

# JM38510/10403BEA Datasheet



DiGi Electronics Part Number	JM38510/10403BEA-DG
Manufacturer	<a href="#">Texas Instruments</a>
Manufacturer Product Number	JM38510/10403BEA
Description	IC DRIVER 2/0 16CDIP
Detailed Description	2/0 Driver 16-CDIP

<https://www.DiGi-Electronics.com>

This model JM38510/10403BEA is available at DiGi Electronics.

DiGi Electronics offers a global database of semiconductor and electronic component datasheets.

We welcome your inquiries regarding pricing, lead time, or other product-related questions.

 [Request a Quote](#)

 [Datasheet Search](#)



Tel: +00 852-30501935

RFQ Email: [Info@DiGi-Electronics.com](mailto:Info@DiGi-Electronics.com)

DiGi is a global authorized distributor of electronic components.

## Purchase and inquiry

Manufacturer Product Number:

JM38510/10403BEA

Series:

-

Type:

Driver

Number of Drivers/Receivers:

2/0

Data Rate:

-

Operating Temperature:

-55°C ~ 125°C (TA)

Package / Case:

16-CDIP (0.300", 7.62mm)

Manufacturer:

Texas Instruments

Product Status:

Active

Protocol:

-

Duplex:

-

Voltage - Supply:

4.5V ~ 5.5V

Mounting Type:

Through Hole

Supplier Device Package:

16-CDIP

## Environmental & Export classification

RoHS Status:

ROHS3 Compliant

Moisture Sensitivity Level (MSL):

Not Applicable

# SN55114, SN75114 DUAL DIFFERENTIAL LINE DRIVERS

SLLS071C – SEPTEMBER 1973 – REVISED SEPTEMBER 1998

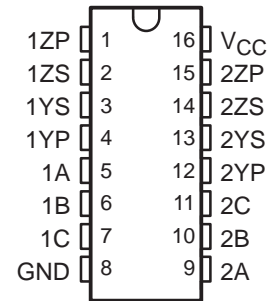
- Choice of Open-Collector, Open-Emitter, or Totem-Pole Outputs
- Single-Ended or Differential AND/NAND Outputs
- Single 5-V Supply
- Dual-Channel Operation
- TTL Compatible
- Short-Circuit Protection
- High-Current Outputs
- Triple inputs
- Clamp Diodes at Inputs and Outputs
- Designed for Use With SN55115 and SN75115 Differential Line Receivers
- Designed to Be Interchangeable With National DS9614 Line Driver

## description

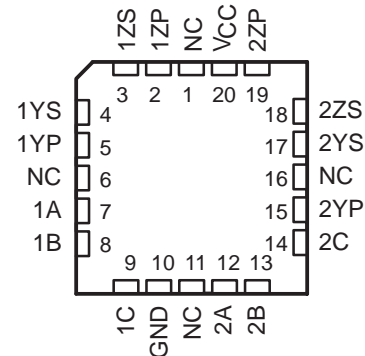
The SN55114 and SN75114 dual differential line drivers are designed to provide differential output signals with the high-current capability for driving balanced lines, such as twisted pair, at normal line impedances without high power dissipation. The output stages are similar to TTL totem-pole outputs, but with the sink outputs, YS and ZS, and the corresponding active pullup terminals, YP and ZP, available on adjacent package pins. Since the output stages provide TTL-compatible output levels, these devices can also be used as TTL expanders or phase splitters.

The SN55114 is characterized for operation over the full military temperature range of  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ . The SN75114 is characterized for operation from  $0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ .

SN55114 . . . J OR W PACKAGE  
SN75114 . . . D OR N PACKAGE  
(TOP VIEW)



SN55114 . . . FK PACKAGE  
(TOP VIEW)



NC – No internal connection

FUNCTION TABLE

INPUTS			OUTPUTS	
A	B	C	Y	Z
H	H	H	H	L
All other input combinations			L	H

H = high level, L = low level



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

PRODUCTION DATA information is 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.

 **TEXAS  
INSTRUMENTS**

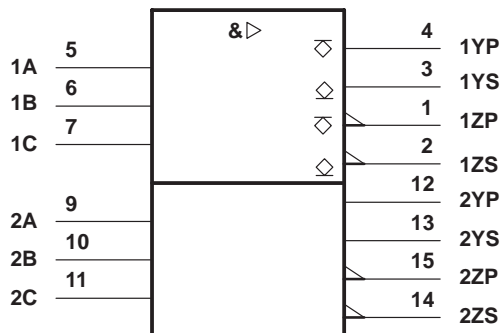
POST OFFICE BOX 655303 • DALLAS, TEXAS 75265

Copyright © 1998, Texas Instruments Incorporated

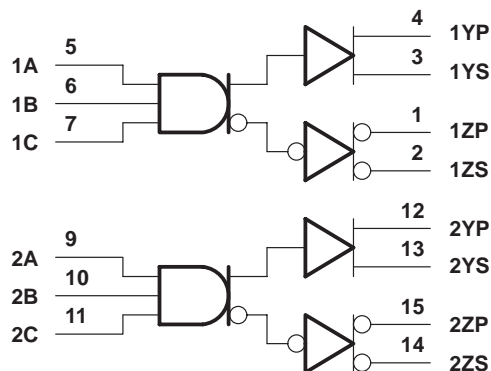
# SN55114, SN75114 DUAL DIFFERENTIAL LINE DRIVERS

SLLS071C – SEPTEMBER 1973 – REVISED SEPTEMBER 1998

## logic symbol†



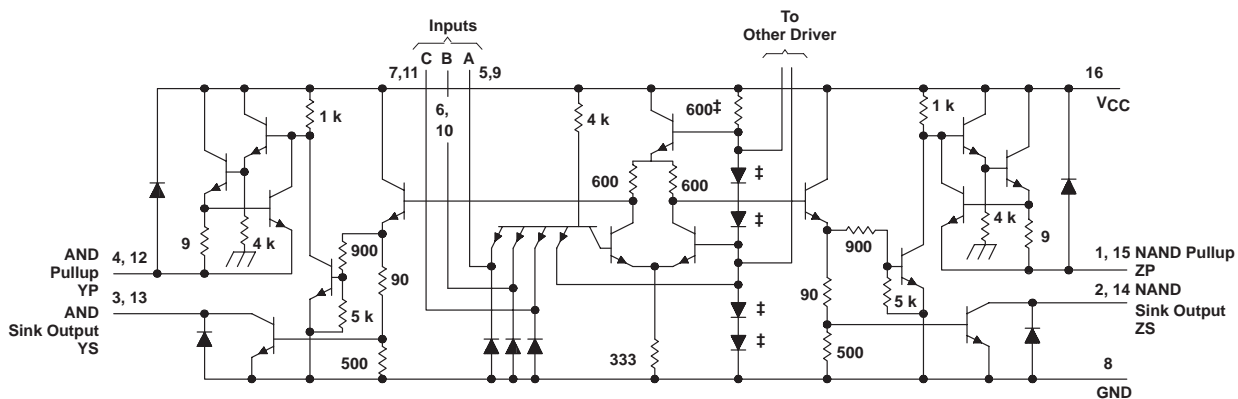
## logic diagram (positive logic)



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

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

## schematic (each driver)



‡ These components are common to both drivers. Resistor values shown are nominal and in ohms.

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

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

Supply voltage, $V_{CC}$ (see Note 1)	7 V
Input voltage, $V_I$	5.5 V
Off-state voltage applied to open-collector outputs	12 V
Continuous total power dissipation	See Dissipation Rating Table
Storage temperature range, $T_{stg}$	-65°C to 150°C
Case temperature for 60 seconds, $T_C$ : FK package	260°C
Lead temperature 1,6 mm (1/16 inch) from case for 60 seconds: J or W package	300°C
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds: D or N package	260°C

† Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

NOTES: 1. All voltage values are with respect to the network ground terminal.

DISSIPATION RATING TABLE

PACKAGE	$T_A \leq 25^\circ\text{C}$ POWER RATING	DERATING FACTOR ABOVE $T_A = 25^\circ\text{C}$	$T_A = 70^\circ\text{C}$ POWER RATING	$T_A = 125^\circ\text{C}$ POWER RATING
D	950 mW	7.6 mW/°C	608 mW	—
FK‡	1375 mW	11.0 mW/°C	880 mW	275 mW
J‡	1375 mW	11.0 mW/°C	880 mW	275 mW
N	1150 mW	9.2 mW/°C	736 mW	—
W‡	1000 mW	8.0 mW/°C	640 mW	200 mW

‡ In the FK, J, and W packages, SN55114 chips are either silver glass or alloy mounted.

**recommended operating conditions (unless otherwise noted)**

	SN55114			SN75114			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
Supply voltage, $V_{CC}$	4.5	5	5.5	4.75	5	5.25	V
High-level input voltage, $V_{IH}$	2			2			V
Low-level input voltage, $V_{IL}$			0.8			0.8	V
High-level output current, $I_{OH}$			-40			-40	mA
Low-level output current, $I_{OL}$			40			40	mA
Operating free-air temperature, $T_A$	-55		125	0		70	°C

# SN55114, SN75114

## DUAL DIFFERENTIAL LINE DRIVERS

SLLS071C – SEPTEMBER 1973 – REVISED SEPTEMBER 1998

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

PARAMETER	TEST CONDITIONS†	SN55114		SN75114		UNIT		
		MIN	TYP‡	MAX	MIN		TYP‡	MAX
$V_{IK}$ Input clamp voltage	$V_{CC} = \text{MIN}$ , $I_I = -12 \text{ mA}$	-0.9	-1.5	-0.9	-1.5	V		
$V_{OH}$ High-level output voltage	$V_{CC} = \text{MIN}$ , $V_{IH} = 2 \text{ V}$ , $V_{IL} = 0.8 \text{ V}$	$I_{OH} = -10 \text{ mA}$	2.4	3.4	2.4	3.4	V	
		$I_{OH} = -40 \text{ mA}$	2	3	2	3		
$V_{OL}$ Low-level output voltage	$V_{CC} = \text{MIN}$ , $V_{IH} = 2 \text{ V}$ , $V_{IL} = 0.8 \text{ V}$ , $I_{OL} = 40 \text{ mA}$	0.2	0.4	0.2	0.45	V		
$V_{OK}$ Output clamp voltage	$V_{CC} = 5 \text{ V}$ , $I_O = 40 \text{ mA}$ , $T_A = 25^\circ\text{C}$	6.1	6.5	6.1	6.5	V		
	$V_{CC} = \text{MAX}$ , $I_O = -40 \text{ mA}$ , $T_A = 25^\circ\text{C}$	-1.1	-1.5	-1.1	-1.5			
$I_{O(\text{off})}$ Off-state open collector output current	$V_{CC} = \text{MAX}$	$V_{OH} = 12 \text{ V}$	$T_A = 25^\circ\text{C}$	1	100	$\mu\text{A}$		
			$T_A = 125^\circ\text{C}$	200				
		$V_{OH} = 5.25 \text{ V}$	$T_A = 25^\circ\text{C}$		1		100	
			$T_A = 70^\circ\text{C}$		200			
$I_I$ 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	$\mu\text{A}$		
$I_{IL}$ Low-level input current	$V_{CC} = \text{MAX}$ , $V_I = 0.4 \text{ V}$			-1.1	-1.6	mA		
$I_{OS}$ Short-circuit output current§	$V_{CC} = \text{MAX}$ , $V_O = 0$ , $T_A = 25^\circ\text{C}$	-40	-90	-120	-40	-90	-120	mA
$I_{CC}$ Supply current (both drivers)	All inputs at 0 V, No load, $T_A = 25^\circ\text{C}$	$V_{CC} = \text{MAX}$	37	50	37	50	mA	
		$V_{CC} = 7 \text{ V}$	47	65	47	70		

† All parameters, with the exception of off-state open-collector output current, are measured with the active pullup connected to the sink output. For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

‡ All typical values are at  $T_A = 25^\circ\text{C}$  and  $V_{CC} = 5 \text{ V}$ , with the exception of  $I_{CC}$  at 7 V.

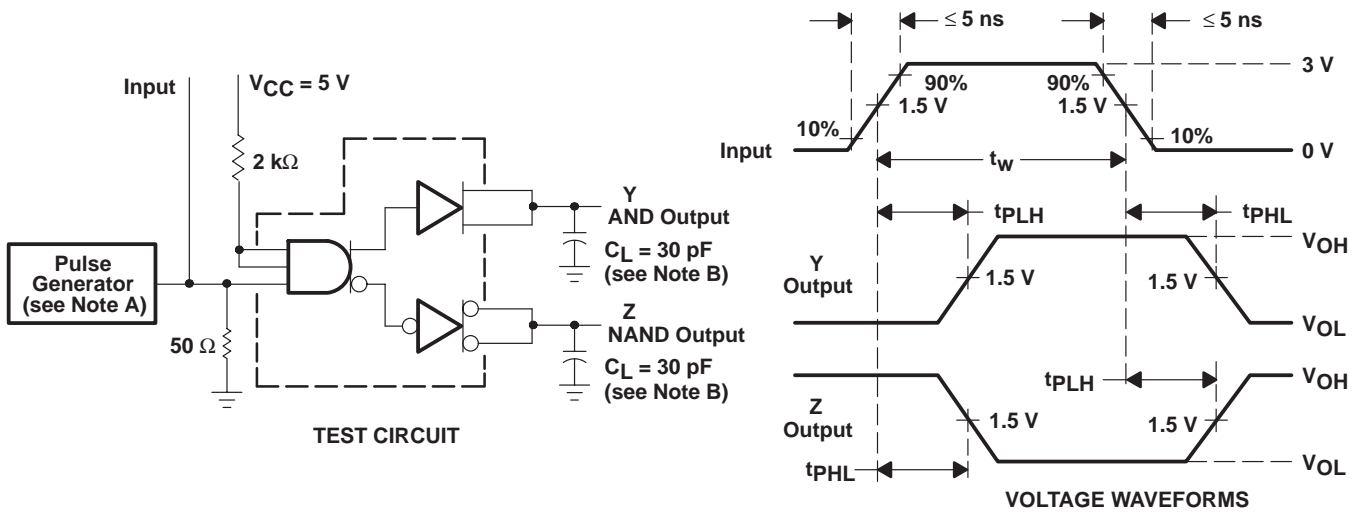
§ Only one output should be shorted at a time, and duration of the short circuit should not exceed one second.

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

PARAMETER	TEST CONDITIONS	SN55114		SN75114		UNIT
		MIN	TYP	MAX	MIN	
$t_{PLH}$ Propagation delay time, low- to high-level output	$C_L = 30 \text{ pF}$ , See Figure 1	15	20	15	30	ns
$t_{PHL}$ Propagation delay time, high- to low-level output		11	20	11	30	ns



PARAMETER MEASUREMENT INFORMATION



NOTES: A. The pulse generator has the following characteristics:  $Z_O = 50 \Omega$ ,  $PRR \leq 500 \text{ kHz}$ ,  $t_w \leq 100 \text{ ns}$ .  
B.  $C_L$  includes probe and jig capacitance.

Figure 1. Test Circuit and Voltage Waveforms

TYPICAL CHARACTERISTICS†

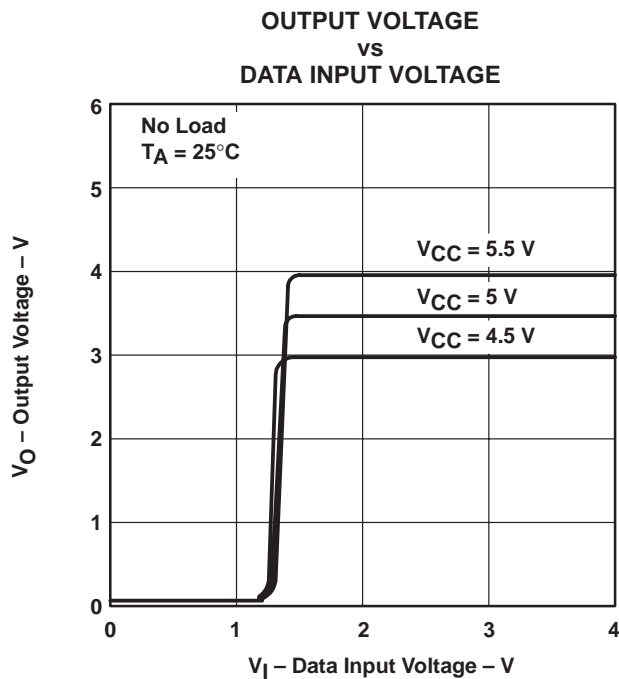


Figure 2

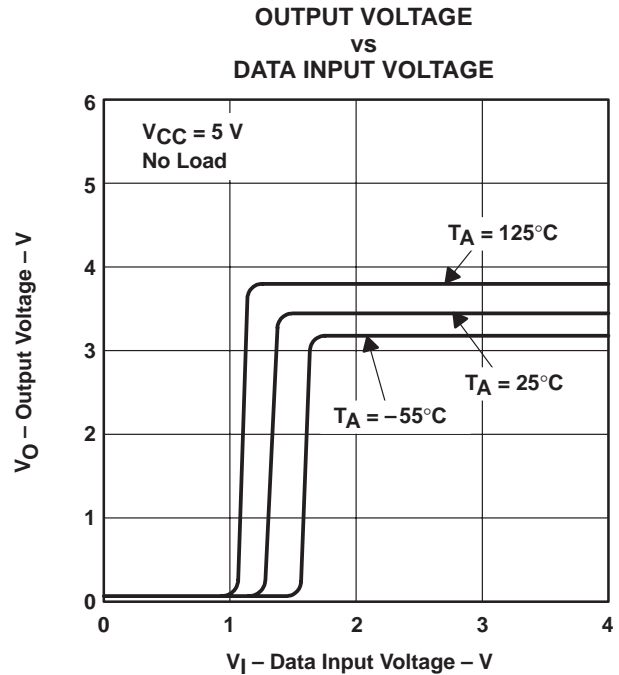


Figure 3

† Operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. These parameters were measured with the active pullup connected to the sink output.

# SN55114, SN75114 DUAL DIFFERENTIAL LINE DRIVERS

SLLS071C – SEPTEMBER 1973 – REVISED SEPTEMBER 1998

## TYPICAL CHARACTERISTICS†

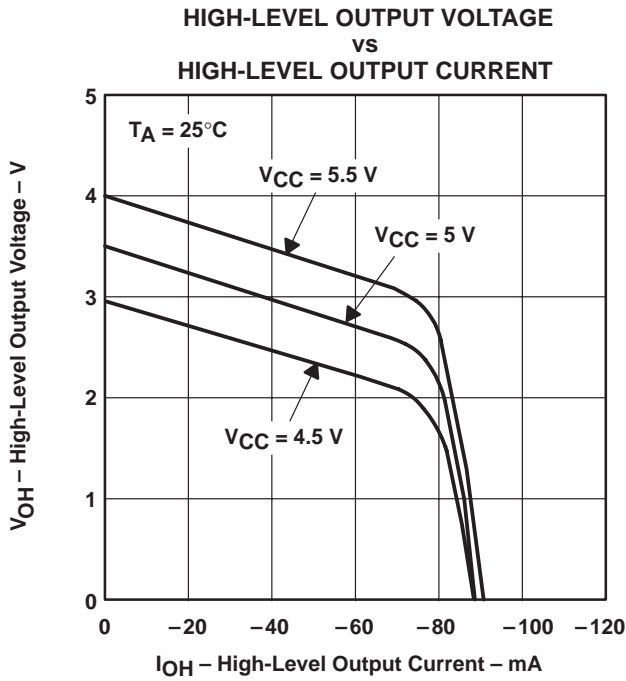


Figure 4

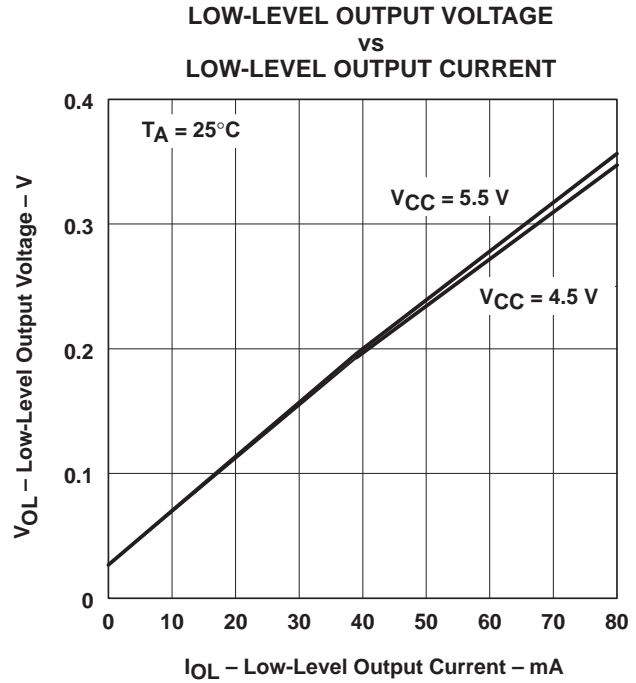


Figure 5

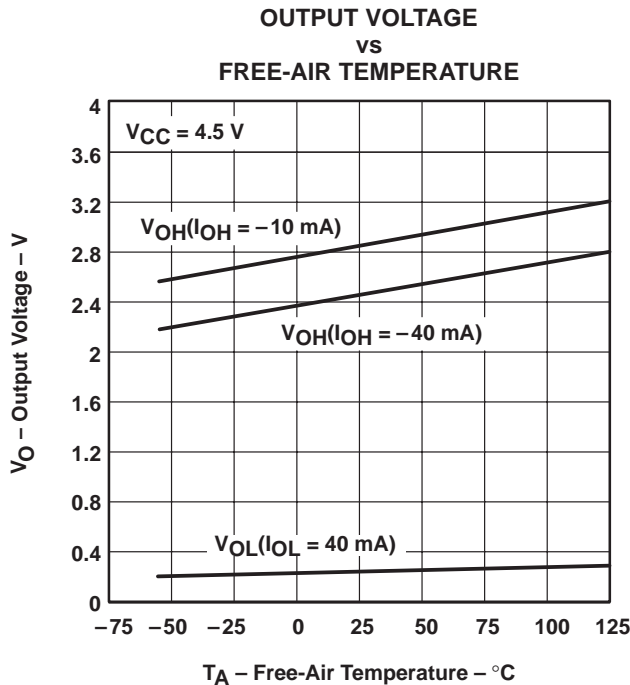


Figure 6

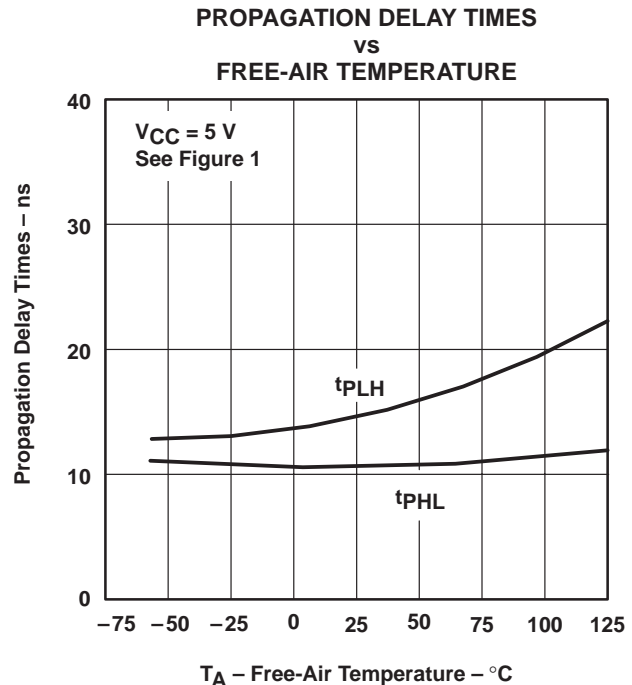


Figure 7

† Operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. These parameters were measured with the active pullup connected to the sink output.

TYPICAL CHARACTERISTICS†

SUPPLY CURRENT  
 (BOTH DRIVERS)  
 vs  
 SUPPLY VOLTAGE

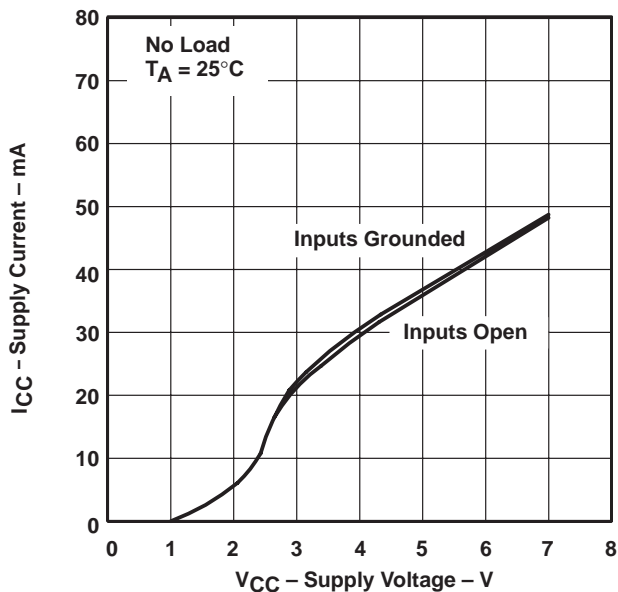


Figure 8

SUPPLY CURRENT  
 (BOTH DRIVERS)  
 vs  
 FREE-AIR TEMPERATURE

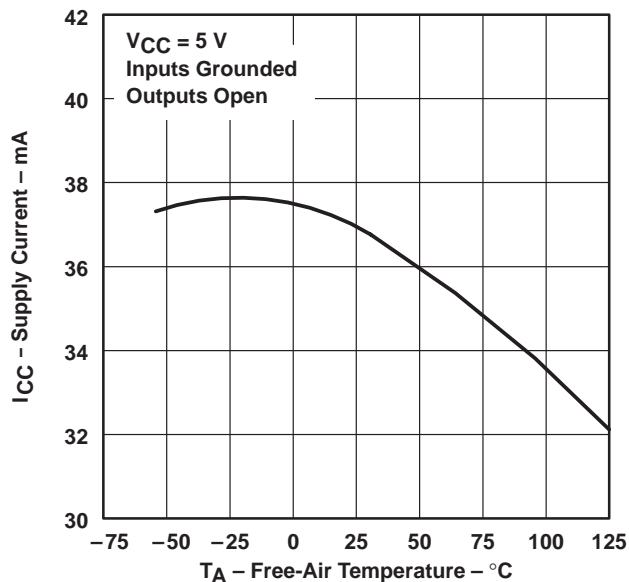


Figure 9

SUPPLY CURRENT  
 (BOTH DRIVERS)  
 vs  
 FREQUENCY

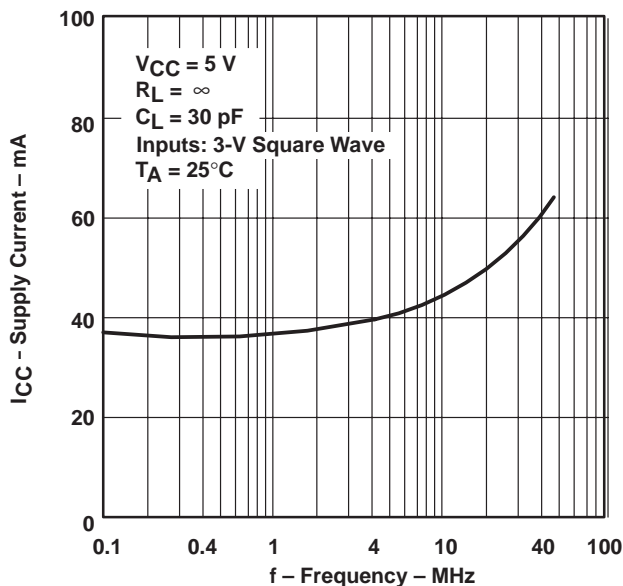


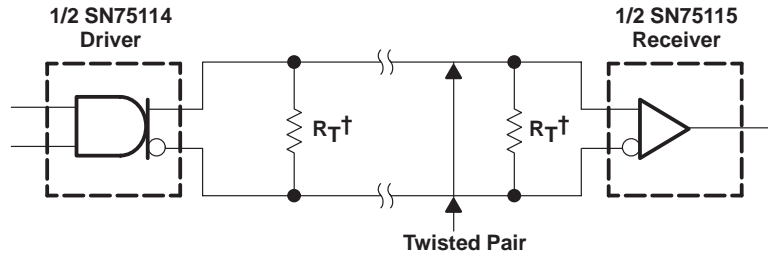
Figure 10

† Operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. These parameters were measured with the active pullup connected to the sink output.

# SN55114, SN75114 DUAL DIFFERENTIAL LINE DRIVERS

SLLS071C – SEPTEMBER 1973 – REVISED SEPTEMBER 1998

## APPLICATION INFORMATION



$^\dagger R_T = Z_0$ . A capacitor can be connected in series with  $R_T$  to reduce power dissipation.

**Figure 11. Basic Party-Line or Data-Bus Differential Data Transmission**

**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
5962-88744022A	ACTIVE	LCCC	FK	20	55	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-88744022A SNJ55114FK	<a href="#">Samples</a>
5962-8874402EA	ACTIVE	CDIP	J	16	25	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-8874402EA SNJ55114J	<a href="#">Samples</a>
5962-8874402FA	ACTIVE	CFP	W	16	25	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-8874402FA SNJ55114W	<a href="#">Samples</a>
JM38510/10403BEA	ACTIVE	CDIP	J	16	25	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	JM38510/10403BEA	<a href="#">Samples</a>
M38510/10403BEA	ACTIVE	CDIP	J	16	25	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	JM38510/10403BEA	<a href="#">Samples</a>
SN55114J	ACTIVE	CDIP	J	16	25	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	SN55114J	<a href="#">Samples</a>
SN75114D	ACTIVE	SOIC	D	16	40	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	0 to 70	SN751149614CD	<a href="#">Samples</a>
SN75114DG4	ACTIVE	SOIC	D	16	40	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	0 to 70	SN751149614CD	<a href="#">Samples</a>
SN75114N	ACTIVE	PDIP	N	16	25	RoHS & Green	NIPDAU	N / A for Pkg Type	0 to 70	SN75114N	<a href="#">Samples</a>
SNJ55114FK	ACTIVE	LCCC	FK	20	55	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-88744022A SNJ55114FK	<a href="#">Samples</a>
SNJ55114J	ACTIVE	CDIP	J	16	25	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-8874402EA SNJ55114J	<a href="#">Samples</a>
SNJ55114W	ACTIVE	CFP	W	16	25	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-8874402FA SNJ55114W	<a href="#">Samples</a>

(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  $\leq 1000$ ppm threshold. Antimony trioxide based flame retardants must also meet the  $\leq 1000$ ppm 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.

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

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

**OTHER QUALIFIED VERSIONS OF SN55114, SN75114 :**

● Catalog : [SN75114](#)

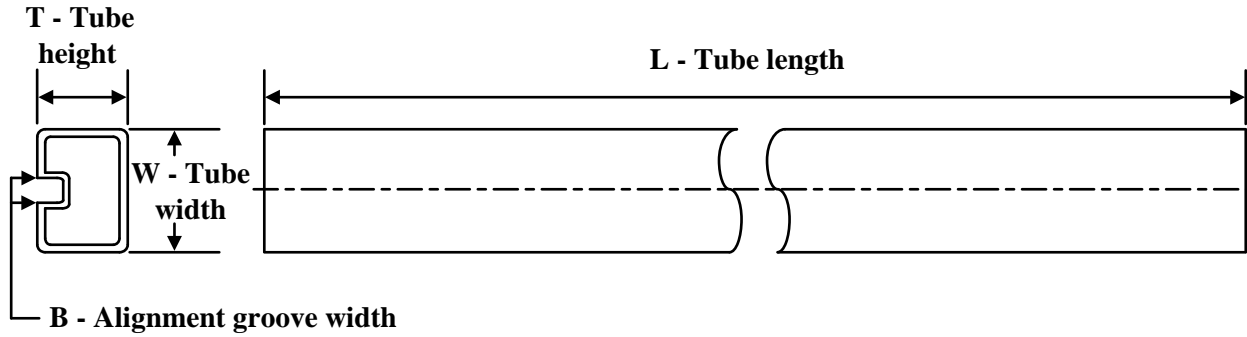
● Military : [SN55114](#)

NOTE: Qualified Version Definitions:

● Catalog - TI's standard catalog product

● Military - QML certified for Military and Defense Applications

## TUBE



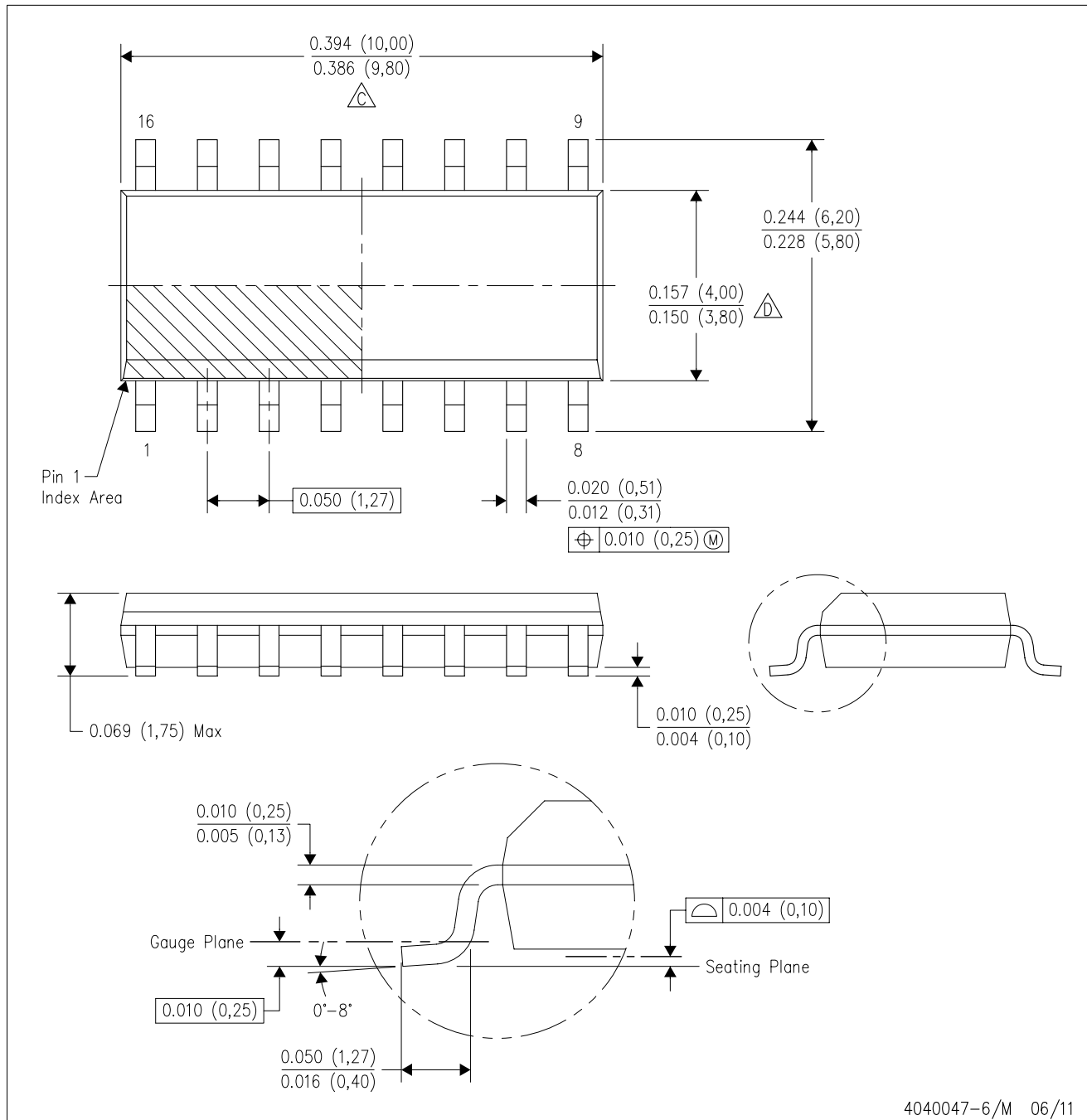
\*All dimensions are nominal

Device	Package Name	Package Type	Pins	SPQ	L (mm)	W (mm)	T (μm)	B (mm)
5962-88744022A	FK	LCCC	20	55	506.98	12.06	2030	NA
5962-8874402FA	W	CFP	16	25	506.98	26.16	6220	NA
SN75114D	D	SOIC	16	40	507	8	3940	4.32
SN75114DG4	D	SOIC	16	40	507	8	3940	4.32
SN75114N	N	PDIP	16	25	506	13.97	11230	4.32
SNJ55114FK	FK	LCCC	20	55	506.98	12.06	2030	NA
SNJ55114W	W	CFP	16	25	506.98	26.16	6220	NA

## MECHANICAL DATA

D (R-PDSO-G16)

PLASTIC SMALL OUTLINE

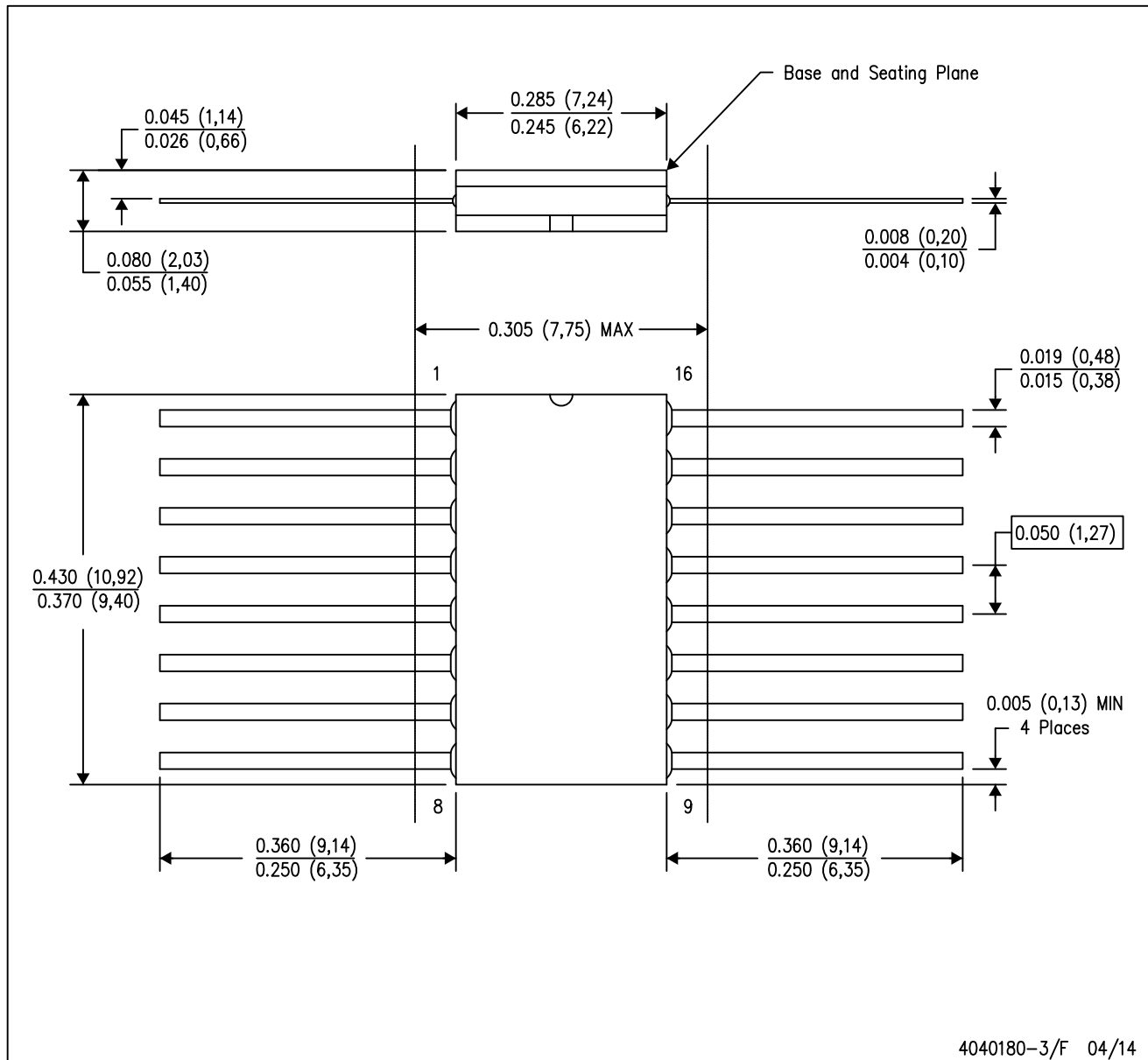


- NOTES:
- All linear dimensions are in inches (millimeters).
  - This drawing is subject to change without notice.
  - Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.006 (0,15) each side.
  - Body width does not include interlead flash. Interlead flash shall not exceed 0.017 (0,43) each side.
  - Reference JEDEC MS-012 variation AC.

## MECHANICAL DATA

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 GDFP2-F16

## GENERIC PACKAGE VIEW

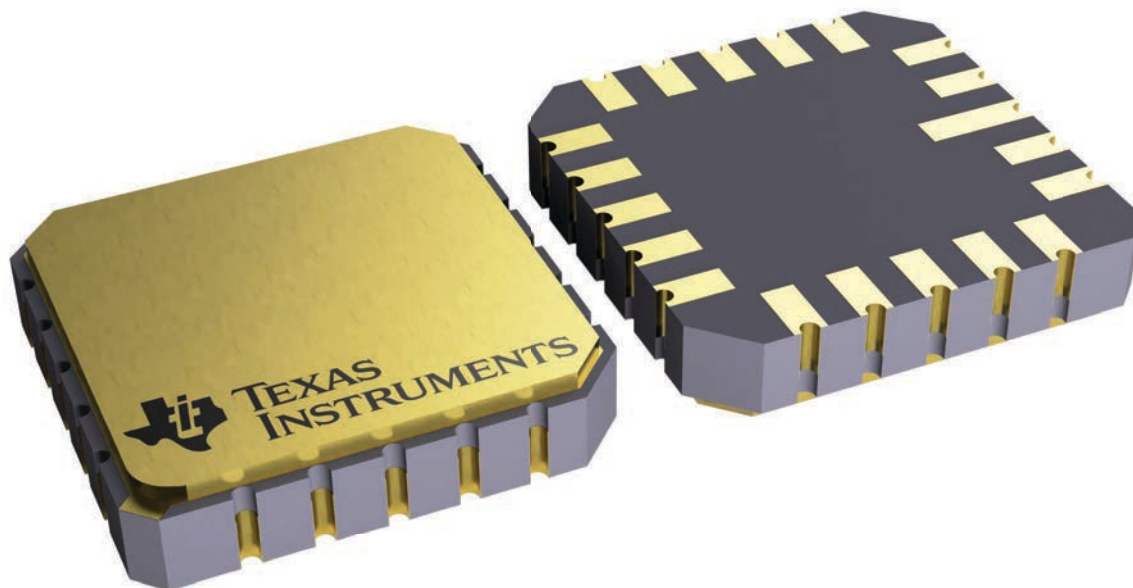
**FK 20**

**LCCC - 2.03 mm max height**

8.89 x 8.89, 1.27 mm pitch

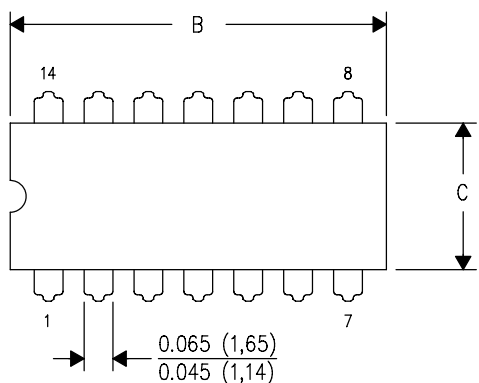
LEADLESS CERAMIC CHIP CARRIER

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

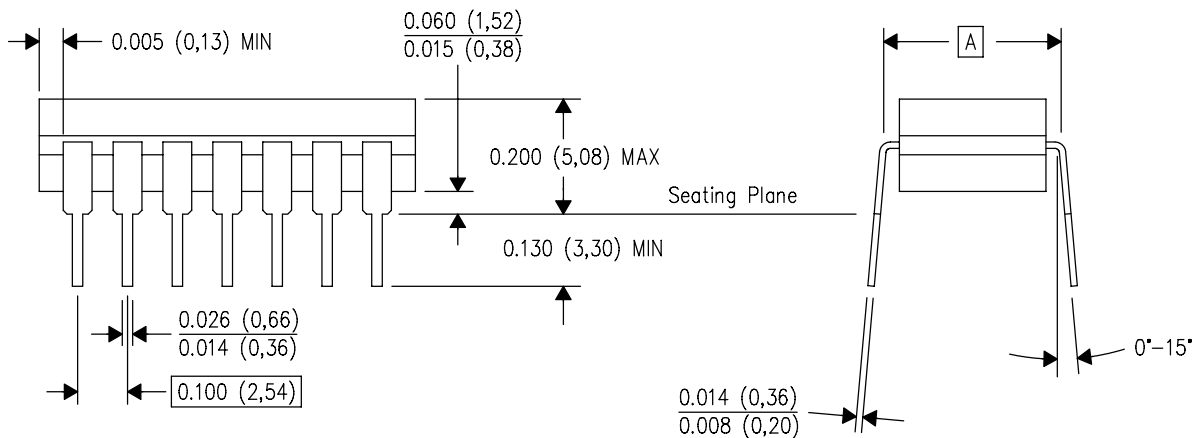


J (R-GDIP-T\*\*)   
 14 LEADS SHOWN

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

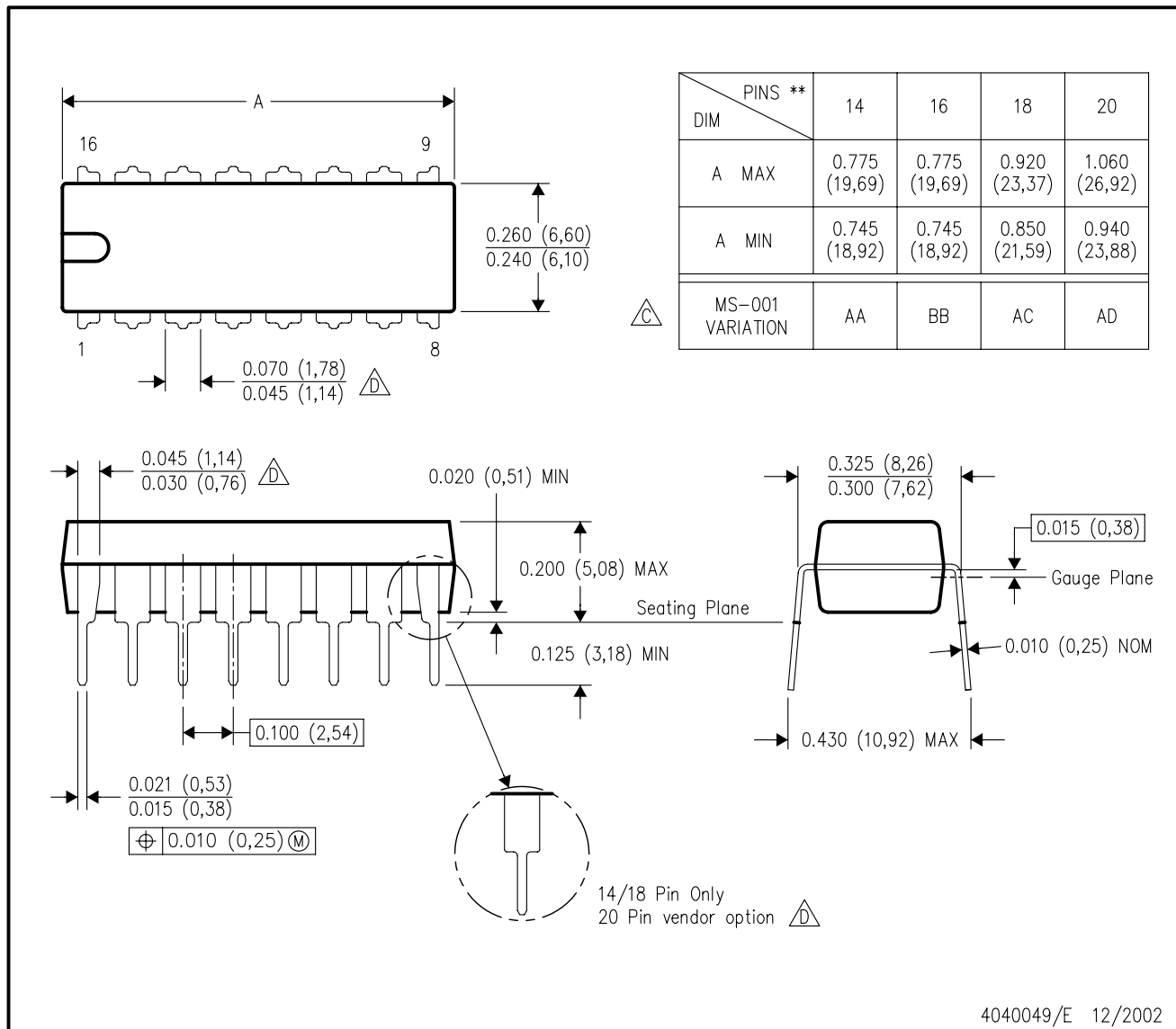
- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - C. This package is hermetically sealed with a ceramic lid using glass frit.
  - D. Index point is provided on cap for terminal identification only on press ceramic glass frit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

**MECHANICAL DATA**

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

**PLASTIC DUAL-IN-LINE PACKAGE**

16 PINS SHOWN



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.

## IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATA SHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, regulatory or other requirements.

These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI's products are provided subject to [TI's Terms of Sale](#) or other applicable terms available either on [ti.com](#) or provided in conjunction with such TI products. TI's provision of these resources does not expand or otherwise alter TI's applicable warranties or warranty disclaimers for TI products.

TI objects to and rejects any additional or different terms you may have proposed.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265

Copyright © 2025, Texas Instruments Incorporated

## OUR CERTIFICATE

DiGi provide top-quality products and perfect service for customer worldwide through standardization, technological innovation and continuous improvement. DiGi through third-party certification, we stricly control the quality of products and services. Welcome your RFQ to

Email: [Info@DiGi-Electronics.com](mailto:Info@DiGi-Electronics.com)



Tel: +00 852-30501935

RFQ Email: [Info@DiGi-Electronics.com](mailto:Info@DiGi-Electronics.com)

DiGi is a global authorized distributor of electronic components.