

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 recreations are done with the approval of the OCM.

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

Quality Overview

- ISO-9001
- AS9120 certification
- Qualified Manufacturers List (QML) MIL-PRF-35835
 - 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.

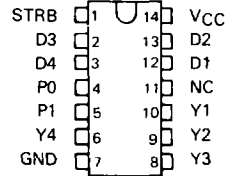
The original manufacturer's datasheet accompanying this document reflects the performance and specifications of the Rochester manufactured version of this device. Rochester Electronics guarantees the performance of its semiconductor products to the original OEM specifications. 'Typical' values are for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

SN54278, SN74278 4-BIT CASCADABLE PRIORITY REGISTERS

MAY 1972—REVISED MARCH 1988

- Latched Data Inputs Serve as Buffer Register and Can also:
Synchronize Data Acquisition
"Debounce" Mechanical Switch Input
- Cascading Input P0 and Output P1 Provides "Busy" Signal Inhibiting All Lower-Order Bits
- Full TTL Compatibility
- Use for:
Priority Interrupt
Synchronous Priority Line Selection

SN54278 . . . J OR W PACKAGE
SN74278 . . . N PACKAGE
(TOP VIEW)



NC—No internal connection

description

The SN54278 and SN74278 each consist of four data latches, full priority output gating, and a cascading gate. The highest-order data applied at a D latch input is transferred to the appropriate Y output while the strobe input is high, and when the strobe goes low all data is latched. The cascading input P0 is fully overriding and on the highest-order package this input must be held at a low logic level. The P1 output is intended for connection to the P0 input of the next lower-order package and will provide a "busy" (high-level) signal to inhibit all subsequent lower-order packages.

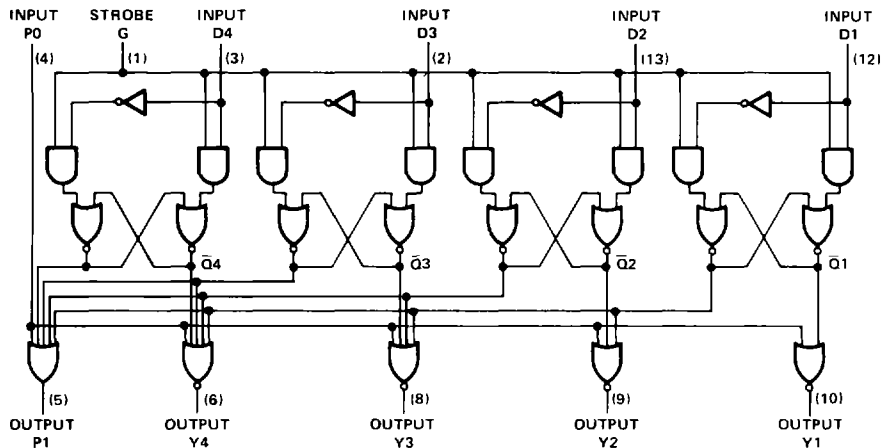
After the overriding P0 input, the order of priority is D1, D2, D3, and D4, respectively, within the package.

FUNCTION TABLE

INPUTS		INTERNAL LATCH NODES				OUTPUTS								
P0	G	D1	D2	D3	D4	Q̄1	Q̄2	Q̄3	Q̄4	Y1	Y2	Y3	Y4	P1
L	H	H	X	X	X	L	X	X	X	H	L	L	L	H
L	H	L	H	X	X	H	L	X	X	L	L	L	L	H
L	H	L	L	H	X	H	H	L	X	L	L	H	L	H
L	H	L	L	L	H	H	H	H	L	L	L	L	H	H
L	H	L	L	L	L	H	H	H	H	L	L	L	L	L
L	L	X	X	X	X	Latched when G goes low				Same function of Q̄ nodes as on 1st 5 lines				
H	L	X	X	X	X					L	L	L	L	H
H	H	Internal Q̄ levels are same function of D inputs as on first 5 lines								L	L	L	L	H

H = high level, L = low level, X = irrelevant

logic diagram (positive logic)



PRODUCTION DATA documents contain information current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

TEXAS
INSTRUMENTS

POST OFFICE BOX 655012 • DALLAS, TEXAS 75265

2-767

2

TTL Devices

SN54278, SN74278

4-BIT CASCADABLE PRIORITY REGISTERS

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

Supply voltage, V_{CC} (see Note 1)	7 V
Input voltage	5.5 V
Interemitter voltage (see Note 2)	5.5 V
Operating free-air temperature range: SN54278 Circuits	-55°C to 125°C
SN74278 Circuits	0°C to 70°C
Storage temperature range	-65°C to 150°C

NOTES: 1 Voltage values, except interemitter voltage, are with respect to network ground terminal.

2 This is the voltage between two emitters of a multiple-emitter transistor. For this circuit, this rating applies between the strobe input and any of the four data inputs.

recommended operating conditions

	SN54278			SN74278			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
Supply voltage, V_{CC}	4.5	5	5.5	4.75	5	5.25	V
High-level output current, I_{OH}			-800			-800	μ A
Low-level output current, I_{OL}			16			16	mA
Data setup time, t_{SU} (see Figure 1)	20			20			ns
Data hold time, t_H (see Figure 1)	5			5			ns
Strobe pulse width, t_W (see Figure 1)	20			20			ns
Operating free-air temperature, T_A	-55	125		0	70		°C

2

TTL Devices

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

PARAMETER		TEST CONDITIONS†	MIN	TYP	MAX	UNIT
V_{IH}	High-level input voltage		2			V
V_{IL}	Low-level input voltage				0.8	V
V_{IK}	Input clamp voltage	$V_{CC} = \text{MIN.}$, $I_I = -12 \text{ mA}$			-1.5	V
V_{OH}	High-level output voltage	$V_{CC} = \text{MIN.}$, $V_{IH} = 2 \text{ V}$, $V_{IL} = 0.8 \text{ V}$, $I_{OH} \approx -800 \mu\text{A}$	2.4	3.4		V
V_{OL}	Low-level output voltage	$V_{CC} = \text{MIN.}$, $V_{IH} = 2 \text{ V}$, $V_{IL} = 0.8 \text{ V}$, $I_{OL} = 16 \text{ mA}$	0.2	0.4		V
I_I	Input current at maximum input voltage	$V_{CC} = \text{MAX.}$, $V_I = 5.5 \text{ V}$			1	mA
I_{IH}	High-level input current	Any D input			80	μ A
		P0 input	$V_{CC} = \text{MAX.}$, $V_I = 2.4 \text{ V}$		200	
		G input			320	
I_{IL}	Low-level input current	Any D input			-3.2	mA
		P0 input	$V_{CC} = \text{MAX.}$, $V_I = 0.4 \text{ V}$		-8	
		G input			-12.8	
I_{OS}	Short-circuit output current‡	$V_{CC} = \text{MAX.}$	SN54278	-18	-55	mA
			SN74278	-18	-57	
I_{CC}	Supply current	$V_{CC} = \text{MAX.}$, See Note 3		55	80	mA

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

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

§ Not more than one output should be shorted at a time.

NOTE 3 I_{CC} is measured with the P0 input grounded, all other inputs at 4.5 V, and outputs open.

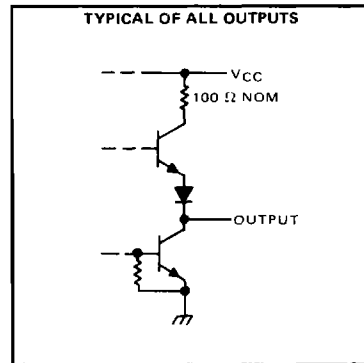
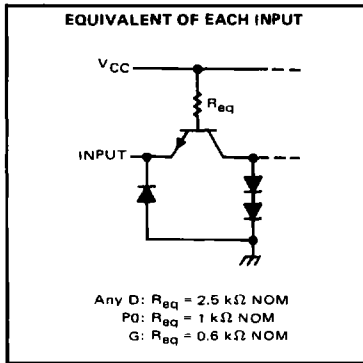
SN54278, SN74278 4-BIT CASCADABLE PRIORITY REGISTERS

switching characteristics, $V_{CC} = 5\text{ V}$, $T_A = 25^\circ\text{ C}$

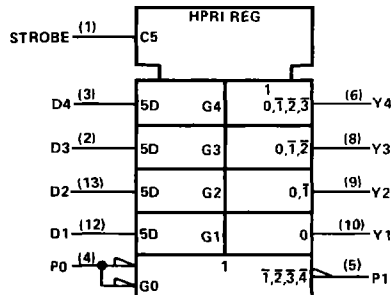
PARAMETER†	FROM (INPUT)	TO (OUTPUT)	WAVEFORMS	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{PLH}	Data	Y	A and C (with strobe high)	$C_L = 15\text{ pF}$, $R_L = 400\ \Omega$, See Figure 1		30		ns
t_{PHL}						39		
t_{PLH}	Data	Y	A and D (with strobe high)			38		ns
t_{PHL}						31		
t_{PLH}	Data	P1	A and E (with strobe high)			46		ns
t_{PHL}						39		
t_{PLH}	Strobe	Any Y	B and C or B and D			30		ns
t_{PHL}						31		
t_{PLH}	Strobe	P1	B and E			38		ns
t_{PHL}						42		
t_{PLH}	P0	P1	F and G		23		ns	
t_{PHL}					30			

† t_{PLH} = propagation delay time, low-to-high-level output
 t_{PHL} = propagation delay time, high-to-low-level output

schematics of inputs and outputs



logic symbol†



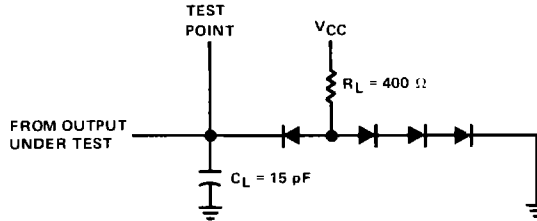
† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

2

TTL Devices

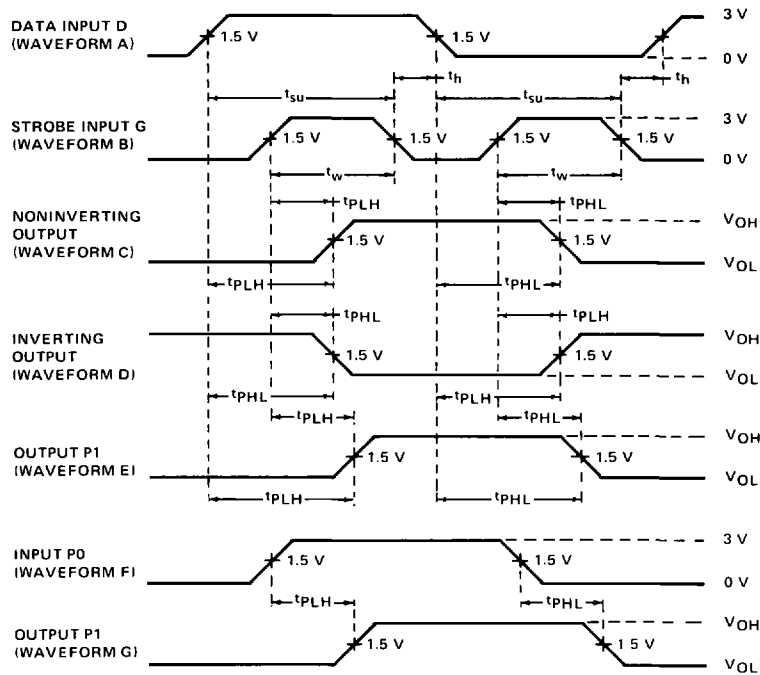
SN54278, SN74278
4-BIT CASCADABLE PRIORITY REGISTERS

PARAMETER MEASUREMENT INFORMATION



C_L includes probe and jig capacitance
 All diodes are 1N3064.

LOAD CIRCUIT



VOLTAGE WAVEFORMS

NOTE Input pulses are supplied by a generator having the following characteristics: $t_r \leq 7$ ns, $t_f \leq 7$ ns, $PRR \leq$ MHz, $Z_{out} \approx 50\Omega$.

FIGURE 1—SWITCHING TIMES

2

TTL Devices