802.3da
PSE Power Output

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ANALOG DEVICES

AHEAD OF WHAT'S POSSIBLE™

Summary

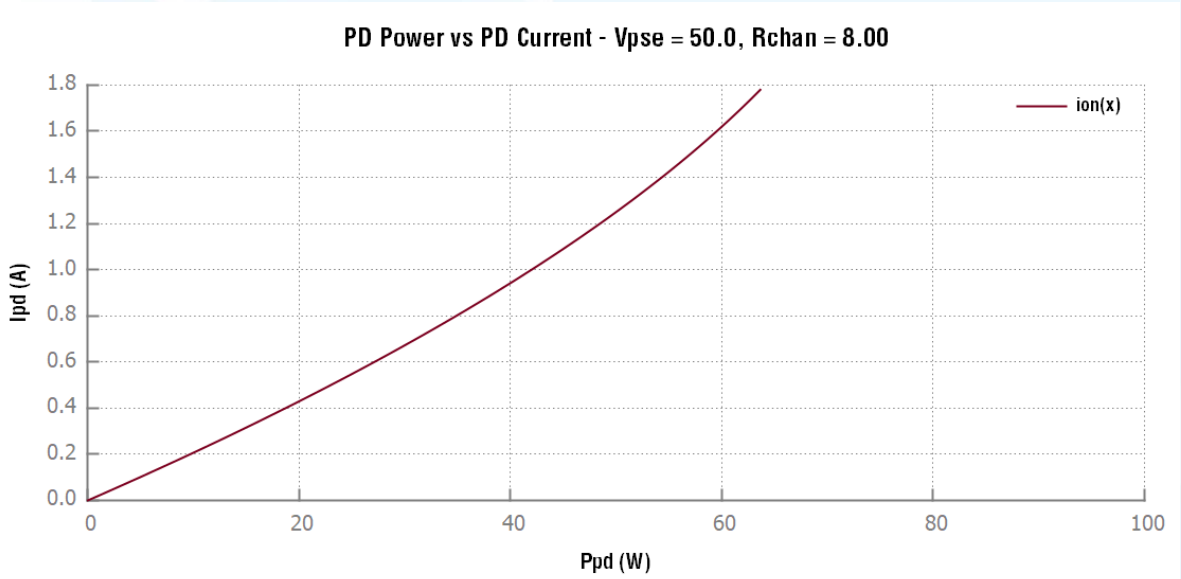
- Copy as many parameters as possible from clause 145 (802.3bt) and/or clause 104 (802.3bu)
  - Allow us to use the high volume MOSFETs that are used in PoE
- Open a discussion on cable resistance
  - We need estimates for resistance in each node’s connection to the mixing segment

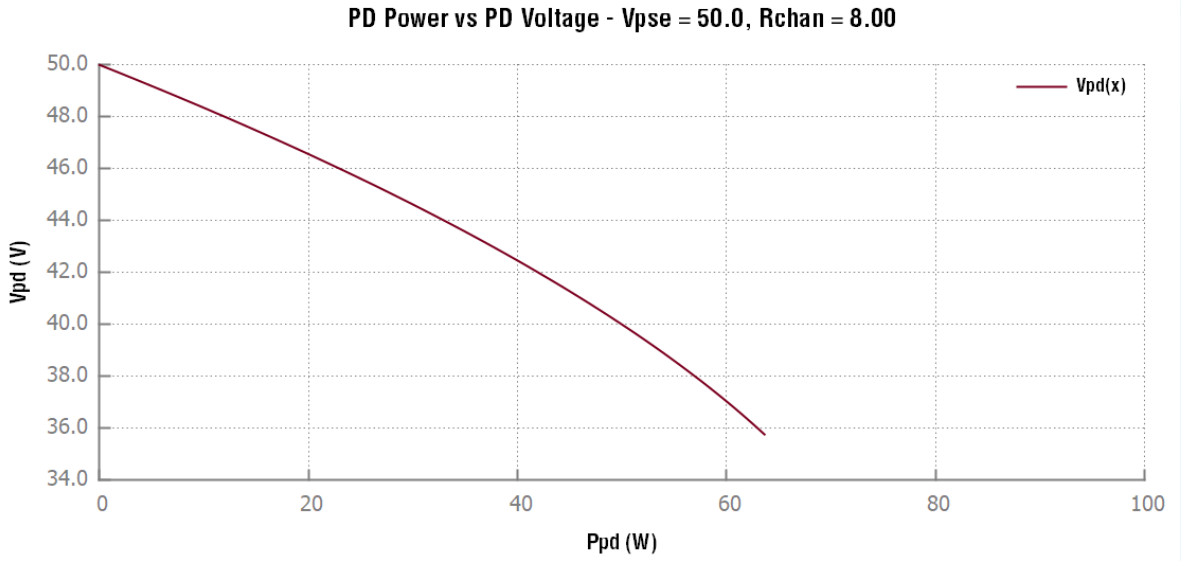
PSE Output Requirements

Item	Parameter	Symbol	Min	Max	Units	Notes
1	Output voltage in power on state	Vpse	50	57	V	Same as 802.3bt (type 3)
2	Inrush current	Iinrush	400	450	mA	Reuse PoE MOSFETs
3	Short circuit current	Ilim	TBD	1.75	A	Reuse PoE MOSFETs
4	Short circuit time limit	Tlim	6	75	ms	Reuse PoE MOSFETs
5	Overload power	Pcut	TBD	TBD		Based on power allocated to PDs?
6	Overload time limit	Tcut	50	75	ms	Same as 802.3bt (~6% over-power in a 1s sliding window)
7	Power turn on time	Tpon	-	TBD	ms	
8	Turn on rise time	Trise	TBD	-	ms	Don’t disturb the data
9	Turn off time	Toff	-	500	ms	Same as 802.3bt
10	Turn off voltage	Voff	-	TBD	V	
11	Error delay timing	Ted	750	-	ms	Same as 802.3bt

What is the channel resistance?

- Need to know channel resistance to portion out PD power
- Cable resistance estimation
  - AWG 18 (32 mΩ/m)
    - 75 meters
    - R = 2 * 75m * 0.032mΩ/m = 4.8Ω
    - Needs adjustments for cable heating
  - 32 connections to the mixing segment
    - 100mΩ / connection ? (guessing)
    - R = 3.2Ω
  - Estimate channel resistance is 8.0 ohms
- Assume all power is drawn at the end of the cable
  - 31 data-only, 1 highest power PD
  - P_{PSE} = 90W
  - $P_{PD,MAX}$ ~= 63W





Consensus?

- Vpse - Output voltage in power on state, 50V-57V?
- Given Vpse, these values will allow the reuse of high volume MOSFETs
  - Inrush current, 400mA-450mA?
  - Short circuit current, 1.75mA (max)?
  - Short circuit time limit, 6ms-75ms?