

# SN54150, SN54151A, SN54LS151, SN54S151, SN74150, SN74151A, SN74LS151, SN74S151 DATA SELECTORS/MULTIPLEXERS

DECEMBER 1972—REVISED MARCH 1988

- '150 Selects One-of-Sixteen Data Sources
- Others Select One-of-Eight Data Sources
- All Perform Parallel-to-Serial Conversion
- All Permit Multiplexing from N Lines to One Line
- Also For Use as Boolean Function Generator
- Input-Clamping Diodes Simplify System Design
- Fully Compatible with Most TTL Circuits

TYPE	TYPICAL AVERAGE	TYPICAL
	PROPAGATION DELAY TIME DATA INPUT TO W OUTPUT	POWER DISSIPATION
'150	13 ns	200 mW
'151A	8 ns	145 mW
'LS151	13 ns	30 mW
'S151	4.5 ns	225 mW

## description

These monolithic data selectors/multiplexers contain full on-chip binary decoding to select the desired data source. The '150 selects one-of-sixteen data sources; the '151A, 'LS151, and 'S151 select one-of-eight data sources. The '150, '151A, 'LS151, and 'S151 have a strobe input which must be at a low logic level to enable these devices. A high level at the strobe forces the W output high, and the Y output (as applicable) low.

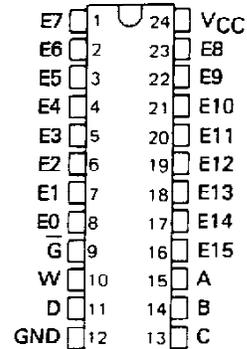
The '150 has only an inverted W output; the '151A, 'LS151, and 'S151 feature complementary W and Y outputs.

The '151A and '152A incorporate address buffers that have symmetrical propagation delay times through the complementary paths. This reduces the possibility of transients occurring at the output(s) due to changes made at the select inputs, even when the '151A outputs are enabled (i.e., strobe low).

### SN54150 . . . J OR W PACKAGE

#### SN74150 . . . N PACKAGE

(TOP VIEW)

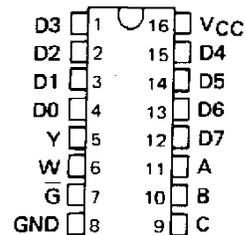


### SN54151A, SN54LS151, SN54S151 . . . J OR W PACKAGE

#### SN74151A . . . N PACKAGE

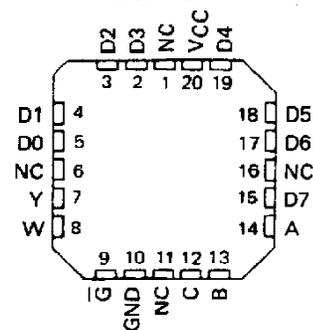
#### SN74LS151, SN74S151 . . . D OR N PACKAGE

(TOP VIEW)



### SN54LS151, SN54S151 . . . FK PACKAGE

(TOP VIEW)



NC - No internal connection

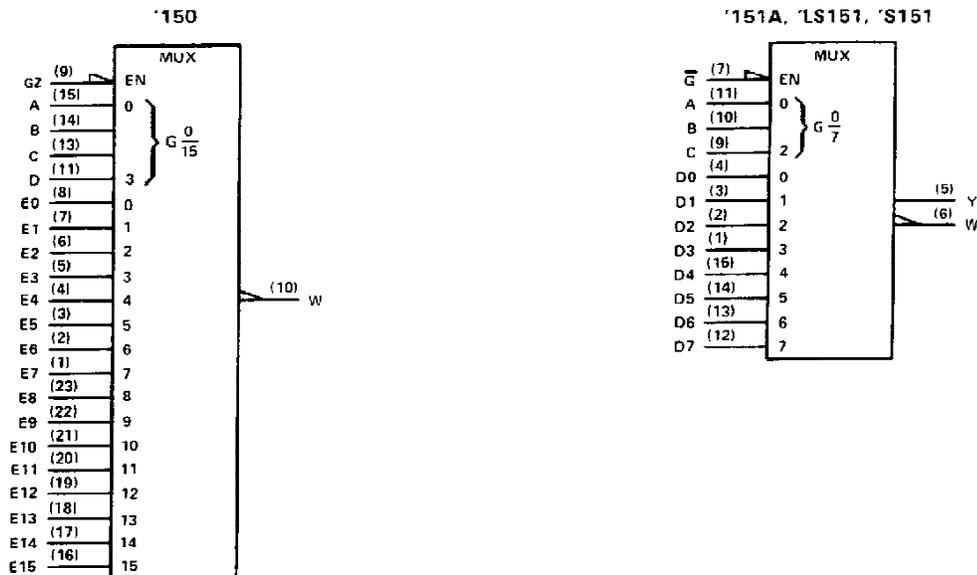
PRODUCTION DATA documents contain information current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

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**SN54150, SN54151A, SN54LS151, SN54S151,  
SN74150, SN74151A, SN74LS151, SN74S151  
DATA SELECTORS/MULTIPLEXERS**

logic symbols†



†These symbols are in accordance with ANSI/IEEE Std. 91-1984 and IEC Publication 617-12. Pin numbers shown are D, J, N, and W packages.

'150  
FUNCTION TABLE

INPUTS					STROBE $\bar{G}$	OUTPUT W
D	C	B	A	SELECT		
X	X	X	X	H	H	
L	L	L	L	L	$\bar{E}0$	
L	L	L	H	L	$\bar{E}1$	
L	L	H	L	L	$\bar{E}2$	
L	L	H	H	L	$\bar{E}3$	
L	H	L	L	L	$\bar{E}4$	
L	H	L	H	L	$\bar{E}5$	
L	H	H	L	L	$\bar{E}6$	
L	H	H	H	L	$\bar{E}7$	
H	L	L	L	L	$\bar{E}8$	
H	L	L	H	L	$\bar{E}9$	
H	L	H	L	L	$\bar{E}10$	
H	L	H	H	L	$\bar{E}11$	
H	H	L	L	L	$\bar{E}12$	
H	H	L	H	L	$\bar{E}13$	
H	H	H	L	L	$\bar{E}14$	
H	H	H	H	L	$\bar{E}15$	

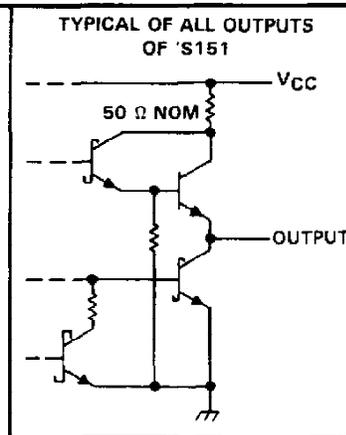
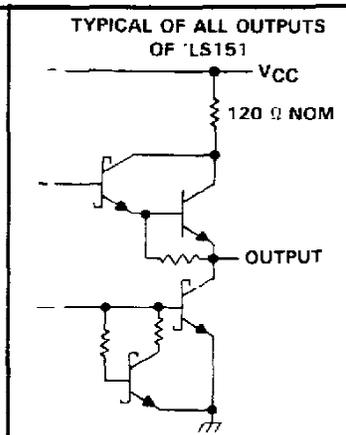
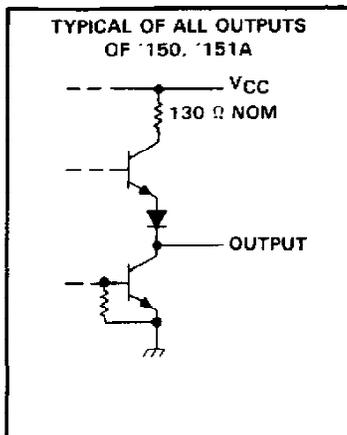
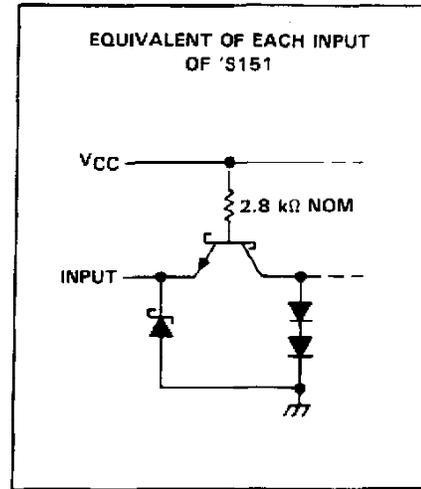
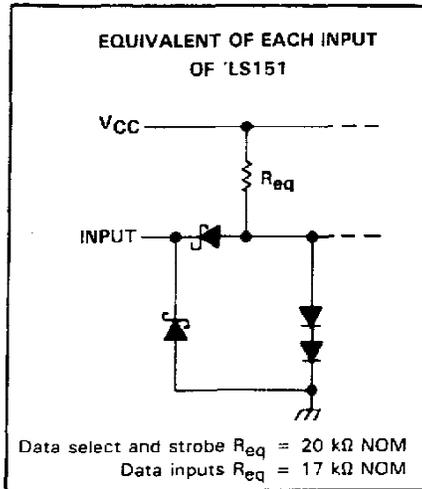
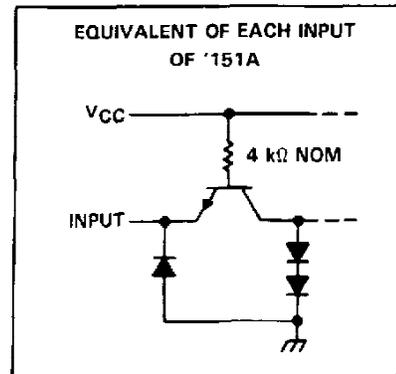
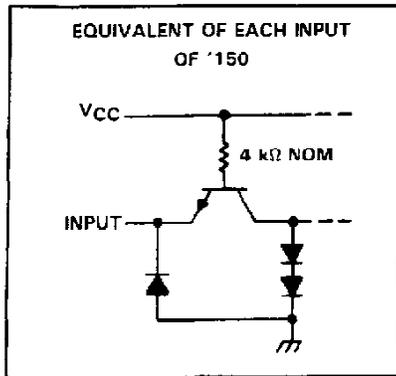
'151A, 'LS151, 'S151  
FUNCTION TABLE

INPUTS				OUTPUTS	
C	B	A	STROBE $\bar{G}$	Y	W
X	X	X	H	L	H
L	L	L	L	D0	$\bar{D}0$
L	L	H	L	D1	$\bar{D}1$
L	H	L	L	D2	$\bar{D}2$
L	H	H	L	D3	$\bar{D}3$
H	L	L	L	D4	$\bar{D}4$
H	L	H	L	D5	$\bar{D}5$
H	H	L	L	D6	$\bar{D}6$
H	H	H	L	D7	$\bar{D}7$

H = high level, L = low level, X = irrelevant  
 $\bar{E}0, \bar{E}1, \dots, \bar{E}15$  = the complement of the level of the respective E input  
 D0, D1, ..., D7 = the level of the D respective input

**SN54150, SN54151A, SN54LS151, SN54S151  
SN74150, SN74151A, SN74LS151, SN74S151  
DATA SELECTORS/MULTIPLEXERS**

schematics of inputs and outputs



# SN54150, SN54151A, SN74150, SN74151A

## DATA SELECTORS/MULTIPLEXERS

### recommended operating conditions

	SN54'			SN74'			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
Supply voltage, $V_{CC}$	4.5	5	5.5	4.75	5	5.25	V
High-level output current, $I_{OH}$			-800			-800	$\mu$ A
Low-level output current, $I_{OL}$			16			16	mA
Operating free-air temperature, $T_A$	-55		125	0		70	$^{\circ}$ C

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

PARAMETER	TEST CONDITIONS <sup>†</sup>	'150			'151A			UNIT
		MIN	TYP <sup>‡</sup>	MAX	MIN	TYP <sup>‡</sup>	MAX	
$V_{IH}$ High-level input voltage		2			2			V
$V_{IL}$ Low-level input voltage				0.8			0.8	V
$V_{IK}$ Input clamp voltage	$V_{CC} = \text{MIN}$ , $I_I = -8 \text{ mA}$			-1.5			-1.5	V
$V_{OH}$ High-level output voltage	$V_{CC} = \text{MIN}$ , $V_{IH} = 2 \text{ V}$ , $V_{IL} = 0.8 \text{ V}$ , $I_{OH} = -800 \mu\text{A}$	2.4	3.4		2.4	3.4		V
$V_{OL}$ Low-level output voltage	$V_{CC} = \text{MIN}$ , $V_{IH} = 2 \text{ V}$ , $V_{IL} = 0.8 \text{ V}$ , $I_{OL} = 16 \text{ mA}$		0.2	0.4		0.2	0.4	V
$I_I$ Input current at maximum input voltage	$V_{CC} = \text{MAX}$ , $V_I = 5.5 \text{ V}$			1			1	mA
$I_{IH}$ High-level input current	$V_{CC} = \text{MAX}$ , $V_I = 2.4 \text{ V}$			40			40	$\mu$ A
$I_{IL}$ Low-level input current	$V_{CC} = \text{MAX}$ , $V_I = 0.4 \text{ V}$			-1.6			-1.6	mA
$I_{OS}$ Short-circuit output current <sup>§</sup>	$V_{CC} = \text{MAX}$	SN54'	-20	-55	-20	-55		mA
		SN74'	-18	-55	-18	-55		
$I_{CC}$ Supply current	$V_{CC} = \text{MAX}$ . See Note 3		40	68		29	48	mA

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

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

<sup>§</sup> Not more than one output of the '151A should be shorted at a time.

NOTE 3:  $I_{CC}$  is measured with the strobe and data select inputs at 4.5 V, all other inputs and outputs open.

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

PARAMETER <sup>¶</sup>	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	'150			'151A			UNIT
				MIN	TYP	MAX	MIN	TYP	MAX	
$t_{PLH}$	A, B, or C (4 levels)	Y	$C_L = 15 \text{ pF}$ , $R_L = 400 \Omega$ , See Note 4 i				25	38		ns
$t_{PHL}$							25	38		
$t_{PLH}$	A, B, C, or D (3 levels)	W		23	35		17	26		ns
$t_{PHL}$				22	33		19	30		
$t_{PLH}$	Strobe $\bar{G}$	Y					21	33		ns
$t_{PHL}$							22	33		
$t_{PLH}$	Strobe $\bar{G}$	W		15.5	24		14	21		ns
$t_{PHL}$				21	30		15	23		
$t_{PLH}$	D0 thru D7	Y					13	20		ns
$t_{PHL}$							18	27		
$t_{PLH}$	E0 thru E15, or D0 thru D7	W	8.5	14		8	14		ns	
$t_{PHL}$			13	20		8	14			

<sup>¶</sup>  $t_{PLH}$  = propagation delay time, low-to-high-level output

$t_{PHL}$  = propagation delay time, high-to-low-level output

NOTE 4: Load circuits and voltage waveforms are shown in Section 1.

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# SN54LS151, SN74LS151 DATA SELECTORS/MULTIPLEXERS

## recommended operating conditions

	SN54LS151			SN74LS151			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
Supply voltage, $V_{CC}$	4.5	5	5.5	4.75	5	5.25	V
High-level output current, $I_{OH}$			-400			-400	$\mu A$
Low-level output current, $I_{OL}$			4			8	mA
Operating free-air temperature, $T_A$	-55		125	0		70	$^{\circ}C$

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

PARAMETER	TEST CONDITIONS†	SN54LS151			SN74LS151			UNIT	
		MIN	TYP‡	MAX	MIN	TYP‡	MAX		
$V_{IH}$ High-level input voltage		2			2			V	
$V_{IL}$ Low-level input voltage				0.7			0.8	V	
$V_{IK}$ Input clamp voltage	$V_{CC} = \text{MIN}, I_I = -18 \text{ mA}$			-1.5			-1.5	V	
$V_{OH}$ High-level output voltage	$V_{CC} = \text{MIN}, V_{IH} = 2 \text{ V}, V_{IL} = V_{IL\text{max}}, I_{OH} = -400 \mu A$	2.5	3.4		2.7	3.4		V	
$V_{OL}$ Low-level output voltage	$V_{CC} = \text{MIN}, V_{IH} = 2 \text{ V}, V_{IL} = V_{IL\text{max}}$			0.25	0.4		0.25	0.4	V
	$I_{OL} = 4 \text{ mA}$ $I_{OL} = 8 \text{ mA}$						0.35	0.5	
$I_I$ Input current at maximum input voltage	$V_{CC} = \text{MAX}, V_I = 7 \text{ V}$			0.1			0.1	mA	
$I_{IH}$ High-level input current	$V_{CC} = \text{MAX}, V_I = 2.7 \text{ V}$			20			20	$\mu A$	
$I_{IL}$ Low-level input current	$V_{CC} = \text{MAX}, V_I = 0.4 \text{ V}$			-0.4			-0.4	mA	
$I_{OS}$ Short-circuit output current‡	$V_{CC} = \text{MAX}$			-20		-100	-20	-100	mA
$I_{CC}$ Supply current	$V_{CC} = \text{MAX},$ Outputs open, All inputs at 4.5 V			6.0	10		6.0	10	mA

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

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

§ Not more than one output should be shorted at a time and duration of short-circuit should not exceed one second.

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

PARAMETER†	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	MIN	TYP	MAX	UNIT
$t_{PLH}$	A, B, or C (4 levels)	Y	$C_L = 15 \text{ pF},$ $R_L = 2 \text{ k}\Omega,$ See Note 4		27	43	ns
$t_{PHL}$					18	30	
$t_{PLH}$	A, B, or C (3 levels)	W			14	23	ns
$t_{PHL}$					20	32	
$t_{PLH}$	Strobe $\bar{G}$	Y			26	42	ns
$t_{PHL}$					20	32	
$t_{PLH}$	Strobe $\bar{G}$	W			15	24	ns
$t_{PHL}$					18	30	
$t_{PLH}$	Any D	Y			20	32	ns
$t_{PHL}$					16	26	
$t_{PLH}$	Any D	W			13	21	ns
$t_{PHL}$					12	20	

†  $t_{PLH}$  = propagation delay time, low-to-high-level output

$t_{PHL}$  = propagation delay time, high-to-low-level output

NOTE 4: Load circuits and voltage waveforms are shown in Section 1.

  
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# SN54S151, SN74S151 DATA SELECTORS/MULTIPLEXERS

## recommended operating conditions

	SN54S151			SN74S151			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
Supply voltage, $V_{CC}$	4.5	5	5.5	4.75	5	5.25	V
High-level output current, $I_{OH}$			-1			-1	mA
Low-level output current, $I_{OL}$			20			20	mA
Operating free-air temperature, $T_A$	-55		125	0		70	$^{\circ}$ C

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

PARAMETER	TEST CONDITIONS <sup>†</sup>	MIN	TYP <sup>‡</sup>	MAX	UNIT
$V_{IH}$ High-level input voltage		2			V
$V_{IL}$ Low-level input voltage				0.8	V
$V_{IK}$ Input clamp voltage	$V_{CC} = \text{MIN}$ , $I_I = -18 \text{ mA}$			-1.2	V
$V_{OH}$ High-level output voltage	$V_{CC} = \text{MIN}$ , $V_{IH} = 2 \text{ V}$ , $V_{IL} = 0.8 \text{ V}$ , $I_{OH} = -1 \text{ mA}$	SN54S151	2.5	3.4	V
		SN74S151	2.7	3.4	
$V_{OL}$ Low-level output voltage	$V_{CC} = \text{MIN}$ , $V_{IH} = 2 \text{ V}$ , $V_{IL} = 0.8 \text{ V}$ , $I_{OL} = 20 \text{ mA}$			0.5	V
$I_I$ Input current at maximum input voltage	$V_{CC} = \text{MAX}$ , $V_I = 5.5 \text{ V}$			1	mA
$I_{IH}$ High-level input current	$V_{CC} = \text{MAX}$ , $V_I = 2.7 \text{ V}$			50	$\mu$ A
$I_{IL}$ Low-level input current	$V_{CC} = \text{MAX}$ , $V_I = 0.5 \text{ V}$			-2	mA
$I_{OS}$ Short-circuit output current <sup>§</sup>	$V_{CC} = \text{MAX}$	-40		-100	mA
$I_{CC}$ Supply current	$V_{CC} = \text{MAX}$ , All inputs at 4.5 V, All outputs open		45	70	mA

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

<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.

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

PARAMETER <sup>†</sup>	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	MIN	TYP	MAX	UNIT
$t_{PLH}$	A, B, or C (4 levels)	Y	$C_L = 15 \text{ pF}$ , $R_L = 280 \text{ k}\Omega$ , See Note 4	12	18	ns	
$t_{PHL}$				12	18		
$t_{PLH}$	A, B, or C (3 levels)	W		10	15	ns	
$t_{PHL}$				9	13.5		
$t_{PLH}$	Any D	Y		8	12	ns	
$t_{PHL}$				8	12		
$t_{PLH}$	Any D	W		4.5	7	ns	
$t_{PHL}$				4.5	7		
$t_{PLH}$	Strobe $\bar{G}$	Y		11	16.5	ns	
$t_{PHL}$				12	18		
$t_{PLH}$	Strobe $\bar{G}$	W		9	13	ns	
$t_{PHL}$				8.5	12		

<sup>†</sup> $t_{PLH}$  = propagation delay time, low-to-high-level output

$t_{PHL}$  = propagation delay time, high-to-low-level output

NOTE 4: Load circuits and voltage waveforms are shown in Section 1.

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**PACKAGING INFORMATION**

Orderable part number	Status (1)	Material type (2)	Package   Pins	Package qty   Carrier	RoHS (3)	Lead finish/ Ball material (4)	MSL rating/ Peak reflow (5)	Op temp (°C)	Part marking (6)
<a href="#">76010012A</a>	Active	Production	LCCC (FK)   20	55   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	76010012A SNJ54LS 151FK
<a href="#">7601001EA</a>	Active	Production	CDIP (J)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	7601001EA SNJ54LS151J
<a href="#">7601001EA</a>	Active	Production	CDIP (J)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	7601001EA SNJ54LS151J
<a href="#">JM38510/07901BEA</a>	Active	Production	CDIP (J)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 07901BEA
JM38510/07901BEA.A	Active	Production	CDIP (J)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 07901BEA
<a href="#">JM38510/07901BFA</a>	Active	Production	CFP (W)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 07901BFA
JM38510/07901BFA.A	Active	Production	CFP (W)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 07901BFA
<a href="#">JM38510/30901B2A</a>	Active	Production	LCCC (FK)   20	55   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 30901B2A
<a href="#">JM38510/30901B2A</a>	Active	Production	LCCC (FK)   20	55   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 30901B2A
JM38510/30901B2A.A	Active	Production	LCCC (FK)   20	55   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 30901B2A
JM38510/30901B2A.A	Active	Production	LCCC (FK)   20	55   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 30901B2A
<a href="#">JM38510/30901BEA</a>	Active	Production	CDIP (J)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 30901BEA
<a href="#">JM38510/30901BEA</a>	Active	Production	CDIP (J)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 30901BEA
JM38510/30901BEA.A	Active	Production	CDIP (J)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 30901BEA
JM38510/30901BEA.A	Active	Production	CDIP (J)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 30901BEA
<a href="#">JM38510/30901BFA</a>	Active	Production	CFP (W)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 30901BFA

Orderable part number	Status (1)	Material type (2)	Package   Pins	Package qty   Carrier	RoHS (3)	Lead finish/ Ball material (4)	MSL rating/ Peak reflow (5)	Op temp (°C)	Part marking (6)
<a href="#">JM38510/30901BFA</a>	Active	Production	CFP (W)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 30901BFA
JM38510/30901BFA.A	Active	Production	CFP (W)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 30901BFA
JM38510/30901BFA.A	Active	Production	CFP (W)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 30901BFA
<a href="#">M38510/07901BEA</a>	Active	Production	CDIP (J)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 07901BEA
<a href="#">M38510/07901BFA</a>	Active	Production	CFP (W)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 07901BFA
<a href="#">M38510/30901B2A</a>	Active	Production	LCCC (FK)   20	55   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 30901B2A
<a href="#">M38510/30901B2A</a>	Active	Production	LCCC (FK)   20	55   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 30901B2A
<a href="#">M38510/30901BEA</a>	Active	Production	CDIP (J)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 30901BEA
<a href="#">M38510/30901BEA</a>	Active	Production	CDIP (J)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 30901BEA
<a href="#">M38510/30901BFA</a>	Active	Production	CFP (W)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 30901BFA
<a href="#">M38510/30901BFA</a>	Active	Production	CFP (W)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	JM38510/ 30901BFA
<a href="#">SN54LS151J</a>	Active	Production	CDIP (J)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	SN54LS151J
<a href="#">SN54LS151J</a>	Active	Production	CDIP (J)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	SN54LS151J
SN54LS151J.A	Active	Production	CDIP (J)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	SN54LS151J
SN54LS151J.A	Active	Production	CDIP (J)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	SN54LS151J
<a href="#">SN54S151J</a>	Active	Production	CDIP (J)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	SN54S151J
SN54S151J.A	Active	Production	CDIP (J)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	SN54S151J
<a href="#">SN74LS151D</a>	Obsolete	Production	SOIC (D)   16	-	-	Call TI	Call TI	0 to 70	LS151
<a href="#">SN74LS151D</a>	Obsolete	Production	SOIC (D)   16	-	-	Call TI	Call TI	0 to 70	LS151
<a href="#">SN74LS151DR</a>	Active	Production	SOIC (D)   16	2500   LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	0 to 70	LS151
<a href="#">SN74LS151DR</a>	Active	Production	SOIC (D)   16	2500   LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	0 to 70	LS151
SN74LS151DR.A	Active	Production	SOIC (D)   16	2500   LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	0 to 70	LS151
SN74LS151DR.A	Active	Production	SOIC (D)   16	2500   LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	0 to 70	LS151

Orderable part number	Status (1)	Material type (2)	Package   Pins	Package qty   Carrier	RoHS (3)	Lead finish/ Ball material (4)	MSL rating/ Peak reflow (5)	Op temp (°C)	Part marking (6)
<a href="#">SN74LS151N</a>	Active	Production	PDIP (N)   16	25   TUBE	Yes	NIPDAU	N/A for Pkg Type	0 to 70	SN74LS151N
<a href="#">SN74LS151N</a>	Active	Production	PDIP (N)   16	25   TUBE	Yes	NIPDAU	N/A for Pkg Type	0 to 70	SN74LS151N
SN74LS151N.A	Active	Production	PDIP (N)   16	25   TUBE	Yes	NIPDAU	N/A for Pkg Type	0 to 70	SN74LS151N
SN74LS151N.A	Active	Production	PDIP (N)   16	25   TUBE	Yes	NIPDAU	N/A for Pkg Type	0 to 70	SN74LS151N
SN74LS151NE4	Active	Production	PDIP (N)   16	25   TUBE	Yes	NIPDAU	N/A for Pkg Type	0 to 70	SN74LS151N
SN74LS151NE4	Active	Production	PDIP (N)   16	25   TUBE	Yes	NIPDAU	N/A for Pkg Type	0 to 70	SN74LS151N
<a href="#">SN74LS151NSR</a>	Active	Production	SOP (NS)   16	2000   LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	0 to 70	74LS151
<a href="#">SN74LS151NSR</a>	Active	Production	SOP (NS)   16	2000   LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	0 to 70	74LS151
SN74LS151NSR.A	Active	Production	SOP (NS)   16	2000   LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	0 to 70	74LS151
SN74LS151NSR.A	Active	Production	SOP (NS)   16	2000   LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	0 to 70	74LS151
<a href="#">SNJ54LS151FK</a>	Active	Production	LCCC (FK)   20	55   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	76010012A SNJ54LS 151FK
<a href="#">SNJ54LS151FK</a>	Active	Production	LCCC (FK)   20	55   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	76010012A SNJ54LS 151FK
SNJ54LS151FK.A	Active	Production	LCCC (FK)   20	55   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	76010012A SNJ54LS 151FK
SNJ54LS151FK.A	Active	Production	LCCC (FK)   20	55   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	76010012A SNJ54LS 151FK
<a href="#">SNJ54LS151J</a>	Active	Production	CDIP (J)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	7601001EA SNJ54LS151J
<a href="#">SNJ54LS151J</a>	Active	Production	CDIP (J)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	7601001EA SNJ54LS151J
SNJ54LS151J.A	Active	Production	CDIP (J)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	7601001EA SNJ54LS151J
SNJ54LS151J.A	Active	Production	CDIP (J)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	7601001EA SNJ54LS151J
<a href="#">SNJ54S151J</a>	Active	Production	CDIP (J)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	SNJ54S151J
SNJ54S151J.A	Active	Production	CDIP (J)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	SNJ54S151J
<a href="#">SNJ54S151W</a>	Active	Production	CFP (W)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	SNJ54S151W
SNJ54S151W.A	Active	Production	CFP (W)   16	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	SNJ54S151W

- (1) **Status:** For more details on status, see our [product life cycle](#).
- (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.
- (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.

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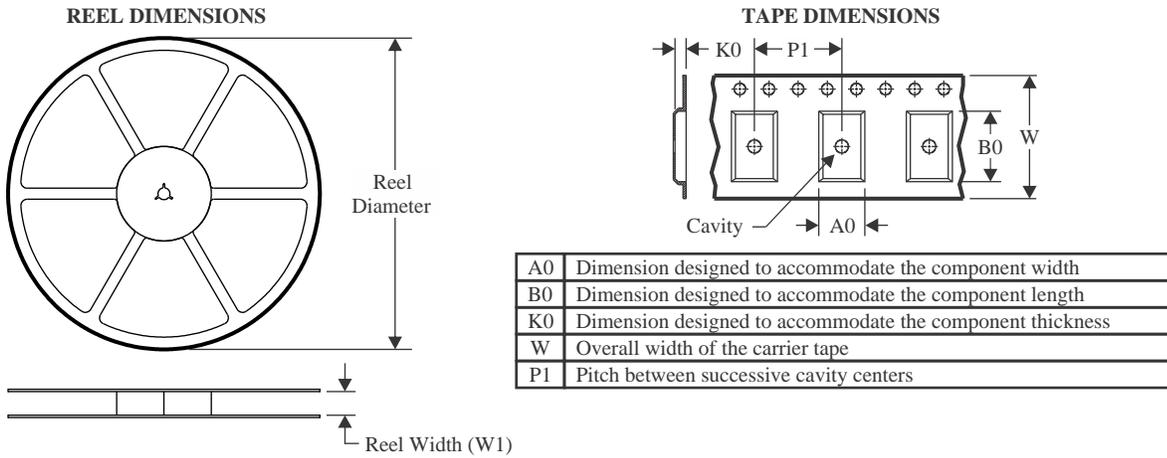
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**OTHER QUALIFIED VERSIONS OF SN54LS151, SN74LS151 :**

- Catalog : [SN74LS151](#)
- Military : [SN54LS151](#)

NOTE: Qualified Version Definitions:

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

**TAPE AND REEL INFORMATION**

**QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE**

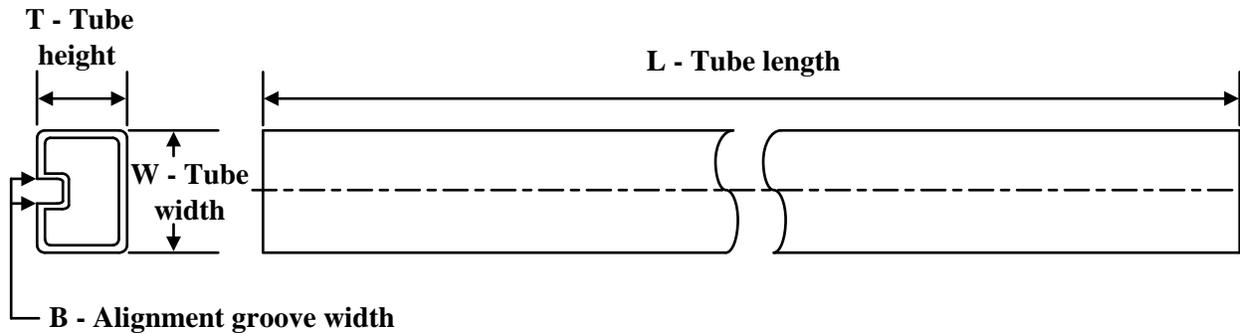

\*All dimensions are nominal

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
SN74LS151DR	SOIC	D	16	2500	330.0	16.4	6.5	10.3	2.1	8.0	16.0	Q1
SN74LS151NSR	SOP	NS	16	2000	330.0	16.4	8.1	10.4	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)
SN74LS151DR	SOIC	D	16	2500	353.0	353.0	32.0
SN74LS151NSR	SOP	NS	16	2000	353.0	353.0	32.0

**TUBE**


\*All dimensions are nominal

Device	Package Name	Package Type	Pins	SPQ	L (mm)	W (mm)	T (μm)	B (mm)
76010012A	FK	LCCC	20	55	506.98	12.06	2030	NA
JM38510/07901BFA	W	CFP	16	25	506.98	26.16	6220	NA
JM38510/07901BFA.A	W	CFP	16	25	506.98	26.16	6220	NA
JM38510/30901B2A	FK	LCCC	20	55	506.98	12.06	2030	NA
JM38510/30901B2A.A	FK	LCCC	20	55	506.98	12.06	2030	NA
JM38510/30901BFA	W	CFP	16	25	506.98	26.16	6220	NA
JM38510/30901BFA.A	W	CFP	16	25	506.98	26.16	6220	NA
M38510/07901BFA	W	CFP	16	25	506.98	26.16	6220	NA
M38510/30901B2A	FK	LCCC	20	55	506.98	12.06	2030	NA
M38510/30901BFA	W	CFP	16	25	506.98	26.16	6220	NA
SN74LS151N	N	PDIP	16	25	506	13.97	11230	4.32
SN74LS151N	N	PDIP	16	25	506	13.97	11230	4.32
SN74LS151N.A	N	PDIP	16	25	506	13.97	11230	4.32
SN74LS151N.A	N	PDIP	16	25	506	13.97	11230	4.32
SN74LS151NE4	N	PDIP	16	25	506	13.97	11230	4.32
SN74LS151NE4	N	PDIP	16	25	506	13.97	11230	4.32
SNJ54LS151FK	FK	LCCC	20	55	506.98	12.06	2030	NA
SNJ54LS151FK.A	FK	LCCC	20	55	506.98	12.06	2030	NA

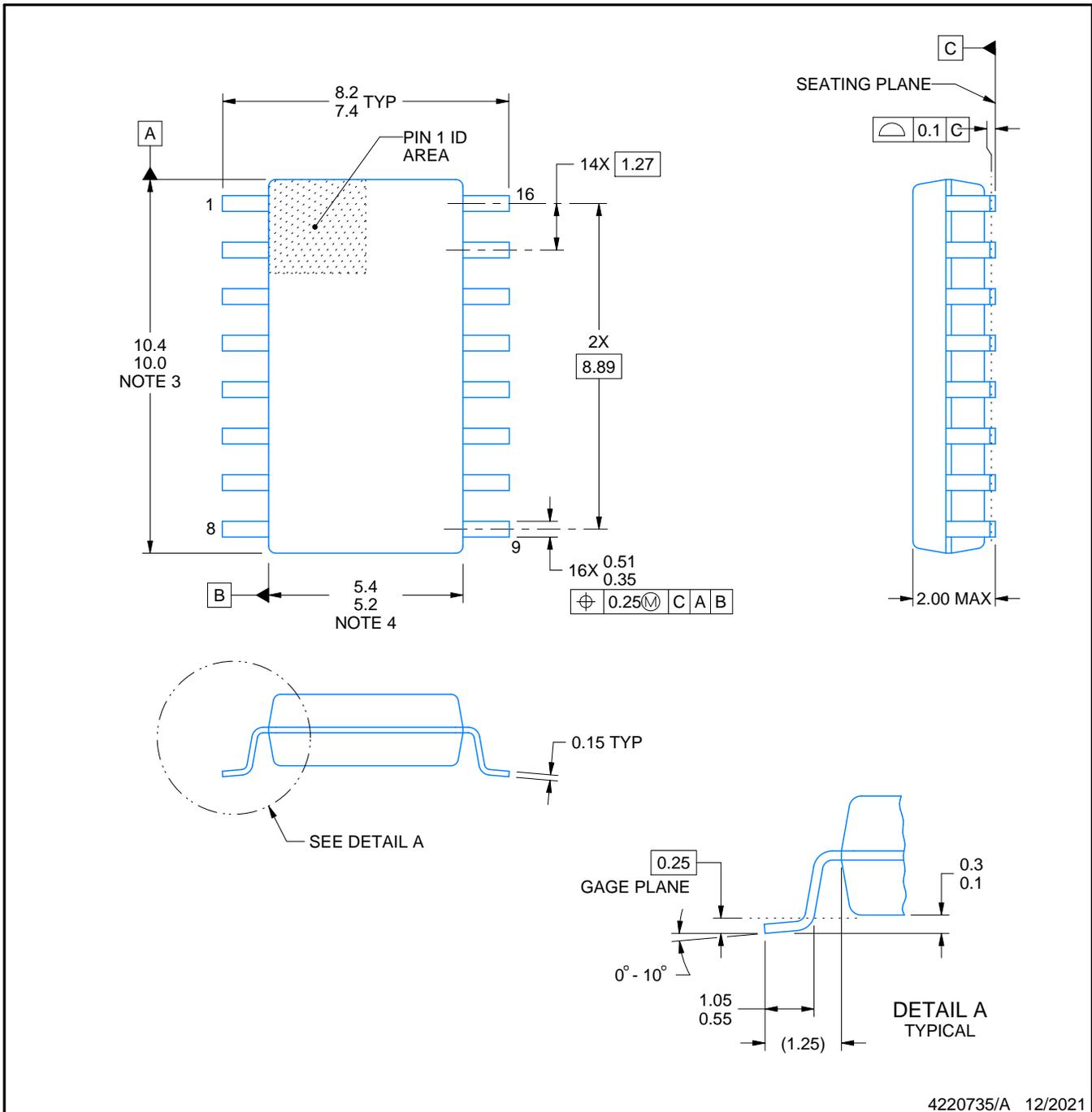


# PACKAGE OUTLINE

## NS0016A

### SOP - 2.00 mm max height

SOP



4220735/A 12/2021

#### NOTES:

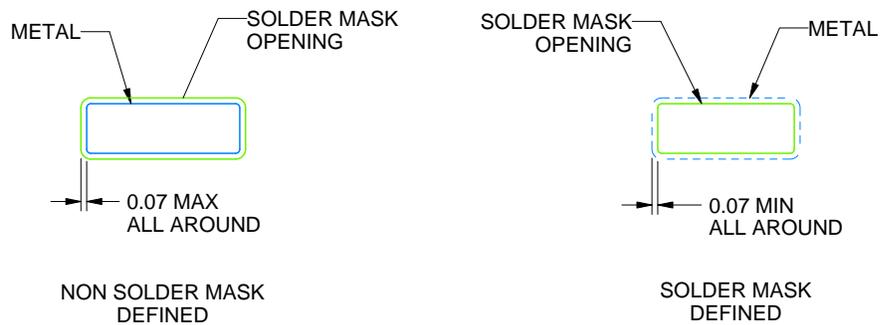
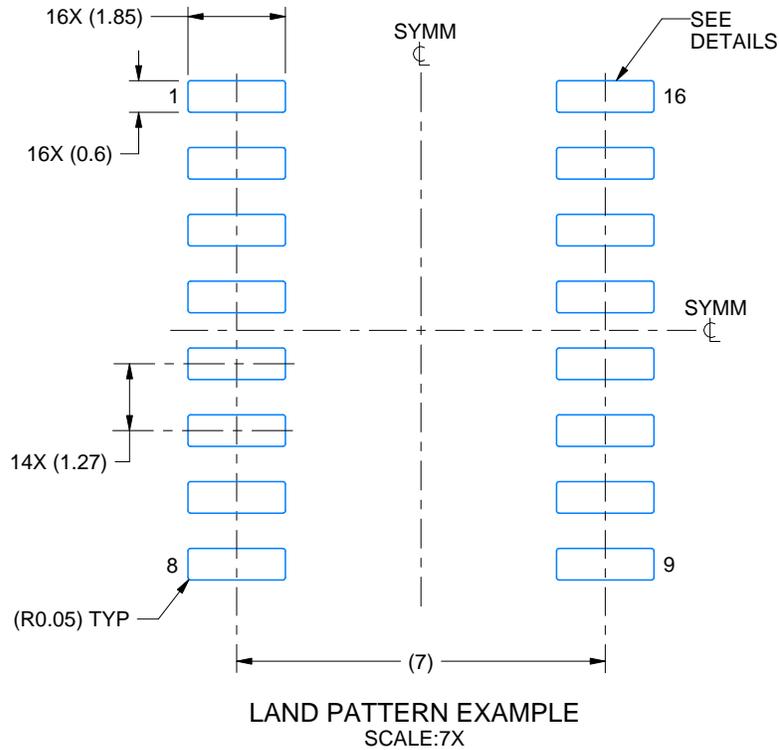
1. All linear dimensions are in millimeters. Dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.15 mm, per side.
4. This dimension does not include interlead flash. Interlead flash shall not exceed 0.25 mm, per side.

# EXAMPLE BOARD LAYOUT

NS0016A

SOP - 2.00 mm max height

SOP



SOLDER MASK DETAILS

4220735/A 12/2021

NOTES: (continued)

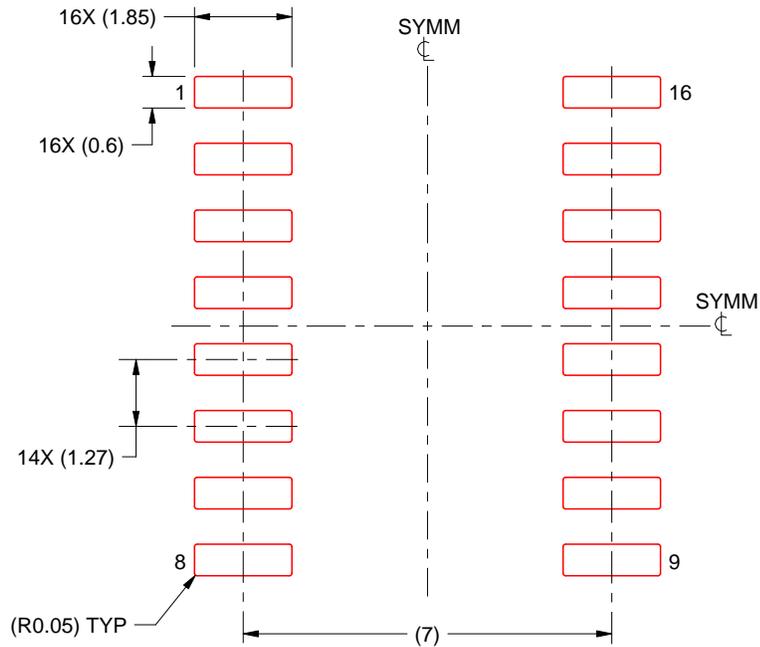
- 5. Publication IPC-7351 may have alternate designs.
- 6. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

# EXAMPLE STENCIL DESIGN

NS0016A

SOP - 2.00 mm max height

SOP



SOLDER PASTE EXAMPLE  
BASED ON 0.125 mm THICK STENCIL  
SCALE:7X

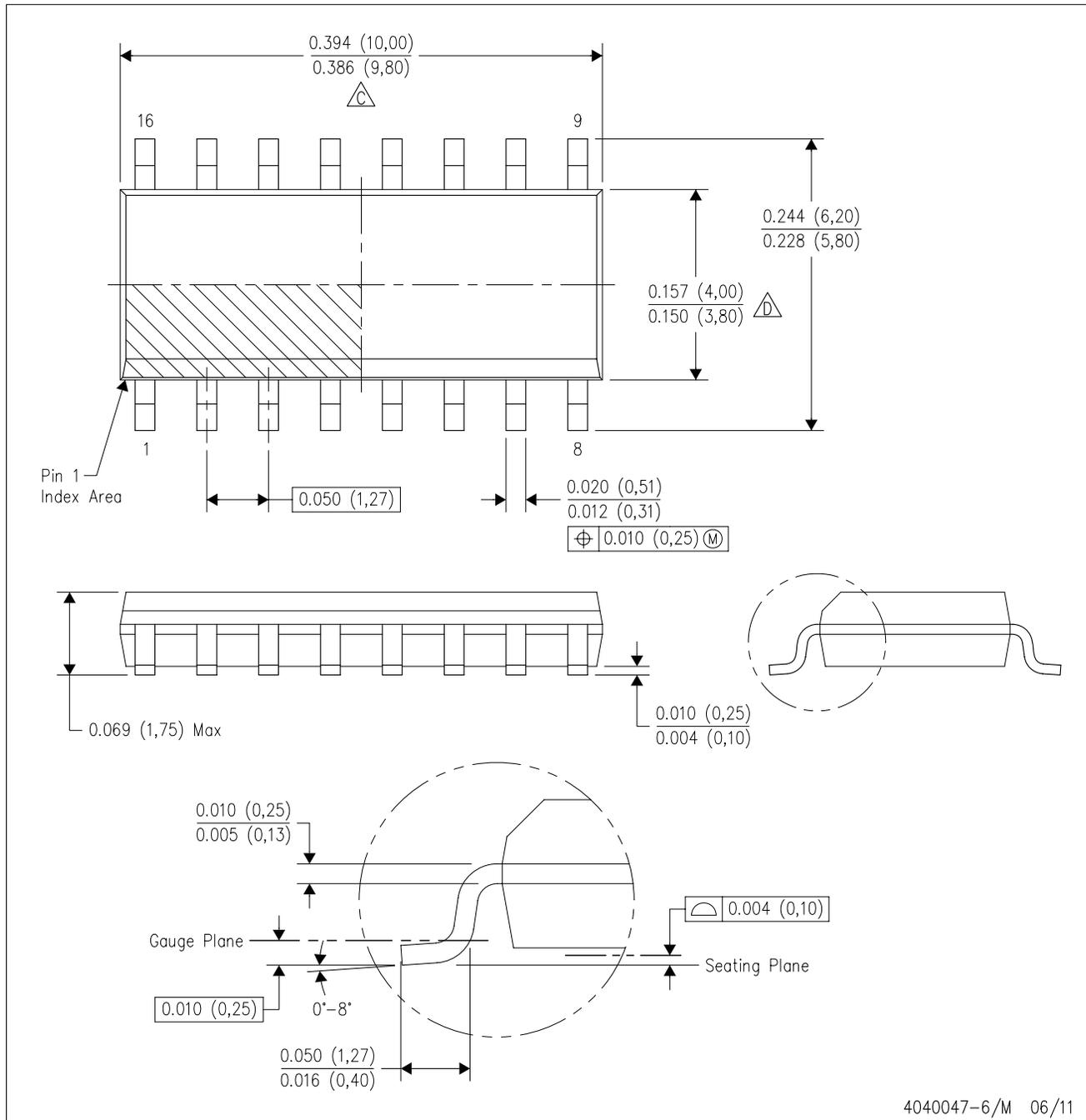
4220735/A 12/2021

NOTES: (continued)

7. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.
8. Board assembly site may have different recommendations for stencil design.

D (R-PDSO-G16)

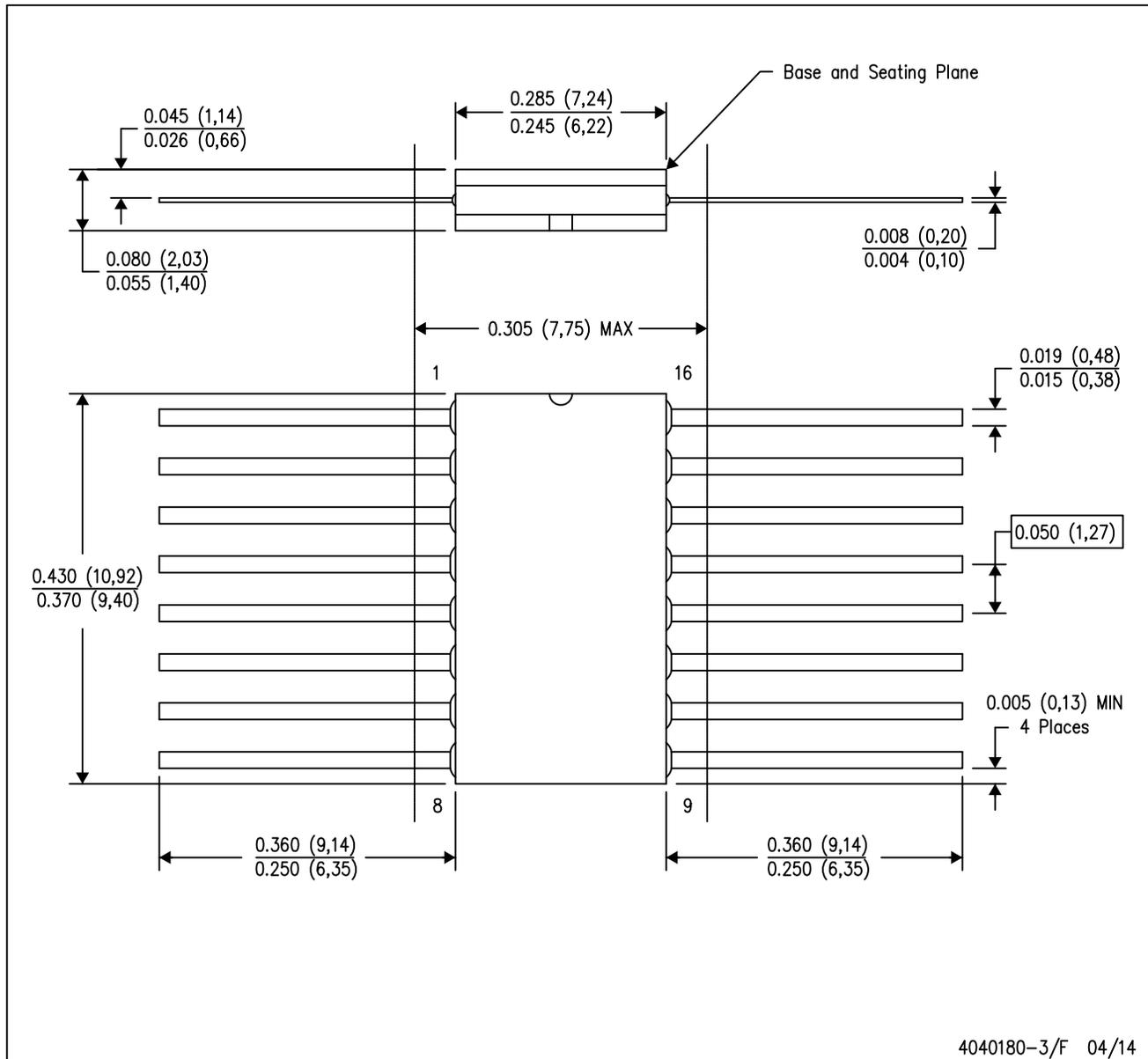
PLASTIC SMALL OUTLINE



- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - C. 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.
  - D. 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.

W (R-GDFP-F16)

CERAMIC DUAL FLATPACK



- NOTES:
- 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 GDFP2-F16

## GENERIC PACKAGE VIEW

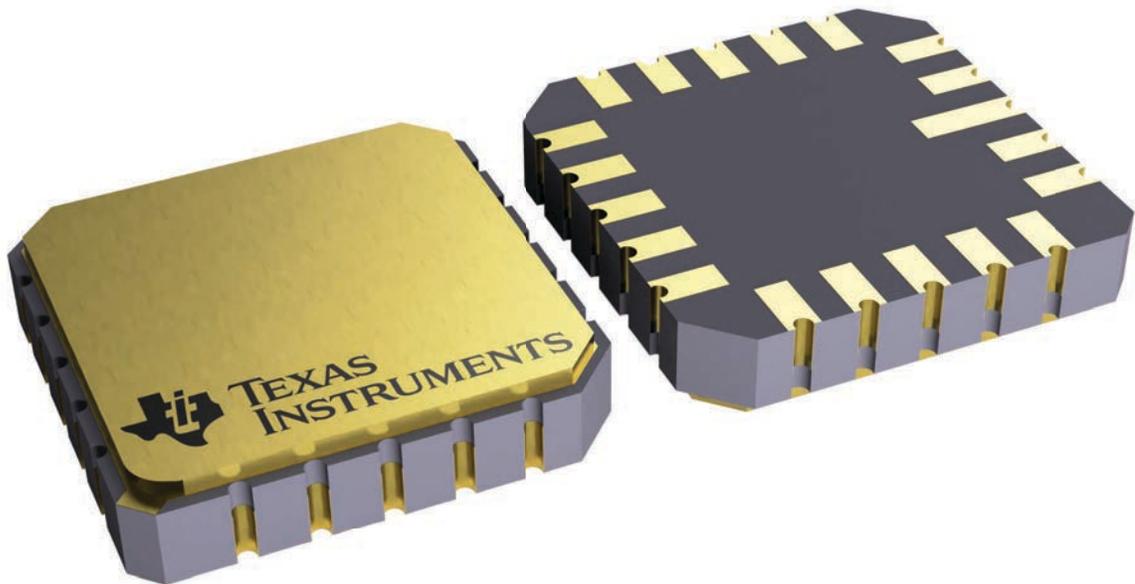
**FK 20**

**LCCC - 2.03 mm max height**

8.89 x 8.89, 1.27 mm pitch

LEADLESS CERAMIC CHIP CARRIER

This image is a representation of the package family, actual package may vary.  
Refer to the product data sheet for package details.

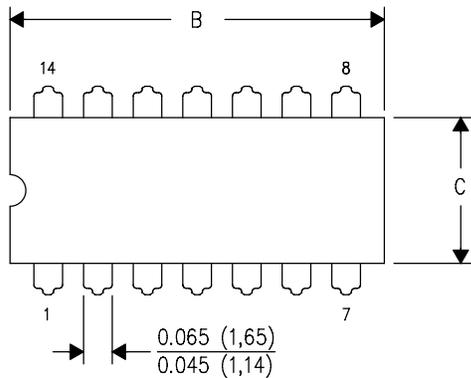


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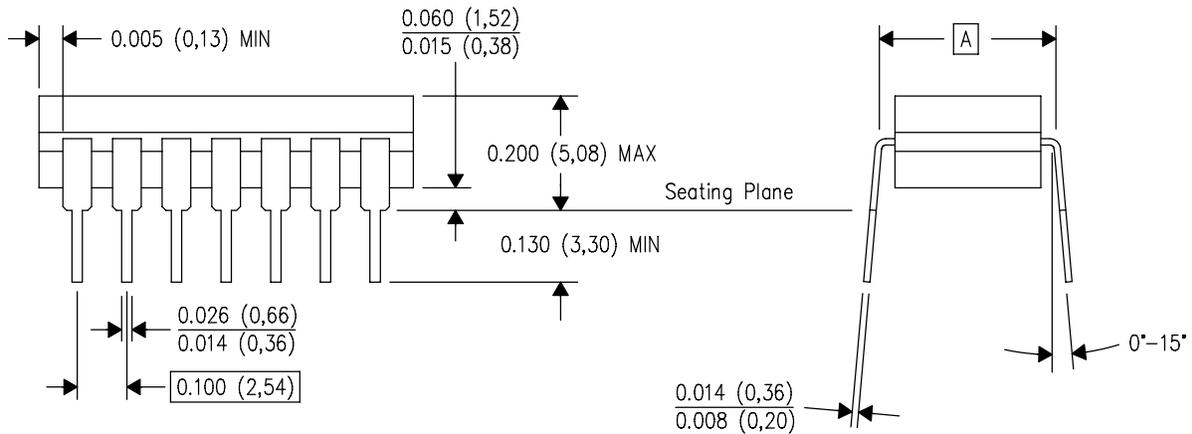
J (R-GDIP-T\*\*)

14 LEADS SHOWN

CERAMIC DUAL IN-LINE PACKAGE



DIM \ PINS **	14	16	18	20
A	0.300 (7,62) BSC	0.300 (7,62) BSC	0.300 (7,62) BSC	0.300 (7,62) BSC
B MAX	0.785 (19,94)	.840 (21,34)	0.960 (24,38)	1.060 (26,92)
B MIN	—	—	—	—
C MAX	0.300 (7,62)	0.300 (7,62)	0.310 (7,87)	0.300 (7,62)
C MIN	0.245 (6,22)	0.245 (6,22)	0.220 (5,59)	0.245 (6,22)



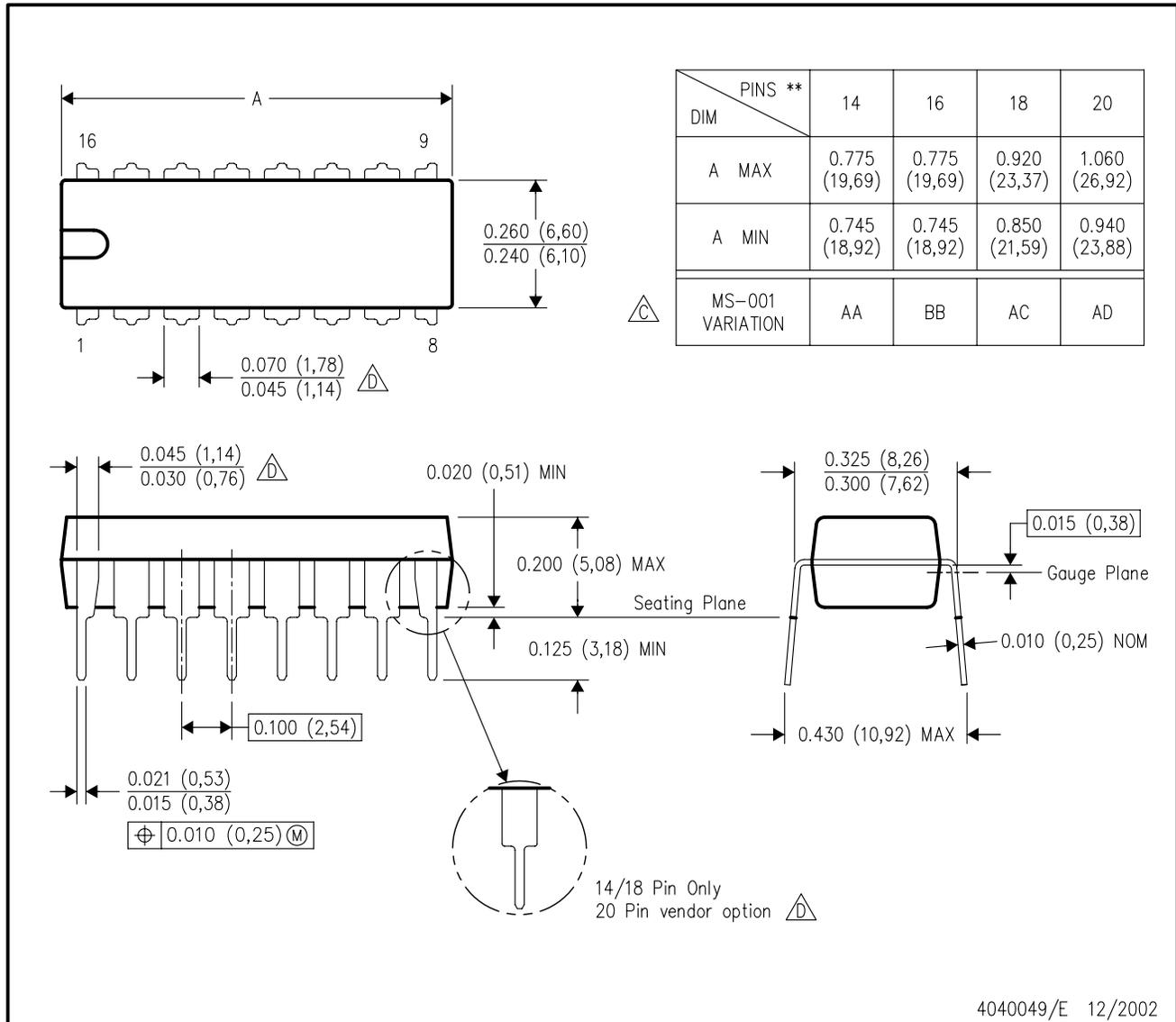
4040083/F 03/03

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

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

PLASTIC DUAL-IN-LINE PACKAGE

16 PINS SHOWN



- NOTES:
- 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.

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