

1 Changes from SS PD to DS PD state machine.

2 1) Dual-signature PD operating principle: two separate state machines for Mode A and Mode B.

3
4 2) Naming constants, variables, timers and functions: xxxx_modeA and xxxx_modeB.

5 Autoclass is not used for dual-sig. (No need per inputs got so far).

6 There is a consensus between Yair, Fred, Dylen, Chriss and Lennart so far that
7 AUTO_CLASS is not required for dual-sig PDs. It is not a problem to add it later. We need
8 more marketing inputs.

9
10 3) present_det_sig_modeA, present_det_sig_modeB: A text was added that defines this
11 variable should be valid or not regardless if the other pairset is powered with voltage above
12 Vreset.

13 Other options such not allow a pairset to go into OFFLINE when the other pairset is
14 powered was considered however the problem with this approach is that if we look at
15 dual-sig PD as two independent PDs that are closed in a single PD box than one of the
16 pairsets can be in OFF-LINE at any time regardless of what the other pair is doing.

17
18 4) present_class_sig_A_modeA/B and present_class_sig_B_modeA/B is TRUE also if
19 power__recived_modeB/A is TRUE is OK automatically whenever Vclass is in range.

20
21 5) pd_dll_capable was removed since dual-signature PD need to support DLL.

22
23 6) pd_max_power_modeA values were set to 5 max.

24
25 7) PSE state machine for supporting dual-signature PD needs separate DLL_ENABLE for primary and
26 secondary.

27
28
29
30 **Baseline starts at next page:**

- 1 1. Update 33.3.3.11 as follows:
- 2 2. Add the dual-signature state machine drawings darshan_07_0516.pdf and darshan_08_0516.pdf
- 3 3. To add the following editor note at the PSE state machine section: "Editor Note: PSE state machine for
- 4 supporting dual-signature PD needs separate DLL ENABLE for primary and secondary."

6 33.3.3.11 Type 3 and Type 4 dual-signature PD State diagrams

7
8 *Editor Note: PD power control state diagram (Figure 33-50) need to be evaluate and sync with the*
9 *dual-signature state machine.*

11 33.3.3.x1 Type 3 and Type 4 Constants for dual-signature PD

12 To reuse the constant from Table 33-26 to be per pairset, a text was added to indicate it without the need to
13 change Table 33-26 or change it to Vreset-2P, Vreset_th_2P, and Vmark_th-2P respectively in Table 33-26.

15 The PD state diagram uses the following constants:

16 VReset

17 Reset voltage per pairset (see Table 33–26)

18 VReset_th

19 Reset voltage threshold per pairset (see Table 33–26)

20 VMark_th

21 Mark event voltage threshold per pairset (see Table 33–26)

22
23
24 pd_req_class_modeA

25 A constant indicating the requested Class of the PD over mode A.

26 Values:

- 27 1: The PD requests Class 1.
- 28 2: The PD requests Class 2.
- 29 3: The PD requests Class 3.
- 30 4: The PD requests Class 4.
- 31 5: The PD requests Class 5.

32
33 pd_req_class_modeB

34 A constant indicating the requested Class of the PD over mode B.

35 Values:

- 36 1: The PD requests Class 1.
- 37 2: The PD requests Class 2.
- 38 3: The PD requests Class 3.
- 39 4: The PD requests Class 4.
- 40 5: The PD requests Class 5.

42 33.3.3.x2 Type 3 and Type 4 Variables for dual-signature PD

43 The PD state diagram uses the following variables:

44
45 mdi_power_required_modeA

46 A control variable indicating that over mode A, the PD is enabled and should request power from the PSE by
47 applying a PD detection signature to the link, and when the PSE sources power to apply the MPS to keep the
48 PSE sourcing power. A variable that is set in an implementation-dependent manner. Values:

- 49 FALSE:PD functionality is disabled.
50 TRUE:PD functionality is enabled.

1
2 mdi_power_required_modeB
3 A control variable indicating that over mode B, the PD is enabled and should request power from the PSE by
4 applying a PD detection signature to the link, and when the PSE sources power to apply the MPS to keep the
5 PSE sourcing power. A variable that is set in an implementation-dependent manner. Values:
6 FALSE:PD functionality is disabled.
7 TRUE:PD functionality is enabled.
8
9 pd_dll_enabled_modeA
10 A variable indicating whether the Data Link Layer classification mechanism is enabled over mode A.
11 Values:
12 FALSE:Data Link Layer classification is not enabled.
13 TRUE:Data Link Layer classification is enabled.
14
15 pd_dll_enabled_modeB
16 A variable indicating whether the Data Link Layer classification mechanism is enabled over mode B.
17 Values:
18 FALSE:Data Link Layer classification is not enabled.
19 TRUE:Data Link Layer classification is enabled
20
21 pd_max_power_modeA
22 A control variable indicating the max power that the PD may draw from the PSE over mode A. See power
23 classifications in Table 33–28.
24 Values:
25 1: PD may draw Class 1 power
26 2: PD may draw Class 2 power
27 3: PD may draw Class 3 power
28 4: PD may draw Class 4 power
29 5: PD may draw Class 5 power
30
31 pd_max_power_modeB
32 A control variable indicating the max power that the PD may draw from the PSE over mode B. See power
33 classifications in Table 33–28.
34 Values:
35 1: PD may draw Class 1 power
36 2: PD may draw Class 2 power
37 3: PD may draw Class 3 power
38 4: PD may draw Class 4 power
39 5: PD may draw Class 5 power
40
41 pd_reset_modeA
42 An implementation-specific control variable that unconditionally resets the PD state diagram over mode A to the
43 OFFLINE_modeA state.
44 Values:
45 FALSE:The device has not been reset (default).
46 TRUE:The device has been reset.
47
48 pd_reset_modeB
49 An implementation-specific control variable that unconditionally resets the PD state diagram over mode B to the
50 OFFLINE_modeB state.
51 Values:
52 FALSE:The device has not been reset (default).
53 TRUE:The device has been reset.
54
55
56

1
2 **pd_undefined_modeA**
3 A control variable that indicates that the PD is in an undefined condition [over mode A](#). The PD may or may not show
4 a valid or invalid detection signature, may or may not draw mark current, may or may not draw any class current, may
5 or may not show MPS and may change the pse_power_level_modeA variable.
6 Values:
7 FALSE:The PD is in a defined condition (default).
8 TRUE:The PD is an undefined condition.
9
10 **pd_undefined_modeB**
11 A control variable that indicates that the PD is in an undefined condition [over mode B](#). The PD may or may not show
12 a valid or invalid detection signature, may or may not draw mark current, may or may not draw any class current, may
13 or may not show MPS and may change the pse_power_level_modeB variable.
14 Values:
15 FALSE:The PD is in a defined condition (default).
16 TRUE:The PD is an undefined condition.
17
18
19 **power_received_modeA**
20 An indication from the circuitry that power is present on the PD's PI [over mode A](#).
21 Values:
22 FALSE:The input voltage does not meet the requirements of VPort_PD in Table 33–28.
23 TRUE:The input voltage meets the requirements of VPort_PD.
24
25 **power_received_modeB**
26 An indication from the circuitry that power is present on the PD's PI [over mode B](#).
27 Values:
28 FALSE:The input voltage does not meet the requirements of VPort_PD in Table 33–28.
29 TRUE:The input voltage meets the requirements of VPort_PD.
30
31
32 **present_class_sig_A_modeA**
33 Controls presenting the classification signature that is used during first two class events (see 33.3.5) by the PD [over](#)
34 [mode A](#).
35 Values:
36 FALSE:The PD classification signature is not to be applied to the link.
37 TRUE:The PD classification signature is to be applied to the link.
38
39
40 **present_class_sig_A_modeB**
41 Controls presenting the classification signature that is used during first two class events (see 33.3.5) by the PD [over](#)
42 [mode B](#).
43 Values:
44 FALSE:The PD classification signature is not to be applied to the link.
45 TRUE:The PD classification signature is to be applied to the link.
46
47 **present_class_sig_B_modeA**
48 Controls presenting the classification signature that is used during the third class event and all subsequent class events
49 [over mode A](#) (see 33.3.5) by the PD.
50 Values:
51 FALSE:The PD classification signature is not to be applied to the link.
52 TRUE:The PD classification signature is to be applied to the link.
53
54
55
56

1
2 present_class_sig_B_modeB

3 Controls presenting the classification signature that is used during the third class event and all subsequent class events
4 over mode B (see 33.3.5) by the PD.

5 Values:

6 FALSE:The PD classification signature is not to be applied to the link.

7 TRUE:The PD classification signature is to be applied to the link.

8
9
10 A text was added to present_det_sig_modeA and present_det_sig_modeB in order to ensure that that providing a
power on a pairset will not cause to the unpowered pairset signature to be invalid.

11
12 present_det_sig_modeA

13 Controls presenting the detection signature (see 33.3.4) by the PD over mode A.

14 Values:

15 invalid: A non-valid PD detection signature is to be applied to the link over mode A regardless of any
16 voltage above Vreset applied to mode B.

17
18 valid:A valid PD detection signature is to be applied to the link over mode A regardless of any voltage
19 above Vreset applied to mode B.

20 either: Either a valid or non-valid PD detection signature may be applied to the link.

21
22 present_det_sig_modeB

23 Controls presenting the detection signature (see 33.3.4) by the PD over mode B.

24 Values:

25 invalid: A non-valid PD detection signature is to be applied to the link over mode B regardless of any
26 voltage above Vreset applied to mode B.

27
28 valid:A valid PD detection signature is to be applied to the link over mode B regardless of any voltage
29 above Vreset applied to mode B.

30 either: Either a valid or non-valid PD detection signature may be applied to the link.

31
32 present_mark_sig_modeA

33 Controls presenting the mark event current and impedance (see 33.3.5.2.1) by the PD over mode A.

34 Values:

35 FALSE:The PD does not present mark event behavior.

36 TRUE:The PD does present mark event behavior.

37
38 present_mark_sig_modeB

39 Controls presenting the mark event current and impedance (see 33.3.5.2.1) by the PD over mode B.

40 Values:

41 FALSE:The PD does not present mark event behavior.

42 TRUE:The PD does present mark event behavior.

43
44 present_mps_modeA

45 Controls applying MPS over mode A (see 33.3.7.10) to the PD's PI.

46 Values:

47 FALSE:The Maintain Power Signature (MPS) is not to be applied to the PD's PI.

48 TRUE:The MPS is to be applied to the PD's PI.

49
50 present_mps_modeB

51 Controls applying MPS over mode B (see 33.3.7.10) to the PD's PI.

52 Values:

53 FALSE:The Maintain Power Signature (MPS) is not to be applied to the PD's PI.

54 TRUE:The MPS is to be applied to the PD's PI.

1
2 [pse_dll_power_level_modeA](#)
3 A control variable output by the PD power control state diagram (Figure 33–50) that indicates the power level of the
4 PSE by which the PD is being powered [over mode A](#).
5 Values:
6 1: The PSE has allocated Class 3 power or less (default).
7 2: The PSE has allocated Class 4 power.
8 3: The PSE has allocated [Class 5](#)
9
10 [pse_dll_power_level_modeB](#)
11 A control variable output by the PD power control state diagram (Figure 33–50) that indicates the power level of the
12 PSE by which the PD is being powered [over mode B](#).
13 Values:
14 1: The PSE has allocated Class 3 power or less (default).
15 2: The PSE has allocated Class 4 power.
16 3: The PSE has allocated [Class 5](#)
17
18 [pse_power_level_modeA](#)
19 A control variable that indicates to the PD [over mode A](#) the level of power the PSE is supplying.
20 Values:
21 3: The PSE has allocated the PD’s requested power or Class 3 power, whichever is less.
22 4: The PSE has allocated the PD’s requested power or Class 4 power, whichever is less.
23 5: The PSE has allocated the PD’s requested power or [Class 6 5](#) power, whichever is less.
24
25 [pse_power_level_modeB](#)
26 A control variable that indicates to the PD [over mode B](#) the level of power the PSE is supplying.
27 Values:
28 3: The PSE has allocated the PD’s requested power or Class 3 power, whichever is less.
29 4: The PSE has allocated the PD’s requested power or Class 4 power, whichever is less.
30 5: The PSE has allocated the PD’s requested power or [Class 6 5](#) power, whichever is less.
31
32 [VPD_modeA](#)
33 Voltage at the PD PI as defined in 1.4.425 [over mode A](#).
34
35 [VPD_modeB](#)
36 Voltage at the PD PI as defined in 1.4.425 [over mode B](#).
37

38 **33.3.3.x3 Type 3 and Type 4 Timers for dual-signature PD**

39 All timers operate in the manner described in 14.2.3.2 with the following addition. A timer is reset and stops counting
40 upon entering a state where “stop x_timer” is asserted.

41 [tpowerdly_timer_modeA](#)
42 A timer used to prevent class 4 Type 3 [dual-signature PDs](#) from drawing more than Type 1 power [over mode A](#) and
43 [class 5](#) Type 4 [dual-signature PDs](#) from drawing more than Class 2 power [over mode A](#) during the PSE’s inrush
44 period; see T_{delay-2P} in Table 33–28.
45

46 [tpowerdly_timer_modeB](#)
47 A timer used to prevent class 4 Type 3 [dual-signature PDs](#) from drawing more than Type 1 power [over mode B](#) and
48 [class 5](#) Type 4 [dual-signature PDs](#) from drawing more than Class 2 power [over mode B](#) during the PSE’s inrush
49 period; see T_{delay-2P} in Table 33–28.
50

51

1

2 **33.3.3.x4 Type 3 and Type 4 Functions dual-signature PD**

3 `do_class_timing_modeA`

4 This function is used by a Type 3 or Type 4 PD to evaluate the Type of PSE connected to the link by measuring the
5 length of the class event [over mode A](#). The class event timing requirements are defined in Table 33–26. This function
6 returns the following variable:

7 `short_mps`: A control variable that indicates to the PD the Type of PSE to which it is connected. This variable
8 is used to indicate which MPS timing requirements (see 33.3.8) the PD should use. Values:
9 TRUE: The PSE uses Type 3, 4 MPS requirements.
10 FALSE: The PSE uses Type 1, 2 MPS requirements.

11

12 `do_class_timing_modeB`

13 This function is used by a Type 3 or Type 4 PD to evaluate the Type of PSE connected to the link by measuring the
14 length of the class event [over mode B](#). The class event timing requirements are defined in Table 33–26. This function
15 returns the following variable:

16 `short_mps`: A control variable that indicates to the PD the Type of PSE to which it is connected. This variable
17 is used to indicate which MPS timing requirements (see 33.3.8) the PD should use. Values:
18 TRUE: The PSE uses Type 3, 4 MPS requirements.
19 FALSE: The PSE uses Type 1, 2 MPS requirements.