



Detection Timing

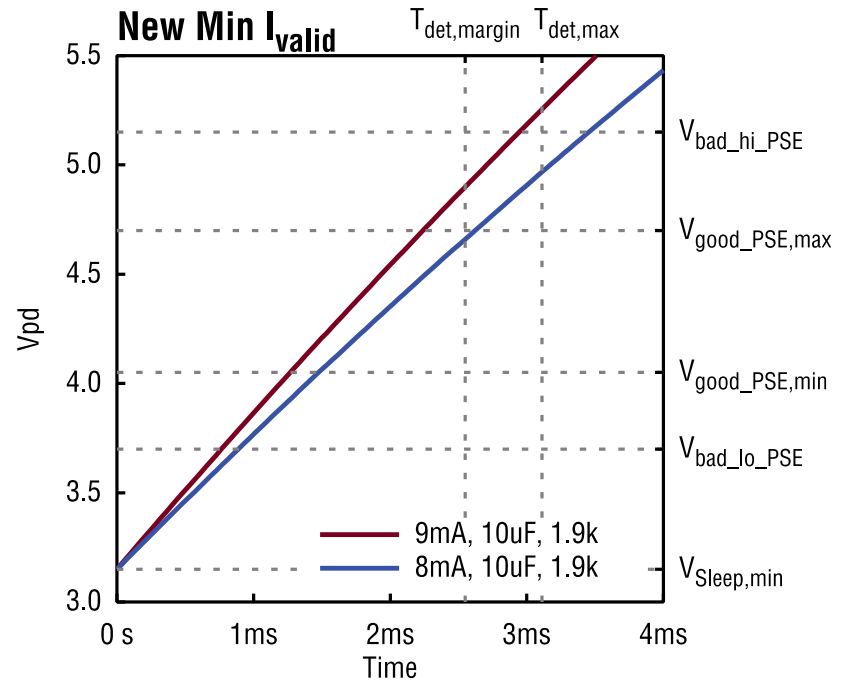
Andy Gardner

Presentation Objectives

- Adjust detection timing to ensure that non-valid signatures (capacitor w/o zener) are rejected
- Allow fastest possible detection

Problem 1: Min I_{valid} Is Too Low

- 8mA Detection Current into minimum PD impedance does not exit the detection window before $T_{\text{det,max}}$
- $T_{\text{det,margin}} = T_{\text{det,max}} / 1.22$
- Increase $I_{\text{valid,min}}$ to 9mA



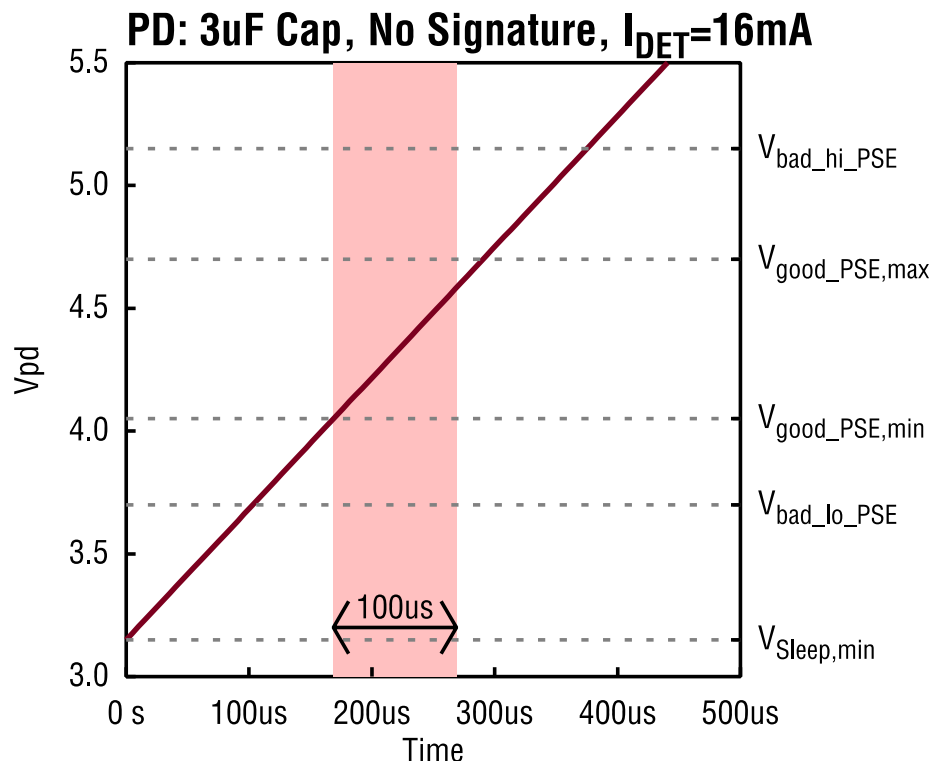
Problem 2: $T_{sig_hold,min}$ is too short

10	Signature hold timer for validity	T_{sig_hold}	ms	0.1	See 104.3.4.2
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104.3.4.2 Detection criteria

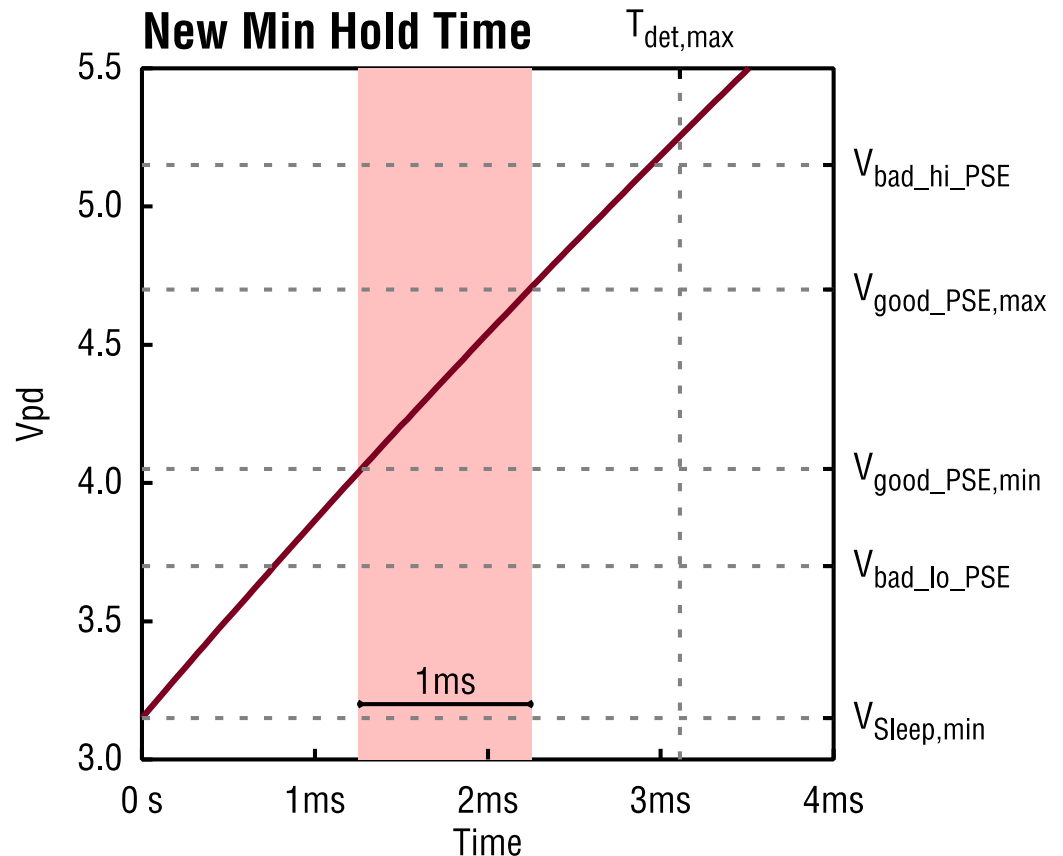
A PSE shall accept as a valid PD signature a link segment with a voltage in the range of V_{good_PSE} for at least T_{sig_hold} in response to a probing current in the range I_{valid} as specified in Table 104-2.

- PD without signature
- $C_{pd} > 2.46\mu F$
- Accepted as Valid PD

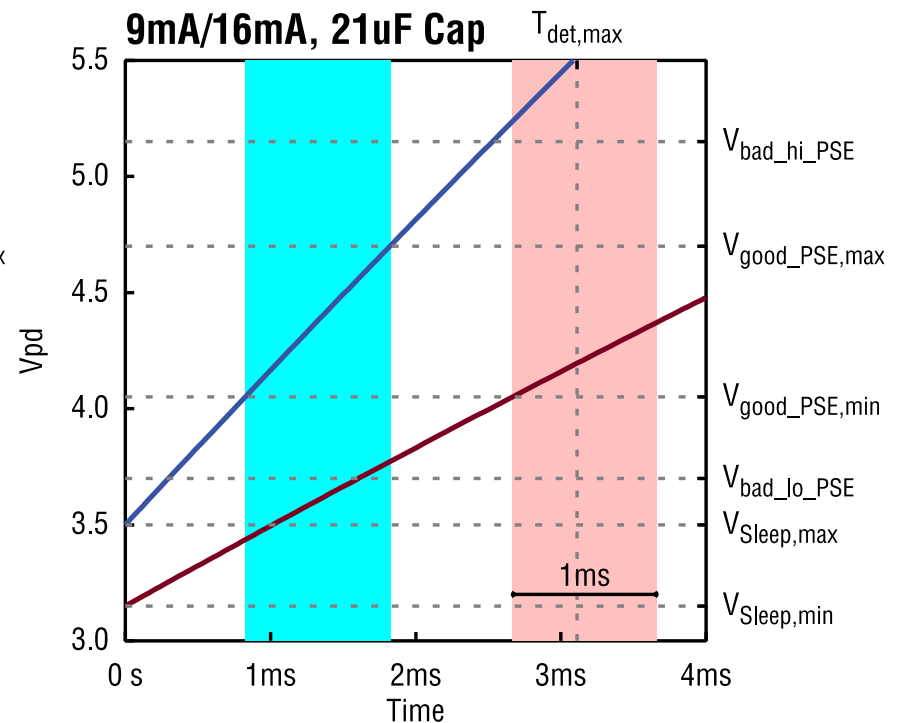
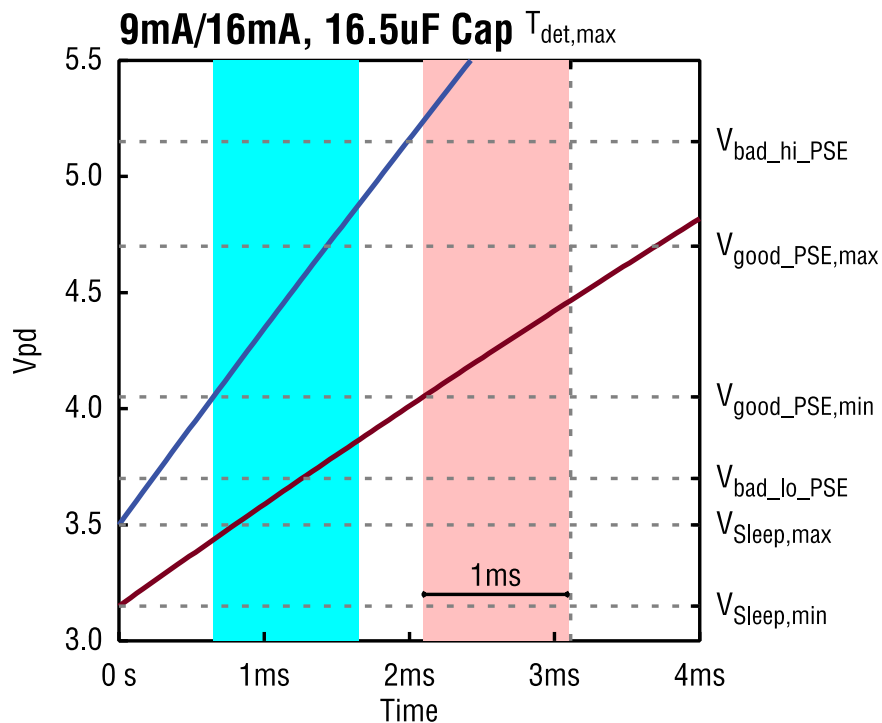


Increase $T_{\text{sig_hold,min}}$ to 1ms

- Determine $T_{\text{sig_hold,min}}$ as smallest PSE detect current into smallest valid PD impedance
- $I_{\text{detect}} = 9\text{mA}$
- $C_{\text{pd}} = 10\mu\text{F}$
- $R_{\text{wake}} = 1.9\text{k}$



No Single Capacitor Value Can Trick All PSEs



Proposal

- Increase $I_{\text{valid,min}}$ to 9mA
- Increase $T_{\text{sig_hold,min}}$ to 1ms