
PART NUMBER**54H01JB-ROCV**

Rochester Electronics**Manufactured Components**

Rochester branded components are manufactured using either die/wafers purchased from the original suppliers or Rochester wafers recreated from the original IP. All re-creations are done with the approval of the Original Component Manufacturer. (OCM)

Parts are tested using original factory test programs or Rochester developed test solutions to guarantee product meets or exceeds the OCM data sheet.

Quality Overview

- ISO-9001
- AS9120 certification
- Qualified Manufacturers List (QML) MIL-PRF-38535
 - Class Q Military
 - Class V Space Level

Qualified Suppliers List of Distributors (QSLD)

- Rochester is a critical supplier to DLA and meets all industry and DLA standards.

Rochester Electronics, LLC is committed to supplying products that satisfy customer expectations for quality and are equal to those originally supplied by industry manufacturers.

The original manufacturer's datasheet accompanying this document reflects the performance and specifications of the Rochester manufactured version of this device. Rochester Electronics guarantees the performance of its semiconductor products to the original OCM specifications. 'Typical' values are for reference purposes only. Certain minimum or maximum ratings may be based on product characterization, design, simulation, or sample testing.

54L01, 54H01

Positive-NAND Gates AND Inverters with Open-Collector Outputs

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FOR REFERENCE ONLY

POSITIVE-NAND GATES AND INVERTERS WITH OPEN-COLLECTOR OUTPUTS

recommended operating conditions

	54 FAMILY 74 FAMILY	SERIES 54 SERIES 74		SERIES 54H SERIES 74H		SERIES 54L SERIES 74L		SERIES 54LS SERIES 74LS		SERIES 54S SERIES 74S		UNIT
		'01, '03, '05, '12, '22		'H01, 'H05, 'H22		'L01, 'L03		'LS01, 'LS03, 'LS05, 'LS12, 'LS22		'S05, 'S22		
Supply voltage, V _{CC}	54 Family	MIN 4.5	NOM 5	MAX 5.5	MIN 4.5	NOM 5	MAX 5.5	MIN 4.5	NOM 5	MAX 5.5	MIN 4.5	MAX 5.5
	74 Family	MIN 4.75	NOM 5	MAX 5.25	MIN 4.75	NOM 5	MAX 5.25	MIN 4.75	NOM 5	MAX 5.25	MIN 4.75	MAX 5.25
High-level output voltage, V _{OH}	54 Family	16		20	5.3		5.5	5.5		5.5	5.5	V
Low-level output current, I _{OL}	74 Family	16		20	3.6		2	4		20	20	
	54 Family	-55		125	-55		125	-55		125	-55	
Operating free-air temperature, T _A	74 Family	0		70	0		70	0		70	0	

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

PARAMETER	TEST FIGURE	TEST CONDITIONS†	SERIES 54 SERIES 74		SERIES 54H SERIES 74H		SERIES 54L SERIES 74L		SERIES 54LS SERIES 74LS		SERIES 54S SERIES 74S		UNIT
			'01, '03, '05, '12, '22		'H01, 'H05, 'H22		'L01, 'L03		'LS01, 'LS03, 'LS05, 'LS12, 'LS22		'S05, 'S22		
			MIN	TYP‡	MAX	MIN	TYP‡	MAX	MIN	TYP‡	MAX	MIN	
V _{IH} High-level input voltage	1, 2		2		0.8	0.8	0.6	0.7			0.8	V	
V _{IL} Low-level input voltage	1, 2	54 Family 74 Family	0.8		0.8	0.6	0.8			0.8		V	
V _{IK} Input clamp voltage	3	V _{CC} = MIN, I _I = §	-1.5		-1.5	-1.5	-1.5			-1.2		V	
I _{OH} High-level output current	1	V _{CC} = MIN, V _{IL} = V _{IL} max, V _{OH} = 5.5 V	250		250	50	100			250		µA	
V _{OL} Low-level output voltage	2	V _{CC} = MIN, I _{OL} = MAX	0.2	0.4	0.2	0.4	0.15	0.3	0.25	0.4	0.5		
		V _{IH} = 2 V I _{OL} = 4 mA	0.2	0.4	0.2	0.4	0.2	0.4	0.35	0.5	0.5		
I _I Input current at maximum input voltage	4	V _I = 5.5 V	1		1	0.1					1	mA	
		V _I = 7 V						0.1					
I _{IH} High-level input current	4	V _{IH} = 2.4 V V _{IH} = 2.7 V	40		50	10					50	µA	
		V _{IL} = 0.3 V					-0.18						
I _{IL} Low-level input current	5	V _{IL} = 0.4 V	-1.6		-2							mA	
		V _{IL} = 0.5 V											
I _{CC} Supply current	7	V _{CC} = MAX									-2	mA	

See table on next page

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

‡ All typical values are at $V_{CC} = 5 \text{ V}, T_A = 25^\circ\text{C}$.

§ $I_I = -12 \text{ mA}$ for SN54/SN74, -8 mA for SN54H/SN74H, and -18 mA for SN54LS/SN74LS and SN54S/SN74S.

POSITIVE-NAND GATES AND INVERTERS WITH OPEN-COLLECTOR OUTPUTS

supply current†

TYPE	I _{CC} (mA)		I _{CC} (mA)		I _{CC} (mA)	
	Total with outputs high		Total with outputs low		Average per Gate (50% duty cycle)	
	TYP	MAX	TYP	MAX	TYP	
'01	4	8	12	22	2	
'03	4	8	12	22	2	
'05	6	12	18	33	2	
'12	3	6	9	16.5	2	
'22	2	4	6	11	2	
'H01	10	16.8	26	40	4.1	
'H05	16	26	40	58	4.67	
'H22	5	8.4	13	20	4.1	
'L01	0.44	0.8	1.16	2.04	0.20	
'L03	0.44	0.8	1.16	2.04	0.20	
'LS01	0.8	1.6	2.4	4.4	0.4	
'LS03	0.8	1.6	2.4	4.4	0.4	
'LS05	1.2	2.4	3.6	6.6	0.4	
'LS12	0.7	1.4	1.8	3.3	0.42	
'LS22	0.4	0.8	1.2	2.2	0.4	
'S03	6	13.2	20	36	3.25	
'S05	9	19.8	30	54	3.25	
'S22	3	6.6	10	18	3.25	

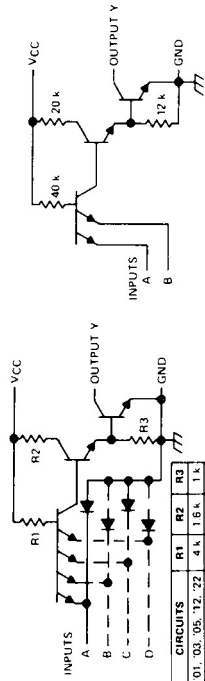
† Maximum values of I_{CC} are over the recommended operating ranges of V_{CC} and T_A; typical values are at V_{CC} = 5 V, T_A = 25°C.

switching characteristics at V_{CC} = 5 V, T_A = 25°C

TYPE	TEST CONDITIONS#	t _{PLH} (ns)		t _{PLH} (ns)	
		Propagation delay time, low-to-high-level output		Propagation delay time, high-to-low-level output	
		MIN	TYP	MAX	
'01, '03	C _L = 15 pF, R _L = 4 kΩ for t _{PLH} , 400 Ω for t _{PLH}	35	45	8	15
'05		40	55	8	15
'12, '22		35	45	8	15
'H01, 'H05, 'H22	C _L = 25 pF, R _L = 280 Ω	10	15	7.5	12
'L01, 'L03	C _L = 50 pF, R _L = 4 kΩ	60	90	33	60
'LS01, 'LS03, 'LS05, 'LS12, 'LS22	C _L = 15 pF, R _L = 2 kΩ	17	32	15	28
'S03, 'S05, 'S22	C _L = 15 pF, R _L = 280 Ω	2	5	7.5	2
	C _L = 50 pF, R _L = 280 Ω	7.5		4.5	7

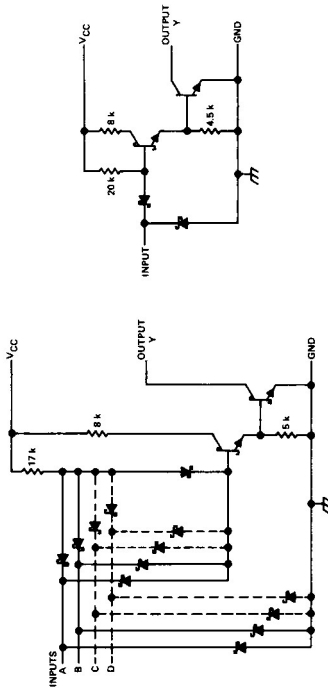
Load circuits and voltage waveforms are shown on pages 3-10 and 3-11.

schematics (each gate)



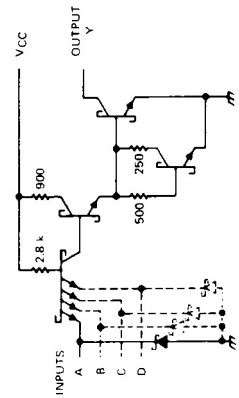
'L01, 'L03 CIRCUITS

'01, '03, '05, '12, '22, 'H01, 'H05, 'H22 CIRCUITS



'LS05 CIRCUITS

'LS01, 'LS03, 'LS12, 'LS22 CIRCUITS



'S03, 'S05, 'S22 CIRCUITS

Resistor values shown are nominal and in ohms.

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