Power Matters

Microsemi

Update Figures 33-14x

IEEE802.3bt

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Objectives

- Objective
  - Update Figures 33-14 with its variations to capture PSE types 1-4.

Working Assumptions

- The requirements for per pairset current described by Figure 33-14x are mandatory.
- The requirements on total current is optional unless violating the 100W limits.
  - When total current is observed, it allows cancelation of E2EP2PRunb effect, lower protection margins resulting with smaller transformers.
  - Improved design flexibility

Terms

- Icon-2P_unb, Ipeak-2P, ILIM-2P are the 2P value of the pair with maximum current due to E2EP2PRunb.

- Icon, Ipeak, ILIM is the total 4-Pair current (unbalance effect is canceled) which is shown on the right Y axis.

33.2.4.4 Variables

Iport

Total output current .

Iport-2P

Output current on a pairset (see 33.2.7.6)

Iport-2P-other

Output current on the other pairset, defined as IPort-2P-other = IPort - IPort-2P.

Iport-2P and Iport-2P-other are pairs of the same polarity.

Replace Figure 33-14 title with:
Figure 33-14 – POWER_ON state, operating current templates for Type 1 and Type 2 PSEs

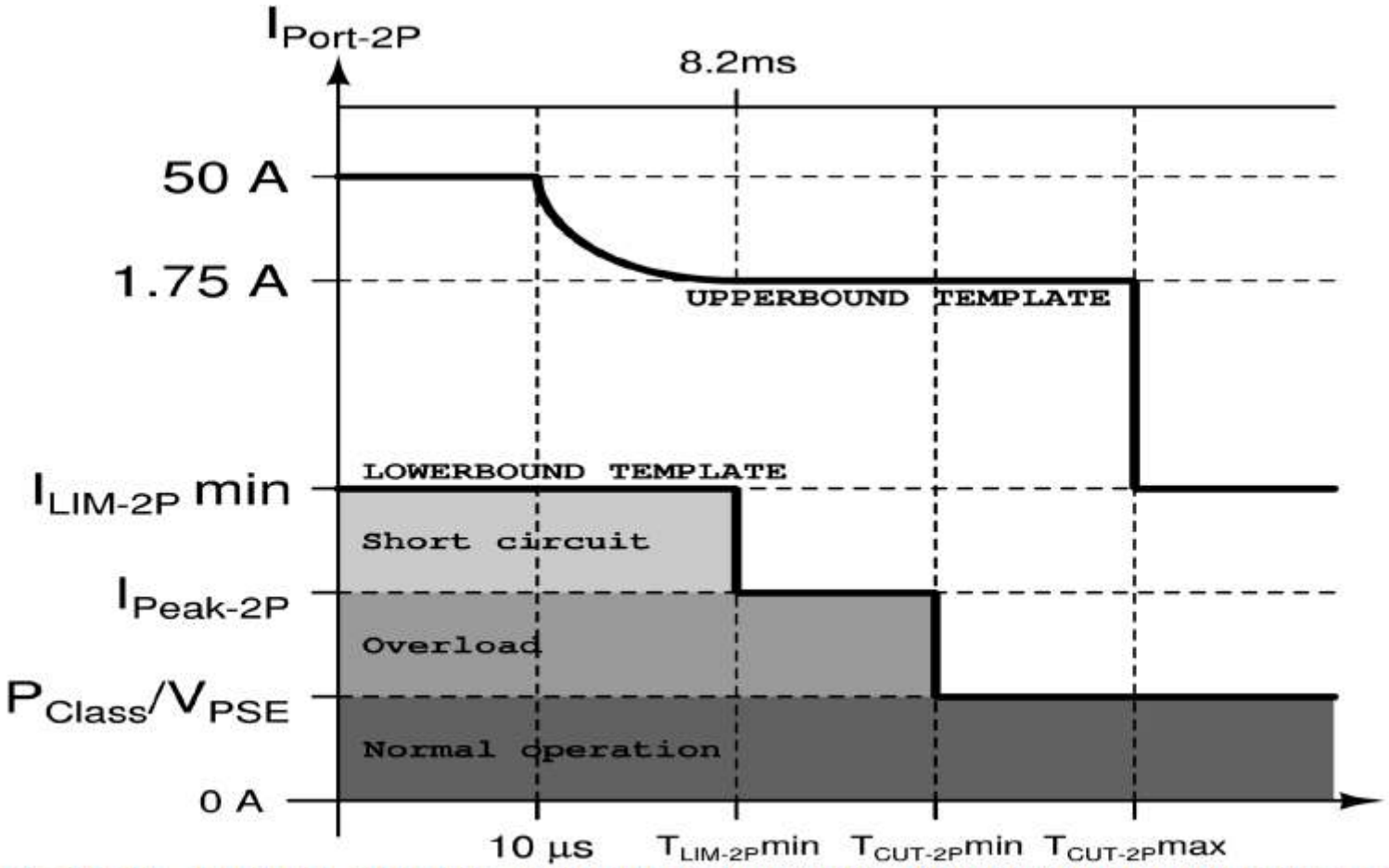

Figure 33–14—POWER_ON state, per pairset operating current templates for PSEs that operate in 2-pair mode, Type 3 and Type 4 dual-signature PSEs

Insert new Figure 33-14a as follows:

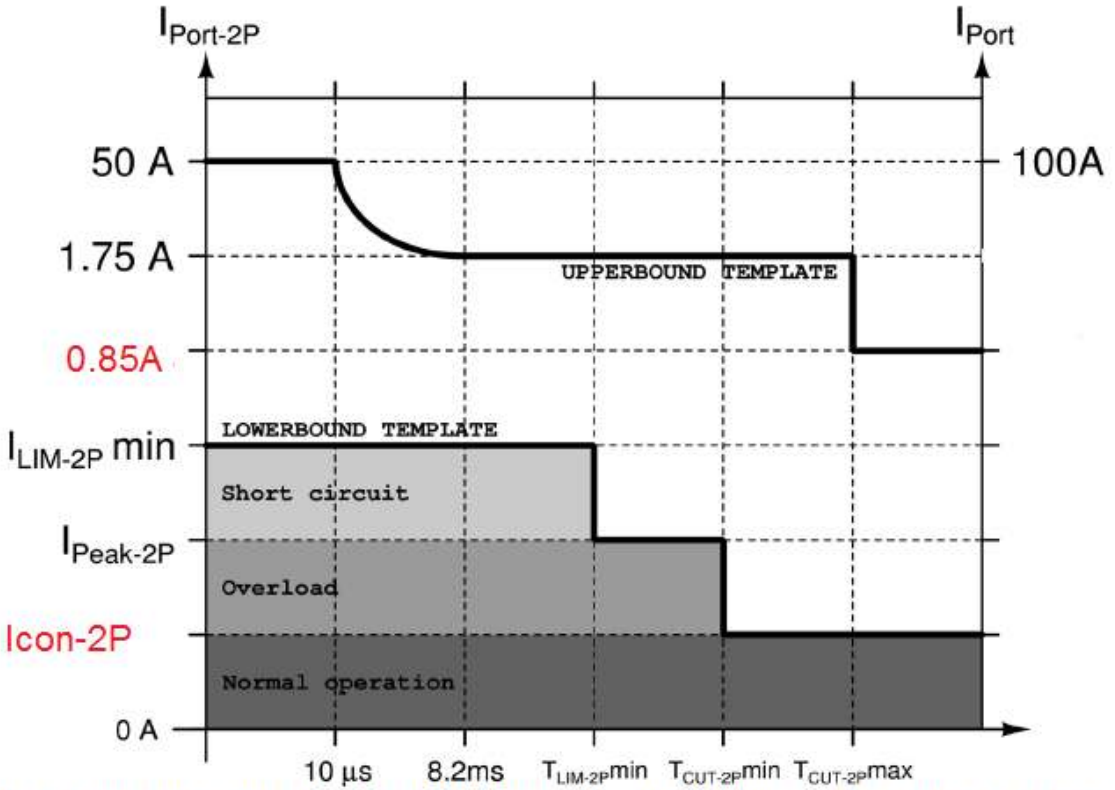

Figure 33–14a—POWER_ON state, per pairset operating current templates for Type 3 PSEs in 4-pair mode connected to single-signature PDs

1. Replace Figure 33-14a title with:
   Figure 33-14a – POWER_ON state, operating current templates for Type 3 and Type 4 PSEs operating in 2P-mode or Type 3 and 4 PSEs operating in 4P-mode when connected to dual signature PD with different class signature on each pairset.
2. Update the red text in the drawing

Insert new Figure 33-14b as follows:

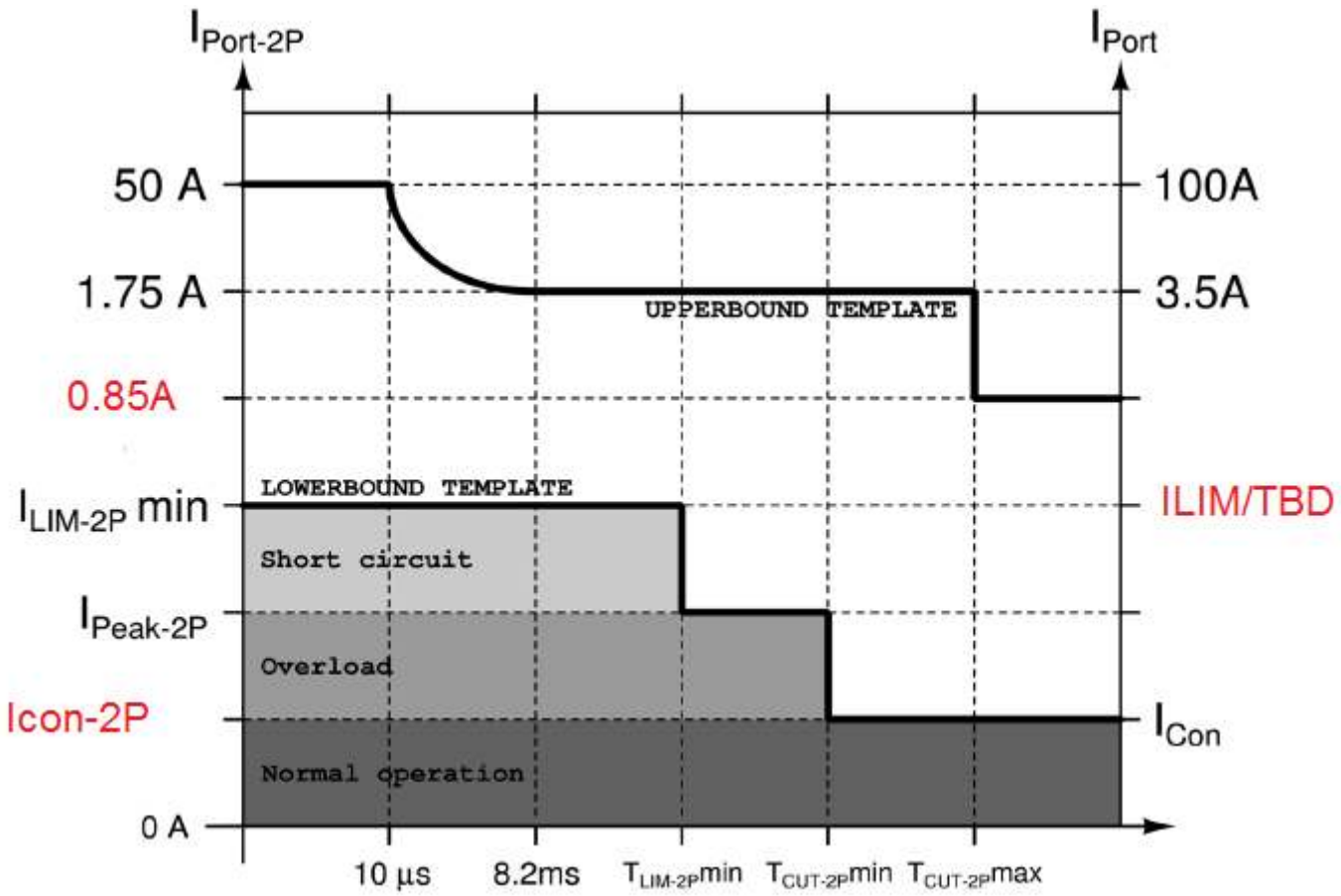

Figure 33-14b – POWER_ON state, operating current templates for Type 3 PSEs operating in 4P-mode and connected to single signature PD, or connected to dual signature PD with the same class per pairset.

Insert new Figure 33-14c as follows:

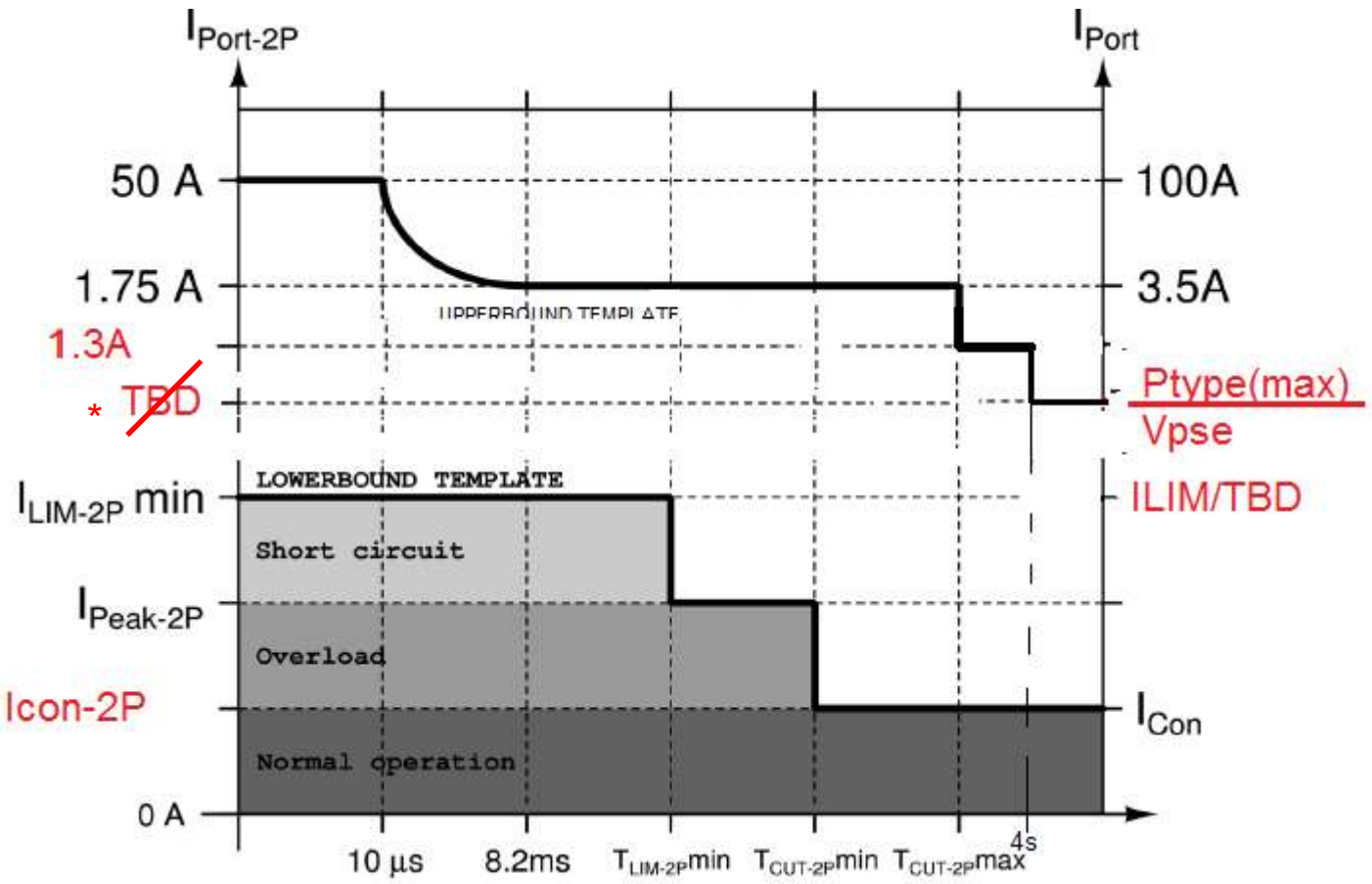

Figure 33-14c – POWER_ON state, operating current templates for Type 4 PSEs operating in 4P-mode and connected to single signature PD, or connected to dual signature PD with the same class per pairset.

---------- Not part of the Baseline ----------

*The TBD is not needed on Iport-2P axis since it is covered by the range ILIM-2P and 1.3A

ILIM vs ILIM-2P or why we need ILIM

Class	ILIM-2P	2xILIM-2P	ILIM
6	702	1404	1076 to 1258
8	990	1980	1445 to 1814

- ILIM-2P includes E2EP2PRunb effect which increase the protection margins for 2xILIM-2P.
- We can see that with ILIM we will have less unrequired margins since E2EP2PRunb effect is canceled.
- It allows PSE to design for smaller transformers if ILIM can optionally can be used as well (in addition to ILIM-2P)
- It may be better to express ILIM as e.g. 1.15*Icon to account for Pclass/Vport_PSE that is hidden in Icon.

Discussion

Thank You