ANALOG DEVICES

AHEAD OF WHAT'S POSSIBLE™

Clause 104 Modifications for 10SPE - Baseline

HEATH STEWART

Baseline Changes

- Modify Table 104-7 PD Power Supply Limits
  - Track changes to PHY and cable capacitance
    - Split C_{IN_Class} into two rows
      - Label original row Type A, B, C, D
      - New row change C_{IN_Class} to 400nF, Type E, Class TBD
  - Change C_{Bus} to 72nF (TBD)
  - Add clarity to T_{SLOT} by splitting into RESET, READ, and WRITE variants
    - Add $t_{RSTSLOT}$, $t_{WRITESLOT}$, $t_{READSLOT}$ as shown in following slides
    - Remove t_{SLOT}
  - Modifications to SCCP timing as shown in following slides

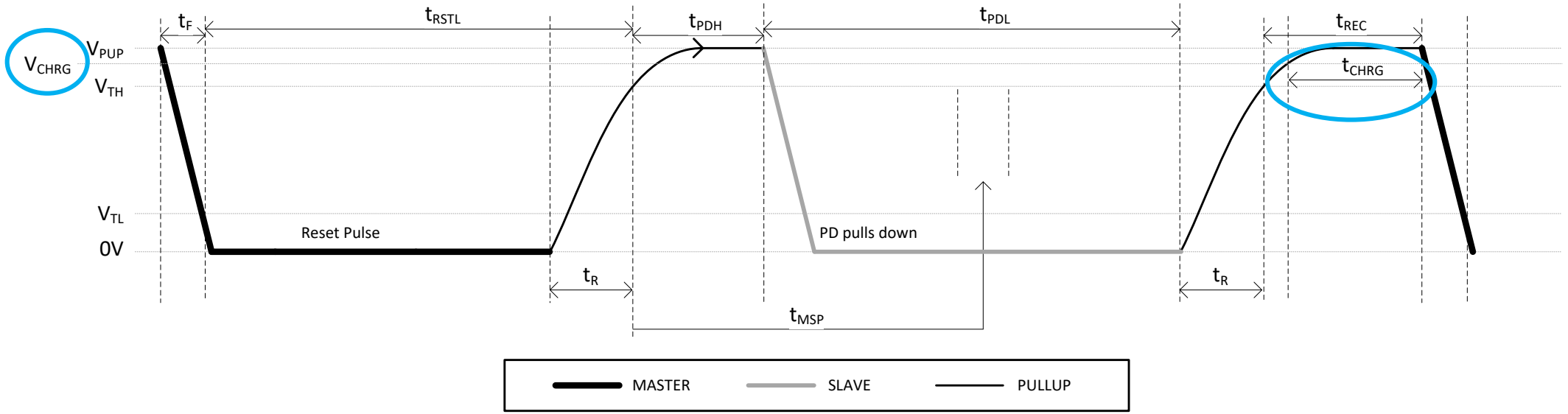
Baseline Changes

- Modify Table 104-8 SCCP Electrical Requirements
  - Change existing items to Type A, B, C, D (new column)
  - Split existing t_{SLOT} into two variants (update figures 104-11,12)
    - $t_{WRITESLOT}$, using existing t_{SLOT} value
    - $t_{READSLOT}$, using existing t_{SLOT} value
    - Delete t_{SLOT}
  - All following changes attributable to New 10SPE Type ‘E’
    - If item already exists split row, existing row is Type A, B, C, D
    - Split C_{Bus}, add subrow 72nF for Type E
    - Add clarity for PD reservoir capacitor recharge for Type E
      - Create $V_{CHRG,\ min} = V_{PUP,\ min} * 90\%$
      - Create $t_{CHRG,\ min} = 200us$
    - Add all bold red changes as shown in slides 5, 6, 7 (sorry about color choice)
      - Attribute to Type E
      - Split rows

Figure Changes

- Change Figures 104-10,11,12
  - Add V_{CHRG}, t_{CHRG} as shown in slides 5, 6, 7

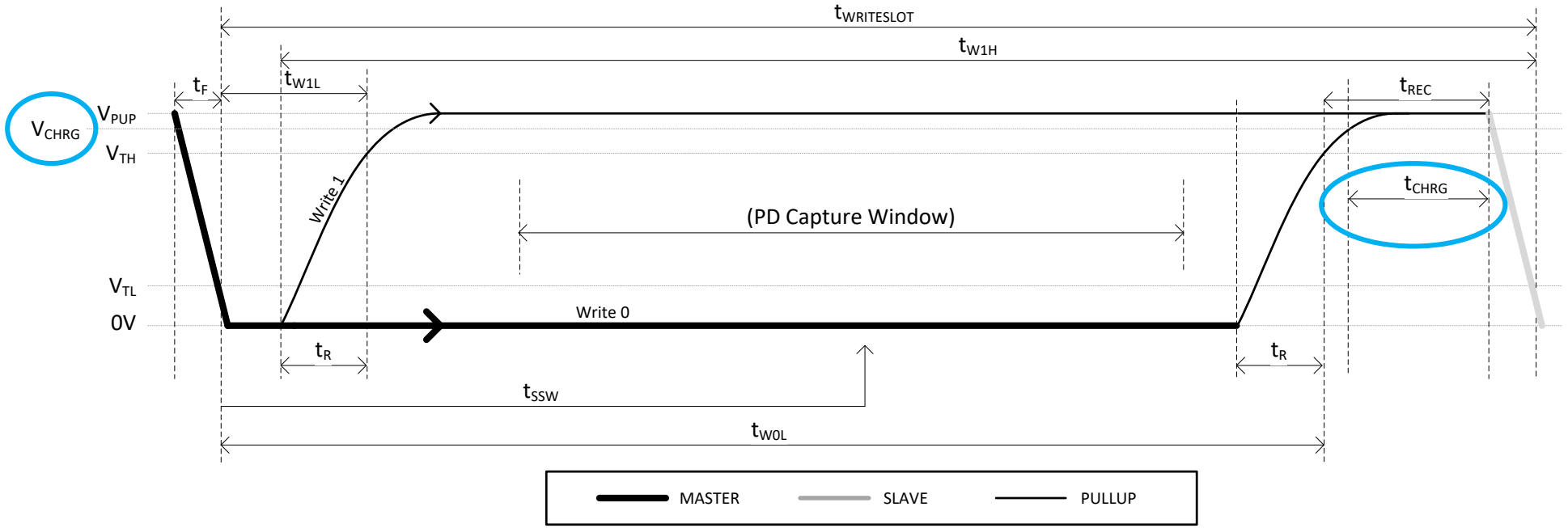
Reset command timing proof



Symbol	Min	Typ	Max	Unit	Note
t_F			**250**	us	5V pu vs 100Ohm pd
t_R			**500**	us	9mA PSE pu / 0.4uF C_{chan} V_{TL} to V_{CHRG}
t_{RSTL}	**8**	9	**10.5**	ms	PSE LO time for Reset pulse
t_{PDH}	**0.7**	1.0	**1.3**	ms	PD HI, measured from rising edge V_{TH}
t_{PDL}	**2.8**	4.0	**5.2**	ms	PD LO, presence pulse, pulldown duration
t_{MSP}	**1.8**	2.0	**2.2**	ms	PSE presence capture, measured from rising edge V_{TH}
t_{REC}	**270**	300	**330**	us	Charge PD SCCP reservoir capacitor
t_{CHRG}	**200**			us	Critical PD SCCP reservoir capacitor charging region
$t_{SLOT,RST}$			18.6	ms	
t_{LO}			10.5	ms	PD must maintain state

Red indicates changed parameters
***Bold** indicates parameters captured in SCCP electrical requirements*

Write 0/1 slot timing proof



Symbol	Min	Typ	Max	Unit	Note
t_F			**250**	us	5V pu vs 100Ohm pd
t_R			**500**	us	9mA PSE pu / 0.4uF C_{chan} V_{TL} to V_{CHRG}
t_{W1L}	90		**610**	us	
t_{SSW}	**0.77**	1.1	**1.43**	ms	PD capture measured from falling edge V_{TL}
t_{W0L}	**1.8**	2.0	**2.2**	ms	PSE hold time for Write 0 symbol
t_{REC}	**270**	300	**330**	us	Charge PD SCCP reservoir capacitor
t_{CHRG}	**200**			us	Critical PD SCCP reservoir capacitor charging region
$t_{WRITESLOT}$			**2.78**	**ms**	

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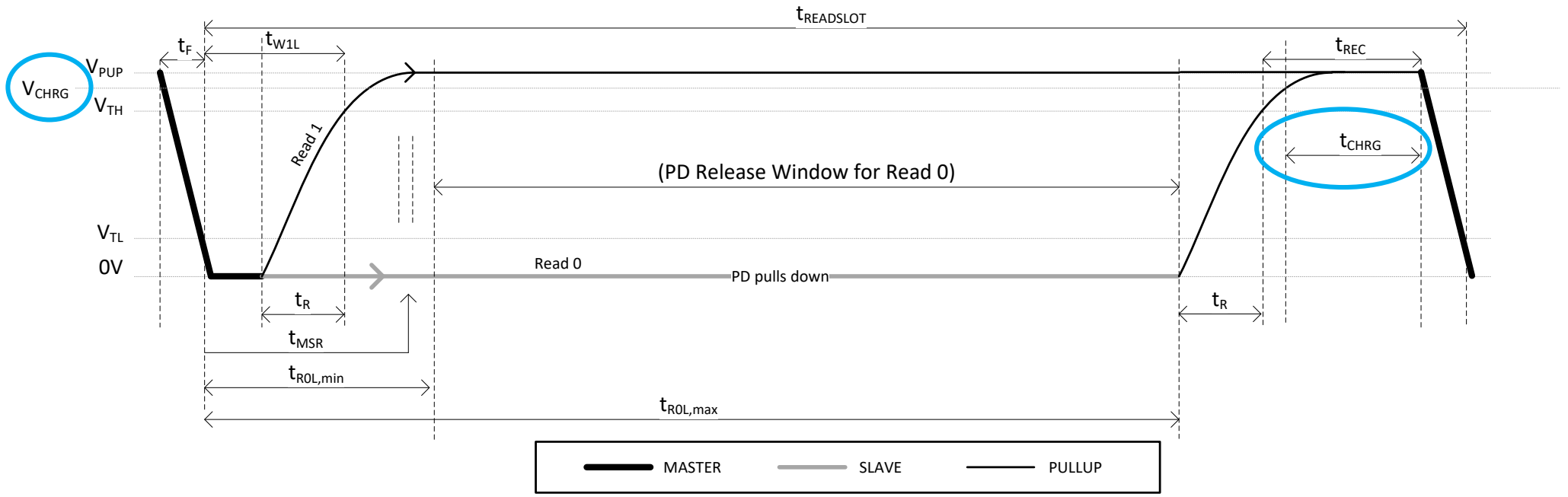
Read 0/1 slot timing proof



Symbol	Min	Typ	Max	Unit	Note
t_F			**250**	us	5V pu vs 100Ohm pd
t_R			**500**	us	9mA PSE pu / 0.4uF C_{chan} V_{TL} to V_{CHRG}
t_{W1L}	90		**610**	us	
t_{MSR}	**0.9**	1	**1.1**	ms	PSE capture, from falling edge V_{TL}
t_{R0L}	**1.75**	2.5	**3.25**	ms	PD release, from falling edge V_{TL}
t_{REC}	**270**	300	**330**	us	Charge PD SCCP reservoir capacitor
t_{CHRG}	**200**			us	Critical PD SCCP reservoir capacitor charging region
$t_{READSLOT}$			**3.83**	ms	Read symbol duration

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