COM 3.70 with 3.1 Configuration Updates, Fixes, and Exploratory Features including Package/Die Load Ladder

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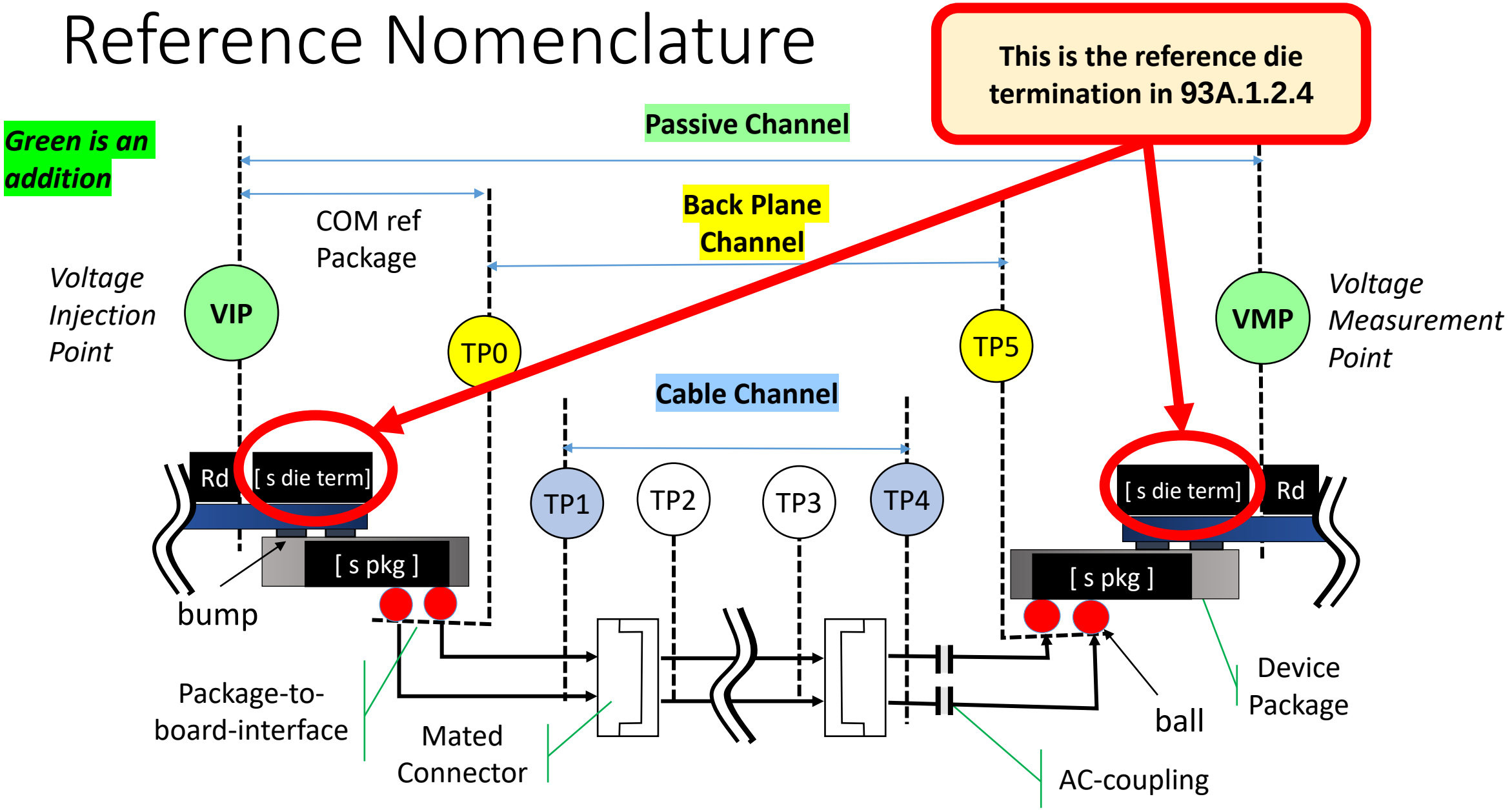
Reference Nomenclature



D3.1 update, Additional Exploratory COM Capability, Expanded Tx FFE taps, and minor improvements

- Changed output
  - total_IL_wpkgs_dB_at_Fnq to VIP_to_VIM_IL_dB_at_Fnq
- Fixed .3bj backward compatibility issue.
  - Tr caused error for 100G Base CR4
  - No change to prior configuration spreadsheets.
    - i.e., backward compatible
- Fix for floating tap algorithm for computing consecutive taps spacing.
  - Impact from a few tests: < 0.05 dB COM
- Expands syntax for Tx FFE to any number of taps
  - Syntax c(n) where n is an a positive of negative non-zero integer.
  - Rules: all tap ranges up to n must be specified. Set c(n) to zero if tap is not used.
  - Example
    - C(-4) = [0.1 ; 0.05 ; 0]
    - C(-3)=0
    - C(-2)=[0.1 ; 0.05 ; 0]
    - C(-1)=0
- Exploratory implementation of ran_3ck_03_0122 for SNR_Tx
  - By setting keyword to 1 (default is 0 if not specified)
- Speed up for C2M
- CR and C2M d3.1 spreadsheet change

IEEE802.3 ck Package Model (single sided representation)

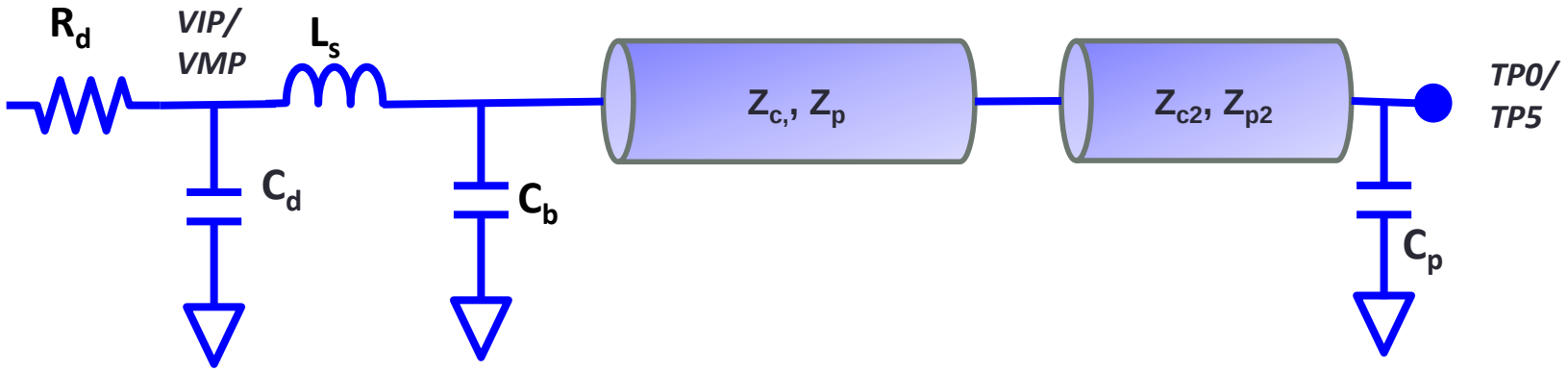
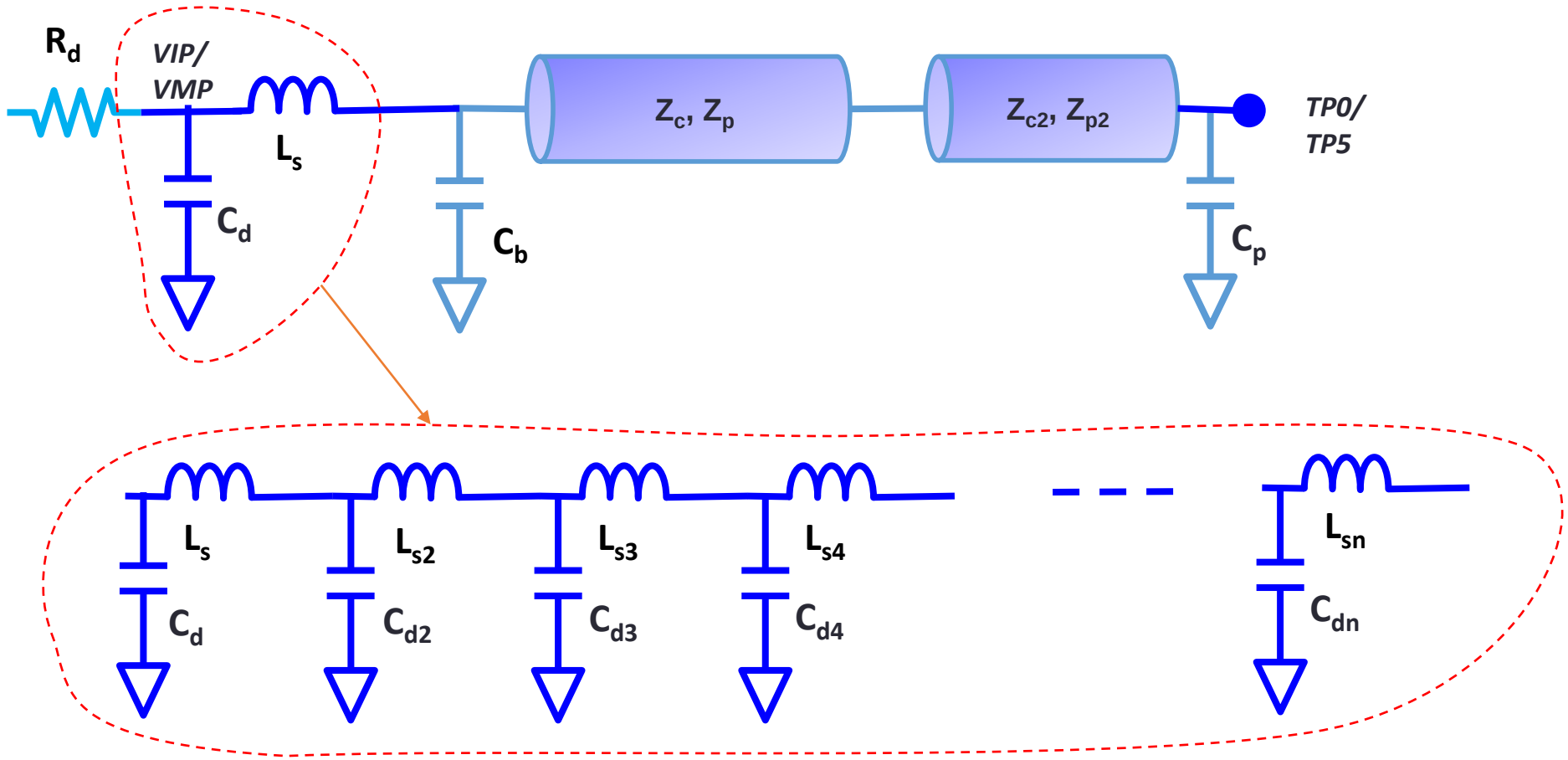


Table 93A-1 parameters			
Parameter	**Setting**	**Units**	**Information**
C_d	[1.2e-4 1.2e-4]	nF	[TX RX]
L_s	[0.12, 0.12]	nH	[TX RX]
C_b	[0.3e-4 0.3e-4]	nF	[TX RX]
z_p select	[1 2]		[test cases to run]
z_p (TX)	[12 31; 1.8 1.8]	mm	[test cases]
z_p (NEXT)	[12 29; 1.8 1.8]	mm	[test cases]
z_p (FEXT)	[12 31; 1.8 1.8]		[test cases]
z_p (RX)	[12 29; 1.8 1.8]	mm	[test cases]
C_p	[0.87e-4 0.87e-4]	nF	[TX RX]
R_0	50	Ohm	
R_d	[45 45]	Ohm	[TX RX]
A_v	0.39	V	vp/vf=.694
A_fe	0.39	V	vp/vf=.694
A_ne	0.578	V	

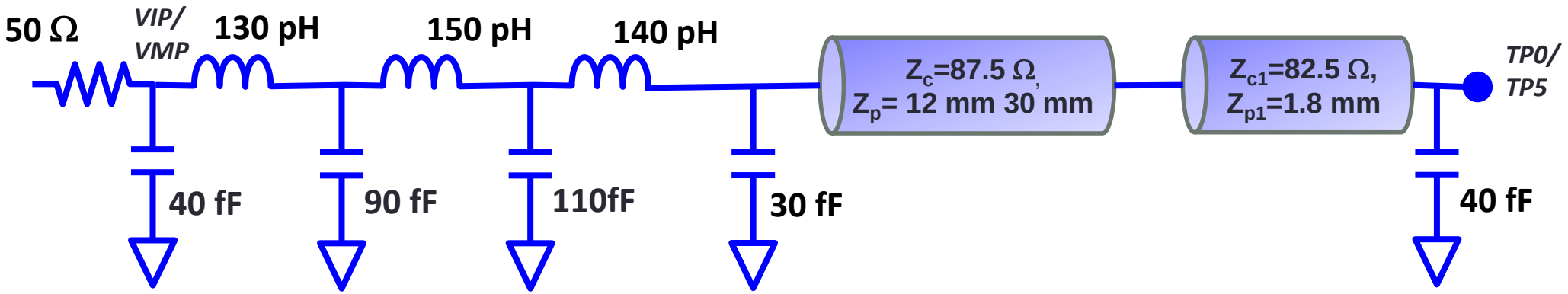
Table 93A–3 parameters		
Parameter	**Setting**	**Units**
package_tl_gamma0_a1_a2	[0 0.0009909 0.0002772]	
package_tl_tau	6.141E-03	ns/mm
package_Z_c	[87.5 87.5 ; 92.5 92.5]	Ohm

Replace Cd and Ls with a Ladder



C_d	[Cd Cd2 Cd3 Cd4 … Cdn ; Cd Cd2 Cd3 Cd4 … Cdn]	nF	[TX ; RX]
L_s	[Ls Ls2 Ls3 Ls4 … Lsn; Ls Ls2 Ls3 Ls4 … Lsn]	nH	[TX ; RX]

Example: T-coil ladder data in li_3df_02_220316



C_d	[0.4e-4 0.9e-4 1.1e-4 ; 0.4e-4 0.9e-4 1.1e-4]	nF	[TX RX]
L_s	[0.13 0.15 0.14; 0.13 .15 0.14]	nH	[TX RX]
C_b	[0.3e-4 0.3e-4]	nF	[TX RX]
z_p select	[1 2 3 4]		[test cases to run]
z_p (TX)	[12 31; 1.8 1.8]	mm	[test cases]
z_p (NEXT)	[12 29; 1.8 1.8]	mm	[test cases]
z_p (FEXT)	[12 31; 1.8 1.8]	mm	[test cases]
z_p (RX)	[12 29; 1.8 1.8]	mm	[test cases]
C_p	[0.4e-4 0.4e-4]	nF	[TX RX]
R_0	50	Ohm	

Parameter	Setting
package_tl_gamma0_a1_a2	[0 8.9e-4 1.55e-4]
package_tl_tau	6.14E-03
package_Z_c	[87.5 87.5 ; 92.5 92.5]

Exploratory for .3df

File list

- com_ieee8023_93a_370.m
- mellitz_3ck_01_032322.pdf
- TP0V_example.m
- config_sheets_3p1
  - config_com_ieee8023_93a=3ck_d3p1 _TP0V_11_30_21.xlsx
  - config_com_ieee8023_93a=3ck_d3p1_120F_C2C_11_30_21.xlsx
  - config_com_ieee8023_93a=3ck_d3p1_120g_C2M_tp1a_9_11_30_21.xlsx
  - config_com_ieee8023_93a=3ck_d3p1_CR_CA_11_30_21.xlsx
  - config_com_ieee8023_93a=3ck_d3p1_KR_11_30_21.xlsx
  - config_com_ieee8023_93a=3ck_d3p1_MTF_tp1a_11-30-21.xlsx
  - keywords_14-Mar-2022.csv

Thank You!