

PD Transients (D3.1) v100

Info (not part of baseline)

The PD transient requirements:

145.3.8.6 PD behavior during transients at the PSE PI

A PD shall continue to operate without interruption in the presence of transients:

- lasting longer than 30 μ s and less than 250 μ s at the PSE PI as defined in 145.2.8.3
- lasting less than 30 μ s and causing the voltage at the PD PI to fall to not less than 34 V.

During a transient the input power of the PD may exceed $P_{\text{Peak_PD}}$ or $P_{\text{Peak_PD-2P}}$. Table 145–30 defines three PSE output voltage transients.

Table 145–30—Transient conditions

Item	Assigned Class	$T_{\text{Transient}}$	Initial voltage	Final voltage	Source dv / dt	Source resistance ^a	Source current
TR1	1 to 6	10 ms	50 V	56 V	2250 V/s	$R_{\text{Ch}} \pm 2.5\%$	$I_{\text{LIM-2P}} + 5 \text{ mA}$
TR2	1 to 8	6 ms	52 V				
TR3	—	—	$V_{\text{Port_PSE-2P min}}$	$V_{\text{Port_PSE-2P min}} + 2.5 \text{ V}$	3.5 V/ μ s	$1.5 \Omega \pm 2.5\%$	> 5 A capability

^aThe source resistance is the effective 4-pair resistance.

When transient TR1 or TR2 is applied, the PD shall meet the operating power limits after $T_{\text{Transient}}$ as defined in Table 145–30.

When transient TR3 is applied, the PD shall meet the operating power limits within 4 ms.

Issues

- Does not specify properly what is meant by “source resistance”
- Does not deal with 2-pair / 4-pair
- Needlessly complicates TR3 by using both 50 V and 52 V as the starting voltage when a single voltage range is possible
- Does not specify what the reference point for $T_{\text{Transient}}$ is
- Violates style guide by mixing different order of magnitude for same unit

145.3.8.6 PD behavior during transients at the PSE PI

Replace Table 145–30 as follows:

Table 145–30 — Transient conditions

Item	Assigned Class	2-pair/ 4-pair	$T_{\text{Transient}}$	Initial voltage	Final voltage	Source dv/dt	Source resistance	Source current ^a
TR1	1 to 4	2-pair	10 ms	50 V	56 V	2.25 V/ms	12.5 Ω	Limit to $I_{\text{LIM-2P}} + 5 \text{ mA}$
	1 to 6	4-pair					6.25 Ω	
TR2	1 to 4	2-pair	6 ms	52 V		12.5 Ω		
	1 to 8	4-pair				6.25 Ω		
TR3	1 to 8	both	4 ms	52 V	54.5 V	3500 V/ms	1.5 Ω	> 5 A capability

^a The source current for TR1 and TR2 is the current limit per powered pairset.

Change text in 145.3.8.6 as follows:

A PD shall continue to operate without interruption in the presence of transients:

- lasting longer than 30 μs and less than 250 μs at the PSE PI, as defined in 145.2.8.3, and causing the voltage at the PD PI to fall to not less than $V_{\text{Tran_PD-2P}}$, as defined in Table 145–29
- lasting less than 30 μs and causing the voltage at the PD PI to fall to not less than 34 volt.

Insert new text after Table 145–30 as follows:

The TR1, TR2, and TR3 tests consists of a voltage source, with a current limit (for TR1 and TR2), driven from the ‘initial voltage’ to the ‘final voltage’ a the ‘source dv/dt’ rate. A source resistance, as defined in Table 145–30 is in series with this voltage source and the PD.

Change text in 145.3.8.6 as follows:

When transient TR1 or TR2 is applied, the PD shall meet the operating power limits after $T_{\text{Transient}}$, as defined in Table 145–30, referenced from when the ‘final voltage’ is reached at the source. When transient TR3 is applied, the PD shall meet the operating power limits within 4 ms, referenced from the beginning of of TR3 transient.

145.3.8 PD power

Info (not part of baseline)

Some of the additional information pointers in Table 145–29 point to sections no longer dealing with the parameter, or are missing relevant pointers.

Change the “Additional information” in Table 145–29 as follows:

Item 2	$V_{\text{Tran_PD-2P}}$	See 145.3.8.1 145.3.8.6
Item 3	$V_{\text{Overload-2P}}$	See 145.3.8.4, Table 145–1
Item 10	$P_{\text{Class_PD}}$	See 145.3.8.2, 145.3.6, Table 145–1, Table 145–26
Item 11	$P_{\text{Class_PD-2P}}$	See 145.3.8.2, 145.3.6, Table 145–1, Table 145–27