Addressing comments 29, 212, 213, 227

Comment

1) As discuss in March meeting, Type 3 dual-signature PSE with 0.2A minimum current per pairset may not be sufficient to ensure completion of inrush within ~~50mA~~ 50ms with class 2 load when constant power sink load is used in the PD model at Vpd approaching the 30V range.

2) In addition: Type 1 and Type 2 PDs are using Iinrush_max set to 0.4A and when it is internally Inrush limited it is between 200mA to 350mA while now for Type 3 dual-signature it will be 0.25A maximum so the actual internally Iinrush limiting will be lower than 0.25A which will force having two PD chips instead of one single chip having similar working range. This item alone requires discussion in the group.

To resolve (1) , calculations showed that for dual-signature PDs class 1-4, 0.25A minimum per pairset is required at the PSE and 0.25A max at the PD.

To resolve (2) further increase in Iinrush may be required but this needs group discussion.

Suggested Remedy

Table 33–28—PD power supply limits

Item	Parameter	Symbol	Unit	Min	Max	PD Type	Additional Information
Input Inrush current as function of the assigned class when the PD is limiting the current during inrush period per 33.3.7.3.							
6	Single signature PD Class 0 to 6.	Inrush-PD	**A**		**0.4**	**All**	Peak value see 33.3.7.3
	Single Signature PDs Class 7 to 8.				**0.8**	**4**	
	Dual-Signature PD class 1 to 4				~~**0.4**~~ **0.5**	**3**	
	Dual-Signature PD class 5				**0.65**	**4**	
Input Inrush current per pairset as function of the assigned class and when the PD is limiting the current during inrush period per 33.3.7.3.							
7	Single signature PD Class 0 to 6.	Inrush-PD-2P	**A**		**0.4**	**All**	Peak value see 33.3.7.3
	Single Signature PDs Class 7 to 8.				**0.6**	**4**	
	Dual signature PD Class 1 to 4				~~**0.2**~~**0.25**	**3**	
	Dual signature PD Class 5				**0.325**	**4**	

Table 33–17—PSE output PI electrical requirements for all PD classes, unless otherwise specified

#	Parameter	Symbol	Units	Min	Max	PSE Type	Additional Information
7	Total output current of both pairsets of the same polarity in POWER_UP state as function of the assigned class.						
	Single Signature PD Class 0 to 4.	Iinrush	A	0.4	0.45	All	See 33.2.8.5 and maximum value definition in Figure 33-26. For Type 4 PSEs, also see 33.2.8.5.1.
	Single Signature PD Class 5 to 6.			0.4	0.9	3,4	
	Single Signature PD Class 7 to 8.			0.8	0.9	4	
	Dual Signature PD Class 1 to 4.			~~0.4~~ 0.5	0.9	3,4	
	Dual Signature PD, Class 5.			0.65	0.9	4	
8	Output current per pairset in POWER_UP state as function of the assigned class.						
	Single Signature PD Class 0 to 4.	Iinrush-2P	A		0.45	**3,4**	See 33.2.8.5 and maximum value definition in Figure 33-26. For Type 4 PSEs, also see 33.2.8.5.1.
	Single Signature PD class 5 to 6.				0.6	3,4	
	Single Signature PD Class 7 to 8.				0.6	4	
	Dual Signature PD Class 1 to 4.			~~0.2~~ 0.25A	0.6	3,4	
	Dual Signature PD, Class 5.			0.325	0.6	4	

33.2.8.5.1 Type 4 minimum inrush current requirements

A Type 4 PSE, when connected to a single-signature PD with assigned Class 7 or Class 8, may implement a minimum IInrush lower than defined in Table 33–17, but not less than 0.4A ~~respectively~~. Such a PSE that implements a minimum IInrush ~~When a Type 4 PSE is connected to a single-signature PD with assigned Class 7 or Class 8 and uses a~~ lower than ~~IInrush than which is~~ defined in Table 33–17~~, it~~ shall successfully power up a single-signature PD comprised of a parallel combination of 360uF and a Class 2 load within TInrush-2p min without startup oscillations during ~~the~~ POWER_UP ~~period~~, when connected to the PD through channel resistance of 0.1Ω to 12.5Ω per pairset.

A Type 4 PSE, when connected to a dual ~~-~~signature PD with assigned Class 5, may implement a minimum I_{Inrush} and $I_{Inrush-2P}$ lower than defined in Table 33–17, but not less than ~~0.4~~0.5A and ~~0.2~~0.25A respectively. Such a PSE that implements a minimum IInrush and $I_{Inrush-2P}$ ~~When a Type 4 PSE is connected to a dual-signature PD with assigned Class 5 and uses a~~ lower than ~~IInrush-2P than those~~ defined in Table 33–17~~, it~~ shall successfully power up a dual-signature PD comprised of a parallel combination of ~~110uF~~ 180uF per pairset and a Class 2 ~~(TBD)~~ load on ~~per~~ each pairset within TInrush-2p min without startup oscillations during ~~the~~ POWER_UP ~~period~~, when connected to the PD through channel resistance of 0.1Ω to 12.5Ω per pairset.