National Semiconductor

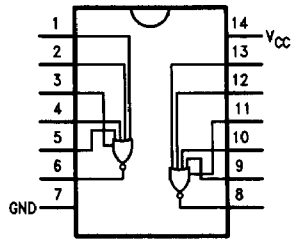
5425/DM7425
Dual 4-Input NOR Gate (with Strobe)

General Description

This device contains two, 4-input gates that perform the logic NOR function. The output of each NOR gate is gated (strobed) by pin 3 and pin 11 by positive true logic i.e., logic "1" equals output on.

Connection Diagram

Dual-In-Line Package



TL/F/9775–1

Order Number 5425DMQB, 5425FMQB, DM7425J or DM7425N
See NS Package Number J14A, N14A and W14B

Absolute Maximum Ratings

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	
54	−55°C to +125°C
DM74	0°C to +70°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	5425			DM7425			Units
		Min	Nom	Max	Min	Nom	Max	
V_{CC}	Supply Voltage	4.5	5	5.5	4.75	5	5.25	V
V_{IH}	High Level Input Voltage	2			2			V
V_{IL}	Low Level Input Voltage			0.8			0.8	V
I_{OH}	High Level Output Current			−0.8			−0.4	mA
I_{OL}	Low Level Output Current			16			16	mA
T_A	Free Air Operating Temperature	−55		125	0		70	°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
V_{OH}	High Level Output Voltage	V_{CC} = Min, I_{OH} = Max V_{IL} = Max		2.4	3.4		V
V_{OL}	Low Level Output Voltage	V_{CC} = Min, I_{OL} = Max V_{IH} = Min			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	Strobe			160	μA
			Inputs			40	
I_{IL}	Low Level Input Current	V_{CC} = Max,	Strobe			−6.4	mA
		V_I = 0.4V	Inputs			−1.6	
I_{OS}	Short Circuit Output Current	V_{CC} = Max (Note 2)	54	−20		−55	mA
			DM74	−18		−57	
I_{CCH}	Supply Current with Outputs High	V_{CC} = Max				16	mA
I_{CCL}	Supply Current with Outputs Low	V_{CC} = Max				19	mA

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

Symbol	Parameter	Conditions	Min	Max	Units
t_{PLH}	Propagation Delay Time Low to High Level Output	C_L = 15 pF R_L = 400Ω		22	ns
t_{PHL}	Propagation Delay Time High to Low Level Output			15	ns

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

Note 2: Not more than one output should be shorted at a time.