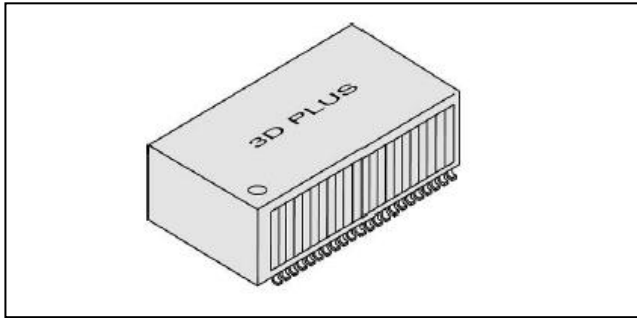


# LVTH MODULE

32-bit Buffer Transceiver



## Features

- 1.65 V to 3.6 V inputs and outputs
- Minimum 24mA output drive current
- High speed A outputs:
  - $t_{PD} = 3.4 \text{ ns}$  at  $V_{CC} = 3.0$  to  $3.6 \text{ V}$
  - $t_{PD} = 4.3 \text{ ns}$  at  $V_{CC} = 2.3$  to  $2.7 \text{ V}$
- Symmetrical impedance A outputs:
  - $|I_{OH}| = I_{OL} = 12 \text{ mA}$  (min.) at  $V_{CC} = 3.0 \text{ V}$
  - $|I_{OH}| = I_{OL} = 8 \text{ mA}$  (min.) at  $V_{CC} = 2.3 \text{ V}$
- High speed B outputs:
  - $t_{PD} = 2.5 \text{ ns}$  (max.) at  $V_{CC} = 3.0$  to  $3.6 \text{ V}$
  - $t_{PD} = 3.2 \text{ ns}$  (max.) at  $V_{CC} = 2.3$  to  $2.7 \text{ V}$
- Symmetrical impedance B outputs:
  - $|I_{OH}| = I_{OL} = 24 \text{ mA}$  (min.) at  $V_{CC} = 3.0 \text{ V}$
  - $|I_{OH}| = I_{OL} = 18 \text{ mA}$  (min.) at  $V_{CC} = 2.3 \text{ V}$
- Power down protection on inputs and outputs
- 26  $\Omega$  series resistors in A port outputs
- Bus hold provided on both sides
- Cold spare function
- Radiation Hardened Die:
  - Total Dose: 100Krad(Si)
  - Immune to SEL (LET>80MeV.cm<sup>2</sup>/mg)
- Available Temperature Range:
  - 0°C to 70°C
  - 40°C to +85°C
  - 55°C to +125°C

## General Description

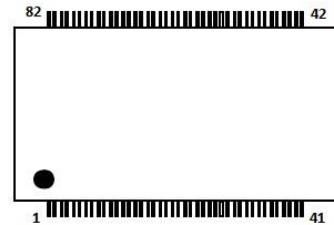
The 3DLT162245VS1639 are Dual 16-bit inputs and Dual 16-bit outputs transceiver. It is ideal for low power and very high speed (1.65 to 3.6V) applications and can be interfaced to a 3.6V signal environment for both inputs and outputs.

This integrated circuit is intended for two-way asynchronous communication between data buses. The direction of data transmission is determined by digital input recorder (DIR) input. The two enable inputs can be used to disable the device so that the buses are effectively isolated. The device circuits include 26  $\Omega$  series resistance in the A ports outputs. These resistors reduce line noise in high-speed applications. Bus hold on data inputs is provided to eliminate the need for external pull-up or pull-down resistors. The 3DLT162245VS1639 is packaged in a 82 pin SOP.

LVTH Module

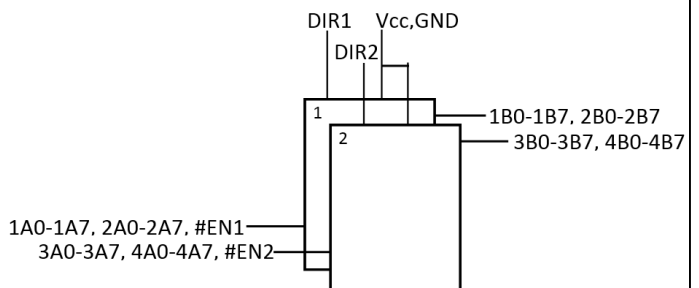
## Pin Assignment (Top View)

SOP 82 (Pitch : 0.5 mm)

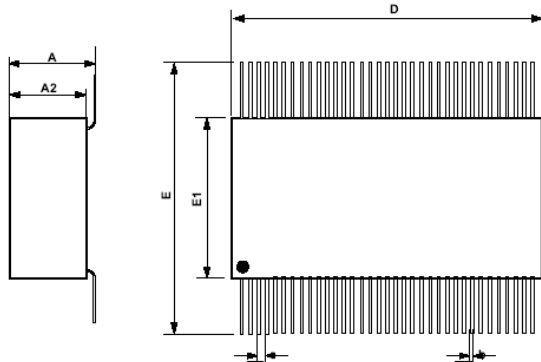


1	#EN1	22	DIR2	43	4A7	64	2A7
2	1B0	23	3B0	44	4A6	65	2A6
3	1B1	24	3B1	45	GND	66	2A5
4	GND	25	3B2	46	4A5	67	2A4
5	1B2	26	3B3	47	4A4	68	GND
6	1B3	27	GND	48	4A3	69	2A3
7	1B4	28	3B4	49	4A2	70	2A2
8	1B5	29	3B5	50	Vcc	71	2A1
9	Vcc	30	3B6	51	4A1	72	2A0
10	1B6	31	3B7	52	4A0	73	1A7
11	1B7	32	4B0	53	3A7	74	1A6
12	2B0	33	4B1	54	3A6	75	Vcc
13	2B1	34	Vcc	55	3A5	76	1A5
14	2B2	35	4B2	56	3A4	77	1A4
15	2B3	36	4B3	57	GND	78	1A3
16	GND	37	4B4	58	3A3	79	1A2
17	2B4	38	4B5	59	3A2	80	GND
18	2B5	39	GND	60	3A1	81	1A1
19	2B6	40	4B6	61	3A0	82	1A0
20	2B7	41	4B7	62	Vcc		
21	Vcc	42	#EN2	63	DIR1		

## Functional Block Diagram



**Mechanical Drawing**



	Min	Max
A	4.3	5
A2	3.2	3.6
D	21.70	22.10
E1	10.90	11.10
b	0.20	
e	0.50	
E	16.1 Max.	
Dimension (mm)		
Max. weight : 2.4gr.		

**RECOMMENDED OPERATING CONDITIONS**

Parameter	Symbol	Min	Typ	Max	Unit
Supply Voltage	$V_{cc}$	1.8		3.6	V
Input Voltage	$V_I$	-0.3		3.6	V
Output Voltage (off)	$V_o$	0		3.6	V
Output Voltage (high or low)	$V_o$	0		$V_{cc}$	V
Input rise and fall time	dt/dv	0		10	ns/V

**ABSOLUTE MAXIMUM RATINGS**

Parameter	Symbol	Value	Unit
Supply Voltage	$V_{cc}$	-0.5 to 4.6	V
Storage temperature	$T_{STG}$	-65 to +150	°C
Current into any output	$I_o$	$\pm 50$	mA

**Note :**

Permanent device damage may occur if "ABSOLUTE MAXIMUM RATINGS" are exceeded.  
Functional operation should be restricted to recommended operating condition.  
Exposure to higher than recommended voltage for extended periods of time could affect device reliability

**DC Characteristics**

Parameter	Symbol	Min	Max
High level input voltage	$V_{IH}$	2.0V	
Low level input voltage	$V_{IL}$		0.8V
Input leakage current	$I_I$		$\pm 5\mu A$

**3DLT162245VS1639 - X X**

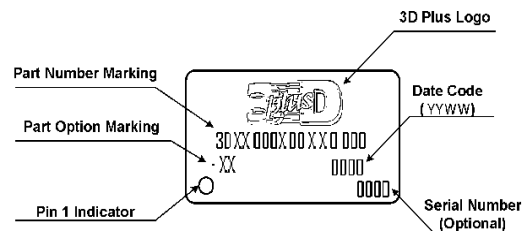
**Temperature Range**

C = 0°C ~ +70°C  
I = -40°C ~ +85°C  
M = -55°C ~ +125°C

**Quality Level**

N = Commercial Grade  
B = Industrial Grade  
S = Space Grade

**Module Marking**



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