System Performance Test Report

RT7885A 1A1C 36W Power Bank EVB with one USB-C and one USB-A outputs

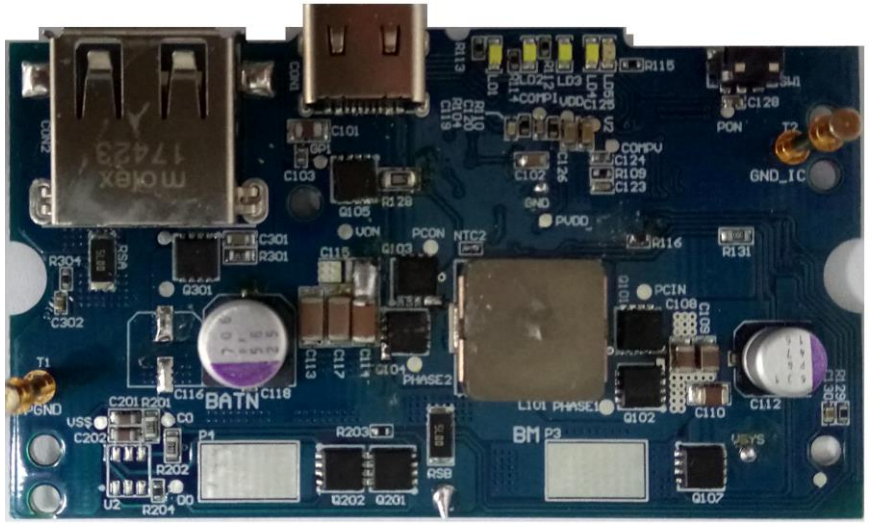
System Dev & Application Eng Dept
ACDC Business Group

Aug 13, 2018

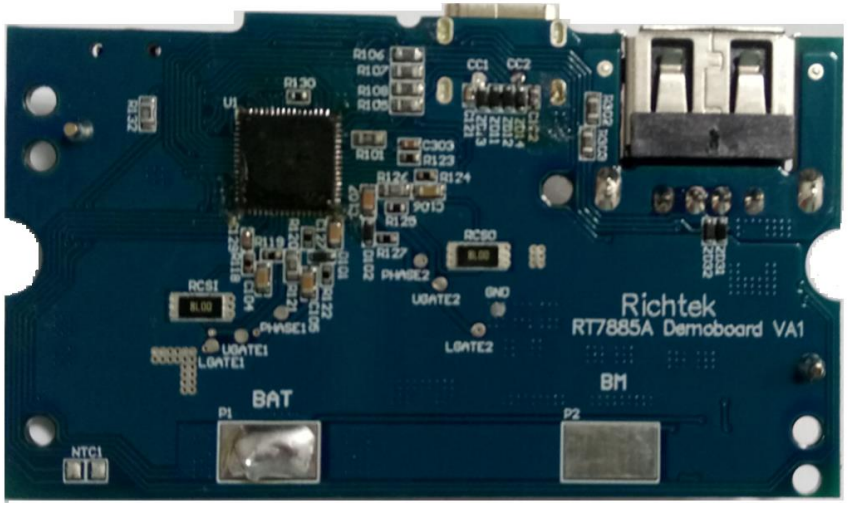
RICHTEK
your power partner.

Pictures of Demoboard

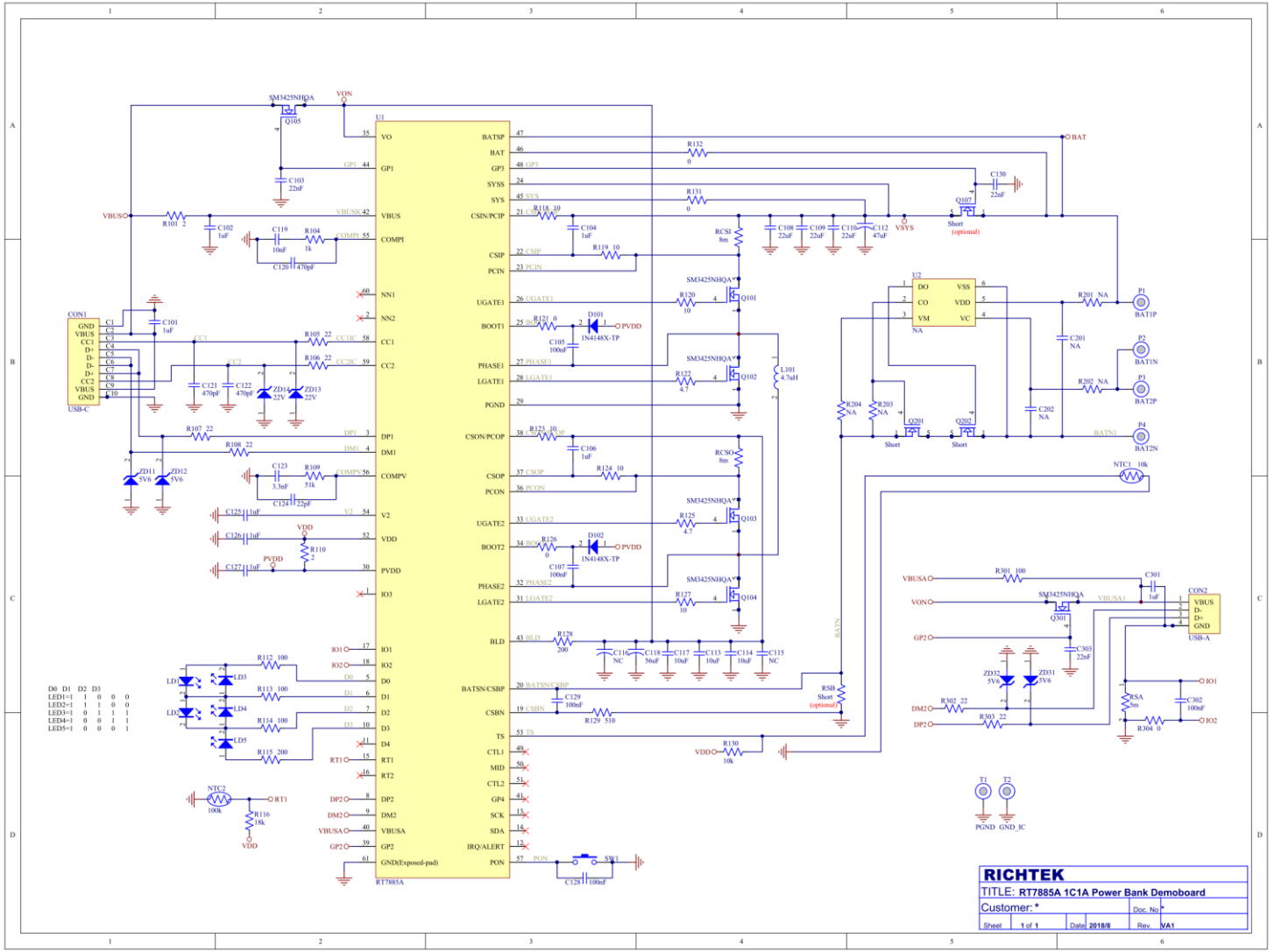
Top View



Bottom View



Application Circuit



Features of Demo board

- **Provider (Source) Mode**
  - V_{BAT} range : 7.0V~8.4V
  - Output Support

    Type C: PD : 5V/3A, 9V/3A, 12V/3A, 15V/2.4A, 20V/1.8A
    SCP : 5V/4.5A, 10V/3A
    FCP : 5V/2A, 9V/2A, 12V/2A
    QC : 5V/2A, 9V/2A, 12V/2A

    Type A: SCP : 5V/4.5A, 10V/3A
    FCP : 5V/2A, 9V/2A, 12V/2A
    QC : 5V/2A, 9V/2A, 12V/2A

    Other : 1)Port A no output when Port C is charging
    2) Port C and Port A support DCP(D+ D- short) only when Port A and Port C all connect.
    3) Support LED
- **Sink Mode**
  - Input voltage (V_{IN}) range : Type C: 5V
  - Output Voltage: V_{BAT} 5.5V~8.0V

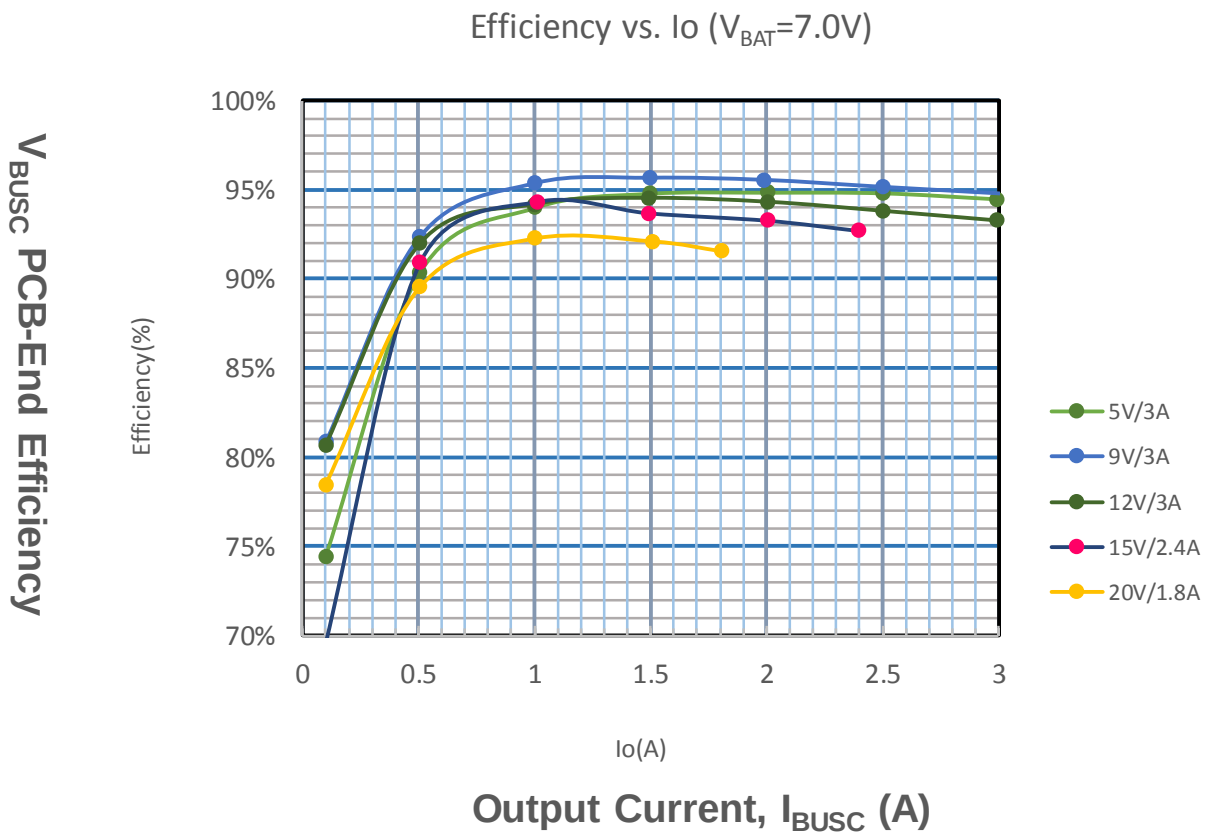
System Performance Test

- Efficiency
- Output Ripple
- I/V Curve
- Protection (V_{BUS} UVP)

Efficiency vs. Output Current

V_{BUSC} Efficiency vs. Output Current at V_{BAT}=7.0V (Provider mode)

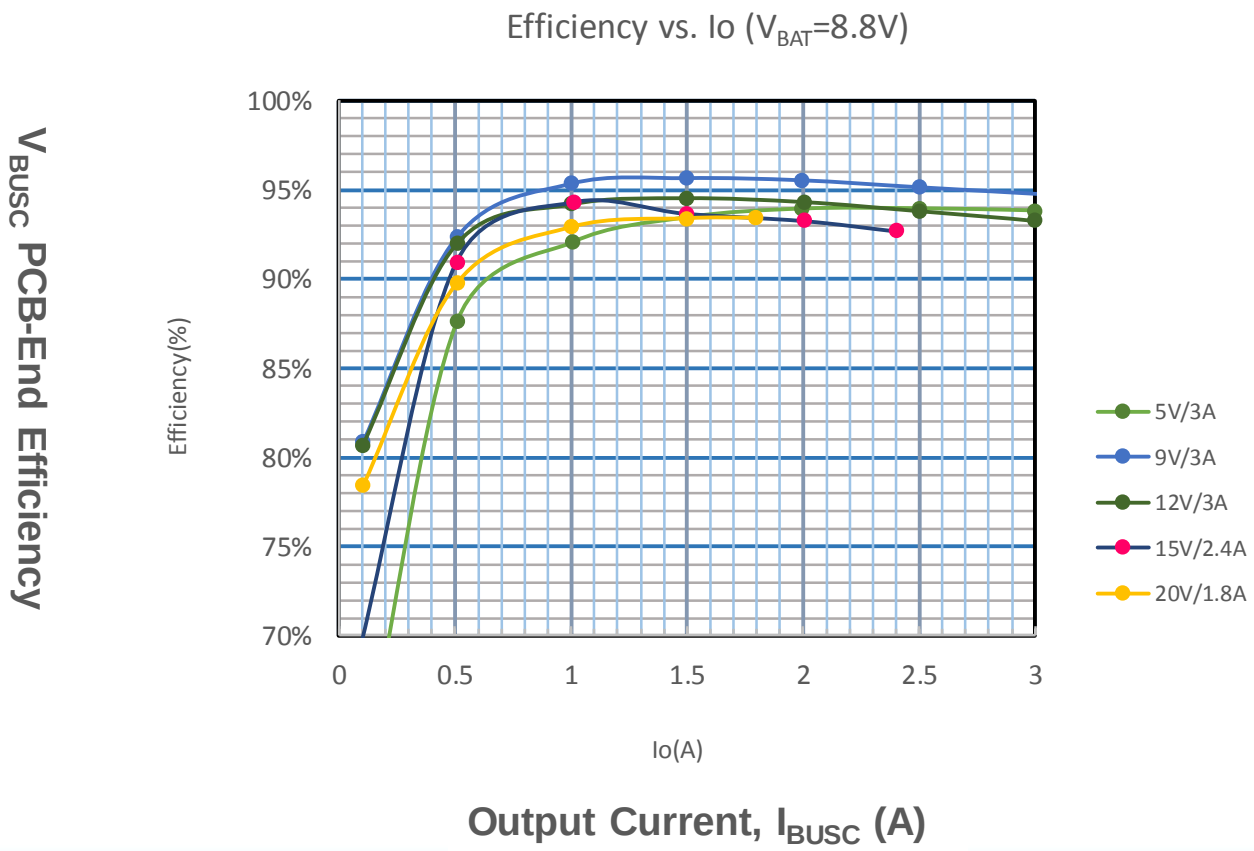
PD mode (Type C Output)



Efficiency vs. Output Current

V_{BUSC} Efficiency vs. Output Current at V_{BAT}=8.8V (Provider mode)

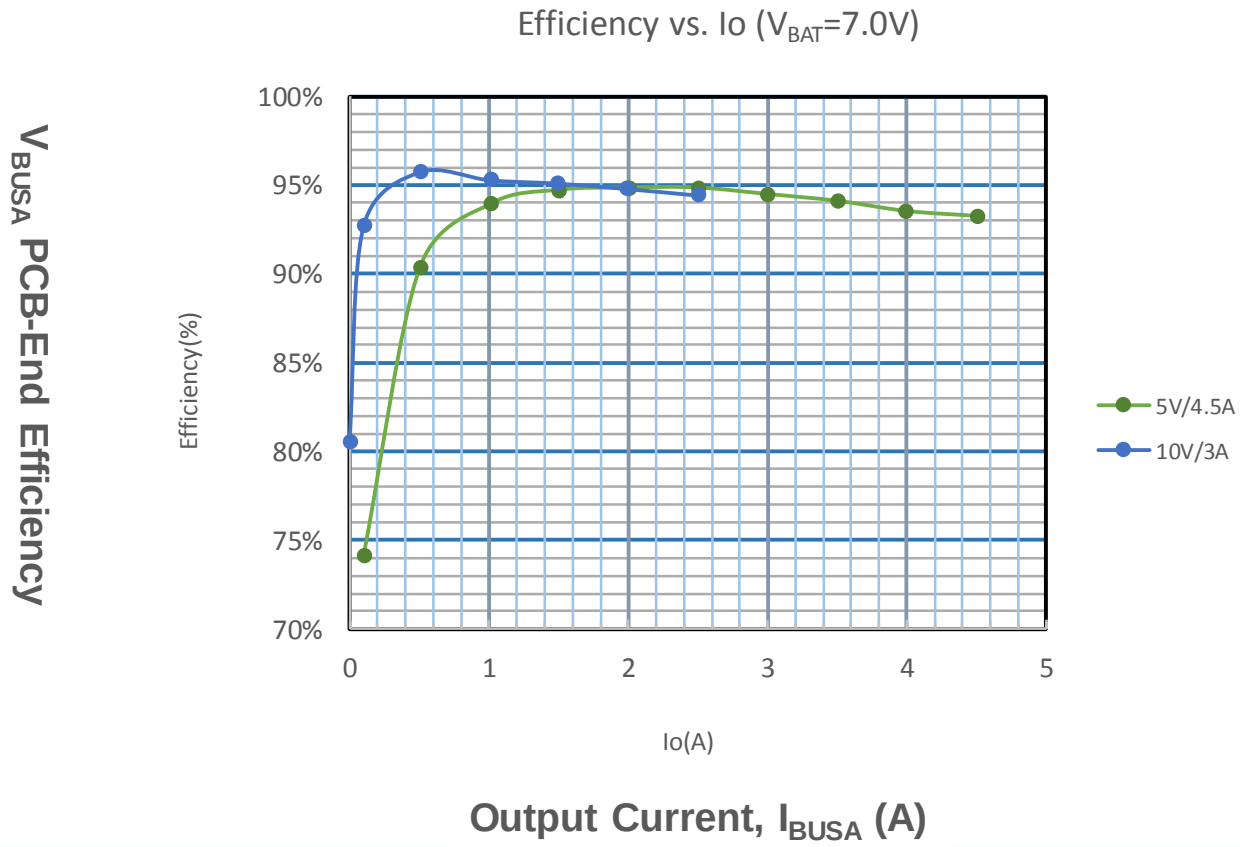
PD mode (Type C Output)



Efficiency vs. Output Current

V_{BUSA} Efficiency vs. Output Current at V_{BAT}=7.0V (Provider mode)

SCP mode (Type A Output)



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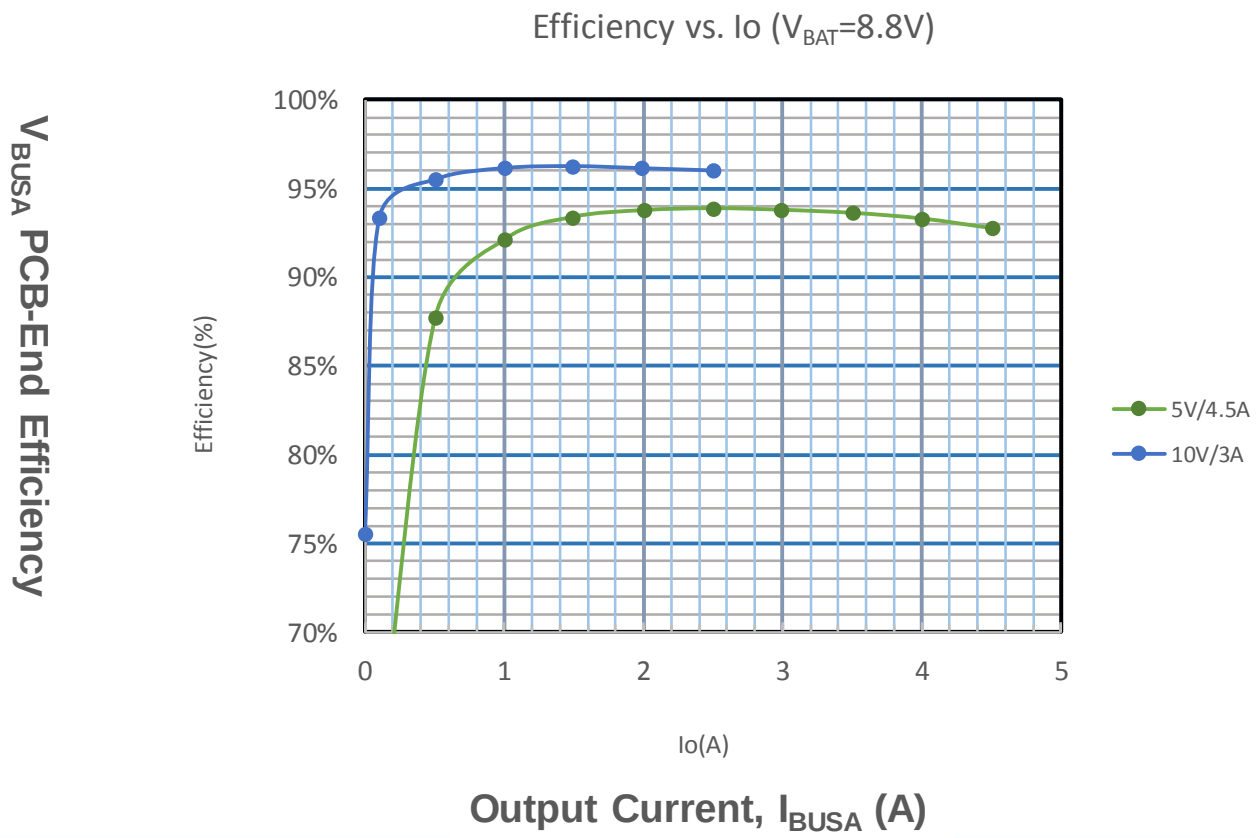

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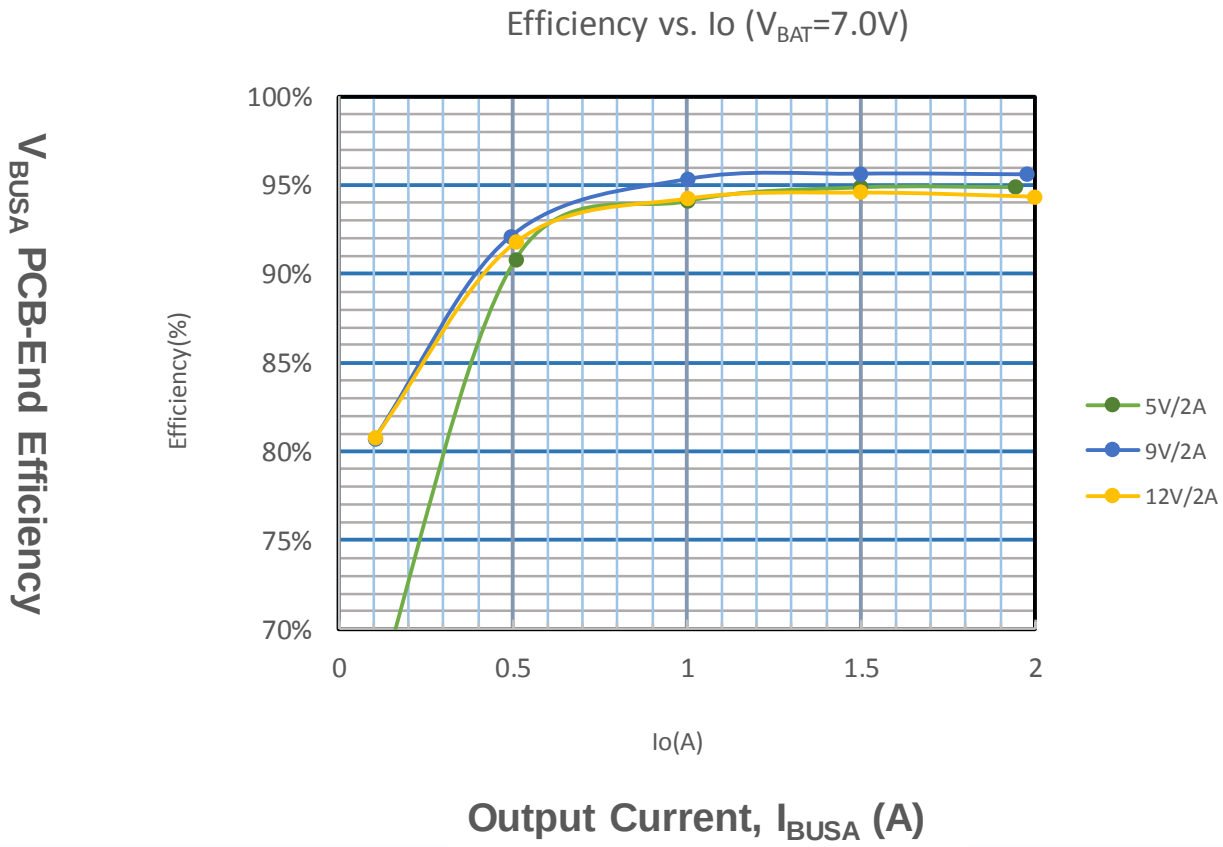
FCP mode (Type A Output)



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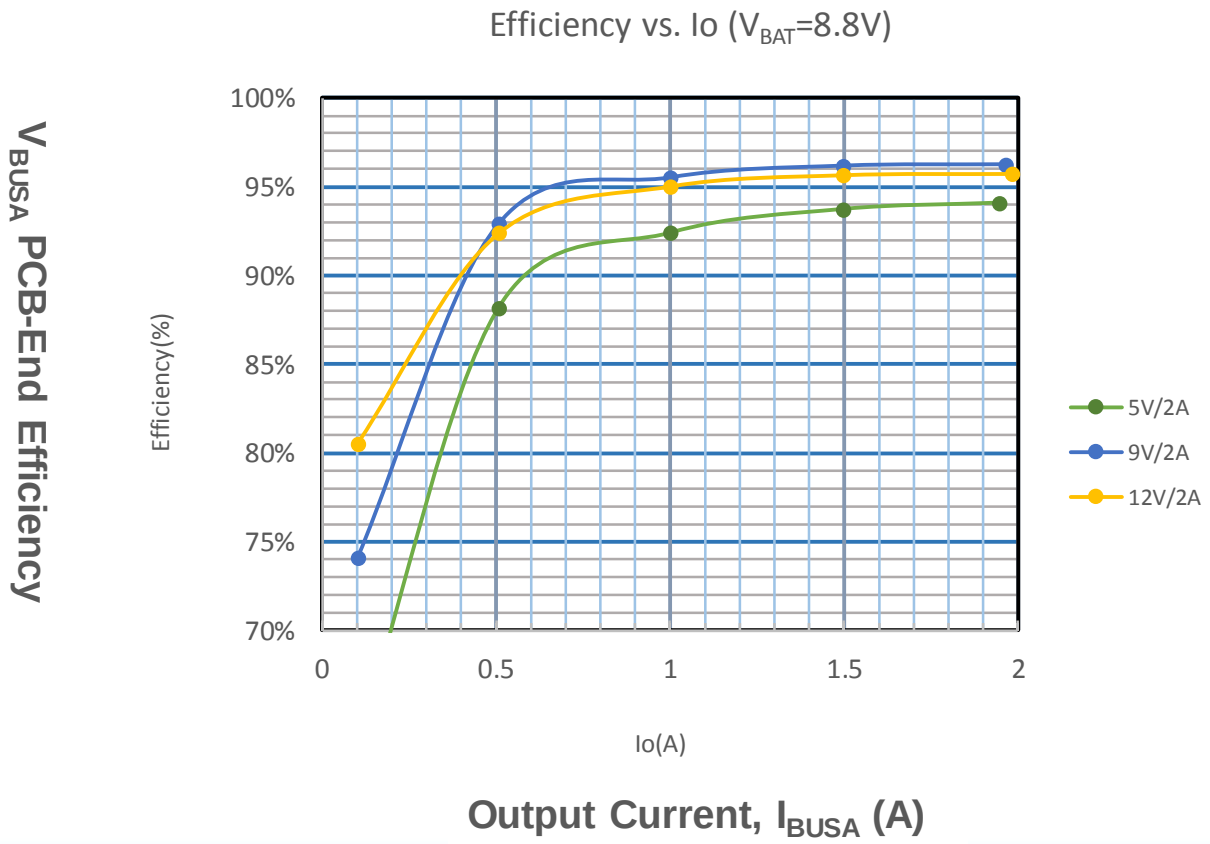
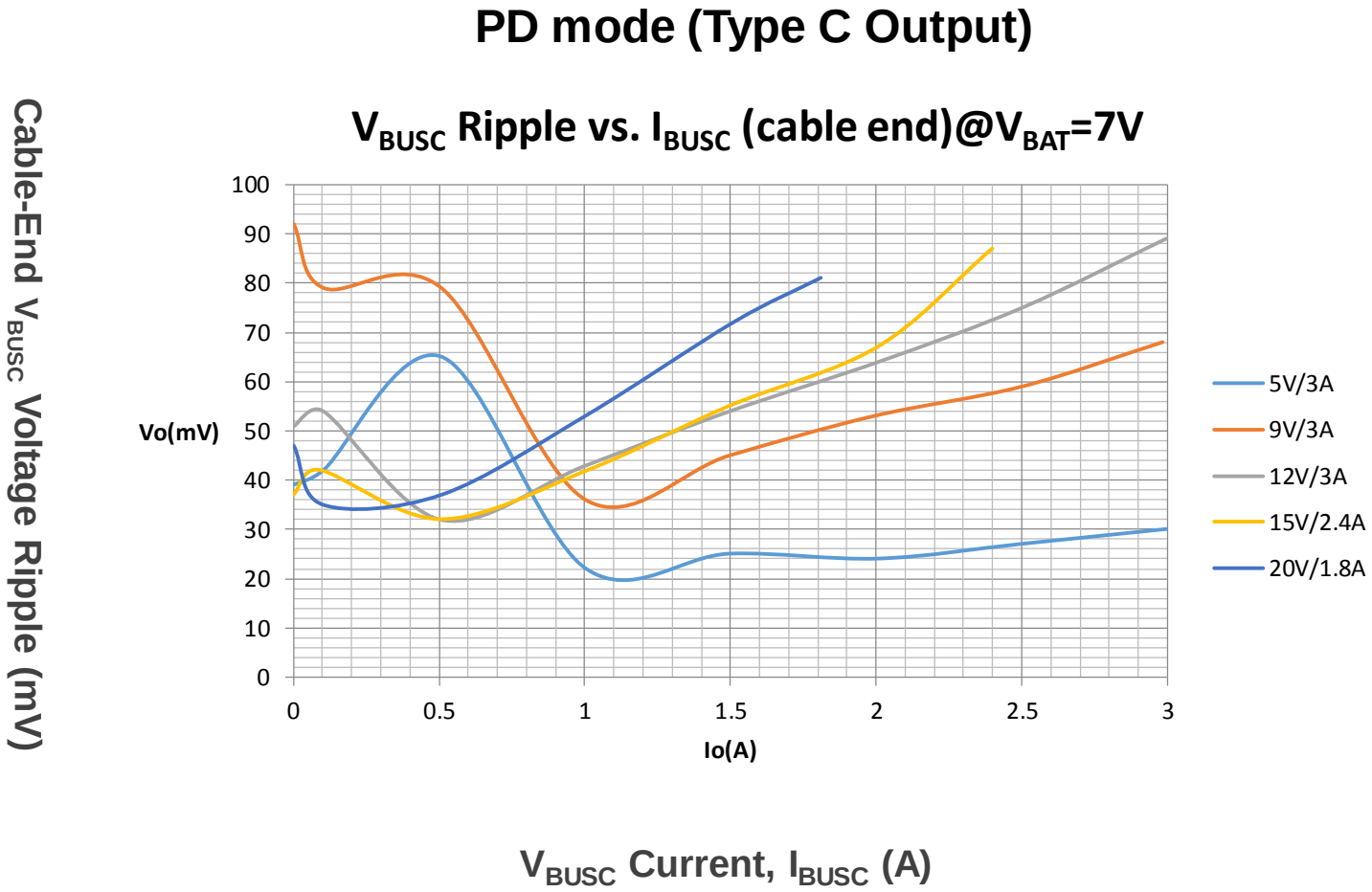


Cable-End V_{BUS} Voltage Ripple vs. Current

V_{BUSC} Ripple Voltage vs. Output Current at V_{BAT}=7.0V (Provider mode)



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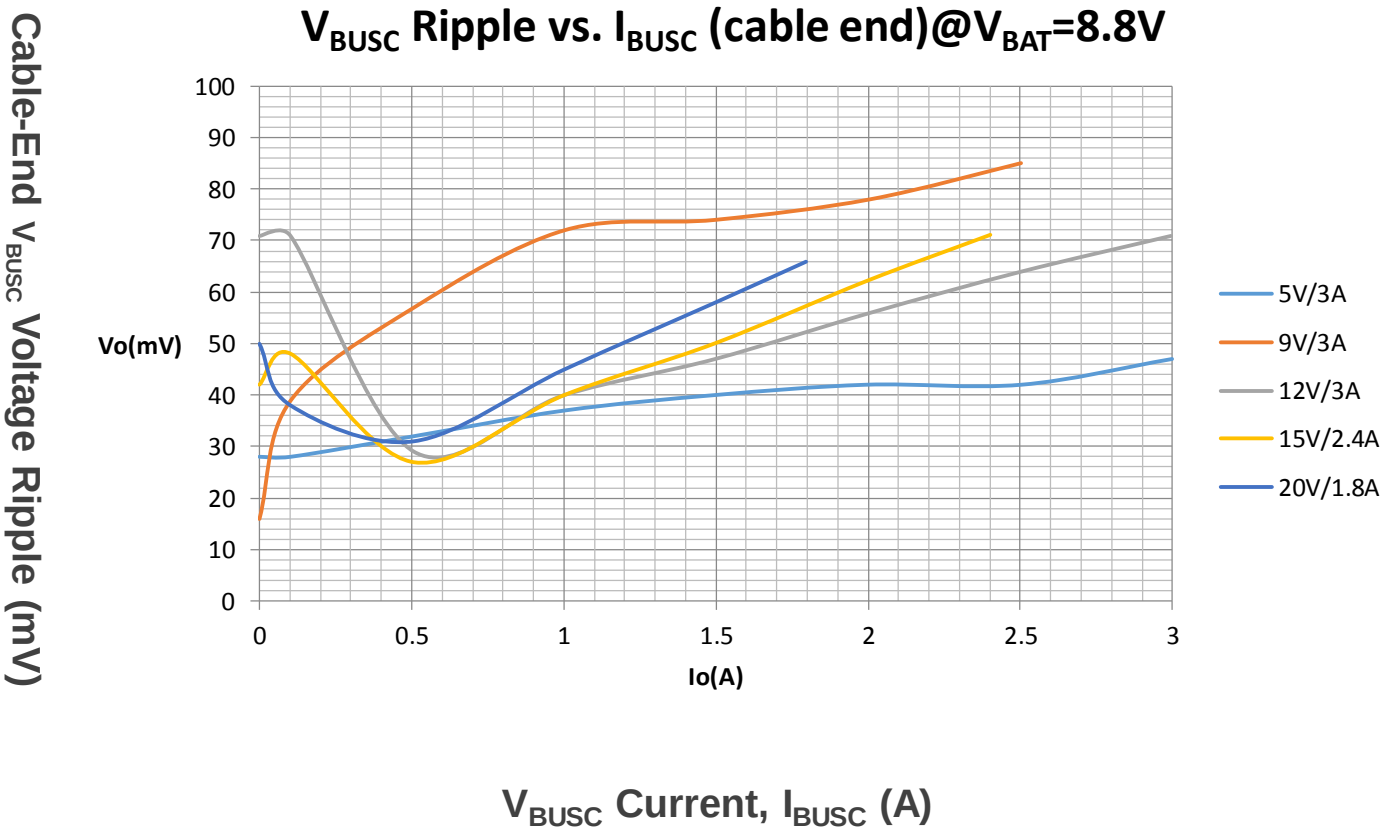

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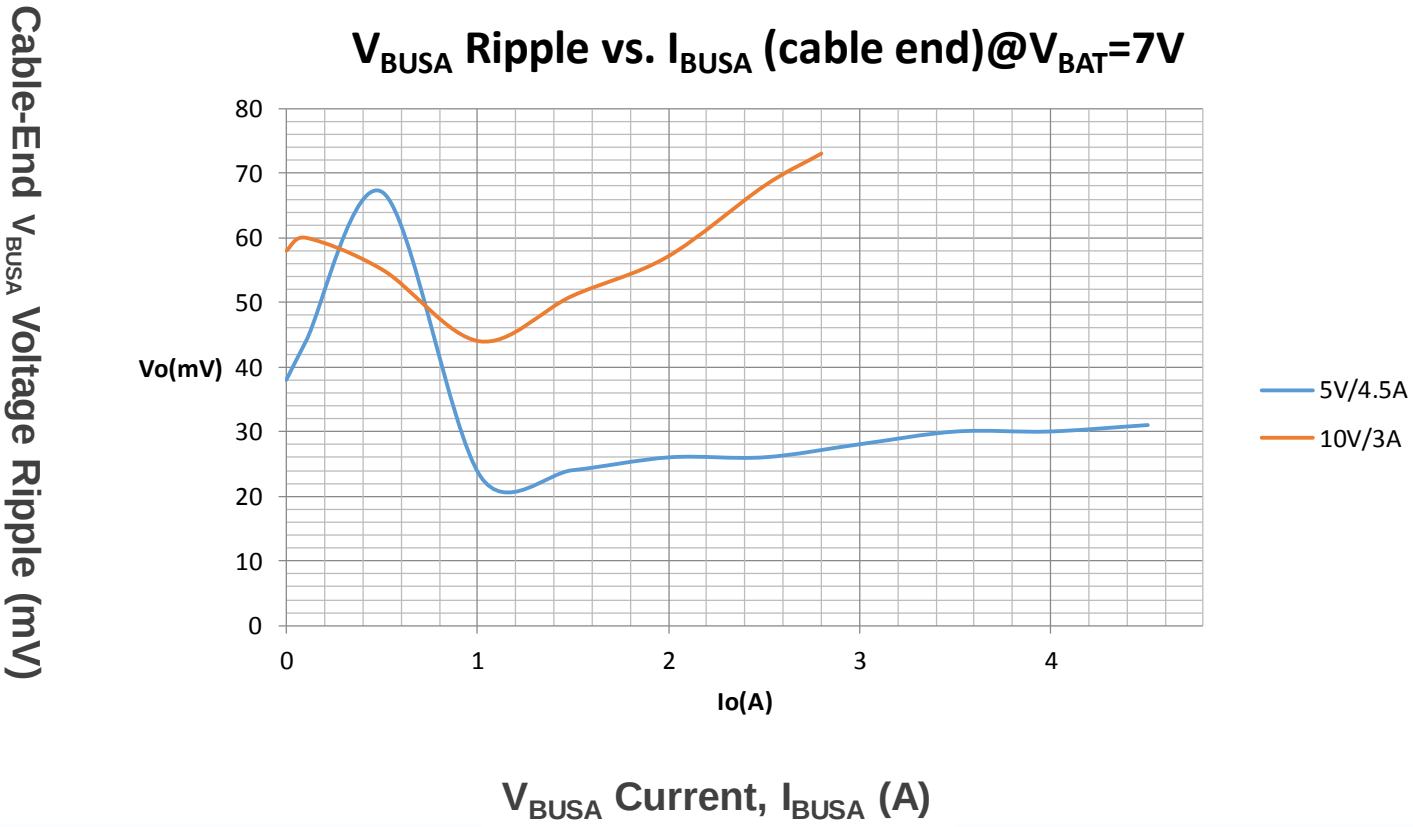

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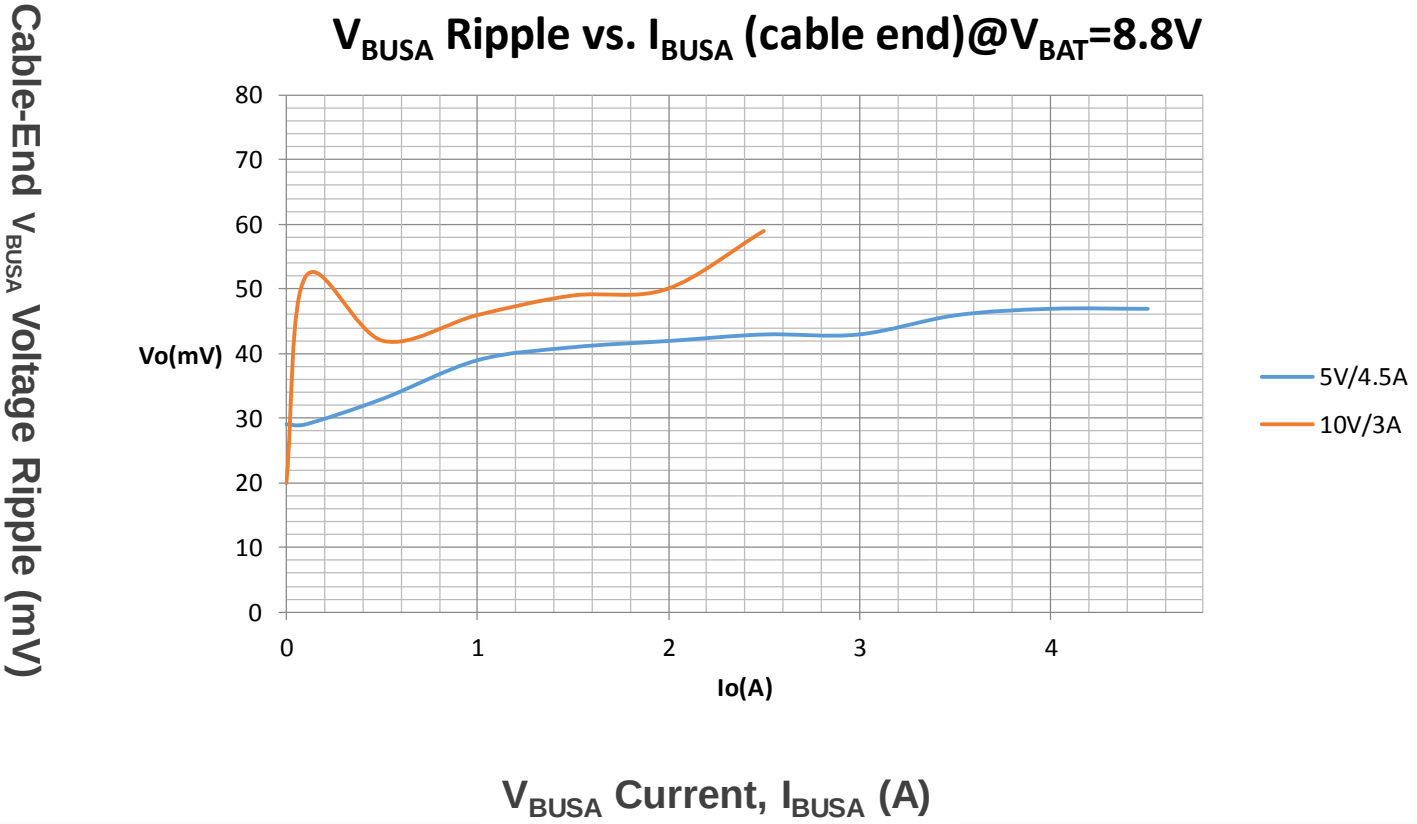

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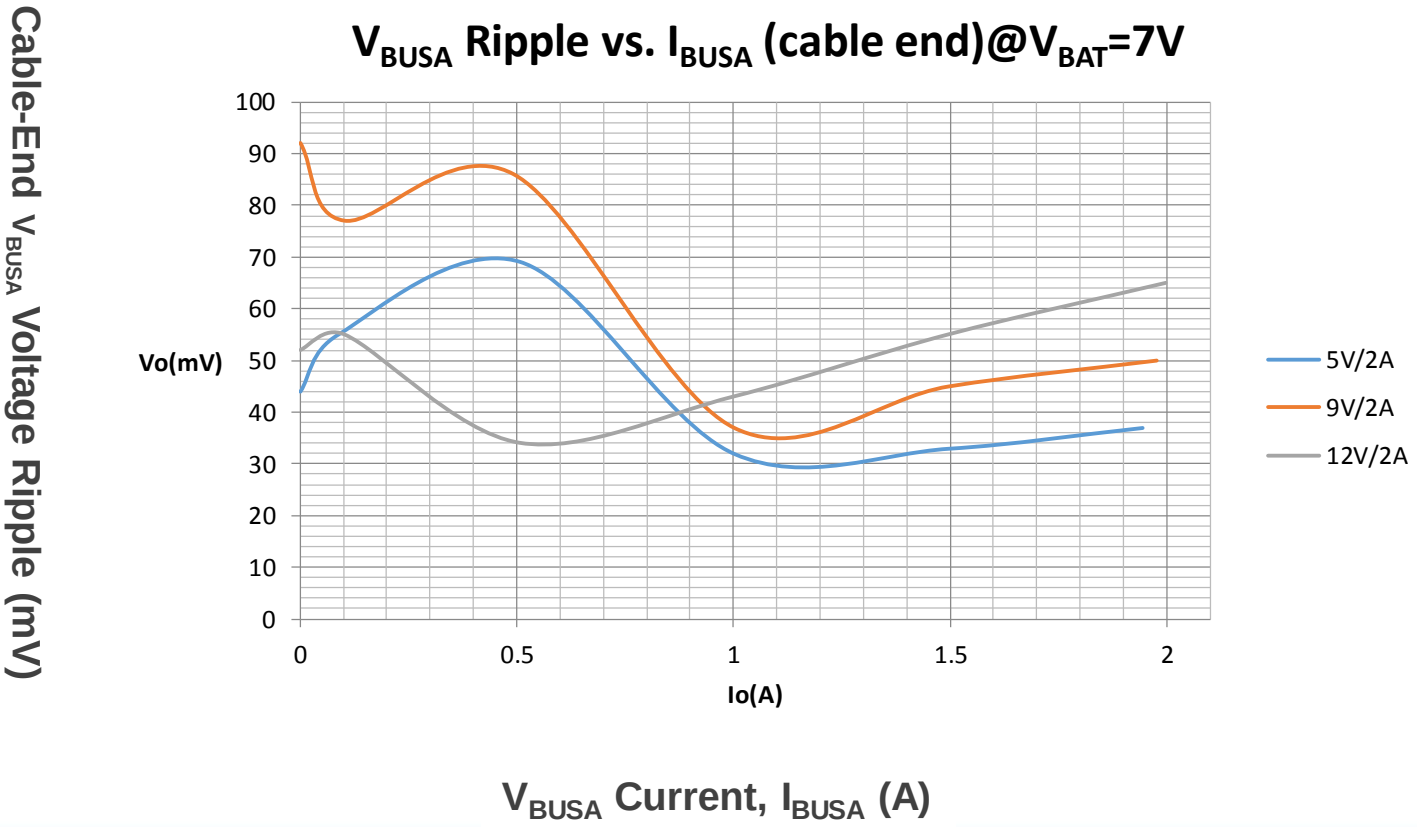

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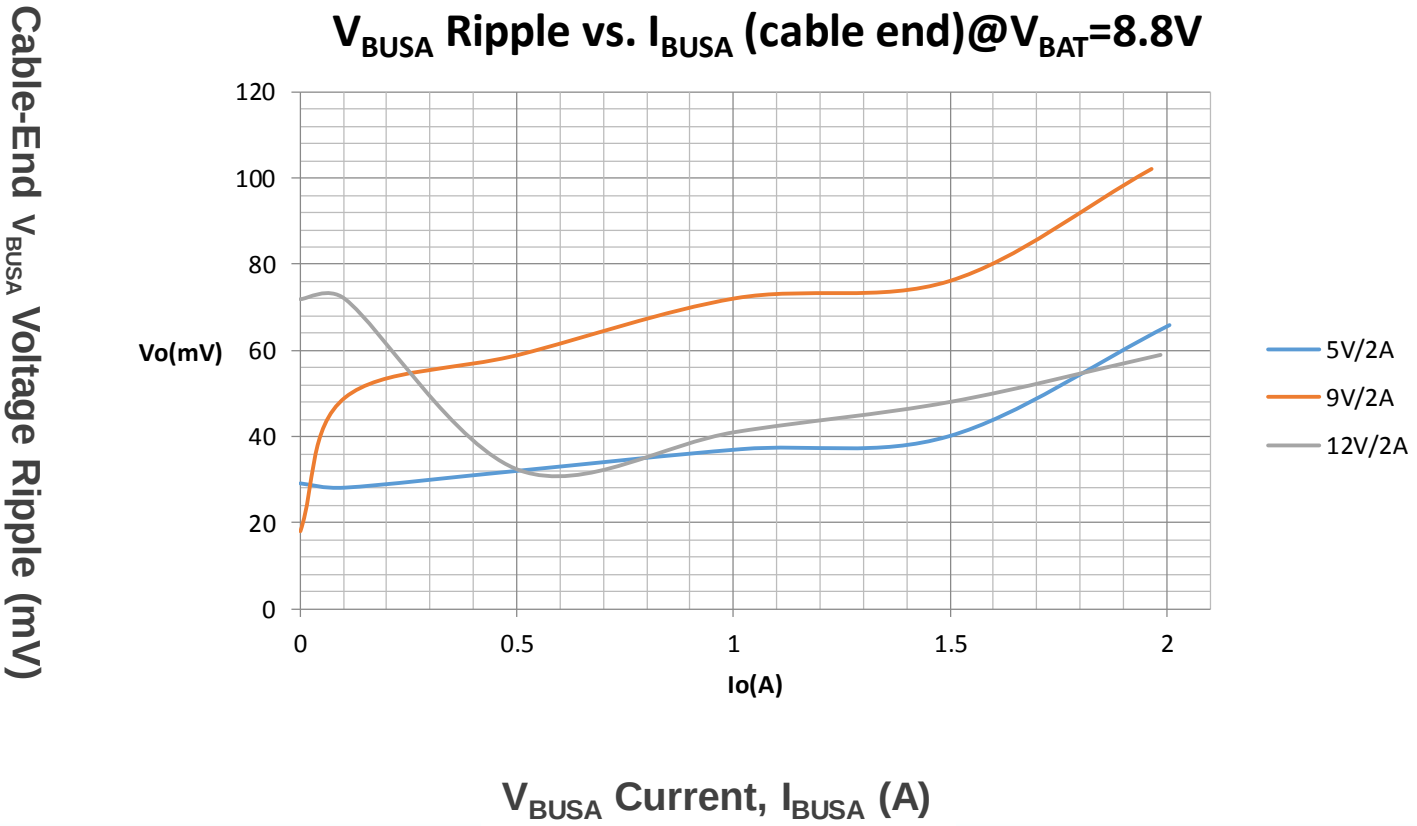
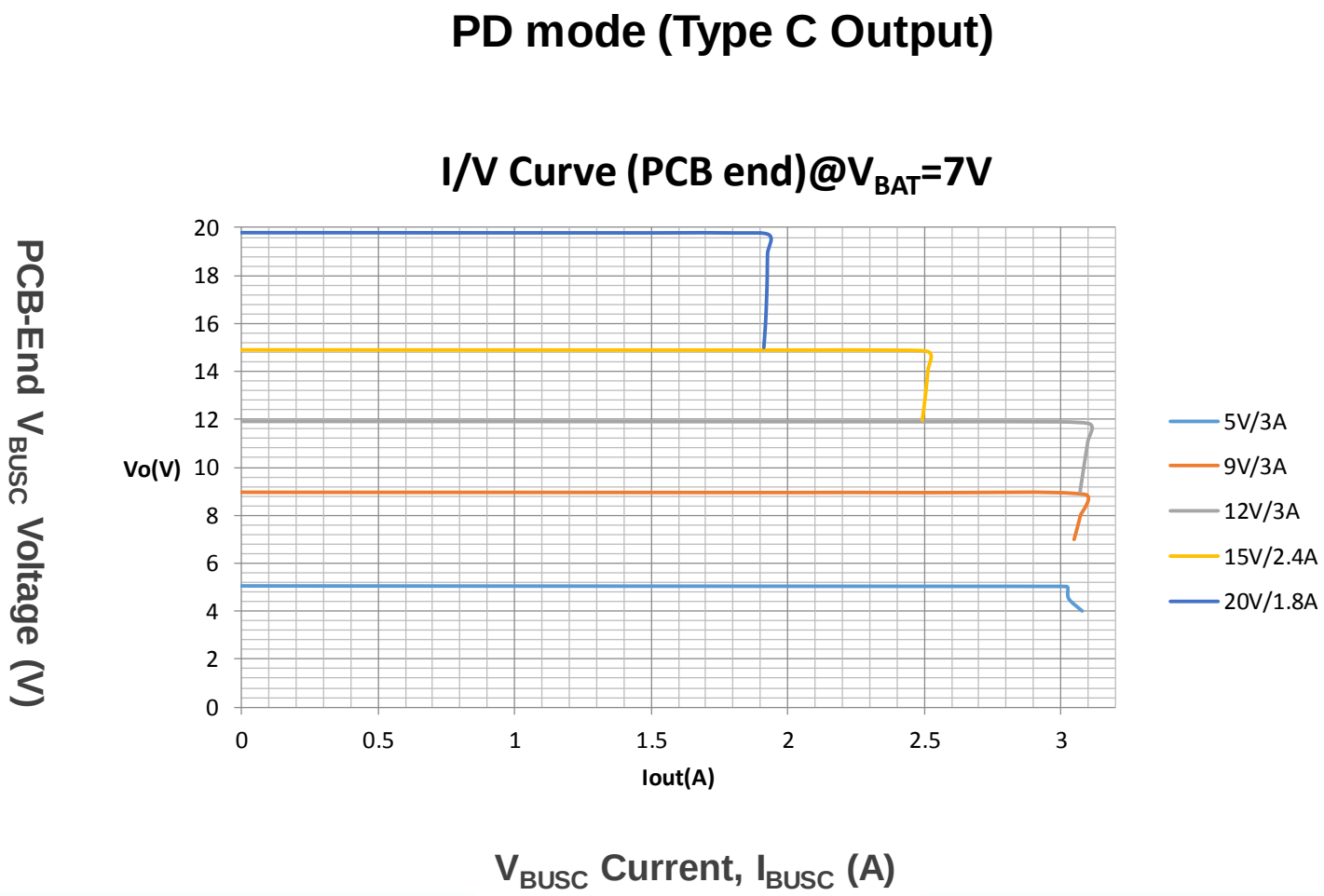


I/V Curve at PCB End

V_{BUSC} I/V Curve at V_{BAT}=7.0V (Provider mode)



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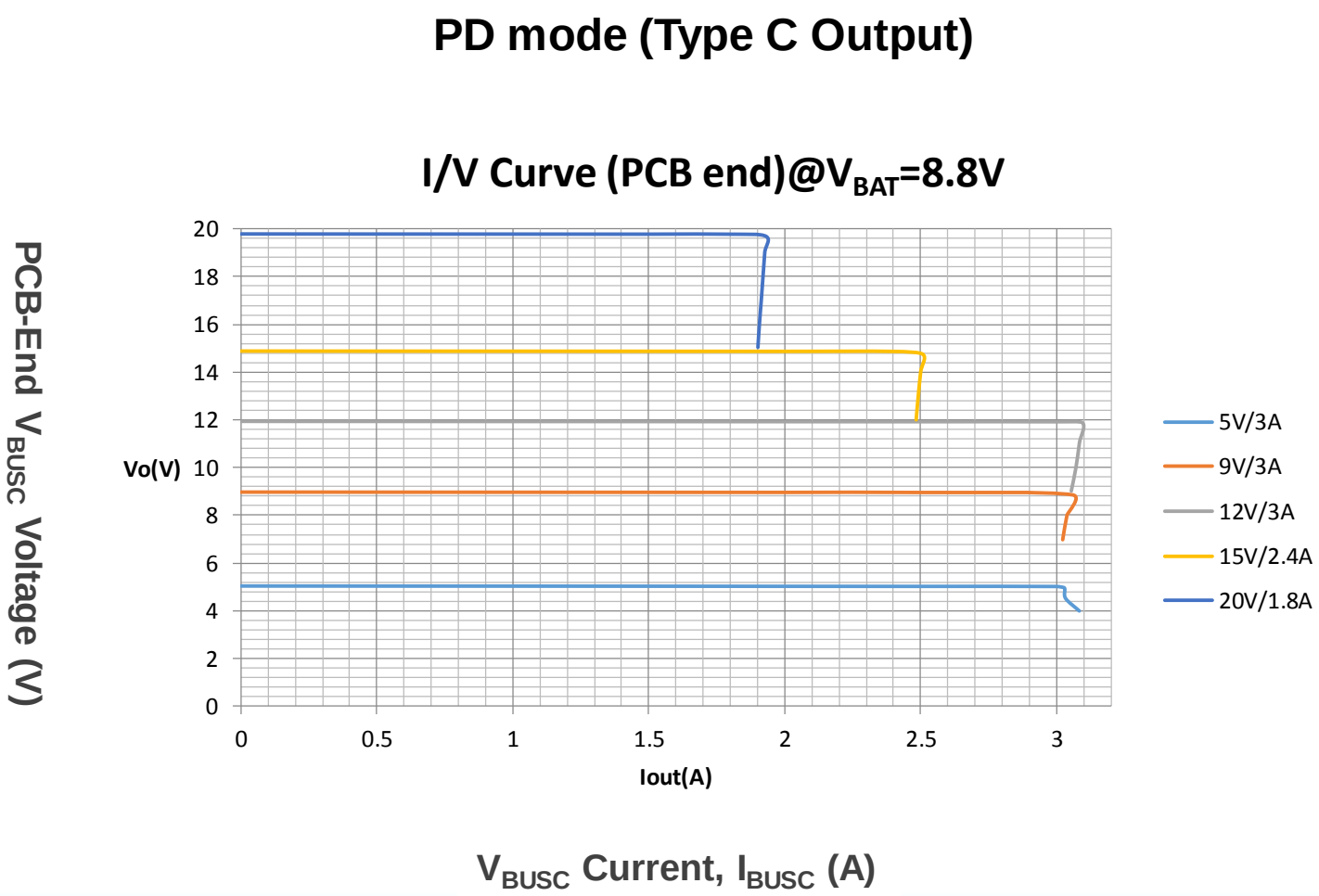

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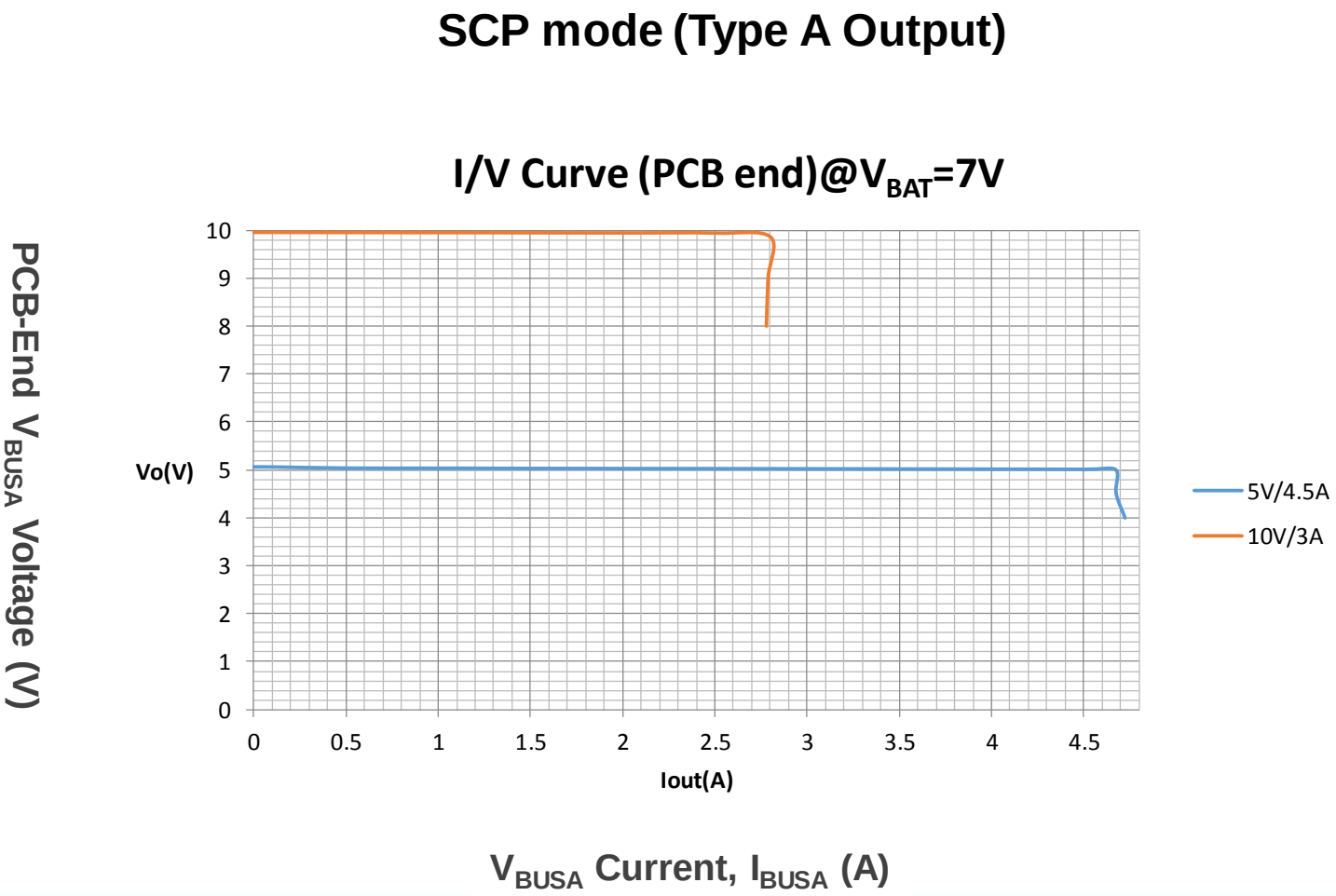

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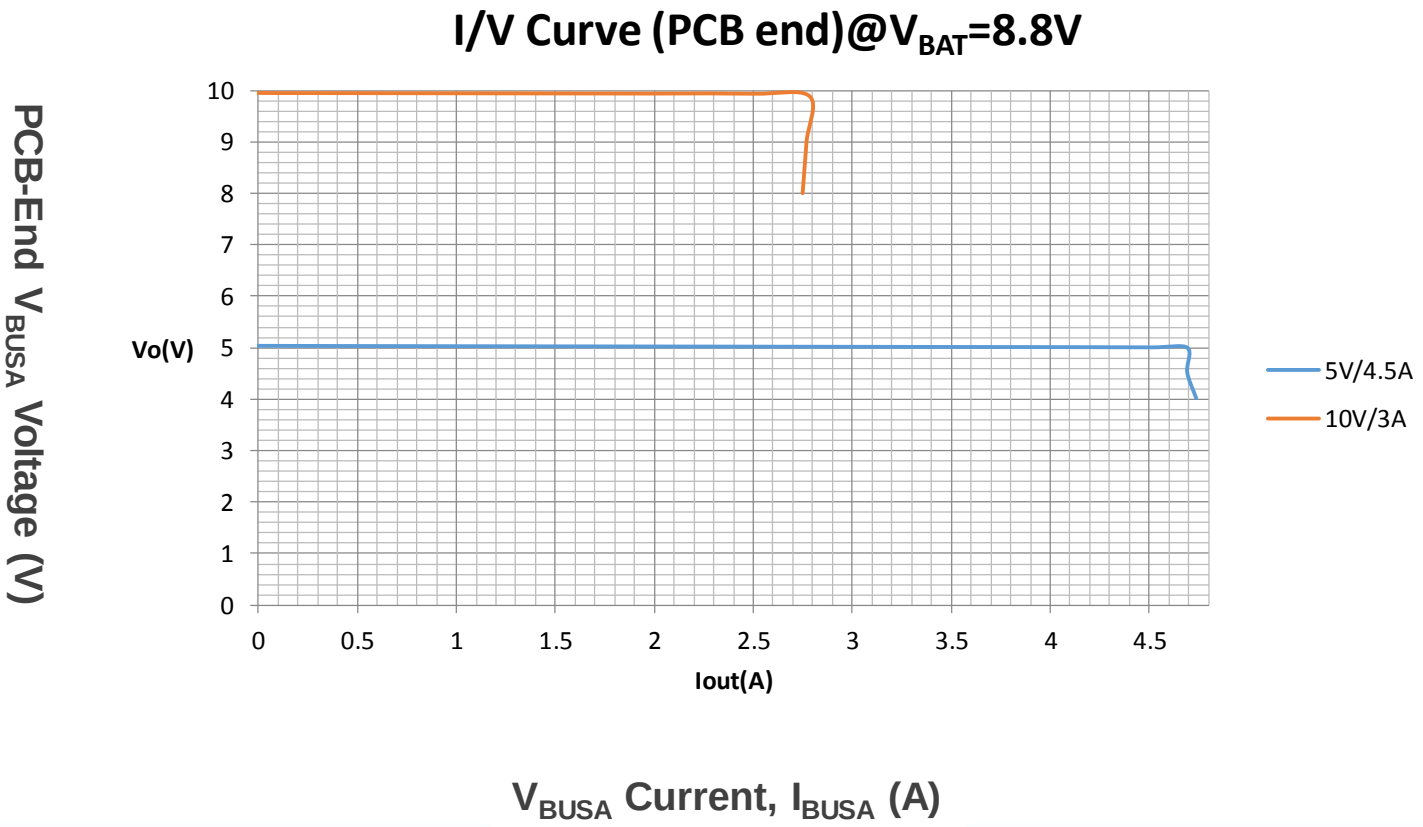

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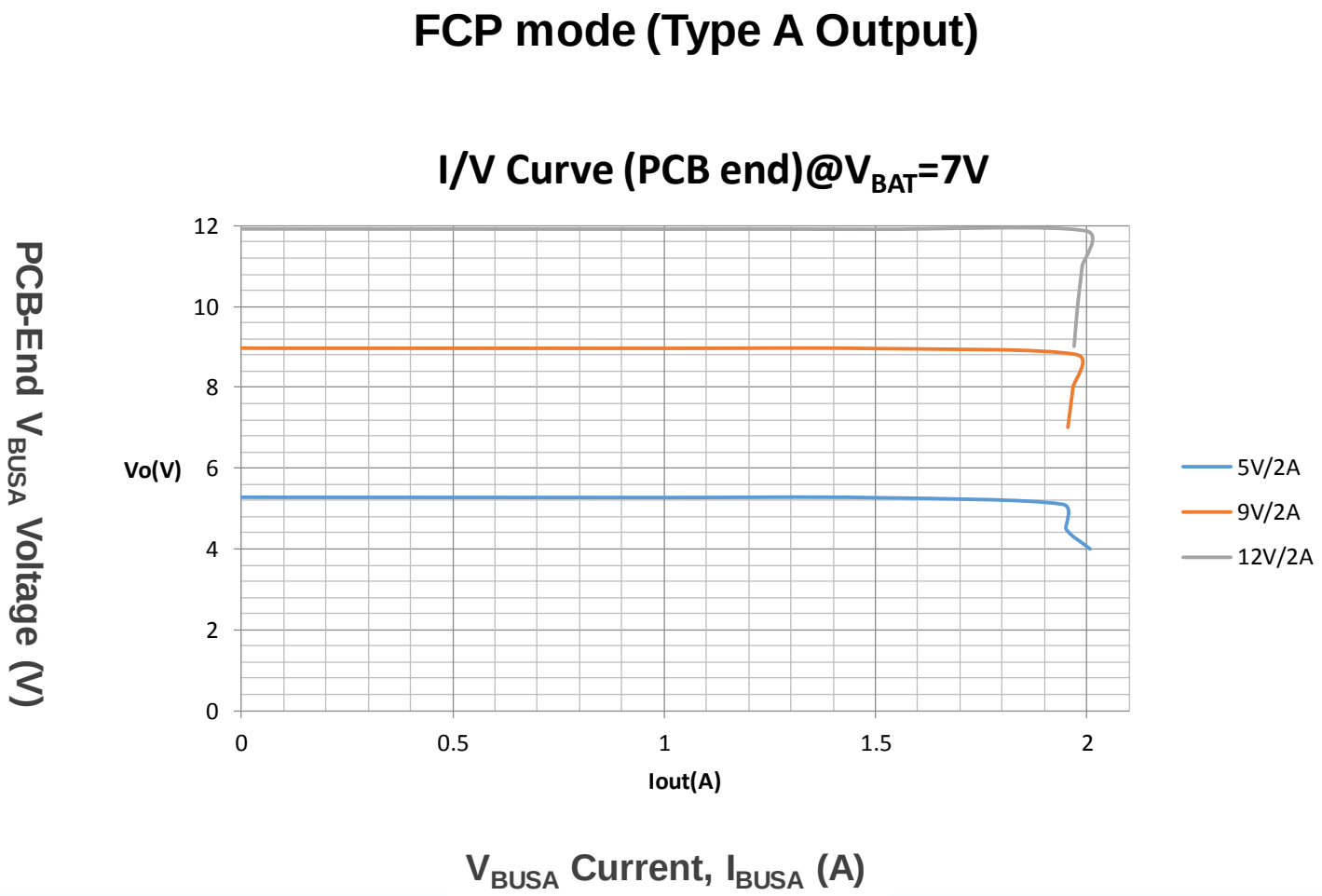

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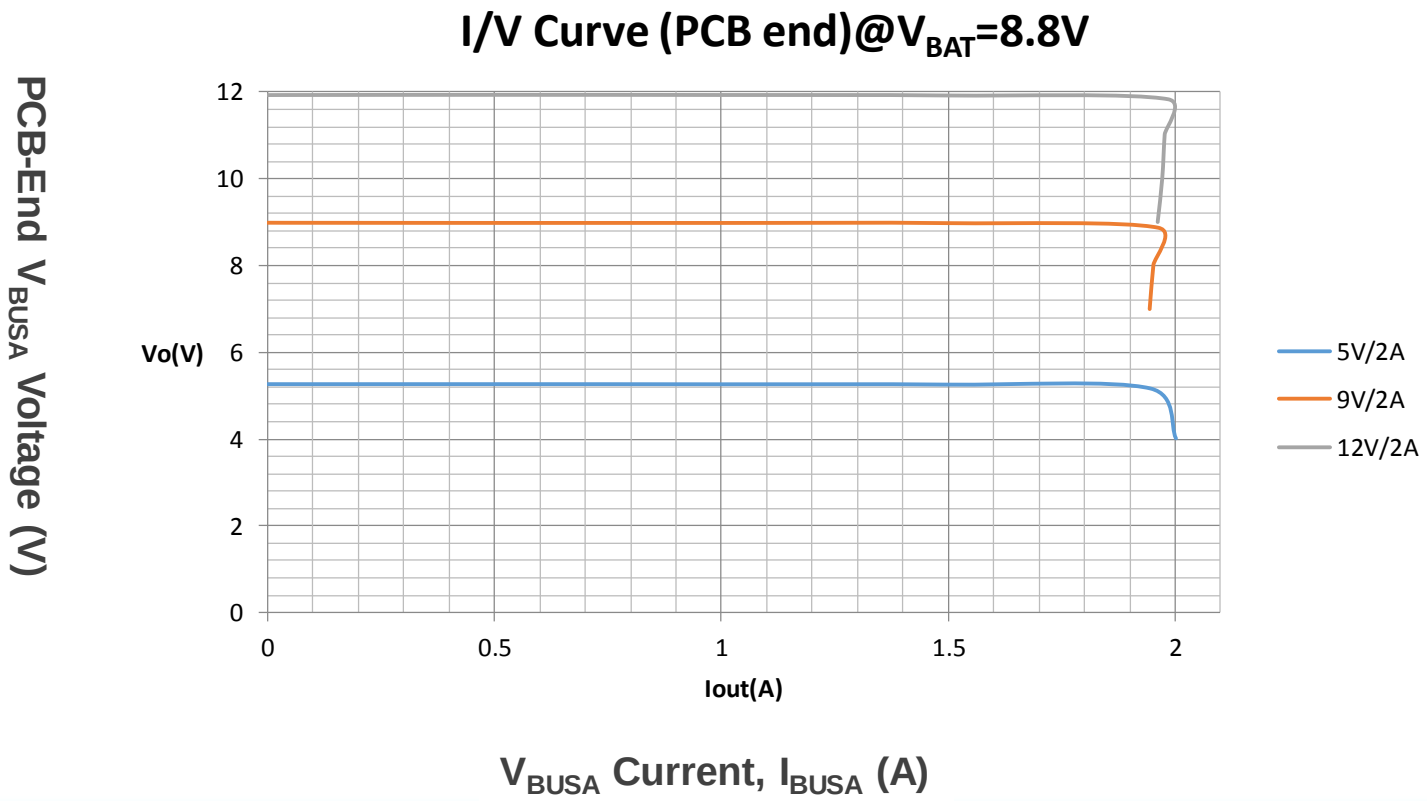
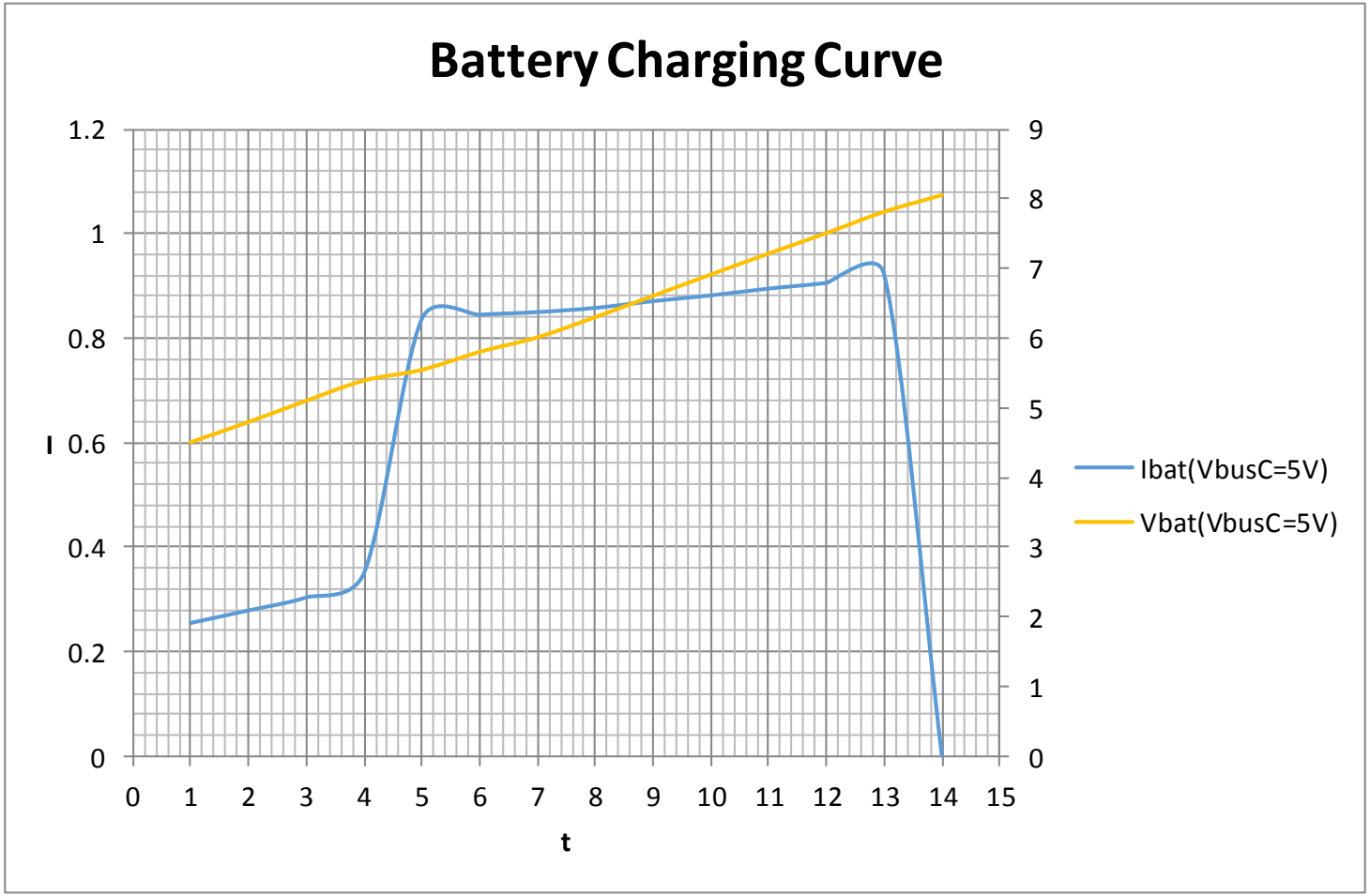


V_{BUSC} UVP (Provider Mode)

VbusC UVP	Vbat=7V	Vbat=8.8V	Note
5V	3.72V	3.72V	PD
9V	6.67V	6.67V	
12V	8.9V	8.9V	
15V	11.1V	11.1V	
20V	14.8V	14.8V	

VbusA UVP	Vbat=7V	Vbat=8.8V	Note
5V	3.69V	3.69V	SCP
10V	7.39V	7.39V	
5V	3.9V	3.9V	FCP/QC
9V	6.68V	6.68V	
12V	8.9V	8.9V	

Battery Charging Curve (Sink Mode)



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thank you.