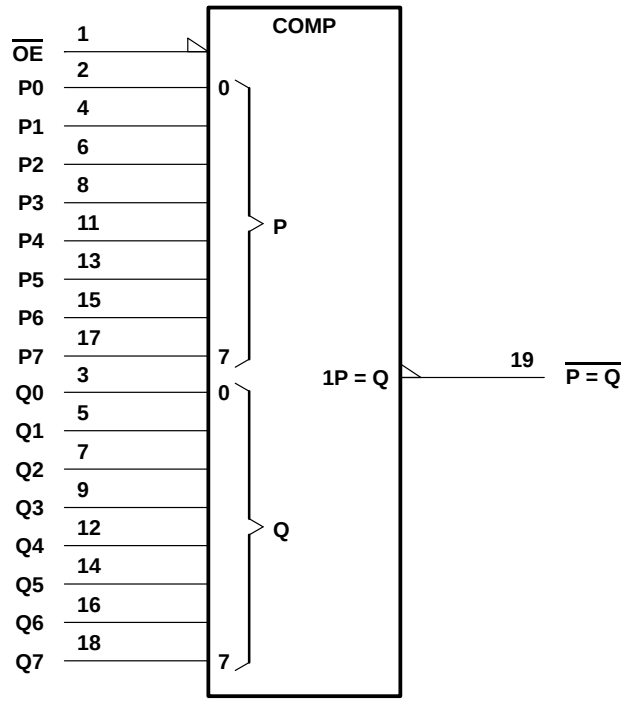
These identity comparators perform comparisons on two 8-bit binary or BCD words. They provide $\overline{P = Q}$ outputs.

The SN54F521 is characterized for operation over the full military temperature range of –55°C to 125°C. The SN74F521 is characterized for operation from 0°C to 70°C.

FUNCTION TABLE

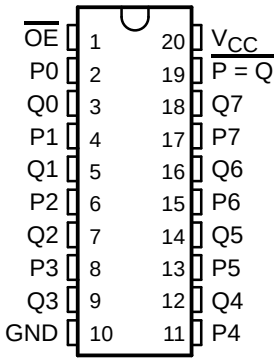
INPUTS		OUTPUT
P, Q	$\overline{OE}$	$\overline{P = Q}$
P = Q	L	L
P ≠ Q	X	H
X	H	H

logic symbol†

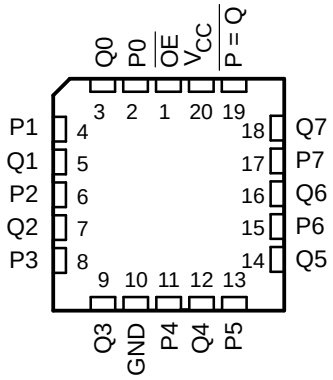


† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

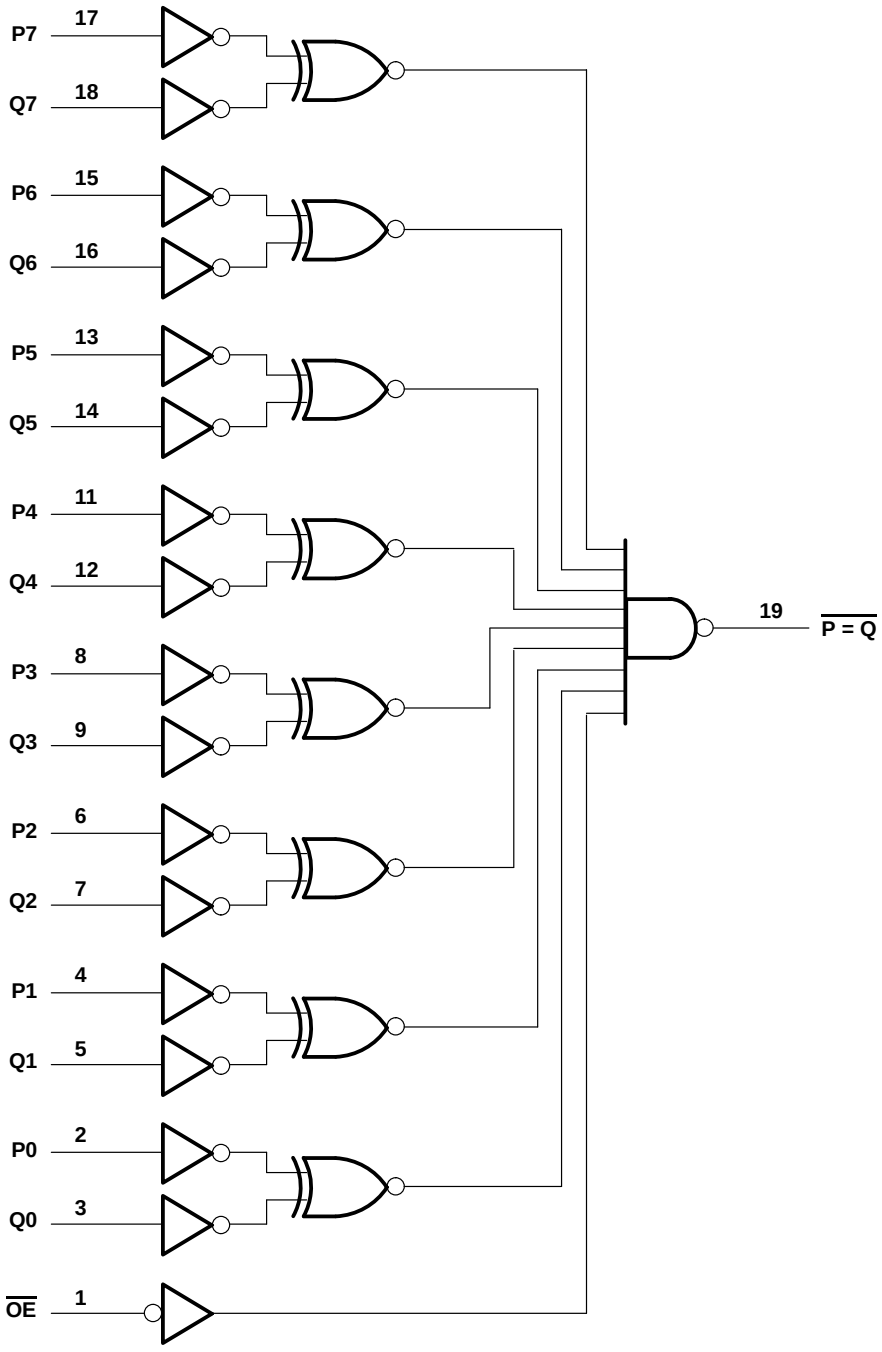
SN54F521 . . . J PACKAGE
SN74F521 . . . DW OR N PACKAGE
(TOP VIEW)



SN54F521 . . . FK PACKAGE
(TOP VIEW)



logic diagram (positive logic)



absolute maximum ratings over operating free-air temperature range (unless otherwise noted)†

Supply voltage range, V_{CC} . . . . . –0.5 V to 7 V
Input voltage range, V_I (see Note 1) . . . . . –1.2 V to 7 V
Input current range . . . . . –30 mA to 5 mA
Voltage range applied to any output in the high state . . . . . –0.5 V to V_{CC}
Current into any output in the low state . . . . . 40 mA
Operating free-air temperature range: SN54F521 . . . . . –55°C to 125°C
SN74F521 . . . . . 0°C to 70°C
Storage temperature range . . . . . –65°C to 150°C

† Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

NOTE 1: The input voltage ratings may be exceeded provided the input current ratings are observed.

recommended operating conditions

		SN54F521			SN74F521			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V_{CC}	Supply voltage	4.5	5	5.5	4.5	5	5.5	V
V_{IH}	High-level input voltage	2			2			V
V_{IL}	Low-level input voltage			0.8			0.8	V
I_{IK}	Input clamp current			–18			–18	mA
I_{OH}	High-level output current			– 1			– 1	mA
I_{OL}	Low-level output current			20			20	mA
T_A	Operating free-air temperature	–55		125	0		70	°C

electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

PARAMETER	TEST CONDITIONS		SN54F521			SN74F521			UNIT
			MIN	TYP‡	MAX	MIN	TYP‡	MAX	
V_{IK}	V_{CC} = 4.5 V,	I_I = –18 mA			–1.2			–1.2	V
V_{OH}	V_{CC} = 4.5 V,	I_{OH} = – 1 mA	2.5	3.4		2.5	3.4		V
	V_{CC} = 4.75 V,	I_{OH} = – 1 mA				2.7			
V_{OL}	V_{CC} = 4.5 V,	I_{OL} = 20 mA		0.3	0.5		0.3	0.5	V
I_I	V_{CC} = 5.5 V,	V_I = 7 V			100			100	µA
I_{IH}	V_{CC} = 5.5 V,	V_I = 2.7 V			20			20	µA
I_{IL}	V_{CC} = 5.5 V,	V_I = 0.5 V			– 0.6			– 0.6	mA
I_{OS}§	V_{CC} = 5.5 V,	V_O = 0	–60		–150	–60		–150	mA
I_{CC}	V_{CC} = 5.5 V,	See Note 2		21	32		21	32	mA

‡ All typical values are at V_{CC} = 5 V, T_A = 25°C.

§ Not more than one output should be shorted at a time, and the duration of the short circuit should not exceed one second.

NOTE 2: I_{CC} is measured with all inputs at 4.5 V.

switching characteristics (see Note 3)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V_{CC} = 5 V, C_L = 50 pF, R_L = 500 Ω, T_A = 25°C			V_{CC} = 4.5 V to 5.5 V, C_L = 50 pF, R_L = 500 Ω, T_A = MIN to MAX†				UNIT
			′F521			SN54F521		SN74F521		
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t_{PLH}	P or Q	$\overline{P = Q}$	2.7	6.6	10	2.7	14	2.7	11	ns
t_{PHL}			3.7	6.6	10	3.2	12	3.2	11	
t_{PLH}	$\overline{OE}$	$\overline{P = Q}$	2.2	4.6	6.5	2.2	8.5	2.2	7.5	ns
t_{PHL}			2.7	6.1	9	2.7	13.5	2.7	10	

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

NOTE 3: Load circuits and waveforms are shown in Section 1.

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