- **3-State Versions of SN54F153 and SN74F153**
- **Permits Multiplexing From N Lines to One Line**
- **Performs Parallel-to-Serial Conversion**
- **Package Options Include Plastic Small-Outline Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs**

SN54F253 . . . J PACKAGE
SN74F253 . . . D OR N PACKAGE
(TOP VIEW)

$1\overline{G}$	1	16	V_{CC}
B	2	15	$2\overline{G}$
1C3	3	14	A
1C2	4	13	2C3
1C1	5	12	2C2
1C0	6	11	2C1
1Y	7	10	2C0
GND	8	9	2Y

SN54F253 . . . FK PACKAGE
(TOP VIEW)

Top pins: B (3), $1\overline{G}$ (2), NC (1), V_{CC} (20), $2\overline{G}$ (19)

1C3	4	18	A
1C2	5	17	2C3
NC	6	16	NC
1C1	7	15	2C2
1C0	8	14	2C1

Bottom pins: 1Y (9), GND (10), NC (11), 2Y (12), 2C0 (13)
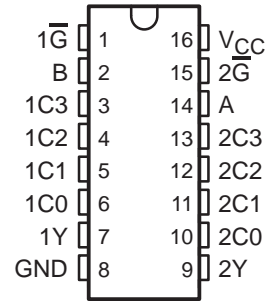
NC – No internal connection

description

These data selectors/multiplexers contain inverters and drivers to supply full binary decoding data selection to the AND-OR gates. Separate output-control inputs are provided for each of the two 4-line sections.
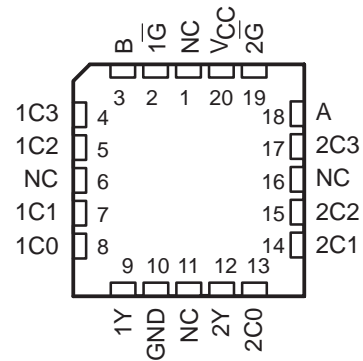
The 3-state outputs can interface with and drive data lines of bus-organized systems. With all but one of the common outputs disabled (at a high-impedance state), the low impedance of the single enabled output will drive the bus line to a high or low logic level. Each output has its own strobe ($\overline{G}$) inputs. The output is disabled when its strobe is high.

The SN54F253 is characterized for operation over the full military temperature range of $-55°C$ to $125°C$. The SN74F253 is characterized for operation from $0°C$ to $70°C$.

FUNCTION TABLE

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

Select inputs A and B are common to both sections.

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logic symbol†

† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.
Pin numbers shown are for the D, J, and N packages.

logic diagram (positive logic)
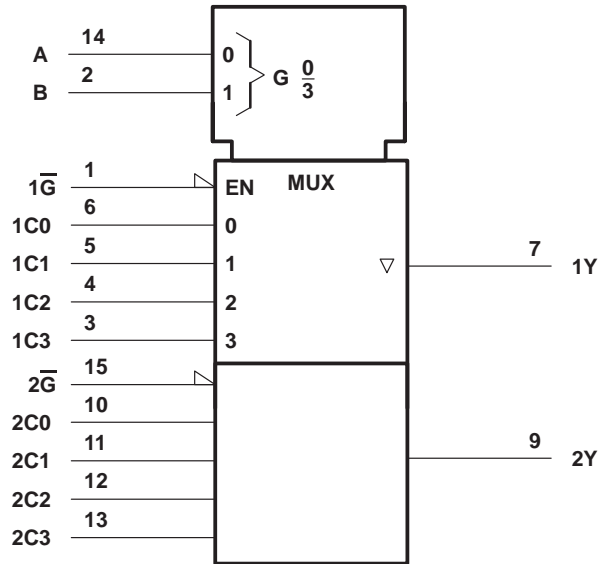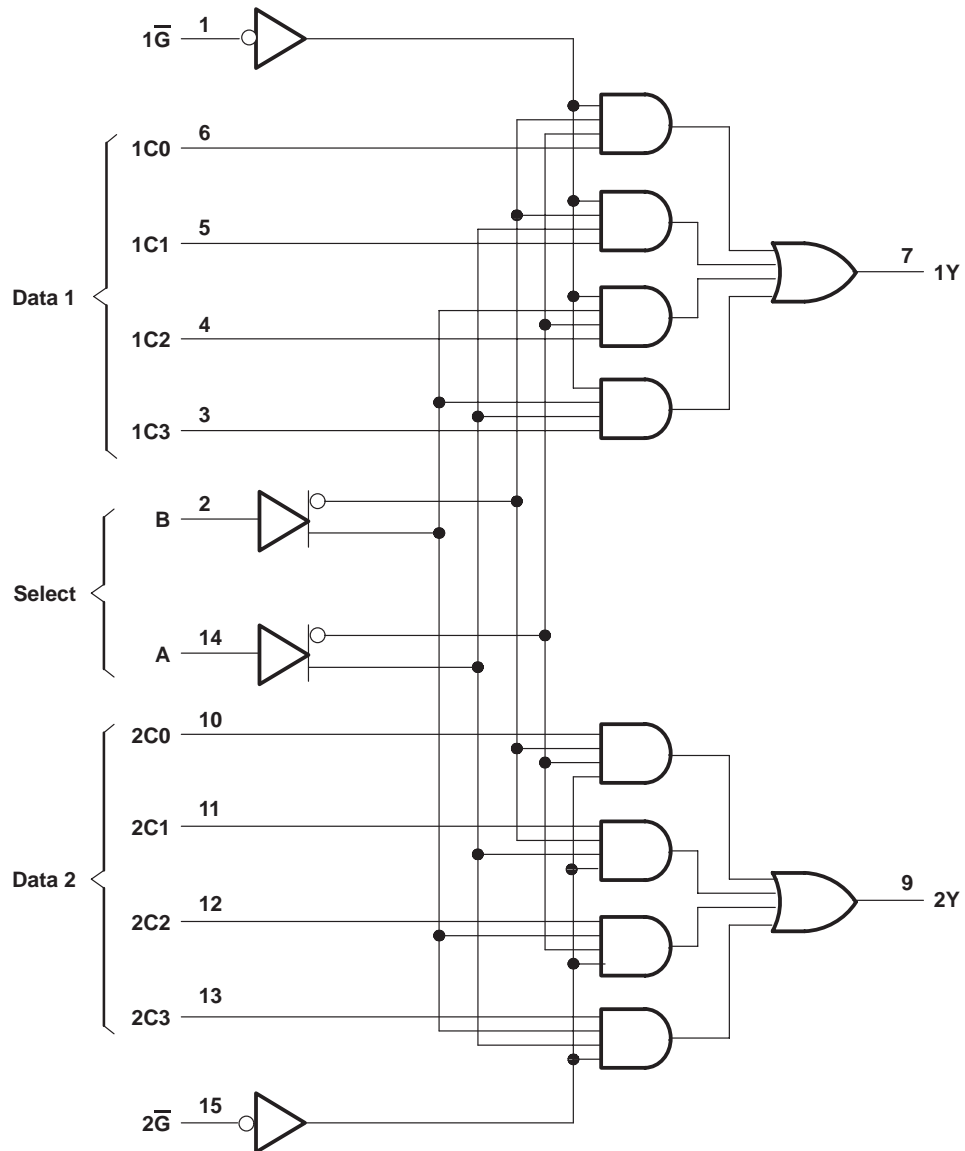

Pin numbers shown are for the D, J, and N packages.

SN54F253, SN74F253
DUAL 1-OF-4 DATA SELECTORS/MULTIPLEXERS
WITH 3-STATE OUTPUTS
SDFS064A – D2032, MARCH 1987 – REVISED OCTOBER 1993

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 (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 disabled or power-off state	−0.5 V to 5.5 V
Voltage range applied to any output in the high state	−0.5 V to V_{CC}
Current into any output in the low state: SN54F253	40 mA
SN74F253	48 mA
Operating free-air temperature range: SN54F253	−55°C to 125°C
SN74F253	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

		SN54F253			SN74F253			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			−3			−3	mA
I_{OL}	Low-level output current			20			24	mA
T_A	Operating free-air temperature	−55		125	0		70	°C

TEXAS
INSTRUMENTS

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

PARAMETER	TEST CONDITIONS		SN54F253			SN74F253			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
		I_{OH} = −3 mA	2.4	3.3		2.4	3.3		
	V_{CC} = 4.75 V,	I_{OH} = −1 mA to −3 mA					2.7		
V_{OL}	V_{CC} = 4.5 V	I_{OL} = 20 mA		0.3	0.5				V
		I_{OL} = 24 mA					0.35	0.5	
I_{OZH}	V_{CC} = 5.5 V,	V_O = 2.7 V			50			50	μA
I_{OZL}	V_{CC} = 5.5 V,	V_O = 0.5 V			−50			−50	μA
I_I	V_{CC} = 5.5 V,	V_I = 7 V			0.1			0.1	mA
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_{CCH}	V_{CC} = 5.5 V, See Note 2	Condition A		11.5	16		11.5	16	
I_{CCL}		Condition B		16	23		16	23	mA
I_{CCZ}		Condition C		16	23		16	23	

† 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 the outputs open under the following conditions:
     A. Inputs A, B, 1C3, and 2C3 at 4.5 V, other inputs grounded
     B. All inputs grounded
     C. Inputs 1G̅ and 2G̅ at 4.5 V, other inputs grounded

switching characteristics (see Note 3)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V_{CC} = 5 V, C_L = 50 pF, R1 = 500 Ω, R2 = 500 Ω, T_A = 25°C			V_{CC} = 4.5 V to 5.5 V, C_L = 50 pF, R1 = 500 Ω, R2 = 500 Ω, T_A = MIN to MAX§				UNIT
			'F253			SN54F253		SN74F253		
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t_{PLH}	A or B	Any Y	3.7	8.1	11.5	2.7	15	3.7	13	ns
t_{PHL}			2.2	6.1	9	1.7	11	2.2	10	
t_{PLH}	Any C	Any Y	2.2	5.1	7	1.7	9	2.2	8	ns
t_{PHL}			1.7	4.1	6	1.7	8	1.7	7	
t_{PZH}	G̅	Any Y	2.2	5.6	8	1.7	10	2.2	9	ns
t_{PZL}			2.2	5.6	8	1.7	10	2.2	9	
t_{PHZ}	G̅	Any Y	1.2	3.3	5	1.2	6.5	1.2	6	ns
t_{PLZ}			1.2	4	6	1.2	8	1.2	7	

§ For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.
NOTE 3: Load circuit and waveforms are shown in Section 1.

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PRODUCT FOLDER | PRODUCT INFO: FEATURES | DESCRIPTION | DATASHEETS | PRICING/AVAILABILITY/PKG | APPLICATION NOTES | RELATED DOCUMENTS

PRODUCT SUPPORT: TRAINING

SN74F253, Dual 1-of-4 Data Selectors/Multiplexers With 3-State Outputs

DEVICE STATUS: **ACTIVE**

PARAMETER NAME	SN74F253
Voltage Nodes (V)	5
Vcc range (V)	4.5 to 5.5
Input Level	TTL
Output Level	TTL
Output Drive (mA)	-3/24
Output	3S
From	4
To	1

FEATURES   ▲Back to Top

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DESCRIPTION   ▲Back to Top

These data selectors/multiplexers contain inverters and drivers to supply full binary decoding data selection to the AND-OR gates. Separate output-control inputs are provided for each of the two 4-line sections.

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Select inputs A and B are common to both sections.

TECHNICAL DOCUMENTS   ▲Back to Top

To view the following documents, Acrobat Reader 4.0 is required.
To download a document to your hard drive, right-click on the link and choose 'Save'.

DATASHEET

Full datasheet in Acrobat PDF: sn74f253.pdf (97 KB,Rev.A) (Updated: 10/01/1993)

APPLICATION NOTES

View Application Notes for Digital Logic

- Bus-Interface Devices With Output-Damping Resistors Or Reduced-Drive Outputs (Rev. A) (SCBA012A - Updated: 08/01/1997)
- Designing With Logic (Rev. C) (SDYA009C - Updated: 06/01/1997)
- Evaluation of Nickel/Palladium/Gold-Finished Surface-Mount Integrated Circuits (SZZA026 - Updated: 06/20/2001)
- Input and Output Characteristics of Digital Integrated Circuits (SDYA010 - Updated: 10/01/1996)

RELATED DOCUMENTS

View Related Documentation for Digital Logic

- Logic Reference Guide (SCYB004, 1032 KB - Updated: 10/23/2001)
- Logic Selection Guide Second Half 2002 (Rev. R) (SDYU001R, 4274 KB - Updated: 07/19/2002)
- Military Semiconductors Selection Guide 2002 (Rev. B) (SGYC003B, 1648 KB - Updated: 04/22/2002)

PRICING/AVAILABILITY/PKG

DEVICE INFORMATION | **TI INVENTORY STATUS AS OF 3:00 PM GMT, 26 Sep 2002** | **REPORTED DISTRIBUTOR INVENTORY AS OF 3:00 PM GMT, 26 Sep 2002**

ORDERABLE DEVICE	STATUS	PACKAGE TYPE|PINS	TEMP (ºC)	PRODUCT CONTENT	BUDGETARY PRICING QTY | $US	STD PACK QTY	IN STOCK	IN PROGRESS QTY|DATE	LEAD TIME	DISTRIBUTOR COMPANY|REGION	IN STOCK	PURCHASE
SN74F253D	ACTIVE	SOP (D) | 16	0 TO 70	View Contents	1KU | 0.59	40	3800	1114 | 02 Oct	5 WKS			
								>10k | 09 Oct				
SN74F253DR	ACTIVE	SOP (D) | 16	0 TO 70	View Contents	1KU | 0.62	2500	2500	9996 | 23 Sep	5 WKS			
								1114 | 01 Oct				
								>10k | 08 Oct				
SN74F253N	ACTIVE	PDIP (N) | 16	0 TO 70	View Contents	1KU | 0.53	25	2025	4 | 25 Sep	5 WKS			
								9098 | 03 Oct				
								>10k | 07 Oct				
								>10k | 14 Oct				
SN74F253NSR	ACTIVE	SOP (NS) | 16		View Contents	1KU | 0.53	2000	N/A*	>10k | 07 Oct	5 WKS			
								2231 | 14 Oct				
								>10k | 21 Oct				

Table Data Updated on: 9/26/2002