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

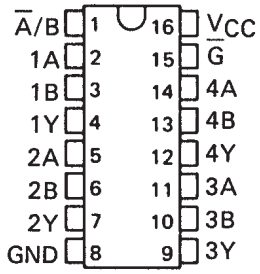
SDLS148 – OCTOBER 1976 – REVISED MARCH 1988

- **Three-State Outputs Interface Directly with System Bus**
- **'LS257B and 'LS258B Offer Three Times the Sink-Current Capability of the Original 'LS257 and 'LS258**
- **Same Pin Assignments as SN54LS157, SN74LS157, SN54S157, SN74S157, and SN54LS158, SN74LS158, SN54S158, SN74S158**
- **Provides Bus Interface from Multiple Sources in High-Performance Systems**

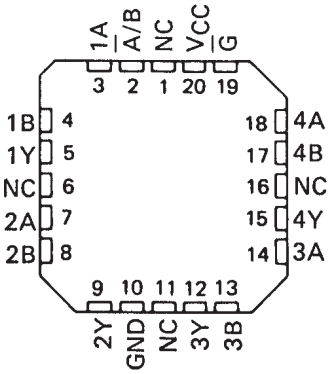
	AVERAGE PROPAGATION DELAY FROM DATA INPUT	TYPICAL POWER DISSIPATION†
'LS257B	9 ns	55 mW
'LS258B	9 ns	55 mW
'S257	4.8 ns	320 mW
'S258	4 ns	280 mW

†Off state (worst case)

SN54LS257B, SN54S257, SN54LS258B, SN54S258 . . . J OR W PACKAGE
SN74LS257B, SN74S257, SN74LS258B, SN74S258 . . . D OR N PACKAGE
(TOP VIEW)



SN54LS257B, SN54S257, SN54LS258B, SN54S258 . . . FK PACKAGE
(TOP VIEW)



NC–No internal connection.

description

These devices are designed to multiplex signals from four-bit data sources to four-output data lines in bus-organized systems. The 3-state outputs will not load the data lines when the output control pin ($\overline{G}$) is at a high-logic level.

Series 54LS and 54S are characterized for operation over the full military temperature range of −55°C to 125°C; Series 74LS and 74S are characterized for operation from 0°C to 70°C.

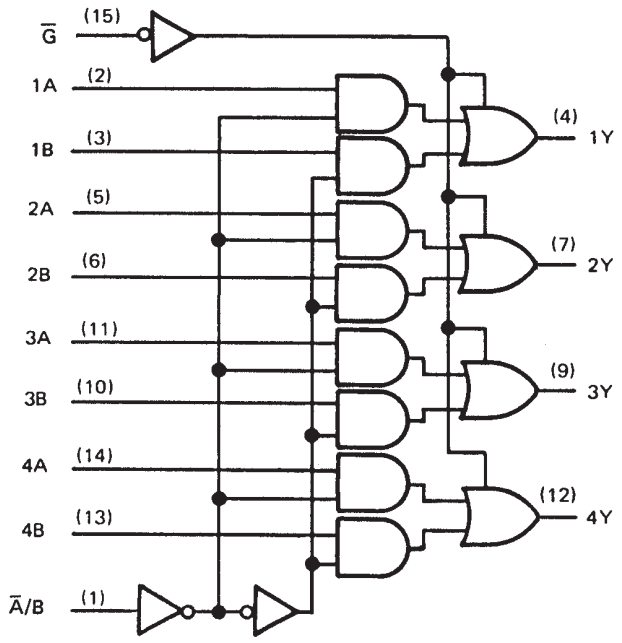
FUNCTION TABLE

INPUTS				OUTPUT Y	
OUTPUT CONTROL	SELECT	A	B	'LS257B 'S257	'LS258B 'S258
H	X	X	X	Z	Z
L	L	L	X	L	H
L	L	H	X	H	L
L	H	X	L	L	H
L	H	X	H	H	L

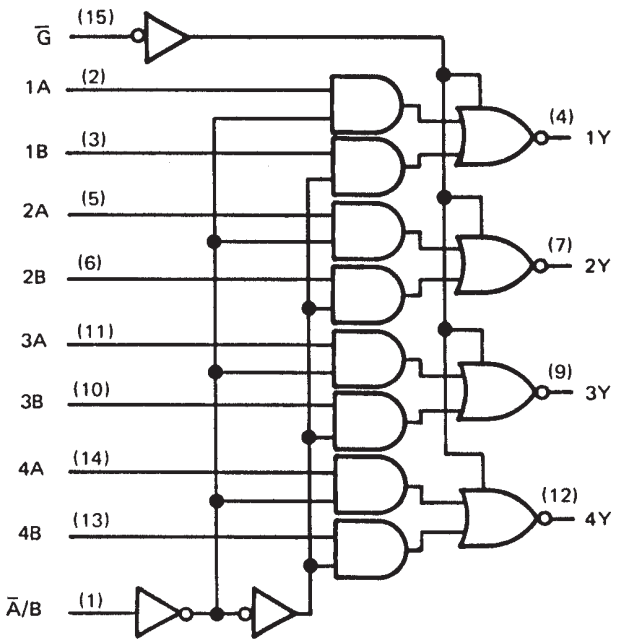
H = high level, L = low level, X = irrelevant,
Z = high impedance (off)

logic diagrams (positive logic)

'LS257B, 'S257

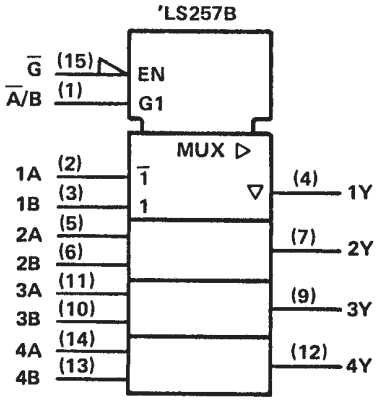


'LS258B, 'S258

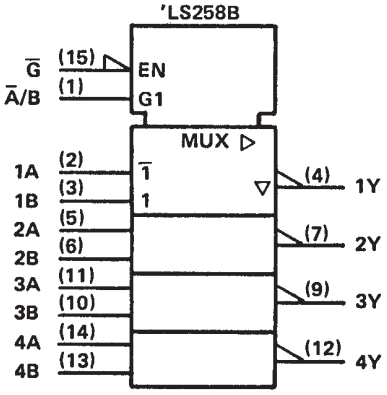


logic symbols†

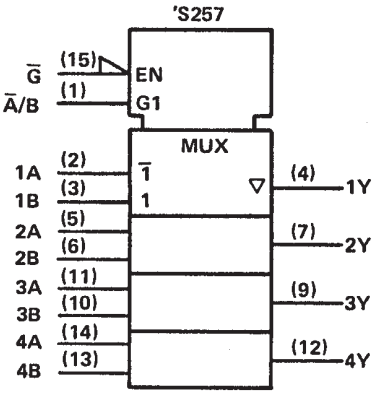
'LS257B



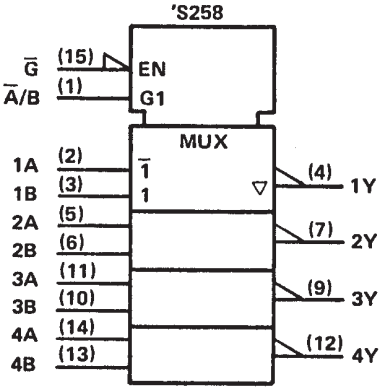
'LS258B



'S257



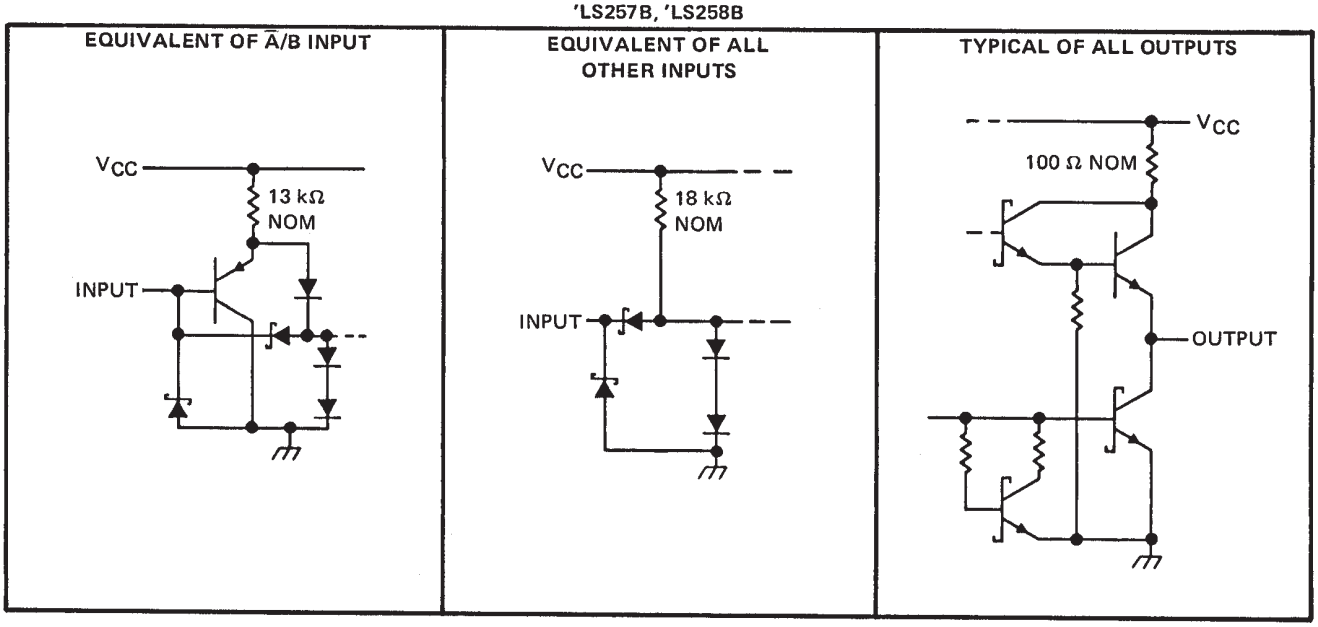
'S258



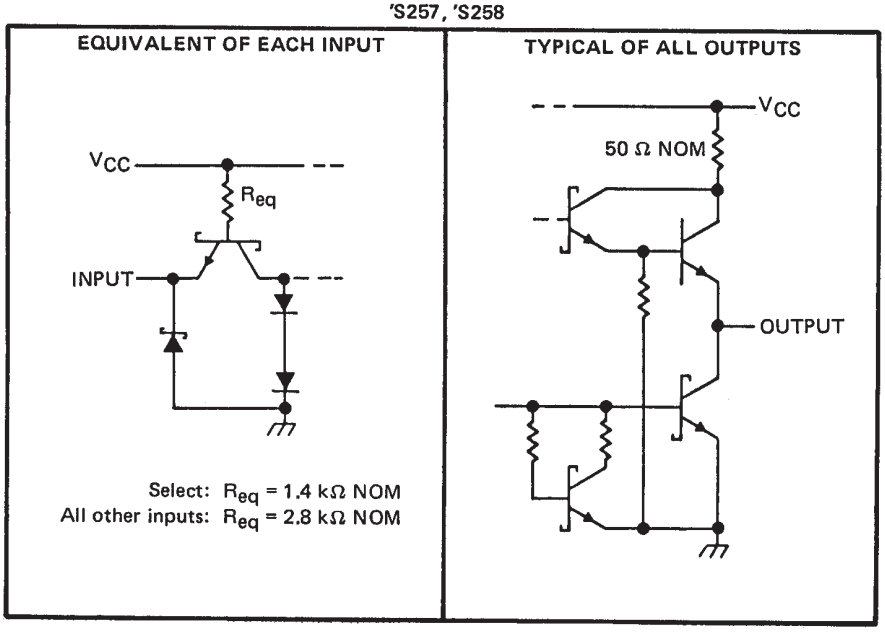
†These symbols are in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.
Pin numbers shown are for D, J, N, and W packages.

schematics of inputs and outputs

'LS257B, 'LS258B



'S257, 'S258



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

Supply voltage, V_{CC} (see Note 1) . . . . . 7 V
Input voltage: 'LS257B, 'LS258B Circuits . . . . . 7 V
'S257, 'S258 Circuits . . . . . 5.5 V
Off-state output voltage . . . . . 5.5 V
Operating free-air temperature range: SN54LS', SN54S' Circuits . . . . . –55°C to 125°C
SN74LS', SN74S' Circuits . . . . . 0°C to 70°C
Storage temperature range . . . . . –65°C to 150°C

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

recommended operating conditions

		SN54LS'			SN74LS'			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V_{CC}	Supply voltage	4.5	5	5.5	4.75	5	5.25	V
V_{IH}	High-level input voltage	2			2			V
V_{IL}	Low-level input voltage			0.7			0.8	V
I_{OH}	High-level output current			– 1			– 2.6	mA
I_{OL}	Low-level output current			12			24	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'			SN74LS'			UNIT
					MIN	TYP‡	MAX	MIN	TYP‡	MAX	
V_{IK}		V_{CC} = MIN, I_I = – 18 mA					– 1.5			– 1.5	V
V_{OH}		V_{CC} = MIN, V_{IH} = 2 V, V_{IL} = MAX, I_{OH} = MAX			2.4	3.4		2.4	3.1		V
V_{OL}		V_{CC} = MIN, V_{IH} = 2 V, V_{IL} = MAX,	I_{OL} = 12 mA			0.25	0.4		0.25	0.4	V
			I_{OL} = 24 mA						0.35	0.5	
I_{OZH}		V_{CC} = MAX, V_{IH} = 2 V, V_O = 2.7 V					20			20	μA
I_{OZL}		V_{CC} - MAX, V_{IH} = 2 V, V_O = 0.4 V					– 20			– 20	μA
I_I		V_{CC} = MAX, V_I = 7 V					0.1			0.1	mA
I_{IH}		V_{CC} = MAX, V_I = 2.7 V					20			20	μA
I_{IL}		V_{CC} = MAX, V_I = 0.4 V					– 0.4			– 0.4	mA
I_{OS}§		V_{CC} = MAX,			– 30		– 130	– 30		– 130	mA
I_{CC}	All outputs high	V_{CC} = MAX, See Note 2		'LS257B		8	12		8	12	mA
	All outputs low					12	18		12	18	
	All outputs off					13	19		13	19	
	All outputs high			'LS258B		6	9		6	9	
	All outputs low					10	15		10	15	
	All outputs off					11	16		11	16	

†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 the short-circuit should not exceed one second.
NOTE 2: I_{CC} is measured with all outputs open and all possible inputs grounded while achieving the stated output conditions.

switching characteristics, V_{CC} = 5 V, T_A = 25°C, R_L = 667 Ω

PARAMETER¶	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	'LS257B			'LS258B			UNIT
				MIN	TYP	MAX	MIN	TYP	MAX	
t_{PLH}	Data	Any	C_L = 45 pF, See Note 3		8	13		7	12	ns
t_{PHL}					10	15		11	17	
t_{PLH}	Select	Any			16	21		14	21	ns
t_{PHL}					17	24		19	24	
t_{PZH}	Output Control	Any			15	30		15	30	ns
t_{PZL}					19	30		20	30	
t_{PHZ}	Output Control	Any	C_L = 5 pF, See Note 3		18	30		18	30	ns
t_{PLZ}					16	25		16	25	

¶t_{PLH} = propagation delay time, low-to-high-level output
t_{PHL} = propagation delay time, high-to-low-level output
t_{PZH} = output enable time to high level
t_{PZL} = output enable time to low level
t_{PHZ} = output disable time from high level
t_{PLZ} = output disable time from low level
NOTE 3: Load circuits and voltage waveforms are shown in Section 1.

recommended operating conditions

	SN54S'			SN74S'			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}			−2			−6.5	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†		'S257			'S258			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} = MIN, I_I = −18 mA				−1.2			−1.2	V
V_{OH}	High-level output voltage		V_{CC} = MIN, V_{IH} = 2 V, V_{IL} = 0.8 V, I_{OH} = −1 mA	SN74S'	2.7			2.7			V
			V_{CC} = MIN, V_{IH} = 2 V, V_{IL} = 0.8 V, I_{OH} = MAX	SN54S'	2.4	3.4		2.4	3.4		
				SN74S'	2.4	3.2		2.4	3.2		
V_{OL}	Low-level output voltage		V_{CC} = MIN, V_{IH} = 2 V, V_{IL} = 0.8 V, I_{OL} = 20 mA				0.5			0.5	V
I_{OZH}	Off-state output current, high-level voltage applied		V_{CC} = MAX, V_{IH} = 2 V, V_O = 2.4 V				50			50	μA
I_{OZL}	Off-state output current, low-level voltage applied		V_{CC} = MAX, V_{IH} = 2 V, V_O = 0.5 V				−50			−50	μA
I_I	Input current at maximum input voltage		V_{CC} = MAX, V_I = 5.5 V				1			1	mA
I_{IH}	High-level input current	S input	V_{CC} = MAX, V_I = 2.7 V				100			100	μA
		Any other					50			50	
I_{IL}	Low-level input current	S input	V_{CC} = MAX V_I = 0.5 V				−4			−4	mA
		Any other					−2			−2	
I_{OS}	Short-circuit output current§		V_{CC} = MAX		−40		−100	−40		−100	mA
I_{CC}	Supply current	All outputs high	V_{CC} = MAX, See Note 2			44	68		36	56	mA
		All outputs low				60	93		52	81	
		All outputs off				64	99		56	87	

†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 the short-circuit should not exceed one second.
NOTE 2: I_{CC} is measured with all outputs open and all possible inputs grounded while achieving the stated output conditions.

switching characteristics, V_{CC} = 5 V, T_A = 25°C, R_L = 280 Ω

PARAMETER¶	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	'S257			'S258			UNIT
				MIN	TYP	MAX	MIN	TYP	MAX	
t_{PLH}	Data	Any	C_L = 15 pF, See Note 3		5	7.5		4	6	ns
t_{PHL}					4.5	6.5		4	6	
t_{PLH}	Select	Any			8.5	15		8	12	ns
t_{PHL}					8.5	15		7.5	12	
t_{PZH}	Output Control	Any			13	19.5		13	19.5	ns
t_{PZL}					14	21		14	21	
t_{PHZ}	Output Control	Any	C_L = 5 pF, See Note 3		5.5	8.5		5.5	8.5	ns
t_{PLZ}					9	14		9	14	

¶f_{max} = Maximum clock frequency
t_{PLH} = propagation delay time, low-to-high-level output
t_{PHL} = propagation delay time, high-to-low-level output
t_{PZH} = output enable time to high level
t_{PZL} ≡ output enable time to low level
t_{PHZ} ≡ output disable time from high level
t_{PLZ} ≡ output disable time from low level
NOTE 3: Load circuits and voltage waveforms are shown in Section 1.

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead finish/ Ball material (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
7603701EA	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	7603701EA SNJ54LS257BJ	Samples
7603701FA	ACTIVE	CFP	W	16	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	7603701FA SNJ54LS257BW	Samples
7603701FA	ACTIVE	CFP	W	16	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	7603701FA SNJ54LS257BW	Samples
7603801EA	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	7603801EA SNJ54LS258BJ	Samples
7603801EA	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	7603801EA SNJ54LS258BJ	Samples
8002301EA	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	8002301EA SNJ54S258J	Samples
8002301EA	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	8002301EA SNJ54S258J	Samples
8002301FA	ACTIVE	CFP	W	16	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	8002301FA SNJ54S258W	Samples
8002301FA	ACTIVE	CFP	W	16	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	8002301FA SNJ54S258W	Samples
JM38510/07906BEA	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	JM38510/ 07906BEA	Samples
JM38510/07906BEA	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	JM38510/ 07906BEA	Samples
JM38510/07906BFA	ACTIVE	CFP	W	16	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	JM38510/ 07906BFA	Samples
JM38510/07906BFA	ACTIVE	CFP	W	16	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	JM38510/ 07906BFA	Samples
JM38510/30906B2A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	-55 to 125	JM38510/ 30906B2A	Samples
JM38510/30906B2A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	-55 to 125	JM38510/ 30906B2A	Samples
JM38510/30906BEA	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	JM38510/ 30906BEA	Samples
JM38510/30906BEA	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	JM38510/	Samples

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead finish/ Ball material (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
										30906BEA	
JM38510/30906BFA	ACTIVE	CFP	W	16	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	JM38510/ 30906BFA	Samples
JM38510/30906BFA	ACTIVE	CFP	W	16	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	JM38510/ 30906BFA	Samples
M38510/07906BEA	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	JM38510/ 07906BEA	Samples
M38510/07906BEA	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	JM38510/ 07906BEA	Samples
M38510/07906BFA	ACTIVE	CFP	W	16	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	JM38510/ 07906BFA	Samples
M38510/07906BFA	ACTIVE	CFP	W	16	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	JM38510/ 07906BFA	Samples
M38510/30906B2A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	-55 to 125	JM38510/ 30906B2A	Samples
M38510/30906B2A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	-55 to 125	JM38510/ 30906B2A	Samples
M38510/30906BEA	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	JM38510/ 30906BEA	Samples
M38510/30906BEA	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	JM38510/ 30906BEA	Samples
M38510/30906BFA	ACTIVE	CFP	W	16	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	JM38510/ 30906BFA	Samples
M38510/30906BFA	ACTIVE	CFP	W	16	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	JM38510/ 30906BFA	Samples
SN54LS257BJ	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	SN54LS257BJ	Samples
SN54LS257BJ	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	SN54LS257BJ	Samples
SN54LS258BJ	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	SN54LS258BJ	Samples
SN54LS258BJ	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	SN54LS258BJ	Samples
SN54S257J	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	SN54S257J	Samples
SN54S257J	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	SN54S257J	Samples

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead finish/ Ball material (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
SN74LS257BD	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	NIPDAU	Level-1-260C-UNLIM	0 to 70	LS257B	Samples
SN74LS257BD	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	NIPDAU	Level-1-260C-UNLIM	0 to 70	LS257B	Samples
SN74LS257BDR	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	NIPDAU	Level-1-260C-UNLIM	0 to 70	LS257B	Samples
SN74LS257BDR	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	NIPDAU	Level-1-260C-UNLIM	0 to 70	LS257B	Samples
SN74LS257BN	ACTIVE	PDIP	N	16	25	Green (RoHS & no Sb/Br)	NIPDAU	N / A for Pkg Type	0 to 70	SN74LS257BN	Samples
SN74LS257BN	ACTIVE	PDIP	N	16	25	Green (RoHS & no Sb/Br)	NIPDAU	N / A for Pkg Type	0 to 70	SN74LS257BN	Samples
SN74LS257BNSR	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	NIPDAU	Level-1-260C-UNLIM	0 to 70	74LS257B	Samples
SN74LS257BNSR	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	NIPDAU	Level-1-260C-UNLIM	0 to 70	74LS257B	Samples
SN74LS258BD	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	NIPDAU	Level-1-260C-UNLIM	0 to 70	LS258B	Samples
SN74LS258BD	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	NIPDAU	Level-1-260C-UNLIM	0 to 70	LS258B	Samples
SN74LS258BDR	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	NIPDAU	Level-1-260C-UNLIM	0 to 70	LS258B	Samples
SN74LS258BDR	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	NIPDAU	Level-1-260C-UNLIM	0 to 70	LS258B	Samples
SN74LS258BN	ACTIVE	PDIP	N	16	25	Green (RoHS & no Sb/Br)	NIPDAU	N / A for Pkg Type	0 to 70	SN74LS258BN	Samples
SN74LS258BN	ACTIVE	PDIP	N	16	25	Green (RoHS & no Sb/Br)	NIPDAU	N / A for Pkg Type	0 to 70	SN74LS258BN	Samples
SN74S257N	ACTIVE	PDIP	N	16	25	Green (RoHS & no Sb/Br)	NIPDAU	N / A for Pkg Type	0 to 70	SN74S257N	Samples
SN74S257N	ACTIVE	PDIP	N	16	25	Green (RoHS & no Sb/Br)	NIPDAU	N / A for Pkg Type	0 to 70	SN74S257N	Samples
SNJ54LS257BFK	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	-55 to 125	SNJ54LS 257BFK	Samples
SNJ54LS257BFK	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	-55 to 125	SNJ54LS	Samples

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead finish/ Ball material (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
										257BFK	
SNJ54LS257BJ	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	7603701EA SNJ54LS257BJ	Samples
SNJ54LS257BJ	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	7603701EA SNJ54LS257BJ	Samples
SNJ54LS257BW	ACTIVE	CFP	W	16	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	7603701FA SNJ54LS257BW	Samples
SNJ54LS257BW	ACTIVE	CFP	W	16	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	7603701FA SNJ54LS257BW	Samples
SNJ54LS258BJ	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	7603801EA SNJ54LS258BJ	Samples
SNJ54LS258BJ	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	7603801EA SNJ54LS258BJ	Samples
SNJ54S257J	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	SNJ54S257J	Samples
SNJ54S257J	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	SNJ54S257J	Samples
SNJ54S257W	ACTIVE	CFP	W	16	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	SNJ54S257W	Samples
SNJ54S257W	ACTIVE	CFP	W	16	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	SNJ54S257W	Samples
SNJ54S258J	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	8002301EA SNJ54S258J	Samples
SNJ54S258J	ACTIVE	CDIP	J	16	1	TBD	SNPB	N / A for Pkg Type	-55 to 125	8002301EA SNJ54S258J	Samples
SNJ54S258W	ACTIVE	CFP	W	16	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	8002301FA SNJ54S258W	Samples
SNJ54S258W	ACTIVE	CFP	W	16	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	8002301FA SNJ54S258W	Samples

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

(2) **RoHS:** TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".
RoHS Exempt: TI defines "RoHS Exempt" to mean products that contain lead but are compliant with EU RoHS pursuant to a specific EU RoHS exemption.
Green: TI defines "Green" to mean the content of Chlorine (Cl) and Bromine (Br) based flame retardants meet JS709B low halogen requirements of <=1000ppm threshold. Antimony trioxide based flame retardants must also meet the <=1000ppm threshold requirement.

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

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead finish/Ball material - Orderable Devices 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.

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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.

OTHER QUALIFIED VERSIONS OF SN54LS257B, SN54LS258B, SN54S257, SN74LS257B, SN74LS258B, SN74S257 :

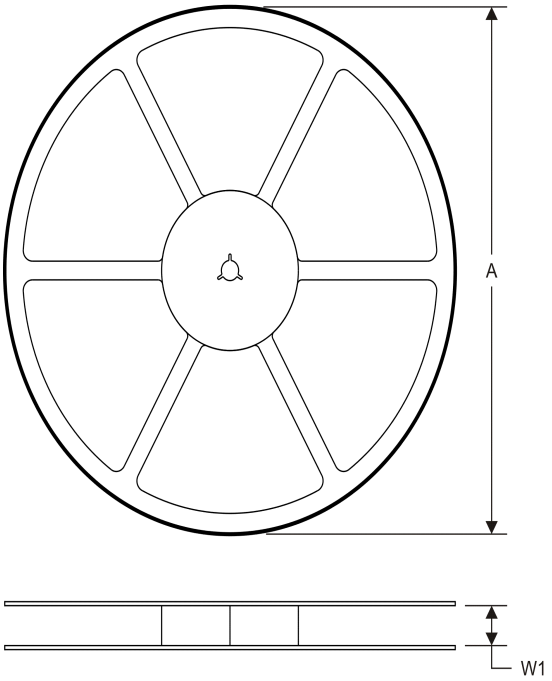
- Catalog: SN74LS257B, SN74LS258B, SN74S257
- Military: SN54LS257B, SN54LS258B, SN54S257

NOTE: Qualified Version Definitions:

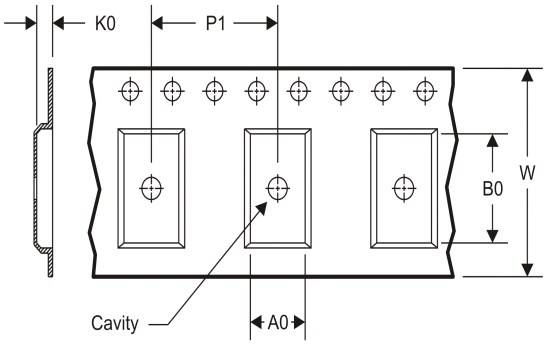
- Catalog - TI's standard catalog product
- Military - QML certified for Military and Defense Applications

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



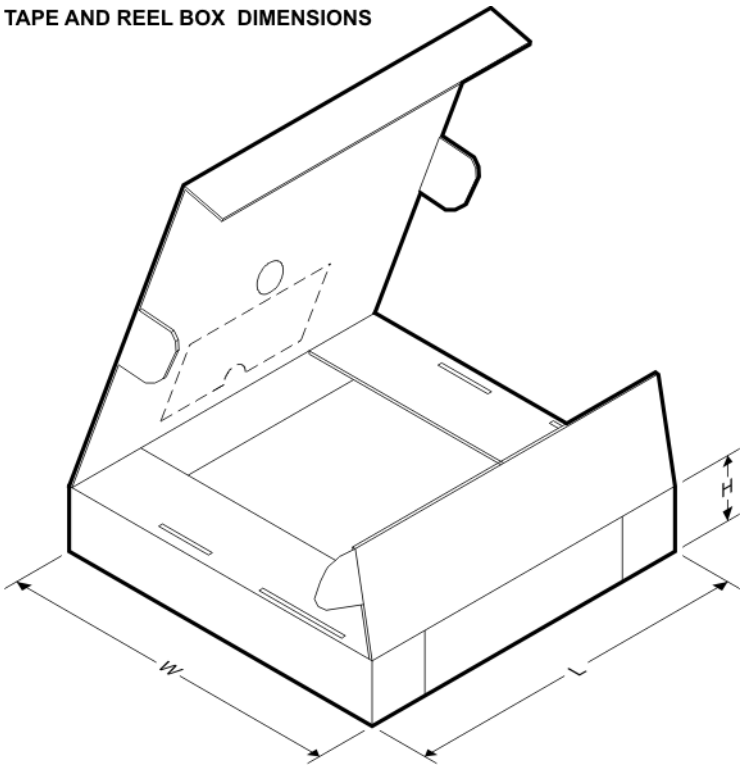
A0	Dimension designed to accommodate the component width
B0	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers

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
SN74LS257BDR	SOIC	D	16	2500	330.0	16.4	6.5	10.3	2.1	8.0	16.0	Q1
SN74LS257BNSR	SO	NS	16	2000	330.0	16.4	8.2	10.5	2.5	12.0	16.0	Q1
SN74LS258BDR	SOIC	D	16	2500	330.0	16.4	6.5	10.3	2.1	8.0	16.0	Q1

TAPE AND REEL BOX DIMENSIONS

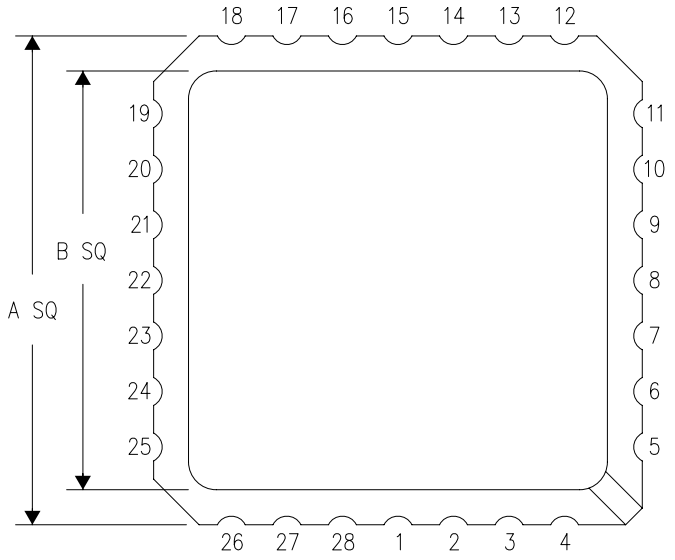


*All dimensions are nominal

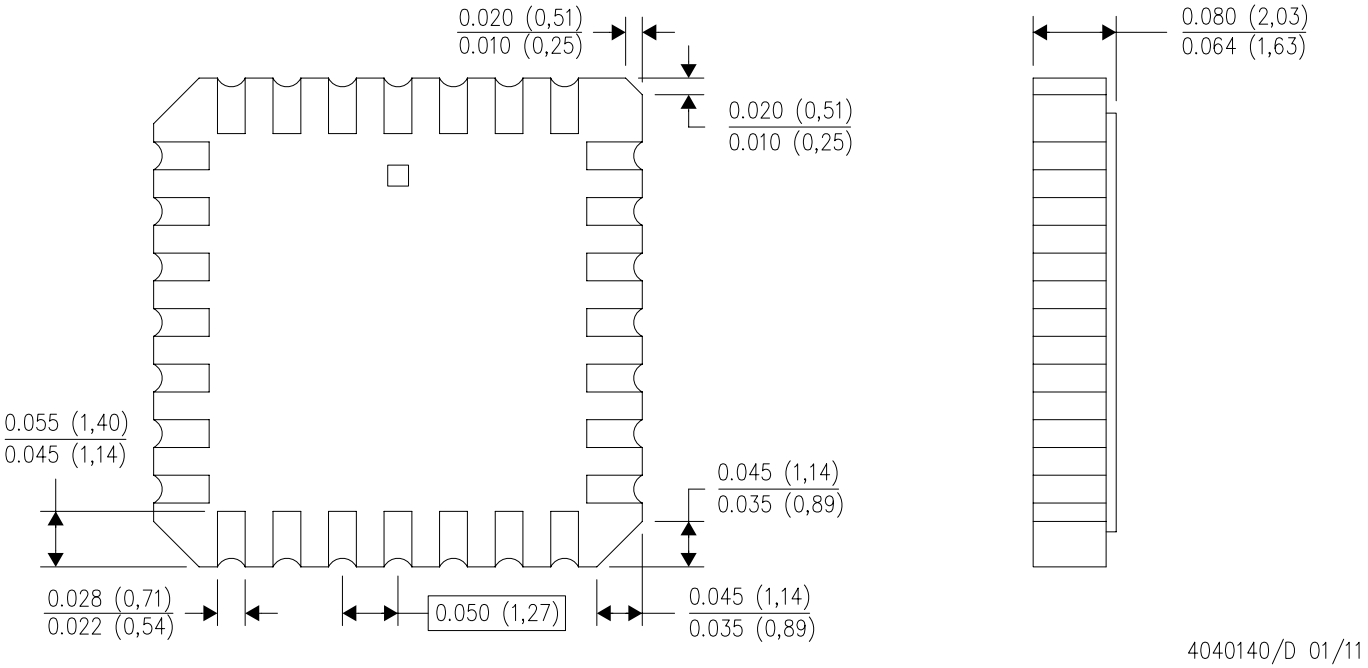
Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74LS257BDR	SOIC	D	16	2500	333.2	345.9	28.6
SN74LS257BNSR	SO	NS	16	2000	367.0	367.0	38.0
SN74LS258BDR	SOIC	D	16	2500	333.2	345.9	28.6

FK (S–CQCC–N**) LEADLESS CERAMIC CHIP CARRIER

28 TERMINAL SHOWN



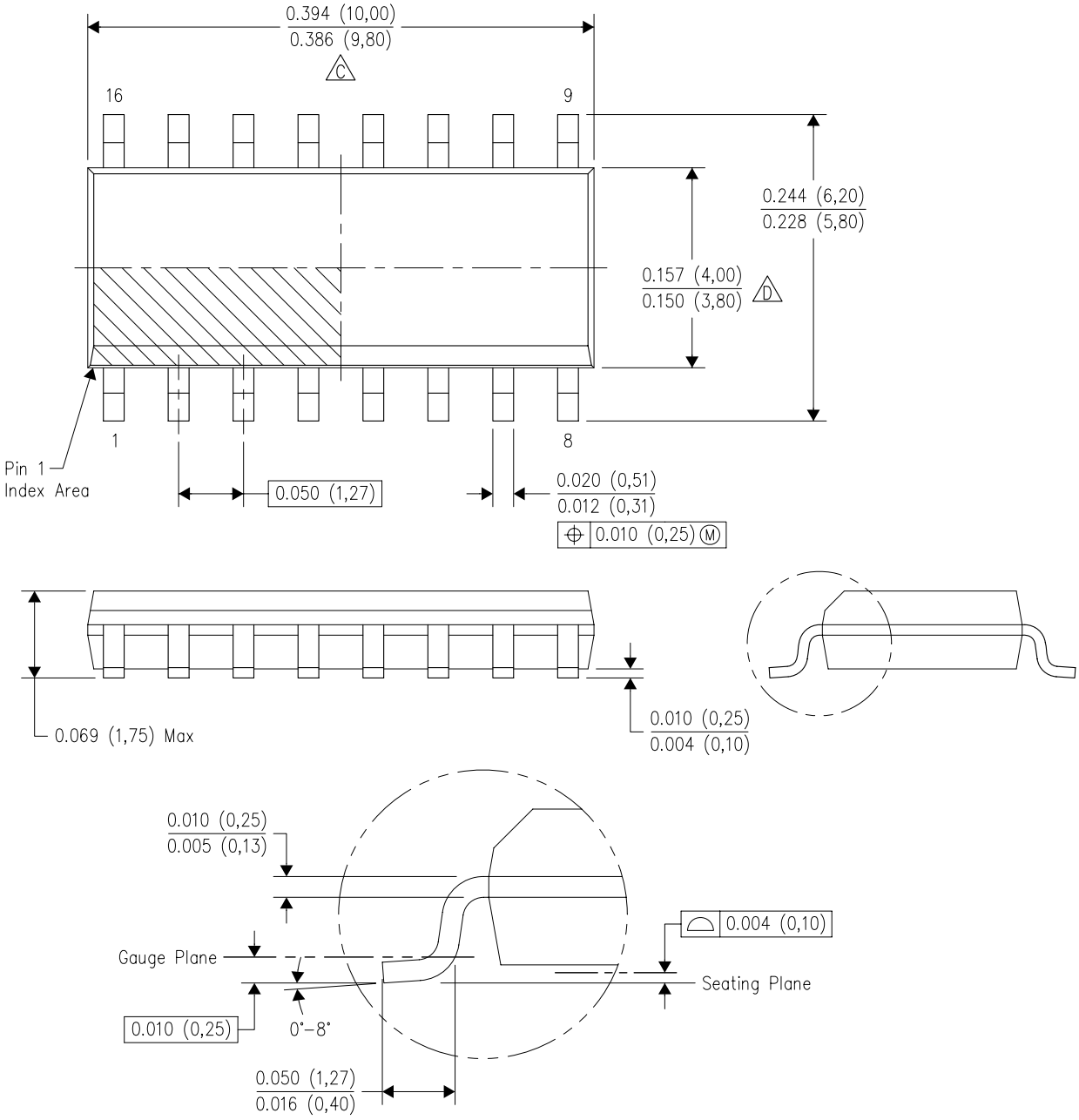
NO. OF TERMINALS **	A		B	
	MIN	MAX	MIN	MAX
20	0.342 (8,69)	0.358 (9,09)	0.307 (7,80)	0.358 (9,09)
28	0.442 (11,23)	0.458 (11,63)	0.406 (10,31)	0.458 (11,63)
44	0.640 (16,26)	0.660 (16,76)	0.495 (12,58)	0.560 (14,22)
52	0.740 (18,78)	0.761 (19,32)	0.495 (12,58)	0.560 (14,22)
68	0.938 (23,83)	0.962 (24,43)	0.850 (21,6)	0.858 (21,8)
84	1.141 (28,99)	1.165 (29,59)	1.047 (26,6)	1.063 (27,0)



4040140/D 01/11

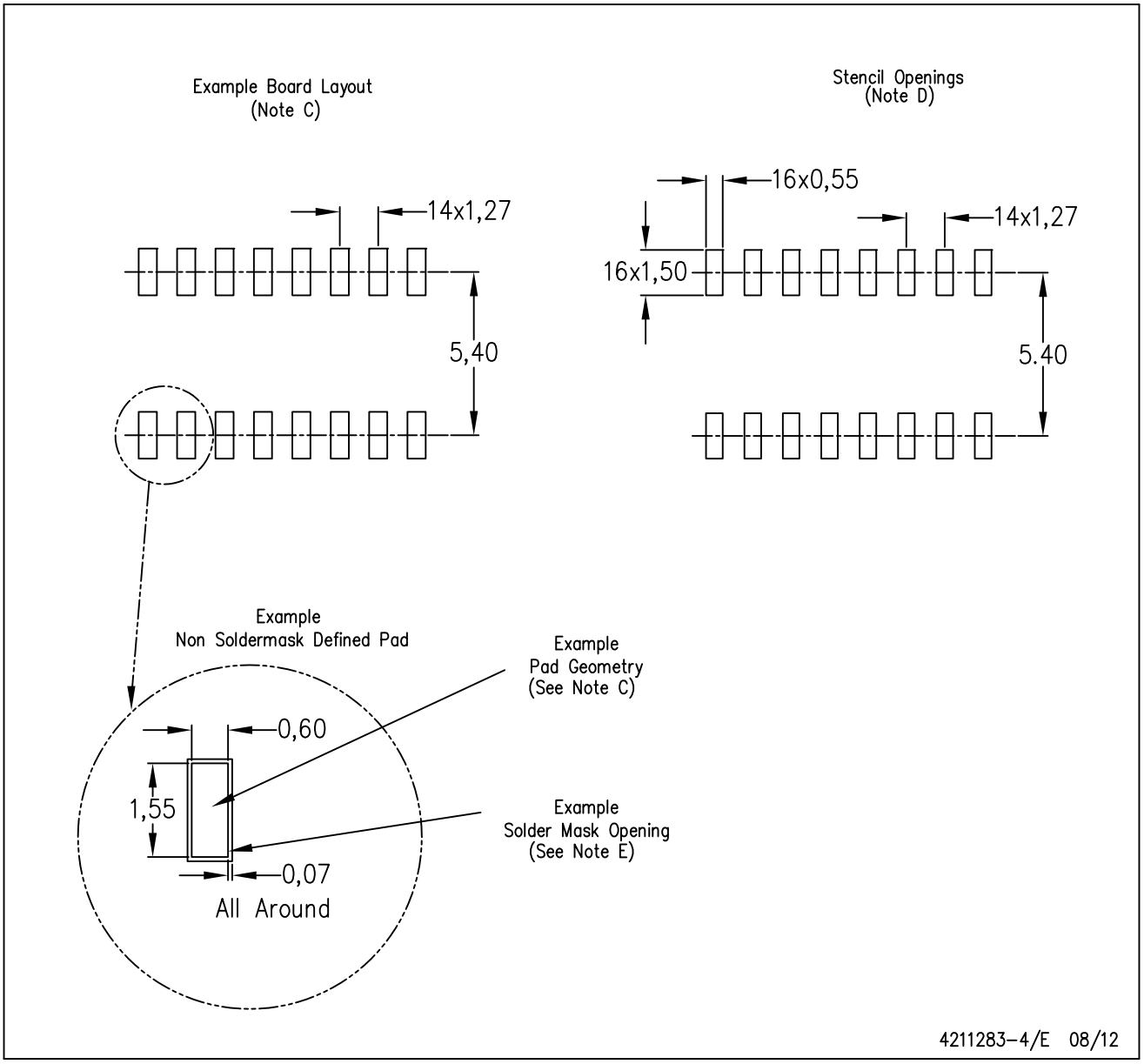
NOTES:
A. All linear dimensions are in inches (millimeters).
B. This drawing is subject to change without notice.
C. This package can be hermetically sealed with a metal lid.
D. Falls within JEDEC MS–004

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.

D (R–PDSO–G16) PLASTIC SMALL OUTLINE

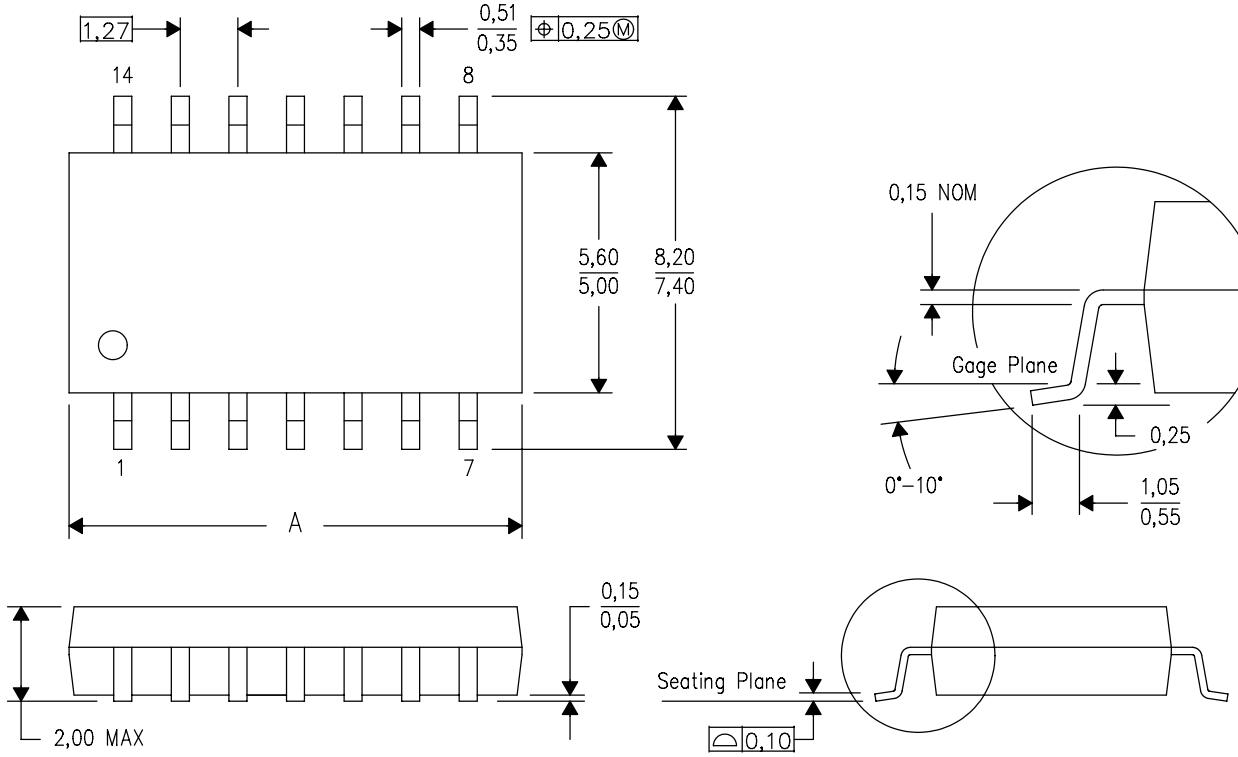


NOTES:
A. All linear dimensions are in millimeters.
B. This drawing is subject to change without notice.
C. Publication IPC–7351 is recommended for alternate designs.
D. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC–7525 for other stencil recommendations.
E. Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.

MECHANICAL DATA

NS (R-PDSO-G)** **PLASTIC SMALL-OUTLINE PACKAGE**

14-PINS SHOWN

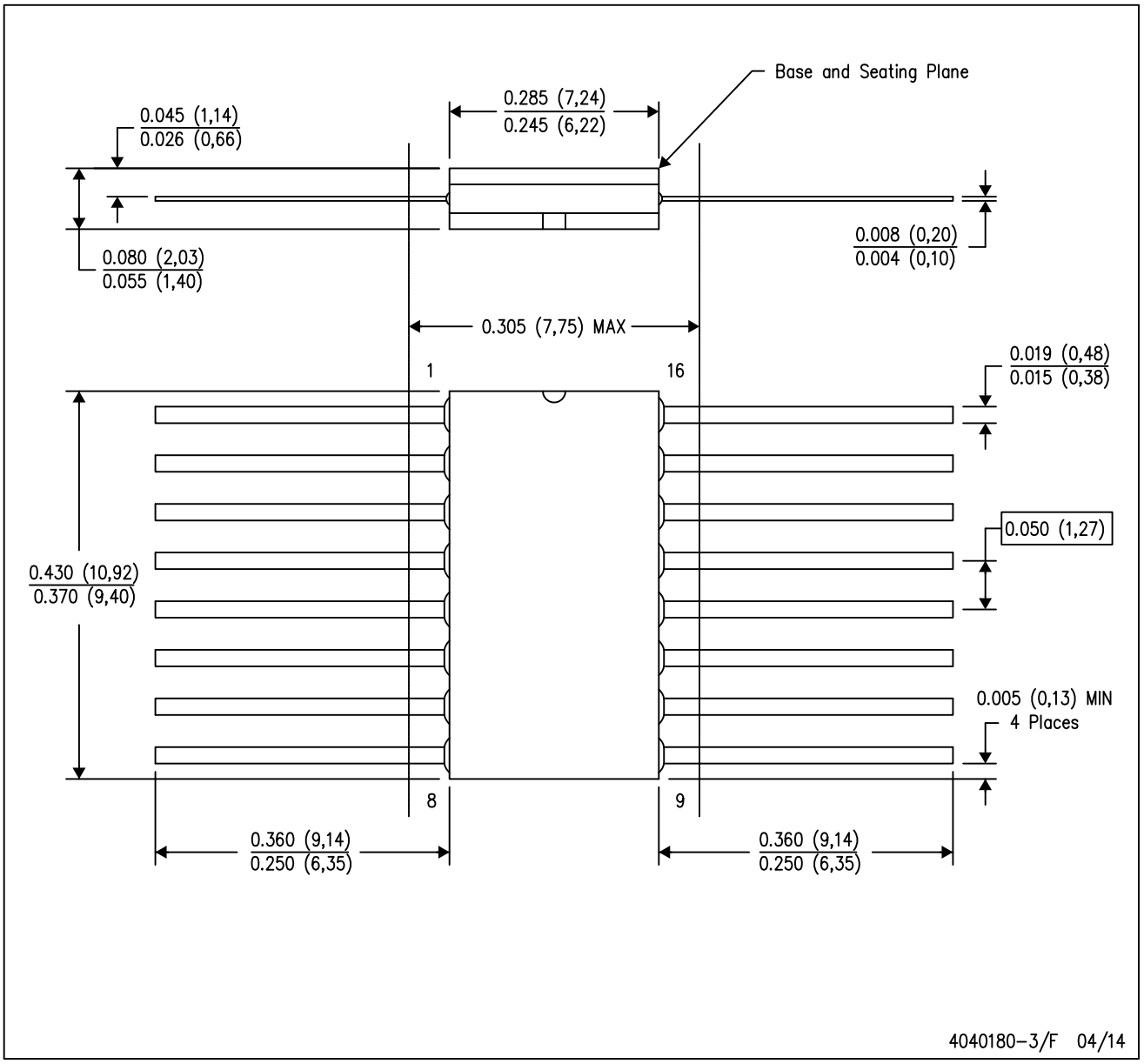


DIM \ PINS **	14	16	20	24
A MAX	10,50	10,50	12,90	15,30
A MIN	9,90	9,90	12,30	14,70

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.

W (R–GDFP–F16) CERAMIC DUAL FLATPACK

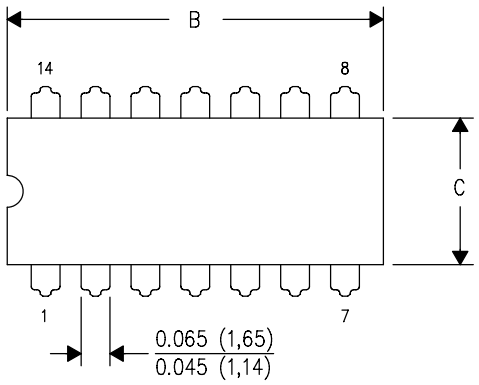


NOTES:
A. All linear dimensions are in inches (millimeters).
B. This drawing is subject to change without notice.
C. This package can be hermetically sealed with a ceramic lid using glass frit.
D. Index point is provided on cap for terminal identification only.
E. Falls within MIL STD 1835 GDFP2–F16

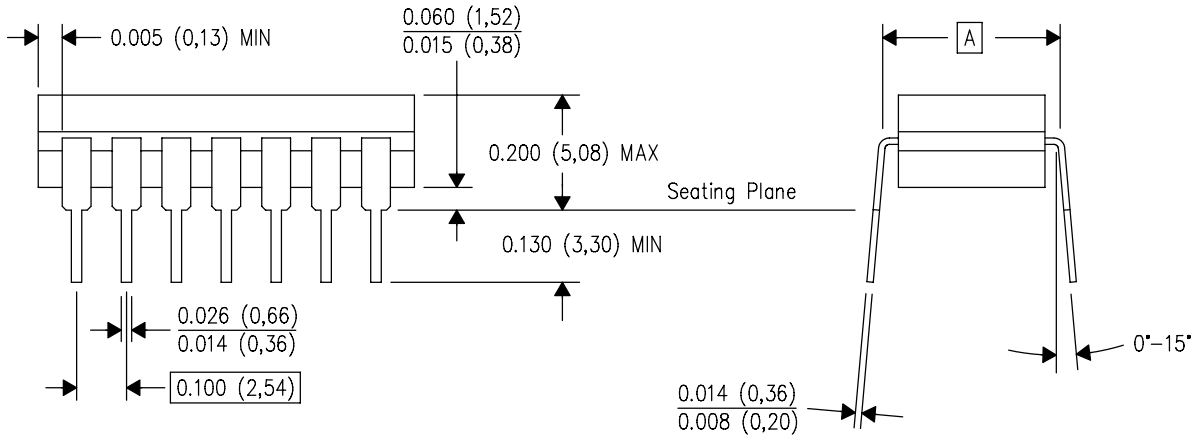
J (R–GDIP–T**)

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)



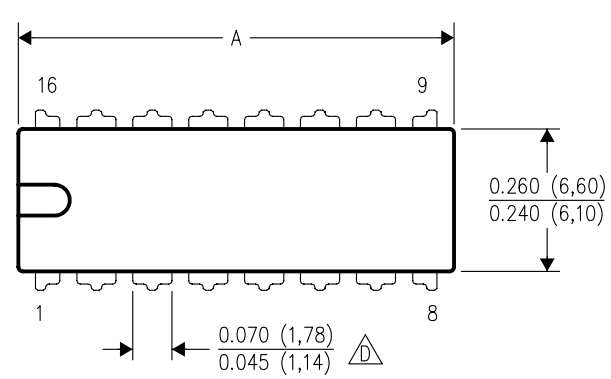
4040083/F 03/03

NOTES:
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.

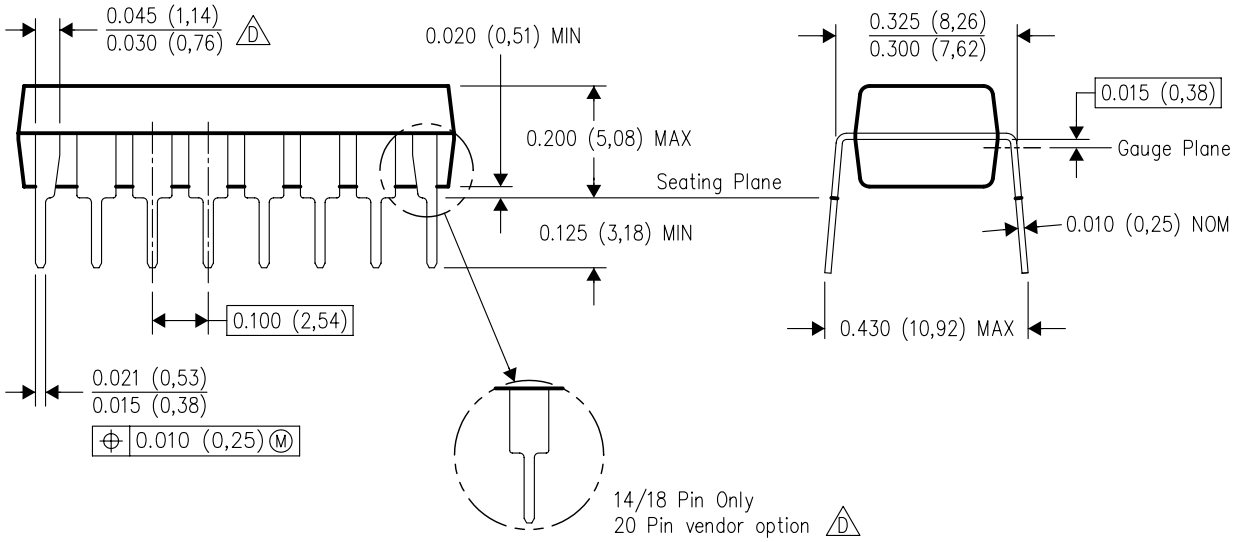
N (R–PDIP–T**)

PLASTIC DUAL–IN–LINE PACKAGE

16 PINS SHOWN



DIM \ PINS **	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 (C)	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.
C. Falls within JEDEC MS–001, except 18 and 20 pin minimum body length (Dim A).
D. The 20 pin end lead shoulder width is a vendor option, either half or full width.

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