

TNETA1545

DUAL DIFFERENTIAL PSEUDO-ECL TO ECL TRANSLATORS AND DUAL DIFFERENTIAL ECL TO PSEUDO-ECL TRANSLATORS

SDNS005B – SEPTEMBER 1993 – REVISED OCTOBER 1995

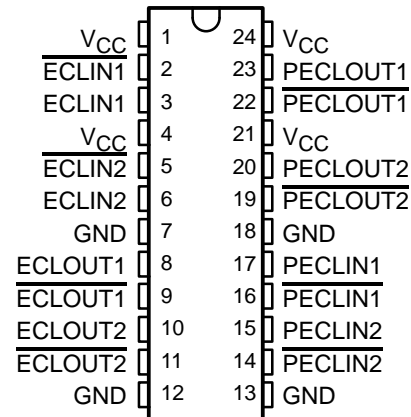
- Dual ECL to Pseudo-ECL and Pseudo-ECL to ECL Translators
- Single 5-V Power Supply
- Advanced BiCMOS Technology
- Typical Application: Interface Between an ECL-Level Optical Transmitter and a Pseudo-ECL-Output Level Parallel-to-Serial Converter
- Packaged in 24-Pin Plastic Small-Outline Package

description

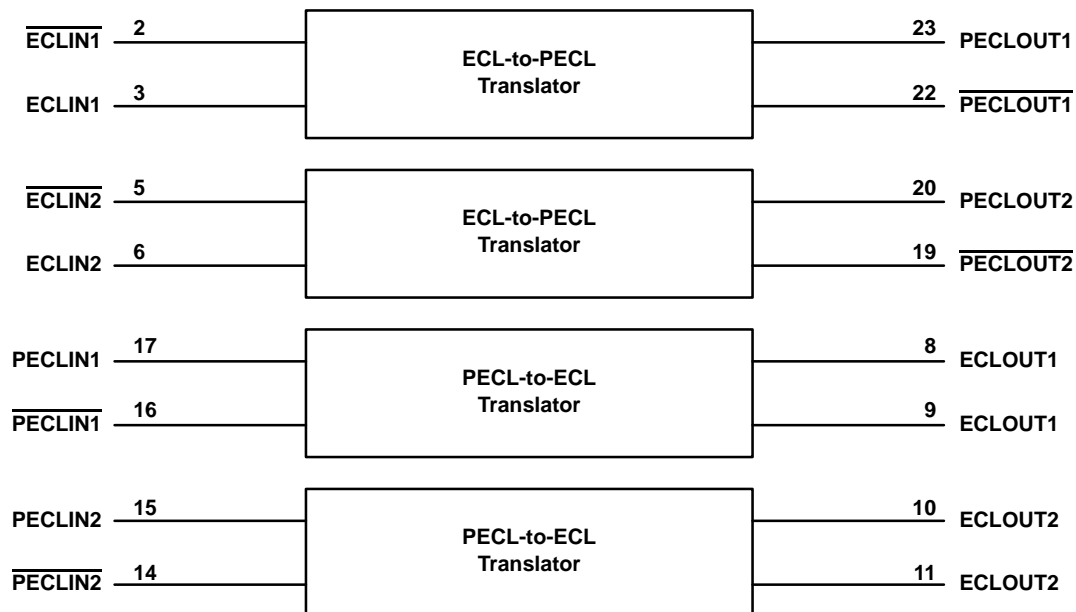
The TNETA1545 provides four buffers. Two buffers for two differential ECL-input signals referenced to GND are translated to differential psuedo-ECL (PECL) outputs referenced to 5 V instead of GND.

Two buffers for two differential PECL-input signals referenced to 5 V instead of GND are translated to differential ECL outputs referenced to GND.

**DW PACKAGE
(TOP VIEW)**



functional block diagram



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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**

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Terminal Functions

TERMINAL NAME	NO.	I/O	DESCRIPTION
ECLIN1, ECLIN1	3, 2	I	ECL-compatible inputs for ECL-to-PECL translator
PECLOUT1, PECLOUT1	23, 22	O	PECL-compatible outputs from ECL-to-PECL translator
ECLIN2, ECLIN2	6, 5	I	ECL-compatible inputs for ECL-to-PECL translator
PECLOUT2, PECLOUT2	20, 19	O	PECL-compatible outputs from ECL-to-PECL translator
PECLIN1, PECLIN1	17, 16	I	PECL-compatible inputs from PECL-to-ECL translator
ECLOUT1, ECLOUT1	8, 9	O	ECL-compatible outputs from PECL-to-ECL translator
PECLIN2, PECLIN2	15, 14	I	PECL-compatible inputs for PECL-to-ECL translator
ECLOUT2, ECLOUT2	10, 11	O	ECL-compatible outputs from PECL-to-ECL translator
GND	7,12,13,18		Ground (0-V reference)
V _{CC}	1,4,21,24		Supply voltage

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

Supply voltage range, V _{CC} (see Note 1)	–0.5 V to 7 V
Input voltage range: ECL	–2.5 V to 0 V
PECL	0 V to 7 V
Operating free-air temperature range, T _A	–40° C to 85° 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.

NOTE 1: All voltage values are with respect to GND.

recommended operating conditions

		MIN	NOM	MAX	UNIT
V _{CC}	Supply voltage	4.75	5	5.25	V
V _{IH}	High-level input voltage	ECL (see Note 2)	–1.165	–0.88	V
		PECL (see Note 2)	V _{CC} – 1.165	V _{CC} – 0.88	
V _{IL}	Low-level input voltage	ECL (see Note 2)	–1.81	–1.475	V
		PECL (see Note 2)	V _{CC} – 1.81	V _{CC} – 1.475	
T _A	Operating free-air temperature	–40		85	°C

NOTE 2: The algebraic convention, in which the least positive (most negative) value is designated minimum, is used in this data sheet for logic-level voltages only.

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electrical characteristics over recommended operating free-air temperature range

PARAMETER		TEST CONDITIONS	MIN	MAX	UNIT
V_{OH}	High-level output voltage	$\overline{ECLOUT1}$, $\overline{ECLOUT1}$, $\overline{ECLOUT2}$, $\overline{ECLOUT2}$ $V_{CC} = 4.75\text{ V}$, See Note 3	-1.025	-0.88	V
		$\overline{PECLOUT1}$, $\overline{PECLOUT1}$, $\overline{PECLOUT2}$, $\overline{PECLOUT2}$ $V_{CC} = 4.75\text{ V}$, See Note 4	$V_{CC} - 1.025$	$V_{CC} - 0.84$	
V_{OL}	Low-level output voltage	$\overline{ECLOUT1}$, $\overline{ECLOUT1}$, $\overline{ECLOUT2}$, $\overline{ECLOUT2}$ $V_{CC} = 4.75\text{ V}$, See Notes 2 and 3	-1.81	-1.62	V
		$\overline{PECLOUT1}$, $\overline{PECLOUT1}$, $\overline{PECLOUT2}$, $\overline{PECLOUT2}$ $V_{CC} = 4.75\text{ V}$, See Note 4	$V_{CC} - 1.85$	$V_{CC} - 1.62$	
I_{IH}	High-level input current	$\overline{PECLIN1}$, $\overline{PECLIN1}$, $\overline{PECLIN2}$, $\overline{PECLIN2}$ $V_{CC} = 5.25\text{ V}$, $V_I = 4.45\text{ V}$		50	μA
		$\overline{ECLIN1}$, $\overline{ECLIN1}$, $\overline{ECLIN2}$, $\overline{ECLIN2}$ $V_{CC} = 5.25\text{ V}$, $V_I = -0.88\text{ V}$		-1.5	mA
I_{IL}	Low-level input current	$\overline{PECLIN1}$, $\overline{PECLIN1}$, $\overline{PECLIN2}$, $\overline{PECLIN2}$ $V_{CC} = 5.25\text{ V}$, $V_I = 3.35\text{ V}$		50	μA
		$\overline{ECLIN1}$, $\overline{ECLIN1}$, $\overline{ECLIN2}$, $\overline{ECLIN2}$ $V_{CC} = 5.25\text{ V}$, $V_I = -1.81\text{ V}$		-2.5	mA
I_{CC}	Supply current	$V_{CC} = 5.25\text{ V}$, See Note 5		75	mA
		$V_{CC} = 5.25\text{ V}$, See Note 6		125	

- NOTES: 2. The algebraic convention, in which the least positive (most negative) value is designated minimum, is used in this data sheet for logic-level voltages only.
3. These outputs are terminated through a 50- Ω resistor to -2 V.
4. These outputs are terminated with a 50- Ω resistor to $V_{CC} - 2\text{ V}$.
5. All outputs open
6. $\overline{ECLOUT1}$, $\overline{ECLOUT1}$, $\overline{ECLOUT2}$, $\overline{ECLOUT2}$ terminated with a 50- Ω resistor to -2 V.
 $\overline{PECLOUT1}$, $\overline{PECLOUT1}$, $\overline{PECLOUT2}$, $\overline{PECLOUT2}$ terminated with a 50- Ω resistor to $V_{CC} - 2\text{ V}$.

switching characteristics over recommended operating free-air temperature range, $V_{CC} = 5\text{ V} \pm 0.25\text{ V}$

PARAMETER	FROM (INPUT)	TO (OUTPUT)	MIN	MAX	UNIT
f_{\max}			250		MHz
t_{PLH}	$\overline{ECLIN}/\overline{ECLIN}$ or $\overline{PECLIN}/\overline{PECLIN}$	$\overline{PECLOUT}/\overline{PECLOUT}$ or $\overline{ECLOUT}/\overline{ECLOUT}$	1.5	4	ns
t_{PHL}	$\overline{ECLIN}/\overline{ECLIN}$ or $\overline{PECLIN}/\overline{PECLIN}$	$\overline{PECLOUT}/\overline{PECLOUT}$ or $\overline{ECLOUT}/\overline{ECLOUT}$	1.5	4	ns



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