

SDLS058

SN54157, SN54LS157, SN54LS158, SN54S157, SN54S158, SN74157, SN74LS157, SN74LS158, SN74S157, SN74S158 QUADRUPLE 2-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS

MARCH 1974 — REVISED MARCH 1988

- Buffered Inputs and Outputs
- Three Speed/Power Ranges Available

TYPES	TYPICAL AVERAGE PROPAGATION TIME	TYPICAL POWER DISSIPATION
'157	9 ns	150 mW
'LS157	9 ns	49 mW
'S157	5 ns	250 mW
'LS158	7 ns	24 mW
'S158	4 ns	195 mW

applications

- Expand Any Data Input Point
- Multiplex Dual Data Buses
- Generate Four Functions of Two Variables (One Variable Is Common)
- Source Programmable Counters

description

These monolithic data selectors/multiplexers contain inverters and drivers to supply full on-chip data selection to the four output gates. A separate strobe input is provided. A 4-bit word is selected from one of two sources and is routed to the four outputs. The '157, 'LS157, and 'S157 present true data whereas the 'LS158 and 'S158 present inverted data to minimize propagation delay time.

FUNCTION TABLE

INPUTS				OUTPUT Y	
STROBE $\bar{G}$	SELECT $\bar{A}/B$	A	B	'157, 'LS157, 'S157	'LS158 'S158
H	X	X	X	L	H
L	L	L	X	L	H
L	L	H	X	H	L
L	H	X	L	L	H
L	H	X	H	H	L

H = high level, L = low level, X = irrelevant

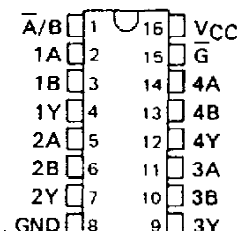
absolute maximum ratings over operating free-air temperature range (unless otherwise noted)

Supply voltage, V_{CC} (See Note 1)	7 V
Input voltage: '157, 'S158	5.5 V
'LS157, 'LS158	7 V
Operating free-air temperature range: SN54'	-55°C to 125°C
SN74'	0°C to 70°C
Storage temperature range	-65°C to 150°C

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

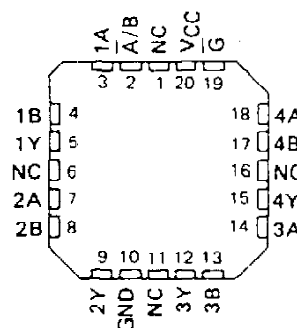
SN54157, SN54LS157, SN54S157,
SN54LS158, SN54S158 . . . J OR W PACKAGE
SN74157 . . . N PACKAGE
SN74LS157, SN74S157,
SN74LS158, SN74S158 . . . D OR N PACKAGE

(TOP VIEW)



SN54LS157, SN54S157, SN54LS158,
SN54S158 . . . FK PACKAGE

(TOP VIEW)



NC - No internal connection

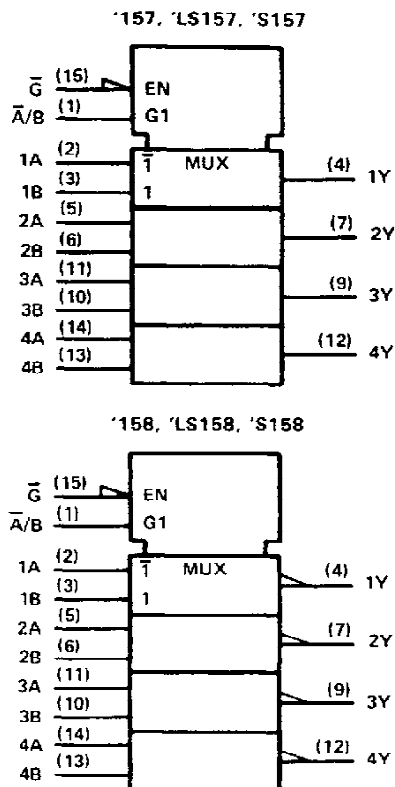
PRODUCTION DATA documents contain information current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

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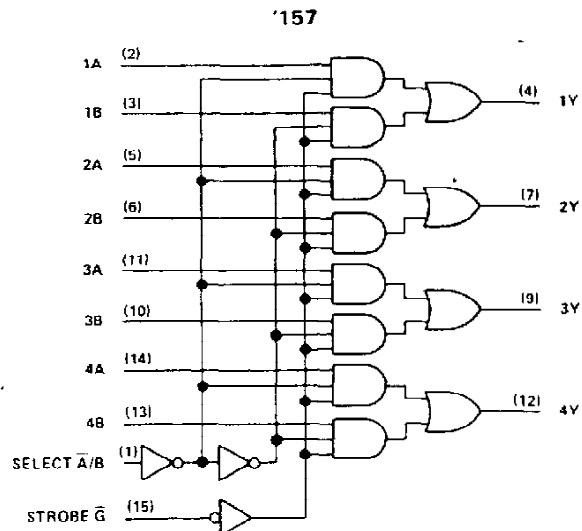
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**SN54157, SN54LS157, SN54LS158, SN54S157, SN54S158,
SN74157, SN74LS157, SN74LS158, SN74S157, SN74S158
QUADRUPLE 2-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS**

logic symbols†



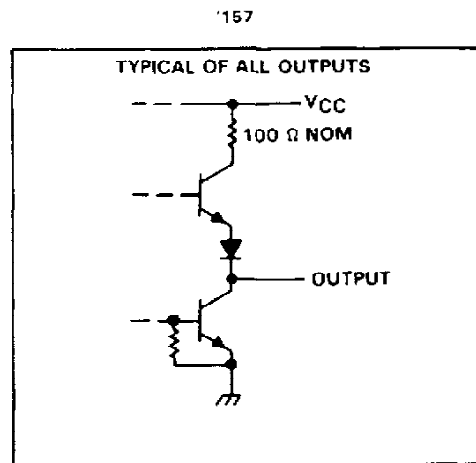
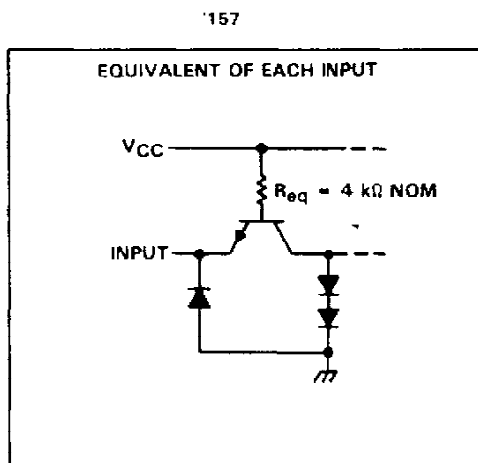
logic diagram (positive logic)



† These symbols are in accordance with ANSI/IEEE Std. 91-1984 and IEC Publication 617-12.

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

schematics of inputs and outputs



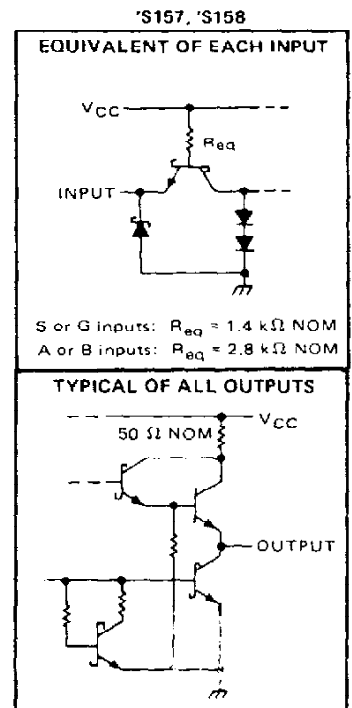
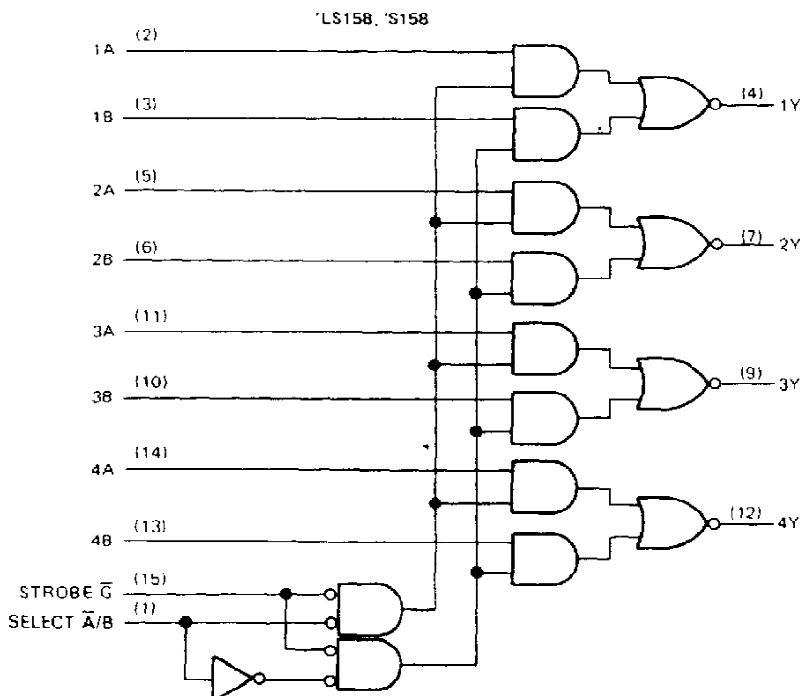
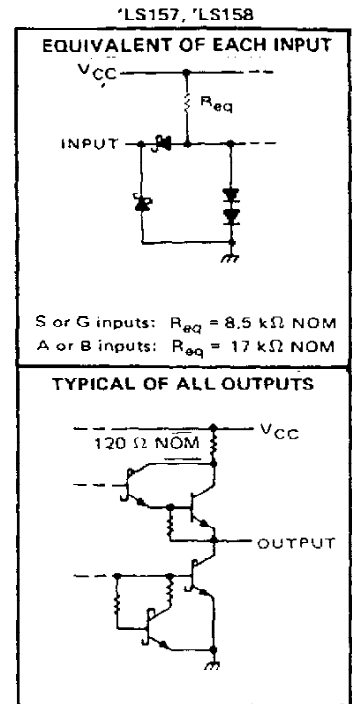
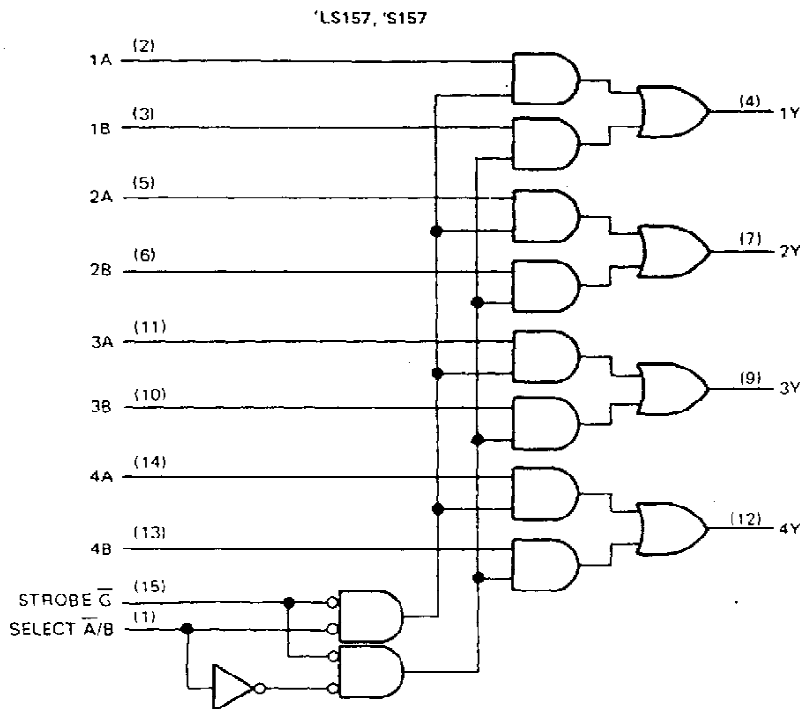
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**SN54LS157, SN54LS158, SN54S157, SN54S158,
SN74LS157, SN74LS158, SN74S157, SN74S158
QUADRUPLE 2-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS**

logic diagrams (positive logic)

schematics of inputs and outputs



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

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SN54157, SN74157

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

recommended operating conditions

	SN54157			SN74157			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	μ 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†	SN54157			SN74157			UNIT
		MIN	TYP‡	MAX	MIN	TYP‡	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	$V_{CC} = \text{MIN}$, $I_I = -12 \text{ mA}$			-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	μ 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‡	$V_{CC} = \text{MAX}$	-20		-55	-18		-55	mA
I_{CC} Supply current	$V_{CC} = \text{MAX}$, See Note 2		30	48		30	48	mA

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

‡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 duration of short-circuit should not exceed one second.

NOTE 2: I_{CC} is measured with 4.5 V applied to all inputs and all outputs open.

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

PARAMETER [¶]	FROM (INPUT)	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{PLH}	Data	$C_L = 15 \text{ pF}$, $R_L = 400 \Omega$, See Note 3		9	14	ns
t_{PHL}				9	14	
t_{PLH}	Strobe $\overline{G}$			13	20	ns
t_{PHL}				14	21	
t_{PLH}	Select $\overline{A/B}$			15	23	ns
t_{PHL}				18	27	

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

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

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

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SN54LS157, SN54LS158, SN74LS157, SN74LS158 **QUADRUPLE 2-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS**

recommended operating conditions

		SN54LS ¹			SN74LS ¹			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V _{CC}	Supply voltage	4.5	5	5.5	4.75	5	5.25	V
I _{OH}	High-level output current			-400			-400	μA
I _{OL}	Low-level output current			4			8	mA
T _A	Operating free-air temperature	-55		125	0		70	°C

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

PARAMETER		TEST CONDITIONS†		SN54LS ¹			SN74LS ¹			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} = MIN, I _I = -18 mA				-1.5			-1.5	V
V _{OH}	High-level output voltage	V _{CC} = MIN, V _{IH} = 2 V, V _{IL} = MAX, I _{OH} = -400 μA		2.5	3.4		2.7	3.4		V
V _{OL}	Low-level output voltage	V _{CC} = MIN, V _{IH} = 2 V, V _{IL} = MAX	I _{OL} = 4 mA	0.25	0.4		0.25	0.4		V
			I _{OL} = 8 mA				0.35	0.5		
I _I	Input current at maximum input voltage	A/B or $\bar{G}$ A or B	V _{CC} = MAX, V _I = 7 V			0.2			0.2	mA
						0.1			0.1	
I _{IH}	High-level input current	A/B or $\bar{G}$ A or B	V _{CC} = MAX, V _I = 2.7 V			40			40	μA
						20			20	
I _{IL}	Low-level input current	A/B or $\bar{G}$ A or B	V _{CC} = MAX, V _I = 0.4 V			-0.8			-0.8	mA
						-0.4			-0.4	
I _{OS}	Short-circuit output current§	V _{CC} = MAX		-20		-100	-20		-100	mA
I _{CC}	Supply current	V _{CC} = MAX, See Note 2	'LS157		9.7	16		9.7	16	mA
			'LS158		4.8	8		4.8	8	
		V _{CC} = MAX, All A inputs at 4.5 V, All other inputs at 0 V	'LS158		6.5	11		6.5	11	

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

‡ 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 duration of short circuit should not exceed one second.

NOTE 2: I_{CC} is measured with 4.5 V applied to all inputs and all outputs open.

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

PARAMETER†	FROM (INPUT)	TEST CONDITIONS	'LS157			'LS158			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
t _{PLH}	Data	C _L = 15 pF, R _L = 2 kΩ, See Note 3		9	14		7	12	ns
t _{PHL}				9	14		10	15	
t _{PLH}	Strobe $\overline{G}$			13	20		11	17	ns
t _{PHL}				14	21		18	24	
t _{PLH}	Select $\overline{A/B}$			15	23		13	20	ns
t _{PHL}				18	27		16	24	

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

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

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



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SN54S157, SN54S158, SN74S157, SN74S158

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

recommended operating conditions

	SN54S157 SN54S158			SN74S157 SN74S158			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	°C

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

PARAMETER		TEST CONDITIONS†	SN54S157 SN74S157			SN54S158 SN74S158			UNIT
			MIN	TYP‡	MAX	MIN	TYP‡	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	$V_{CC} = \text{MIN}, I_I = -18 \text{ mA}$			-1.2			-1.2	V
V_{OH}	High-level output voltage	$V_{CC} = \text{MIN}, V_{IH} = 2 \text{ V},$ $V_{IL} = 0.8 \text{ V}, I_{OH} = -1 \text{ mA}$	Series 54S	2.5	3.4	2.5	3.4		V
		Series 74S	2.7	3.4	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			0.5	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	$\overline{A/B}$ or $\overline{G}$ A or B $V_{CC} = \text{MAX}, V_I = 2.7 \text{ V}$			100			100	μA
					50			50	
I_{IL}	Low-level input current	$\overline{A/B}$ or $\overline{G}$ A or B $V_{CC} = \text{MAX}, V_I = 0.5 \text{ V}$			-4			-4	mA
					-2			-2	
I_{OS}	Short-circuit output current §	$V_{CC} = \text{MAX}$	-40		-100	-40		-100	mA
I_{CC}	Supply current	$V_{CC} = \text{MAX},$ All inputs at 4.5 V, See Note 2		50	78		39	61	mA
		$V_{CC} = \text{MAX},$ A inputs at 4.5 V, B, G, S, inputs at 0 V, See Note 2						81	

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

‡ 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 duration of the short-circuit should not exceed one second.

Note 2: I_{CC} is measured with all outputs open.

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

PARAMETER ¹	FROM (INPUT)	TEST CONDITIONS	SN54S157 SN74S157			SN54S158 SN74S158			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
t _{PLH}	Data	C _L = 15 pF, R _L = 280 Ω, See Note 3	5	7.5		4	6		ns
t _{PHL}			4.5	6.5		4	6		
t _{PLH}	Strobe $\overline{G}$		8.5	12.5		6.5	11.5		ns
t _{PHL}			7.5	12		7	12		
t _{PLH}	Select $\overline{A/B}$		9.5	15		8	12		ns
t _{PHL}			9.5	15		8	12		

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

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

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

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PACKAGING INFORMATION

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/Ball Finish	MSL Peak Temp ⁽³⁾
76002012A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type
7600201EA	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type
7600201FA	ACTIVE	CFP	W	16	1	TBD	A42	N / A for Pkg Type
76033012A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type
7603301EA	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type
7603301FA	ACTIVE	CFP	W	16	1	TBD	A42	N / A for Pkg Type
JM38510/07903BEA	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type
JM38510/07903BFA	ACTIVE	CFP	W	16	1	TBD	A42	N / A for Pkg Type
JM38510/07904BEA	OBSOLETE	CDIP	J	16		TBD	Call TI	Call TI
JM38510/07904BFA	OBSOLETE	CFP	W	16		TBD	Call TI	Call TI
JM38510/30903B2A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type
JM38510/30903BEA	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type
JM38510/30903BFA	ACTIVE	CFP	W	16	1	TBD	A42	N / A for Pkg Type
SN54157J	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type
SN54LS157J	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type
SN54LS158J	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type
SN54S157J	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type
SN54S158J	OBSOLETE	CDIP	J	16		TBD	Call TI	Call TI
SN74157N	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI
SN74157N3	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI
SN74LS157D	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS157DE4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS157DG4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS157DR	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS157DRE4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS157DRG4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS157N	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type
SN74LS157N3	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI
SN74LS157NE4	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type
SN74LS157NSR	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS157NSRE4	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS157NSRG4	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS158D	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS158DE4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/Ball Finish	MSL Peak Temp ⁽³⁾
no Sb/Br)								
SN74LS158DG4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS158DR	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS158DRE4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS158DRG4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS158N	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type
SN74LS158N3	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI
SN74LS158NE4	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type
SN74LS158NSR	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS158NSRE4	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS158NSRG4	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74S157N	ACTIVE	PDIP	N	16		TBD	Call TI	Call TI
SN74S157N3	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI
SN74S157NE4	ACTIVE	PDIP	N	16		TBD	Call TI	Call TI
SN74S158D	OBSOLETE	SOIC	D	16		TBD	Call TI	Call TI
SN74S158DR	OBSOLETE	SOIC	D	16		TBD	Call TI	Call TI
SN74S158N	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI
SN74S158N3	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI
SNJ54157J	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type
SNJ54157W	ACTIVE	CFP	W	16	1	TBD	A42	N / A for Pkg Type
SNJ54LS157FK	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type
SNJ54LS157J	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type
SNJ54LS157W	ACTIVE	CFP	W	16	1	TBD	A42	N / A for Pkg Type
SNJ54LS158FK	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type
SNJ54LS158J	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type
SNJ54LS158W	ACTIVE	CFP	W	16	1	TBD	A42	N / A for Pkg Type
SNJ54S157FK	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type
SNJ54S157J	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type
SNJ54S157W	ACTIVE	CFP	W	16	1	TBD	A42	N / A for Pkg Type
SNJ54S158FK	OBSOLETE	LCCC	FK	20		TBD	Call TI	Call TI
SNJ54S158J	OBSOLETE	CDIP	J	16		TBD	Call TI	Call TI
SNJ54S158W	OBSOLETE	CFP	W	16		TBD	Call TI	Call TI

⁽¹⁾ 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.

OBSELETE: 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.

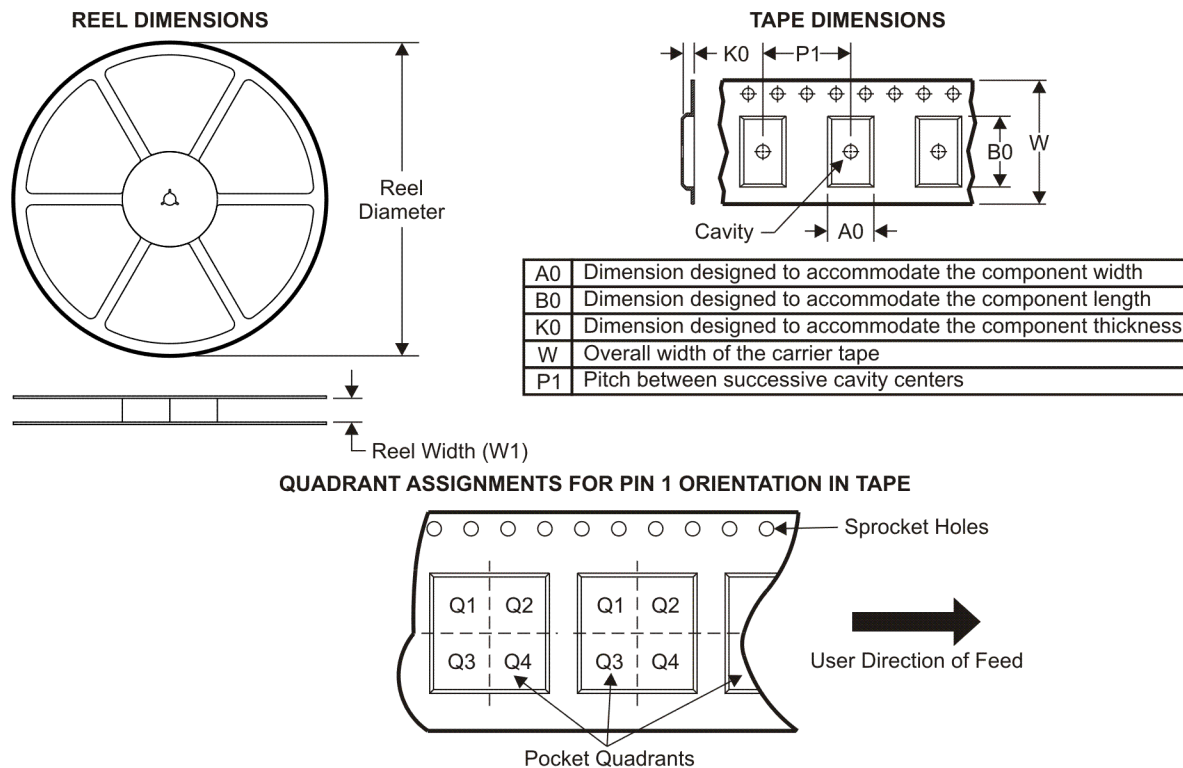
Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

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.

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.

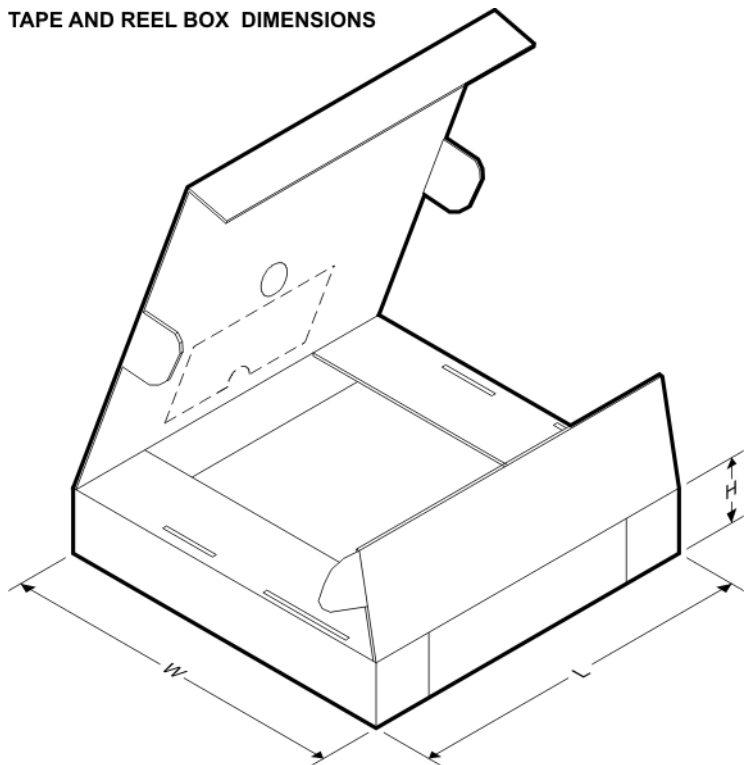
In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

TAPE AND REEL INFORMATION


*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
SN74LS157DR	SOIC	D	16	2500	330.0	16.4	6.5	10.3	2.1	8.0	16.0	Q1
SN74LS157NSR	SO	NS	16	2000	330.0	16.4	8.2	10.5	2.5	12.0	16.0	Q1
SN74LS158DR	SOIC	D	16	2500	330.0	16.4	6.5	10.3	2.1	8.0	16.0	Q1
SN74LS158NSR	SO	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

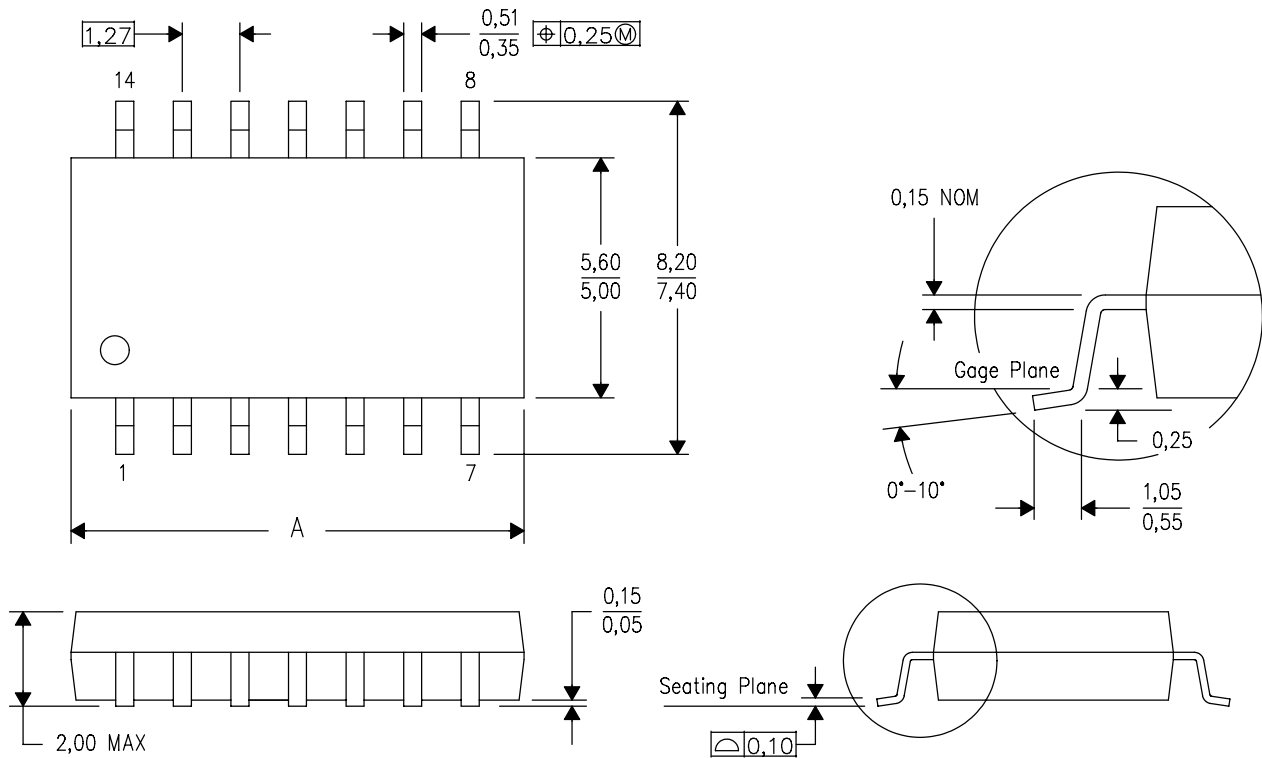
Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74LS157DR	SOIC	D	16	2500	333.2	345.9	28.6
SN74LS157NSR	SO	NS	16	2000	346.0	346.0	33.0
SN74LS158DR	SOIC	D	16	2500	333.2	345.9	28.6
SN74LS158NSR	SO	NS	16	2000	346.0	346.0	33.0

MECHANICAL DATA

NS (R-PDSO-G**)

PLASTIC SMALL-OUTLINE PACKAGE

14-PINS SHOWN



DIM \ PINS **	14	16	20	24
A MAX	10,50	10,50	12,90	15,30
A MIN	9,90	9,90	12,30	14,70

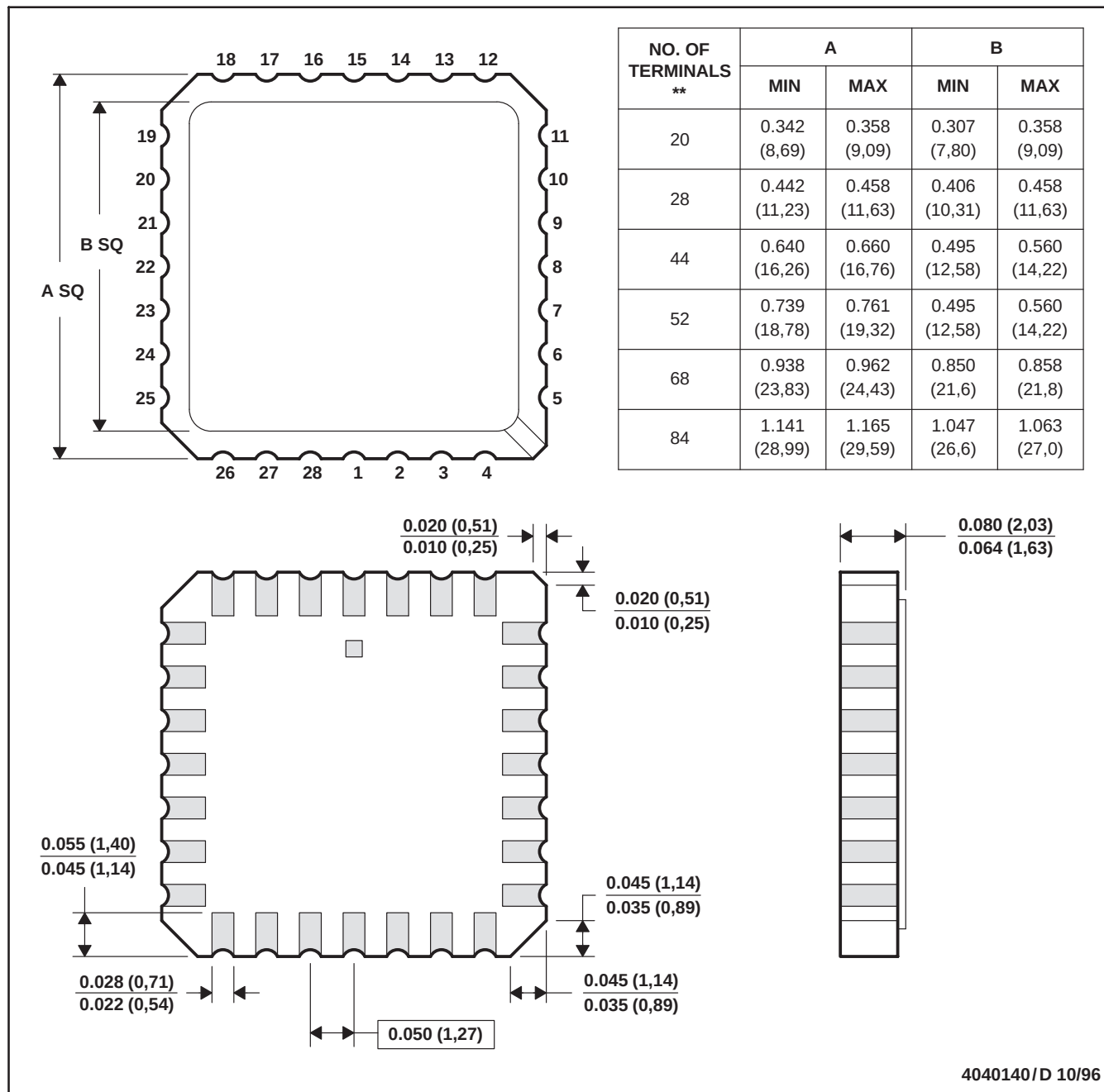
4040062/C 03/03

- NOTES:
- 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.

FK (S-CQCC-N**)

LEADLESS CERAMIC CHIP CARRIER

28 TERMINAL SHOWN

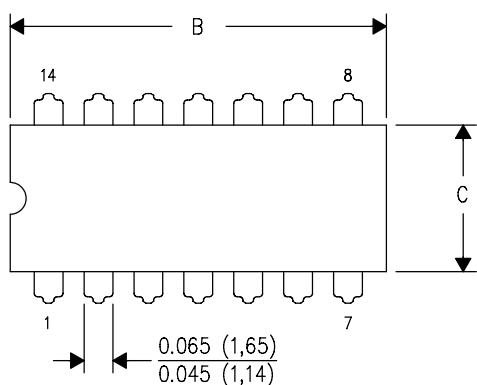


- NOTES:
- All linear dimensions are in inches (millimeters).
 - This drawing is subject to change without notice.
 - This package can be hermetically sealed with a metal lid.
 - The terminals are gold plated.
 - Falls within JEDEC MS-004

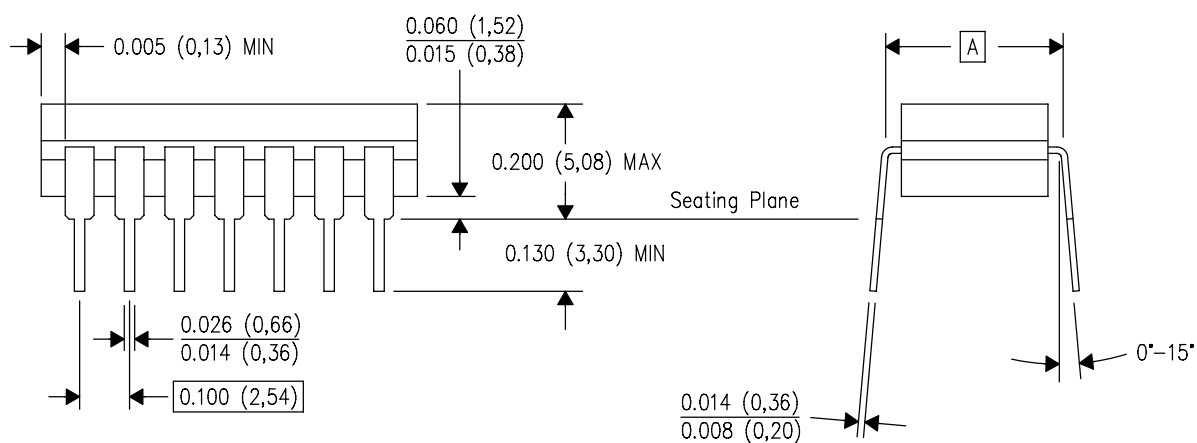
J (R-GDIP-T**)

14 LEADS SHOWN

CERAMIC DUAL IN-LINE PACKAGE



PINS ** DIM	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)

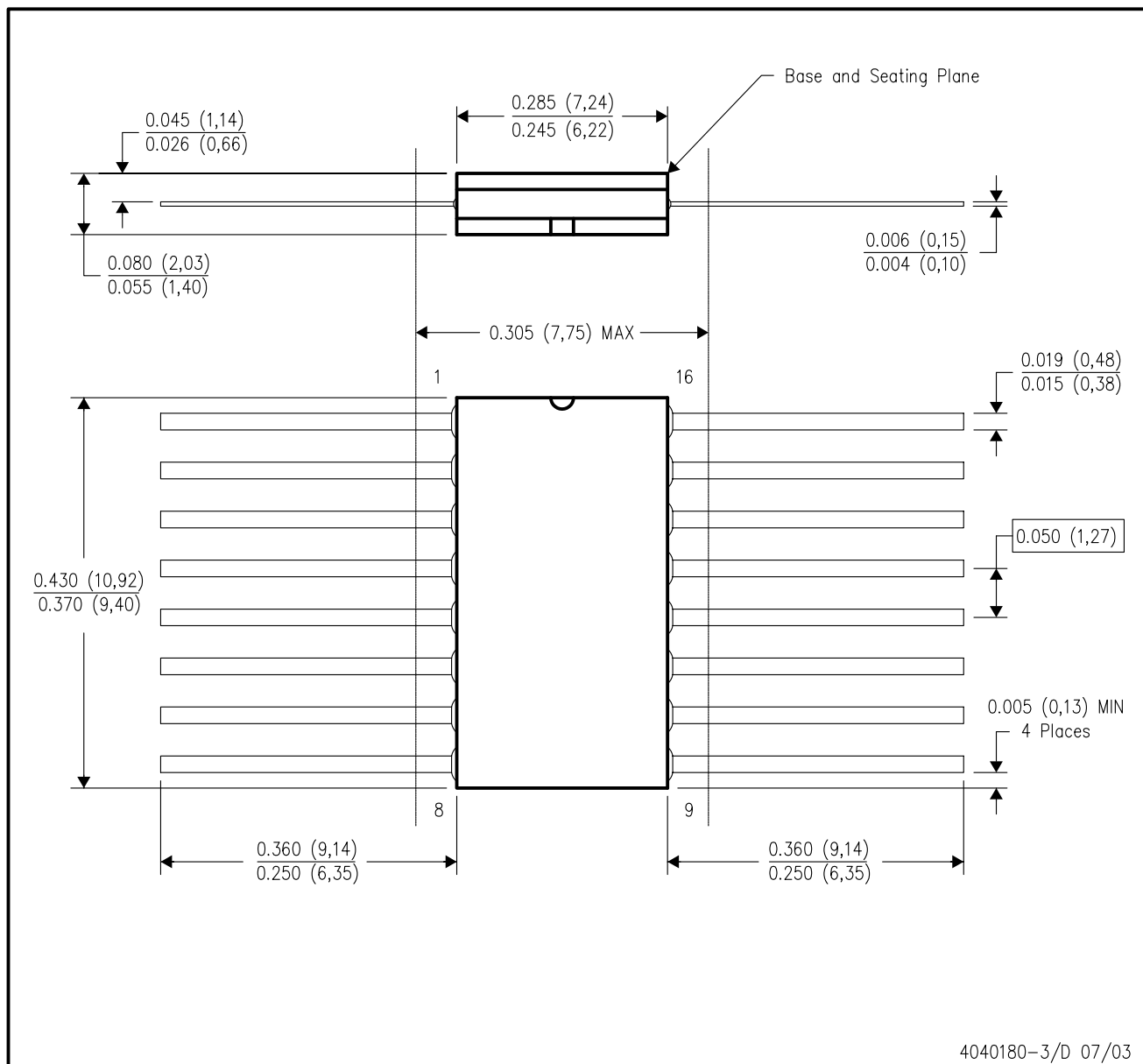


4040083/F 03/03

- NOTES:
- 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)

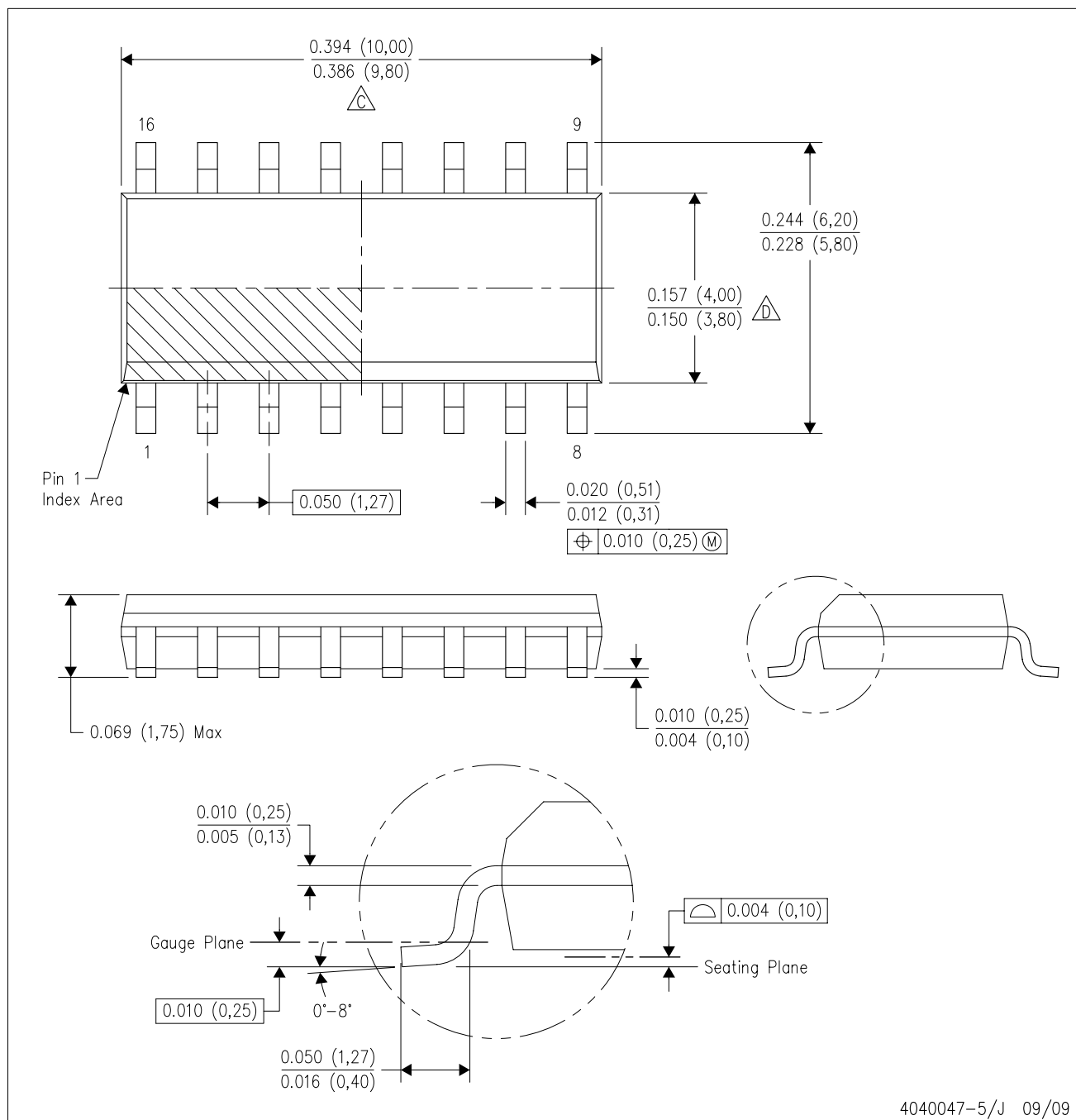
CERAMIC DUAL FLATPACK



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

D (R-PDSO-G16)

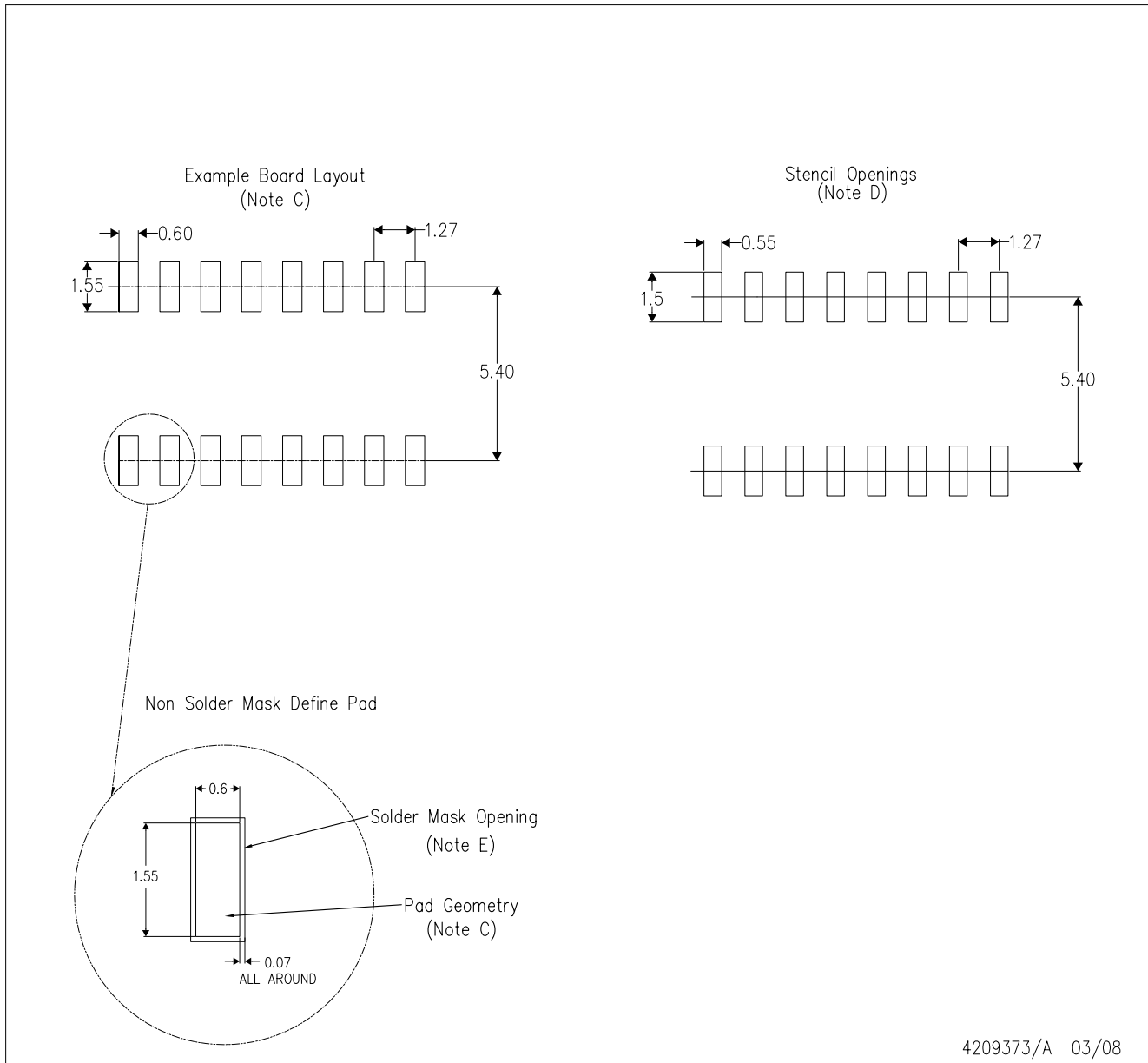
PLASTIC SMALL-OUTLINE PACKAGE



4040047-5/J 09/09

- 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 .006 (0,15) per end.
 - D. Body width does not include interlead flash. Interlead flash shall not exceed .017 (0,43) per side.
 - E. Reference JEDEC MS-012 variation AC.

D(R-PDSO-G16)

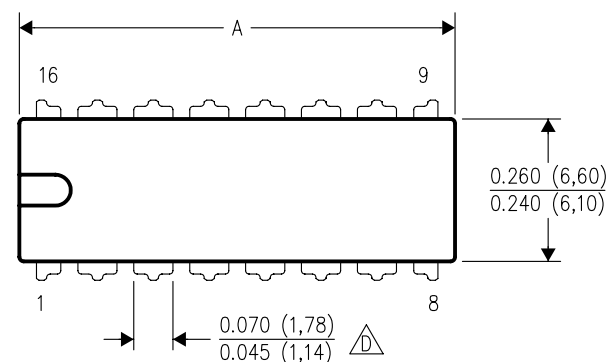


- NOTES:
- A. All linear dimensions are in millimeters.
 - B. This drawing is subject to change without notice.
 - C. Refer to IPC7351 for alternate board design.
 - D. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC-7525
 - E. Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.

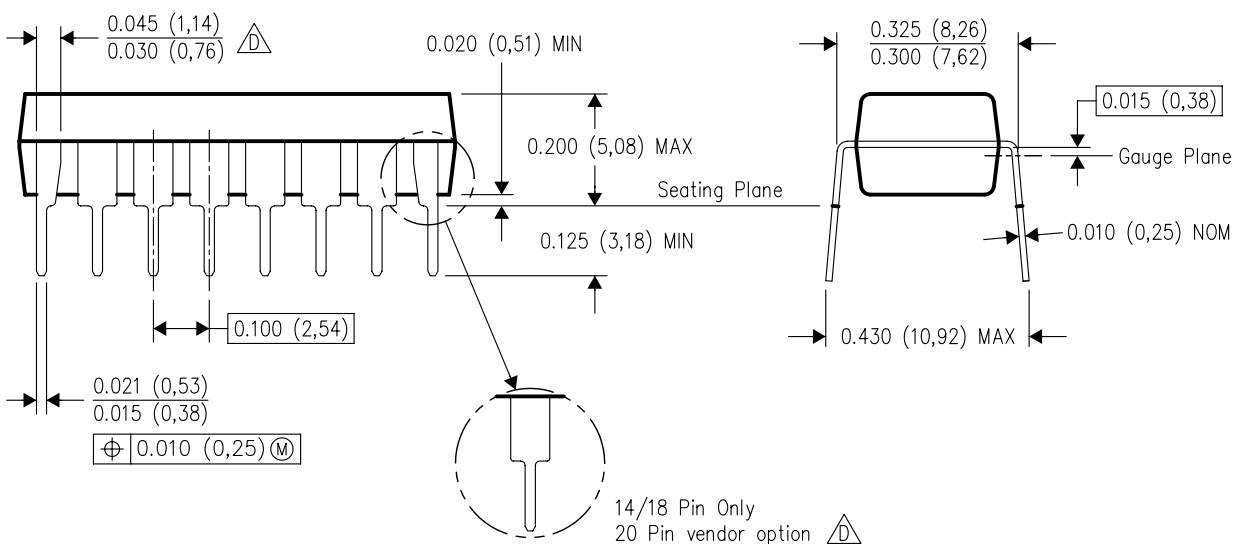
N (R-PDIP-T**)

16 PINS SHOWN

PLASTIC DUAL-IN-LINE PACKAGE



PINS ** DIM	14	16	18	20
A MAX	0.775 (19,69)	0.775 (19,69)	0.920 (23,37)	1.060 (26,92)
A MIN	0.745 (18,92)	0.745 (18,92)	0.850 (21,59)	0.940 (23,88)
MS-001 VARIATION	AA	BB	AC	AD



4040049/E 12/2002

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.

PACKAGING INFORMATION

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/Ball Finish	MSL Peak Temp ⁽³⁾
76002012A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type
7600201EA	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type
7600201FA	ACTIVE	CFP	W	16	1	TBD	A42	N / A for Pkg Type
76033012A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type
7603301EA	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type
7603301FA	ACTIVE	CFP	W	16	1	TBD	A42	N / A for Pkg Type
JM38510/07903BEA	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type
JM38510/07903BFA	ACTIVE	CFP	W	16	1	TBD	A42	N / A for Pkg Type
JM38510/07904BEA	OBSOLETE	CDIP	J	16		TBD	Call TI	Call TI
JM38510/07904BFA	OBSOLETE	CFP	W	16		TBD	Call TI	Call TI
JM38510/30903B2A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type
JM38510/30903BEA	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type
JM38510/30903BFA	ACTIVE	CFP	W	16	1	TBD	A42	N / A for Pkg Type
SN54157J	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type
SN54LS157J	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type
SN54LS158J	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type
SN54S157J	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type
SN54S158J	OBSOLETE	CDIP	J	16		TBD	Call TI	Call TI
SN74157N	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI
SN74157N3	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI
SN74LS157D	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS157DE4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS157DG4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS157DR	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS157DRE4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS157DRG4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS157N	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type
SN74LS157N3	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI
SN74LS157NE4	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type
SN74LS157NSR	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS157NSRE4	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS157NSRG4	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS158D	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS158DE4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/Ball Finish	MSL Peak Temp ⁽³⁾
no Sb/Br)								
SN74LS158DG4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS158DR	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS158DRE4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS158DRG4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS158N	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type
SN74LS158N3	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI
SN74LS158NE4	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type
SN74LS158NSR	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS158NSRE4	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74LS158NSRG4	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
SN74S157N	ACTIVE	PDIP	N	16	25	TBD	Call TI	Call TI
SN74S157N3	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI
SN74S157NE4	ACTIVE	PDIP	N	16	25	TBD	Call TI	Call TI
SN74S158D	OBSOLETE	SOIC	D	16		TBD	Call TI	Call TI
SN74S158DR	OBSOLETE	SOIC	D	16		TBD	Call TI	Call TI
SN74S158N	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI
SN74S158N3	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI
SNJ54157J	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type
SNJ54157W	ACTIVE	CFP	W	16	1	TBD	A42	N / A for Pkg Type
SNJ54LS157FK	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type
SNJ54LS157J	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type
SNJ54LS157W	ACTIVE	CFP	W	16	1	TBD	A42	N / A for Pkg Type
SNJ54LS158FK	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type
SNJ54LS158J	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type
SNJ54LS158W	ACTIVE	CFP	W	16	1	TBD	A42	N / A for Pkg Type
SNJ54S157FK	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type
SNJ54S157J	ACTIVE	CDIP	J	16	1	TBD	A42	N / A for Pkg Type
SNJ54S157W	ACTIVE	CFP	W	16	1	TBD	A42	N / A for Pkg Type
SNJ54S158FK	OBSOLETE	LCCC	FK	20		TBD	Call TI	Call TI
SNJ54S158J	OBSOLETE	CDIP	J	16		TBD	Call TI	Call TI
SNJ54S158W	OBSOLETE	CFP	W	16		TBD	Call TI	Call TI

⁽¹⁾ 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.

OBSELETE: 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.

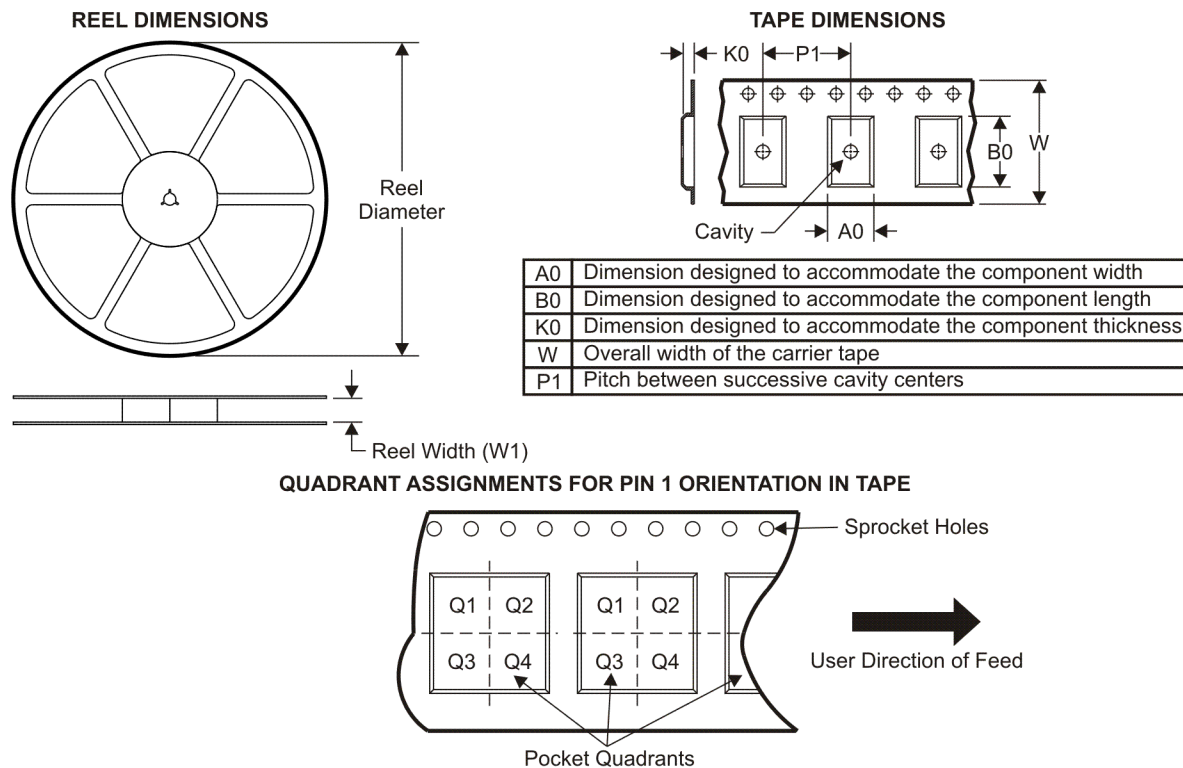
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Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

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

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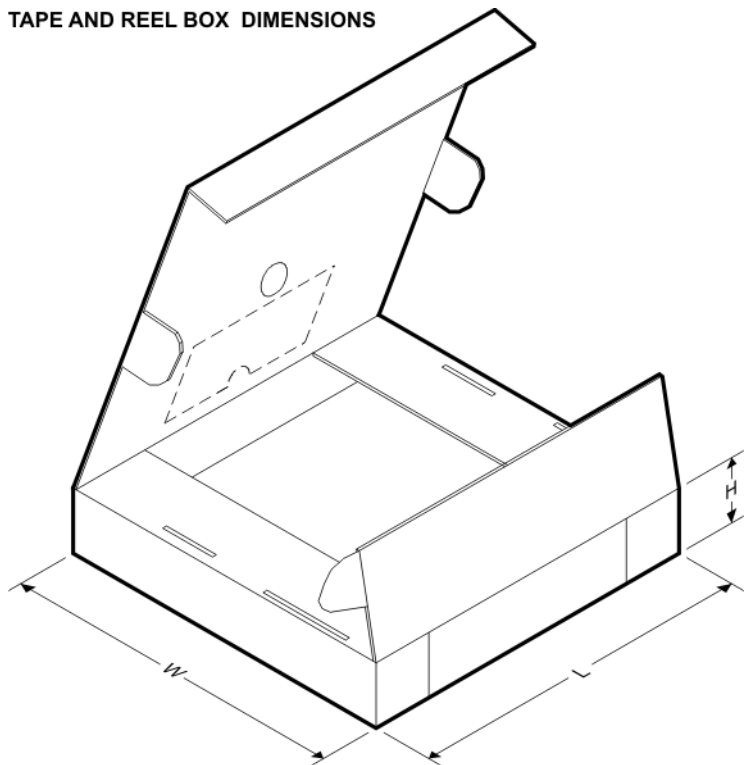
In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

TAPE AND REEL INFORMATION


*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
SN74LS157DR	SOIC	D	16	2500	330.0	16.4	6.5	10.3	2.1	8.0	16.0	Q1
SN74LS157NSR	SO	NS	16	2000	330.0	16.4	8.2	10.5	2.5	12.0	16.0	Q1
SN74LS158DR	SOIC	D	16	2500	330.0	16.4	6.5	10.3	2.1	8.0	16.0	Q1
SN74LS158NSR	SO	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

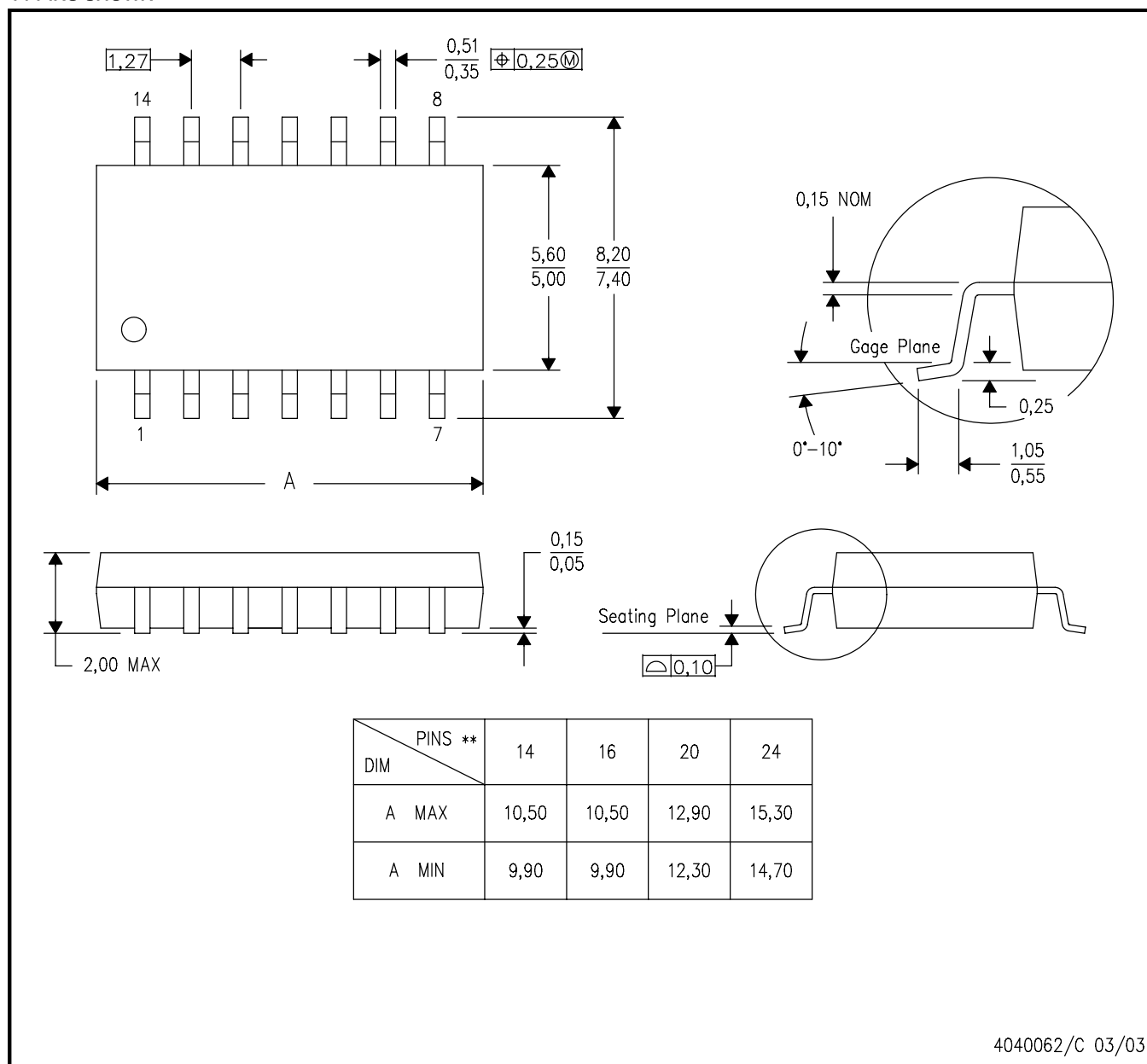
Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74LS157DR	SOIC	D	16	2500	333.2	345.9	28.6
SN74LS157NSR	SO	NS	16	2000	346.0	346.0	33.0
SN74LS158DR	SOIC	D	16	2500	333.2	345.9	28.6
SN74LS158NSR	SO	NS	16	2000	346.0	346.0	33.0

MECHANICAL DATA

NS (R-PDSO-G**)

PLASTIC SMALL-OUTLINE PACKAGE

14-PINS SHOWN

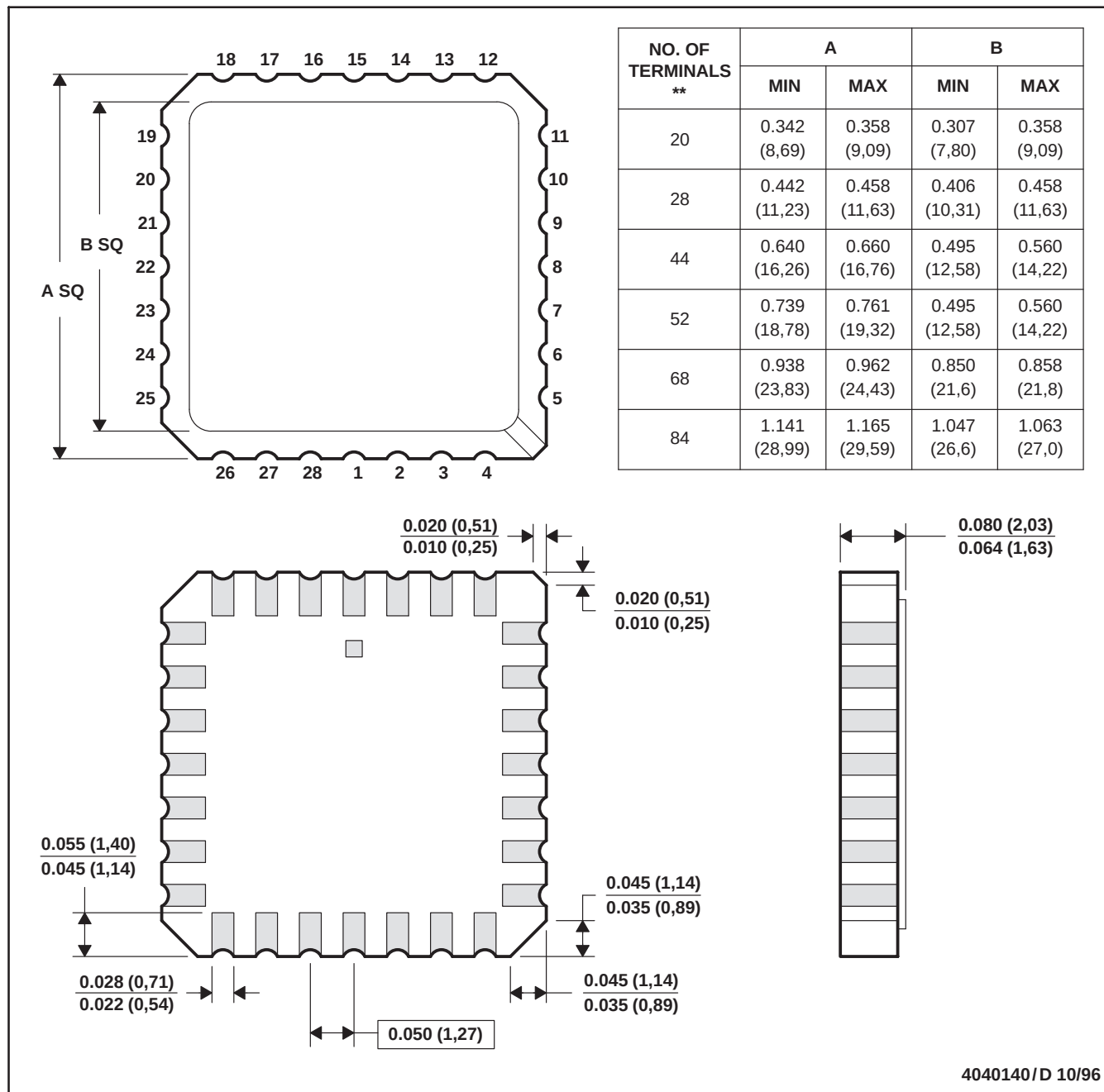


- NOTES:
- All linear dimensions are in millimeters.
 - This drawing is subject to change without notice.
 - Body dimensions do not include mold flash or protrusion, not to exceed 0,15.

FK (S-CQCC-N**)

LEADLESS CERAMIC CHIP CARRIER

28 TERMINAL SHOWN

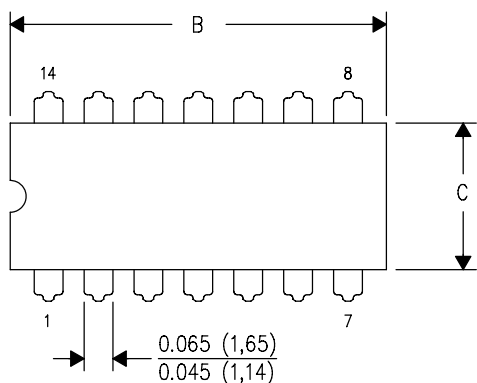


- NOTES:
- All linear dimensions are in inches (millimeters).
 - This drawing is subject to change without notice.
 - This package can be hermetically sealed with a metal lid.
 - The terminals are gold plated.
 - Falls within JEDEC MS-004

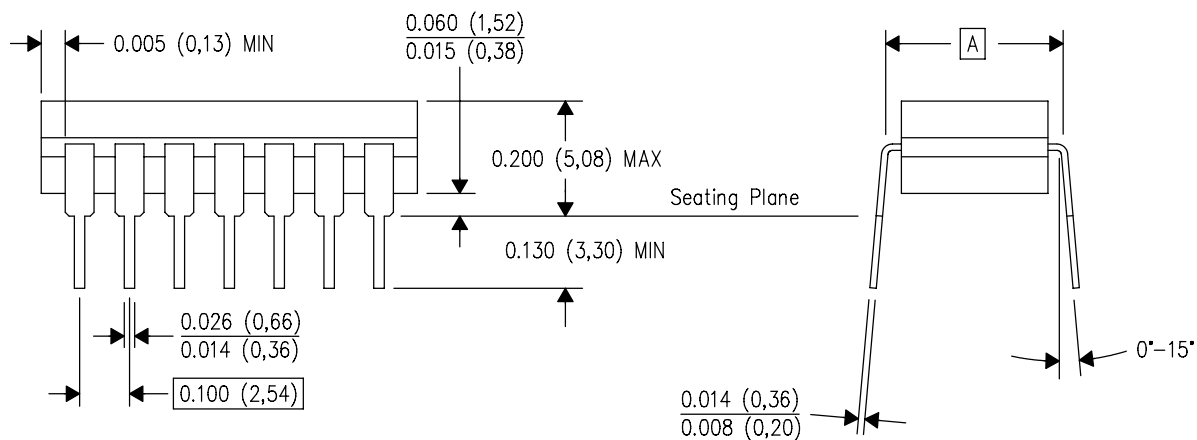
J (R-GDIP-T**)

14 LEADS SHOWN

CERAMIC DUAL IN-LINE PACKAGE



PINS ** DIM	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)

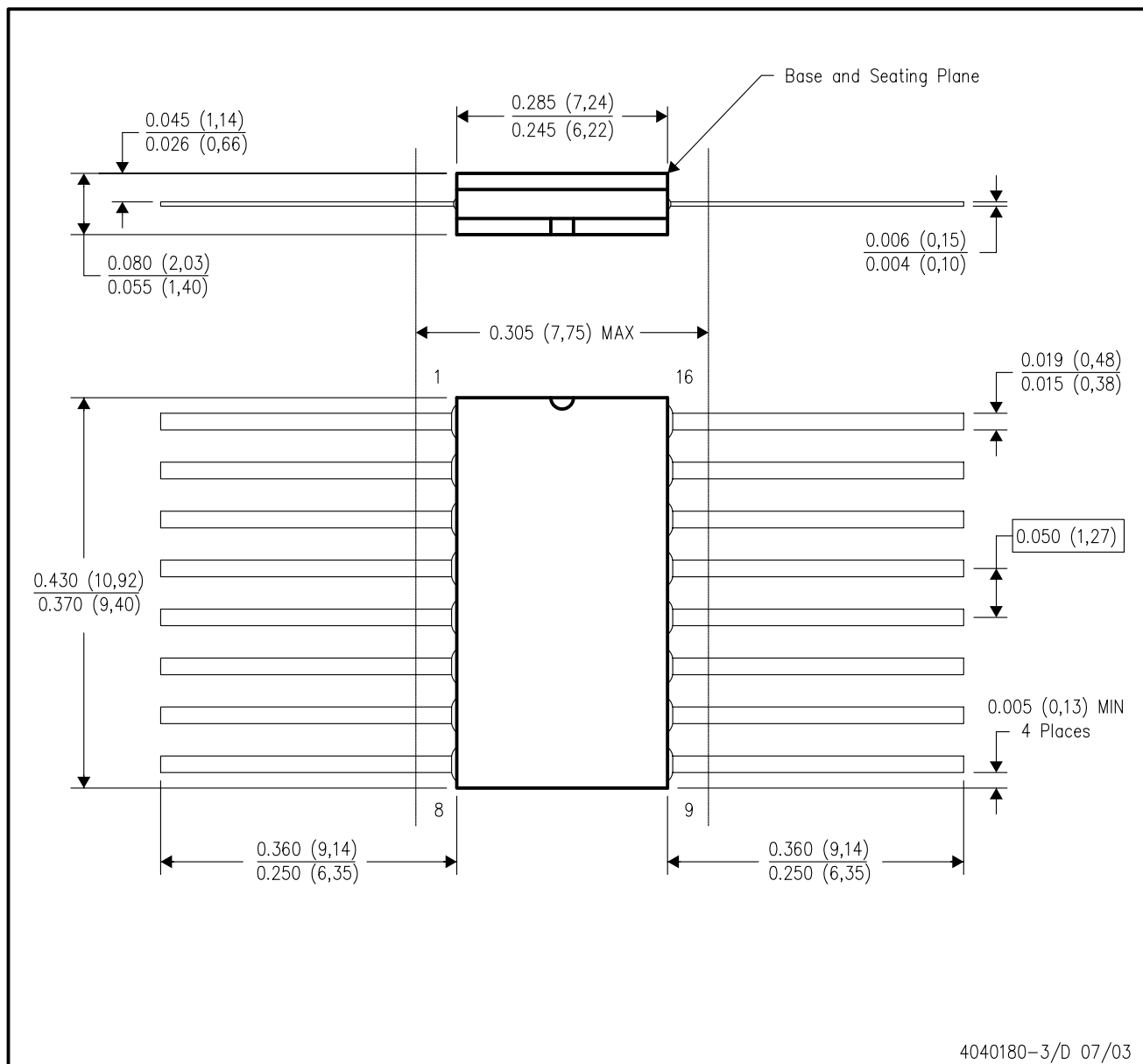


4040083/F 03/03

- NOTES:
- 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)

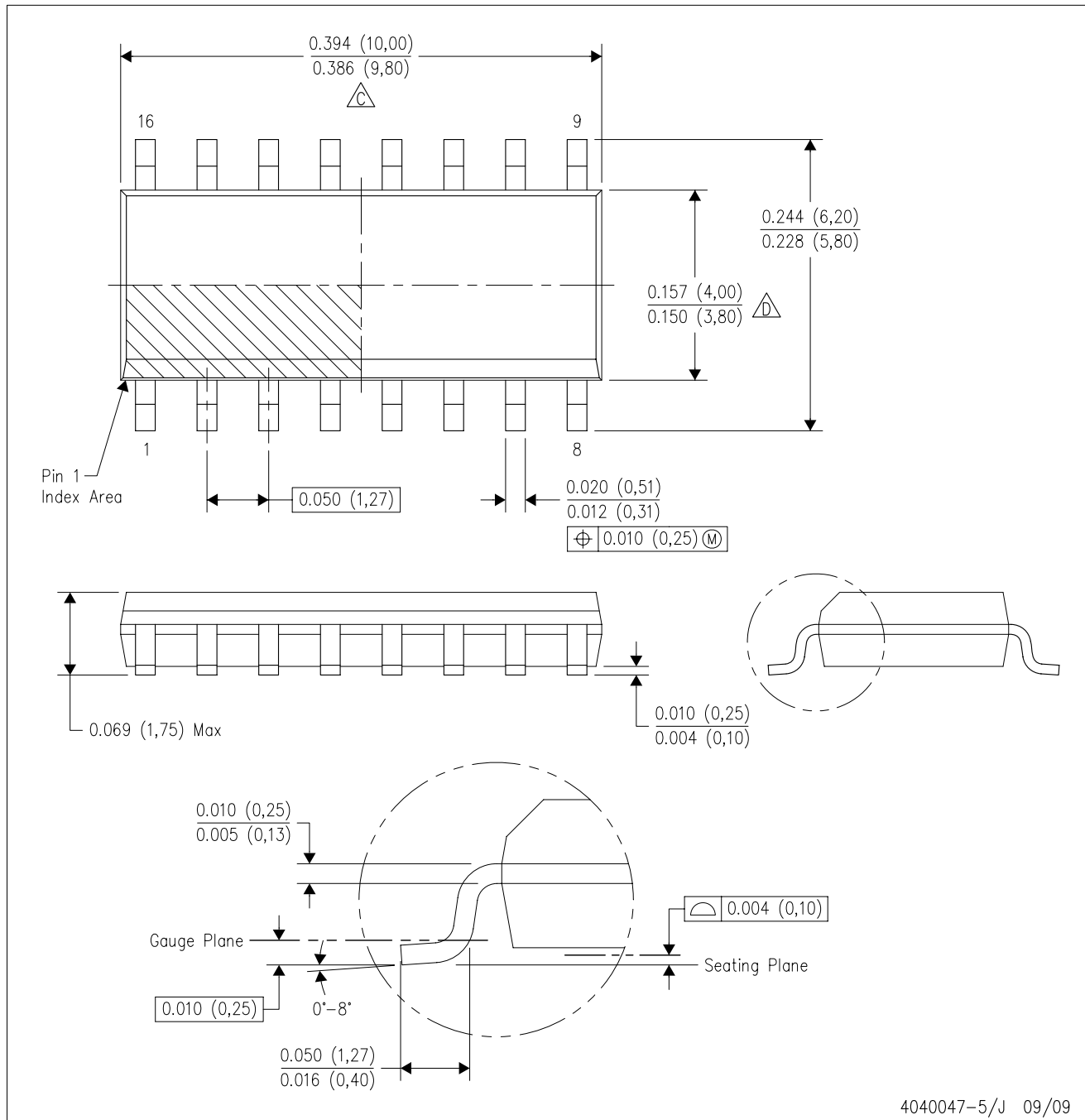
CERAMIC DUAL FLATPACK



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

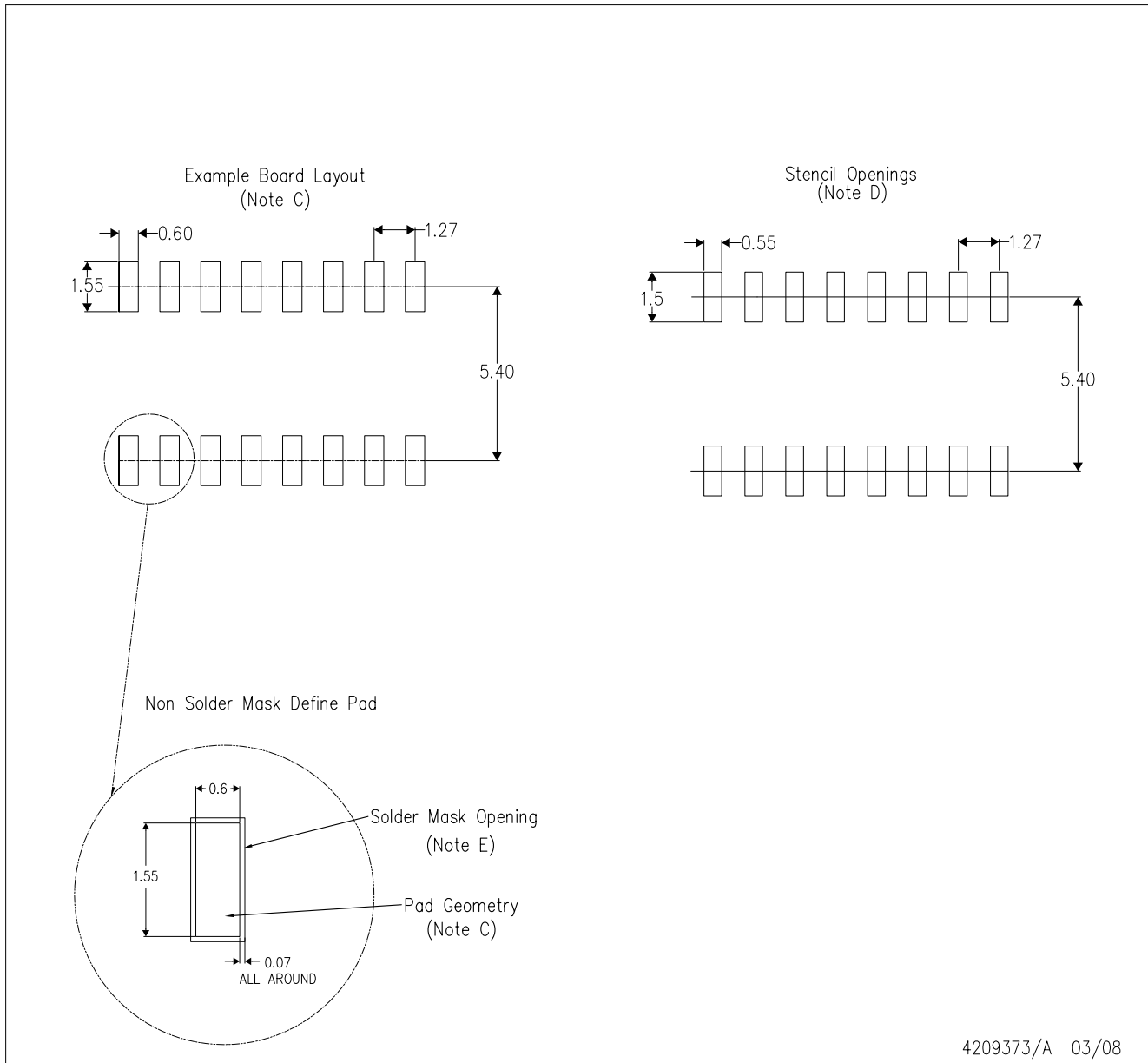
D (R-PDSO-G16)

PLASTIC SMALL-OUTLINE PACKAGE



- 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 .006 (0,15) per end.
 - D. Body width does not include interlead flash. Interlead flash shall not exceed .017 (0,43) per side.
 - E. Reference JEDEC MS-012 variation AC.

D(R-PDSO-G16)

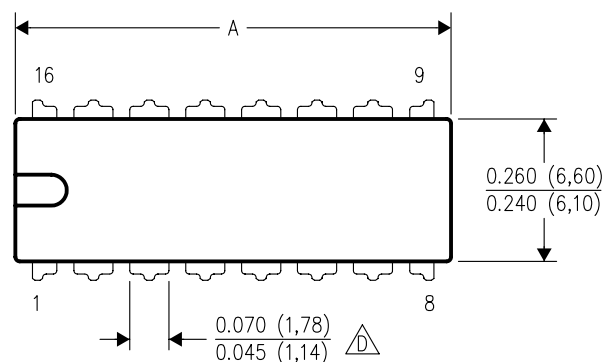


- NOTES:
- A. All linear dimensions are in millimeters.
 - B. This drawing is subject to change without notice.
 - C. Refer to IPC7351 for alternate board design.
 - D. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC-7525
 - E. Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.

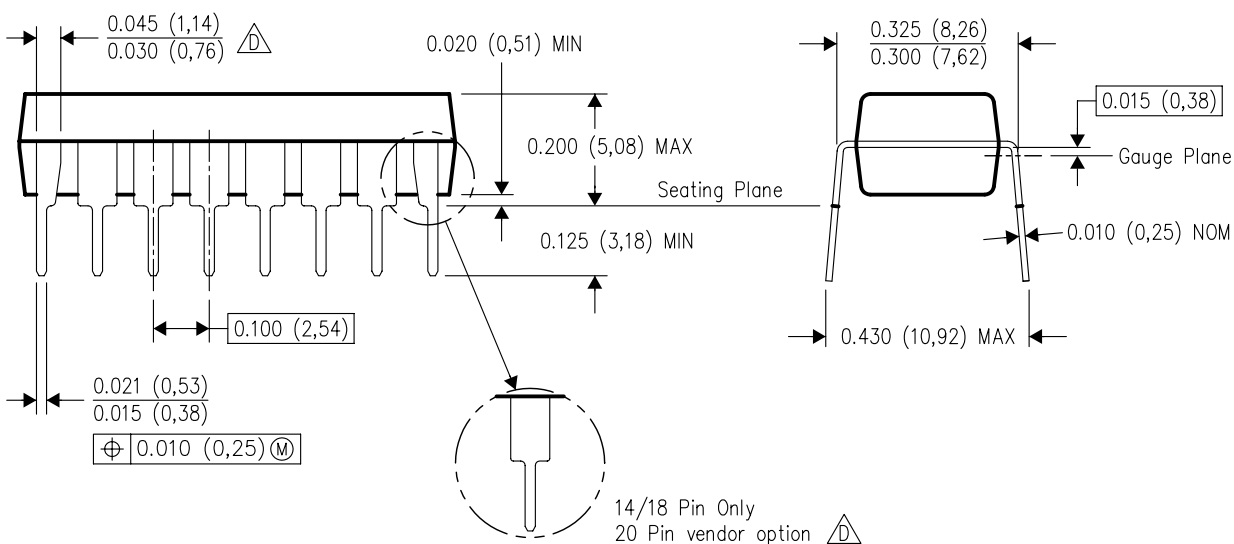
N (R-PDIP-T**)

16 PINS SHOWN

PLASTIC DUAL-IN-LINE PACKAGE



PINS ** DIM	14	16	18	20
A MAX	0.775 (19,69)	0.775 (19,69)	0.920 (23,37)	1.060 (26,92)
A MIN	0.745 (18,92)	0.745 (18,92)	0.850 (21,59)	0.940 (23,88)
MS-001 VARIATION	AA	BB	AC	AD



4040049/E 12/2002

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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