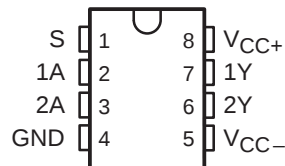


- Meets or Exceeds the Requirement of TIA/EIA-232-F and ITU Recommendation V.28
- Withstands Sustained Output Short Circuit to Any Low-Impedance Voltage Between –25 V and 25 V
- 2-μs Maximum Transition Time Through the 3-V to –3-V Transition Region Under Full 2500-pF Load
- Inputs Compatible With Most TTL Families
- Common Strobe Input
- Inverting Output
- Slew Rate Can Be Controlled With an External Capacitor at the Output
- Standard Supply Voltages . . . ± 12 V

D OR P PACKAGE
(TOP VIEW)

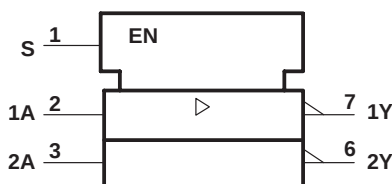


description

The SN75150 is a monolithic dual line driver designed to satisfy the requirements of the standard interface between data-terminal equipment and data-communication equipment as defined by TIA/EIA-232-F. A rate of 20 kbits/s can be transmitted with a full 2500-pF load. Other applications are in data-transmission systems using relatively short single lines, in level translators, and for driving MOS devices. The logic input is compatible with most TTL families. Operation is from 12-V and –12-V power supplies.

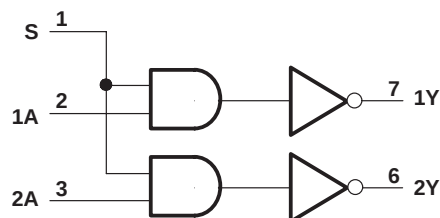
The SN75150 is characterized for operation from 0°C to 70°C.

logic symbol†



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

logic diagram (positive logic)



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**

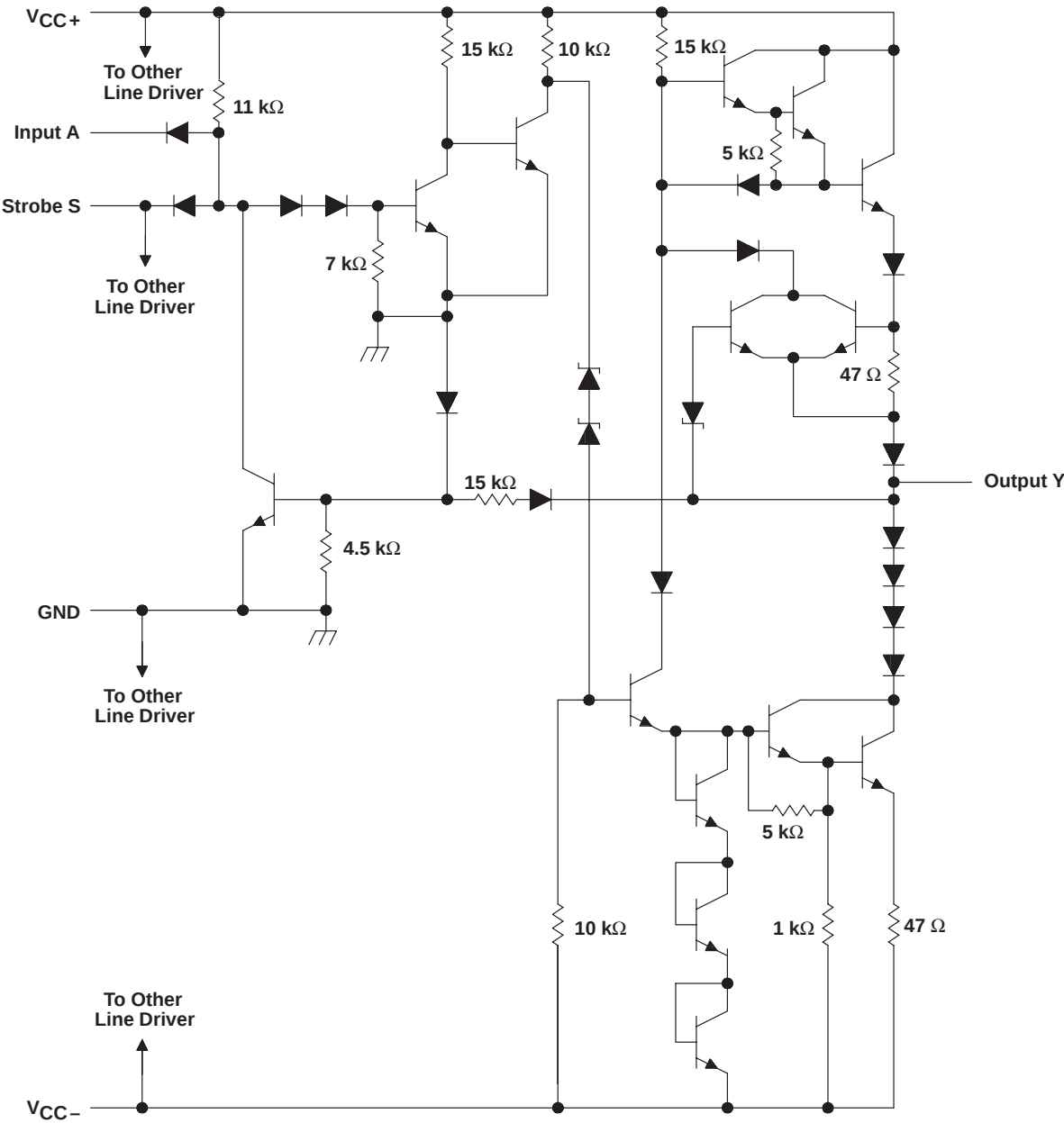
POST OFFICE BOX 655303 • DALLAS, TEXAS 75265

Copyright © 1999, Texas Instruments Incorporated

SN75150
DUAL LINE DRIVER

SLLS081C – JANUARY 1971 – REVISED JUNE 1999

schematic (each line driver)



Resistor values shown are nominal.

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

Supply voltage, V_{CC+} (see Note 1)	15 V
Supply voltage, V_{CC-}	–15 V
Input voltage, V_I	15 V
Applied output voltage	±25 V
Package thermal impedance, θ_{JA} (see Notes 2 and 3): D package	197°C/W
P package	104°C/W
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds	260°C
Storage temperature range, T_{stg}	–65°C to 150°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. Voltage values are with respect to network ground terminal.
 2. Maximum power dissipation is a function of $T_J(\max)$, θ_{JA} , and T_A . The maximum allowable power dissipation at any allowable ambient temperature is $P_D = (T_J(\max) - T_A)/\theta_{JA}$. Operating at the absolute maximum T_J of 150°C can impact reliability.
 3. The package thermal impedance is calculated in accordance with JESD 51, except for through-hole packages, which use a trace length of zero.

recommended operating conditions

		MIN	NOM	MAX	UNIT
Supply voltage	V_{CC+}	10.8	12	13.2	V
	V_{CC-}	–10.8	–12	–13.2	
High-level input voltage, V_{IH}		2		5.5	V
Low-level input voltage, V_{IL}		0		0.8	V
Driver output voltage, V_O				±15	V
Operating free-air temperature, T_A		0		70	°C

SN75150

DUAL LINE DRIVER

SLLS081C – JANUARY 1971 – REVISED JUNE 1999

electrical characteristics over recommended operating free-air temperature range, $V_{CC\pm} = \pm 13.2$ V (unless otherwise noted)

PARAMETER		TEST CONDITIONS	MIN	TYP [†]	MAX	UNIT
V_{OH}	High-level output voltage	$V_{CC+} = 10.8$ V, $V_{IL} = 0.8$ V, $V_{CC-} = -10.8$ V, $R_L = 3$ k Ω to 7 k Ω	5	8		V
V_{OL}	Low-level output voltage (see Note 4)	$V_{CC+} = 10.8$ V, $V_{IH} = 2$ V, $V_{CC-} = -10.8$ V, $R_L = 3$ k Ω to 7 k Ω		-8	-5	V
I_{IH}	High-level input current	$V_I = 2.4$ V		1	10	μ A
	Strobe input			2	20	
I_{IL}	Low-level input current	$V_I = 0.4$ V		-1	-1.6	mA
	Strobe input			-2	-3.2	
I_{OS}	Short-circuit output current [‡]	$V_O = 25$ V		2	8	mA
		$V_O = -25$ V		-3	-8	
		$V_O = 0$, $V_I = 3$ V	10	15	30	
		$V_O = 0$, $V_I = 0$	-10	-15	-30	
I_{CCH+}	Supply current from V_{CC+} , high-level output	$V_I = 0$, $R_L = 3$ k Ω , $T_A = 25^\circ$ C		10	22	mA
I_{CCH-}	Supply current from V_{CC-} , high-level output			-1	-10	mA
I_{CCL+}	Supply current from V_{CC+} , low-level output	$V_I = 3$ V, $R_L = 3$ k Ω , $T_A = 25^\circ$ C		8	17	mA
I_{CCL-}	Supply current from V_{CC-} , low-level output			-9	-20	mA

[†] All typical values are at $V_{CC+} = 12$ V, $V_{CC-} = -12$ V, $T_A = 25^\circ$ C.

[‡] Not more than one output should be shorted at a time.

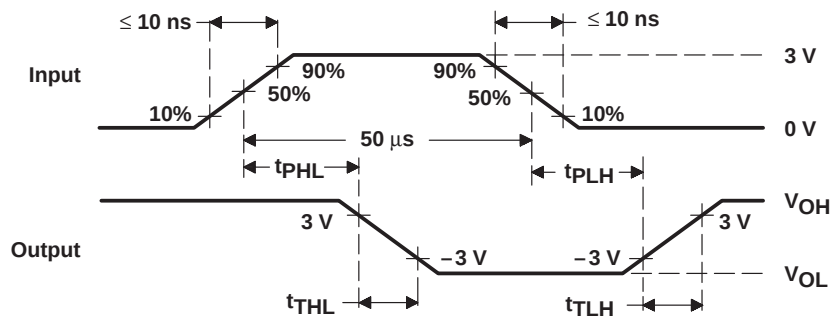
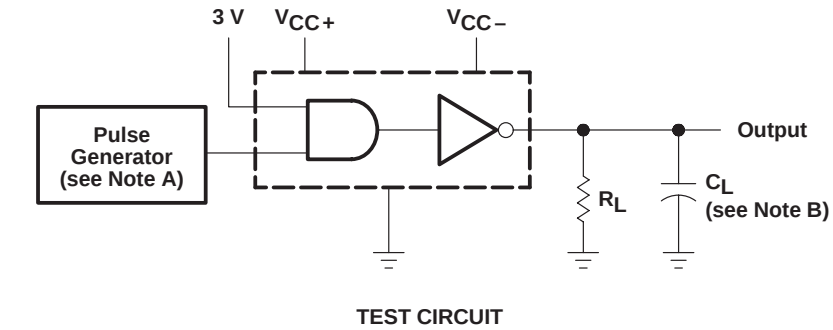
NOTE 4: The algebraic convention, in which the less positive (more negative) limit is designated as minimum, is used in this data sheet for logic levels only, e.g., when -5 V is the maximum, the typical value is a more negative voltage.

switching characteristics, $V_{CC+} = 12$ V, $V_{CC-} = -12$ V, $T_A = 25^\circ$ C (see Figure 1)

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{TLH}	Transition time, low-to-high-level output	$C_L = 2500$ pF, $R_L = 3$ k Ω to 7 k Ω	0.2	1.4	2	μ s
t_{THL}	Transition time, high-to-low-level output		0.2	1.5	2	μ s
t_{TLH}	Transition time, low-to-high-level output	$C_L = 15$ pF, $R_L = 7$ k Ω		40		ns
t_{THL}	Transition time, high-to-low-level output			20		ns
t_{PLH}	Propagation delay time, low-to-high-level output	$C_L = 15$ pF, $R_L = 7$ k Ω		60		ns
t_{PHL}	Propagation delay time, high-to-low-level output			45		ns



PARAMETER MEASUREMENT INFORMATION



- NOTES: A. The pulse generator has the following characteristics: duty cycle $\leq 50\%$, $Z_O \approx 50 \Omega$.
B. C_L includes probe and jig capacitance.

Figure 1. Test Circuit and Voltage Waveforms

TYPICAL CHARACTERISTICS

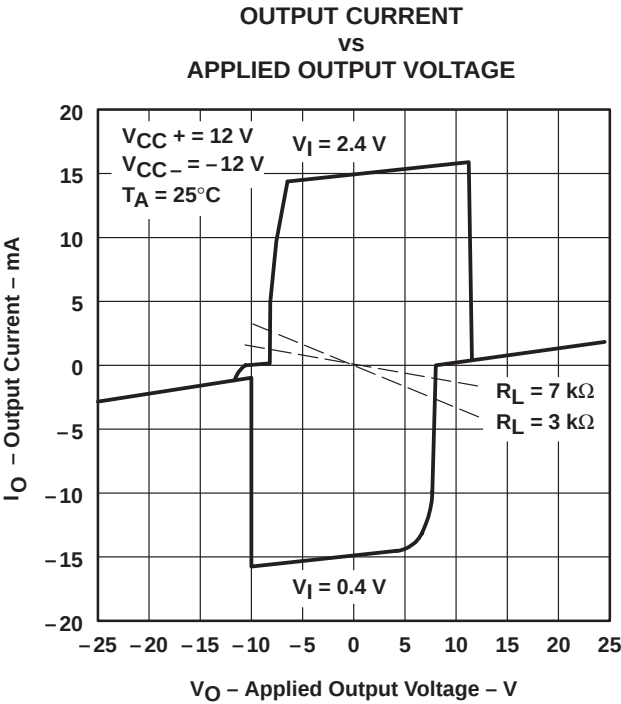


Figure 2

PACKAGING INFORMATION

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/Ball Finish	MSL Peak Temp ⁽³⁾
SN75150D	ACTIVE	SOIC	D	8	75	Pb-Free (RoHS)	CU NIPDAU	Level-2-260C-1 YEAR/ Level-1-235C-UNLIM
SN75150DE4	ACTIVE	SOIC	D	8	75	Pb-Free (RoHS)	CU NIPDAU	Level-2-260C-1 YEAR/ Level-1-235C-UNLIM
SN75150DR	ACTIVE	SOIC	D	8	2500	Pb-Free (RoHS)	CU NIPDAU	Level-2-260C-1 YEAR/ Level-1-235C-UNLIM
SN75150DRE4	ACTIVE	SOIC	D	8	2500	Pb-Free (RoHS)	CU NIPDAU	Level-2-260C-1 YEAR/ Level-1-235C-UNLIM
SN75150JG	OBSOLETE	CDIP	JG	8		TBD	Call TI	Call TI
SN75150P	ACTIVE	PDIP	P	8	50	Pb-Free (RoHS)	CU NIPDAU	Level-NC-NC-NC
SN75150PE4	ACTIVE	PDIP	P	8	50	Pb-Free (RoHS)	CU NIPDAU	Level-NC-NC-NC

⁽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⁾ Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS) 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.

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)

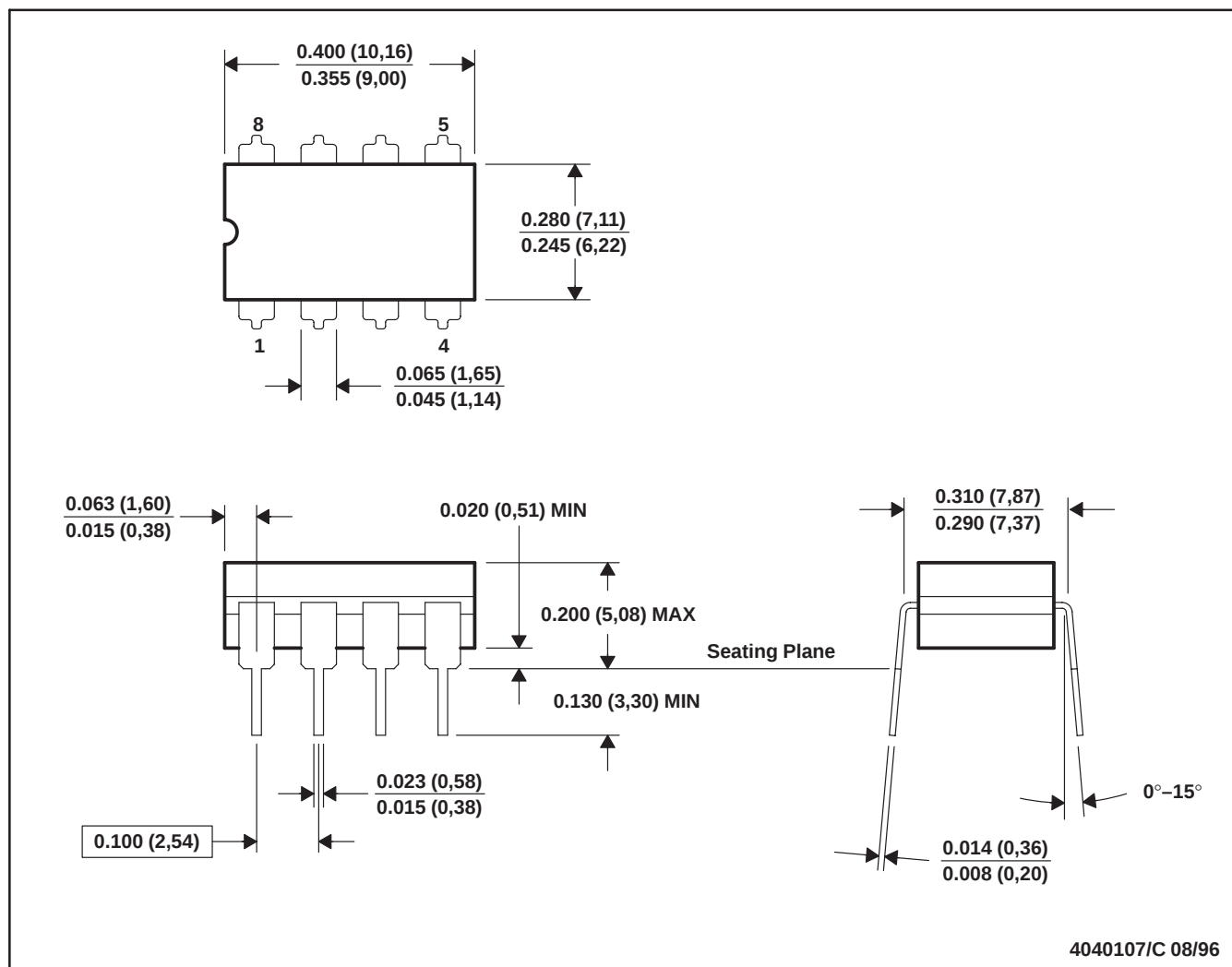
⁽³⁾ MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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.

JG (R-GDIP-T8)

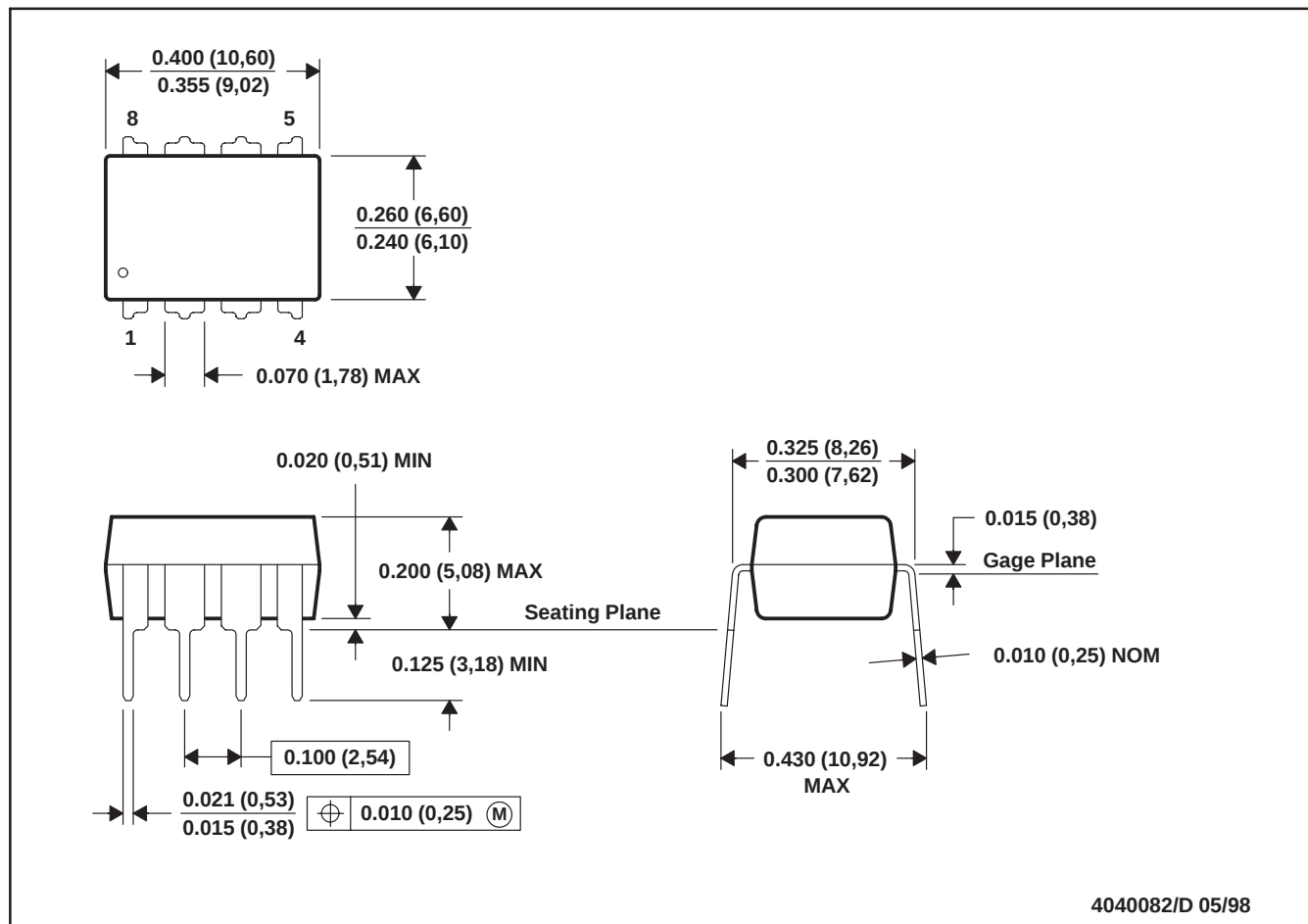
CERAMIC DUAL-IN-LINE



- 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.
 - E. Falls within MIL STD 1835 GDIP1-T8

P (R-PDIP-T8)

PLASTIC DUAL-IN-LINE

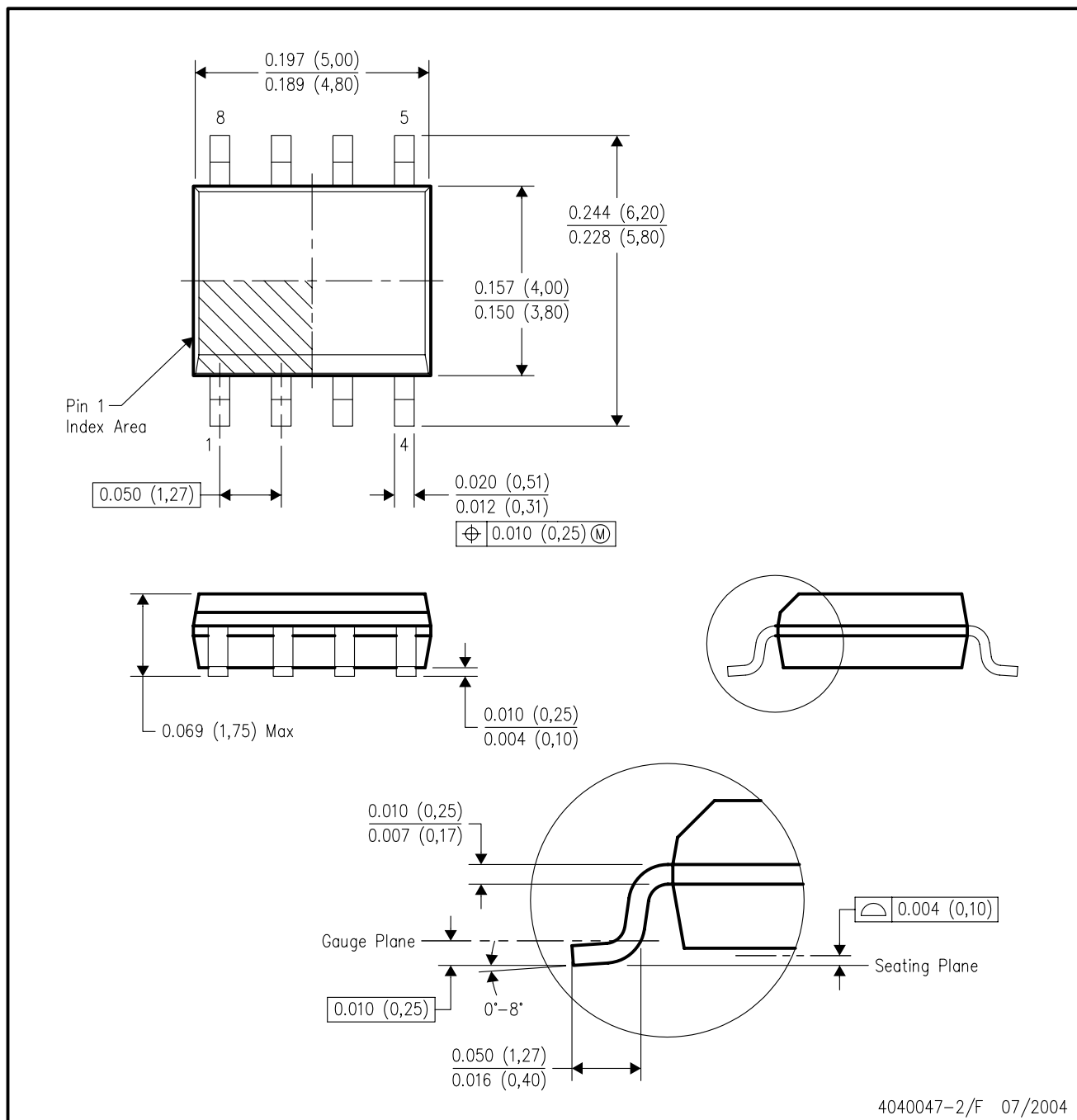


- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. Falls within JEDEC MS-001

For the latest package information, go to http://www.ti.com/sc/docs/package/pkg_info.htm

D (R-PDSO-G8)

PLASTIC SMALL-OUTLINE PACKAGE



- NOTES:
- All linear dimensions are in inches (millimeters).
 - This drawing is subject to change without notice.
 - Body dimensions do not include mold flash or protrusion not to exceed 0.006 (0,15).
 - Falls within JEDEC MS-012 variation AA.

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

Products		Applications	
Amplifiers	amplifier.ti.com	Audio	www.ti.com/audio
Data Converters	dataconverter.ti.com	Automotive	www.ti.com/automotive
DSP	dsp.ti.com	Broadband	www.ti.com/broadband
Interface	interface.ti.com	Digital Control	www.ti.com/digitalcontrol
Logic	logic.ti.com	Military	www.ti.com/military
Power Mgmt	power.ti.com	Optical Networking	www.ti.com/opticalnetwork
Microcontrollers	microcontroller.ti.com	Security	www.ti.com/security
		Telephony	www.ti.com/telephony
		Video & Imaging	www.ti.com/video
		Wireless	www.ti.com/wireless

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

Copyright © 2005, Texas Instruments Incorporated