

WEBENCH® Power Architect

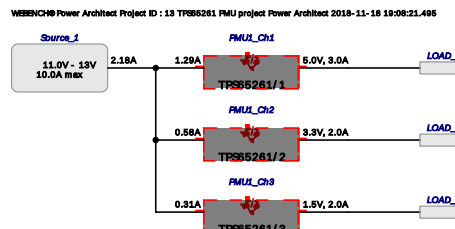
Project Report

Project : 4466246/13 : TPS65261 PMU project
Created : 2018-11-18 19:08:21.495

Project Summary

1. Total System Efficiency	86.844 %
2. Total System BOM Count	46.0
3. Total System Footprint	363.0 mm ²
4. Total System BOM Cost	\$5.26
5. Total System Power Dissipation	3.727 W

--> Launch WEBENCH Power Architect.



My Comments

No comments

Sequencer Flag Table

Supply	Sequencer Flag	Load	Load Name
PMU1_Ch1	0	LOAD_1	
PMU1_Ch2	0	LOAD_2	
PMU1_Ch3	0	LOAD_3	
PMU1	NA		

Power Supplies

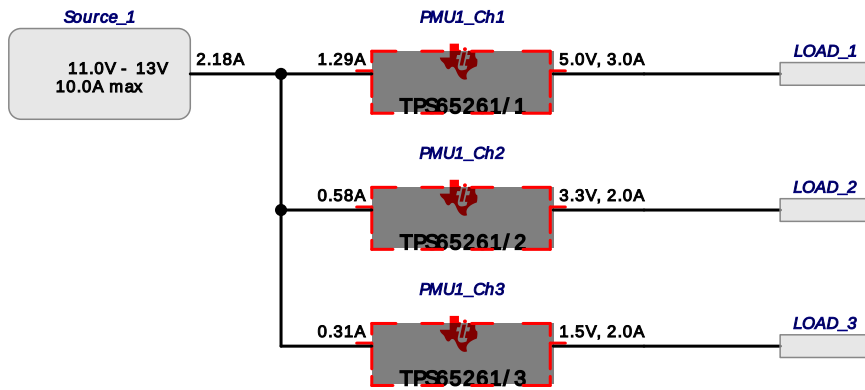
#	Name	NSID	Description	Vout	Iout	Efficiency	Foot-print	Cost	Design	Page
1.	PMU1_Ch1	TPS65261/1	Buck : 4.5V to 18V Input, 2A/3A Output Triple DC-DC Buck Converters	5.0 V	3.0 A	89.6%	139	\$2.91	119	9
2.	PMU1_Ch2	TPS65261/2	Buck : 4.5V to 18V Input, 2A/3A Output Triple DC-DC Buck Converters	3.3 V	2.0 A	86.8%	169	\$2.61	120	14
3.	PMU1_Ch3	TPS65261/3	Buck : 4.5V to 18V Input, 2A/3A Output Triple DC-DC Buck Converters	1.5 V	2.0 A	75.1%	121	\$2.43	121	19
4.	PMU1	TPS65261	PMU : 4.5V to 18V Input, 2A/3A Output Triple DC-DC Buck Converters	V	NaN A	86.8%	363	\$5.26	118	4

Power Loads

#	Name	VLoad	ILoad	Description
1.	LOAD_1	5.0 V	3.0 A	VoutRipple=10%
2.	LOAD_2	3.3 V	2.0 A	VoutRipple=10%
3.	LOAD_3	1.5 V	2.0 A	VoutRipple=10%

Project Diagram

WEBENCH® Power Architect Project ID : 13 TPS65261 PMU project Power Architect 2018-11-18 19:08:21.495



Electrical Procurement BOM

Manufacturer	Part Number	Description	Quantity	Budgetary Price	Footprint (mm ²)
AVX	06031U6R8BAT2A	0603	1	\$0.07	5
Kemet	C0805C105K4RACTU	0805	1	\$0.02	7
TDK	C2012X5R1V226M125AC	0805	2	\$0.38	7
TDK	C3225X6S1C226M250AC	1210_280	2	\$0.27	15
Samsung Electro-Mechanics	CL05C561JB5NNNC	0402	1	\$0.01	3
Samsung Electro-Mechanics	CL10C122JB8NNNC	0603	2	\$0.01	9
Samsung Electro-Mechanics	CL21C130JBANNNC	0805	1	\$0.01	7
Samsung Electro-Mechanics	CL21C250JBANNNC	0805	1	\$0.01	7
Vishay-Dale	CRCW040273K2FKED	0402	1	\$0.01	3
Vishay-Dale	CRCW04028K25FKED	0402	1	\$0.01	3
Vishay-Dale	CRCW04029R76FKED	0402	1	\$0.01	3
Panasonic	ERJ-6ENF5112V	0805	1	\$0.01	7
MuRata	GRM033R71A103KA01D	0201	3	\$0.01	6
MuRata	GRM155R61C472KA01D	0402	3	\$0.01	9
MuRata	GRM155R71C473KA01D	0402	3	\$0.01	9
MuRata	GRM188R60J226MEA0D	0603	2	\$0.06	5
MuRata	GRM219R61E106KA12	0805	6	\$0.06	20
Yageo	RC0201FR-07105KL	0201	2	\$0.01	4
Yageo	RC0201FR-0710KL	0201	4	\$0.01	8
Yageo	RC0201FR-07133KL	0201	1	\$0.01	2
Yageo	RC0201FR-0715K4L	0201	1	\$0.01	2
Yageo	RC0201FR-0728K7L	0201	2	\$0.01	4
Yageo	RC0201FR-0744K2L	0201	1	\$0.01	2
Bourns	SRR6038-5R0Y	SRR6038	1	\$0.32	77
Texas Instruments	TPS65261RHBR	RHB0032E	1	\$1.40	49
Coilcraft	XAL4030-472MEB	XAL4030	2	\$0.72	50
Total			47	\$5322.98	000000000001

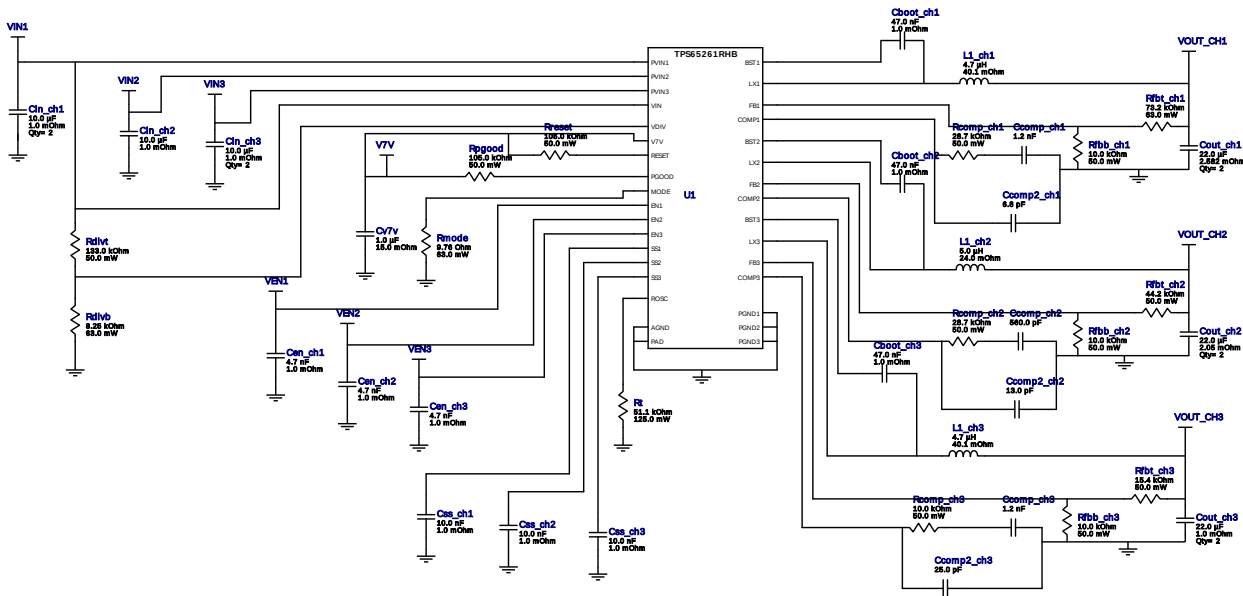


Vout = 5.0V
Vout2 = 3.3V
Iout = 3.0A
Iout2 = 2.0A

Device = TPS65261RHBR
Topology = PMU
Created = 2018-11-18 19:08:18.420
BOM Cost = \$5.26
BOM Count = 46
Total Pd = 3.73W

WEBENCH® Design Report

Design : TPS65261RHBR
Design 118 - TPS65261RHBR



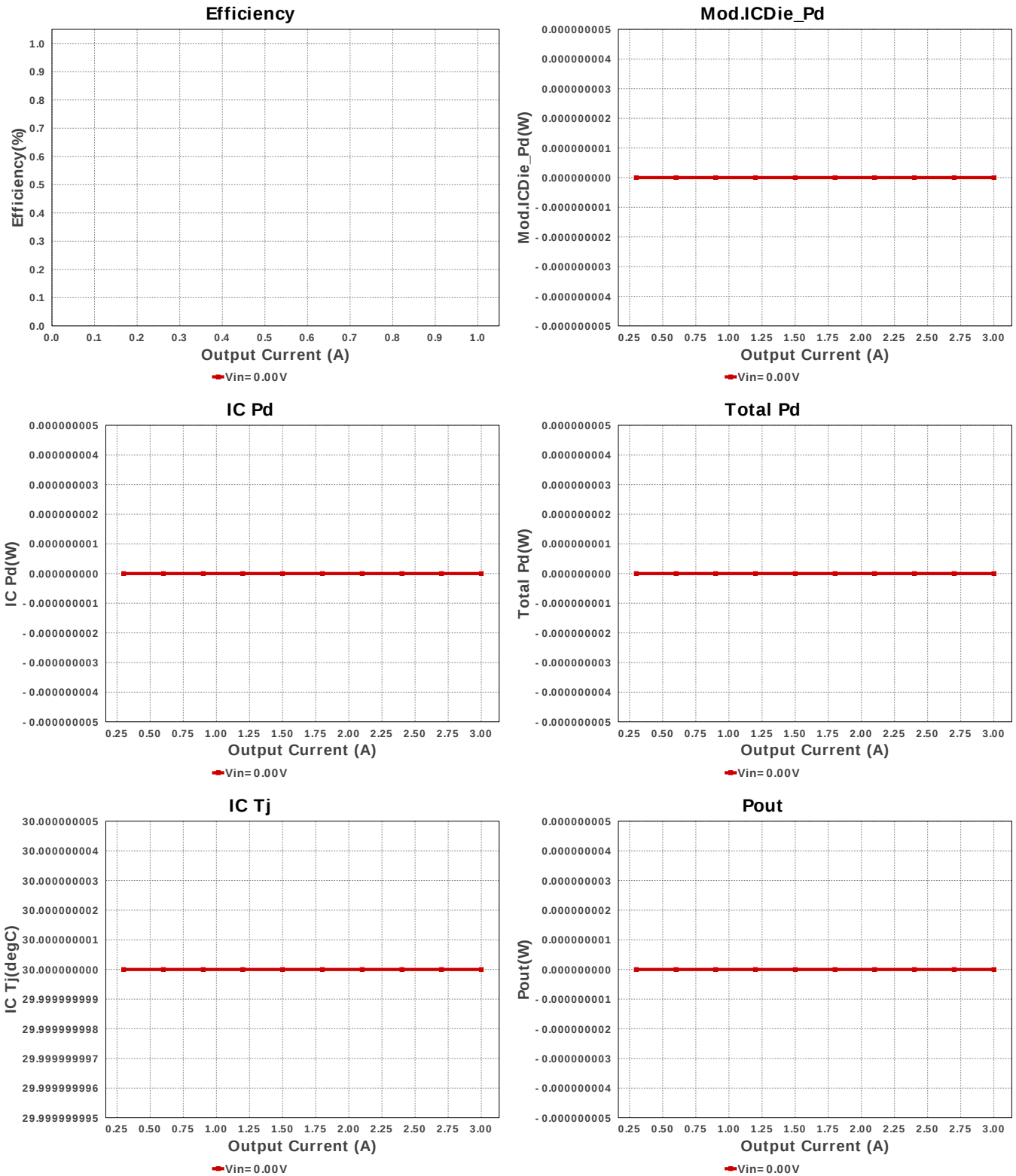
1. This schematic shows all the components for this Power Management Unit. The block diagram on the left shows how the channels are connected. Use the drop down PMU Options selector below the optimization dial on the summary page to get the details for each channel. Or click on the block diagram on the left to select a specific channel.

Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot_ch1	MuRata	GRM155R71C473KA01D Series= X7R	Cap= 47.0 nF ESR= 1.0 mOhm VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
2.	Cboot_ch2	MuRata	GRM155R71C473KA01D Series= X7R	Cap= 47.0 nF ESR= 1.0 mOhm VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
3.	Cboot_ch3	MuRata	GRM155R71C473KA01D Series= X7R	Cap= 47.0 nF ESR= 1.0 mOhm VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
4.	Ccomp2_ch1	AVX	06031U6R8BAT2A Series= C0G/NP0	Cap= 6.8 pF VDC= 100.0 V IRMS= 0.0 A	1	\$0.07	0603 5 mm ²
5.	Ccomp2_ch2	Samsung Electro-Mechanics	CL21C130JBANNNC Series= C0G/NP0	Cap= 13.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
6.	Ccomp2_ch3	Samsung Electro-Mechanics	CL21C250JBANNNC Series= C0G/NP0	Cap= 25.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
7.	Ccomp_ch1	Samsung Electro-Mechanics	CL10C122JB8NNNC Series= C0G/NP0	Cap= 1.2 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0603 5 mm ²
8.	Ccomp_ch2	Samsung Electro-Mechanics	CL05C561JB5NNNC Series= C0G/NP0	Cap= 560.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
9.	Ccomp_ch3	Samsung Electro-Mechanics	CL10C122JB8NNNC Series= C0G/NP0	Cap= 1.2 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0603 5 mm ²
10.	Cen_ch1	MuRata	GRM155R61C472KA01D Series= X5R	Cap= 4.7 nF ESR= 1.0 mOhm VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm ²
11.	Cen_ch2	MuRata	GRM155R61C472KA01D Series= X5R	Cap= 4.7 nF ESR= 1.0 mOhm VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm ²
12.	Cen_ch3	MuRata	GRM155R61C472KA01D Series= X5R	Cap= 4.7 nF ESR= 1.0 mOhm VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm ²
13.	Cin_ch1	MuRata	GRM219R61E106KA12 Series= X5R	Cap= 10.0 uF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	2	\$0.06	 0805 7 mm ²
14.	Cin_ch2	MuRata	GRM219R61E106KA12 Series= X5R	Cap= 10.0 uF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	\$0.06	 0805 7 mm ²
15.	Cin_ch3	MuRata	GRM219R61E106KA12 Series= X5R	Cap= 10.0 uF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	2	\$0.06	 0805 7 mm ²
16.	Cout_ch1	TDK	C3225X6S1C226M250AC Series= X6S	Cap= 22.0 uF ESR= 2.582 mOhm VDC= 16.0 V IRMS= 4.5756 A	2	\$0.27	 1210_280 15 mm ²
17.	Cout_ch2	TDK	C2012X5R1V226M125AC Series= X5R	Cap= 22.0 uF ESR= 2.05 mOhm VDC= 35.0 V IRMS= 4.5559 A	2	\$0.38	 0805 7 mm ²
18.	Cout_ch3	MuRata	GRM188R60J226MEA0D Series= X5R	Cap= 22.0 uF ESR= 1.0 mOhm VDC= 6.3 V IRMS= 6.0 A	2	\$0.06	 0603 5 mm ²
19.	Css_ch1	MuRata	GRM033R71A103KA01D Series= X7R	Cap= 10.0 nF ESR= 1.0 mOhm VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	 0201 2 mm ²
20.	Css_ch2	MuRata	GRM033R71A103KA01D Series= X7R	Cap= 10.0 nF ESR= 1.0 mOhm VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	 0201 2 mm ²
21.	Css_ch3	MuRata	GRM033R71A103KA01D Series= X7R	Cap= 10.0 nF ESR= 1.0 mOhm VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	 0201 2 mm ²
22.	Cv7v	Kemet	C0805C105K4RACTU Series= X7R	Cap= 1.0 uF ESR= 15.0 mOhm VDC= 16.0 V IRMS= 8.19 A	1	\$0.02	 0805 7 mm ²
23.	L1_ch1	Coilcraft	XAL4030-472MEB	L= 4.7 uH DCR= 40.1 mOhm	1	\$0.72	 XAL4030 25 mm ²
24.	L1_ch2	Bourns	SRR6038-5R0Y	L= 5.0 uH DCR= 24.0 mOhm	1	\$0.32	 SRR6038 77 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
25.	L1_ch3	Coilcraft	XAL4030-472MEB	L= 4.7 μ H DCR= 40.1 mOhm	1	\$0.72	 XAL4030 25 mm ²
26.	Rcomp_ch1	Yageo	RC0201FR-0728K7L Series= ?	Res= 28700.0Ohm Power= 50.0 mW Tolerance= 1.0%	1	\$0.01	 0201 2 mm ²
27.	Rcomp_ch2	Yageo	RC0201FR-0728K7L Series= ?	Res= 28700.0Ohm Power= 50.0 mW Tolerance= 1.0%	1	\$0.01	 0201 2 mm ²
28.	Rcomp_ch3	Yageo	RC0201FR-0710KL Series= ?	Res= 10000.0Ohm Power= 50.0 mW Tolerance= 1.0%	1	\$0.01	 0201 2 mm ²
29.	Rdivb	Vishay-Dale	CRCW04028K25FKED Series= CRCW..e3	Res= 8250.0Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
30.	Rdivt	Yageo	RC0201FR-07133KL Series= ?	Res= 133000.0Ohm Power= 50.0 mW Tolerance= 1.0%	1	\$0.01	 0201 2 mm ²
31.	Rfbb_ch1	Yageo	RC0201FR-0710KL Series= ?	Res= 10000.0Ohm Power= 50.0 mW Tolerance= 1.0%	1	\$0.01	 0201 2 mm ²
32.	Rfbb_ch2	Yageo	RC0201FR-0710KL Series= ?	Res= 10000.0Ohm Power= 50.0 mW Tolerance= 1.0%	1	\$0.01	 0201 2 mm ²
33.	Rfbb_ch3	Yageo	RC0201FR-0710KL Series= ?	Res= 10000.0Ohm Power= 50.0 mW Tolerance= 1.0%	1	\$0.01	 0201 2 mm ²
34.	Rfbt_ch1	Vishay-Dale	CRCW040273K2FKED Series= CRCW..e3	Res= 73200.0Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
35.	Rfbt_ch2	Yageo	RC0201FR-0744K2L Series= ?	Res= 44200.0Ohm Power= 50.0 mW Tolerance= 1.0%	1	\$0.01	 0201 2 mm ²
36.	Rfbt_ch3	Yageo	RC0201FR-0715K4L Series= ?	Res= 15400.0Ohm Power= 50.0 mW Tolerance= 1.0%	1	\$0.01	 0201 2 mm ²
37.	Rmode	Vishay-Dale	CRCW04029R76FKED Series= CRCW..e3	Res= 9.76Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
38.	Rpgood	Yageo	RC0201FR-07105KL Series= ?	Res= 105000.0Ohm Power= 50.0 mW Tolerance= 1.0%	1	\$0.01	 0201 2 mm ²
39.	Rreset	Yageo	RC0201FR-07105KL Series= ?	Res= 105000.0Ohm Power= 50.0 mW Tolerance= 1.0%	1	\$0.01	 0201 2 mm ²
40.	Rt	Panasonic	ERJ-6ENF5112V Series= ERJ-6E	Res= 51100.0Ohm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
41.	U1	Texas Instruments	TPS65261RHBR	Switcher	1	\$1.40	 RHB0032E 49 mm ²



Operating Values

#	Name	Value	Category	Description
1.	Cin_ch1 Pd	1.098 mW	Capacitor	Input capacitor power dissipation
2.	Cin_ch2 Pd	805.37 μ W	Capacitor	Input capacitor power dissipation
3.	Cin_ch3 Pd	238.44 μ W	Capacitor	Input capacitor power dissipation
4.	Cout_ch1 Pd	64.768 μ W	Capacitor	Output capacitor power dissipation
5.	Cout_ch2 Pd	30.995 μ W	Capacitor	Output capacitor power dissipation
6.	Cout_ch3 Pd	6.082 μ W	Capacitor	Output capacitor power dissipation
7.	IC Pd	3.103 W	IC	IC Pd
8.	IC Tj	85.861 degC	IC	PMU IC junction temperature
9.	ICThetaJA	18.0 degC/W	IC	IC junction-to-ambient thermal resistance
10.	Module ICPd	3.103 W	IC	IC Pd
11.	L1_ch1 Pd	362.91 mW	Inductor	Inductor power dissipation

#	Name	Value	Category	Description
12.	L1_ch2 Pd	96.726 mW	Inductor	Inductor power dissipation
13.	L1_ch3 Pd	160.89 mW	Inductor	Inductor power dissipation
14.	Cin_ch1 Pd	1.098 mW	Power	Input capacitor power dissipation
15.	Cin_ch2 Pd	805.37 μ W	Power	Input capacitor power dissipation
16.	Cin_ch3 Pd	238.44 μ W	Power	Input capacitor power dissipation
17.	Cout_ch1 Pd	64.768 μ W	Power	Output capacitor power dissipation
18.	Cout_ch2 Pd	30.995 μ W	Power	Output capacitor power dissipation
19.	Cout_ch3 Pd	6.082 μ W	Power	Output capacitor power dissipation
20.	L1_ch1 Pd	362.91 mW	Power	Inductor power dissipation
21.	L1_ch2 Pd	96.726 mW	Power	Inductor power dissipation
22.	L1_ch3 Pd	160.89 mW	Power	Inductor power dissipation
23.	Total Pd	3.727 W	Power	PMU total power dissipation
24.	BOM Count	46	System Information	Total Design BOM count
25.	Efficiency	86.844 %	System Information	PMU steady state efficiency
26.	FootPrint	363.0 mm ²	System Information	Total PMU footprint area of BOM components
27.	Frequency	854.108 kHz	System Information	Switching frequency
28.	Pout	24.6 W	System Information	Total PMU output power
29.	Total BOM	\$5.26	System Information	Total BOM Cost

Design Inputs

#	Name	Value	Description
1.	Iout	3.0	Maximum Output Current
2.	Iout1	3.0	Output Current #1
3.	Iout2	2.0	Output Current #2
4.	Iout3	2.0	Output Current #3
5.	Vin1Max	13.0	Maximum Input Voltage #1
6.	Vin1Min	11.0	Minimum Input Voltage #1
7.	Vin2Max	13.0	Maximum Input Voltage #2
8.	Vin2Min	11.0	Minimum Input Voltage #2
9.	Vin3Max	13.0	Maximum Input Voltage #3
10.	Vin3Min	11.0	Minimum Input Voltage #3
11.	Vout	5.0	Output Voltage
12.	Vout1	5.0	Output Voltage #1
13.	Vout2	3.3	Output Voltage #2
14.	Vout3	1.5	Output Voltage #3
15.	base_pn	TPS65261	Base Product Number
16.	source	DC	Input Source Type
17.	Ta	30.0	Ambient temperature

Design Assistance

1. **TPS65261** Product Folder : <http://www.ti.com/product/tps65261> : contains the data sheet and other resources.

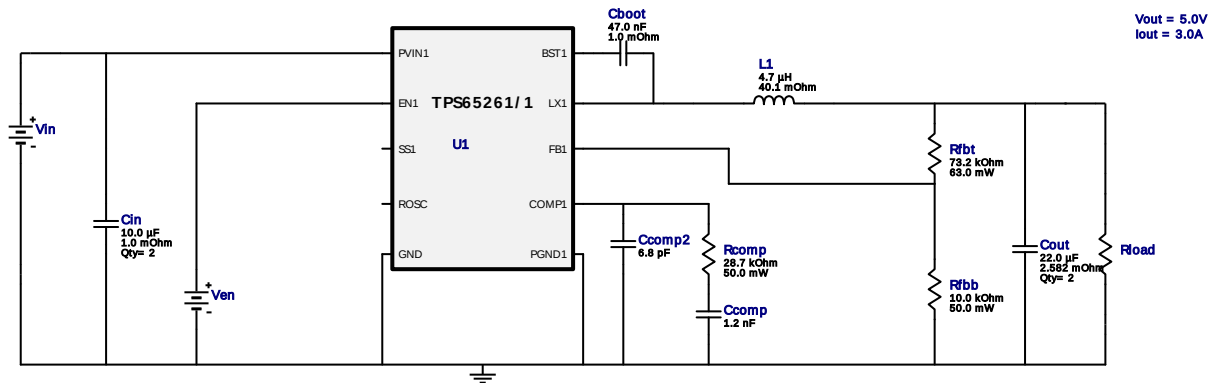


Vout = 5.0V
Iout = 3.0A

Device = TPS65261RHBR
Topology = Buck
Created = 2018-11-18 19:08:18.735
BOM Cost = \$NaN
BOM Count = NaN
Total Pd = 1.73W

WEBENCH® Design Report

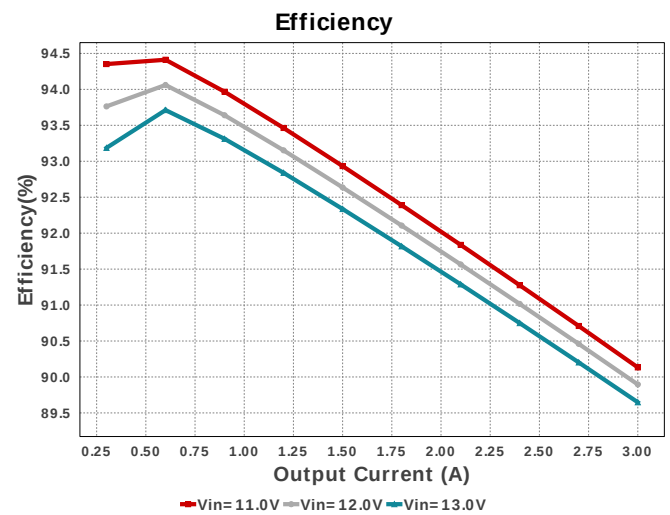
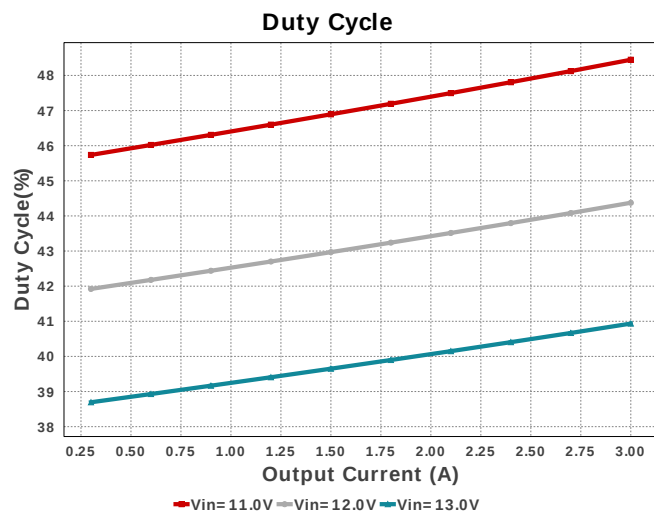
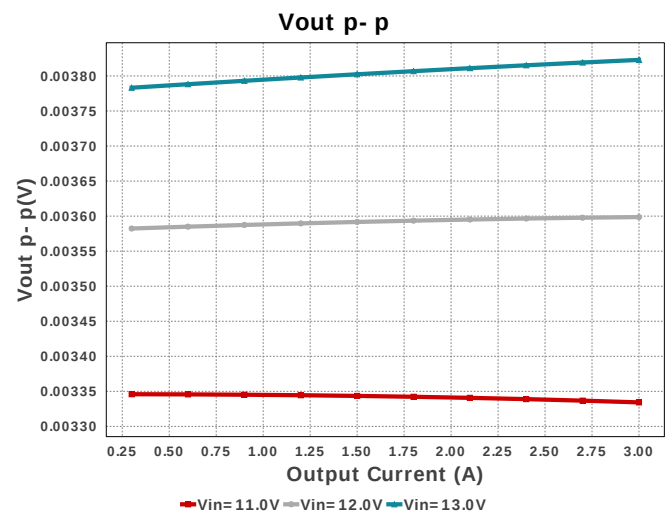
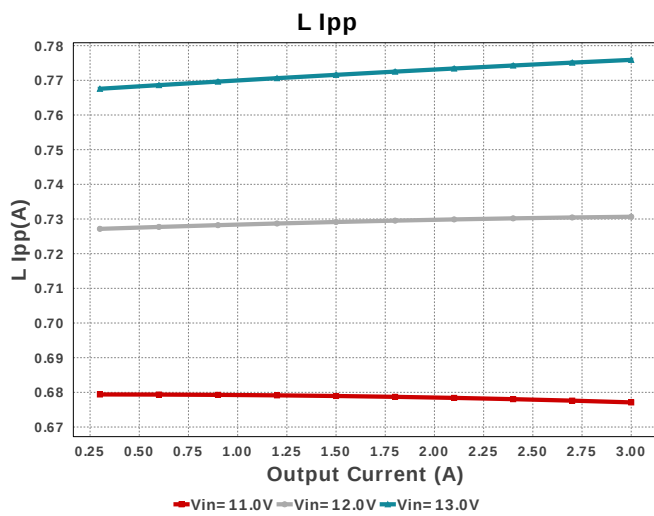
Design : TPS65261RHBR
TPS65261RHBR 11V-13V to 5.00V @ 3A

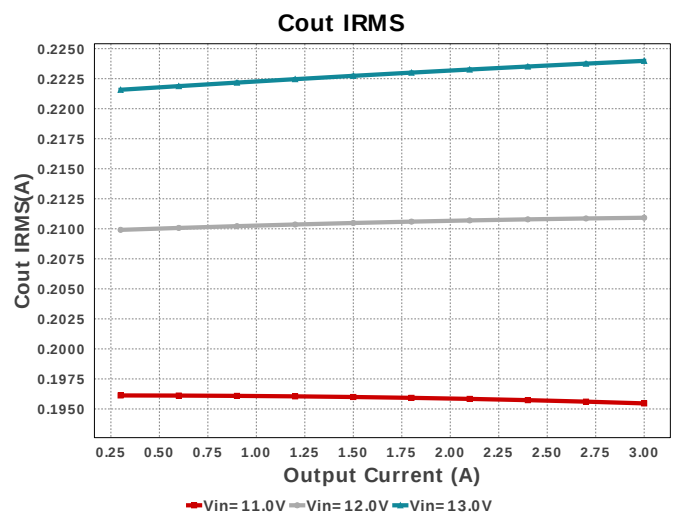
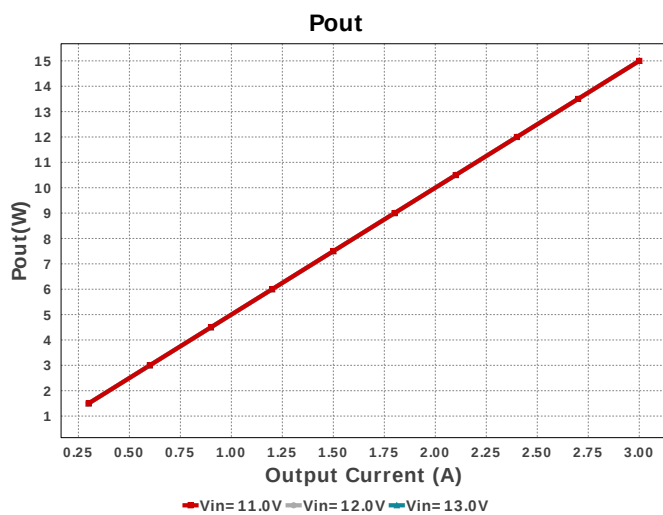
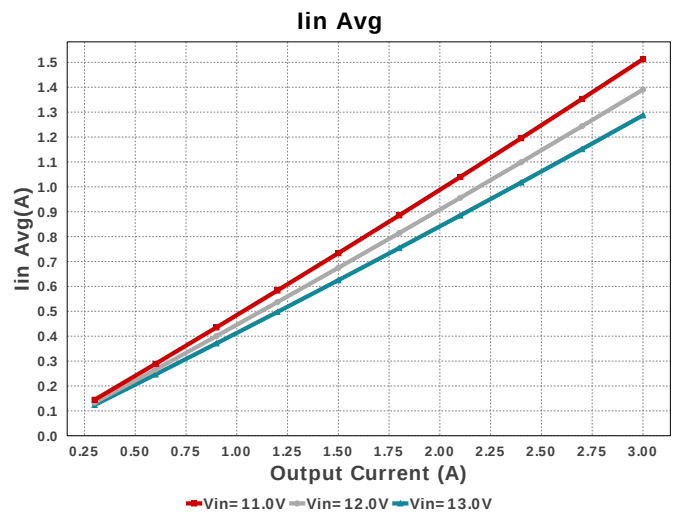
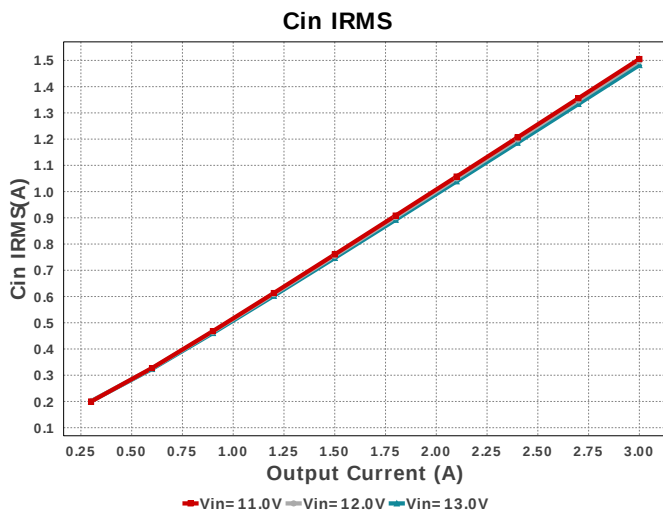
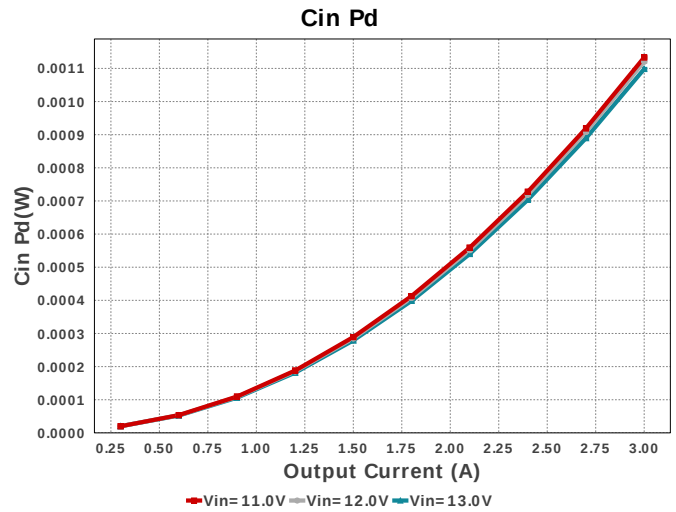
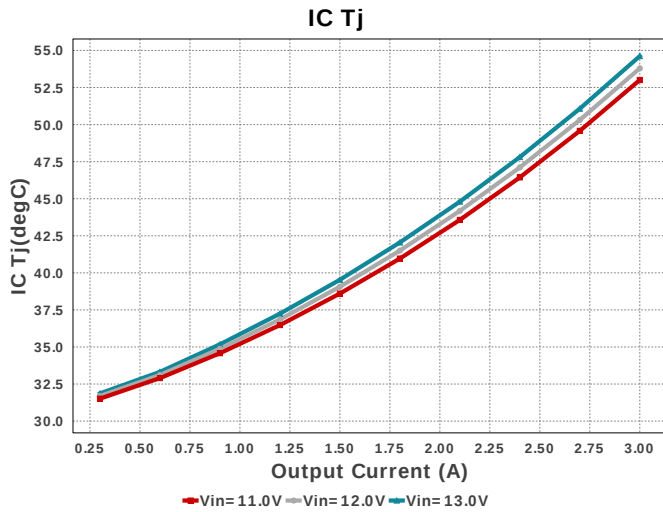


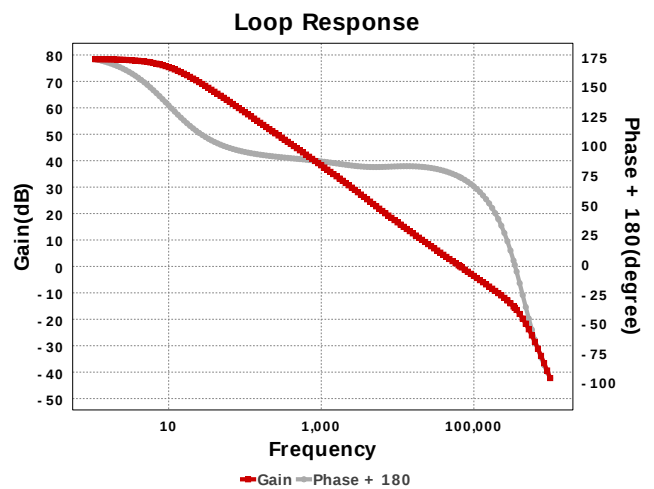
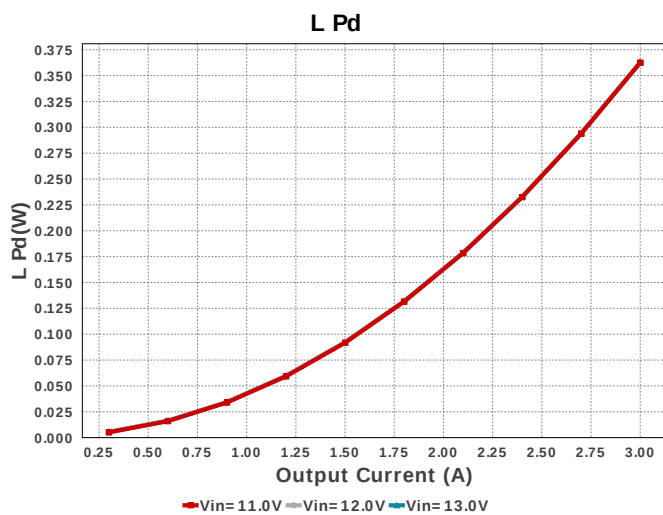
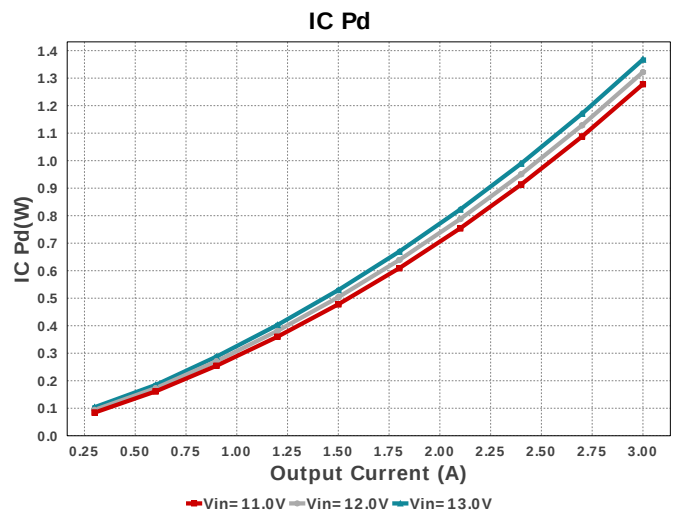
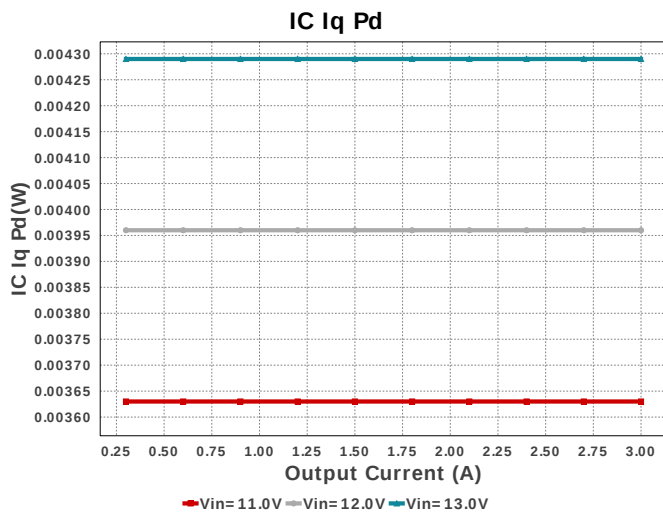
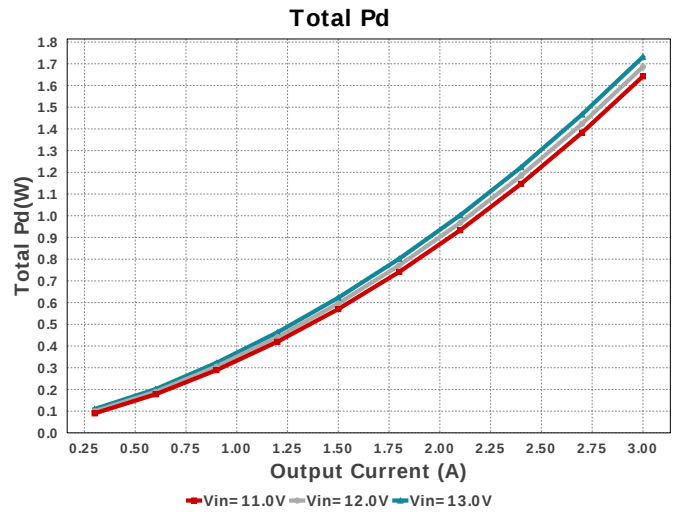
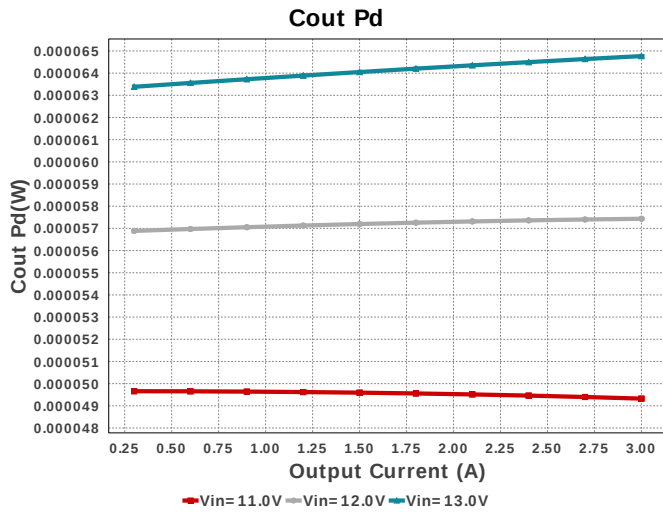
Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	MuRata	GRM155R71C473KA01D Series= X7R	Cap= 47.0 nF ESR= 1.0 mOhm VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
2.	Ccomp	Samsung Electro-Mechanics	CL10C122JB8NNNC Series= C0G/NP0	Cap= 1.2 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0603 5 mm ²
3.	Ccomp2	AVX	06031U6R8BAT2A Series= C0G/NP0	Cap= 6.8 pF VDC= 100.0 V IRMS= 0.0 A	1	\$0.07	0603 5 mm ²
4.	Cen	MuRata	GRM155R61C472KA01D Series= X5R	Cap= 4.7 nF ESR= 1.0 mOhm VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
5.	Cin	MuRata	GRM219R61E106KA12 Series= X5R	Cap= 10.0 uF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	2	\$0.06	0805 7 mm ²
6.	Cout	TDK	C3225X6S1C226M250AC Series= X6S	Cap= 22.0 uF ESR= 2.582 mOhm VDC= 16.0 V IRMS= 4.5756 A	2	\$0.27	1210_280 15 mm ²
7.	L1	Coilcraft	XAL4030-472MEB	L= 4.7 uH DCR= 40.1 mOhm	1	\$0.72	XAL4030 25 mm ²
8.	Rcomp	Yageo	RC0201FR-0728K7L Series= ?	Res= 28700.0Ohm Power= 50.0 mW Tolerance= 1.0%	1	\$0.01	0201 2 mm ²
9.	Rfbb	Yageo	RC0201FR-0710KL Series= ?	Res= 10000.0Ohm Power= 50.0 mW Tolerance= 1.0%	1	\$0.01	0201 2 mm ²
10.	Rfbt	Vishay-Dale	CRCW040273K2FKED Series= CRCW..e3	Res= 73200.0Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
11.	U1	Texas Instruments	TPS65261RHBR	Switcher	0	\$1.40	 RHB0032E 49 mm ²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	1.482 A	Capacitor	Input capacitor RMS ripple current
2.	Cin Pd	1.098 mW	Capacitor	Input capacitor power dissipation
3.	Cout IRMS	223.984 mA	Capacitor	Output capacitor RMS ripple current
4.	Cout Pd	64.768 μ W	Capacitor	Output capacitor power dissipation
5.	IC Iq Pd	4.29 mW	IC	IC Iq Pd
6.	IC Pd	1.368 W	IC	IC power dissipation
7.	ICThetaJA Effective	18.0 degC/W	IC	Applicable to the EVM in free space with no airflow
8.	Iin Avg	1.287 A	IC	Average input current
9.	L Ipp	775.9 mA	Inductor	Peak-to-peak inductor ripple current
10.	L Pd	362.91 mW	Inductor	Inductor power dissipation
11.	Cin Pd	1.098 mW	Power	Input capacitor power dissipation

#	Name	Value	Category	Description
12.	Cout Pd	64.768 μ W	Power	Output capacitor power dissipation
13.	IC Pd	1.368 W	Power	IC power dissipation
14.	L Pd	362.91 mW	Power	Inductor power dissipation
15.	Total Pd	1.732 W	Power	PMU channel power dissipation
16.	Cross Freq	66.168 kHz	System	Bode plot crossover frequency
			Information	
17.	Duty Cycle	40.935 %	System	Duty cycle
			Information	
18.	Efficiency	89.648 %	System	PMU channel steady state efficiency
			Information	
19.	Frequency	854.108 kHz	System	Switching frequency
			Information	
20.	Gain Marg	-15.65 dB	System	Bode Plot Gain Margin
			Information	
21.	Iout	3.0 A	System	Iout operating point
			Information	
22.	Low Freq Gain	78.397 dB	System	Gain at 1Hz
			Information	
23.	Mode	CCM	System	Conduction Mode
			Information	
24.	Phase Marg	73.97 deg	System	Bode Plot Phase Margin
			Information	
25.	Pout	15.0 W	System	Total output power
			Information	
26.	Vin	13.0 V	System	Vin operating point
			Information	
27.	Vout	5.0 V	System	Operational Output Voltage
			Information	
28.	Vout Actual	4.992 V	System	Vout Actual calculated based on selected voltage divider resistors
			Information	
29.	Vout Tolerance	2.795 %	System	Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable
			Information	
30.	Vout p-p	3.823 mV	System	Peak-to-peak output ripple voltage
			Information	

Design Inputs

#	Name	Value	Description
1.	Iout	3.0	Maximum Output Current
2.	VinMax	13.0	Maximum input voltage
3.	VinMin	11.0	Minimum input voltage
4.	Vout	5.0	Output Voltage
5.	acFrequency	0.0	AC Frequency
6.	base_pn	TPS65261/1	Base Product Number
7.	source	DC	Input Source Type
8.	Ta	30.0	Ambient temperature

Design Assistance

1. **TPS65261/1** Product Folder : <http://www.ti.com/product/TPS65261> : contains the data sheet and other resources.

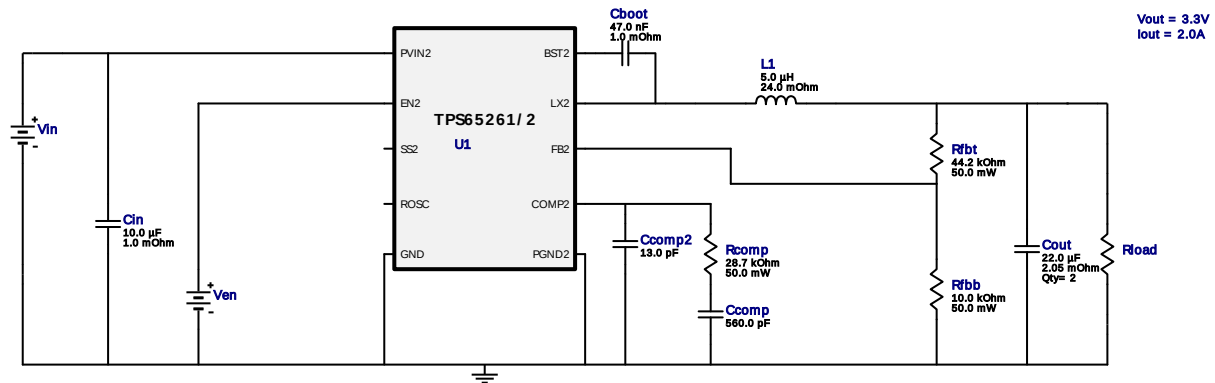


Vout = 3.3V
Iout = 2.0A

Device = TPS65261RHBR
Topology = Buck
Created = 2018-11-18 19:08:19.267
BOM Cost = \$NaN
BOM Count = NaN
Total Pd = 1.0W

WEBENCH® Design Report

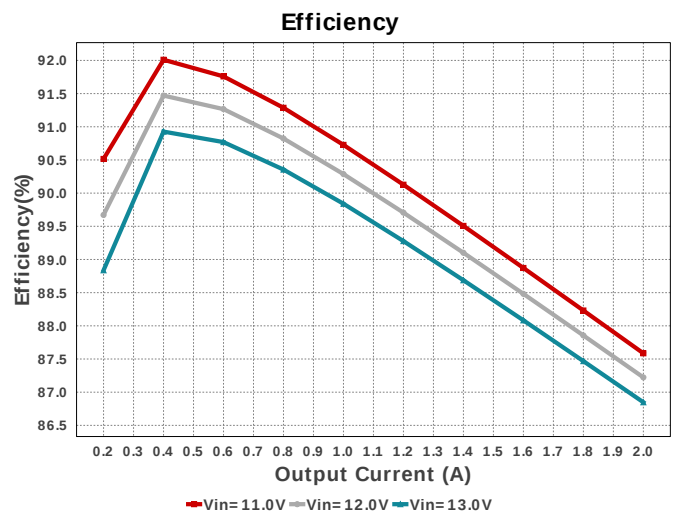
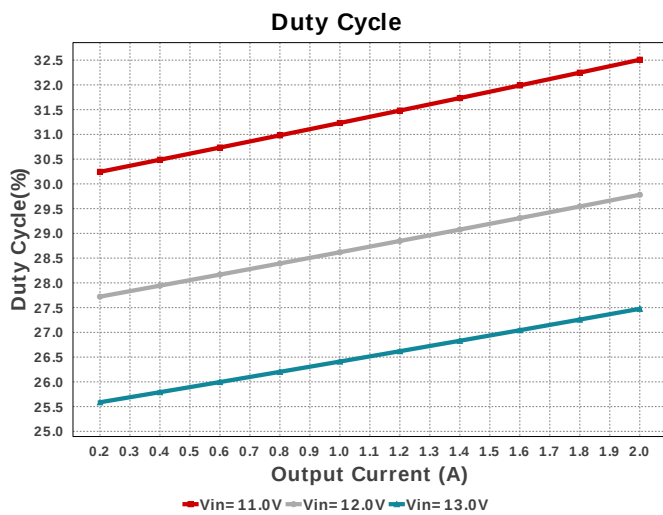
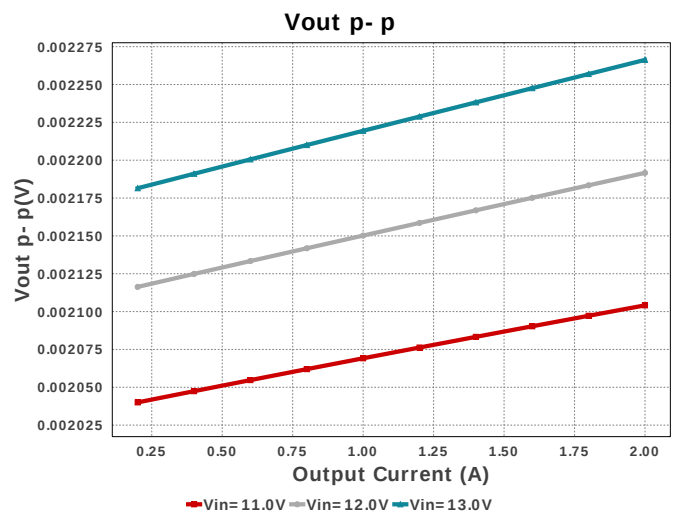
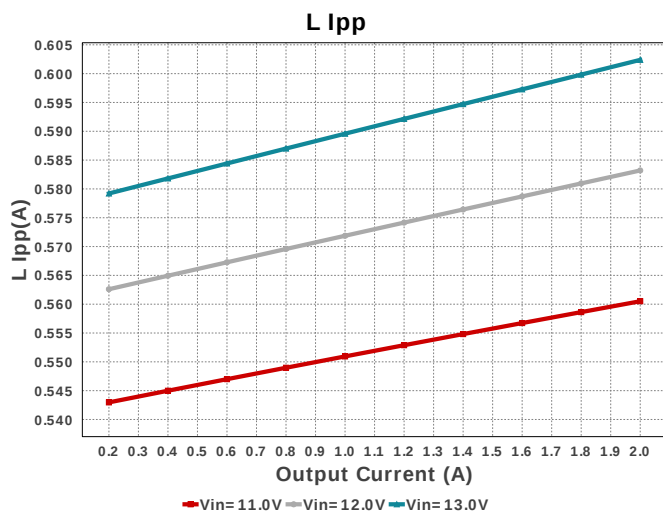
Design : TPS65261RHBR
TPS65261RHBR 11V-13V to 3.30V @ 2A

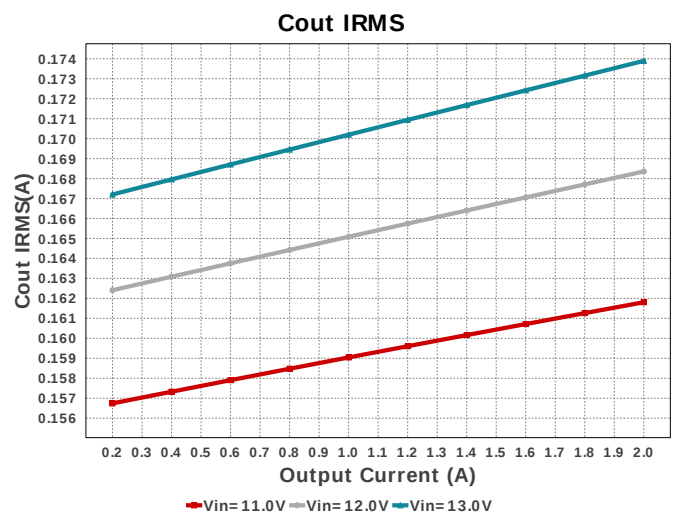
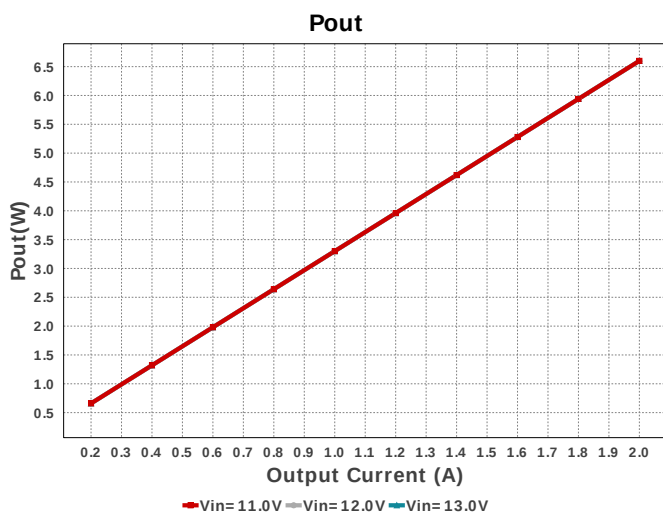
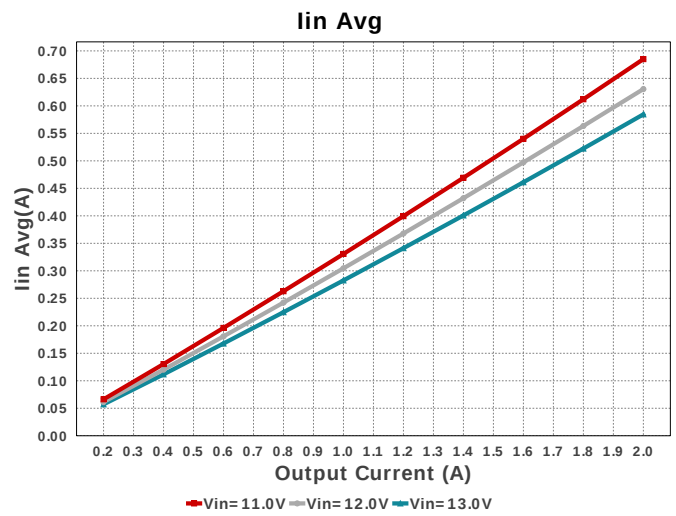
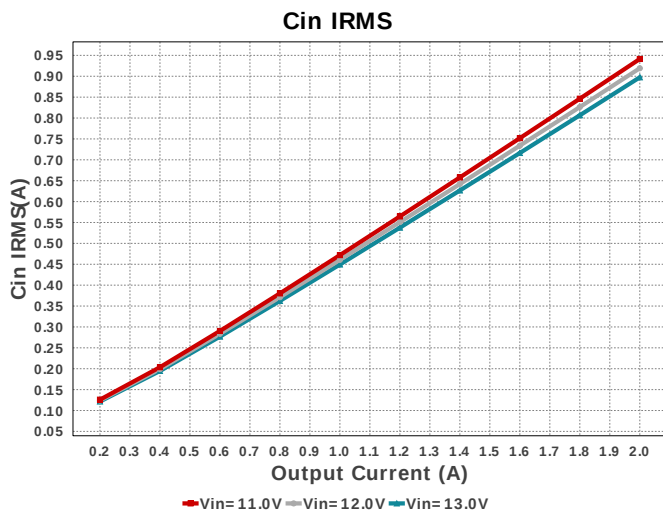
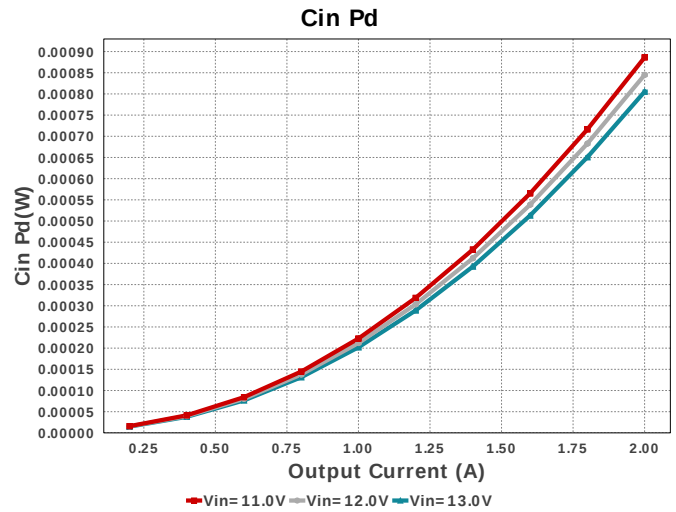
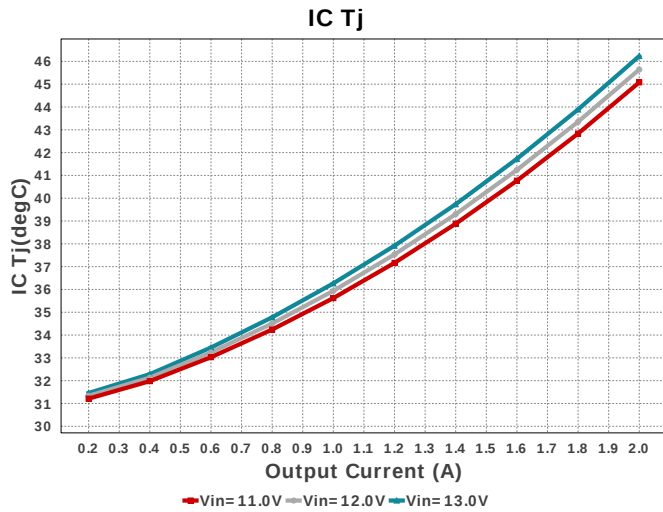


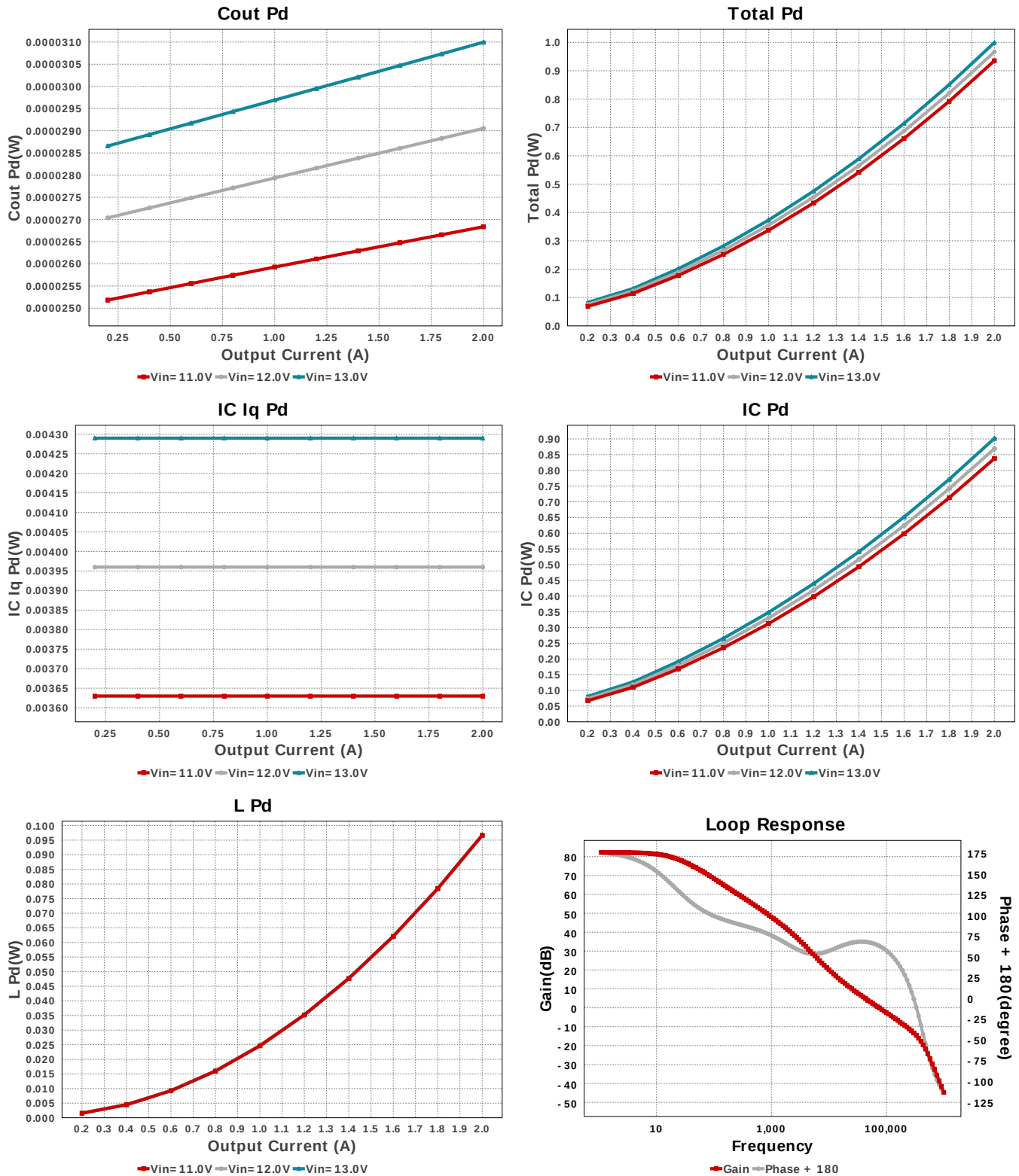
Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	MuRata	GRM155R71C473KA01D Series= X7R	Cap= 47.0 nF ESR= 1.0 mOhm VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
2.	Ccomp	Samsung Electro-Mechanics	CL05C561JB5NNNC Series= C0G/NP0	Cap= 560.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
3.	Ccomp2	Samsung Electro-Mechanics	CL21C130JBANNNC Series= C0G/NP0	Cap= 13.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
4.	Cen	MuRata	GRM155R61C472KA01D Series= X5R	Cap= 4.7 nF ESR= 1.0 mOhm VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
5.	Cin	MuRata	GRM219R61E106KA12 Series= X5R	Cap= 10.0 uF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	\$0.06	0805 7 mm ²
6.	Cout	TDK	C2012X5R1V226M125AC Series= X5R	Cap= 22.0 uF ESR= 2.05 mOhm VDC= 35.0 V IRMS= 4.5559 A	2	\$0.38	0805 7 mm ²
7.	L1	Bourns	SRR6038-5R0Y	L= 5.0 µH DCR= 24.0 mOhm	1	\$0.32	 SRR6038 77 mm ²
8.	Rcomp	Yageo	RC0201FR-0728K7L Series= ?	Res= 28700.0Ohm Power= 50.0 mW Tolerance= 1.0%	1	\$0.01	0201 2 mm ²
9.	Rfbb	Yageo	RC0201FR-0710KL Series= ?	Res= 10000.0Ohm Power= 50.0 mW Tolerance= 1.0%	1	\$0.01	0201 2 mm ²
10.	Rfbbt	Yageo	RC0201FR-0744K2L Series= ?	Res= 44200.0Ohm Power= 50.0 mW Tolerance= 1.0%	1	\$0.01	0201 2 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
11.	U1	Texas Instruments	TPS65261RHBR	Switcher	0	\$1.40	 RHB0032E 49 mm ²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	897.426 mA	Capacitor	Input capacitor RMS ripple current
2.	Cin Pd	805.37 μ W	Capacitor	Input capacitor power dissipation
3.	Cout IRMS	173.895 mA	Capacitor	Output capacitor RMS ripple current
4.	Cout Pd	30.995 μ W	Capacitor	Output capacitor power dissipation
5.	IC Iq Pd	4.29 mW	IC	IC Iq Pd
6.	IC Pd	901.74 mW	IC	IC power dissipation
7.	ICThetaJA Effective	18.0 degC/W	IC	Applicable to the EVM in free space with no airflow
8.	Iin Avg	584.58 mA	IC	Average input current
9.	L Ipp	602.39 mA	Inductor	Peak-to-peak inductor ripple current
10.	L Pd	96.726 mW	Inductor	Inductor power dissipation
11.	Cin Pd	805.37 μ W	Power	Input capacitor power dissipation

#	Name	Value	Category	Description
12.	Cout Pd	30.995 μ W	Power	Output capacitor power dissipation
13.	IC Pd	901.74 mW	Power	IC power dissipation
14.	L Pd	96.726 mW	Power	Inductor power dissipation
15.	Total Pd	999.492 mW	Power	PMU channel power dissipation
16.	Cross Freq	74.952 kHz	System	Bode plot crossover frequency
			Information	
17.	Duty Cycle	27.476 %	System	Duty cycle
			Information	
18.	Efficiency	86.848 %	System	PMU channel steady state efficiency
			Information	
19.	Frequency	854.108 kHz	System	Switching frequency
			Information	
20.	Gain Marg	-13.309 dB	System	Bode Plot Gain Margin
			Information	
21.	Iout	2.0 A	System	Iout operating point
			Information	
22.	Low Freq Gain	82.187 dB	System	Gain at 1Hz
			Information	
23.	Mode	CCM	System	Conduction Mode
			Information	
24.	Phase Marg	64.162 deg	System	Bode Plot Phase Margin
			Information	
25.	Pout	6.6 W	System	Total output power
			Information	
26.	Vin	13.0 V	System	Vin operating point
			Information	
27.	Vout	3.3 V	System	Operational Output Voltage
			Information	
28.	Vout Actual	3.252 V	System	Vout Actual calculated based on selected voltage divider resistors
			Information	
29.	Vout Tolerance	2.664 %	System	Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable
			Information	
30.	Vout p-p	2.266 mV	System	Peak-to-peak output ripple voltage
			Information	

Design Inputs

#	Name	Value	Description
1.	Iout	2.0	Maximum Output Current
2.	VinMax	13.0	Maximum input voltage
3.	VinMin	11.0	Minimum input voltage
4.	Vout	3.3	Output Voltage
5.	acFrequency	0.0	AC Frequency
6.	base_pn	TPS65261/2	Base Product Number
7.	source	DC	Input Source Type
8.	Ta	30.0	Ambient temperature

Design Assistance

1. **TPS65261/2** Product Folder : <http://www.ti.com/product/TPS65261> : contains the data sheet and other resources.

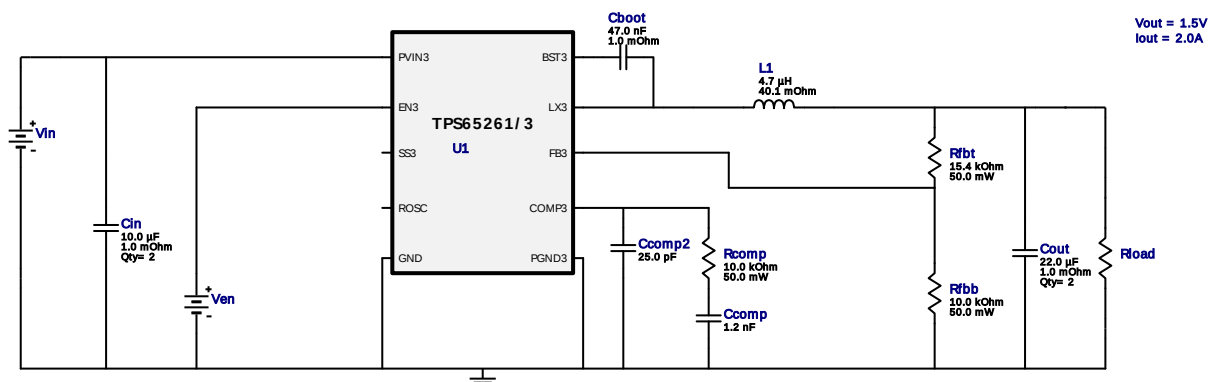


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Iout = 2.0A

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BOM Cost = \$NaN
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Total Pd = 1.0W

WEBENCH® Design Report

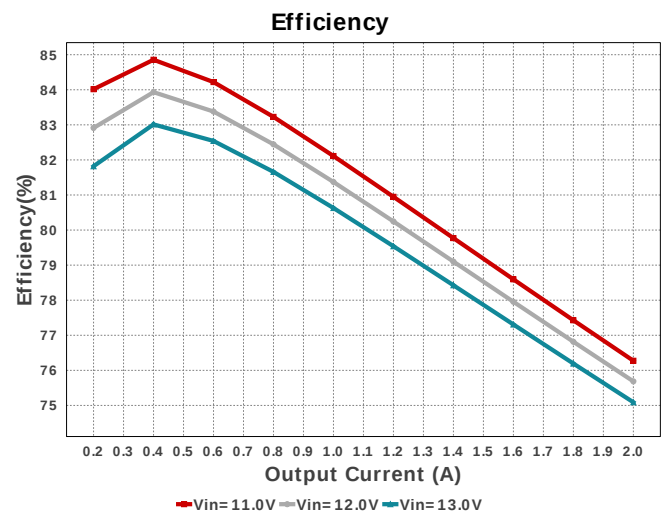
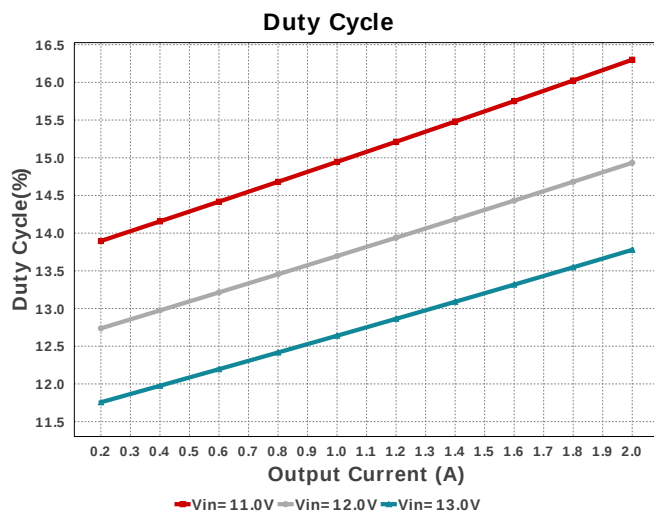
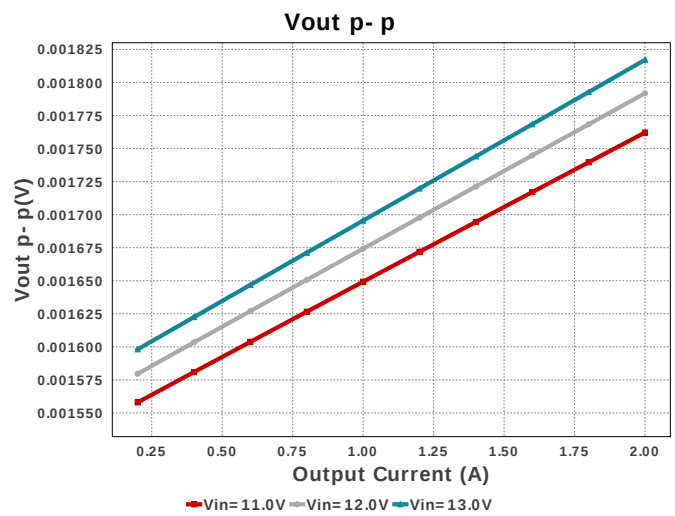
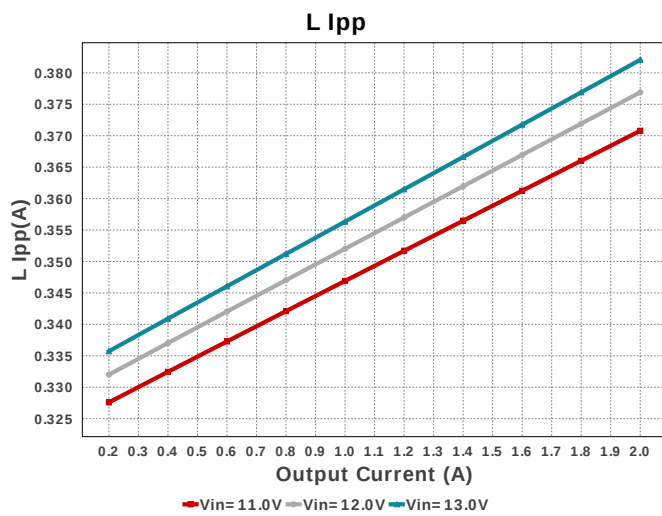
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TPS65261RHBR 11V-13V to 1.50V @ 2A

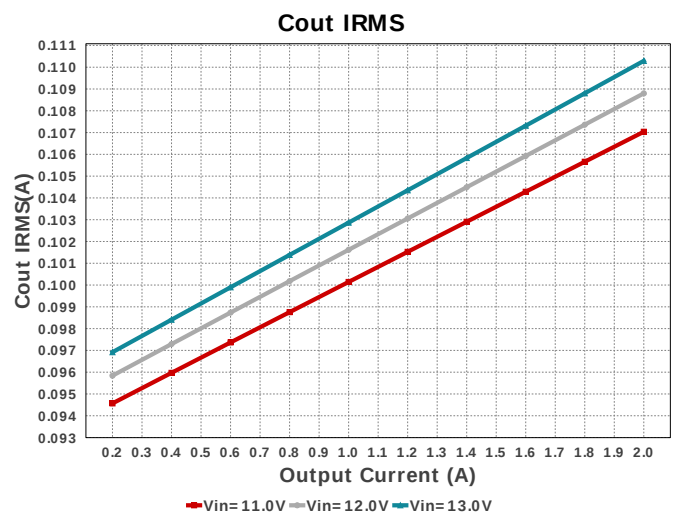
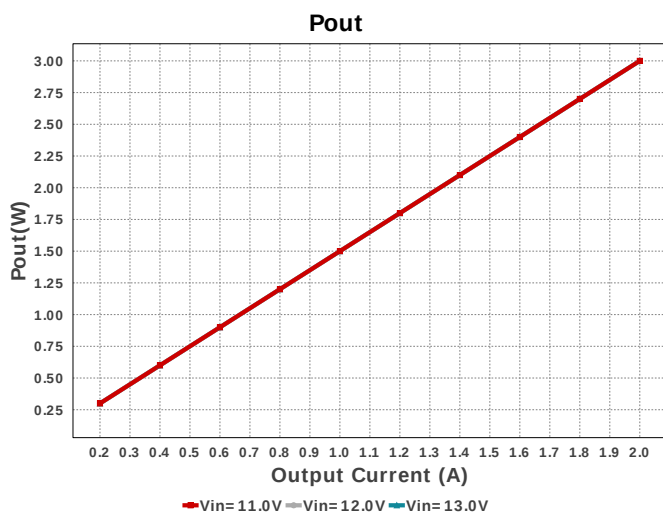
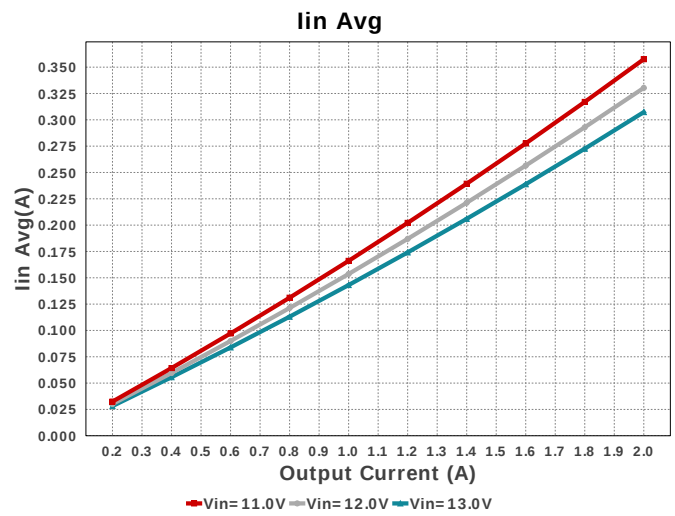
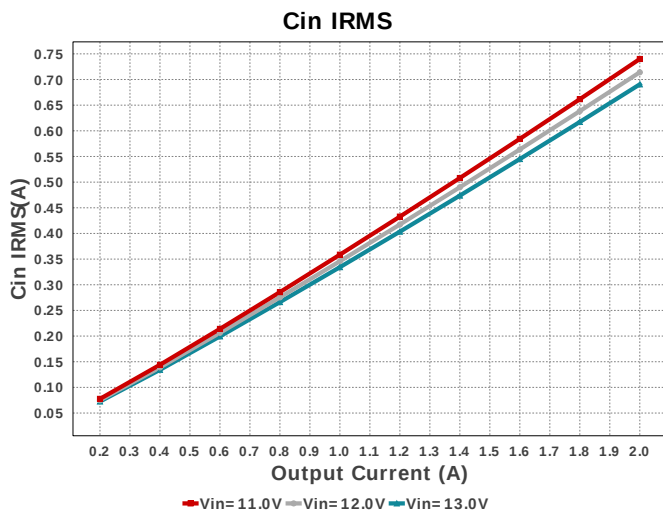
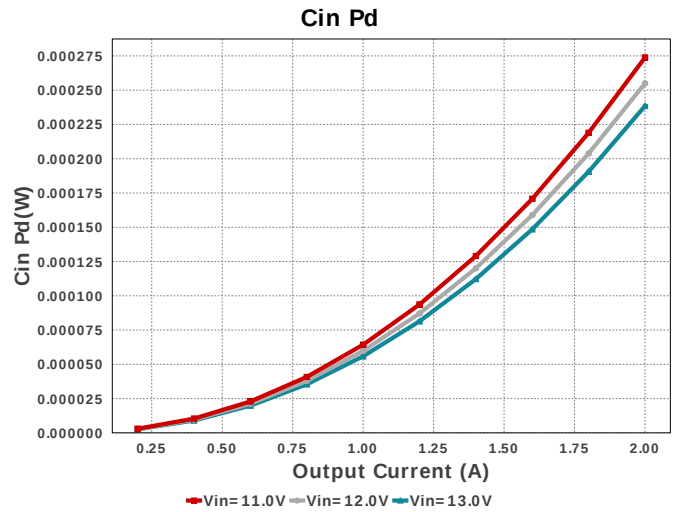
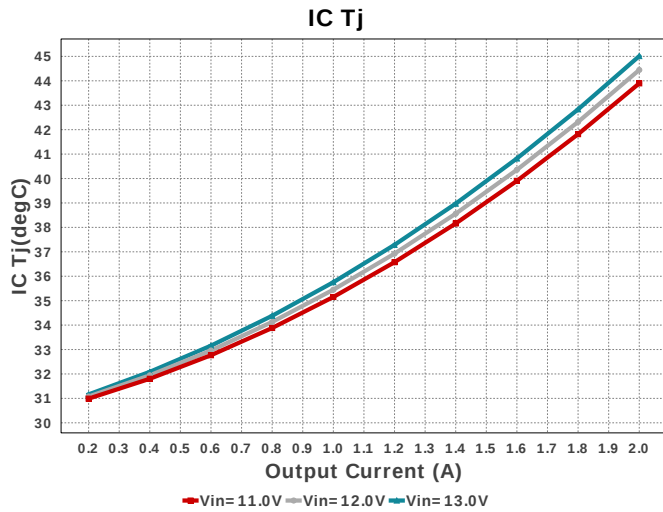


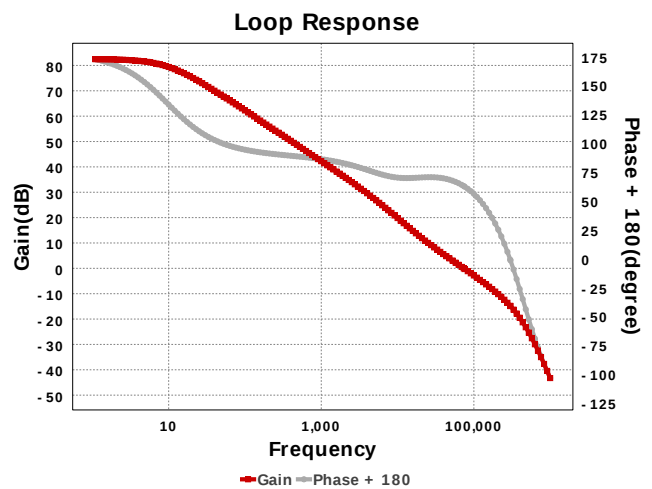
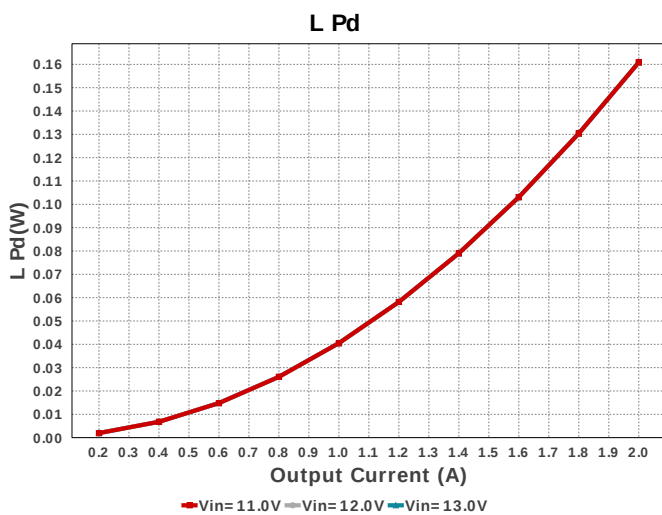
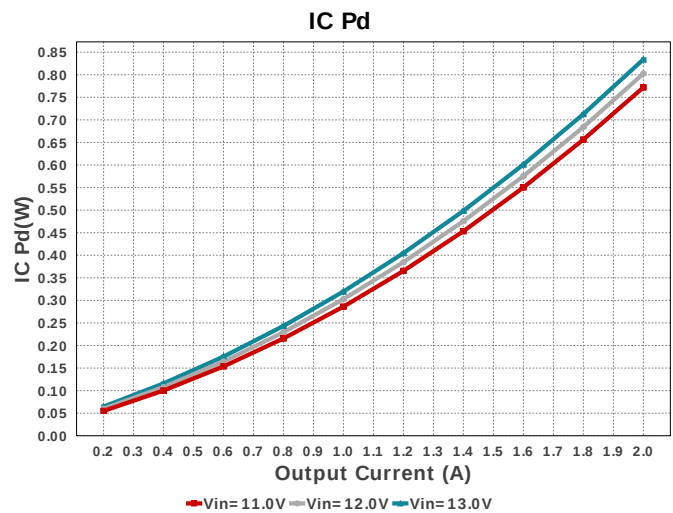
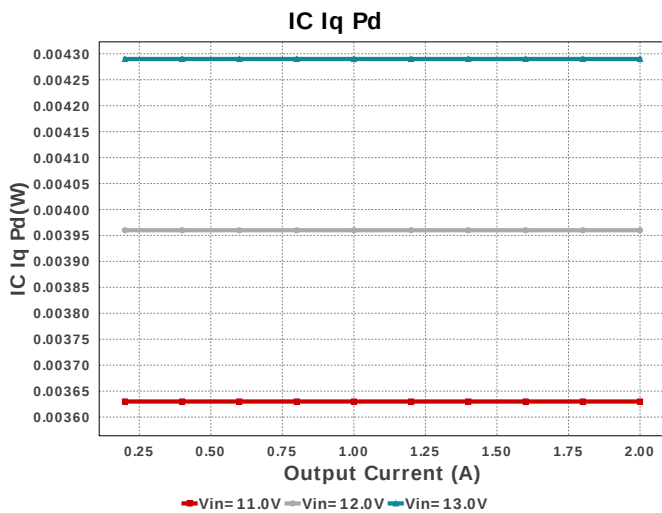
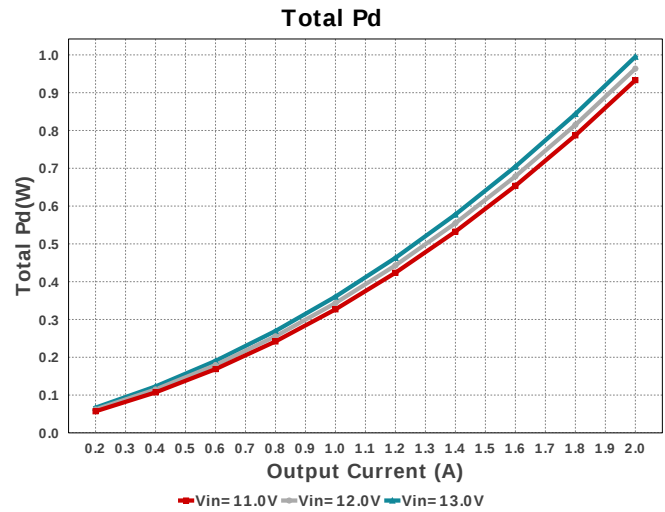
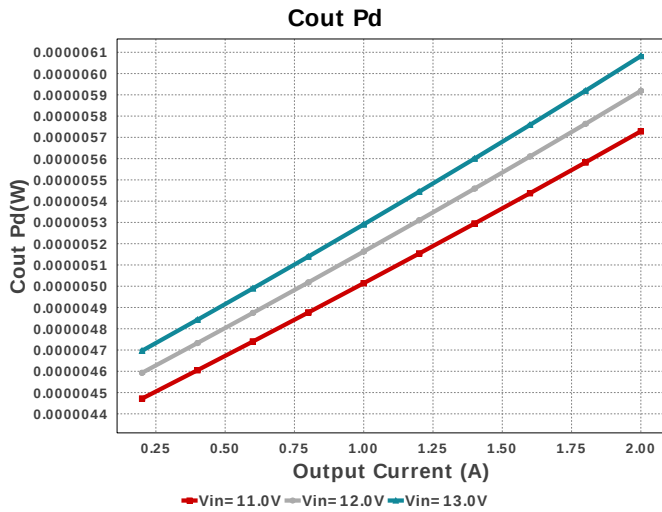
Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	MuRata	GRM155R71C473KA01D Series= X7R	Cap= 47.0 nF ESR= 1.0 mOhm VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
2.	Ccomp	Samsung Electro-Mechanics	CL10C122JB8NNNC Series= C0G/NP0	Cap= 1.2 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0603 5 mm ²
3.	Ccomp2	Samsung Electro-Mechanics	CL21C250JBANNNC Series= C0G/NP0	Cap= 25.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
4.	Cen	MuRata	GRM155R61C472KA01D Series= X5R	Cap= 4.7 nF ESR= 1.0 mOhm VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
5.	Cin	MuRata	GRM219R61E106KA12 Series= X5R	Cap= 10.0 uF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	2	\$0.06	0805 7 mm ²
6.	Cout	MuRata	GRM188R60J226MEA0D Series= X5R	Cap= 22.0 uF ESR= 1.0 mOhm VDC= 6.3 V IRMS= 6.0 A	2	\$0.06	0603 5 mm ²
7.	L1	Coilcraft	XAL4030-472MEB	L= 4.7 uH DCR= 40.1 mOhm	1	\$0.72	XAL4030 25 mm ²
8.	Rcomp	Yageo	RC0201FR-0710KL Series= ?	Res= 10000.0Ohm Power= 50.0 mW Tolerance= 1.0%	1	\$0.01	0201 2 mm ²
9.	Rfbb	Yageo	RC0201FR-0710KL Series= ?	Res= 10000.0Ohm Power= 50.0 mW Tolerance= 1.0%	1	\$0.01	0201 2 mm ²
10.	Rfbb	Yageo	RC0201FR-0715K4L Series= ?	Res= 15400.0Ohm Power= 50.0 mW Tolerance= 1.0%	1	\$0.01	0201 2 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
11.	U1	Texas Instruments	TPS65261RHBR	Switcher	0	\$1.40	 RHB0032E 49 mm ²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	690.563 mA	Capacitor	Input capacitor RMS ripple current
2.	Cin Pd	238.44 μ W	Capacitor	Input capacitor power dissipation
3.	Cout IRMS	110.292 mA	Capacitor	Output capacitor RMS ripple current
4.	Cout Pd	6.082 μ W	Capacitor	Output capacitor power dissipation
5.	IC Iq Pd	4.29 mW	IC	IC Iq Pd
6.	IC Pd	833.97 mW	IC	IC power dissipation
7.	ICThetaJA Effective	18.0 degC/W	IC	Applicable to the EVM in free space with no airflow
8.	Iin Avg	307.32 mA	IC	Average input current
9.	L Ipp	382.06 mA	Inductor	Peak-to-peak inductor ripple current
10.	L Pd	160.89 mW	Inductor	Inductor power dissipation
11.	Cin Pd	238.44 μ W	Power	Input capacitor power dissipation

#	Name	Value	Category	Description
12.	Cout Pd	6.082 μ W	Power	Output capacitor power dissipation
13.	IC Pd	833.97 mW	Power	IC power dissipation
14.	L Pd	160.89 mW	Power	Inductor power dissipation
15.	Total Pd	995.194 mW	Power	PMU channel power dissipation
16.	Cross Freq	73.623 kHz	System	Bode plot crossover frequency
17.	Duty Cycle	13.778 %	System	Duty cycle
18.	Efficiency	75.09 %	System	PMU channel steady state efficiency
19.	Frequency	854.108 kHz	System	Switching frequency
20.	Gain Marg	-14.774 dB	System	Bode Plot Gain Margin
21.	Iout	2.0 A	System	Iout operating point
22.	Low Freq Gain	82.454 dB	System	Gain at 1Hz
23.	Mode	CCM	System	Conduction Mode
24.	Phase Marg	63.733 deg	System	Bode Plot Phase Margin
25.	Pout	3.0 W	System	Total output power
26.	Vin	13.0 V	System	Vin operating point
27.	Vout	1.5 V	System	Operational Output Voltage
28.	Vout Actual	1.524 V	System	Vout Actual calculated based on selected voltage divider resistors
29.	Vout Tolerance	2.237 %	System	Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable
30.	Vout p-p	1.817 mV	System	Peak-to-peak output ripple voltage

Design Inputs

#	Name	Value	Description
1.	Iout	2.0	Maximum Output Current
2.	VinMax	13.0	Maximum input voltage
3.	VinMin	11.0	Minimum input voltage
4.	Vout	1.5	Output Voltage
5.	acFrequency	0.0	AC Frequency
6.	base_pn	TPS65261/3	Base Product Number
7.	source	DC	Input Source Type
8.	Ta	30.0	Ambient temperature

Design Assistance

1. **TPS65261/3** Product Folder : <http://www.ti.com/product/TPS65261> : contains the data sheet and other resources.

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