

## SN54F353, SN74F353

### *Dual 1-of-4 Data Selectors/Multiplexers with 3-State Outputs*

Each of these data selectors/multiplexers contains inverters and drivers to supply full binary decoding data selection to the AND-OR-invert gates. Separate strobe inputs ( $\overline{G}$ ) are provided for each of the two four-line sections.

The three-state outputs can interface with and drive data lines of bus-organized systems. With all but one of the common outputs disabled (at a high-impedance state), the low-impedance of the single enabled output will drive the bus line to a high or low logic level. Each output has its own strobe ( $\overline{G}$ ). The output is disabled when its strobe is high.

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### **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 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.

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*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.*

# SN54F353, SN74F353 DUAL 1-OF-4 DATA SELECTORS/MULTIPLEXERS WITH 3-STATE OUTPUTS

D2932, MARCH 1987—REVISED JANUARY 1989

- Inverting Versions of SN54F253 and SN74F253
- Permits Multiplexing from N Lines to 1 Line
- Performs Parallel-to-Serial Conversion
- Package Options Include Plastic "Small Outline" Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs
- Dependable Texas Instruments Quality and Reliability

## description

Each of these data selectors/multiplexers contains inverters and drivers to supply full binary decoding data selection to the AND-OR-invert gates. Separate strobe inputs ( $\bar{G}$ ) are provided for each of the two four-line sections.

The three-state outputs can interface with and drive data lines of bus-organized systems. With all but one of the common outputs disabled (at a high-impedance state), the low-impedance of the single enabled output will drive the bus line to a high or low logic level. Each output has its own strobe ( $\bar{G}$ ). The output is disabled when its strobe is high.

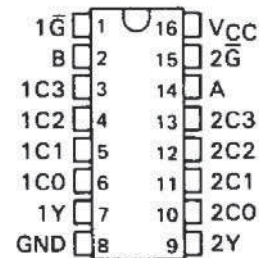
The SN54F353 is characterized for operation over the full military temperature range of  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ . The SN74F353 is characterized for operation from  $0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ .

FUNCTION TABLE

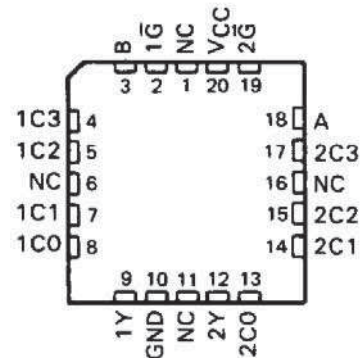
SELECT INPUTS		DATA INPUTS				STROBE $\bar{G}$	OUTPUT Y
		C0	C1	C2	C3		
X	X	X	X	X	X	H	Z
L	L	L	X	X	X	L	H
L	L	H	X	X	X	L	L
L	H	X	L	X	X	L	H
L	H	X	H	X	X	L	L
H	L	X	X	L	X	L	H
H	L	X	X	H	X	L	L
H	H	X	X	X	L	L	H
H	H	X	X	X	H	L	L

Select inputs A and B are common to both sections.

SN54F353 . . . J PACKAGE  
SN74F353 . . . D OR N PACKAGE  
(TOP VIEW)

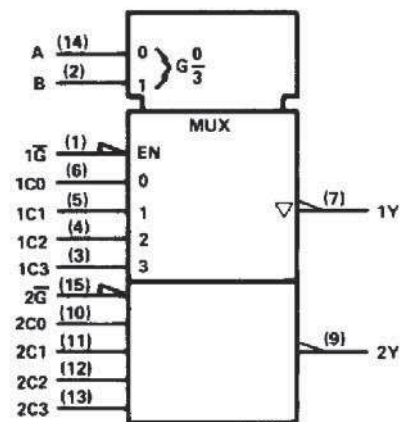


SN54F353 . . . FK PACKAGE  
(TOP VIEW)



NC—No internal connection

## logic symbol†



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

Pin numbers shown are for D, J, and N packages.

UNLESS OTHERWISE NOTED this document contains PRODUCTION DATA 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**

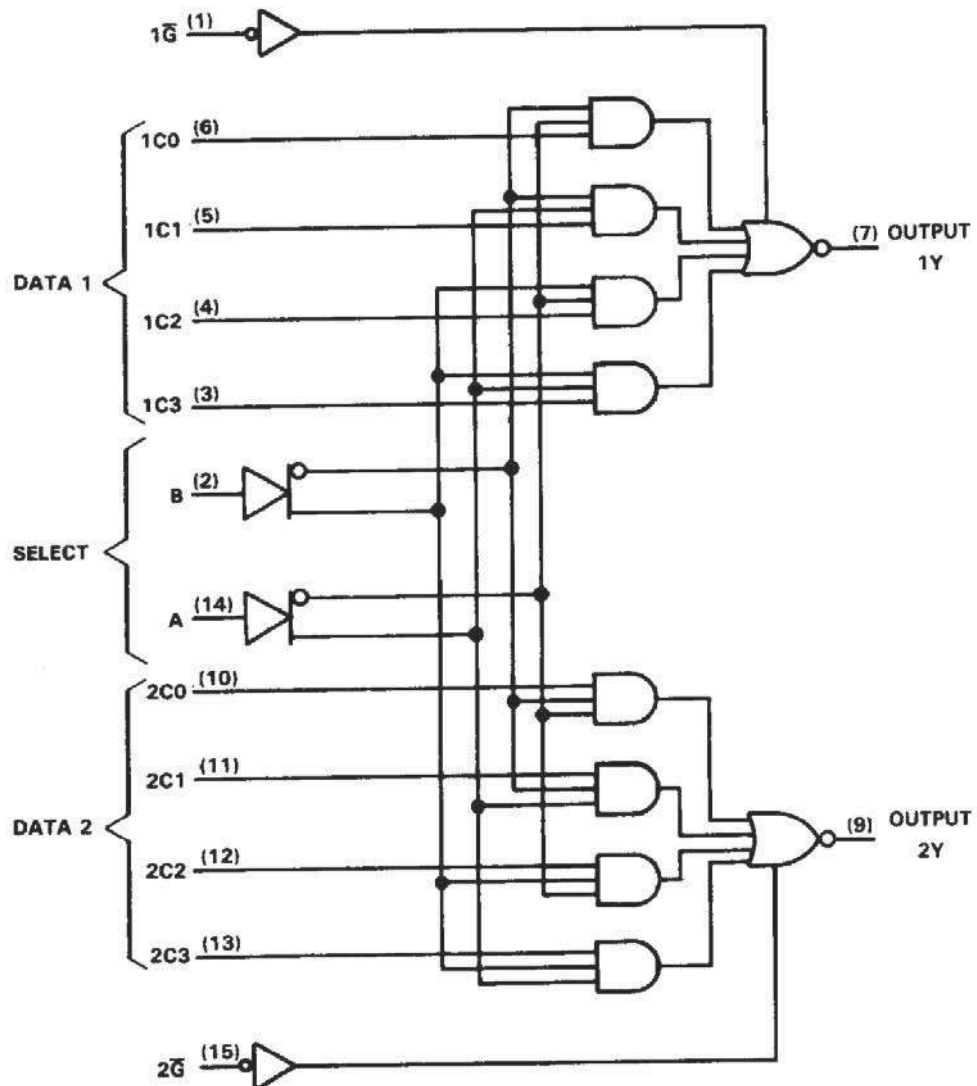
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# SN54F353, SN74F353 DUAL 1-OF-4 DATA SELECTORS/MULTIPLEXERS WITH 3-STATE OUTPUTS

logic diagram (positive logic)



Pin numbers shown are for D, J, and N packages.

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

Supply voltage, $V_{CC}$ .....	-0.5 V to 7 V
Input voltage <sup>†</sup> .....	-1.2 V to 7 V
Input current .....	-30 mA to 5 mA
Voltage applied to any output in the disabled or power-off state .....	-0.5 V to 5.5 V
Voltage applied to any output in the high state .....	-0.5 V to $V_{CC}$
Current into any output in the low state: SN54F353 .....	40 mA
SN74F353 .....	48 mA
Operating free-air temperature range: SN54F353 .....	-55°C to 125°C
SN74F353 .....	0°C to 70°C
Storage temperature range .....	-65°C to 150°C

<sup>†</sup>The input voltage ratings may be exceeded provided the input current ratings are observed.



**SN54F353, SN74F353**  
**DUAL 1-OF-4 DATA SELECTORS/MULTIPLEXERS**  
**WITH 3-STATE OUTPUTS**

**recommended operating conditions**

		SN54F353			SN74F353			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V <sub>CC</sub>	Supply voltage	4.5	5	5.5	4.5	5	5.5	V
V <sub>IH</sub>	High-level input voltage	2			2			V
V <sub>IL</sub>	Low-level input voltage			0.8			0.8	V
I <sub>IK</sub>	Input clamp current			-18			-18	mA
I <sub>OH</sub>	High-level output current			-3			-3	mA
I <sub>OL</sub>	Low-level output current			20			20	mA
T <sub>A</sub>	Operating free-air temperature	-55		125	0		70	°C

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

PARAMETER	TEST CONDITIONS <sup>†</sup>	SN54F353			SN74F353			UNIT	
		MIN	TYP <sup>‡</sup>	MAX	MIN	TYP <sup>‡</sup>	MAX		
V <sub>IK</sub>	V <sub>CC</sub> = 4.5 V, I <sub>I</sub> = -18 mA			-1.2			-1.2	V	
V <sub>OH</sub>	V <sub>CC</sub> = 4.5 V	I <sub>OH</sub> = -1 mA		2.5	3.4	2.5		3.4	V
		I <sub>OH</sub> = -3 mA		2.4	3.3	2.4		3.3	
	V <sub>CC</sub> = 4.75 V, I <sub>OH</sub> = -1 mA to -3 mA						2.7		
V <sub>OL</sub>	V <sub>CC</sub> = 4.5 V	I <sub>OL</sub> = 20 mA		0.30	0.5			V	
		I <sub>OL</sub> = 24 mA				0.35	0.5		
I <sub>OZH</sub>	V <sub>CC</sub> = 5.5 V, V <sub>O</sub> = 2.7 V			50		50		μA	
I <sub>OZL</sub>	V <sub>CC</sub> = 5.5 V, V <sub>O</sub> = 0.5 V			-50		-50		μA	
I <sub>I</sub>	V <sub>CC</sub> = 5.5 V, V <sub>I</sub> = 7 V			0.1		0.1		mA	
I <sub>IH</sub>	V <sub>CC</sub> = 5.5 V, V <sub>I</sub> = 2.7 V			20		20		μA	
I <sub>IL</sub>	V <sub>CC</sub> = 5.5 V, V <sub>I</sub> = 0.5 V			-0.6		-0.6		mA	
I <sub>OS</sub> <sup>§</sup>	V <sub>CC</sub> = 5.5 V, V <sub>O</sub> = 0	-60		-150	-60		-150	mA	
I <sub>CCH</sub> (see Note 1)	V <sub>CC</sub> = 5.5 V, Condition A			9.3	14	9.3		14	mA
I <sub>CCL</sub>	V <sub>CC</sub> = 5.5 V, Condition B			13.3	20	13.3		20	
I <sub>CCZ</sub>	V <sub>CC</sub> = 5.5 V, Condition C			15	23	15		23	

<sup>†</sup> For conditions shown as MIN or 5.5 V, use the appropriate value specified under Recommended Operating Conditions.

<sup>‡</sup> All typical values are at V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C.

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

NOTE 1: I<sub>CC</sub> is measured with the outputs open under the following conditions:

- A. All inputs grounded.
- B. Output control grounded, other inputs at 4.5 V.
- C. Output control at 4.5 V, other inputs grounded.

**SN54F353, SN74F353**  
**DUAL 1-OF-4 DATA SELECTORS/MULTIPLEXERS**  
**WITH 3-STATE OUTPUTS**

switching characteristics (see Note 2)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V <sub>CC</sub> = 5 V, C <sub>L</sub> = 50 pF, R <sub>1</sub> = 500 Ω, R <sub>2</sub> = 500 Ω, T <sub>A</sub> = 25°C			V <sub>CC</sub> = 4.5 V to 5.5 V, C <sub>L</sub> = 50 pF, R <sub>1</sub> = 500 Ω, R <sub>2</sub> = 500 Ω, T <sub>A</sub> = MIN to MAX†			UNIT	
			F353			SN54F353		SN74F353		
			MIN	TYP	MAX	MIN	MAX	MIN		MAX
t <sub>PLH</sub>	A or B	Any Y	2.7	7.6	11	2.2	14	2.2	12.5	ns
t <sub>PHL</sub>			2.2	6.1	8.5	1.7	11	1.7	9.5	
t <sub>PLH</sub>	Data (Any C)	Any Y	1.7	4.8	7	1.2	9	1.2	8	ns
t <sub>PHL</sub>			1	2.1	3.5	1	5	1	4	
t <sub>PZH</sub>	0	Any Y	2.2	5.1	8	2.2	10.5	2.2	9	ns
t <sub>PZL</sub>			2.7	5.6	8	2.2	10.5	2.2	9	
t <sub>PLZ</sub>	0	Any Y	1.2	3.3	5	1.2	7	1	6	ns
t <sub>PHZ</sub>			1.2	4	6	1	8	1	7	

† For conditions shown as MIN or MAX, use the appropriate value specified under Recommended Operating Conditions.  
 NOTE 2: Load circuits and waveforms are shown in Section 1.

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Data Sheets