

# **JEDEC STANDARD**

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## **0.5 V Low Voltage Swing Terminated Logic (LVSTL05)**

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### **JESD8-33**

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**JUNE 2019**

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**JEDEC SOLID STATE TECHNOLOGY ASSOCIATION**



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## 0.5 V LOW VOLTAGE SWING TERMINATED LOGIC (LVSTL05)

(From JEDEC Board Ballot JCB-19-06, formulated under the cognizance of the JC-16 Committee on Interface Technology.)

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### 1 Scope

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This standard defines power supply voltage range, dc interface, switching parameter and overshoot/undershoot for high speed low voltage swing terminated NMOS driver family digital circuits. The specifications in this standard represent a minimum set of interface specifications for low voltage terminated circuits.

The purpose of this standard is to provide a standard of specification for uniformity, multiplicity of sources, elimination of confusion, and ease of device specification and design by users. Class 1 describes terminated electrical characteristics. Class 2 describes ODT off case with high VDDQ voltage electrical characteristics. Class 3 describes ODT off case with low VDDQ voltage electrical characteristics.

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### 2 Standard specifications

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All voltages are referenced to ground except where noted.

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### 3 LVSTL system definition

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LVSTL (Low Voltage Swing Terminated Logic) Driver and ODT System. LVSTL I/O cell is comprised of pull-up, pull-down driver and a terminator. The basic cell is shown in Figure 1

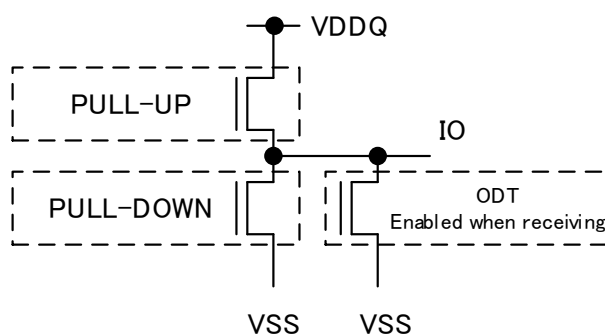


Figure 1 — LVSTL I/O Cell

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#### 4 Recommended DC Operating conditions

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**Table 1 — Recommended DC operating conditions**

	Min	TYP	Max	Unit	
VDD	1.01	1.05	1.12	V	Internal circuit Power
VDDQ Class 1,2	0.47	0.5	0.57	V	Driver Power range 1
VDDQ Class 3	0.27	0.3	0.37	V	Driver Power range 2

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#### 5 Driver Output characteristics

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**Table 2 — Pull-Up Characteristics**

VOH <sub>PU,nom</sub>	VOH,nom	Unit	Note
Class 1 VDDQ/2	250	mV	1
Class 2 VDDQ	500	mV	1
Class 3 VDDQ	300	mV	1
NOTE 1 VOH,nom values are based on a typical VDDQ.			

## 6 Input level characteristics for Class 1, Class 2 and Class 3

Input levels are same for all class 1, class 2 and class 3.

### 1. Hexagonal Rx Mask

Hexagonal Rx mask and single pulse definition are followings:

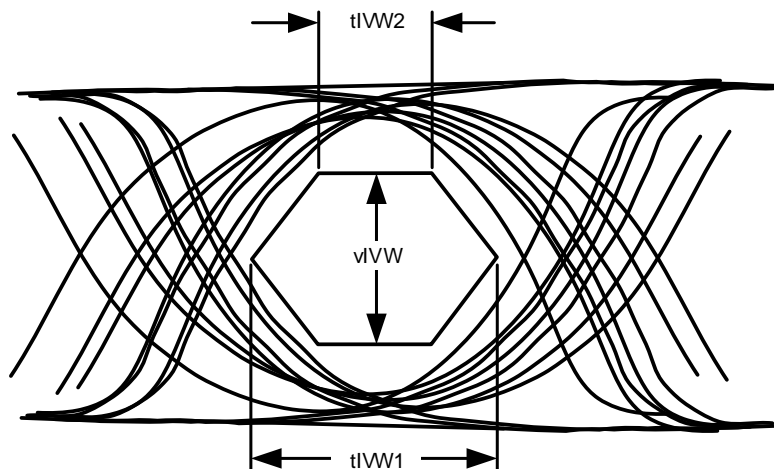


Figure 2 — Rx mask definition

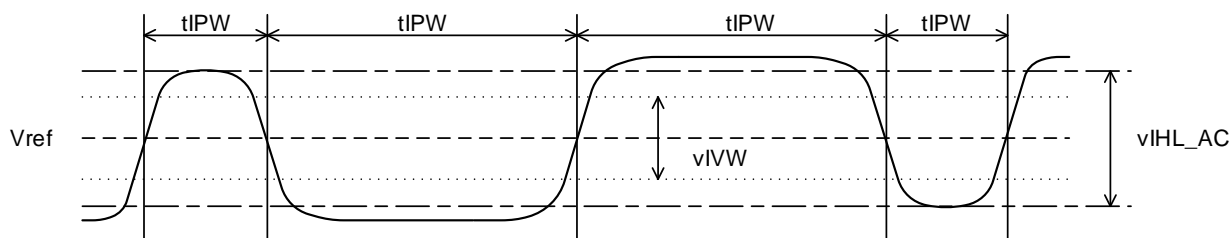


Figure 3 — Rx single pulse definition

Table 3 — Rx Mask specifications

Item	Symbol	Min/Max	Range 1	Range 2	Range 3	Range 4	Unit	Note
Rx mask height	vIVW	Min	155	140	120	100	mV	
Rx pulse amplitude	vIHL_AC	Min	190	140	140	140	mV	







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**1. I recommend changes to the following:**

☐ Requirement, clause number \_\_\_\_\_

☐ Test method number \_\_\_\_\_ Clause number \_\_\_\_\_

The referenced clause number has proven to be:

☐ Unclear ☐ Too Rigid ☐ In Error

☐ Other \_\_\_\_\_

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**2. Recommendations for correction:**

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**3. Other suggestions for document improvement:**

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