

Design ID: **QLKA**

Description: **512 Mbit 45nm SPI Flash Memory**

Marketing device name(s):

MT25XL512ABAxPP_xxTT (PP=package code, TT=temperature code)

Valid speed grades: **DDR at 108MHz (216MB/s). SDR at 108MHz (108MB/s).**

Zip filename: **IBIS_MT35XL512ABA.zip**

IBIS filename: **mt35xl512aba_it.ibs** File rev: **2.1**

IBIS filename: **mt35xl512aba_at.ibs** File rev: **2.1**

HSPICE filename: **NA** File rev: **NA**

Die revision: **A**

Date: **October 17, 2016**

Datasheet Link (from **micron.com**): https://www.micron.com/~media/documents/products/datasheet/nor-flash/serial-nor/mt35x_octal/die-rev-a/mt35x_qlka_l_512_aba_0.pdf

E-mail modelsupport@micron.com for questions regarding Quality Report.

Device Parameters

VCC Slow: **2.7** Typical: **3.0** Fast: **3.6**

Junction Temperature (Industrial) Slow: **100** Typical: **50** Fast: **-40**

Junction Temperature (Automotive) Slow: **120** Typical: **50** Fast: **-40**

VCC/VSS Decoupling Capacitance (Approximate value at 10MHz) – Full Die: **1446 pF**

VCC/VSS Decoupling Capacitance ESR – Full Die **900 mOhm**

IBIS Quality Summary

1. ☒ Include the IBIS Quality Specification 2.0 Overall IBIS Quality level. For details on IBIS Quality, reference the quality specification and quality checklist on IBIS quality webpage http://www.ibis.org/quality_wip/checklist.html.

Overall IBIS Quality Level: 3MS

Exceptions: NO

2. ☒ Include the filename of the IBIS Quality Checklist that accompanies this report.

Filename: mt35xl512aba_ibis_quality_checklist.xlsx

IBIS Model Correlation: datasheet

1. ☒ Compare C_comp with datasheet Input Capacitance. Provide C_comp comparison table for all models and for all package combinations (i.e. x4, x8 and x16).

Component name: **MT35XL512ABAxx12 (AT)**

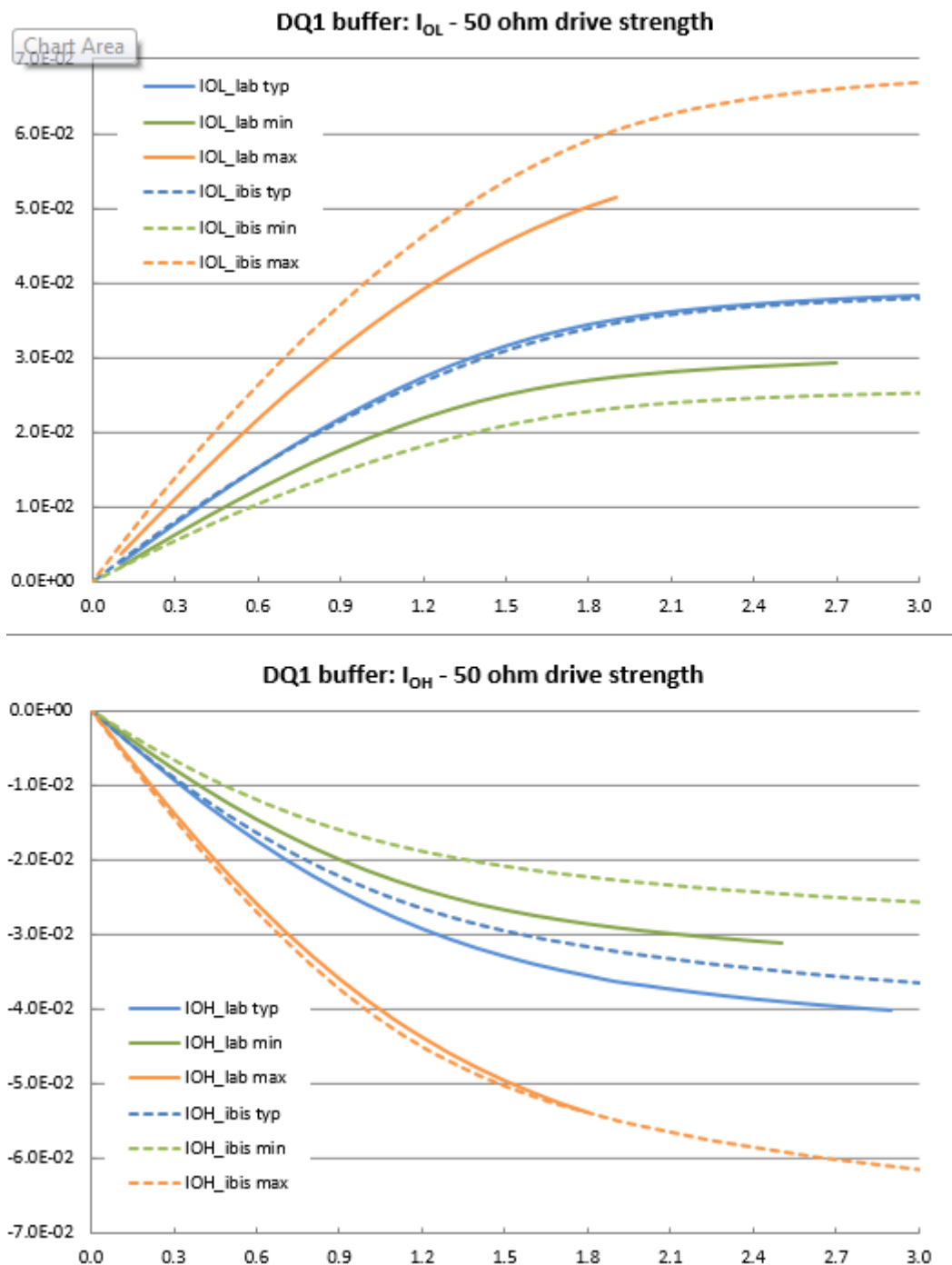
Signal	IBIS pkg min [pF]	IBIS pkg max [pF]	IBIS die min [pF]	IBIS die max [pF]	IBIS tot min [pF]	IBIS tot max [pF]	Spec tot min [pF]	Spec tot max [pF]
DQ0-DQ7	0.54	1.08	3.04	3.82	3.58	4.90	-	5.00
DQS	0.85	0.85	2.94	3.84	3.79	4.70	-	5.00
INT#	1.12	1.12	2.56	3.40	3.68	4.51	-	5.00
C	1.07	1.07	1.35	1.75	2.42	2.82	-	3.00
S#	1.04	1.04	1.95	2.15	2.99	3.19	-	3.00
RESET#	1.06	1.06	2.83	3.11	3.88	4.16	-	5.00

IBIS Model Correlation: measurements

1. ☒ For Output or I/O models compare measured IOH/IOL data with IBIS pullup/pulldown data.
If the measurement conditions are different from the IBIS conditions, run Spice simulations using the same measurement conditions such as VCC, temperature, and process. Include measurement conditions in the image labels.

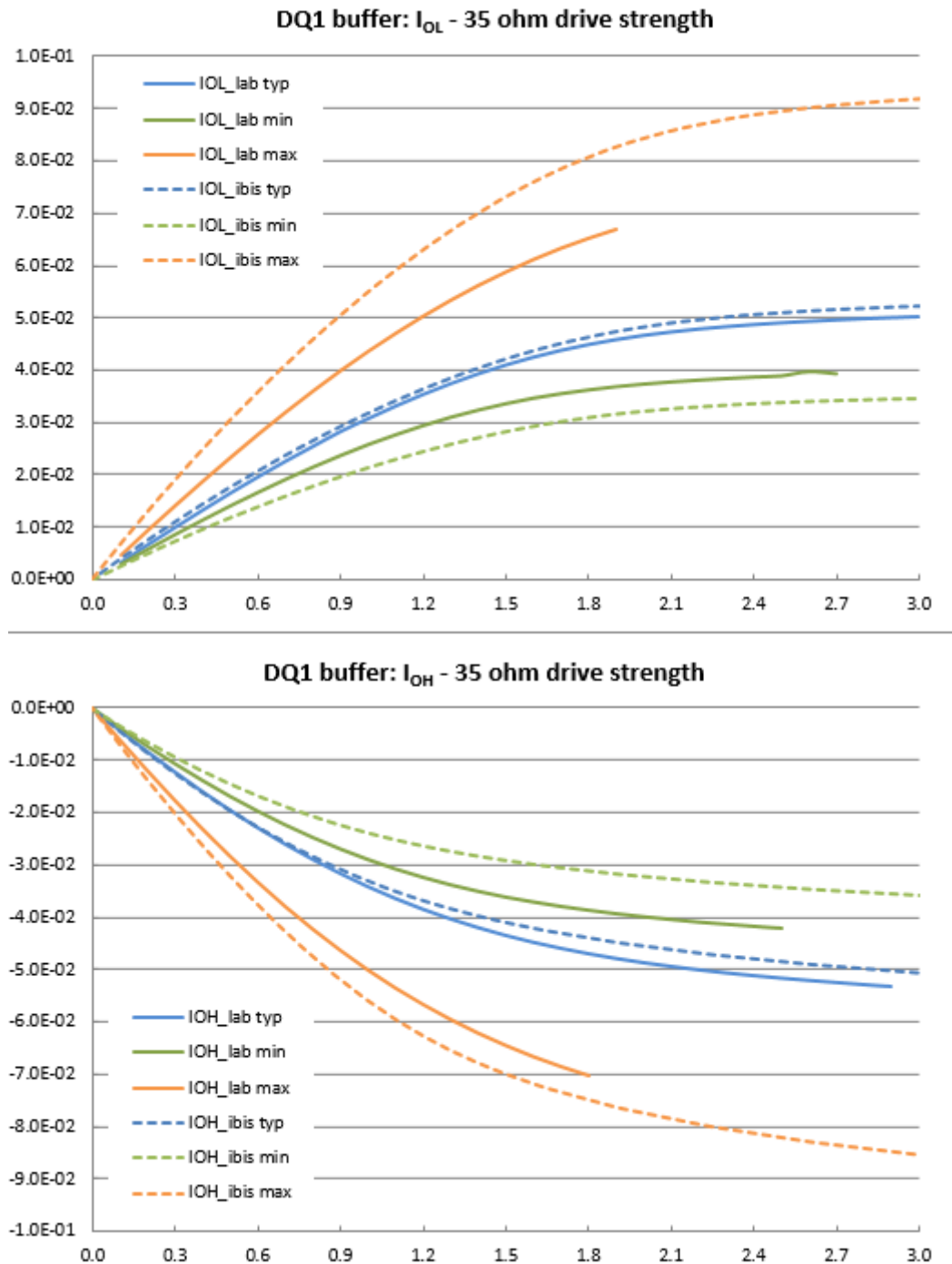
a. Model name: **DQ1 - 50 ohm**

Measurement conditions: **typ: 3.0V, 35C ; min: 2.7V, 85C; max: 3.6V, -40C**



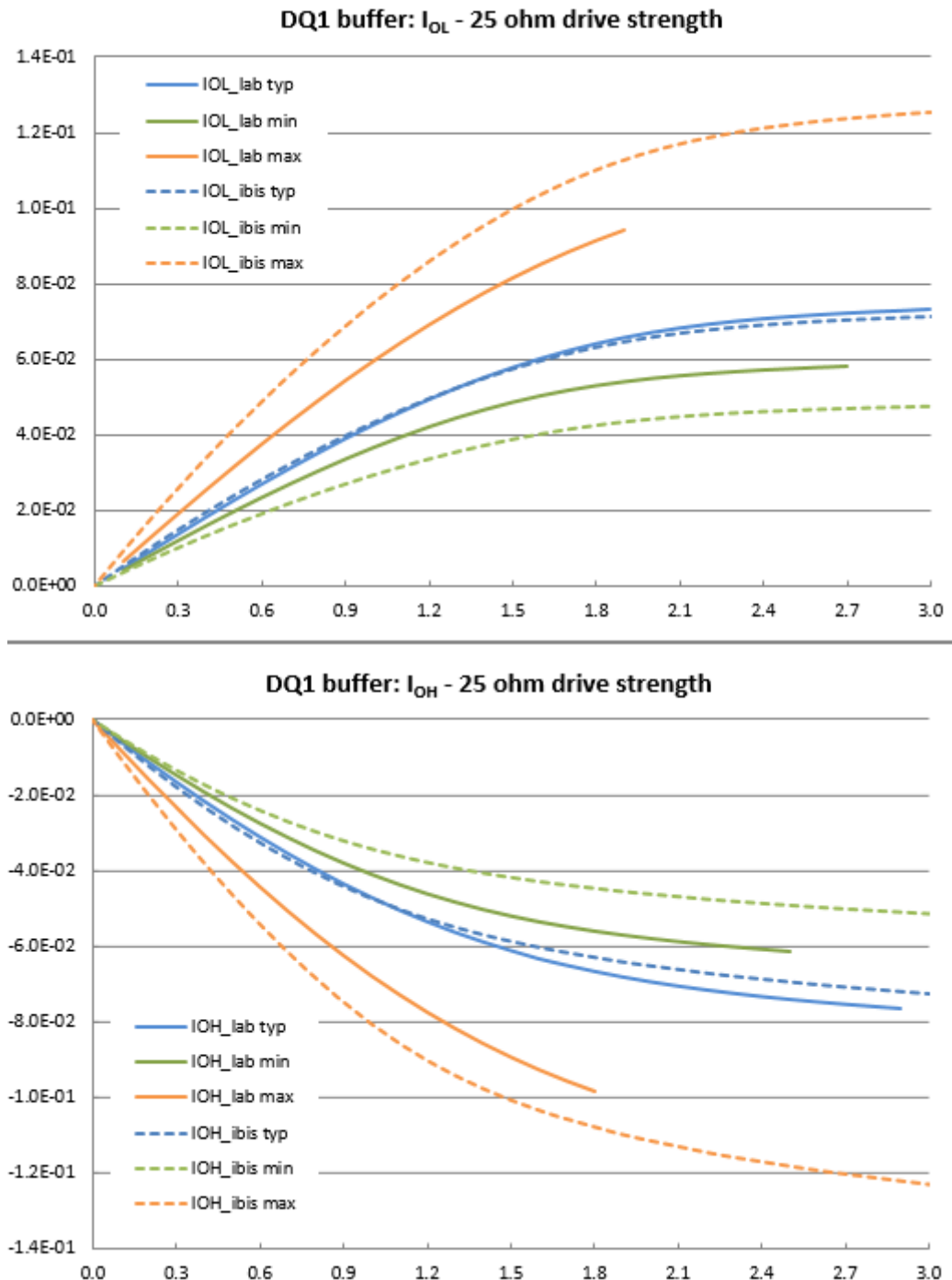
b. Model name: **DQ1 - 35 ohm**

Measurement conditions: **typ: 3.0V, 35C ; min: 2.7V, 85C; max: 3.6V, -40C**



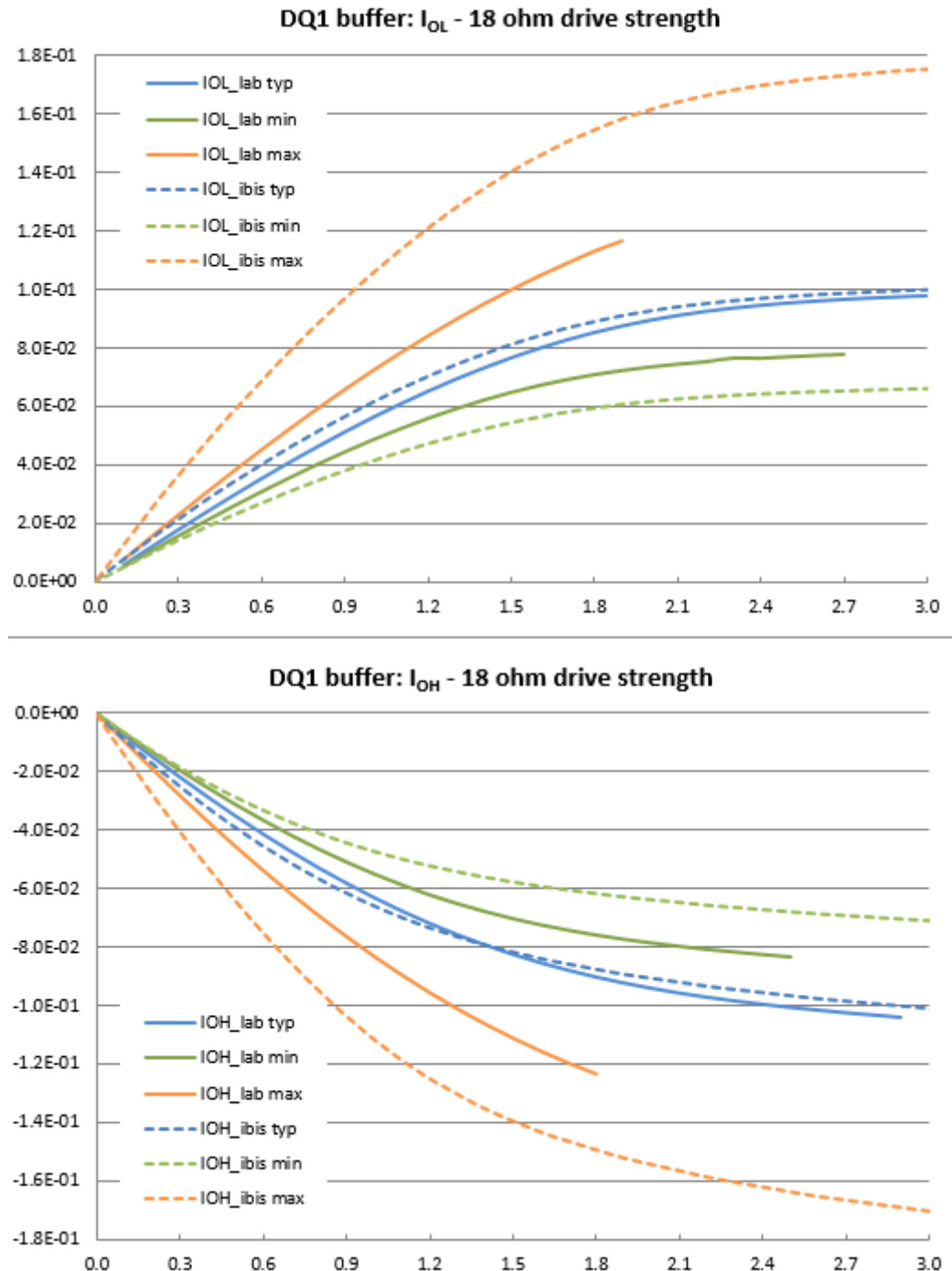
c. Model name: **DQ1 - 25 ohm**

Measurement conditions: **typ: 3.0V, 35C ; min: 2.7V, 85C; max: 3.6V, -40C**



d. Model name: **DQ1 - 18 ohm**

Measurement conditions: **typ: 3.0V, 35C ; min: 2.7V, 85C; max: 3.6V, -40C**



2. ☒ Compare C_comp with measured C_comp. Provide C_comp comparison table for all models and for all package combinations (i.e x4, x8 and x16).

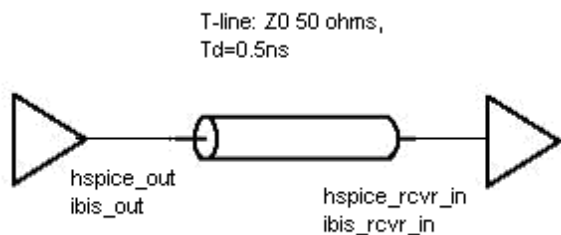
Component name: **MT35XL512ABAx12 (AT)**

Signal	IBIS pkg min [pF]	IBIS pkg max [pF]	IBIS die min [pF]	IBIS die max [pF]	IBIS tot min [pF]	IBIS tot max [pF]	Measured min [pF]	Measured max [pF]
DQ0-DQ7	0.54	1.08	3.04	3.82	3.58	4.90	4.07	4.64
DQS	0.85	0.85	2.94	3.84	3.79	4.70	4.25	4.30
INT#	1.12	1.12	2.56	3.40	3.68	4.51	4.09	4.15
C	1.07	1.07	1.35	1.75	2.42	2.82	2.67	2.72
S#	1.04	1.04	1.95	2.15	2.99	3.19	3.04	3.15
RESET#	1.06	1.06	2.83	3.11	3.88	4.16	3.99	4.05

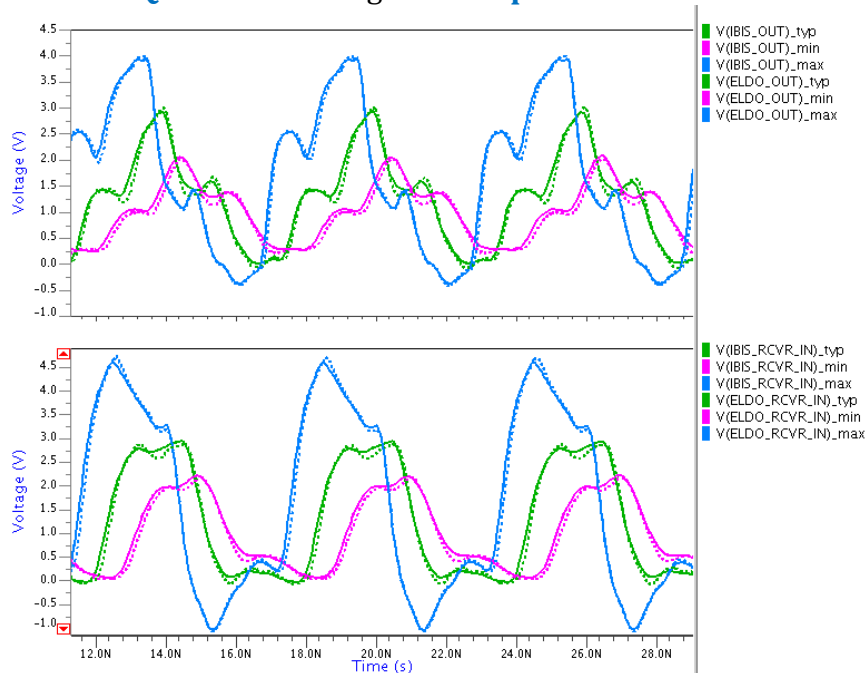
IBIS Model Correlation: IBIS vs Spice

1. ☒ For all Output or I/O models, run Spice transient simulations using encrypted netlists and the IBIS model (b-element).
 - a. ☒ Use the setup and node naming conventions shown below for the IBIS and Spice files.
Update the setup diagram if it is different. Indicate the version of Spice simulator used for simulations: **ELDO 13.1 b5 (64 bits)**
 - b. ☒ Run simulations for all corners cases and at fastest speed grades, testing ODT models as loads when applicable

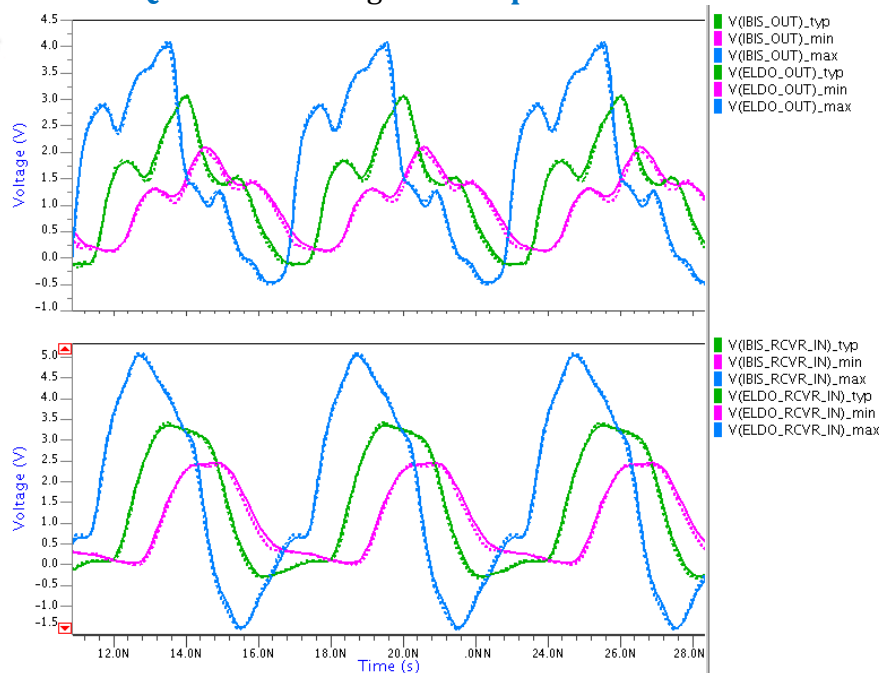
SETUP:



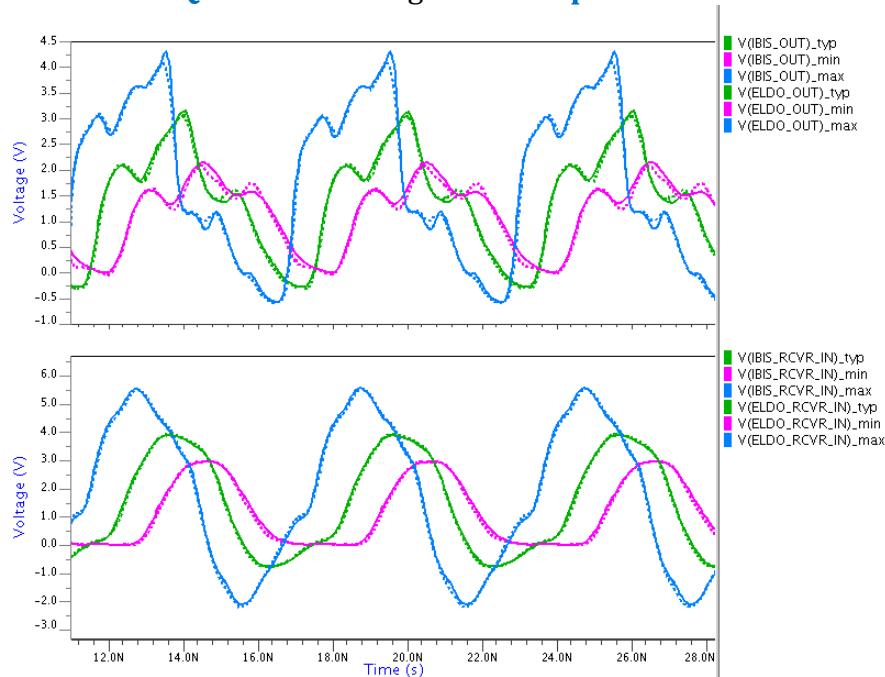
i. DQ 50 ohm driving Cloud=6pF



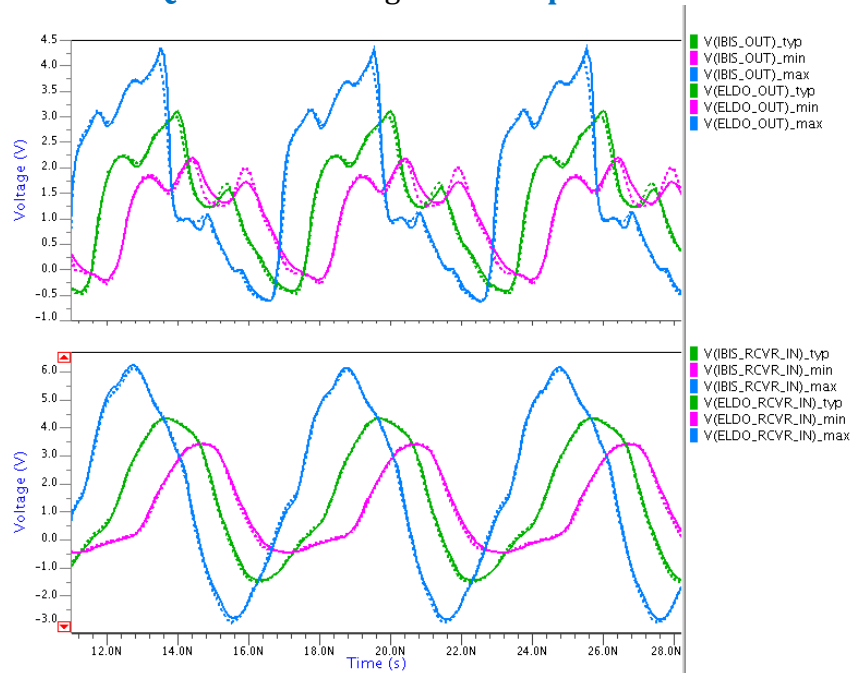
i. DQ 35 ohm driving Cloud=9pF



ii. DQ 25 ohm driving Cloud=12pF



iii. DQ 18 ohm driving Cloud=15pF



Comments

IBIS vs Spice correlation waveforms for DQS have been omitted because they are very similar to the DQ ones

Document Revision History

Rev **1.1** - Date **March 13, 2015**

- a. IBIS revision **1.1**
- b. HSPICE revision **NA**

Rev **1.2** - Date **August 26, 2015**

- a. IBIS revision **1.2**
- b. HSPICE revision **NA**

Rev **1.3** - Date **October 30, 2015**

- a. IBIS revision **1.3**
- b. HSPICE revision **NA**

Rev **2.0** - Date **September 14, 2016**

- a. IBIS revision **2.0**
- b. HSPICE revision **NA**

Rev **2.1** - Date **October 17, 2016**

- a. IBIS revision **2.1**
- b. HSPICE revision **NA**