- Three-State Versions of '151, 'LS151, 'S151
- Three-State Outputs Interface Directly with System Bus
- Perform Parallel-to-Serial Conversion
- Permit Multiplexing from N-lines to One Line
- Complementary Outputs Provide True and Inverted Data
- Fully Compatible with Most TTL Circuits

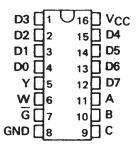
TYPE	MAX NO. OF COMMON OUTPUTS	TYPICAL AVG PROP DELAY TIME (D TO Y)	TYPICAL POWER DISSIPATION
SN54251	49	17 ns	250 mW
SN74251	129	17 ns	250 mW
SN54LS251	49	17 ns	35 mW
SN74LS251	129	17 ns	35 mW
SN54S251	39	8 ns	275 mW
SN74S251	129	8 ns	275 mW

#### description

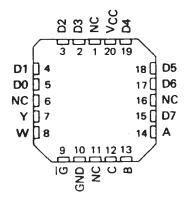
These monolithic data selectors/multiplexers contain full on-chip binary decoding to select one-of-eight data sources and feature a strobe-controlled three-state output. The strobe must be at a low logic level to enable these devices. The three-state outputs permit a number of outputs to be connected to a common bus. When the strobe input is high, both outputs are in a high-impedance state in which both the upper and lower transistors of each totem-pole output are off, and the output neither drives nor loads the bus significantly. When the strobe is low, the outputs are activated and operate as standard TTL totem-pole outputs.

To minimize the possibility that two outputs will attempt to take a common bus to opposite logic levels, the output control circuitry is designed so that the 'average output disable time is shorter than the average output enable time. The SN54251 and SN74251 have output clamp diodes to attenuate reflections on the bus line.

SN54251, SN54LS251, SN54S251 . . . J OR W PACKAGE SN74251 . . . N PACKAGE SN74LS251, SN74S251 . . . D OR N PACKAGE (TOP VIEW)



SN54LS251, SN54S251 . . . FK PACKAGE (TOP VIEW)



NC - No internal connection

#### **FUNCTION TABLE**

	11	VPUT	S	OUT	PUTS
S	ELEC	T	ENABLE	v	w
С	В	A	G	_	**
Х	х	Х	н	z	Z
L	L	L	L	D0	DO
L	L	н	L	D1	Dī
L	н	L	L	D2	D2
L	Н	Н	L	D3	D3
н	L	L	L	D4	D4
н	L	н	L	05	D5
н	н	L	L	D6	D6
н	н	н	L	D7	D7

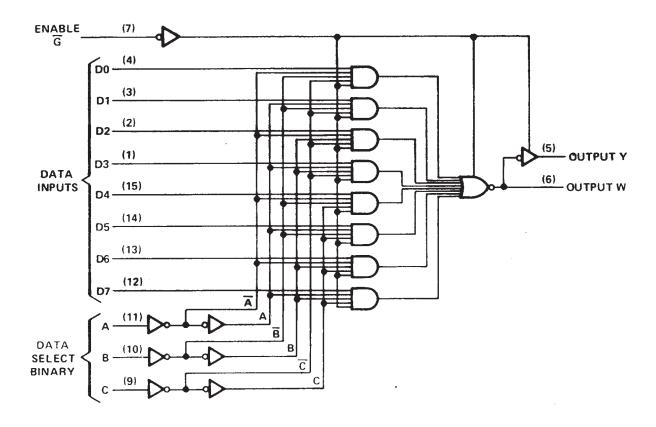
H = high logic level, L = low logic level

X = irrelevant, Z = high impedance (off)

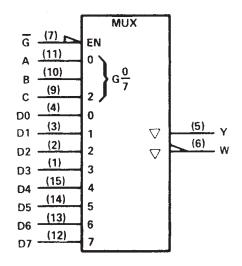
D0, D1 . . . D7 = the level of the respective D input

#### SDLS085 - DECEMBER 1972 - REVISED MARCH 1988

## logic diagram (positive logic)



# logic symbol†



<sup>&</sup>lt;sup>†</sup>This symbol is in accordance with ANSI/IEEE Std. 91-1984 and IEC Publication 617-12. Pin numbers shown are for D, J, N, and W packages.



# SN54251 SN74251, DATA SELECTORS/MULTIPLEXERS WITH 3-STATE OUTPUTS

SDLS085 - DECEMBER 1972 - REVISED MARCH 1988

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

Supply voltage, V <sub>CC</sub> (see Note 1)	 
Input voltage	 
Off-state output voltage	 
Operating free-air temperature range: SN54251	 
Storage temperature range	 

NOTE 1: Voltage values are with respect to network ground terminal.

#### recommended operating conditions

The state of the s		SN5425	1		SN7425	1	UNIT
	MIN	NOM	MAX	MIN	MOM	MAX	UNIT
Supply voltage, V <sub>CC</sub>	4.5	5	5.5	4.75	5	5.25	٧
High-level output current, IOH			-2			-5.2	mA
Low-level output current, IOL			16			16	mA
Operating free-air temperature, TA	-55		125	0		70	°C

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

	PARAMETER	TEST CONDI	TIONS	MIN	TYP‡	MAX	UNIT
VIH	High-level input voltage			2	-		V
VIL	Low-level input voltage					0.8	V
VIK	Input clamp voltage	V <sub>CC</sub> = MIN, I <sub>I</sub> =	-12 mA			-1.5	V
V <sub>OH</sub>	High-level output voltage	""	1 = 2 V, 1 = MAX	2.4	3.2		٧
VOL	Low-level output voltage	, , ,,	= 2 V, = 16 mA		0.2	0.4	٧
loz	Off-state (high-impedance-state) output current	V <sub>CC</sub> = MAX,	V <sub>O</sub> = 2.4 V			40	μА
		V <sub>IH</sub> = 2 V	V <sub>O</sub> = 0.4 V			-40	
v <sub>o</sub>	Output clamp voltage	V <sub>CC</sub> = MAX,	$I_0 = -12 \text{ mA}$			1.5	V
٧٥	Output clamp vortage	V <sub>IH</sub> = 4.5 V	I <sub>O</sub> = 12 mA		٧٥	CC+1.5	1
T <sub>1</sub>	Input current at maximum input voltage	V <sub>CC</sub> = MAX, V <sub>I</sub>	= 5.5 V			1	mA
1 <sub>1H</sub>	High-level input current	V <sub>CC</sub> = MAX, V <sub>I</sub>	= 2.4 V			40	μΑ
TIL	Low-level input current	V <sub>CC</sub> = MAX, V <sub>I</sub>	= 0.4 V			-1.6	mA
los	Short-circuit output current §	V <sub>CC</sub> = MAX		-18		-55	mA
Icc	Supply current	V <sub>CC</sub> = MAX, All All outputs open	inputs at 4.5 V,		38	62	mA

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



 $<sup>^{\</sup>ddagger}$ All typical values are at  $V_{CC} = 5 \text{ V}$ ,  $T_{A} = 25^{\circ} \text{C}$ .

<sup>§</sup>Not more than one output should be shorted at a time.

# SN54251 SN74251, DATA SELECTORS/MULTIPLEXERS WITH 3-STATE OUTPUTS

SDLS085 - DECEMBER 1972 - REVISED MARCH 1988

## switching characteristics, VCC = 5 V, TA = 25°C

PARAMETER†	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	MIN	TYP	MAX	UNIT
tРLН	A, B, or C	· Y			29	45	
<sup>t</sup> PHL	(4 levels)		Ī		28	45	ns
<b>'</b> PLH	A, B, or C	w			20	33	กร
tPHL .	(3 levels)	•			21	33	1 115
ФLH	Any D	Y	Cլ = 50 pF,		17	28	ns
ФНL	Ally D	•	$R_L = 400 \Omega$ ,		18	28	"
tPLH .	Any D	w	See Note 2		10	15	ns
ФНL	Ally D	1	See Note 2		9	15	""
<sup>t</sup> PZH	ē ·	Y			17	27	
<sup>t</sup> PZL	9	1			26	40	ns
<sup>t</sup> PZH	G	w	1		17	27	ns
†PZL		**			24	40	'''
, tPHZ	G	Y	C <sub>L</sub> = 5 pF,		5	8	ns
<sup>t</sup> PLZ			$R_L = 400 \Omega$ ,		15	23	113
tPHZ	G	w	See Note 2		5	8	ns
<sup>t</sup> PLZ	1	} **	See Note 2		15	23	] '''

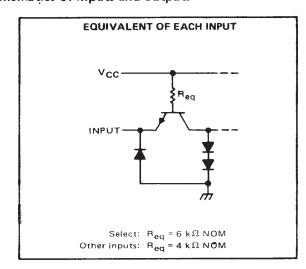
 $<sup>^{\</sup>dagger}t_{PLH}$  = Propagation delay time, low-to-high-level output

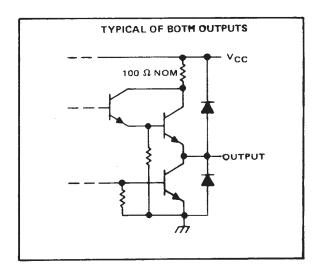
tpzH = Output enable time to high level tpzL = Output enable time to low level

 $t_{PHZ} = Output$  disable time from high level  $t_{PLZ} = Output$  disable time from low level

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

#### schematics of inputs and outputs





t<sub>PHL</sub> = Propagation delay time, high-to-low-level output

# SN54LS251 SN74LS251, DATA SELECTORS/MULTIPLEXERS WITH 3-STATE OUTPUTS

SDLS085 - DECEMBER 1972 - REVISED MARCH 1988

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

Supply voltage, V <sub>CC</sub> (see Note 1)														7 V	•
Input voltage										.•				7 \	/
Off-state output voltage														5.5 V	•
Operating free-air temperature range: SI	N54LS251										5	5°	C to	າ 125°C	;
Si	N74LS251											0	°C	to 70°C	)
Storage temperature range										_	-6	5°	C to	າ 150°C	•

NOTE 1: Voltage values are with respect to network ground terminal.

#### recommended operating conditions

		S	N54LS2	51	S	N74LS2	251	UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	UNIT
Vcc	Supply voltage	4.5	5	5.5	4.75	5	5.25	٧
VIH	High-level input voltage	2			2			V
VIL	Low-level input voltage			0.7			0.8	V
ТОН	High-level output current			- 1			- 2.6	mA
lOL	Low-level output current			4			8	mΑ
TA	Operating free-air temperature	- 55		125	0		70	°C

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

DADAMETED		TEST CON	DITIONST		S	N54LS2	51	SI	N74LS2	51	UNIT
PARAMETER		TEST CON	יפאטוווט		MIN	TYP ‡	MAX	MIN	TYP\$	MAX	UNIT
VIK	V <sub>CC</sub> = MIN,	I <sub>I</sub> = - 18 mA					- 1.5			- 1.5	V
V <sub>OH</sub>	V <sub>CC</sub> = MIN, I <sub>OH</sub> = MAX	V <sub>IH</sub> = 2 V,	VIL = MAX		2.4	3.4		2.4	3.1		V
\/ -	VCC = MIN,	V <sub>1H</sub> = 2 V,		IOL = 4 mA		0.25	0.4		. 0.25	0.4	V
VOL	VIL = MAX			10L = 8 mA					0.35	0.5	ľ
1	\/ = MAX	V = 2 V		V <sub>O</sub> = 2.7 V			- 20			20	μА
loz	V <sub>CC</sub> = MAX,	V(H - 2 V		V <sub>O</sub> = 0.4 V			20			- 20	μΑ.
11	V <sub>CC</sub> = MAX,	V <sub>I</sub> = 7 V					0.1			0.1	mA
ин	V <sub>CC</sub> = MAX,	V <sub>1</sub> = 2.7 V					20			20	μА
Enable G	V <sub>CC</sub> = MAX,	V: = 0.4					- 0.2			0.2	mA
All other	VCC - MAA,	V   - 0.4					- 0.4			- 0.4	1112
los §	V <sub>CC</sub> = MAX				- 30		130	- 30		- 130	mA
				Condition A		6.1	10		6.1	10	mA
¹cc	V <sub>CC</sub> = MAX,	See Note 3		Condition B		7.1	12		7.1	12	'''A
	ı			1	. E			1			

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

- A. Enable grounded.
- B. Strobe at 4.5 V.



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

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

NOTE 3: I<sub>CC</sub> is measured with the outputs open and all data and select inputs at 4.5 V under the following conditions:

# SN54LS251 SN74LS251, (TIM9905), DATA SELECTORS/MULTIPLEXERS WITH 3-STATE OUTPUTS

SDLS085 - DECEMBER 1972 - REVISED MARCH 1988

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

PARAMETER†	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	MIN	TYP	MAX	UNIT
tPLH .	A, B, or C	Y			29	45	
tPHL .	(4 levels)	1			28	45	กร
tPLH	A, B, or C	w			20 .	33	ns
tPHL.	(3 levels)	1			. 21	33	""
ФLH	Any D	Y			17	28	ns
ФHL	1 ^''''		$C_L = 15 pF$ ,		18	28	173
tPLH .	Any D	w	$R_L = 2 k\Omega$ ,		10	. 15	ns
tPHL	1	"	See Note 2		9	15	113
<sup>t</sup> PZH	G	Y			30	45	ns
<sup>t</sup> PZL	1	'			26	40	""
<sup>t</sup> PZH	Ğ	w	]		17	27	ns
tPZL .	1 "	"			24	40	'''
<sup>t</sup> PHZ	G	Y	C 5 - 5		30	45	ns
<sup>t</sup> PLZ	1	1	C <sub>L</sub> = 5 pF,		15	25	113
<sup>†</sup> PHZ	Ğ	w	$R_{L} = 2 k\Omega,$ See Note 2		37	55	ns
<sup>t</sup> PLZ	1	"	See Note 2		15	25	

†tpLH = Propagation delay time, low-to-high-level output

tpHL = Propagation delay time, high-to-low-level output

tpzH = Output enable time to high level

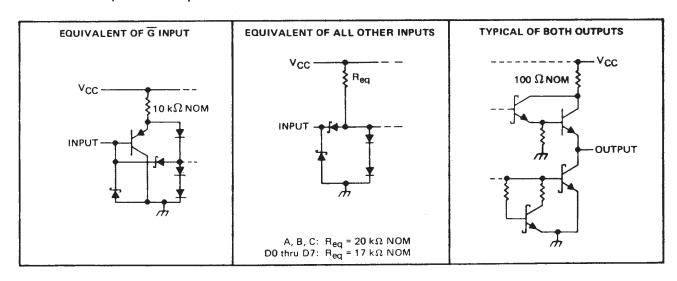
 $t_{PZL}$  = Output enable time to low level

tpHZ = Output disable time from high level

tpLZ = Output disable time from low level

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

#### schematics of inputs and outputs



# SN54S251 SN74S251, DATA SELECTORS/MULTIPLEXERS WITH 3-STATE OUTPUTS

SDLS085 - DECEMBER 1972 - REVISED MARCH 1988

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

Supply voltage, VCC (see Note 1)	 ٧
Input voltage	 V
Operating free-air temperature range: SN54S251	 °C
SN74S251	 °C
Storage temperature range	 °C

NOTE 1: Voltage values are with respect to network ground terminal.

#### recommended operating conditions

	S	N54S25	51		N74S2	51 <sub>-</sub>	
	MIN	NOM	MAX	MIN	NOM	MAX	UNIT
Supply voltage, V <sub>CC</sub>	4.5	5	- 5.5	4.75	5	5.25	V
High-level output current, IOH			-2			-6.5	mA
Low-level output current, IOL			20			20	mA
Operating free-air temperature, TA	-55		125	0		70	°C

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

	PARAMETER		TES	T CONDITIONS	•	MIN	TYP‡	MAX	UNIT
VIH	High-level input voltage					2			V
VIL	Low-level input voltage							0.8	V
Vικ	Input clamp voltage	V <sub>CC</sub> = MIN,	11	= −18 mA				-1.2	V
1.4		V <sub>CC</sub> = MIN,	٧ı	H = 2 V,	SN545'	2.4	3.4		V
VOH	High-level output voltage	V <sub>IL</sub> = 0.8 V,	10	H = MAX	SN745'	2.4	3.2		·
		V <sub>CC</sub> = MIN,	٧ı	H = 2 V,				0.5	V
VOF	Low-level output voltage	V <sub>IL</sub> = 0.8 V,	10	L = 20 mA				0.5	, v
	0# #	V <sub>CC</sub> = MAX,		Vo = 2.4 V	•	1		50	
loz	Off-state (high-impedance-state) output current	V <sub>IH</sub> = 2 V		V <sub>O</sub> = 0.5 V				-50	μΑ
- 4	Input current at maximum input voltage	V <sub>CC</sub> = MAX,	٧ı	= 5.5 V				1	mA
Чн	High-level input current	VCC = MAX,	Vı	= 2.7 V				50	μА
HE	Low-level input current	V <sub>CC</sub> = MAX,	Vi	= 0.5 V				-2	mA .
los	Short-circuit output current	V <sub>CC</sub> = MAX				-40		-100	mA
	6	V <sub>CC</sub> = MAX,	All	inputs at 4.5 V,		1	55	85	mA
1cc	Supply current	All outputs open				35	00	IIIA_	

<sup>†</sup> For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable type. ‡AII typical values are at  $V_{CC} = 5 \text{ V}$ ,  $T_A = 25^{\circ} \text{ C}$ .



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

# SN54S251 SN74S251, DATA SELECTORS/MULTIPLEXERS WITH 3-STATE OUTPUTS

SDLS085 - DECEMBER 1972 - REVISED MARCH 1988

## switching characteristics, VCC = 5 V, TA = 25°C

PARAMETER <sup>†</sup>	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	MIN TY	P MAX	UNIT	
tPLH	A, B, or C	Y		1:	2 18	ns	
tPHL	(4 levels)	ı		1:	3 19.5	] ''`	
tРLН	A, B, or C	w	CL = 15 pF,	10	15	ns	
tPHL.	(3 levels)	**	R <sub>L</sub> = 280 Ω, Y See Note 2		13.5	1	
<sup>†</sup> PLH	Any D	~			12	ns	
<sup>t</sup> PHL	Any	'			3 12	1 "	
<sup>t</sup> PLH	Any D	w		4.		ns	
<sup>t</sup> PHL		<b>"</b>		4.	5 7		
<sup>t</sup> PZH	G	Υ	CL = 50 pF,		3 19.5	ns	
<sup>t</sup> PZL	٦ ٥		R <sub>L</sub> = 280 Ω,	1.	21		
<sup>t</sup> PZH	<u> </u>	w	See Note 2	1:	3 19.5		
<sup>†</sup> PZL	7 . 6	W	See Note 2	1.	21	] ""	
<sup>†</sup> PHZ	ē	Y	C. = 5 pE	5.	8.5	ns	
<sup>†</sup> PLZ	٥ -	<b>'</b>	C <sub>L</sub> = 5 pF,		9 14	] ""	
<sup>†</sup> PHZ	G	w	R <sub>L</sub> = 280 Ω, See Note 2	5.	8.5	8.5	
tPLZ		•••	See Note 2		14	ns	

†tpLH = Propagation delay time, low-to-high-level output

tpHL = Propagation delay time, high-to-low-level output

tpZH = Output enable time to high level

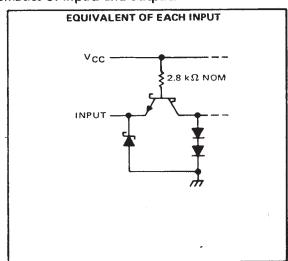
tpzL = Output enable time to low level

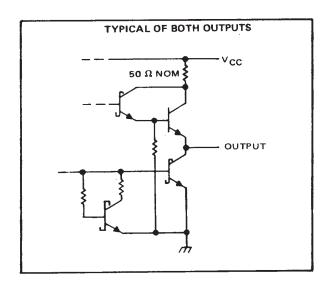
tPHZ = Output disable time from high level

tpLZ = Output disable time from low level

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

#### schematics of inputs and outputs





25-Jan-2012

## **PACKAGING INFORMATION**

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan <sup>(2)</sup>	Lead/ Ball Finish	MSL Peak Temp <sup>(3)</sup>	Samples (Requires Login)
7601601EA	ACTIVE	CDIP	J	16	1	TBD	Call TI	Call TI	
7601601FA	ACTIVE	CFP	W	16	1	TBD	Call TI	Call TI	
7601601FA	ACTIVE	CFP	W	16	1	TBD	Call TI	Call TI	
8002201EA	OBSOLETE	CDIP	J	16		TBD	Call TI	Call TI	
8002201EA	OBSOLETE	CDIP	J	16		TBD	Call TI	Call TI	
8002201FA	OBSOLETE	CFP	W	16		TBD	Call TI	Call TI	
8002201FA	OBSOLETE	CFP	W	16		TBD	Call TI	Call TI	
JM38510/07905BEA	OBSOLETE	CDIP	J	16		TBD	Call TI	Call TI	
JM38510/07905BEA	OBSOLETE	CDIP	J	16		TBD	Call TI	Call TI	
JM38510/30905B2A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	
JM38510/30905B2A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	
JM38510/30905BEA	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type	
JM38510/30905BEA	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type	
JM38510/30905BFA	ACTIVE	CFP	W	16	1	TBD	A42	N / A for Pkg Type	
JM38510/30905BFA	ACTIVE	CFP	W	16	1	TBD	A42	N / A for Pkg Type	
M38510/30905B2A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	
M38510/30905B2A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	
M38510/30905BEA	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type	
M38510/30905BEA	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type	
M38510/30905BFA	ACTIVE	CFP	W	16	1	TBD	A42	N / A for Pkg Type	
M38510/30905BFA	ACTIVE	CFP	W	16	1	TBD	A42	N / A for Pkg Type	
SN54251J	OBSOLETE	CDIP	J	16		TBD	Call TI	Call TI	
SN54251J	OBSOLETE	CDIP	J	16		TBD	Call TI	Call TI	
SN54LS251J	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type	
SN54LS251J	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type	
SN54S251J	OBSOLETE	CDIP	J	16		TBD	Call TI	Call TI	
SN54S251J	OBSOLETE	CDIP	J	16		TBD	Call TI	Call TI	
SN74251N	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI	
SN74251N	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI	
SN74251N3	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI	



www.ti.com 25-Jan-2012

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan <sup>(2)</sup>	Lead/ Ball Finish	MSL Peak Temp <sup>(3)</sup>	Samples (Requires Login)
SN74251N3	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI	
SN74LS251D	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74LS251D	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74LS251DE4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74LS251DE4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74LS251DG4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74LS251DG4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74LS251DR	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74LS251DR	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74LS251DRE4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74LS251DRE4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74LS251DRG4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74LS251DRG4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74LS251N	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type	
SN74LS251N	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type	
SN74LS251N3	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI	
SN74LS251N3	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI	
SN74LS251NE4	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type	
SN74LS251NE4	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type	
SN74LS251NSR	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74LS251NSR	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	





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Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan <sup>(2)</sup>	Lead/ Ball Finish	MSL Peak Temp <sup>(3)</sup>	Samples (Requires Login)
SN74LS251NSRE4	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74LS251NSRE4	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74LS251NSRG4	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74LS251NSRG4	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74S251D	OBSOLETE	SOIC	D	16		TBD	Call TI	Call TI	
SN74S251D	OBSOLETE	SOIC	D	16		TBD	Call TI	Call TI	
SN74S251N	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI	
SN74S251N	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI	
SN74S251N3	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI	
SN74S251N3	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI	
SNJ54251J	OBSOLETE	CDIP	J	16		TBD	Call TI	Call TI	
SNJ54251J	OBSOLETE	CDIP	J	16		TBD	Call TI	Call TI	
SNJ54LS251FK	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	
SNJ54LS251FK	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	
SNJ54LS251J	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type	
SNJ54LS251J	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type	
SNJ54LS251W	ACTIVE	CFP	W	16	1	TBD	A42	N / A for Pkg Type	
SNJ54LS251W	ACTIVE	CFP	W	16	1	TBD	A42	N / A for Pkg Type	
SNJ54S251FK	OBSOLETE	LCCC	FK	20		TBD	Call TI	Call TI	
SNJ54S251FK	OBSOLETE	LCCC	FK	20		TBD	Call TI	Call TI	
SNJ54S251J	OBSOLETE	CDIP	J	16		TBD	Call TI	Call TI	
SNJ54S251J	OBSOLETE	CDIP	J	16		TBD	Call TI	Call TI	
SNJ54S251W	OBSOLETE	CFP	W	16		TBD	Call TI	Call TI	
SNJ54S251W	OBSOLETE	CFP	W	16		TBD	Call TI	Call TI	

<sup>(1)</sup> The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

**PREVIEW:** Device has been announced but is not in production. Samples may or may not be available.





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**OBSOLETE:** TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check http://www.ti.com/productcontent for the latest availability information and additional product content details.

**TBD:** The Pb-Free/Green conversion plan has not been defined.

**Pb-Free (RoHS):** TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

**Pb-Free (RoHS Exempt):** This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

(3) MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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#### OTHER QUALIFIED VERSIONS OF SN54251, SN54LS251, SN54S251, SN74251, SN74LS251, SN74S251:

Catalog: SN74251, SN74LS251, SN74S251

Military: SN54251, SN54LS251, SN54S251

NOTE: Qualified Version Definitions:

- Catalog TI's standard catalog product
- Military QML certified for Military and Defense Applications



## TAPE AND REEL INFORMATION





	Dimension designed to accommodate the component width
B0	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers

QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



#### \*All dimensions are nominal

Device	Package Type	Package Drawing			Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
SN74LS251DR	SOIC	D	16	2500	330.0	16.4	6.5	10.3	2.1	8.0	16.0	Q1
SN74LS251NSR	SO	NS	16	2000	330.0	16.4	8.2	10.5	2.5	12.0	16.0	Q1





\*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74LS251DR	SOIC	D	16	2500	333.2	345.9	28.6
SN74LS251NSR	SO	NS	16	2000	346.0	346.0	33.0

## 14 LEADS SHOWN



- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- C. This package is hermetically sealed with a ceramic lid using glass frit.
- D. Index point is provided on cap for terminal identification only on press ceramic glass frit seal only.
- E. Falls within MIL STD 1835 GDIP1-T14, GDIP1-T16, GDIP1-T18 and GDIP1-T20.

# W (R-GDFP-F16)

# CERAMIC DUAL FLATPACK



- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- C. This package can be hermetically sealed with a ceramic lid using glass frit.
- D. Index point is provided on cap for terminal identification only.
- E. Falls within MIL STD 1835 GDFP1-F16 and JEDEC MO-092AC



# FK (S-CQCC-N\*\*)

## LEADLESS CERAMIC CHIP CARRIER

28 TERMINAL SHOWN



- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- C. This package can be hermetically sealed with a metal lid.
- D. Falls within JEDEC MS-004



# N (R-PDIP-T\*\*)

## PLASTIC DUAL-IN-LINE PACKAGE

16 PINS SHOWN



- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- Falls within JEDEC MS-001, except 18 and 20 pin minimum body length (Dim A).
- The 20 pin end lead shoulder width is a vendor option, either half or full width.



# D (R-PDS0-G16)

## PLASTIC SMALL OUTLINE



- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.006 (0,15) each side.
- Body width does not include interlead flash. Interlead flash shall not exceed 0.017 (0,43) each side.
- E. Reference JEDEC MS-012 variation AC.



## **MECHANICAL DATA**

# NS (R-PDSO-G\*\*)

# 14-PINS SHOWN

## PLASTIC SMALL-OUTLINE PACKAGE



- A. All linear dimensions are in millimeters.
- B. This drawing is subject to change without notice.
- C. Body dimensions do not include mold flash or protrusion, not to exceed 0,15.



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