

SN54ALS857, SN74ALS857 HEX 2-TO-1 UNIVERSAL MULTIPLEXERS WITH 3-STATE OUTPUTS

SDAS170A – DECEMBER 1982 – REVISED JANUARY 1995

- Select True or Complementary Data
- Perform AND/NAND (Masking) of A or B Operand
- Cascadable to Expand Number of Operands
- Detect Zeros on A or B Operands
- 3-State Outputs Interface Directly With System Bus
- Package Options Include Plastic Small-Outline (DW) Packages, Ceramic Chip Carriers (FK), and Standard Plastic (NT) and Ceramic (JT) 300-mil DIPs

description

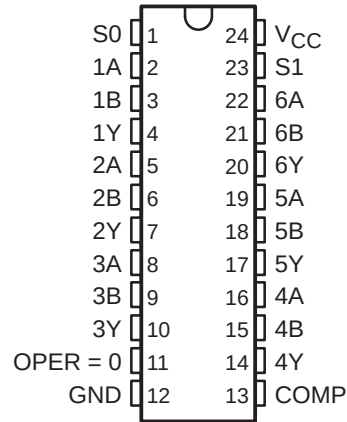
The 'ALS857 are hextuple 2-line to 1-line multiplexers with 3-state outputs. The devices can provide either true (COMP low) or inverted (COMP high) data at the Y outputs. In addition, the 'ALS857 perform the logical AND function ($A \bullet B$) and the clear function as well. The four modes of operation are:

- Select A-data inputs
- Select B-data inputs
- AND A inputs with B inputs
- Clear

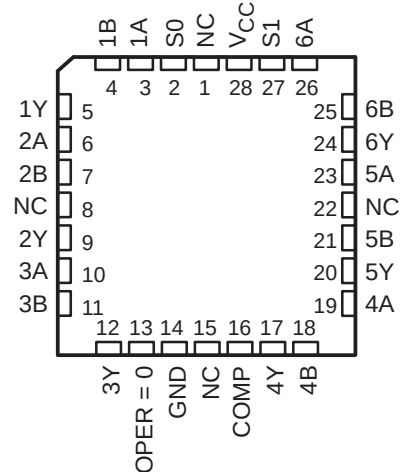
In either of the first two modes, OPER = 0 is high if all the selected A or B inputs are low. The six Y outputs and the OPER = 0 output are all 3-state and rated at 12-mA and 24-mA I_{OL} for the SN54ALS857 and SN74ALS857, respectively. All outputs can be placed in the high-impedance state by applying a high level to the COMP, S0, and S1 inputs simultaneously.

The SN54ALS857 is characterized for operation over the full military temperature range of -55°C to 125°C . The SN74ALS857 is characterized for operation from 0°C to 70°C .

SN54ALS857 . . . JT PACKAGE
SN74ALS857 . . . DW OR NT PACKAGE
(TOP VIEW)



SN54ALS857 . . . FK PACKAGE
(TOP VIEW)



NC – No internal connection

SDAS170A – DECEMBER 1982 – REVISED JANUARY 1995

INPUTS			OUTPUTS	
COMP	S1	S0	Y	OPER = 0
L	L	L	A	H = all A inputs L
L	L	H	B	H = all B inputs L
L	H	L	$A \bullet B$	Z
L	H	H	$\overline{L}$	L
H	L	L	$\overline{A}$	H = all A inputs L
H	L	H	$\overline{B}$	H = all B inputs L
H	H	L	$\overline{A \bullet B}$	Z
H	H	H	Z	Z

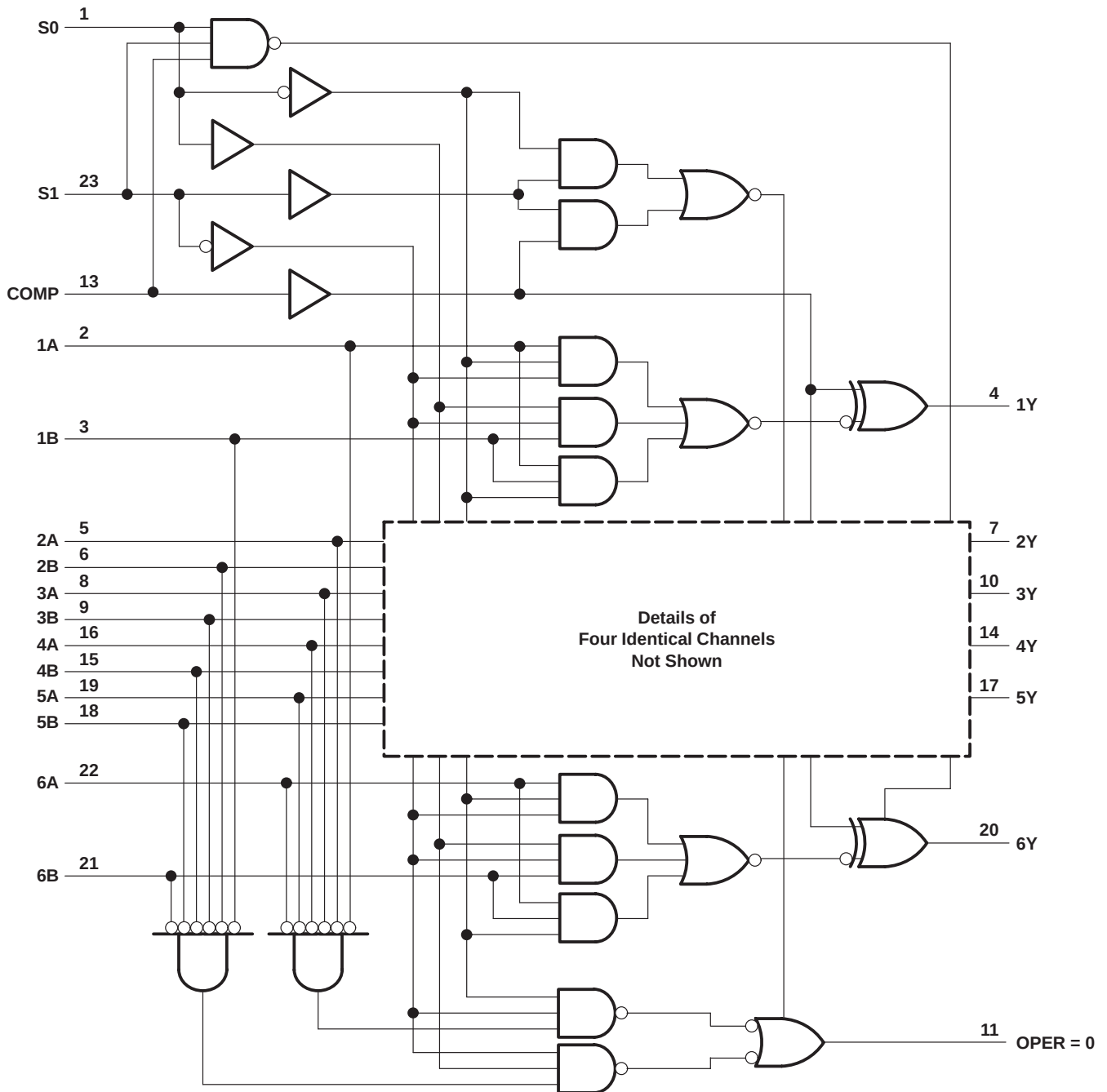
[illegible]

POST OFFICE BOX 655303 • DALLAS, TEXAS 75265

SN54ALS857, SN74ALS857 HEX 2-TO-1 UNIVERSAL MULTIPLEXERS WITH 3-STATE OUTPUTS

SDAS170A – DECEMBER 1982 – REVISED JANUARY 1995

logic diagram (positive logic)



Pin numbers shown are for the DW, JT, and NT packages.

SN54ALS857, SN74ALS857

HEX 2-TO-1 UNIVERSAL MULTIPLEXERS

WITH 3-STATE OUTPUTS

SDAS170A – DECEMBER 1982 – REVISED JANUARY 1995

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

Supply voltage, V_{CC}	7 V
Input voltage, V_I	7 V
Voltage applied to a disabled 3-state output	5.5 V
Operating free-air temperature range, T_A : SN54ALS857	–55°C to 125°C
SN74ALS857	0°C to 70°C
Storage temperature range	–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.

recommended operating conditions

		SN54ALS857			SN74ALS857			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V_{CC}	Supply voltage	4.5	5	5.5	4.5	5	5.5	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		SN54ALS857			SN74ALS857			UNIT
			MIN	TYP [‡]	MAX	MIN	TYP [‡]	MAX	
V_{IK}	$V_{CC} = 4.5$ V,	$I_I = -18$ mA			–1.5			–1.5	V
V_{OH}	$V_{CC} = 4.5$ V to 5.5 V,	$I_{OH} = -0.4$ mA	$V_{CC} - 2$			$V_{CC} - 2$			V
	$V_{CC} = 4.5$ V	$I_{OH} = -1$ mA	2.4	3.3					
		$I_{OH} = -2.6$ mA				2.4	3.2		
V_{OL}	$V_{CC} = 4.5$ V	$I_{OL} = 12$ mA		0.25	0.4		0.25	0.4	V
		$I_{OL} = 24$ mA					0.35	0.5	
I_{OZH}	$V_{CC} = 5.5$ V,	$V_O = 2.7$ V			20			20	μA
I_{OZL}	$V_{CC} = 5.5$ V,	$V_O = 0.4$ V			–20			–20	μA
I_I	$V_{CC} = 5.5$ V,	$V_I = 7$ V			0.1			0.1	mA
I_{IH}	$V_{CC} = 5.5$ V,	$V_I = 2.7$ V			20			20	μA
I_{IL}	$V_{CC} = 5.5$ V,	$V_I = 0.4$ V			–0.2			–0.2	mA
$I_O^{\S}$	$V_{CC} = 5.5$ V,	$V_O = 2.25$ V	–15		–70	–15		–70	mA
I_{CC}	$V_{CC} = 5.5$ V, See Note 1	Outputs high		11	24		11	24	mA
		Outputs low		16	33		16	33	
		Outputs disabled		18	36		18	36	

[‡] All typical values are at $V_{CC} = 5$ V, $T_A = 25^\circ\text{C}$.

^{\S} The output conditions have been chosen to produce a current that closely approximates one half of the true short-circuit output current, I_{OS} .

NOTE 1: I_{CC} is measured with all possible inputs grounded while achieving the stated output conditions.



POST OFFICE BOX 655303 • DALLAS, TEXAS 75265

SN54ALS857, SN74ALS857

HEX 2-TO-1 UNIVERSAL MULTIPLEXERS

WITH 3-STATE OUTPUTS

SDAS170A – DECEMBER 1982 – REVISED JANUARY 1995

switching characteristics (see Figure 1)

PARAMETER†	FROM (INPUT)	TO (OUTPUT)	V _{CC} = 4.5 V to 5.5 V, C _L = 50 pF, R ₁ = 500 Ω, R ₂ = 500 Ω, T _A = MIN to MAX‡				UNIT
			SN54ALS857		SN74ALS857		
			MIN	MAX	MIN	MAX	
t _{pd}	A or B (COMP high)	Y (inverting)	2	35	4	25	ns
	A or B (COMP low)	Y (noninverting)	2	27	4	18	
	S0 or S1	Y	2	37	7	33	
	COMP		2	26	6	18	
	A or B	OPER = 0	2	45	5	37	
	S0 to S1		2	30	5	23	
t _{en}	S0 to S1	Y	2	38	7	35	ns
t _{dis}			2	43	2	23	
t _{en}	COMP	Y	2	37	8	24	ns
t _{dis}			2	45	6	21	
t _{en}	S0	OPER = 0	2	29	6	20	ns
t _{dis}			2	42	11	27	
t _{en}	S1	OPER = 0	2	28	6	25	ns
t _{dis}			2	37	3	19	
t _{en}	COMP	OPER = 0	2	43	9	25	ns
t _{dis}			2	36	6	20	

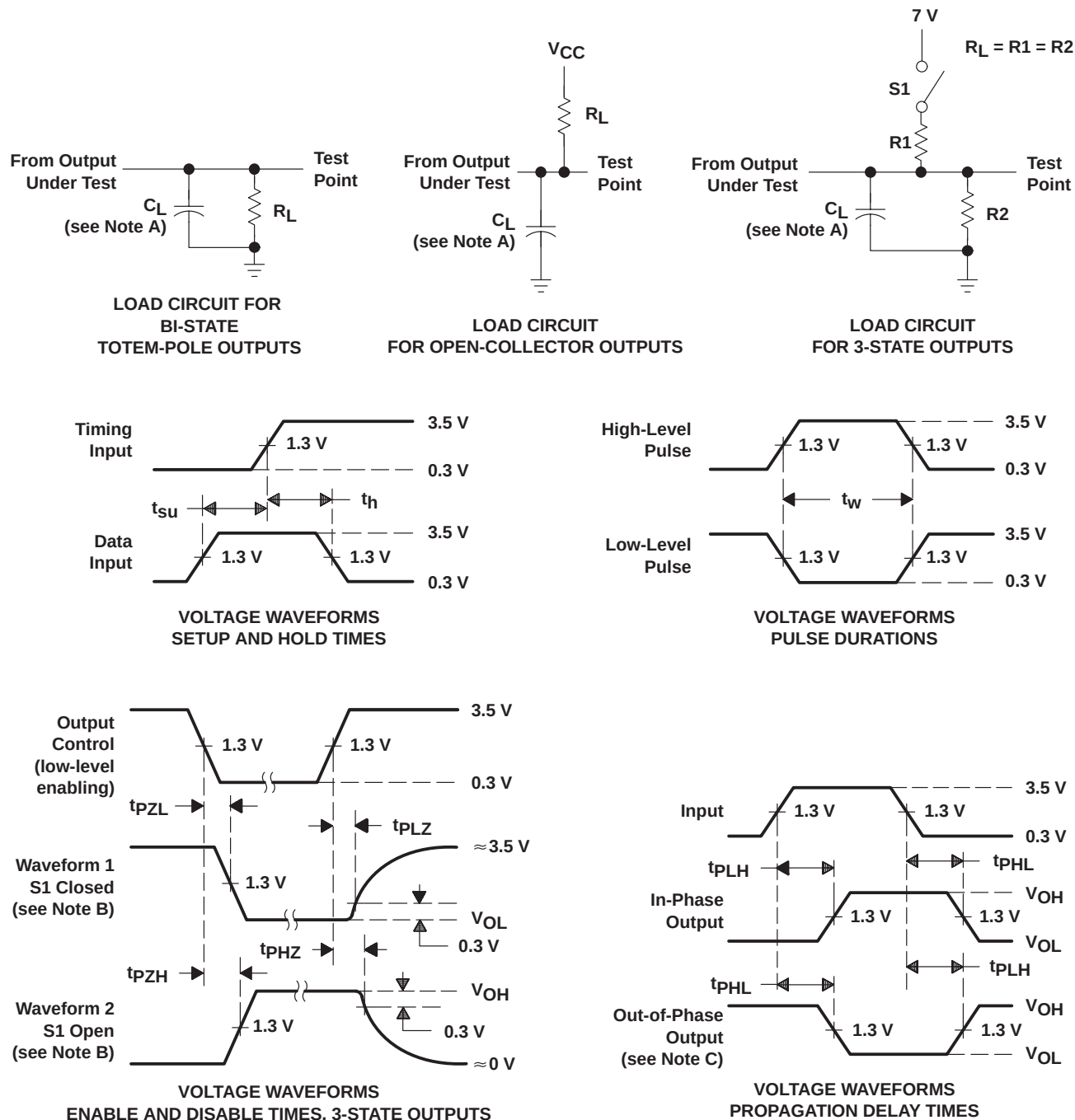
[†] t_{pd} = t_{PLH} or t_{PHL}, t_{en} = t_{PZH} or t_{PZL}, t_{dis} = t_{PHZ} or t_{PLZ}

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

SN54ALS857, SN74ALS857 HEX 2-TO-1 UNIVERSAL MULTIPLEXERS WITH 3-STATE OUTPUTS

SDAS170A – DECEMBER 1982 – REVISED JANUARY 1995

PARAMETER MEASUREMENT INFORMATION SERIES 54ALS/74ALS AND 54AS/74AS DEVICES



- NOTES: A. C_L includes probe and jig capacitance.
 B. Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.
 C. When measuring propagation delay items of 3-state outputs, switch S1 is open.
 D. All input pulses have the following characteristics: $PRR \leq 1 \text{ MHz}$, $t_r = t_f = 2 \text{ ns}$, duty cycle = 50%.
 E. The outputs are measured one at a time with one transition per measurement.

Figure 1. Load Circuits and Voltage Waveforms

PACKAGING INFORMATION

Orderable part number	Status (1)	Material type (2)	Package Pins	Package qty Carrier	RoHS (3)	Lead finish/ Ball material (4)	MSL rating/ Peak reflow (5)	Op temp (°C)	Part marking (6)
5962-8753301LA	Active	Production	CDIP (JT) 24	15 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	5962-8753301LA SNJ54ALS857JT
SNJ54ALS857JT	Active	Production	CDIP (JT) 24	15 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	5962-8753301LA SNJ54ALS857JT
SNJ54ALS857JT.A	Active	Production	CDIP (JT) 24	15 TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	5962-8753301LA SNJ54ALS857JT

⁽¹⁾ **Status:** For more details on status, see our [product life cycle](#).

⁽²⁾ **Material type:** When designated, preproduction parts are prototypes/experimental devices, and are not yet approved or released for full production. Testing and final process, including without limitation quality assurance, reliability performance testing, and/or process qualification, may not yet be complete, and this item is subject to further changes or possible discontinuation. If available for ordering, purchases will be subject to an additional waiver at checkout, and are intended for early internal evaluation purposes only. These items are sold without warranties of any kind.

⁽³⁾ **RoHS values:** Yes, No, RoHS Exempt. See the [TI RoHS Statement](#) for additional information and value definition.

⁽⁴⁾ **Lead finish/Ball material:** Parts 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.

⁽⁵⁾ **MSL rating/Peak reflow:** The moisture sensitivity level ratings and peak solder (reflow) temperatures. In the event that a part has multiple moisture sensitivity ratings, only the lowest level per JEDEC standards is shown. Refer to the shipping label for the actual reflow temperature that will be used to mount the part to the printed circuit board.

⁽⁶⁾ **Part marking:** There may be an additional marking, which relates to the logo, the lot trace code information, or the environmental category of the part.

Multiple part markings will be inside parentheses. Only one part marking contained in parentheses and separated by a "-" will appear on a part. If a line is indented then it is a continuation of the previous line and the two combined represent the entire part marking for that device.

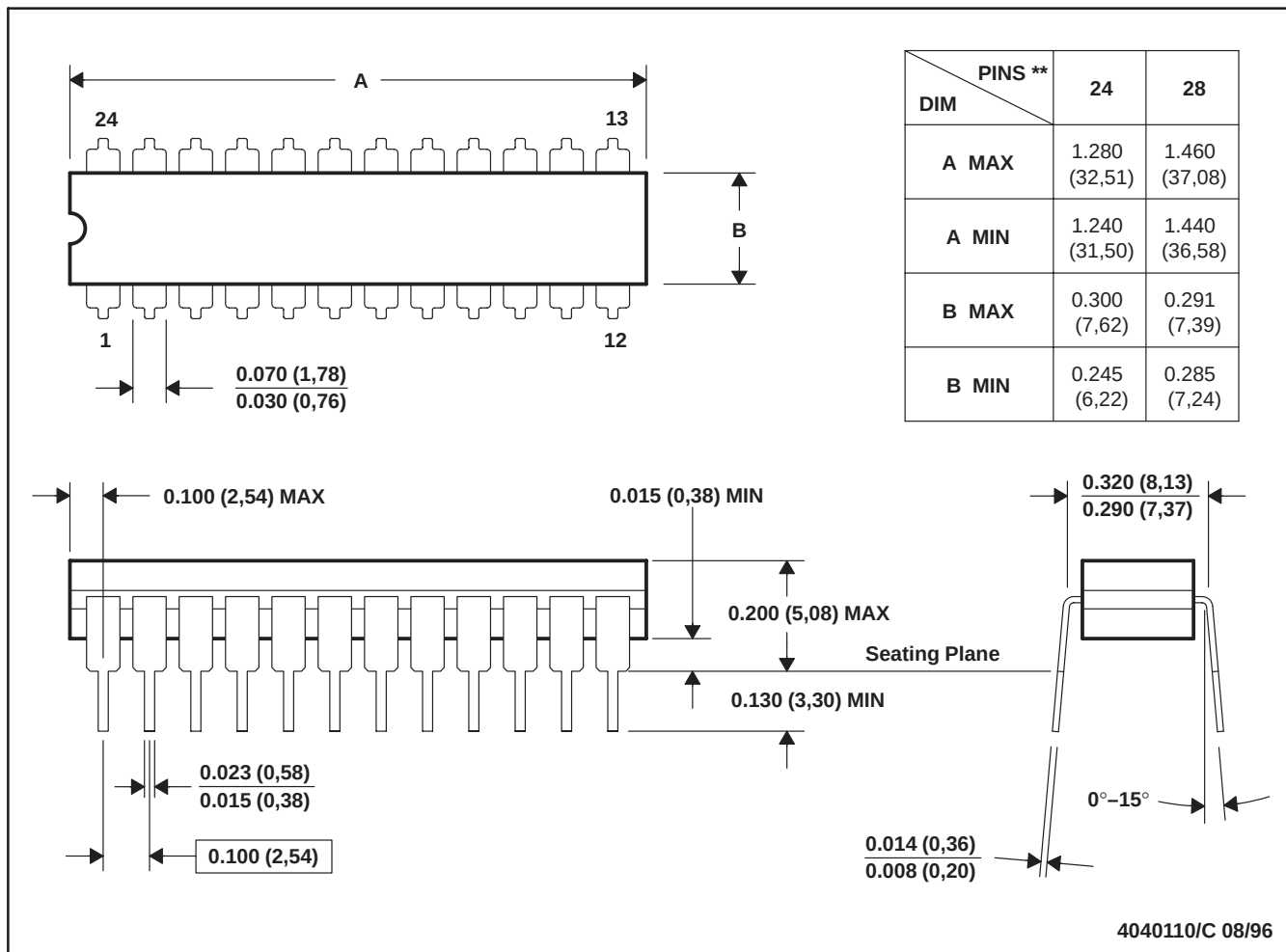
Important Information and Disclaimer: The information provided on this page represents TI's knowledge and belief as of the date that it is provided. TI bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. 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.

JT (R-GDIP-T**)

CERAMIC DUAL-IN-LINE

24 LEADS SHOWN



- 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 GDIP3-T24, GDIP4-T28, and JEDEC MO-058 AA, MO-058 AB

IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), 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 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](#), [TI's General Quality Guidelines](#), 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. Unless TI explicitly designates a product as custom or customer-specified, TI products are standard, catalog, general purpose devices.

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

Copyright © 2026, Texas Instruments Incorporated

Last updated 10/2025