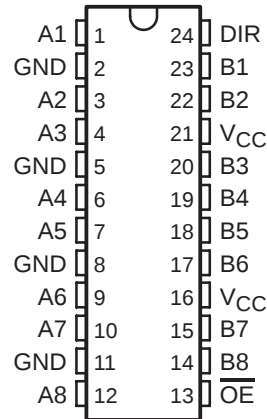


- State-of-the-Art BiCMOS Design Significantly Reduces I_{CCZ}
- Designed to Facilitate Incident-Wave Switching for Line Impedances of 25 Ω or Greater
- Distributed V_{CC} and GND Pins Minimize Noise Generated by the Simultaneous Switching of Outputs
- Data Flow-Through Pinout (All Inputs on Opposite Side From Outputs)
- High-Impedance State During Power Up and Power Down
- ESD Protection Exceeds 2000 V Per MIL-STD-883C, Method 3015
- Package Options Include Plastic Small-Outline (DW) Packages and Standard Plastic 300-mil DIPs (NT)

DW OR NT PACKAGE
(TOP VIEW)



description

The SN64BCT25245 is a 25-Ω octal bus transceiver designed for asynchronous communication between data buses. It improves both the performance and density of 3-state memory address drivers, clock drivers, and bus-oriented transceivers.

The device allows data transmission from the A bus to the B bus or from the B bus to the A bus depending upon the logic level at the direction-control (DIR) input. The output-enable ($\overline{OE}$) input can disable the device so that both buses are effectively isolated.

This transceiver is capable of sinking 188-mA I_{OL} , which facilitates switching 25-Ω transmission lines on the incident wave. The distributed V_{CC} and GND pins minimize switching noise for more reliable system operation.

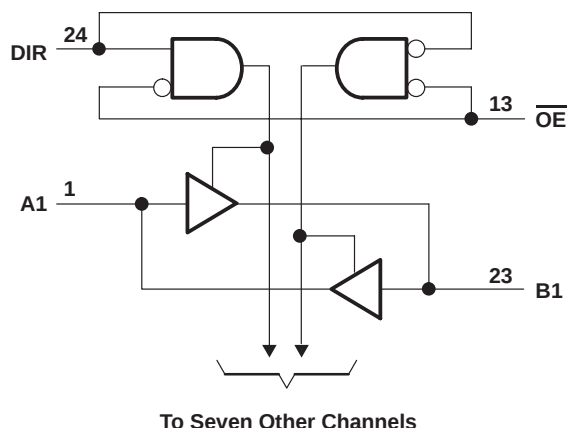
The outputs are in a high-impedance state during power up and power down while the supply voltage is less than approximately 3 V.

The SN64BCT25245 is characterized for operation from -40°C to 85°C and 0°C to 70°C.

FUNCTION TABLE

INPUTS		OPERATION
$\overline{OE}$	DIR	
L	L	B data to A bus
L	H	A data to B bus
H	X	Isolation

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			MIN	NOM	MAX	UNIT
V _{CC}	Supply voltage		4.5	5	5.5	V
V _{IH}	High-level input voltage		2			V
V _{IL}	Low-level input voltage				0.8	V
I _{IK}	Input clamp current				−18	mA
I _{OH}	High-level output current	A port			−80	mA
		B port			−3	
I _{OL}	Low-level output current	A port			188	mA
		B port			24	
T _A	Operating free-air temperature		−40		85	°C

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

PARAMETER		TEST CONDITIONS		MIN	TYP [†]	MAX	UNIT
V_{IK}		$V_{CC} = 4.5\text{ V}$,	$I_I = -18\text{ mA}$			-1.2	V
V_{OH}	A port	$V_{CC} = 4.75\text{ V}$,	$I_{OH} = -3\text{ mA}$	2.7			V
	B port	$V_{CC} = 4.5\text{ V}$,	$I_{OH} = -80\text{ mA}$	2			
V_{OL}	A port	$V_{CC} = 4.5\text{ V}$	$I_{OL} = 94\text{ mA}$		0.42	0.55	V
	B port	$V_{CC} = 4.5\text{ V}$	$I_{OL} = 188\text{ mA}$			0.7	
I_{OZ}		$V_{CC} = 0\text{ to }2.3\text{ V (power up)}$	$V_O = 2.7\text{ V}$			70	μA
			$V_O = 0.5\text{ V}$			-0.6	mA
		$V_{CC} = 1.8\text{ V to }0\text{ (power down)}$	$V_O = 2.7\text{ V}$			70	μA
			$V_O = 0.5\text{ V}$			-0.6	mA
I_I	A and B ports	$V_{CC} = 0\text{ to }5.5\text{ V}$,	$V_I = 5.5\text{ V}$			0.25	mA
	DIR and $\overline{OE}$					0.1	
$I_{IH}^{\ddagger}$	A and B ports	$V_{CC} = 5.5\text{ V}$,	$V_I = 2.7\text{ V}$			70	μA
	DIR and $\overline{OE}$					20	
$I_{IL}^{\ddagger}$	A and B ports	$V_{CC} = 5.5\text{ V}$,	$V_I = 0.5\text{ V}$			-0.6	mA
	DIR and $\overline{OE}$						
$I_{OS}^{\S}$	B port [¶]	$V_{CC} = 5.5\text{ V}$,	$V_O = 0$	-60		-150	mA
I_{CCL}	A to B port	$V_{CC} = 5.5\text{ V}$			48	60	mA
	B to A port				95	125	
I_{CCH}	A to B port	$V_{CC} = 5.5\text{ V}$			36	46	mA
	B to A port				63	80	
I_{CCZ}		$V_{CC} = 5.5\text{ V}$			12	16	mA
C_i	$\overline{OE}$ and DIR	$V_{CC} = 5.5\text{ V}$,	$V_I = 2.5\text{ V to }0.5\text{ V}$		8		pF
C_{io}	A port	$V_{CC} = 5.5\text{ V}$,	$V_I = 2.5\text{ V to }0.5\text{ V}$		18		pF
	B port				8		

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

[‡] For I/O ports, the parameters I_{IH} and I_{IL} include the off-state outputs current.

[§] Not more than one output should be tested at a time, and the duration of the test should not exceed one second.

[¶] Testing for this parameter on the A port is not recommended.

SN64BCT25245

25-Ω OCTAL BUS TRANSCEIVER

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switching characteristics (see Note 2)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V _{CC} = 5 V, C _L = 50 pF, R ₁ = 500 Ω, R ₂ = 500 Ω, T _A = 25°C			V _{CC} = 4.5 V to 5.5 V, C _L = 50 pF, R ₁ = 500 Ω, R ₂ = 500 Ω				UNIT
						T _A = −40°C to 85°C		T _A = 0°C to 70°C		
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t _{PLH}	A	B	1.2	3.3	5.1	1.2	5.7	1.2	5.7	ns
t _{PHL}			1.9	4.3	6.7	1.9	7.3	1.9	7.2	
t _{PLH}	B	A	1.2	3.3	4.8	1.2	5.5	1.2	5.5	ns
t _{PHL}			2.1	4	5.6	2.1	6.3	2.1	6.2	
t _{PZH}	$\overline{\text{OE}}$	A	3.7	6.3	8.4	3.7	9.7	3.7	9.6	ns
t _{PZL}			4.5	7.4	9.2	4.5	10.6	4.5	10.3	
t _{PHZ}	$\overline{\text{OE}}$	A	1.8	3.7	5.5	1.8	6.2	1.8	6.2	ns
t _{PLZ}			3.3	5.1	7.2	3.3	8.8	3.3	8.3	
t _{PZH}	$\overline{\text{OE}}$	B	3.4	5.7	7.9	3.4	8.9	3.4	8.9	ns
t _{PZL}			4.3	6.6	8.7	4.3	9.9	4.3	9.7	
t _{PHZ}	$\overline{\text{OE}}$	B	2.7	4.5	6.3	2.7	6.9	2.7	6.9	ns
t _{PLZ}			1.7	4.5	6.8	1.7	7.7	1.7	7.5	

NOTE 2: 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/ Ball Finish	MSL Peak Temp ⁽³⁾	Samples (Requires Login)
SN64BCT25245DW	ACTIVE	SOIC	DW	24	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN64BCT25245DWE4	ACTIVE	SOIC	DW	24	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN64BCT25245DWG4	ACTIVE	SOIC	DW	24	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	

⁽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), Pb-Free (RoHS Exempt), 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.

Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

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)

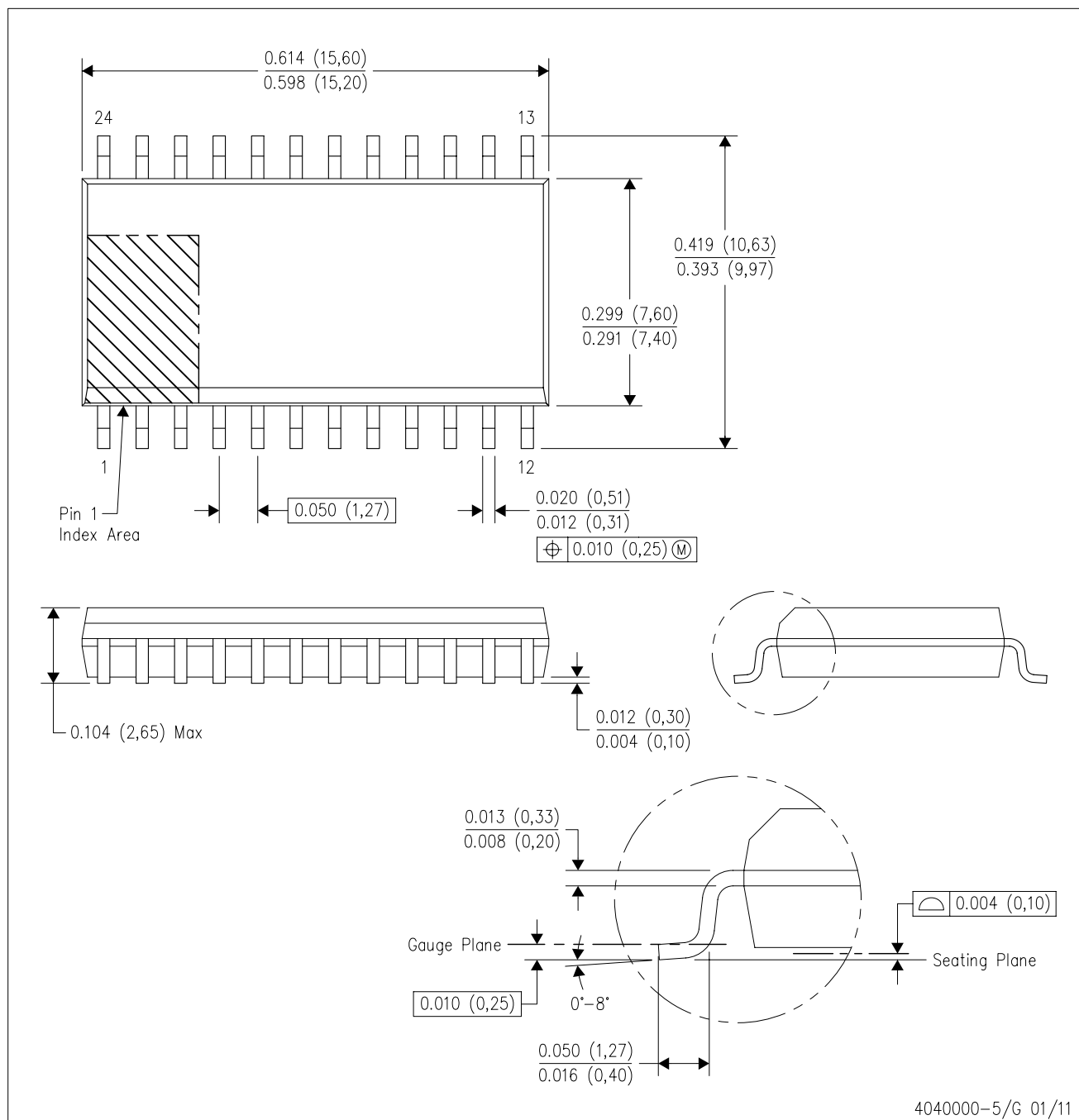
⁽³⁾ MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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DW (R-PDSO-G24)

PLASTIC SMALL OUTLINE



- NOTES: A. All linear dimensions are in inches (millimeters). Dimensioning and tolerancing per ASME Y14.5M-1994.
B. This drawing is subject to change without notice.
C. Body dimensions do not include mold flash or protrusion not to exceed 0.006 (0,15).
D. Falls within JEDEC MS-013 variation AD.

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