

General Information

1

Data Sheets

2

Product Previews

3

Design Considerations

4

Mechanical Data

5

Contents

	Page
Ordering Instructions	5-3
Mechanical Data	5-4

ORDERING INSTRUCTIONS

Electrical characteristics presented in this data book, unless otherwise noted, apply for the circuit type(s) listed in the page heading regardless of package. The availability of a circuit function in a particular package is denoted by an alphabetical reference above the pin-connection diagram(s). These alphabetical references refer to mechanical outline drawings shown in this section.

Factory orders for circuits described in this data book should include a four-part type number as explained in the following example.

EXAMPLE: TL 317M JG /883B

Prefix

MUST CONTAIN TWO OR THREE LETTERS

TL TI Linear Products

STANDARD SECOND-SOURCE PREFIXES

LT Linear Technology	SG Silicon General
LTC Linear Technology	uA Fairchild/National
LM National	UC Unitrode
MC Motorola	

Unique Circuit Description Including Temperature Range

MUST CONTAIN THREE OR MORE CHARACTERS
(From Individual Data Sheets)

Examples: 317M 79L15A
497A 79L12AC
79M24

Package

MUST CONTAIN ONE OR TWO LETTERS

D, DW, FN, J, JG, KA, KC, KJ, KK, KV, L, LD, LP, N, P, U
(From Pin-Connection Diagrams on Individual Data Sheet)

MIL-STD-883B, Method 5004, Class B

OMIT/883B WHEN NOT APPLICABLE

Mechanical Data

5

Circuits are shipped in one of the carriers below. Unless a specific method of shipment is specified by the customer (with possible additional costs), circuits will be shipped in the most practical carrier.

Small Outline (D, DW)
Dual-In-Line (J, JG, N, P)
— Slide Magazines
— A-Channel Plastic Tubing
— Sectioned Cardboard Box
— Individual Cardboard Box

Power Tab (KA, KC, KJ, KK, KV)
— Sleeves
Chip Carriers (FN)
— Anti-Static Plastic Tubing
Flat (U)
— Milton Ross Carrier

Plug-In (L, LD, LP)
— Sectional Cardboard Box
— Individual Cardboard Box

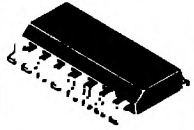
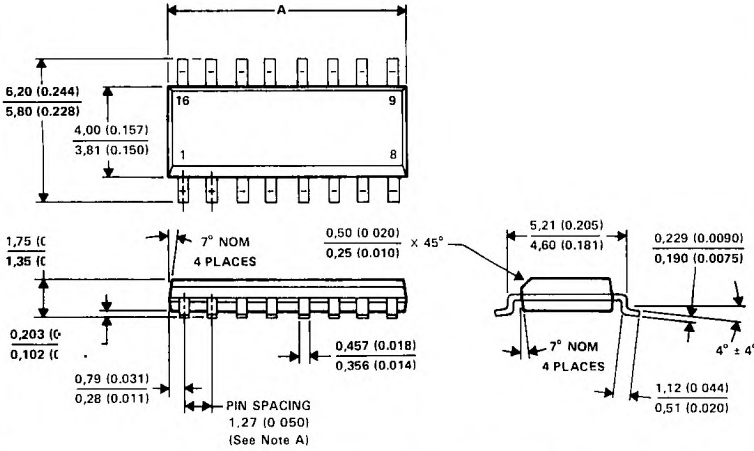


MECHANICAL DATA

D008, D014, and D016 plastic "small outline" packages

Each of these "small outline" packages consists of a circuit mounted on a lead frame and encapsulated within a plastic compound. The compound will withstand soldering temperature with no deformation, and circuit performance characteristics will remain stable when operated in high-humidity conditions. Leads require no additional cleaning or processing when used in soldered assembly.

D008, D014, and D016
(16-pin package used for illustration)



PINS DIM	8	14	16
	A MIN	4.80 (0.189)	8.55 (0.337)
A MAX	5.00 (0.197)	6.74 (0.344)	10.00 (0.394)

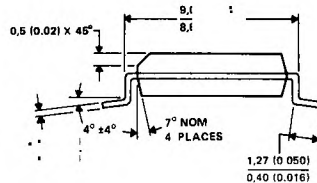
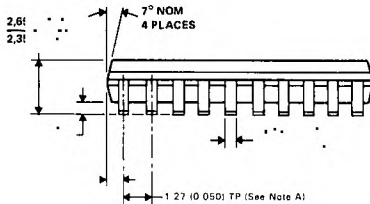
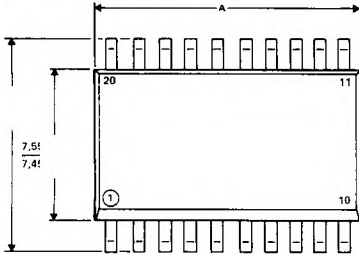
ALL LINEAR DIMENSIONS ARE IN MILLIMETERS AND PARENTHETICALLY IN INCHES

- NOTES: A. Leads are within 0,25 (0.010) radius of true position at maximum material dimension.
 B. Body dimensions do not include mold flash or protrusion.
 C. Mold flash or protrusion shall not exceed 0,15 (0.006).
 D. Lead tips to be planar within ±0,051 (0.002) exclusive of solder.

DW016, DW020, DW024, and DW028 plastic "small outline" packages

Each of these "small outline" packages consists of a circuit mounted on a lead frame and encapsulated within a plastic compound. The compound will withstand soldering temperature with no deformation, and circuit performance characteristics will remain stable when operated in high-humidity conditions. Leads require no additional cleaning or processing when used in soldered assembly.

DW016, DW020, DW024, and DW028
(20-pin package used for illustration)



DIM \ PINS	16	20	24	28†
	A MIN	10,16 (0.400)	12,70 (0.500)	15,29 (0.602)
A MAX	11,18 (0.440)	13,71 (0.540)	16,29 (0.641)	18,68 (0.735)

ALL LINEAR DIMENSIONS ARE IN MILLIMETERS AND PARENTHETICALLY IN INCHES

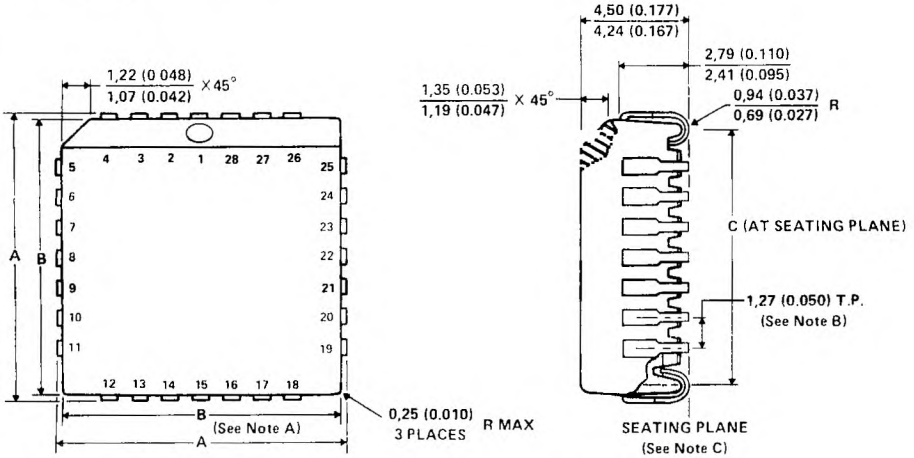
- †The 28-pin package drawing is presently classified as Advance Information.
- NOTES: A. Leads are within 0,25 (0,010) radius of true position at maximum material dimension.
 B. Body dimensions do not include mold flash or protrusion.
 C. Mold flash or protrusion shall not exceed 0,15 (0,006).
 D. Lead tips to be planar within ±0,051 (0,002) exclusive of solder.

MECHANICAL DATA

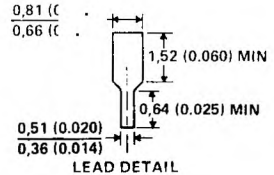
FN020, FN028, FN044, FN068, and FN084 plastic chip carrier packages

Each of these chip carrier packages consists of a circuit mounted on a lead frame and encapsulated within an electrically nonconductive plastic compound. The compound withstands soldering temperatures with no deformation, and circuit performance characteristics remain stable when the devices are operated in high-humidity conditions. The packages are intended for surface mounting on solder lands on 1,27 (0.050) centers. Leads require no additional cleaning or processing when used in soldered assembly.

FN020, FN028, FN044, FN068, and FN084
(28-terminal package used for illustration)



NO. OF TERMINALS	A		B		C	
	MIN	MAX	MIN	MAX	MIN	MAX
20	9,78 (0.385)	10,03 (0.395)	8,89 (0.350)	9,04 (0.356)	7,87 (0.310)	8,38 (0.330)
28	12,32 (0.485)	12,57 (0.495)	11,43 (0.450)	11,58 (0.456)	10,41 (0.410)	10,92 (0.430)
44	17,40 (0.686)	17,65 (0.696)	16,51 (0.650)	16,66 (0.656)	15,49 (0.610)	16,00 ..
68	25,02 (0.985)	25,27 (0.995)	24,13 (0.950)	24,33 (0.956)	23,11 (0.910)	.. (0.930)
84	30,10 (1.186)	30,35 (1.195)	29,21 (1.150)	29,41 (1.156)	27,69 (1.090)	28,70 (1.130)

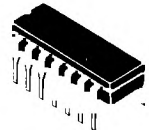
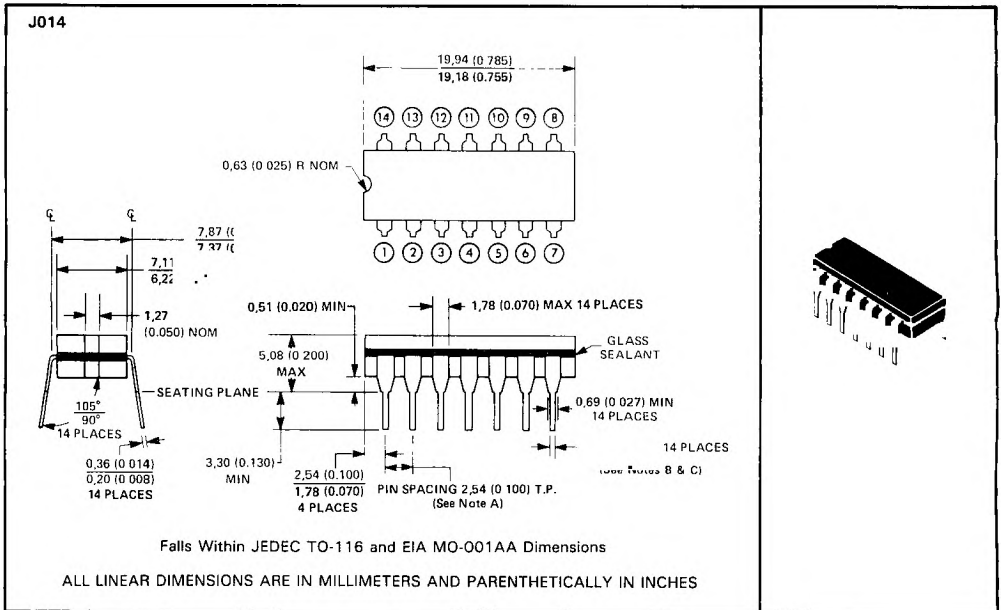


ALL LINEAR DIMENSIONS ARE IN MILLIMETERS AND PARENTHETICALLY IN INCHES

- NOTES: A. Centerline of center pin each side is within 0,10 (0.004) of package centerline as determined by dimension B.
 B. Location of each pin is within 0,127 (0.005) of true position with respect to center pin on each side.
 C. The lead contact points are planar within 0,10 (0.004).

J014 ceramic dual-in-line package

This hermetically sealed dual-in-line package consists of a ceramic base, ceramic cap, and a lead frame. Hermetic sealing is accomplished with glass. The package is intended for insertion in mounting-hole rows on 7,62 (0.300) centers. Once the leads are compressed and inserted, sufficient tension is provided to secure the package in the board during soldering. Tin-plated ("bright-dipped") leads require no additional cleaning or processing when used in soldered assembly.



Mechanical Data

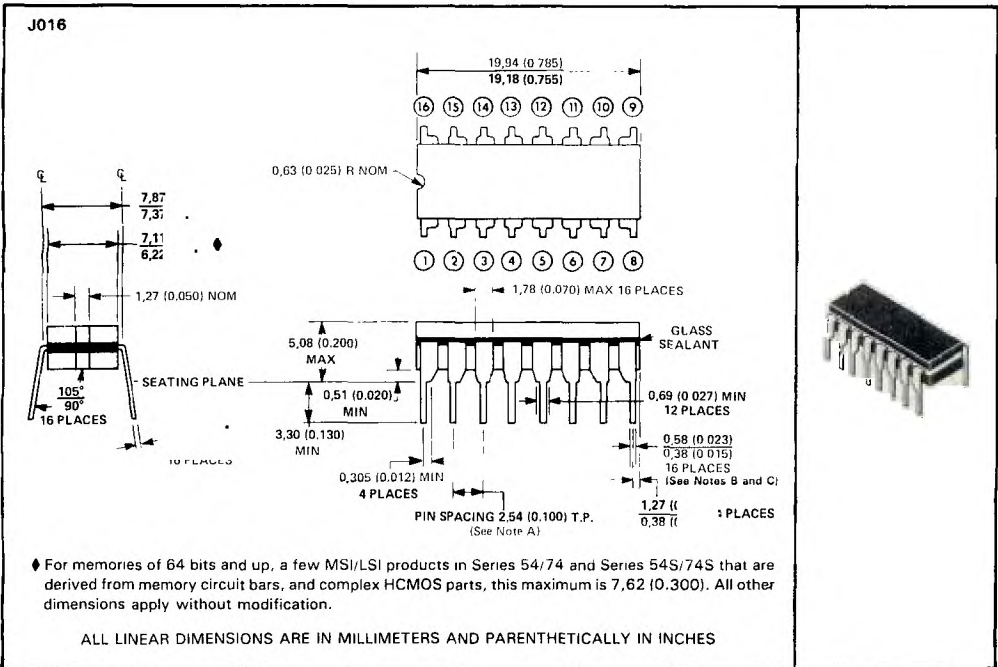
- NOTES: A. Each pin centerline is located within 0,25 (0.010) of its true longitudinal position.
 B. This dimension does not apply for solder-dipped leads.
 C. When solder-dipped leads are specified, dipped area of the lead extends from the lead tip to at least 0,51 (0.020) above the seating plane.

MECHANICAL DATA

J016 ceramic dual-in-line package

This hermetically sealed dual-in-line package consists of a ceramic base, ceramic cap, and a lead frame. Hermetic sealing is accomplished with glass. The package is intended for insertion in mounting-hole rows on 7,62 (0.300) centers. Once the leads are compressed and inserted, sufficient tension is provided to secure the package in the board during soldering. Tin-plated ("bright-dipped") leads require no additional cleaning or processing when used in soldered assembly.

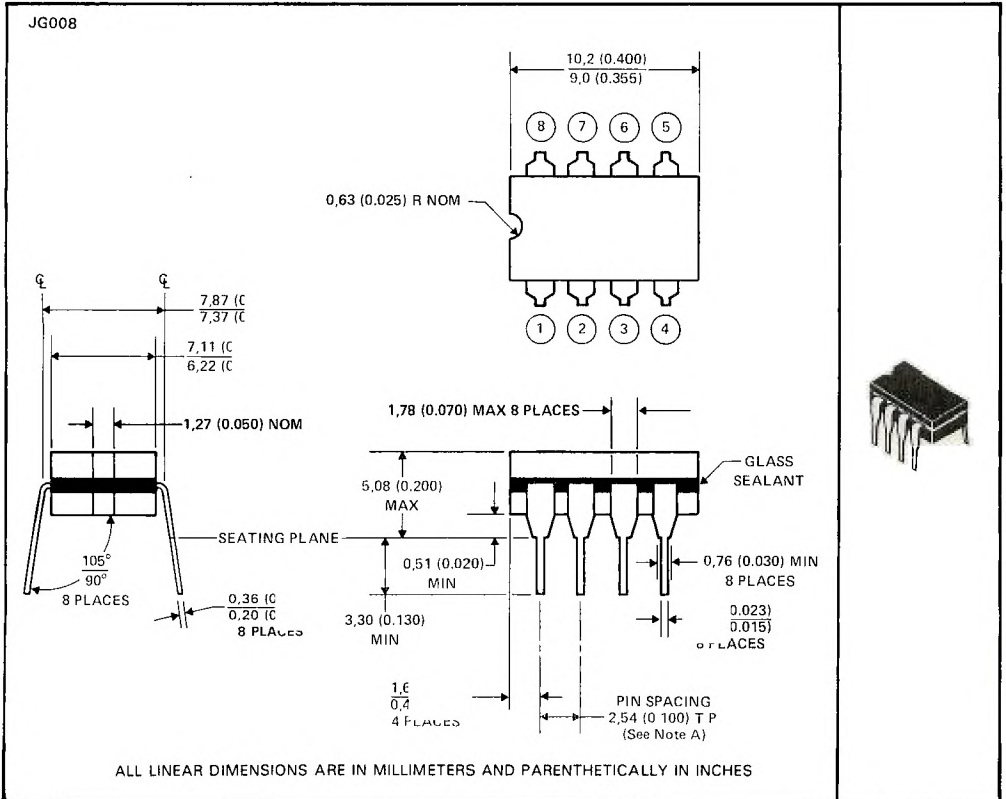
Mechanical Data



- NOTES: A. Each pin centerline is located within 0,25 (0.010) of its true longitudinal position.
 B. This dimension does not apply for solder-dipped leads.
 C. When solder-dipped leads are specified, dipped area of the lead extends from the lead tip to at least 0,51 (0.020) above the seating plane.

JG008 ceramic dual-in-line package

This hermetically sealed dual-in-line package consists of a ceramic base, ceramic cap, and an 8-pin lead frame. The package is intended for insertion in mounting-hole rows 7,62 (0.300) centers (see Note A). Once the leads are compressed and inserted, sufficient tension is provided to secure the package in the board during soldering.



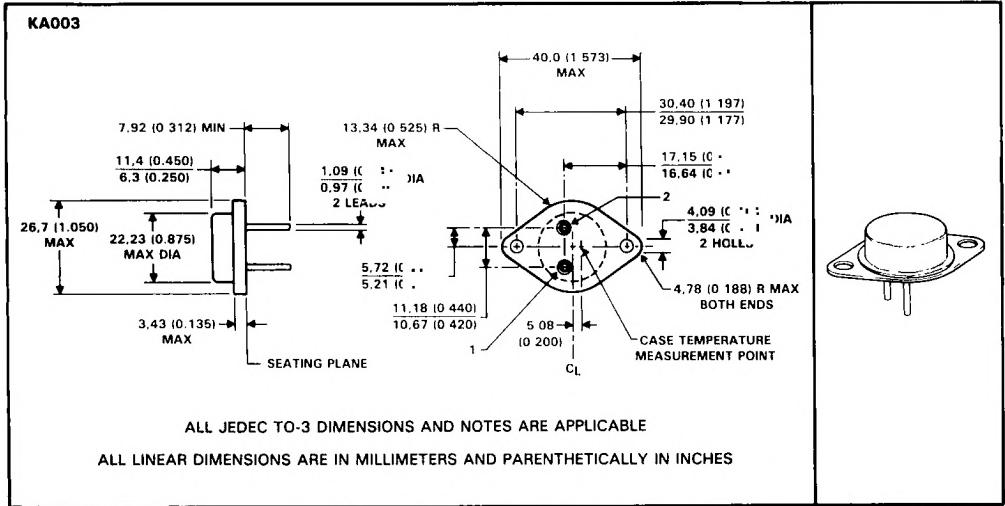
NOTE A: Each pin centerline is located within 0,25 (0.010) of its true longitudinal position.



MECHANICAL DATA

KA003 metal flange-mount package

This hermetically sealed package comprises a base of steel and a can of nickel material. The leads are tin-plated Alloy 52 with solder-dip finish. Leads require no additional cleaning or processing when used in soldered assembly.

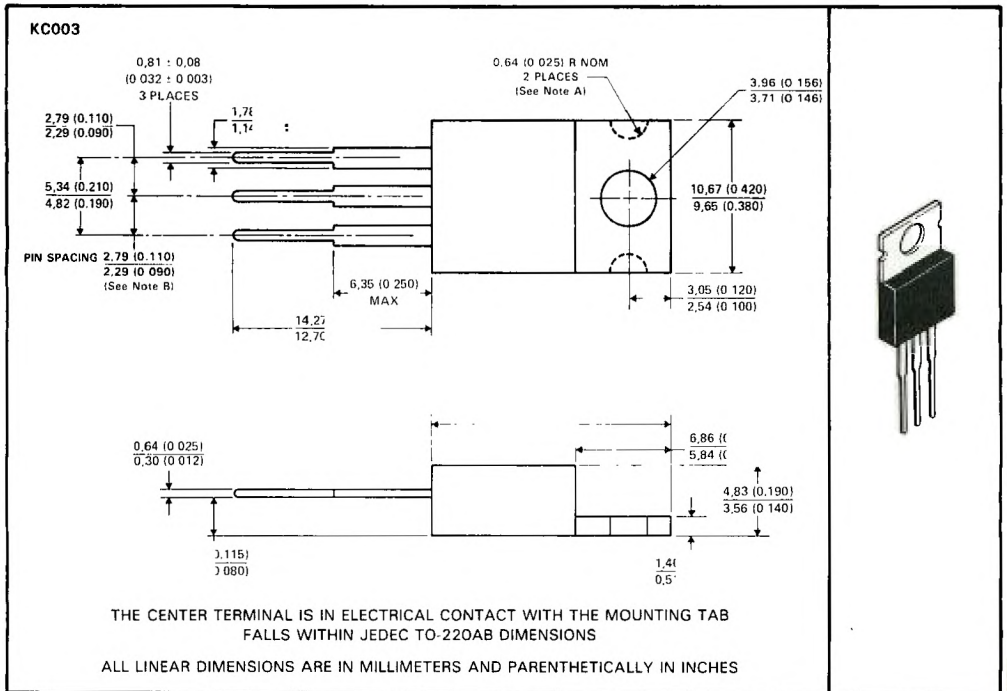


Mechanical Data

5

KC003 plastic flange-mount package

This package consists of a circuit mounted on a lead frame and encapsulated within a plastic compound. The compound will withstand soldering temperature with no deformation, and circuit performance characteristics will remain stable when the package is operated under high-humidity conditions.



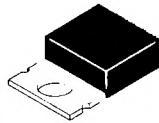
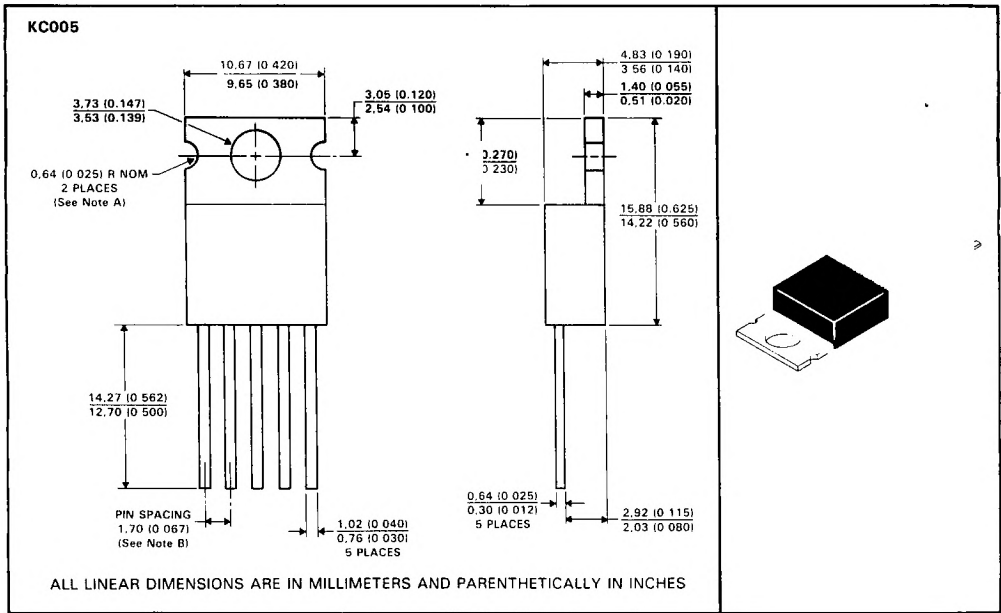
Mechanical Data

- NOTES: A. Notches may or may not be present.
B. Leads are within 0,13 (0.005) radius of true position (T.P.) at maximum material condntions.

MECHANICAL DATA

KC005 plastic flange-mount package

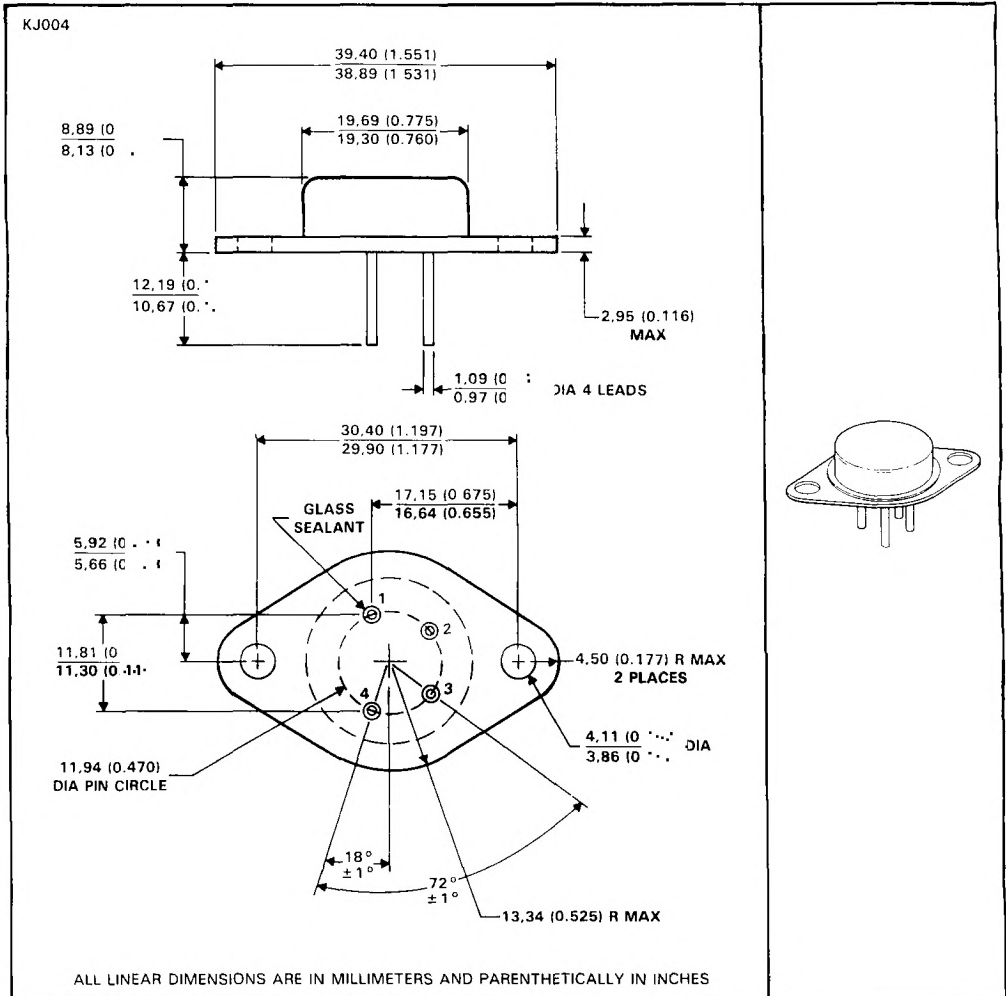
This package consists of a circuit mounted on a lead frame and encapsulated within a plastic compound. The compound will withstand soldering temperature with no deformation, and circuit performance characteristics will remain stable when the package is operated under high-humidity conditions.



- NOTES: A. Notches may or may not be present.
 B. Leads are within 0,13 (0.005) radius of true position (T.P.) at maximum material conditions.

KJ004 metal flange-mount package

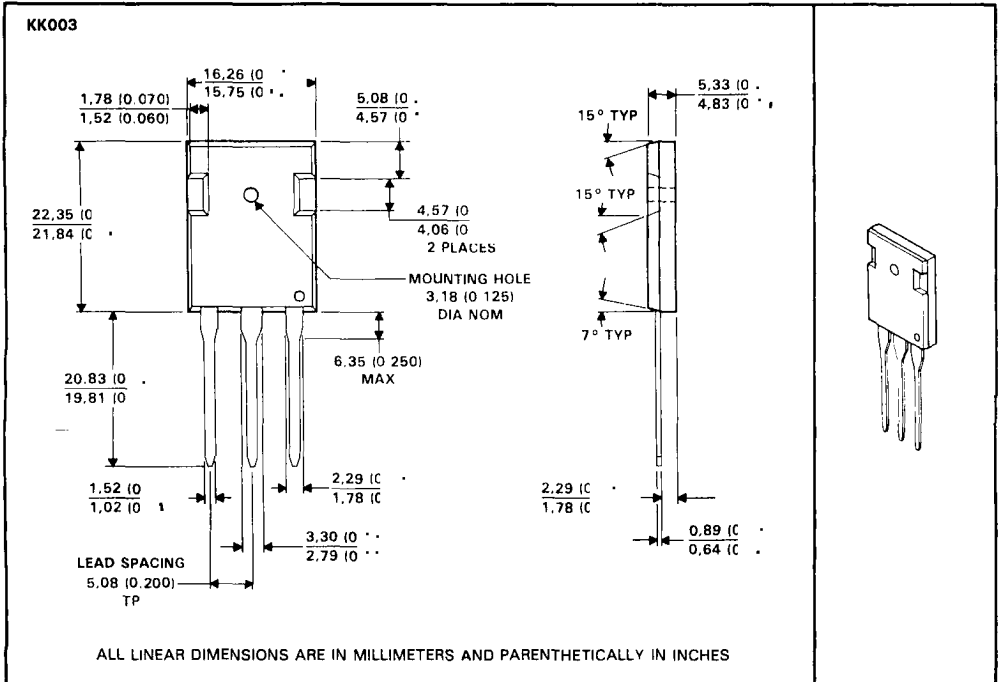
This hermetically sealed package consists of a base and can of nickel-plated steel. The leads are nickel-plated Alloy 52 with solder-dip finish.



MECHANICAL DATA

KK003 plastic flange-mount package

This package consists of a circuit mounted on a lead frame and encapsulated within a plastic compound. The compound will withstand soldering temperature with no deformation, and circuit performance characteristics will remain stable when the package is operated under high-humidity conditions:

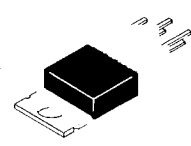
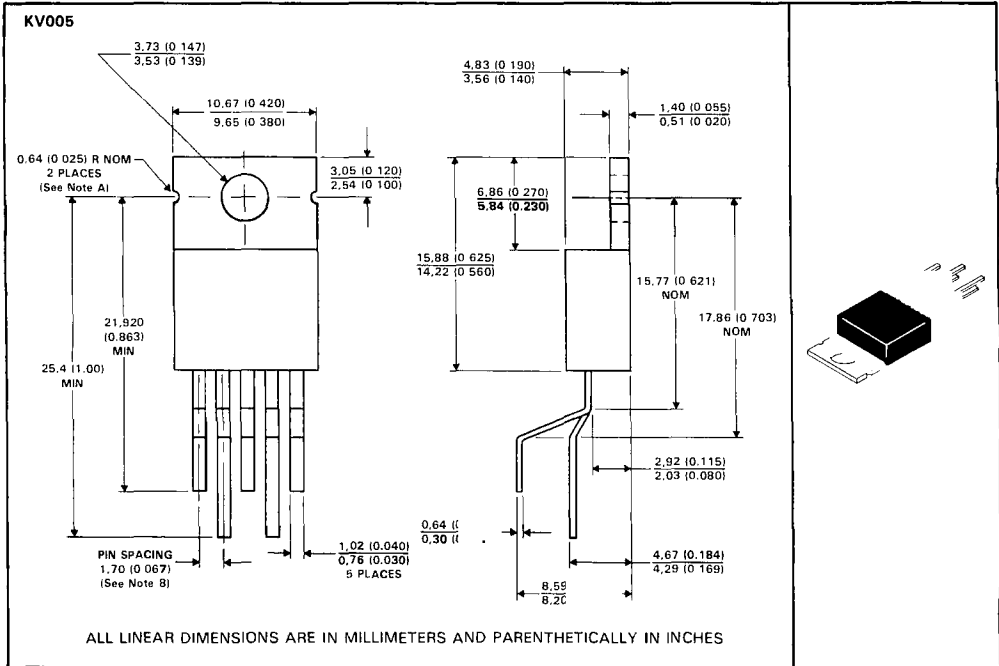


Mechanical Data



KV005 plastic flange-mount package

This package consists of a circuit mounted on a lead frame and encapsulated within a plastic compound. The compound will withstand soldering temperature with no deformation, and circuit performance characteristics will remain stable when the package is operated under high-humidity conditions.



Mechanical Data

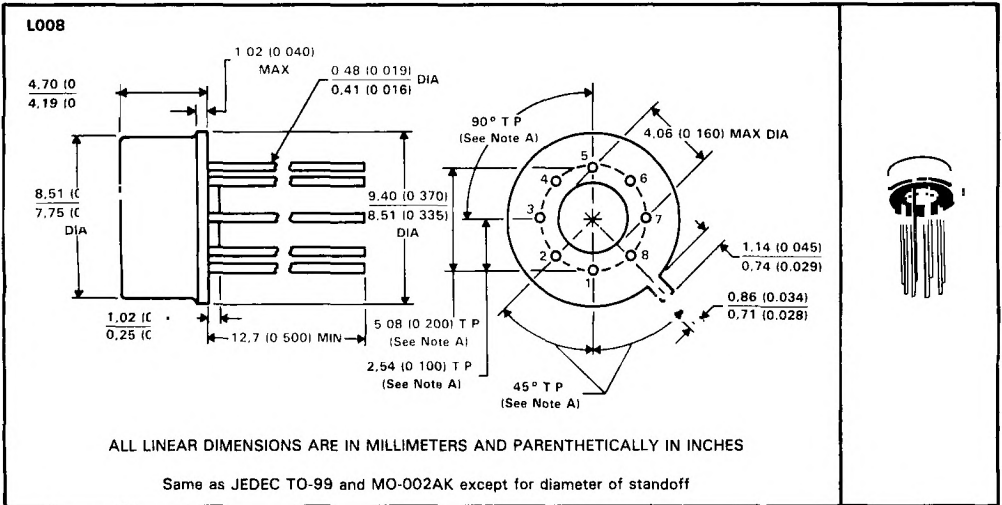
- NOTES: A. Notches may or may not be present.
B. Leads are within 0.13 (0.005) radius of true position (T.P.) at maximum material conditions.



MECHANICAL DATA

L008 metal cylindrical package

This hermetically sealed cylindrical package consists of a welded metal base and cap with individual leads secured by an insulating glass sealant. The gold-plated leads (-00) require no additional cleaning or processing when used in soldered assembly.



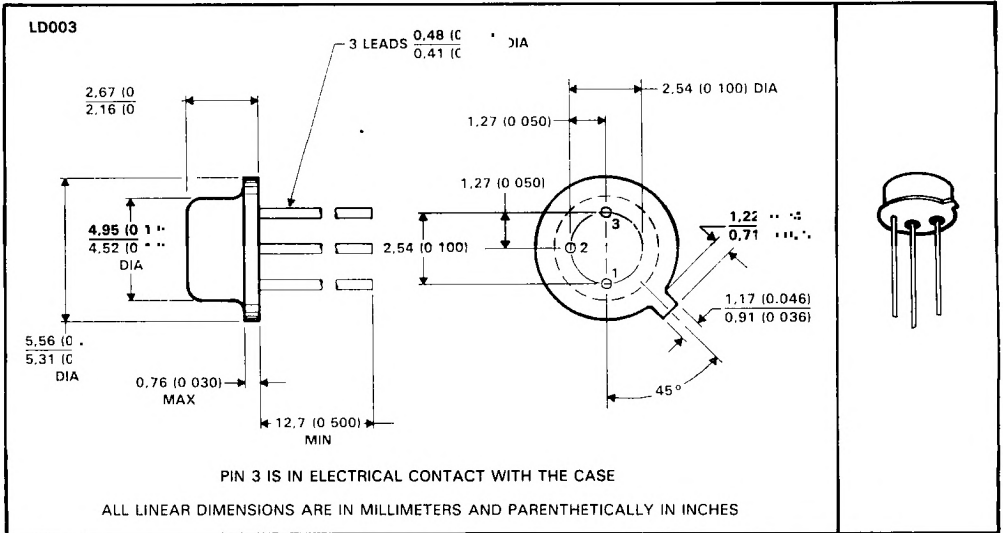
NOTE A: Each lead is located within 0,18 (0.007) of its true position at maximum material condition.

Mechanical Data

5

LD003 metal cylindrical package

This hermetically sealed cylindrical package consists of a welded metal base and can with individual leads secured by an insulating glass sealant. The gold-plated leads (-00) require no additional cleaning or processing when used in soldered assembly.



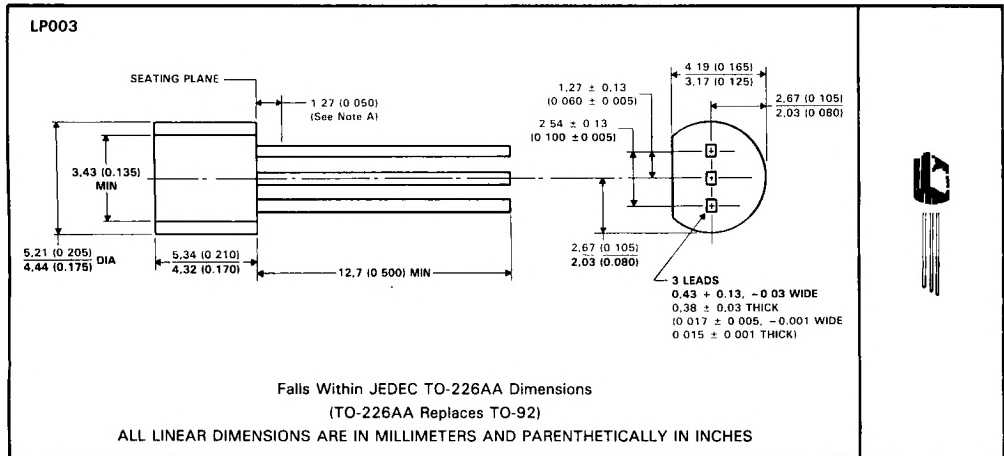
Mechanical Data

3

MECHANICAL DATA

LP003 cylindrical plastic package

This package consists of a circuit mounted on a lead frame and encapsulated within a plastic compound. The compound will withstand soldering temperature with no deformation and circuit performance characteristics remain stable when operated in high-humidity conditions. Leads require no additional cleaning or processing when used in soldered assembly.



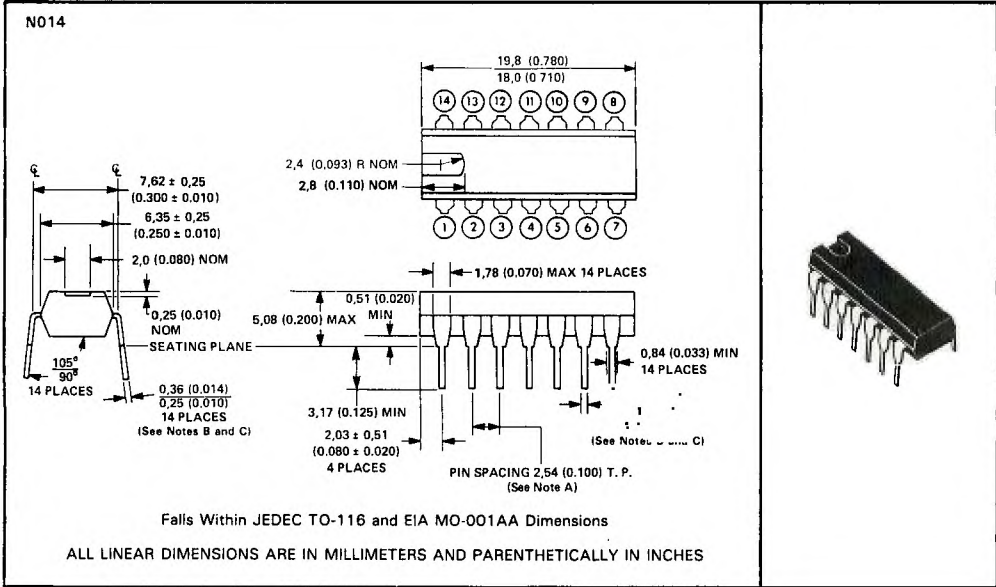
NOTE A: Lead dimensions are not controlled within this area

Mechanical Data

5

NO14 plastic dual-in-line package

This dual-in-line package consists of a circuit mounted on a lead frame and encapsulated within a plastic compound. The compound will withstand soldering temperature with no deformation, and circuit performance characteristics will remain stable when operated in high-humidity conditions. The packages are intended for insertion in mounting-hole rows on 7,62 (0.300) centers (see Note A). Once the leads are compressed and inserted, sufficient tension is provided to secure the package in the board during soldering. Leads require no additional cleaning or processing when used in soldered assembly.



Mechanical Data

- NOTES: A. Each pin centerline is located within 0,25 (0.010) of its true longitudinal position.
 B. This dimension does not apply for solder-dipped leads.
 C. When solder-dipped leads are specified, dipped area of the lead extends from the lead tip to at least 0,51 (0.020) above seating plane.

5

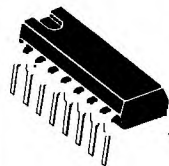
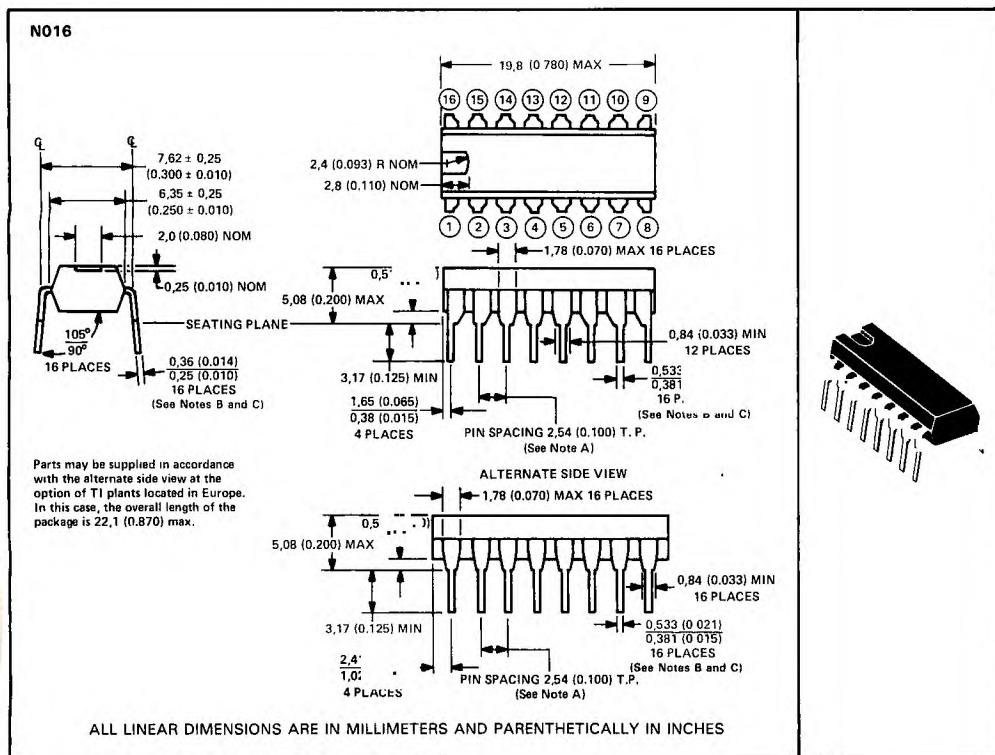
MECHANICAL DATA

N016 plastic dual-in-line package

This dual-in-line package consists of a circuit mounted on a lead frame and encapsulated within an electrically nonconductive plastic compound. The compound will withstand soldering temperature with no deformation, and circuit performance characteristics will remain stable when operated in high-humidity conditions. The package is intended for insertion in mounting-hole rows on 7,62 (0.300) centers. Once the leads are compressed and inserted, sufficient tension is provided to secure the package in the board during soldering. Leads require no additional cleaning or processing when used in soldered assembly.

Mechanical Data

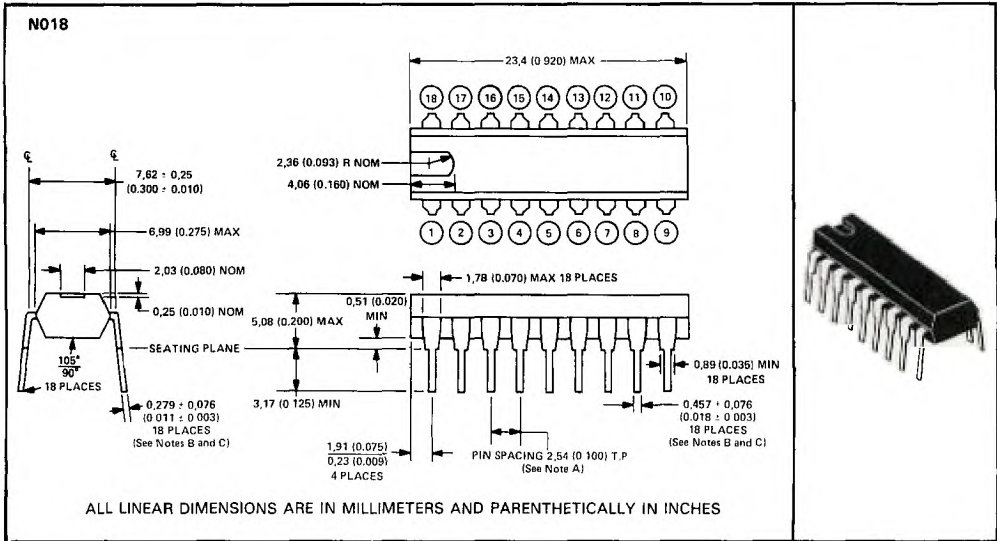
19



- NOTES:
- A. Each pin centerline is located within 0,25 (0.010) of its true longitudinal position.
 - B. This dimension does not apply for solder-dipped leads.
 - C. When solder-dipped leads are specified, dipped area of the lead extends from the lead tip to at least 0,51 (0.020) above seating plane.

N018 plastic dual-in-line package

This dual-in-line package consists of a circuit mounted on a lead frame and encapsulated within an electrically nonconductive plastic compound. The compound will withstand soldering temperature with no deformation, and circuit performance characteristics will remain stable when operated in high-humidity conditions. The package is intended for insertion in mounting-hole rows on 7,62 (0.300) centers. Once the leads are compressed and inserted, sufficient tension is provided to secure the package in the board during soldering. Leads require no additional cleaning or processing when used in soldered assembly.



Mechanical Data

5

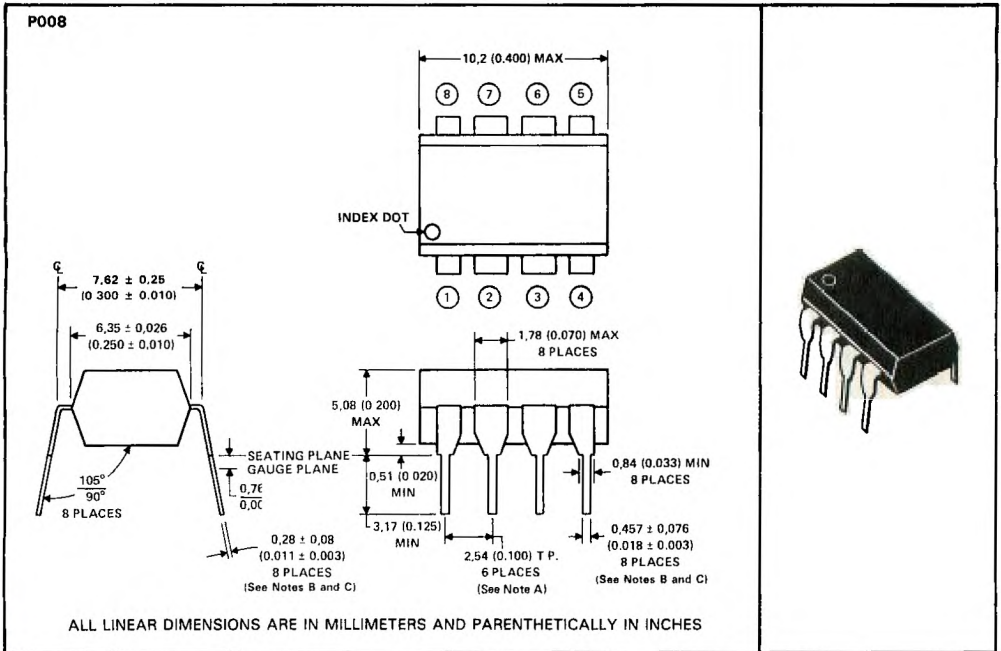
- NOTES: A. Each pin centerline is located within 0,25 (0.010) of its true longitudinal position.
 B. This dimension does not apply for solder-dipped leads.
 C. When solder-dipped leads are specified, dipped area of the lead extends from the lead tip to at least 0,51 (0.020) above seating plane.

MECHANICAL DATA

P008 dual-in-line plastic package

This package consists of a circuit mounted on an 8-pin lead frame and encapsulated within a plastic compound. The compound will withstand soldering temperature with no deformation, and circuit performance characteristics will remain stable when operated in high-humidity conditions. The package is intended for insertion in mounting-hole rows on 7,62 (0.300) centers (See Note A). Once the leads are compressed and inserted, sufficient tension is provided to secure the package in the board during soldering. Solder-plated leads require no additional cleaning or processing when used in soldered assembly.

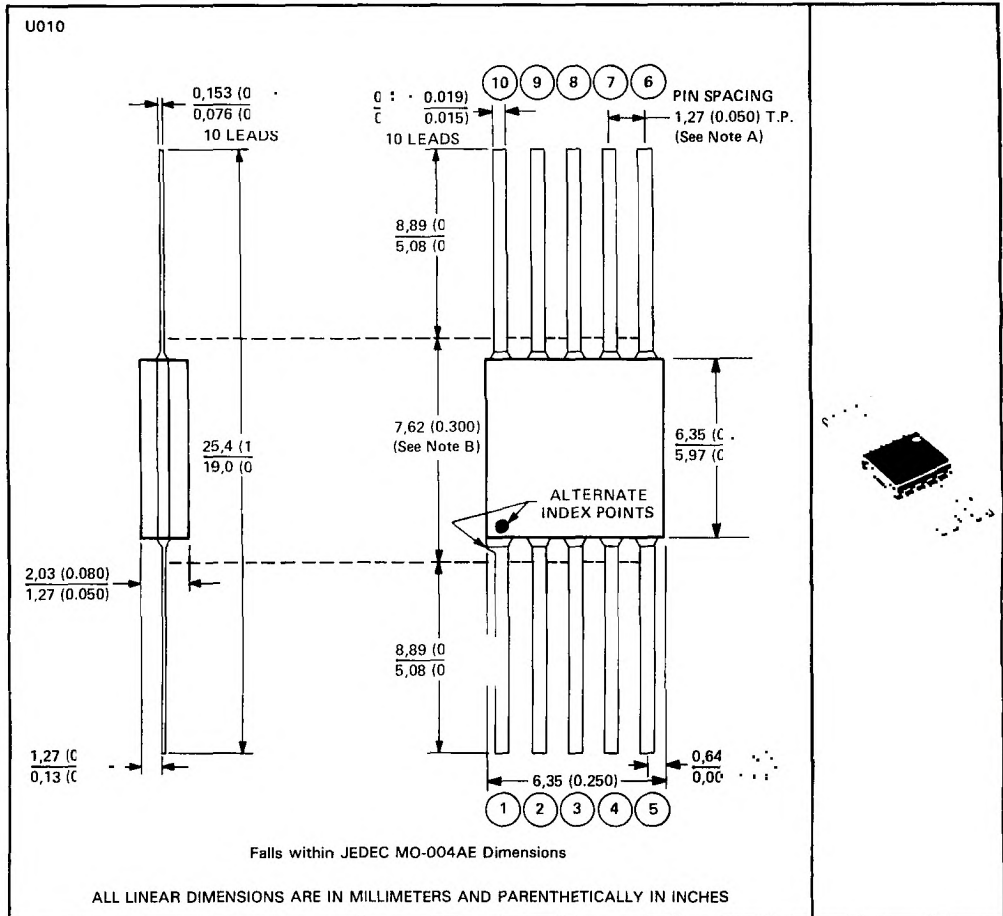
Mechanical Data



- NOTES: A. Each pin centerline is located within 0,25 (0.010) of its true longitudinal position.
 B. This dimension does not apply for solder-dipped leads.
 C. When solder-dipped leads are specified, dipped area of the lead extends from the lead tip to at least 0,51 (0.020) above seating plane.

U010 ceramic flat package

This flat package consists of a ceramic base, ceramic cap, and lead frame. Circuit bars are alloy mounted. Hermetic sealing is accomplished with glass. Leads require no additional cleaning or processing when used in soldered assembly.



NOTES: A. Leads are within 0.13 (0.005) radius of true position (T.P.) at maximum material conditions.
 B. This dimension determines a zone within which all body and lead irregularities lie.

Mechanical Data

5