- Full-Carry Look-Ahead Across the Four Rits
- Systems Achieve Partial Look-Ahead Performance with the Economy of Ripple Carry
- Supply Voltage and Ground on Corner Pins to Simplify P-C Board Layout

TYPICAL ADD TIMES

	TWO	TWO	TYPICAL POWER
	8-BIT	16-BIT	DISSIPATION
TYPE	WORDS	WORDS	PER ADDER
'283	23ns	43ns	310 mW
'LS283	25ns	45ns	95 mW
' \$283	15ns	30ns	510 mW

description

The '283 and 'LS283 adders are electrically and functionally identical to the '83A and 'LS83A, respectively; only the arrangement of the terminals has been changed. The 'S283 high performance versions are also functionally identical.

These improved full adders perform the addition of two 4-bit binary words. The sum (Σ) outputs are provided for each bit and the resultant carry (C4) is obtained from the fourth bit. These adders feature full internal look-ahead across all four bits generating the carry term in ten nanoseconds, typically, for the '283 and 'LS283, and 7.5 nanoseconds for the 'S283. This capability provides the system designer with partial look-ahead performance at the economy and reduced package count of a ripple-carry implementation.

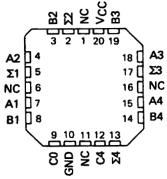
The adder logic, including the carry, is implemented in its true form. End around carry can be accomplished without the need for logic or level inversion.

Series 54, Series 54LS, and Series 54S circuits are characterized for operation over the full temperature range of -55°C to 125°C. Series 74, Series 74LS, and Series 74S circuits are characterized for 0°C to 70°C operation.

SN54283, SN54LS283 . . . J OR W PACKAGE SN54S283 . . . J PACKAGE **SN74283...N PACKAGE** SN74LS283, SN74S283 . . . D OR N PACKAGE (TOP VIEW) 22 []1 U16 [] VCC 15 B3 14 🗌 A3 **A2** 13 **Σ3** Σ1 12 A4 **B1** 11 🗌 B4 10 🔲 Σ4 CO

SN54LS283, SN54S283 . . . FK PACKAGE (TOP VIEW)

GND



NC - No internal connection

FUNCTION TABLE

						OUT	PUT		
ŀ				WHE	N	/	WHE	N	
1	INF	TU		C0 =	٧ ا		C0 =	н/	
1				/	/ W	HEN		/ W	HEN
				_	C	2 - L	/	C	2 - H
A1/]B1/	A2/	B2/	21/	Σ2/	C2/	Σ1/	Σ2/	C2/
Z.A.	V 83	<u> </u>	84	<u>Σ3</u>	<u> 24</u>	<u> </u>	<u> </u>	Z4	Z 04
L	L	L	L	L	L	L	н	ه ا	L
Н	L	L	L	н	L	L	L	н	L
L	H	L	L	н	L	L	L	н	L
Н	н	L	L	l L	н	L	н	н	L
L	L	Н	L	L	н	L	н	н	L
Н	L	н	L	н	н	L	L	L	н
L	н	н	L	н	н	L	L	L	н
H	н	н	L	L	L	н	н.	L	н
L	L	L	н	L	н	L	н	44	L
н	L	L	н	н	н	L	L	L	н
L	н	L	н	H	н	L	L.	L	н
Н	н	L	н	L	L	н	н	L	н
L	L	Н	н	L	L	н	н	L	н
н	L	н	н	н	L	н	L	Н	н
L	н	н	н	н	L	н	L	Н	н
Н	Н	Н	н	L	н	н	н	н	н

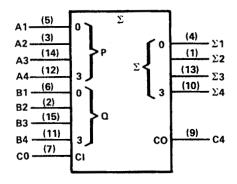
H = high level, L = low level

NOTE: Input conditions at A1, B1, A2, B2, and C0 are used to determine outputs Σ1 and Σ2 and the value of the internal carry C2. The values at C2, A3, B3, A4, and B4 are then used to determine outputs Σ3, Σ4, and C4.



SDLS095A - OCTOBER 1976 - REVISED MARCH 1988

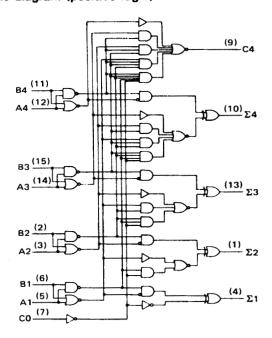
logic symbol†



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

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

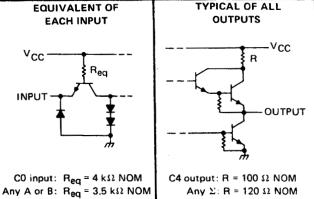
logic diagram (positive logic)



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

schematics of inputs and outputs

EQUIVALENT OF EACH INPUT v_{cc}



'LS283

EQUIVALENT OF TYPICAL OF ALL OUTPUTS **EACH INPUT** vccv_{cc} 100 Ω NOM Req INPUT OUTPUT C0 input: $R_{eq} = 17 \text{ k}\Omega \text{ NOM}$ Any A or B: $R_{eq} = 8.5 \text{ k}\Omega \text{ NOM}$

TYPICAL OF ALL OUTPUTS **EQUIVALENT OF EACH INPUT** ۷cç **50 Ω NOM** 2.8 kΩ NOM INPUT OUTPUT

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

Supply voltage, VCC (see Note 1) .																					7V
Input voltage: '283, 'S283	,								٠.								•				5.5V
'LS283	,																				7V
Interemitter voltage (see Note 2) .																					5.5V
Operating free-air temperature range:	: 1	SN5	42	33,	SN	54	LS2	283	, S	N5	452	283						5	5°(C to	125°C
	:	SN7	42	83,	SN	74	LS2	283	3, S	N7	452	283							0	°C t	o 70°C
Storage temperature range																		6	5°(Cto	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. This rating applies for the '283 and 'S283 only between the following pairs: A1 and B1, A2 and B2, A3 and B3, A4 and B4.



recommended operating conditions

			SN5428	3		N7428	3	
		MIN	NOM	MAX	MIN	NOM	MAX	UNIT
Supply Voltage, VCC		4.5	5	5.5	4.75	5	5.25	V
High-level output current, IOH	Any output except C4			-800			-800	
riginiever output current, tOH	Output C4	·		-400			- 400	μА
Low level output ourrent lev	Any output except C4			16			16	
Low-level output current, IOL	Output C4			8			8	mA
Operating free-air temperature, TA		55		125	0		70	°C

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

	PARAM	ETED	TEST CO	NDITIONS†		SN5428	3		SN7428	3	
	ranaiv	EIEN	1EST CO	NDITIONS.	MIN	TYP‡	MAX	MIN	TYP‡	MAX	UNIT
VIH	High-level input volt	tage			2			2			V
VIL	Low-level input volt	age					0.8			0.8	V
VIK	Input clamp voltage	,	VCC = MIN,	I _I = -12 mA			-1.5			-1.5	V
V _{OH}	High-level output vo	oltage	V _{CC} = MIN, V _{IL} = 0.8 V,		2.4	3.6		2.4	3.6	>	v
VOL	Low-level output vo	Itage	V _{CC} = MIN, V _{IL} = 0.8 V,	V _{IH} = 2 V,		0.2	0.4		0.2	0.4	v
I _I	Input current at ma input voltage	ximum	V _{CC} = MAX,	V _I = 5.5 V			1			1	mA
ĦН	High-level input cur	rent	VCC = MAX,	V ₁ = 2.4 V			40			40	μА
IL	Low-level input curi	rent	VCC = MAX,	V _I = 0.4 V			-1.6			-1.6	mA
los	Short-circuit	Any output except C4	V _{CC} = MAX		-20		-55	-18		-55	
.05	output current §	Output C4	1 ****		-20		-70	-18		-70	mA ·
laa	Supply surrout		V _{CC} = MAX,	All B low, other inputs at 4.5 V		56			56		
¹cc	Supply current		Outputs open	All inputs at 4.5 V		66	99		66	110	mA

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

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

PARAMETER !	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	MIN	TYP	MAX	UNIT
^t PLH	СО	A 53			14	21	†
tPHL_]	Any Σ	C _L = 15 pF, R _L = 400 Ω,		12	21	ns
^t PLH	A _i or B _i	5.	See Note 3		16	24	<u> </u>
^t PHL	7,016,	Σ_{i}			16	24	ns
tPLH .	· C0	C4			9	14	
^t PHL	1	C4	C _L = 15 pF, R _L = 780 Ω,		11.	16	ns
^t PLH	A. or B.	C4	See Note 3		9	14	
tPHL.	A _i or B _i	L4			11	16	ns

 $[\]P_{tPLH}$ = propagation delay time, low-to-high-level output

NOTE 3: Load circuits and voltage waveforms are shown in Section 1.



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

SOnly one output should be shorted at a time.

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

recommended operating conditions

	S	N54LS2	83	SI	N74LS2	83	Ī
	MIN	NOM	MAX	MIN	NOM	MAX	UNIT
Supply voltage, V _{CC}	4.5	5	5.5	4.75	5	5.25	V
High-level output current, IOH			-400			400	μΑ
Low-level output current, IOL			4			8	mA
Operating free-air temperature, TA	-55		125	0		70	°C

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

	DADAMET		700	T CONDITIO	auc†	SI	154LS2	83	SI	N74LS2	83	
	PARAMET	EH	1 E 8	ST CONDITIO	NS'	MIN	TYP [‡]	MAX	MIN	TYP [‡]	MAX	UNIT
VIH	High-level input v	oltage				2			2			V
VIL	Low-level input v	oltage						0.7			0.8	٧
VIK	Input clamp volta	age	V _{CC} = MIN,	1 _j = -18 mA				-1.5			-1.5	٧
Voн	High-level output	voltage	V _{CC} = MIN, I _{OH} = -400 μA		VIL = VIL max,	2.5	3.4		2.7	3.4		v
Voi	Low-level output	voltage	V _{CC} = MIN,	V _{IH} = 2 V,	IOL = 4 mA		0.25	0.4		0.25	0.4	, , ,
VOL	Low-level output	Vortage	VıL = VıL max		IOL = 8 mA					0.35	0.5	V
	Input current at maximum	Any A or B	V MAY	V - 7 V				0.2			0.2	
11	input voltage	СО	V _{CC} = MAX,	V = / V				0.1			0.1	mA
1	High-level	Any A or B	V MAY	V -07V				40			40	
ЧН	input current	CO	V _{CC} = MAX,	V ₁ = 2.7 V				20			20	μΑ
Ī	Low-level	Any A or B	V _{CC} = MAX,	V. = 0.4.V			-	-0.8			-0.8	
11L	input current	CO	VCC - MAA,	V - 0,4 V				-0.4			-0.4	mA
los	Short-circuit out	out current§	V _{CC} = MAX			-20		-100	-20		-100	mA
					All inputs grounded		22	39		22	39	
Icc	Supply current		V _{CC} = MAX, Outputs open		All B low, other inputs at 4.5 V		19	34		19	34	mA
					All inputs at 4.5 V		19	34		19	34	

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

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

PARAMETER¶	FROM (INPUT)	TO (OUTPUT)	TEST CO	NDITIONS	MIN	TYP	MAX	UNIT
^t PLH	CO	Any Σ				16	24	
^t PHL		Any 2				15	24	ns
tPLH .	A _i or B _i	2.	1			15	24	
^t PHL	7,0,5,	Σ_{i}	$C_L = 15 pF$,	$R_L = 2 k\Omega$,		15	24	ns
tPLH .	CO	C4	See Note 3			11	17	
tPHL.		<u>س</u>				11	22	ns
[†] PLH	A _i or B _i	C4	1			11	17	
tPHL:	7 7 5 6	~				12	17	ns

[¶]tpLH = propagation delay time, low-to-high-level output

NOTE 3: Load circuits and voltage waveforms are shown in Section 1.



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

[§]Only one output should be shorted at a time and duration of the short-circuit should not exceed one second.

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

recommended operating conditions

			SN54S28	3		SN74S28	3	
		MIN	NOM	MAX	MIN	NOM	MAX	UNIT
Supply voltage, VCC		4.5	5	5.5	4.75	5	5.25	V
	Any output except C4			-1			-1	mA
High-level output current, IOH	Output C4			500			-500	μΑ
	Any output except C4			20			20	
Low-level output current, IOL	Output C4			10			10	mA
Operating free-air temperature,	T _A	-55		125	0		70	°C

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

	PARAMETER			TEST CO	ONDITIONS†	MIN	TYP†	MAX	UNIT
VIH	High-level input vo	itage				2			V
VIL	Low-level input vo	ltage						8.0	V
ViK	Input clamp voltag	je		V _{CC} = MIN,	I _I = -18 mA			-1.2	V
.,	41' 5 4		SN54S283	V _{CC} = MIN,	V _{1H} = 2 V,	2.5	3.4		
VOH	High-level output	voltage	SN74S283	VIL = 0.8 V,	I _{OH} = MAX	2.7	3.4		† ′
VOL	Low-level output v	oltage/		V _{CC} = MIN, V _{IL} = 0.8 V,	V _{IH} = 2 V, I _{OL} = MAX			0.5	V
11	Input current at m input voltage	aximum		V _{CC} = MAX,	V _I = 5.5 V			1	mA
¹ ІН	High-level input cu	irrent		V _{CC} = MAX,	V ₁ = 2.7 V			50	μА
1 ₁ L	Low-level input cu	rrent		V _{CC} = MAX,	V ₁ = 0.5 V		***************************************	-2	mA
1	Short-circuit	Any outp	out except C4			-40		-100	
los	output current§	Output C	:4	VCC = MAX		-20		-100	mA
Icc	Supply current			V _{CC} = MAX,	All B low, other inputs at 4.5 V		80		
•00	coppiy cuitelit			Outputs open	All inputs at 4.5 V		95	160	mA

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

switching characteristics, V_{CC} = 5 V, T_A = 25°C

PARAMETER¶	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	MIN	TYP	MAX	UNIT
tPLH	CO	A 53			11	18	
ФНL		Any Σ	$C_{L} = 15 pF$, $R_{L} = 280 \Omega$,		12	18	ns
ФLН	A. or P.	5.	See Note 3		12	18	
tPHL	A _i or B _i	Σί			11.5	18	ns ns
tPLH .	CO	C4			6	11	
tРHL.		C4	$C_{L} = 15 pF, R_{L} = 560 \Omega,$		7.5	11	ns
tPLH .	A. or B.	C4	See Note 3		7.5	12	
tPHL	A _i or B _i				8.5	12	ns

 $[\]P_{tPLH}$ = propagation delay time, low-to-high-level output

NOTE 3: Load circuits and voltage waveforms are shown in Section 1.



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

 $[\]S$ Only one output should be shorted at a time, and duration of the short-circuit should not exceed one second.

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

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PACKAGING INFORMATION

Orderable part number	Status (1)	Material type	Package Pins	Package qty Carrier	RoHS (3)	Lead finish/ Ball material	MSL rating/ Peak reflow	Op temp (°C)	Part marking (6)
5962-7604301VEA	Active	Production	CDIP (J) 16	25 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	5962-7604301VE A SNV54LS283J
5962-7604301VEA.A	Active	Production	CDIP (J) 16	25 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	5962-7604301VE A SNV54LS283J
76043012A	Active	Production	LCCC (FK) 20	55 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	76043012A SNJ54LS 283FK
7604301EA	Active	Production	CDIP (J) 16	25 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	7604301EA SNJ54LS283J
7604301FA	Active	Production	CFP (W) 16	25 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	7604301FA SNJ54LS283W
JM38510/31202BEA	Active	Production	CDIP (J) 16	25 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 31202BEA
JM38510/31202BEA.A	Active	Production	CDIP (J) 16	25 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 31202BEA
JM38510/31202BFA	Active	Production	CFP (W) 16	25 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 31202BFA
JM38510/31202BFA.A	Active	Production	CFP (W) 16	25 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 31202BFA
M38510/31202BEA	Active	Production	CDIP (J) 16	25 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 31202BEA
M38510/31202BFA	Active	Production	CFP (W) 16	25 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 31202BFA
SN54LS283J	Active	Production	CDIP (J) 16	25 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	SN54LS283J
SN54LS283J.A	Active	Production	CDIP (J) 16	25 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	SN54LS283J
SN54S283J	Active	Production	CDIP (J) 16	25 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	SN54S283J
SN54S283J.A	Active	Production	CDIP (J) 16	25 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	SN54S283J
SN74LS283D	Active	Production	SOIC (D) 16	40 TUBE	Yes	NIPDAU	Level-1-260C-UNLIM	0 to 70	LS283
SN74LS283D.A	Active	Production	SOIC (D) 16	40 TUBE	Yes	NIPDAU	Level-1-260C-UNLIM	0 to 70	LS283
SN74LS283N	Active	Production	PDIP (N) 16	25 TUBE	Yes	NIPDAU	N/A for Pkg Type	0 to 70	SN74LS283N
SN74LS283N.A	Active	Production	PDIP (N) 16	25 TUBE	Yes	NIPDAU	N/A for Pkg Type	0 to 70	SN74LS283N



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SNJ54S283J



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Orderable part number	Status	Material type	Package Pins	Package qty Carrier	RoHS (3)	Lead finish/ Ball material	MSL rating/ Peak reflow	Op temp (°C)	Part marking (6)
						(4)	(5)		
SN74LS283NE4	Active	Production	PDIP (N) 16	25 TUBE	Yes	NIPDAU	N/A for Pkg Type	0 to 70	SN74LS283N
SN74LS283NSR	Active	Production	SOP (NS) 16	2000 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	0 to 70	74LS283
SN74LS283NSR.A	Active	Production	SOP (NS) 16	2000 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	0 to 70	74LS283
SN74S283N	Active	Production	PDIP (N) 16	25 TUBE	Yes	NIPDAU	N/A for Pkg Type	0 to 70	SN74S283N
SN74S283N.A	Active	Production	PDIP (N) 16	25 TUBE	Yes	NIPDAU	N/A for Pkg Type	0 to 70	SN74S283N
SNJ54LS283FK	Active	Production	LCCC (FK) 20	55 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	76043012A SNJ54LS 283FK
SNJ54LS283FK.A	Active	Production	LCCC (FK) 20	55 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	76043012A SNJ54LS 283FK
SNJ54LS283J	Active	Production	CDIP (J) 16	25 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	7604301EA SNJ54LS283J
SNJ54LS283J.A	Active	Production	CDIP (J) 16	25 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	7604301EA SNJ54LS283J
SNJ54LS283W	Active	Production	CFP (W) 16	25 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	7604301FA SNJ54LS283W
SNJ54LS283W.A	Active	Production	CFP (W) 16	25 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	7604301FA SNJ54LS283W
SNJ54S283J	Active	Production	CDIP (J) 16	25 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	SNJ54S283J

⁽¹⁾ Status: For more details on status, see our product life cycle.

Active

SNJ54S283J.A

Nο

SNPB

N/A for Pkg Type

-55 to 125

25 | TUBE

CDIP (J) | 16

Production

⁽²⁾ Material type: When designated, preproduction parts are prototypes/experimental devices, and are not yet approved or released for full production. Testing and final process, including without limitation quality assurance, reliability performance testing, and/or process qualification, may not yet be complete, and this item is subject to further changes or possible discontinuation. If available for ordering, purchases will be subject to an additional waiver at checkout, and are intended for early internal evaluation purposes only. These items are sold without warranties of any kind.

⁽³⁾ RoHS values: Yes, No, RoHS Exempt. See the TI RoHS Statement for additional information and value definition.

⁽⁴⁾ Lead finish/Ball material: Parts may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead finish/Ball material values may wrap to two lines if the finish value exceeds the maximum column width.

PACKAGE OPTION ADDENDUM

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(5) MSL rating/Peak reflow: The moisture sensitivity level ratings and peak solder (reflow) temperatures. In the event that a part has multiple moisture sensitivity ratings, only the lowest level per JEDEC standards is shown. Refer to the shipping label for the actual reflow temperature that will be used to mount the part to the printed circuit board.

(6) Part marking: There may be an additional marking, which relates to the logo, the lot trace code information, or the environmental category of the part.

Multiple part markings will be inside parentheses. Only one part marking contained in parentheses and separated by a "~" will appear on a part. If a line is indented then it is a continuation of the previous line and the two combined represent the entire part marking for that device.

Important Information and Disclaimer: The information provided on this page represents TI's knowledge and belief as of the date that it is provided. TI bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. TI has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. TI and TI suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

OTHER QUALIFIED VERSIONS OF SN54LS283, SN54LS283-SP, SN54S283, SN74LS283, SN74S283:

Catalog: SN74LS283, SN54LS283, SN74S283

Military: SN54LS283, SN54S283

Space: SN54LS283-SP

NOTE: Qualified Version Definitions:

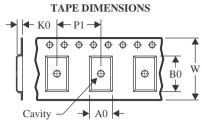
- Catalog TI's standard catalog product
- Military QML certified for Military and Defense Applications
- Space Radiation tolerant, ceramic packaging and qualified for use in Space-based application

PACKAGE MATERIALS INFORMATION

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TAPE AND REEL INFORMATION





A0	Dimension designed to accommodate the component width
В0	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	U	Package Drawing		SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
SN74LS283NSR	SOP	NS	16	2000	330.0	16.4	8.1	10.4	2.5	12.0	16.0	Q1

PACKAGE MATERIALS INFORMATION

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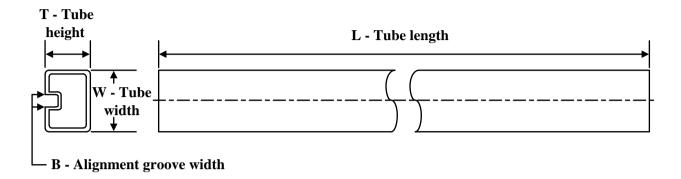
*All dimensions are nominal

	Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
I	SN74LS283NSR	SOP	NS	16	2000	353.0	353.0	32.0



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TUBE



*All dimensions are nominal

Device	Package Name	Package Type	Pins	SPQ	L (mm)	W (mm)	T (µm)	B (mm)
76043012A	FK	LCCC	20	55	506.98	12.06	2030	NA
7604301FA	W	CFP	16	25	506.98	26.16	6220	NA
JM38510/31202BFA	W	CFP	16	25	506.98	26.16	6220	NA
JM38510/31202BFA.A	W	CFP	16	25	506.98	26.16	6220	NA
M38510/31202BFA	W	CFP	16	25	506.98	26.16	6220	NA
SN74LS283D	D	SOIC	16	40	507	8	3940	4.32
SN74LS283D.A	D	SOIC	16	40	507	8	3940	4.32
SN74LS283N	N	PDIP	16	25	506	13.97	11230	4.32
SN74LS283N	N	PDIP	16	25	506	13.97	11230	4.32
SN74LS283N.A	N	PDIP	16	25	506	13.97	11230	4.32
SN74LS283N.A	N	PDIP	16	25	506	13.97	11230	4.32
SN74LS283NE4	N	PDIP	16	25	506	13.97	11230	4.32
SN74LS283NE4	N	PDIP	16	25	506	13.97	11230	4.32
SN74S283N	N	PDIP	16	25	506	13.97	11230	4.32
SN74S283N	N	PDIP	16	25	506	13.97	11230	4.32
SN74S283N.A	N	PDIP	16	25	506	13.97	11230	4.32
SN74S283N.A	N	PDIP	16	25	506	13.97	11230	4.32
SNJ54LS283FK	FK	LCCC	20	55	506.98	12.06	2030	NA
SNJ54LS283FK.A	FK	LCCC	20	55	506.98	12.06	2030	NA
SNJ54LS283W	W	CFP	16	25	506.98	26.16	6220	NA
SNJ54LS283W.A	W	CFP	16	25	506.98	26.16	6220	NA

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