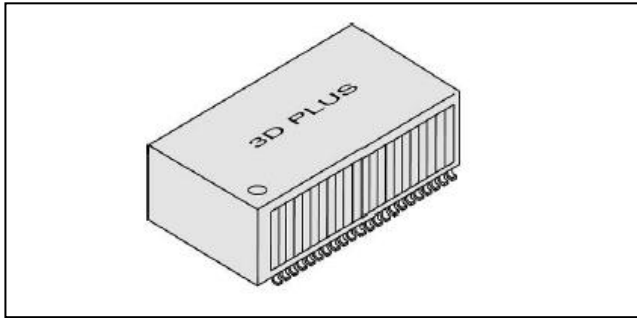


LVTLS MODULE

1.8 V to 3.3 V bidirectional Level Shifter, 32-bit Transceiver



Features

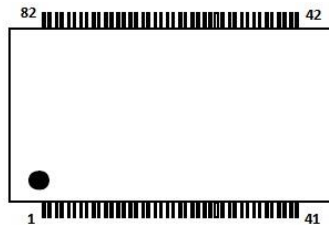
- Extended voltage range from 1.6 V to 3.3 V
- Dual supply bidirectional level shifter
- Separated enable pin for 3-state output
- Cold spare function
- Internal 26 Ω limiting resistor on each I/O
- High speed: $T_{pd} = 8$ ns
- Fail safe function
- Bus hold function
- Radiation Hardened Die:
 - Total Dose: 300 Krad(Si)
 - Immune to SEL (LET>110MeV.cm²/mg)
- Available Temperature Range:
 - 0°C to 70°C
 - 40°C to +85°C
 - 55°C to +125°C

General Description

The 3DLT163245US1696 is a rad-hard advanced high-speed CMOS, Schmitt trigger 32-bit (Dual 16-bit) bidirectional multi-purpose transceiver with 3-state outputs, cold sparing and bus hold capability. Designed to be used as an interface between a 3.3 V bus and a 1.8 V bus in mixed 1.8 V/3.3 V supply systems, it achieves high-speed operation while maintaining the CMOS low-power dissipation. All pins have cold spare buffers to change them to high impedance when Vcc is tied to ground. This module is intended for two-way asynchronous communication between the data buses. The direction of the data transmission is determined by the DIR input. The 3DLT163245US1696 is packaged in an 82-pin SOP.

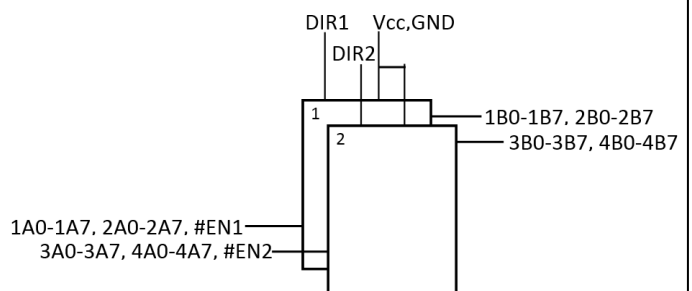
Pin Assignment (Top View)

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	VCCA	71	2A1
9	VCCB	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	VCCA
13	2B1	34	VCCB	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	VCCA		
21	VCCB	42	EN2#	63	DIR1		

Functional Block Diagram

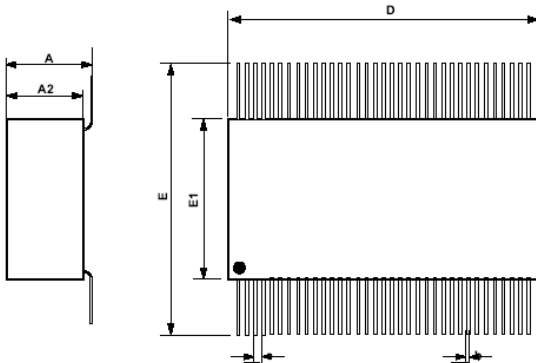


LVTL5 MODULE

3DLT163245US1696

1.8 V to 3.3 V bidirectional Level Shifter, 32-bit Transceiver

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: 2.4g

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min	Typ	Max	Unit
Supply Voltage	$V_{CCA}; V_{CCB}$	1.4		3.6	V
Input Voltage	V_I	0		3.6	V
Output Voltage	V_{OA}	0		V_{CCA}	V
Output Voltage	V_{OB}	0		V_{CCB}	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
Output current	I_o	+50	mA

Electrical Performance Characteristics

Parameter	Symbol	Max	Unit
Propagation delay time (port A to port B)	T_{PH-L1}	6	ns
Propagation delay time (port B to port A)	T_{PH-L2}	7.5	ns
Input leakage current	I_I	5	µA
Output leakage current	I_{OZ}	5	µA

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

3DLT163245US1696 - X X

Temperature Range

C = 0°C ~ +70°C

I = -40°C ~ +85°C

M = -55°C ~ +125°C

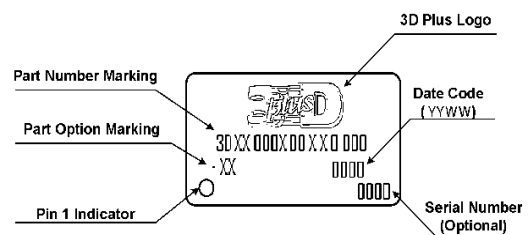
Quality Level

N = Commercial Grade

B = Industrial Grade

S = Space Grade

Module Marking



Main Sales Office

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