



Clause 169 Power Parameters

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Response to Comments 150, 151 and 152

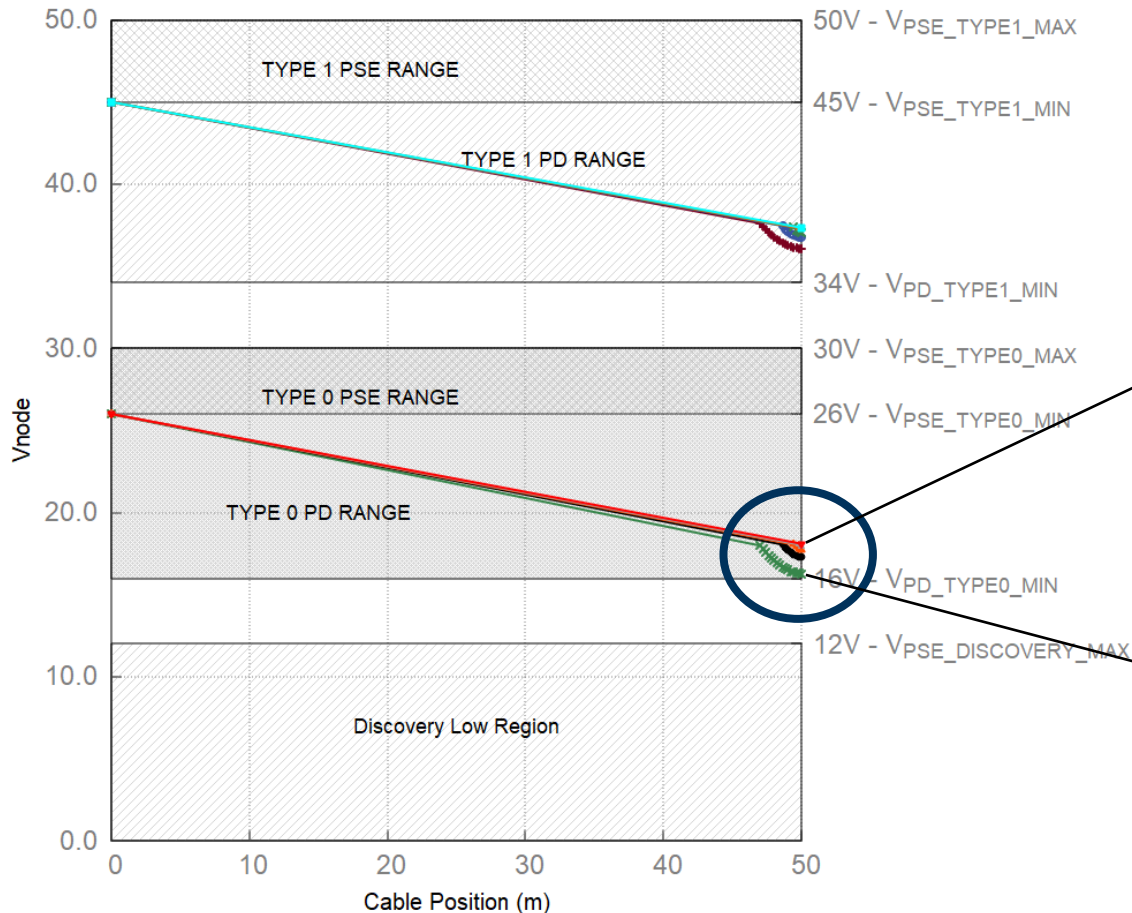
ID	CommenterName	CommenterCo	Clause	Subclause	Page	Line	Type	Comment
150	Paul, Michael	Analog Devices	169	169.3	89	31	T	Typo in table 169-1, $V_{\text{MPD,min}}$ should be 16V
151	Paul, Michael	Analog Devices	169	169.3	89	33	T	Inconsistent values in table 169-1. $16\text{U} \times 1\text{W} = 16\text{W}$, $V_{\text{MPD,min}} = 16\text{V}$, $16\text{W}/16\text{V} = 1\text{A}$. So Type 0 $I_{\text{TCl_MPSE(min)}}$ must be $> 1\text{A}$, Currently set to 866mA
152	Paul, Michael	Analog Devices	169	169.3	89	34	T	Inconsistent values in Table 169-1. $1\text{A} \times 26\text{V} = 26\text{W}$, $P_{\text{MPSE_16U(min)}}$ should be greater than 26W

Table 169–1—System Power Types

Contact	30V Max MPSE	50V Max MPSE	Units
System type	0	1	
$V_{\text{MPSE(max)}}$	30	50	V
$V_{\text{MPSE(min)}}$	26	45	V
$V_{\text{MPD(min)}}$	18	34	V
$I_{\text{TCl_MSPE(min)}}$	889	941	mA
$P_{\text{MPSE_16U(min)}}$	23	42	W
$P_{\text{MPSE_1U(min)}}$	1	2	W

Comments 151 and 152

Higher unit load systems have less channel resistance



Nodes	Unit load level	Rchan (Ω)	Last MPD Voltage (V)	P _{MPSE_16U} (W)	I _{TCI_MPSE} (W)
1	16	8.94	18.10	22.998	0.885
2	8	9.18	19.94	23.118	0.889
4	4	9.58	17.74	23.282	0.895
8	2	10.38	17.29	23.673	0.911
16	1	11.98	16.28	24.660	0.948

Round to 26W

Round to 1A

Resolution to comments 150, 151 and 152

Table 169–1—System Power Types

Contact	30V Max MPSE	50V Max MPSE	Units
System type	0	1	
$V_{MPSE(max)}$	30	50	V
$V_{MPSE(min)}$	26	45	V
$V_{MPD(min)}$	18 16	34	V
$I_{TCI_MSPE(min)}$	889 1000	941	mA
$P_{MPSE_16U(min)}$	23 26	42	W
$P_{MPSE_1U(min)}$	1	2	W

~~$P_{MPSE_1U(max)}$~~

ID	CommenterName	CommenterCo	Clause	Subclause	Page	Line	Type	Comment
150	Paul, Michael	Analog Devices	169	169.3	89	31	T	Typo in table 169-1, $V_{MPD,min}$ should be 16V
151	Paul, Michael	Analog Devices	169	169.3	89	33	T	Inconsistent values in table 169-1. $16U * 1W = 16W$, $V_{MPD,min} = 16V$, $16W/16V = 1A$. So Type 0 $I_{TCI_MPSE(min)}$ must be $> 1A$, Currently set to 866mA
152	Paul, Michael	Analog Devices	169	169.3	89	34	T	Inconsistent values in Table 169-1. $1A * 26V = 26W$, $P_{MPSE_16U(min)}$ should be greater than 26W

Comments

156, 157, 159 and 160

Comments on Table 169-5 (d1.1)

Paul, 156 Michael	Analog Devices	169 169.4.7	98	9 T	What's up with item 2 units and values? 100mA max doesn't make sense
Paul, 157 Michael	Analog Devices	169 169.4.7	98	14 T	Fill TBD for item 4 in table 169-6
Paul, 159 Michael	Analog Devices	169 169.4.7	98	30 T	Fill in item 11 in table 169-6
Paul, 160 Michael	Analog Devices	169 169.4.8	98	38 T	TBD in text block

Table 169-5—PSE output requirements

Item	Parameter	Symbol	Unit	Min	Max	Type	Additional Information
1	DC output voltage during POWER_ON state	$V_{MPSE(ON)}$	V	26	30	0	
				45	50	1	
2	Continuous output current capability in POWER_ON state	$P_{avg}/V_{MPSE(ON)}$	mA	TBD	100	0	
				TBD	100	1	
3	Output Slew Rate		dV/dt	TBD	TBD	ALL	
4	Output current - at short circuit condition	I_{LIM}	A	TBD	TBD	ALL	
5	Short-circuit time limit	T_{LIM}	ms	10	75	ALL	
6	Inrush time	T_{Inrush}	ms	10	20	ALL	
7	MPD Maintain power signature dropout time limit	T_{MPSDO}	ms	TBD	TBD	ALL	
8	PD MPS time for validity	T_{MPS}	ms	6	-	ALL	
9	DC MPS current	I_{HOLD}	A	4	9	ALL	
10	Error delay timing	T_{ED}	ms	750	-	ALL	
11	Overload current	I_{CUT}	A	TBD	TBD	ALL	
12	Overload time limit	T_{CUT}	ms	50	70	ALL	

169.4.8 Continuous output power in POWER_ON state

TBD is the minimum continuous power that the MPSE shall be capable of supplying as defined in Table 169-5.

Comment 157 – Current Limit

I am willing to withdraw Comment 157 unless the room would like to have a discussion on current limits.

From my point of view this topic needs more research and data before numbers can be entered in the table.

Comment 156

Table 104-7—PSE output requirements

Item	Parameter	Symbol	Unit	Min	Max	Class	Type	Additional information
1	DC output voltage during POWER_ON state	$V_{PSE(PON)}$	V	Class $V_{PSE(min)}$	Class $V_{PSE(max)}$	All	All	See 104.4.7.1 and Table 104-1
2	Continuous output current capability in POWER_ON state		mA	P_{Class}/V_{PSE}	—	All	All	See Table 104-1

Table 169-5—PSE output requirements

Item	Parameter	Symbol	Unit	Min	Max	Type	Additional Information
1	DC output voltage during POWER_ON state	$V_{MPSE(PON)}$	V	26	30	0	
45				50	1		
2	Continuous output current capability in POWER_ON state	$P_{avg}/V_{MPSE(PON)}$	mA	TBD	100	0	
TBD				100	1		
3	Output Slew Rate		dV/dt	TBD	TBD	ALL	
4	Output current - at short circuit condition	I_{LIM}	A	TBD	TBD	ALL	
5	Short-circuit time limit	T_{LIM}	ms	10	75	ALL	
6	Inrush time	T_{Inrush}	ms	10	20	ALL	
7	MPD Maintain power signature dropout time limit	T_{MPSDO}	ms	TBD	TBD	ALL	
8	PD MPS time for validity	T_{MPS}	ms	6	-	ALL	
9	DC MPS current	I_{HOLD}	A	4	9	ALL	
10	Error delay timing	T_{ED}	ms	750	-	ALL	
11	Overload current	I_{CUT}	A	TBD	TBD	ALL	
12	Overload time limit	T_{CUT}	ms	50	70	ALL	

- The idea for Table 169-5 Item 2 comes from Table 104-7
- Clause 104 does not have I_{CUT}
- Rely on Table 169-11 Item 11 I_{CUT} for minimum current spec
- Change Item 2 to reflect continuous output **power**

169.4.8 Continuous output power in POWER_ON state

TBD is the minimum continuous power that the MPSE shall be capable of supplying as defined in Table 169-5.

Comment 159 – Overload Current

- Need to fill in TBDs for **ICUT**
- The purpose of **ICUT** is to allow for power management in multi-port MPSE systems.
 - Minimum is based on power and output voltage
 - $P_{\{MPSE_16U\}} / V_{\{MPSE_PON\}}$
 - No maximum **ICUT**
 - Current limit **ILIM** will enforce the **ICUT** upper bound

Table 169–5—PSE output requirements

Item	Parameter	Symbol	Unit	Min	Max	Type	Additional Information
1	DC output voltage during POW-ER_ON state	$V_{MPSE(PON)}$	V	26	30	0	
				45	50	1	
2	Continuous output current capability in POWER_ON state	$P_{avg}/V_{MPSE(PON)}$	mA	TBD	100	0	
				TBD	100	1	
3	Output Slew Rate		dV/dt	TBD	TBD	ALL	
4	Output current - at short circuit condition	I_{LIM}	A	TBD	TBD	ALL	
5	Short-circuit time limit	T_{LIM}	ms	10	75	ALL	
6	Inrush time	T_{Inrush}	ms	10	20	ALL	
7	MPD Maintain power signature dropout time limit	T_{MPSDO}	ms	TBD	TBD	ALL	
8	PD MPS time for validity	T_{MPS}	ms	6	-	ALL	
9	DC MPS current	I_{HOLD}	A	4	9	ALL	
10	Error delay timing	T_{ED}	ms	750	-	ALL	
11	Overload current	I_{CUT}	A	TBD	TBD	ALL	
12	Overload time limit	T_{CUT}	ms	50	70	ALL	

169.4.8 Continuous output power in POWER_ON state

TBD is the minimum continuous power that the MPSE shall be capable of supplying as defined in Table 169–5.

Comment 160 – Fill In TBD

- There is no symbol for continuous power Table 169-5
- Change TBD to **PMPSE_16U**

Table 169-5—PSE output requirements

Item	Parameter	Symbol	Unit	Min	Max	Type	Additional Information
1	DC output voltage during POWER_ON state	$V_{MPSE(PON)}$	V	26	30	0	
				45	50	1	
2	Continuous output current capability in POWER_ON state	$P_{avg}/V_{MPSE(PON)}$	mA	TBD	100	0	
				TBD	100	1	
3	Output Slew Rate		dV/dt	TBD	TBD	ALL	
4	Output current - at short circuit condition	I_{LIM}	A	TBD	TBD	ALL	
5	Short-circuit time limit	T_{LIM}	ms	10	75	ALL	
6	Inrush time	T_{Inrush}	ms	10	20	ALL	
7	MPD Maintain power signature dropout time limit	T_{MPSDO}	ms	TBD	TBD	ALL	
8	PD MPS time for validity	T_{MPS}	ms	6	-	ALL	
9	DC MPS current	I_{HOLD}	A	4	9	ALL	
10	Error delay timing	T_{ED}	ms	750	-	ALL	
11	Overload current	I_{CUT}	A	TBD	TBD	ALL	
12	Overload time limit	T_{CUT}	ms	50	70	ALL	

169.4.8 Continuous output power in POWER_ON state

TBD is the minimum continuous power that the MPSE shall be capable of supplying as defined in Table 169-5.

Changes for Adoption, Comments 156,159, and 160

- Change TBD at the beginning of subsection 169.4.8 to PMPSE_16U
- Adopt changes to Table 169-5 as shown in the table below

Item	Parameter	Symbol	Unit	Min	Max	Type	Additional Information
2	Output power capability in POWER_ON state	PMPSE_16U	W	26	100	0	
				42	100	1	
11	Overload Current	ICUT	A	PMPSE_16U / VMPSE(PON)	-	ALL	

Table 169-5—PSE output requirements

Item	Parameter	Symbol	Unit	Min	Max	Type	Additional Information
1	DC output voltage during POWER_ON state	V _{MPSE(PON)}	V	26	30	0	
				45	50	1	
2	Continuous output current capability in POWER_ON state	Pavg V_{MPSE(PON)}	mA	TBD	100	0	
				TBD	100	1	
3	Output Slew Rate		dV/dt	TBD	TBD	ALL	
4	Output current - at short circuit condition	I _{LIM}	A	TBD	TBD	ALL	
5	Short-circuit time limit	T _{LIM}	ms	10	75	ALL	
6	Inrush time	T _{Inrush}	ms	10	20	ALL	
7	MPD Maintain power signature dropout time limit	T _{MPSDO}	ms	TBD	TBD	ALL	
8	PD MPS time for validity	T _{MPS}	ms	6	-	ALL	
9	DC MPS current	I _{HOLD}	A	4	9	ALL	
10	Error delay timing	T _{ED}	ms	750	-	ALL	
11	Overload current	I _{CUT}	A	TBD	TBD	ALL	
12	Overload time limit	T _{CUT}	ms	50	70	ALL	

169.4.8 Continuous output power in POWER_ON state

TBD is the minimum continuous power that the MPSE shall be capable of supplying as defined in Table 169-5.