



IBIS Summary Documents

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Document Samples

- Keyword Hierarchy tree in IBIS Version 6.0, Section 3.1
- Expanded Keyword Hierarchy tree
- Evolution document
- IBIS-AMI parameter tables in IBIS Version 6.0, Section 10.7
- These documents summarize the IBIS elements



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Official Keyword Hierarchy (Section 3.1) from Specification

ver6_0-wip4.docx [Compatibility Mode] - Microsoft Word

File Home Insert Page Layout References Mailings Review View

Keyword Column

Subparameter Column

3.1 KEYWORD HIERARCHY

.ibs FILE

- File Header Section
 - [IBIS Ver]
 - [Comment Char]
 - [File Name]
 - [File Rev]
 - [Date]
 - [Source]
 - [Notes]
 - [Disclaimer]
 - [Copyright]
- [Component]
 - [Manufacturer]
 - [Package]
 - [Pin]
 - [Package Model]
 - [Alternate Package Models]
 - [End Alternate Package Models]
 - [Pin Mapping]
 - [Diff Pin]
 - [Repeater Pin]
 - [Series Pin Mapping]
 - [Series Switch Groups]
 - [Node Declarations]
 - [End Node Declarations]
 - [Circuit Call]
 - [End Circuit Call]
 - [Begin EMI Component]
 - [Pin EMI]
 - [Pin Domain EMI]
 - [End EMI Component]

Si_location, Timing_location

R_pkg, L_pkg, C_pkg
signal_name, model_name, R_pin,
L_pin, C_pin

pulldown_ref, pullup_ref,
gnd_clamp_ref, power_clamp_ref,
ext_ref
inv_pin, vdiff, tdelay_typ,
tdelay_min, tdelay_max
tx_non_inv_pin
pin_2, model_name,
function_table_group
On, Off

Signal_pin, Diff_signal_pins,
Series_pins, Port_map

Domain, Cpd, C_Heatsink_gnd,
C_Heatsink_float
domain_name, clock_div
percentage

[Model Selector]

[Model]

Model_type, Polarity, Enable,
Vinl, Vinh, C_comp, C_comp_pullup,
C_comp_pulldown,
C_comp_power_clamp,
C_comp_gnd_clamp
Vmeas, Cref, Rref, Vref
Rref_diff, Cref_diff

[Model Spec]

Vinh, Vinl, Vinh+, Vinh-, Vinl+,
Vinl-, S_overshoot_high,
S_overshoot_low, D_overshoot_high,
D_overshoot_low, D_overshoot_time,
D_overshoot_area_h,
D_overshoot_area_l,
D_overshoot_ampl_h,
D_overshoot_ampl_l,
Pulse_high, Pulse_low, Pulse_time,
Vmeas, Cref, Rref, Vref, Cref_rising,
Cref_falling, Rref_rising,
Rref_falling, Vref_rising,
Vref_falling, Vmeas_rising,
Vmeas_falling,
Rref_diff, Cref_diff,
Weak_R, Weak_I, Weak_V
Vth, Vth_min, Vth_max, Vinh_ac,
Vinh_dc, Vinl_ac, Vinl_dc,
Threshold_sensitivity,
Reference_supply, Vcross_low,
Vcross_high, Vdiff_ac, Vdiff_dc,
Tslew_ac, Tdiffslew_ac

[Receiver Thresholds]

[Add Submodel]
[Driver Schedule]
[Temperature Range]
[Voltage Range]
[Pullup Reference]
[Pulldown Reference]
[POWER Clamp Reference]
[GND Clamp Reference]
[External Reference]
[C Comp Corner]

C_comp, C_comp_pullup,
C_comp_pulldown,
C_comp_power_clamp,
C_comp_gnd_clamp

[TTgnd]

11

12

Page: 11 of 235 Words: 71,536

71%

9:30 AM

Unofficial Keyword Hierarchy

Updated from September, 2007

- Keyword Hierarchy tree
 - 165 distinct keyword usages
 - Some keywords are re-used in different contexts (e.g., [IBIS Ver], [End], [Rising Waveform], etc. in .ibs, .pkg and .ebd files)
- Hierarchy documents updated with Version 5.1 and Version 6.0 information



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Unofficial Keyword Hierarchy Tree with Extra Information

```
ross_6_0_tree.txt - Notepad
File Edit Format View Help

-- [Component] (m)
(3.2) Si_location *, Timing_location *
-----
-- [Manufacturer]
-- [Package]
-- [Pin]
R_pkg, L_pkg, C_pkg
signal_name, model_name, R_pin,
L_pin, C_pin
-- [Package Model] (2.1)
|--- [Alternate Package Models] (m) (4.2)
|--- [End Alternate Package Models]
-- [Pin Mapping] (2.1) pulldown_ref, pullup_ref,
(4.2) gnd_clamp_ref, power_clamp_ref,
ext_ref
-- [Diff Pin] (2.1) inv_pin, vdiff, tdelay_typ,
tdelay_min, tdelay_max
-- [Repeater Pin] (6.0) tx_non_inv_pin
-- [Series Pin Mapping] (3.2) pin_2, model_name,
function_table_group
-- [Series Switch Groups] (3.2) on (m), Off (m)
-- [Node Declarations] (4.2)
|--- [End Node Declarations]
-- [Circuit call] (4.2) signal_pin, Diff_signal_pins,
Series_pins, Port_map (m)
(6.0) Converter_Parameters (m)
|--- [End Circuit call]
-- [Begin EMI Component] (5.1) Domain *, Cpd, C_Heatsink_gnd,
C_Heatsink_float
|--- [Pin EMI]
|--- [Pin Domain EMI]
|--- [End EMI Component]
-- [Model Selector] (m) (3.2)
-- [Model] (m)
Model_type *, Polarity *, Enable *,
vinl, vinh, C_comp,
(2.1) vmeas, Cref, Rref, Vref
(4.2) C_comp_pullup, C_comp_pulldown,
C_comp_power_clamp, C_comp_gnd_clamp,
Rref_diff, Cref_diff
-----
-- [Model Spec]
(3.2) vinh, vinl, vinh+, vinh-, vinl+,
vinl-, S_overshoot_high,
S_overshoot_low, D_overshoot_high,
D_overshoot_low, D_overshoot_time,
Pulse_high, Pulse_low, Pulse_time,
vmeas,
(4.2) Cref, Rref, Vref, Cref_rising,
Cref_falling, Rref_rising,
Rref_falling, Vref_rising,
Vref_falling, vmeas_rising,
vmeas_falling,
Rref_diff, Cref_diff,
(5.1) weak_R, weak_I, weak_V,
D_overshoot_area_h, D_overshoot_area_l,
D_overshoot_amp_l_h, D_overshoot_amp_l_l
```

**(ml): multiple locations for
[Comment Char]**

(m): multiple times

**(x.y): when added at major
version [1.1 (blank), 2.1, 3.2,
4.2, 5.1, 6.0]**

***: choices or selections given
at end**

Enumerated Choices at End

ross_6_0_tree.txt - Notepad

File Edit Format View Help

```
Test_load_type      (4.2, 5.1)
  Single_ended
  Differential

Language            (4.2)
  SPICE
  VHDL-AMS
  Verilog-AMS
  VHDL-A(MS)
  Verilog-A(MS)
  IBIS-ISS          (6.0)

Corner, A_to_D corner_name (4.2)
  Typ
  Min
  Max

Corner, D_to_A corner_name (4.2)
  Typ
  Min
  Max

D_to_A polarity      (6.0)
  Non_Inverting
  Inverting

Reserved Digital Port Names (4.2)
  D_receive
  D_drive
  D_enable
  D_switch

Reserved Analog Port Names (4.2)
  A_signal
  A_pos
  A_neg
  A_signal_pos
  A_signal_neg

Reserved Analog Reference Names (4.2)
  A_pufref
  A_pdref
  A_pcref
  A_gcref
  A_extref
  A_gnd

Domain              (5.1)
  Digital
  Analog
  Digital_analog

Model_EMI_type       (5.1)
  Ferrite
  Not_a_ferrite

Model_Domain         (5.1)
  Digital
  Analog

Executable           (5.1)
  Platform_Compiler_Bits File_Name Parameter_File
```

For example, IBIS-ISS added as a Language choice in Version 6.0

polarity added to D_to_A with Non_Inverting and Inverting selections in Version 6.0

Unofficial Evolution Document

- Evolution document features:
 - Updated columns show major version evolution
 - Rules and changes evolution
 - Significant subparameter selections such as the *_type subparameter choices
- Hierarchy and Evolution documents contain overlapping information, but expanded Hierarchy document has more detail
- Sample page shown next



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Evolution Document (*_type, EMI Information and Repeater Pin)

ross_6_0_evo_draft2a.doc [Compatibility Mode] - Microsoft Word

<u>Test_data_type</u> and <u>Test_load_type</u> SELECTIONS					
Version 1.1	Version 2.1	Version 3.2	Version 4.2	Version 5.1	Version 6.0
			<u>Single_ended</u>		
			Differential		
[Begin EMI Component] KEYWORDS					
Version 1.1	Version 2.1	Version 3.2	Version 4.2	Version 5.1	Version 6.0
				[Pin EMI]	
				[Pin Domain EMI]	
<u>Model_emi_type</u> SELECTIONS					
Version 1.1	Version 2.1	Version 3.2	Version 4.2	Version 5.1	Version 6.0
				Ferrite	
				<u>Not_a_Ferrite</u>	
(SUBPARAMETERS) FOR OTHER KEYWORDS					
Version 1.1	Version 2.1	Version 3.2	Version 4.2	Version 5.1	Version 6.0
[Component]		[Component] (<u>Si_location</u> , <u>Timing_location</u>)		[Begin EMI Component] (Domain, Cpd, <u>C_Heatsink_gnd</u> , <u>C_Heatsink_float</u>)	[Repeater Pin] (<u>tx_non_inv_pin</u>)
[Package] (<u>R_pkg</u> , <u>L_pkg</u> , <u>C_pkg</u>)				[Pin EMI] (<u>domain_name</u> , <u>clock_div</u>)	
[Pin] (<u>signal_name</u> , <u>model_name</u> , <u>R_pin</u>)				[Pin Domain EMI] (percentage)	

IBIS-AMI .ami File

Parameter Syntax (Section 10.3)

(<parameter_name>
(**Usage** <usage>) | required
(**Type** <data_type>) | required
(**{Format}** <**data_format**> <data>) | required *

(**List_Tip**) | optional with (**{Format}** **List**)
(**Default** <value>) | optional or illegal *
(**Description** <string>) | optional
)

* **Value** or **Default**, but not both, and other rules

New - Four Summary Tables in Section 10.7 of the Specification

- **Usages for Reserved Parameters**
- **Types for Reserved Parameters**
- **Formats for Reserved Parameters**
- **Types for Format values**
- **28 Reserved Parameters, 18 new in Version 6.0**
- **Part of one table shown next**



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IBIS-AMI Reserved Parameters and Allowable Data Types

Table 31 – Allowable Data Types for Reserved Parameters

Reserved Parameter	Data Type				
	Float	UI	Integer	String	Boolean
AMI_Version ¹				X	
DLL_ID ³				X	
DLL_Path ³				X	
GetWave_Exists					X
Ignore_Bits ²			X		
Init_Returns_Impulse					X
Max_Init_Aggressors			X		
Repeater_Type ³				X	
Rx_Clock_PDF	X	X			
Rx_Clock_Recovery_DCD ³	X	X			
Rx_Clock_Recovery_Dj ³	X	X			
Rx_Clock_Recovery_Mean ³	X	X			
Rx_Clock_Recovery_Rj ³	X	X			
Rx_Clock_Recovery_Sj ³	X	X			
Rx_DCD ³	X	X			
Rx_Dj ³	X	X			
Rx_Noise ³	X				

Conclusion

- Summary information provides quick references for IBIS and IBIS-AMI syntax
- Document references

<http://www.eda.org/ibis/ver6.0/>

ver6_0.docx, .pdf (official specification)

tree_6_0.txt (unofficial)

evol_6_0.docx, .pdf (unofficial)



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