

SN54F157A, SN74F157A QUADRUPLE 2-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS

SDFS053A – MARCH 1987 – REVISED OCTOBER 1993

- Buffered Inputs and Outputs
- Package Options Include Plastic Small-Outline Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs

description

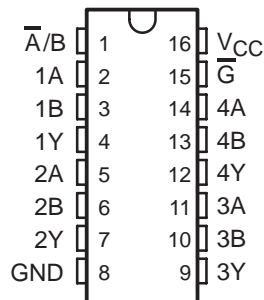
The 'F157A is a quadruple 2-input data selector/multiplexer featuring a common strobe (\bar{G}) input. When the strobe is high, all outputs are low. When the strobe is low, a 4-bit word is selected from one of two sources and is routed to the four outputs. The 'F157A provides true data.

The SN54F157A is characterized for operation over the full military temperature range of -55°C to 125°C . The SN74F157A is characterized for operation from 0°C to 70°C .

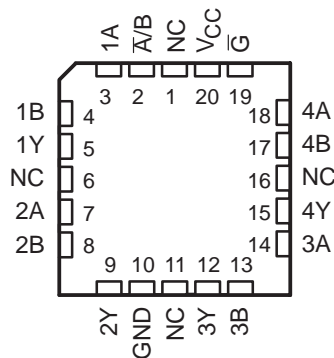
FUNCTION TABLE

INPUTS				OUTPUT
\bar{G}	\bar{A}/\bar{B}	A	B	Y
H	X	X	X	L
L	L	L	X	L
L	L	H	X	H
L	H	X	L	L
L	H	X	H	H

SN54F157A . . . J PACKAGE
SN74F157A . . . D OR N PACKAGE
(TOP VIEW)



SN54F157A . . . FK PACKAGE
(TOP VIEW)

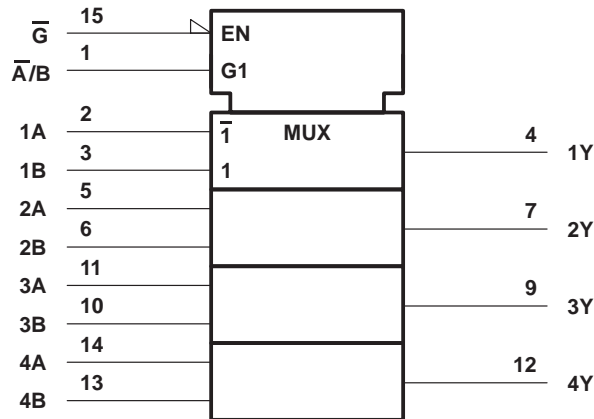


NC – No internal connection

SN54F157A, SN74F157A QUADRUPLE 2-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS

SDFS053A – MARCH 1987 – REVISED OCTOBER 1993

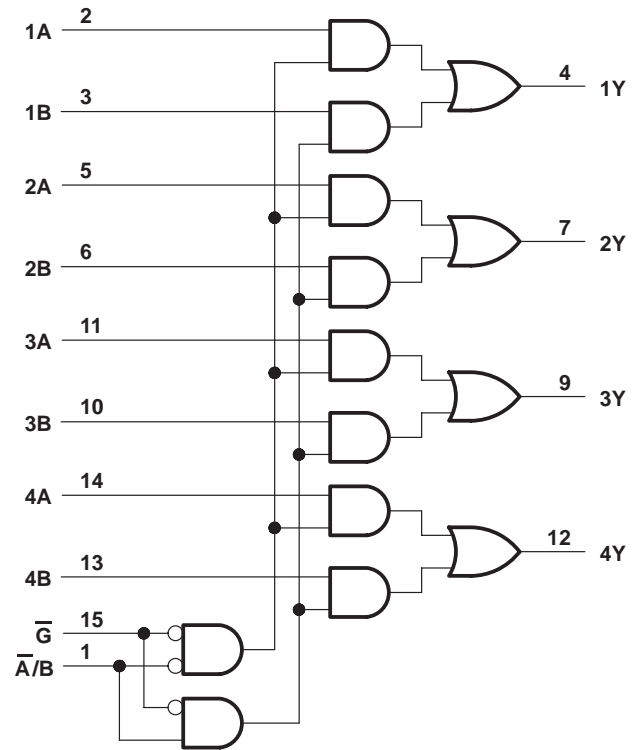
logic symbol†



† 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)



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 high state	-0.5 V to V_{CC}
Current into any output in the low state	40 mA
Operating free-air temperature range: SN54F157A	-55°C to 125°C
SN74F157A	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 rating may be exceeded provided that the input current rating is observed.

recommended operating conditions

	SN54F157A			SN74F157A			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			-1			-1	mA
I_{OL} Low-level output current			20			20	mA
T_A Operating free-air temperature	-55		125	0		70	°C



SN54F157A, SN74F157A

QUADRUPLE 2-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS

SDFS053A – MARCH 1987 – REVISED OCTOBER 1993

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

PARAMETER	TEST CONDITIONS		SN54F157A			SN74F157A			UNIT
			MIN	TYP†	MAX	MIN	TYP†	MAX	
V_{IK}	$V_{CC} = 4.5\text{ V}$,	$I_I = -18\text{ mA}$			-1.2			-1.2	V
V_{OH}	$V_{CC} = 4.5\text{ V}$,	$I_{OH} = -1\text{ mA}$	2.5	3.4		2.5	3.4		V
	$V_{CC} = 4.75\text{ V}$,	$I_{OH} = -1\text{ mA}$				2.7			
V_{OL}	$V_{CC} = 4.5\text{ V}$,	$I_{OL} = 20\text{ mA}$		0.3	0.5		0.3	0.5	V
I_I	$V_{CC} = 5.5\text{ V}$,	$V_I = 7\text{ V}$			0.1			0.1	mA
I_{IH}	$V_{CC} = 5.5\text{ V}$,	$V_I = 2.7\text{ V}$			20			20	μA
I_{IL}	$V_{CC} = 5.5\text{ V}$,	$V_I = 0.5\text{ V}$			-0.6			-0.6	mA
I_{OS}^\ddagger	$V_{CC} = 5.5\text{ V}$,	$V_O = 0$	-60		-150	-60		-150	mA
I_{CC}	$V_{CC} = 5.5\text{ V}$,	$V_I = 4.5\text{ V}$		15	23		15.5	23	mA

† 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, and the duration of the short circuit should not exceed one second.

switching characteristics (see Note 2)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 5\text{ V}$, $C_L = 50\text{ pF}$, $R_L = 500\ \Omega$, $T_A = 25^\circ\text{C}$			$V_{CC} = 4.5\text{ V to }5.5\text{ V}$, $C_L = 50\text{ pF}$, $R_L = 500\ \Omega$, $T_A = \text{MIN to MAX}^\S$				UNIT
			'F157A			SN54F157A		SN74F157A		
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t_{PLH}	$\overline{A/B}$	Y	3.2	6.6	10	3.2	12	3.2	11	ns
t_{PHL}			2.2	4.6	7	2.2	9	2.2	8	
t_{PLH}	\overline{G}	Y	4.2	6.6	9.5	4.2	13	4.2	11	ns
t_{PHL}			1.7	4.1	6.5	1.7	7.5	1.7	7	
t_{PLH}	A or B	Y	1.7	4.1	6	1.7	7.5	1.7	6.5	ns
t_{PHL}			1.7	3.6	5.5	1	7.5	1.2	7	

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

NOTE 2: Load circuits and voltage waveforms are shown in Section 1.



TAPE AND REEL INFORMATION

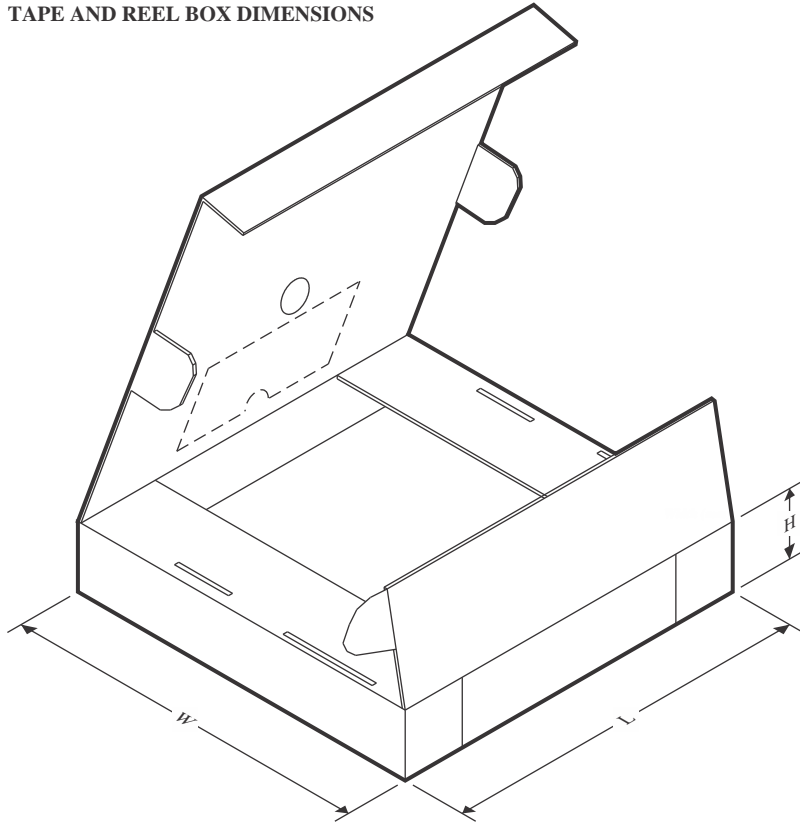


QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



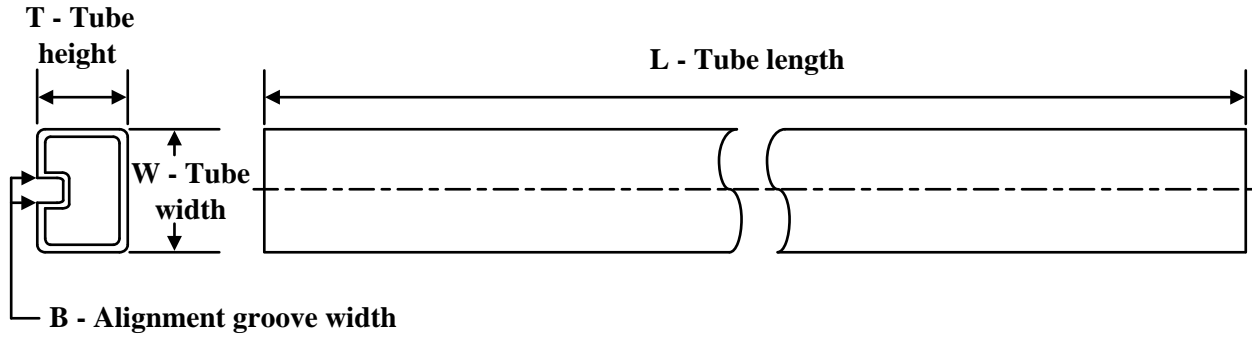
*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
SN74F157ADR	SOIC	D	16	2500	330.0	16.4	6.5	10.3	2.1	8.0	16.0	Q1
SN74F157ANSR	SOP	NS	16	2000	330.0	16.4	8.2	10.5	2.5	12.0	16.0	Q1

TAPE AND REEL BOX DIMENSIONS


*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74F157ADR	SOIC	D	16	2500	340.5	336.1	32.0
SN74F157ANSR	SOP	NS	16	2000	356.0	356.0	35.0

TUBE


*All dimensions are nominal

Device	Package Name	Package Type	Pins	SPQ	L (mm)	W (mm)	T (μm)	B (mm)
SN74F157AN	N	PDIP	16	25	506	13.97	11230	4.32
SN74F157AN	N	PDIP	16	25	506	13.97	11230	4.32

IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATA SHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, regulatory or other requirements.

These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI's products are provided subject to [TI's Terms of Sale](#) or other applicable terms available either on [ti.com](https://www.ti.com) or provided in conjunction with such TI products. TI's provision of these resources does not expand or otherwise alter TI's applicable warranties or warranty disclaimers for TI products.

TI objects to and rejects any additional or different terms you may have proposed.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2024, Texas Instruments Incorporated