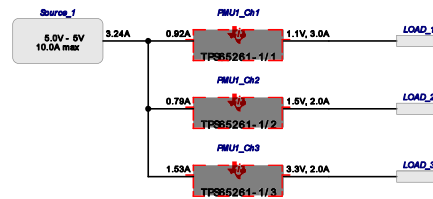




WEBENCH[®] Power Architect

WEBENCH Power Architect Project ID : 38 TPS65261-1 PMU project Power Architect 2018-12-05 01:20:30.374



Project Report

Project : 4992226/38 : TPS65261-1 PMU project
Created : 2018-12-05 01:20:30.374

Project Summary

- | | |
|-----------------------------------|-----------------------|
| 1. Total System Efficiency | 79.69 % |
| 2. Total System BOM Count | 39.0 |
| 3. Total System Footprint | 372.0 mm ² |
| 4. Total System BOM Cost | \$7.10 |
| 5. Total System Power Dissipation | 3.287 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

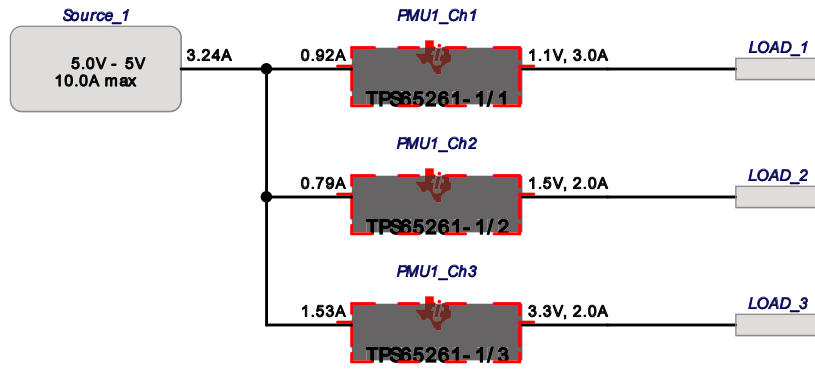
#	Name	NSID	Description	Vout	Iout	Efficiency	Foot-print	Cost	Design	Page
1.	PMU1_Ch1	TPS65261-1/1	Buck : 4.5V to 18V Input, 2A/3A Output Triple DC-DC Buck Converters	1.1 V	3.0 A	70.2%	192	\$1.92	407	9
2.	PMU1_Ch2	TPS65261-1/2	Buck : 4.5V to 18V Input, 2A/3A Output Triple DC-DC Buck Converters	1.5 V	2.0 A	76.7%	121	\$2.37	408	14
3.	PMU1_Ch3	TPS65261-1/3	Buck : 4.5V to 18V Input, 2A/3A Output Triple DC-DC Buck Converters	3.3 V	2.0 A	86.8%	123	\$2.79	409	19
4.	PMU1	TPS65261-1	PMU : 4.5V to 18V Input, 2A/3A Output Triple DC-DC Buck Converters	V	NaN A	79.6%	369	\$4.39	406	4

Power Loads

#	Name	VLoad	Iload	Description
1.	LOAD_1	1.1 V	3.0 A	VoutRipple=10%
2.	LOAD_2	1.5 V	2.0 A	VoutRipple=10%
3.	LOAD_3	3.3 V	2.0 A	VoutRipple=10%

Project Diagram

WEBENCH® Power Architect Project ID : 38 TPS65261-1 PMU project Power Architect 2018-12-05 01:20:30.374



Electrical Procurement BOM

Manufacturer	Part Number	Description	Quantity	Budgetary Price	Footprint (mm ²)
Kemet	C0805C105K4RACTU	0805	1	\$0.02	7
TDK	C2012X6S1C226M125AC	0805	2	\$0.27	7
Samsung Electro-Mechanics	CL10C122JB8NNNC	0603	2	\$0.01	9
Samsung Electro-Mechanics	CL21C140JBANNNC	0805	1	\$0.01	7
Samsung Electro-Mechanics	CL21C300JBANNNC	0805	1	\$0.01	7
Samsung Electro-Mechanics	CL21C360JBANNNC	0805	1	\$0.01	7
Samsung Electro-Mechanics	CL21C621JBCNNNC	0805	1	\$0.01	7
Vishay-Dale	CRCW04028K25FKED	0402	1	\$0.01	3
Vishay-Dale	CRCW04029R76FKED	0402	1	\$0.01	3
Vishay-Dale	CRCW080515K0FKEA	0805	1	\$0.01	7
Vishay-Dale	CRCW080517K8FKEA	0805	1	\$0.01	7
Vishay-Dale	CRCW080528K0FKEA	0805	1	\$0.01	7
Taiyo Yuden	EMK212BJ106KG-T	0805	6	\$0.03	20
Panasonic	ERJ-6ENF3742V	0805	1	\$0.01	7
MuRata	GRM033R71A103KA01D	0201	3	\$0.01	6
MuRata	GRM155R61C472KA01D	0402	3	\$0.01	9
MuRata	GRM155R61C473KA01D	0402	3	\$0.01	9
MuRata	GRM188R60J226MEA0D	0603	4	\$0.06	9
Vishay-Dale	IHLP1212BZER2R2M11	IHLP-1212BZ	2	\$0.56	39
Yageo	RC0201FR-07105KL	0201	2	\$0.01	4
Yageo	RC0201FR-0710KL	0201	3	\$0.01	6
Yageo	RC0201FR-07133KL	0201	1	\$0.01	2
Yageo	RC0201FR-0715K4L	0201	1	\$0.01	2
Yageo	RC0201FR-0718K7L	0201	1	\$0.01	2
Yageo	RC0201FR-0744K2L	0201	1	\$0.01	2
Texas Instruments	TPS65261-1RHBR	RHB0032E	1	\$1.40	49
Coilcraft	XFL4020-222MEB	XFL4020	1	\$0.61	25
Total			47	\$2.68	107000000000005

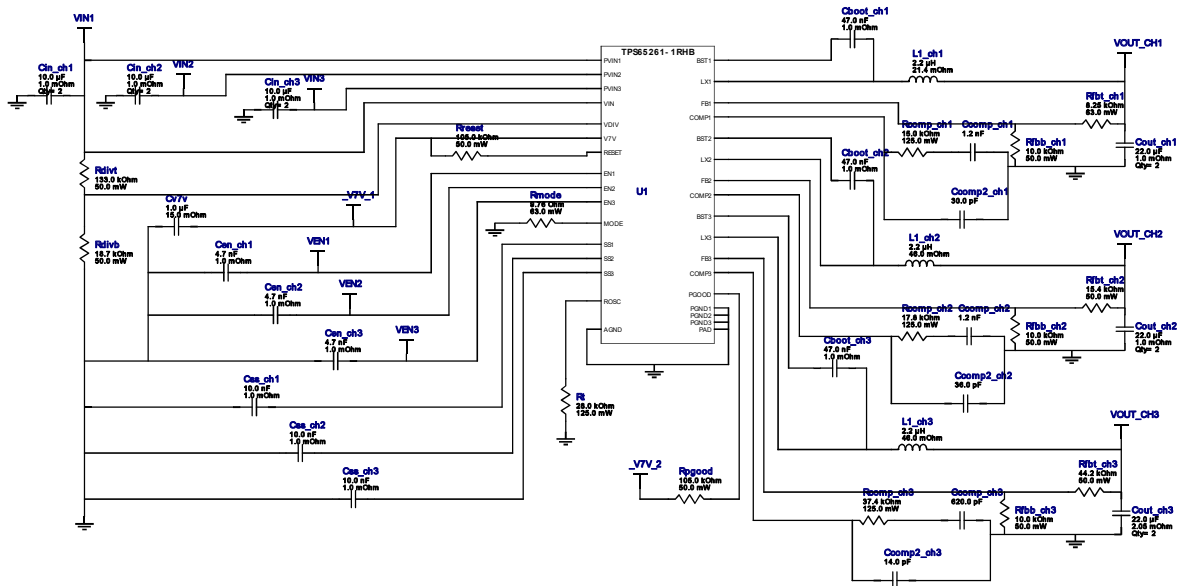


Vout = 1.1V
 Vout2 = 1.5V
 Iout = 3.0A
 Iout2 = 2.0A

Device = TPS65261-1RHBR
 Topology = PMU
 Created = 2018-12-05 01:20:26.475
 BOM Cost = \$4.41
 BOM Count = 47
 Total Pd = 3.29W

WEBENCH® Design Report


















Design : TPS65261-1RHBR
 Design 406 - TPS65261-1RHBR




















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.

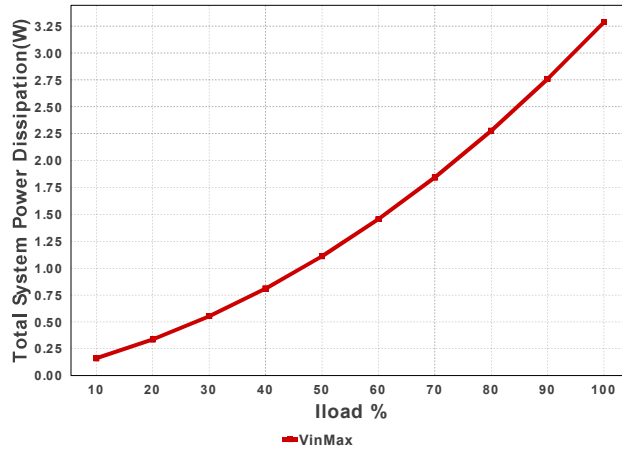
Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot_ch1	MuRata	GRM155R61C473KA01D Series= X5R	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	GRM155R61C473KA01D Series= X5R	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	GRM155R61C473KA01D Series= X5R	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	Samsung Electro-Mechanics	CL21C300JBANNNC Series= C0G/NP0	Cap= 30.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
5.	Ccomp2_ch2	Samsung Electro-Mechanics	CL21C360JBANNNC Series= C0G/NP0	Cap= 36.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
6.	Ccomp2_ch3	Samsung Electro-Mechanics	CL21C140JBANNNC Series= C0G/NP0	Cap= 14.0 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

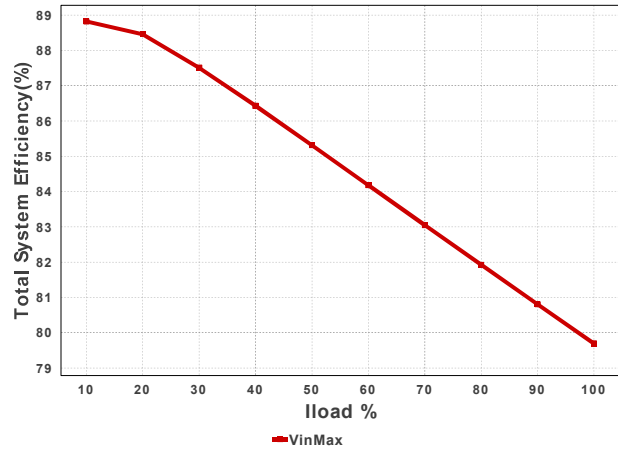
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
8.	Ccomp_ch2	Samsung Electro-Mechanics	CL10C122JB8NNNC Series= C0G/NP0	Cap= 1.2 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0603 5 mm ²
9.	Ccomp_ch3	Samsung Electro-Mechanics	CL21C621JBCNNNC Series= C0G/NP0	Cap= 620.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 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	Taiyo Yuden	EMK212BJ106KG-T Series= X5R	Cap= 10.0 uF ESR= 1.0 mOhm VDC= 16.0 V IRMS= 0.0 A	2	\$0.03	 0805 7 mm ²
14.	Cin_ch2	Taiyo Yuden	EMK212BJ106KG-T Series= X5R	Cap= 10.0 uF ESR= 1.0 mOhm VDC= 16.0 V IRMS= 0.0 A	2	\$0.03	 0805 7 mm ²
15.	Cin_ch3	Taiyo Yuden	EMK212BJ106KG-T Series= X5R	Cap= 10.0 uF ESR= 1.0 mOhm VDC= 16.0 V IRMS= 0.0 A	2	\$0.03	 0805 7 mm ²
16.	Cout_ch1	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
17.	Cout_ch2	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
18.	Cout_ch3	TDK	C2012X6S1C226M125AC Series= X6S	Cap= 22.0 uF ESR= 2.05 mOhm VDC= 16.0 V IRMS= 4.5559 A	2	\$0.27	 0805 7 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	XFL4020-222MEB	L= 2.2 uH DCR= 21.4 mOhm	1	\$0.61	 XFL4020 25 mm ²
24.	L1_ch2	Vishay-Dale	IHLP1212BZER2R2M11	L= 2.2 uH DCR= 46.0 mOhm	1	\$0.56	 IHLP-1212BZ 19 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
25.	L1_ch3	Vishay-Dale	IHLP1212BZER2R2M11	L= 2.2 μ H DCR= 46.0 mOhm	1	\$0.56	 IHLP-1212BZ 19 mm ²
26.	Rcomp_ch1	Vishay-Dale	CRCW080515K0FKEA Series= CRCW..e3	Res= 15000.0Ohm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
27.	Rcomp_ch2	Vishay-Dale	CRCW080517K8FKEA Series= CRCW..e3	Res= 17800.0Ohm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
28.	Rcomp_ch3	Panasonic	ERJ-6ENF3742V Series= ERJ-6E	Res= 37400.0Ohm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
29.	Rdivb	Yageo	RC0201FR-0718K7L Series= ?	Res= 18700.0Ohm Power= 50.0 mW Tolerance= 1.0%	1	\$0.01	 0201 2 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	CRCW04028K25FKED Series= CRCW..e3	Res= 8250.0Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
35.	Rfbt_ch2	Yageo	RC0201FR-0715K4L Series= ?	Res= 15400.0Ohm Power= 50.0 mW Tolerance= 1.0%	1	\$0.01	 0201 2 mm ²
36.	Rfbt_ch3	Yageo	RC0201FR-0744K2L Series= ?	Res= 44200.0Ohm 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	Vishay-Dale	CRCW080528K0FKEA Series= CRCW..e3	Res= 28000.0Ohm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
41.	U1	Texas Instruments	TPS65261-1RHBR	Switcher	1	\$1.40	 RHB0032E 49 mm ²

Total System Power Dissipation



Total System Efficiency



Operating Values

#	Name	Value	Category	Description
1.	Cin_ch1 Pd	889.77 μ W	Capacitor	Input capacitor power dissipation
2.	Cin_ch2 Pd	465.03 μ W	Capacitor	Input capacitor power dissipation
3.	Cin_ch3 Pd	395.48 μ W	Capacitor	Input capacitor power dissipation
4.	Cout_ch1 Pd	3.389 μ W	Capacitor	Output capacitor power dissipation
5.	Cout_ch2 Pd	4.724 μ W	Capacitor	Output capacitor power dissipation
6.	Cout_ch3 Pd	6.968 μ W	Capacitor	Output capacitor power dissipation
7.	IC Pd	2.722 W	IC	IC Pd
8.	IC Tj	79.004 degC	IC	PMU IC junction temperature
9.	ICThetaJA	18.0 degC/W	IC	IC junction-to-ambient thermal resistance
10.	Module ICPd	2.722 W	IC	IC Pd
11.	L1_ch1 Pd	192.75 mW	Inductor	Inductor power dissipation
12.	L1_ch2 Pd	184.43 mW	Inductor	Inductor power dissipation
13.	L1_ch3 Pd	184.31 mW	Inductor	Inductor power dissipation
14.	Cin_ch1 Pd	889.77 μ W	Power	Input capacitor power dissipation
15.	Cin_ch2 Pd	465.03 μ W	Power	Input capacitor power dissipation
16.	Cin_ch3 Pd	395.48 μ W	Power	Input capacitor power dissipation
17.	Cout_ch1 Pd	3.389 μ W	Power	Output capacitor power dissipation
18.	Cout_ch2 Pd	4.724 μ W	Power	Output capacitor power dissipation
19.	Cout_ch3 Pd	6.968 μ W	Power	Output capacitor power dissipation
20.	L1_ch1 Pd	192.75 mW	Power	Inductor power dissipation
21.	L1_ch2 Pd	184.43 mW	Power	Inductor power dissipation
22.	L1_ch3 Pd	184.31 mW	Power	Inductor power dissipation
23.	Total Pd	3.287 W	Power	PMU total power dissipation
24.	BOM Count	47	System Information	Total Design BOM count
25.	Efficiency	79.69 %	System Information	PMU steady state efficiency
26.	FootPrint	304.0 mm ²	System Information	Total PMU footprint area of BOM components
27.	Frequency	1.535 MHz	System Information	Switching frequency
28.	Pout	12.9 W	System Information	Total PMU output power
29.	Total BOM	\$4.41	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.	SoftStart	1.2 ms	Soft Start Time (ms)
6.	Vin1Max	5.0	Maximum Input Voltage #1
7.	Vin1Min	5.0	Minimum Input Voltage #1
8.	Vin2Max	5.0	Maximum Input Voltage #2
9.	Vin2Min	5.0	Minimum Input Voltage #2
10.	Vin3Max	5.0	Maximum Input Voltage #3
11.	Vin3Min	5.0	Minimum Input Voltage #3
12.	Vout	1.1	Output Voltage
13.	Vout1	1.1	Output Voltage #1

#	Name	Value	Description
14.	Vout2	1.5	Output Voltage #2
15.	Vout3	3.3	Output Voltage #3
16.	acFrequency	0.0	AC Frequency
17.	base_pn	TPS65261-1	Base Product Number
18.	source	DC	Input Source Type
19.	Ta	30.0	Ambient temperature
20.	UserFsw	1.5 M	Customer Selected Frequency

Design Assistance

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

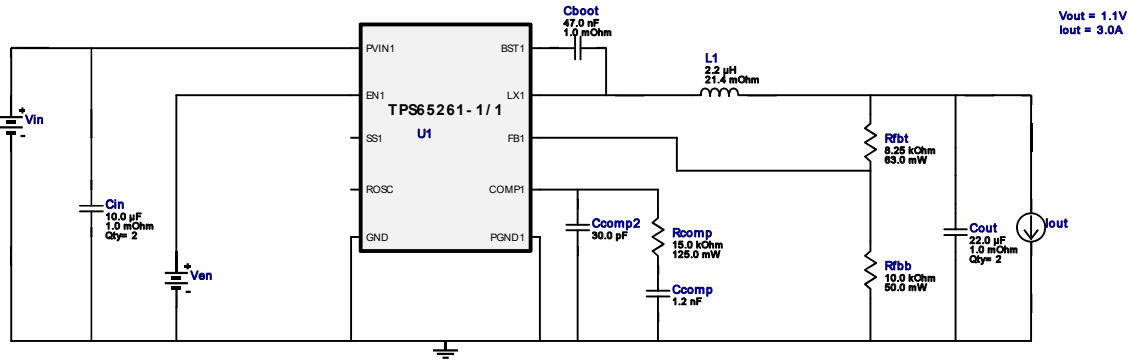


Vout = 1.1V
Iout = 3.0A

Device = TPS65261-1RHBR
Topology = Buck
Created = 2018-12-05 01:20:27.453
BOM Cost = \$2.26
BOM Count = 13
Total Pd = 1.32W


WEBENCH® Design Report

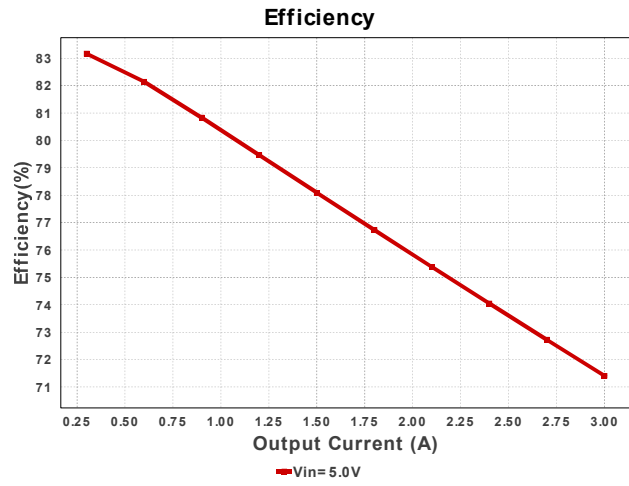
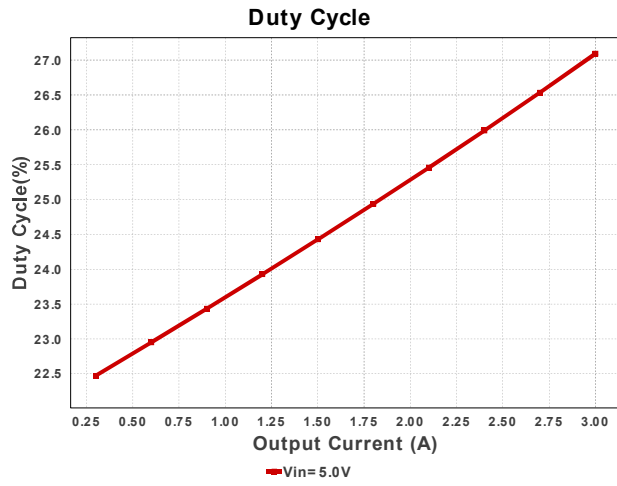
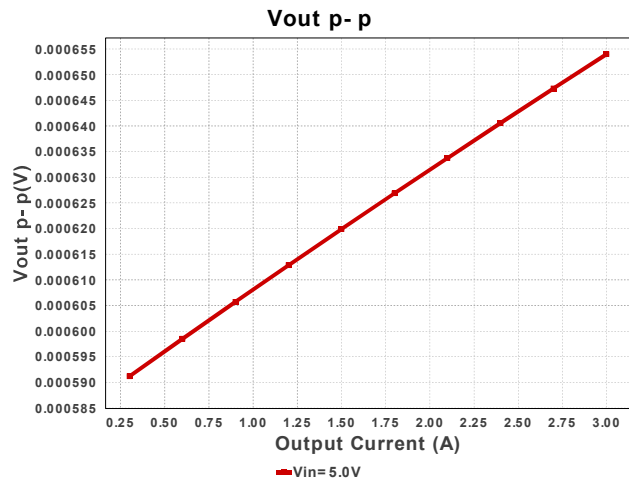
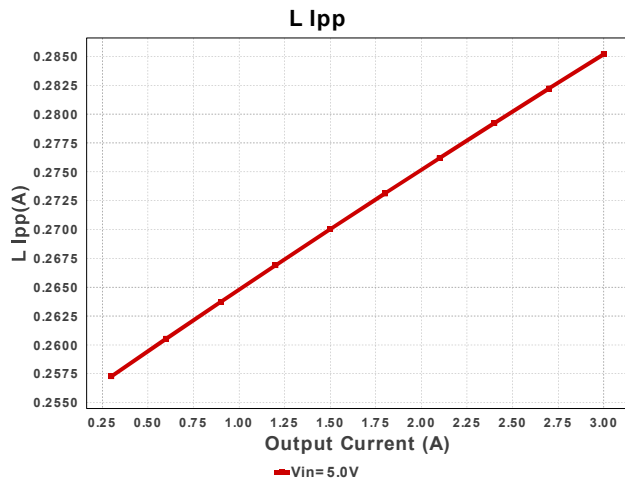
Design : TPS65261-1RHBR
TPS65261-1RHBR 5V-5V to 1.10V @ 3A

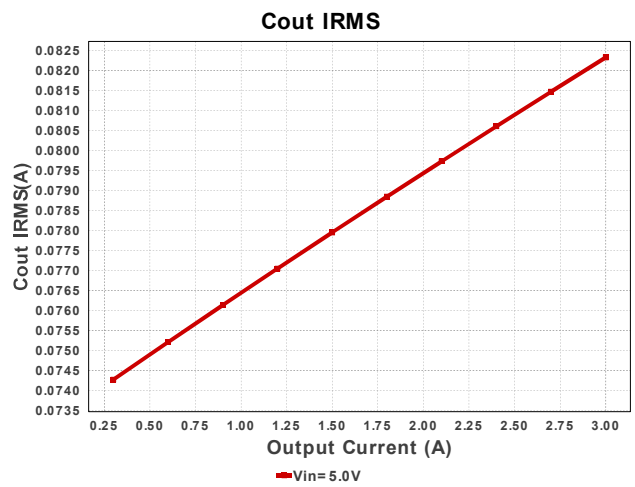
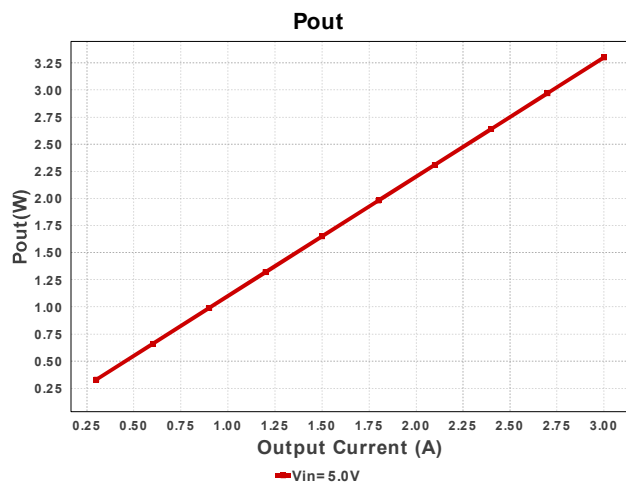
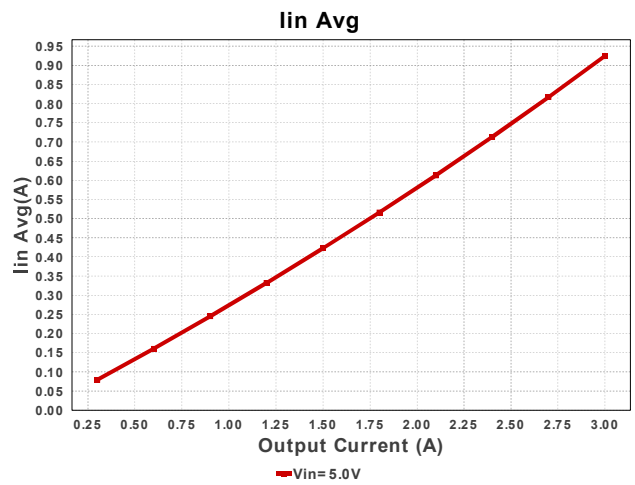
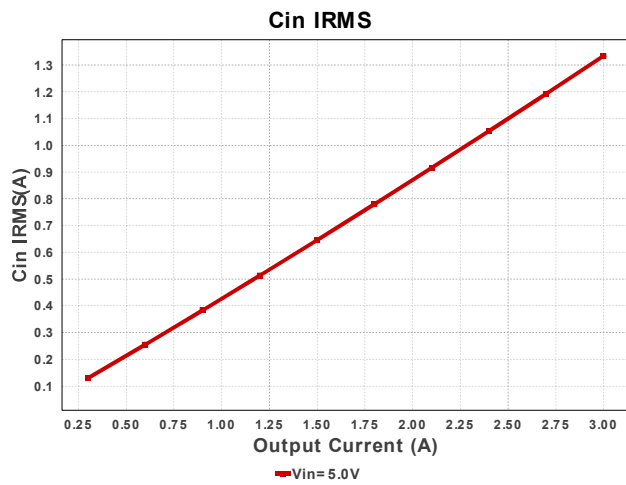
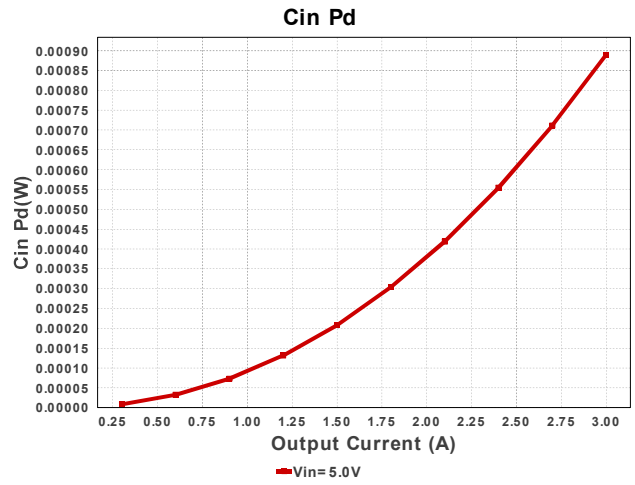
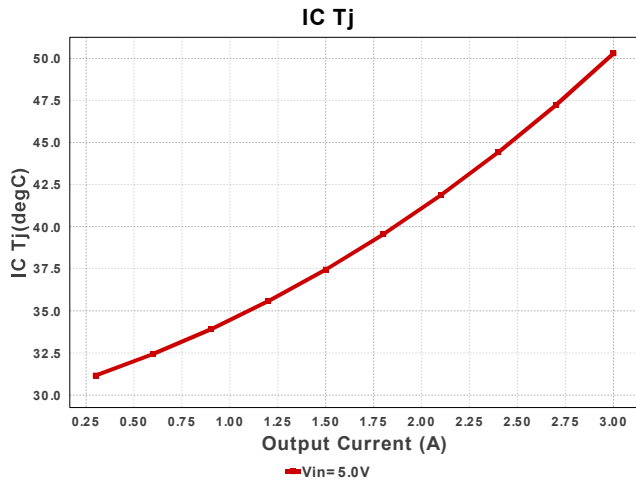


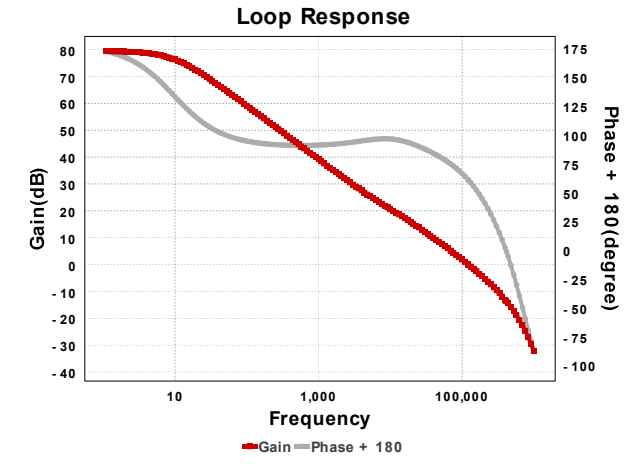
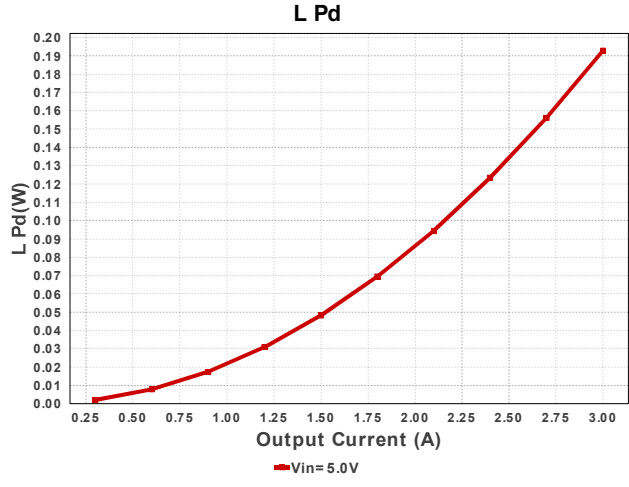
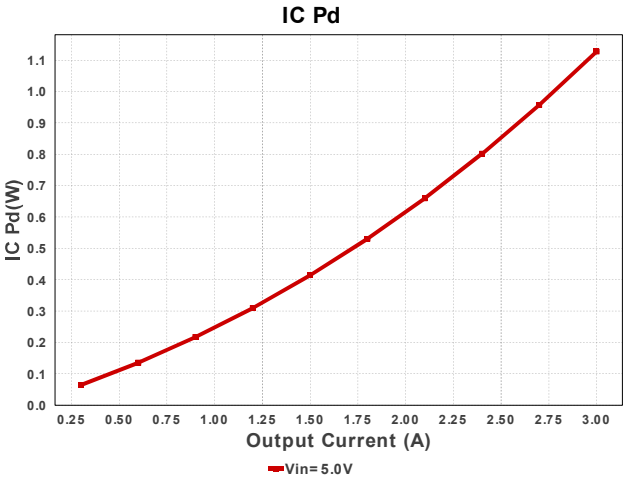
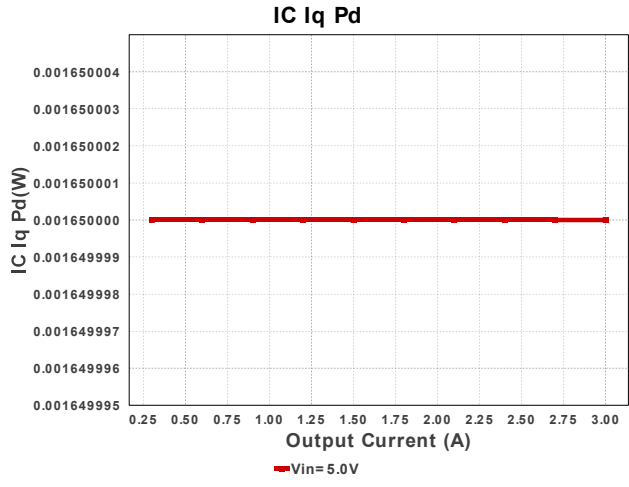
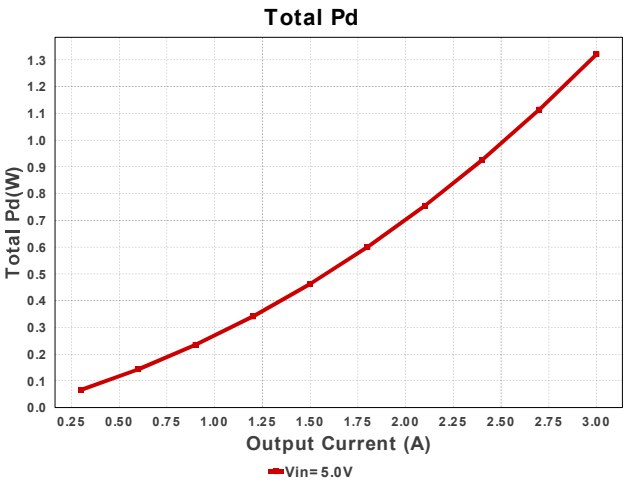
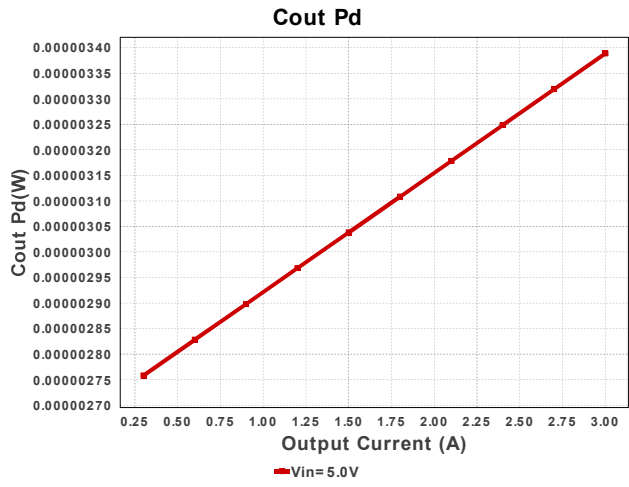
Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	MuRata	GRM155R61C473KA01D Series= X5R	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	CL21C300JBANNNC Series= C0G/NP0	Cap= 30.0 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	Taiyo Yuden	EMK212BJ106KG-T Series= X5R	Cap= 10.0 uF ESR= 1.0 mOhm VDC= 16.0 V IRMS= 0.0 A	2	\$0.03	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	XFL4020-222MEB	L= 2.2 uH DCR= 21.4 mOhm	1	\$0.61	XFL4020 25 mm ²
8.	Rcomp	Vishay-Dale	CRCW080515K0FKEA Series= CRCW..e3	Res= 15000.0Ohm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7 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	CRCW04028K25FKED Series= CRCW..e3	Res= 8250.0Ohm 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	TPS65261-1RHBR	Switcher	0	\$1.40	 RHB0032E 49 mm ²







Operating Values

#	Name	Value	Category	Description
1.	BOM Count	13		Total Design BOM count
2.	Total BOM	\$2.26		Total BOM Cost
3.	Cin IRMS	1.334 A	Capacitor	Input capacitor RMS ripple current
4.	Cin Pd	889.77 µW	Capacitor	Input capacitor power dissipation
5.	Cout IRMS	82.328 mA	Capacitor	Output capacitor RMS ripple current
6.	Cout Pd	3.389 µW	Capacitor	Output capacitor power dissipation
7.	IC Iq Pd	1.65 mW	IC	IC Iq Pd
8.	IC Pd	1.128 W	IC	IC power dissipation
9.	IC Tj	50.297 degC	IC	IC junction temperature
10.	ICThetaJA Effective	18.0 degC/W	IC	Applicable to the EVM in free space with no airflow
11.	Iin Avg	924.26 mA	IC	Average input current

#	Name	Value	Category	Description
12.	L Ipp	285.192 mA	Inductor	Peak-to-peak inductor ripple current
13.	L Pd	192.75 mW	Inductor	Inductor power dissipation
14.	Cin Pd	889.77 μ W	Power	Input capacitor power dissipation
15.	Cout Pd	3.389 μ W	Power	Output capacitor power dissipation
16.	IC Pd	1.128 W	Power	IC power dissipation
17.	L Pd	192.75 mW	Power	Inductor power dissipation
18.	Total Pd	1.321 W	Power	Total Power Dissipation
19.	Cross Freq	122.487 kHz	System Information	Bode plot crossover frequency
20.	Duty Cycle	27.092 %	System Information	Duty cycle
21.	Efficiency	71.408 %	System Information	Steady state efficiency
22.	FootPrint	126.0 mm ²	System Information	Total Foot Print Area of BOM components
23.	Frequency	1.535 MHz	System Information	Switching frequency
24.	Gain Marg	-13.7 dB	System Information	Bode Plot Gain Margin
25.	Iout	3.0 A	System Information	Iout operating point
26.	Low Freq Gain	79.366 dB	System Information	Gain at 1Hz
27.	Mode	CCM	System Information	Conduction Mode
28.	Phase Marg	61.891 deg	System Information	Bode Plot Phase Margin
29.	Pout	3.3 W	System Information	Total output power
30.	Vin	5.0 V	System Information	Vin operating point
31.	Vout	1.1 V	System Information	Operational Output Voltage
32.	Vout Actual	1.095 V	System Information	Vout Actual calculated based on selected voltage divider resistors
33.	Vout Tolerance	1.922 %	System Information	Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable
34.	Vout p-p	653.996 μ V	System Information	Peak-to-peak output ripple voltage

Design Inputs

#	Name	Value	Description
1.	Iout	3.0	Maximum Output Current
2.	SoftStart	1.2 ms	Soft Start Time (ms)
3.	VinMax	5.0	Maximum input voltage
4.	VinMin	5.0	Minimum input voltage
5.	Vout	1.1	Output Voltage
6.	acFrequency	0.0	AC Frequency
7.	base_pn	TPS65261-1/1	Base Product Number
8.	source	DC	Input Source Type
9.	Ta	30.0	Ambient temperature
10.	UserFsw	1.5 M	Customer Selected Frequency

Design Assistance

1. [TPS65261-1/1 Product Folder](http://www.ti.com/product/TPS65261%2D1) : <http://www.ti.com/product/TPS65261%2D1> : contains the data sheet and other resources.

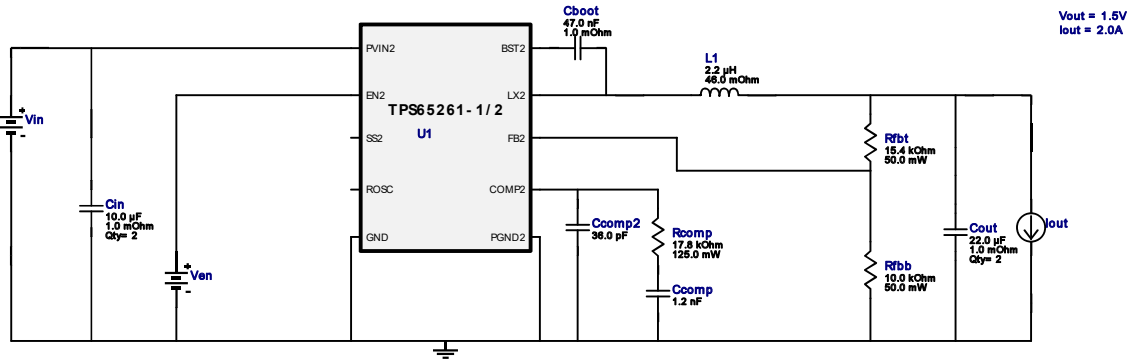


Vout = 1.5V
Iout = 2.0A

Device = TPS65261-1RHBR
Topology = Buck
Created = 2018-12-05 01:20:28.715
BOM Cost = \$2.21
BOM Count = 13
Total Pd = 0.94W


WEBENCH® Design Report

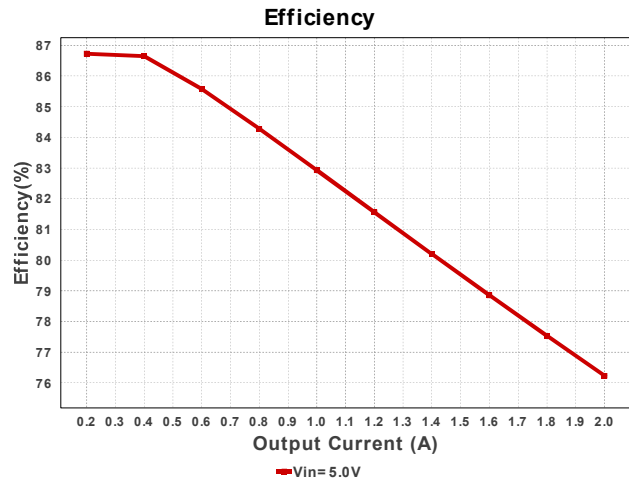
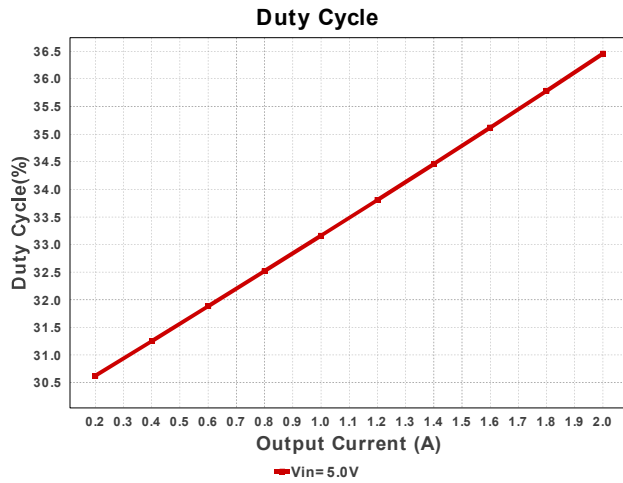
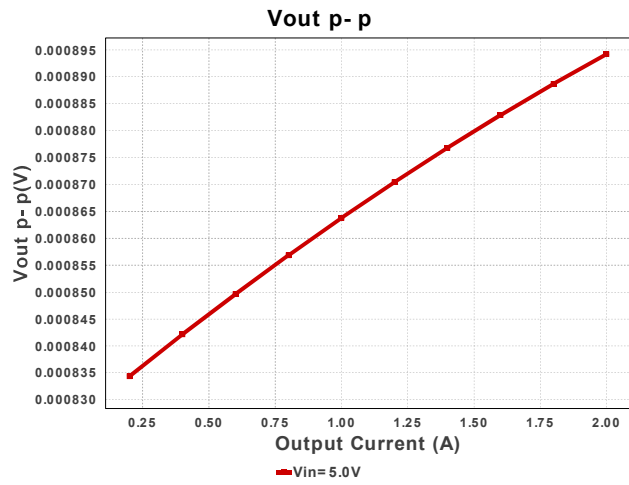
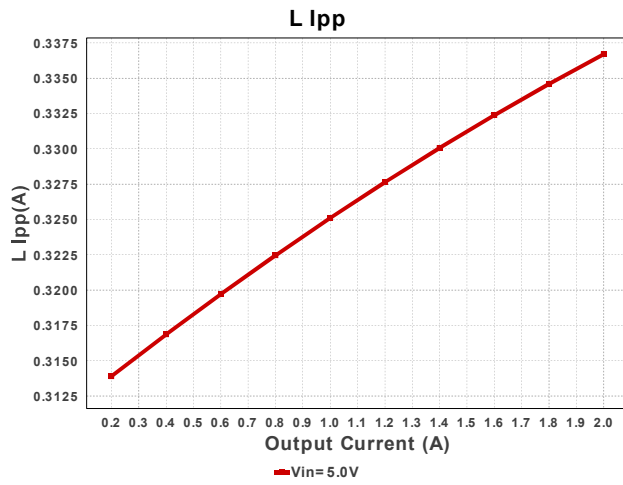
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TPS65261-1RHBR 5V-5V to 1.50V @ 2A

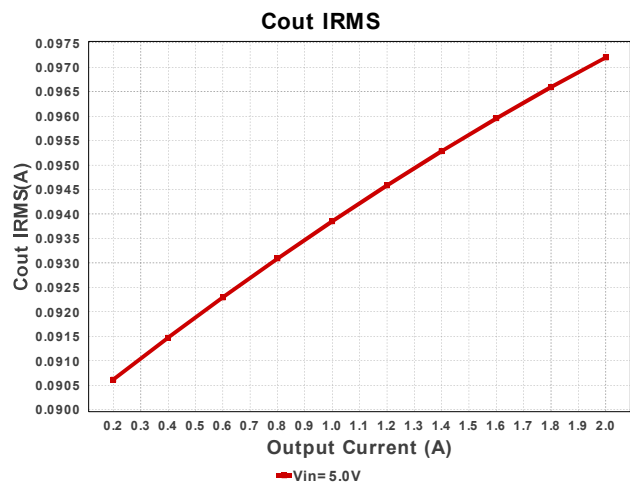
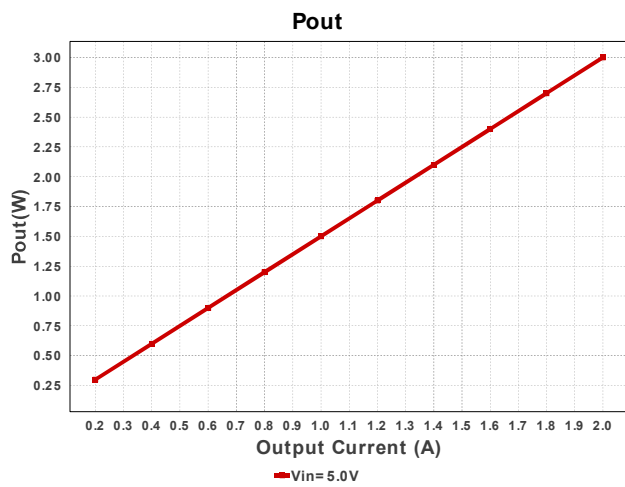
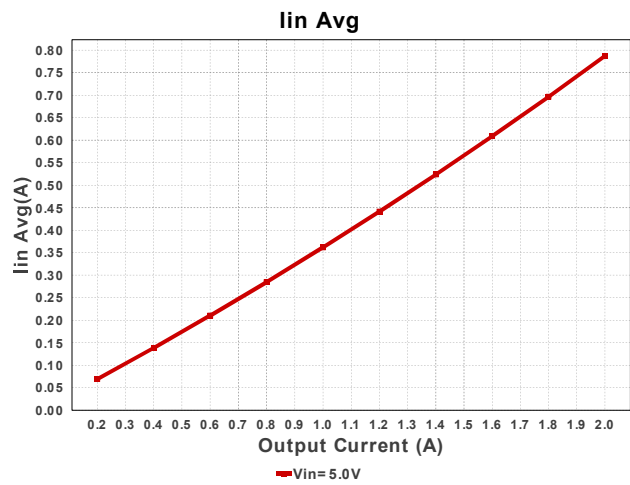
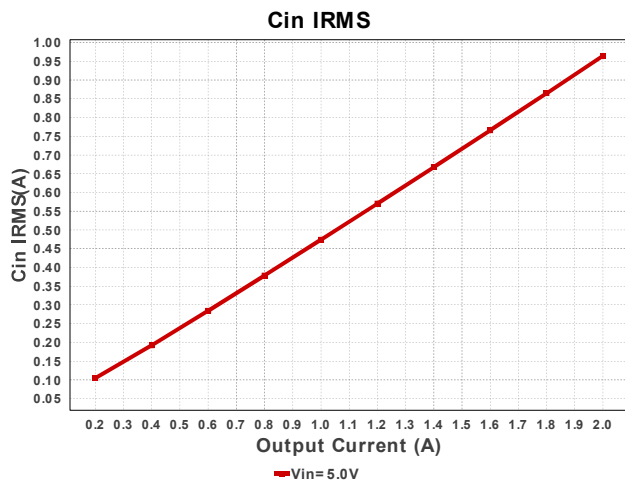
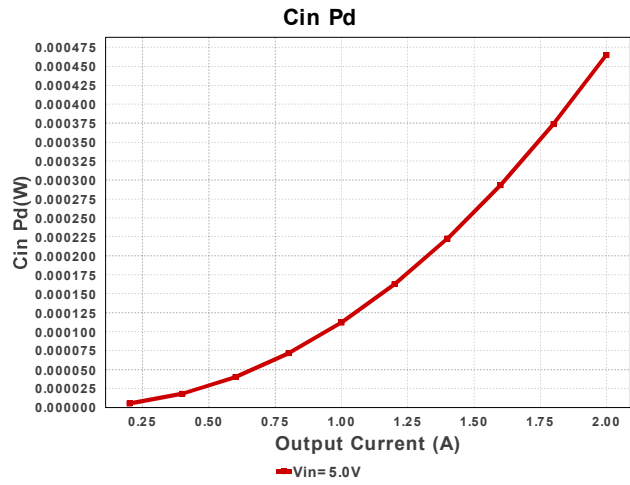
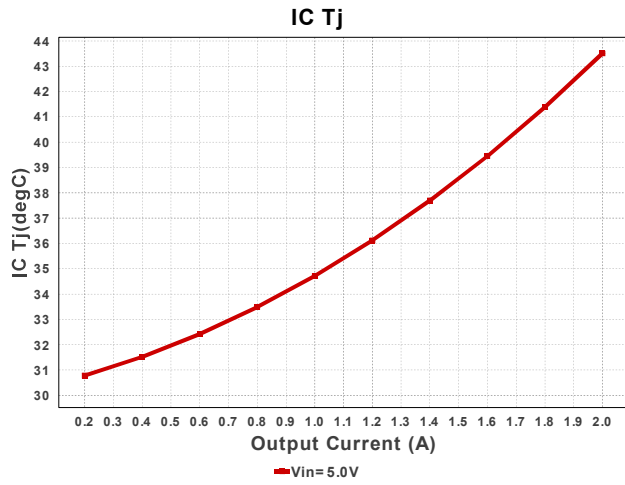


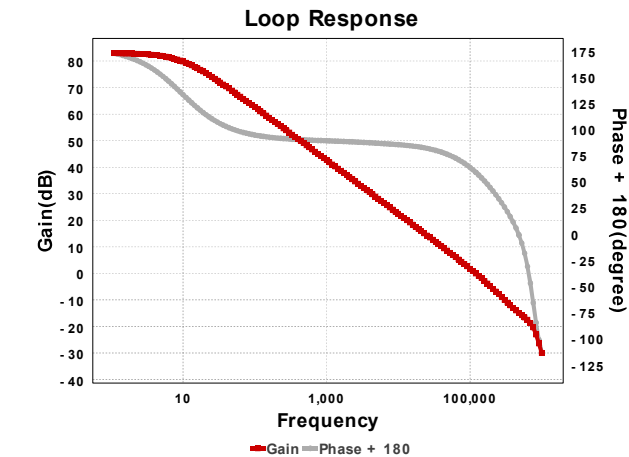
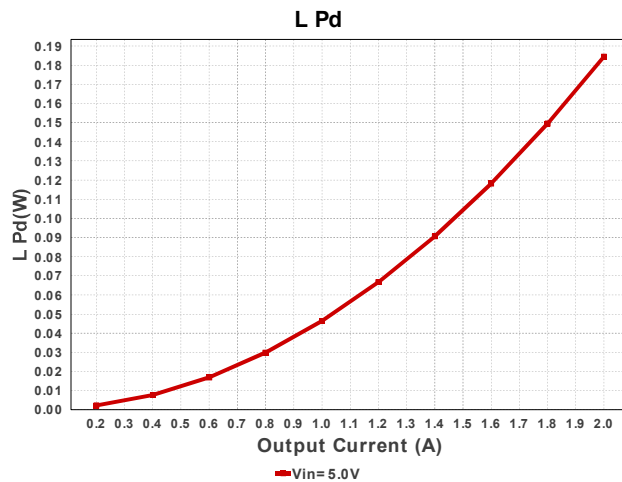
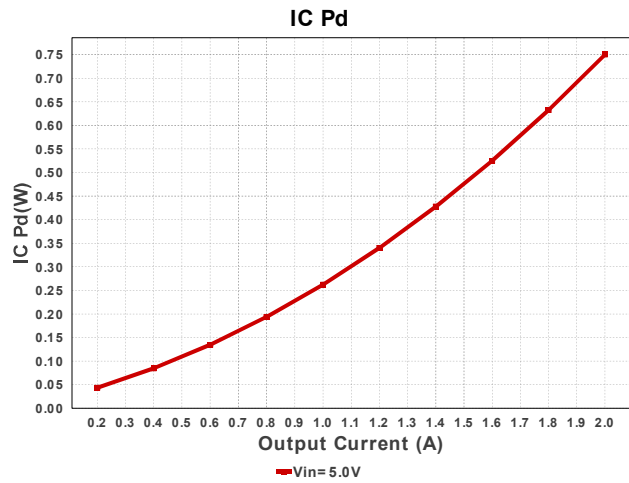
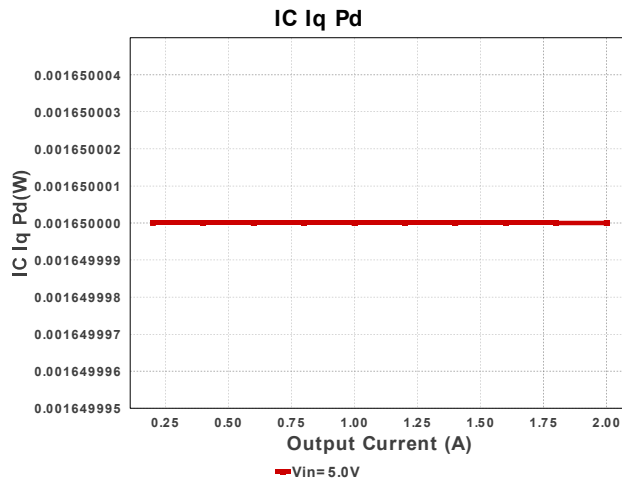
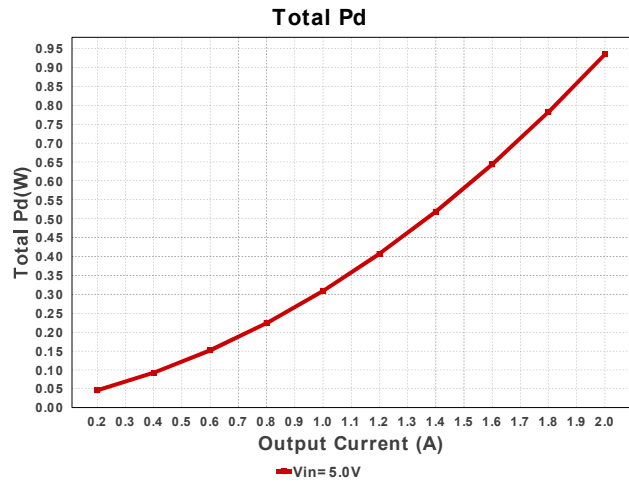
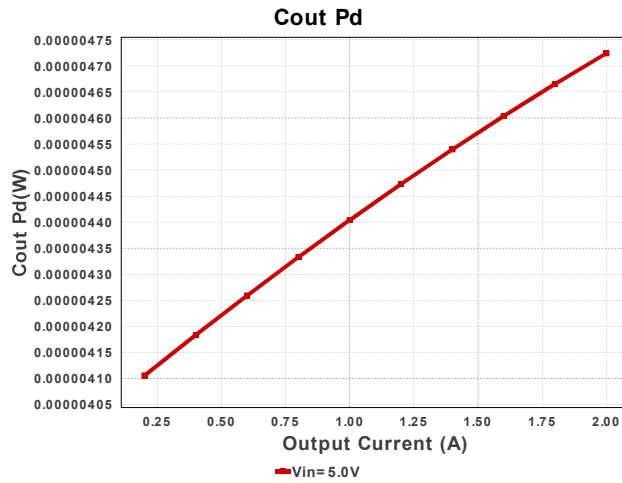
Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	MuRata	GRM155R61C473KA01D Series= X5R	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	CL21C360JBANNNC Series= C0G/NP0	Cap= 36.0 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	Taiyo Yuden	EMK212BJ106KG-T Series= X5R	Cap= 10.0 uF ESR= 1.0 mOhm VDC= 16.0 V IRMS= 0.0 A	2	\$0.03	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	Vishay-Dale	IHLP1212BZER2R2M11	L= 2.2 uH DCR= 46.0 mOhm	1	\$0.56	IHLP-1212BZ 19 mm ²
8.	Rcomp	Vishay-Dale	CRCW080517K8FKEA Series= CRCW..e3	Res= 17800.0Ohm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7 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	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	TPS65261-1RHBR	Switcher	0	\$1.40	 RHB0032E 49 mm ²







Operating Values

#	Name	Value	Category	Description
1.	BOM Count	13		Total Design BOM count
2.	Total BOM	\$2.21		Total BOM Cost
3.	Cin IRMS	964.397 mA	Capacitor	Input capacitor RMS ripple current
4.	Cin Pd	465.03 μ W	Capacitor	Input capacitor power dissipation
5.	Cout IRMS	97.2 mA	Capacitor	Output capacitor RMS ripple current
6.	Cout Pd	4.724 μ W	Capacitor	Output capacitor power dissipation
7.	IC Iq Pd	1.65 mW	IC	IC Iq Pd
8.	IC Pd	750.37 mW	IC	IC power dissipation
9.	IC Tj	43.507 degC	IC	IC junction temperature
10.	ICThetaJA Effective	18.0 degC/W	IC	Applicable to the EVM in free space with no airflow
11.	Iin Avg	787.07 mA	IC	Average input current

#	Name	Value	Category	Description
12.	L Ipp	336.709 mA	Inductor	Peak-to-peak inductor ripple current
13.	L Pd	184.43 mW	Inductor	Inductor power dissipation
14.	Cin Pd	465.03 μ W	Power	Input capacitor power dissipation
15.	Cout Pd	4.724 μ W	Power	Output capacitor power dissipation
16.	IC Pd	750.37 mW	Power	IC power dissipation
17.	L Pd	184.43 mW	Power	Inductor power dissipation
18.	Total Pd	935.354 mW	Power	Total Power Dissipation
19.	Cross Freq	120.111 kHz	System Information	Bode plot crossover frequency
20.	Duty Cycle	36.455 %	System Information	Duty cycle
21.	Efficiency	76.232 %	System Information	Steady state efficiency
22.	FootPrint	120.0 mm ²	System Information	Total Foot Print Area of BOM components
23.	Frequency	1.535 MHz	System Information	Switching frequency
24.	Gain Marg	-14.94 dB	System Information	Bode Plot Gain Margin
25.	Iout	2.0 A	System Information	Iout operating point
26.	Low Freq Gain	82.912 dB	System Information	Gain at 1Hz
27.	Mode	CCM	System Information	Conduction Mode
28.	Phase Marg	59.824 deg	System Information	Bode Plot Phase Margin
29.	Pout	3.0 W	System Information	Total output power
30.	Vin	5.0 V	System Information	Vin operating point
31.	Vout	1.5 V	System Information	Operational Output Voltage
32.	Vout Actual	1.524 V	System Information	Vout Actual calculated based on selected voltage divider resistors
33.	Vout Tolerance	2.237 %	System Information	Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable
34.	Vout p-p	894.206 μ V	System Information	Peak-to-peak output ripple voltage

Design Inputs

#	Name	Value	Description
1.	Iout	2.0	Maximum Output Current
2.	SoftStart	1.2 ms	Soft Start Time (ms)
3.	VinMax	5.0	Maximum input voltage
4.	VinMin	5.0	Minimum input voltage
5.	Vout	1.5	Output Voltage
6.	acFrequency	0.0	AC Frequency
7.	base_pn	TPS65261-1/2	Base Product Number
8.	source	DC	Input Source Type
9.	Ta	30.0	Ambient temperature
10.	UserFsw	1.5 M	Customer Selected Frequency

Design Assistance

1. [TPS65261-1/2 Product Folder](http://www.ti.com/product/TPS65261%2D1) : <http://www.ti.com/product/TPS65261%2D1> : contains the data sheet and other resources.

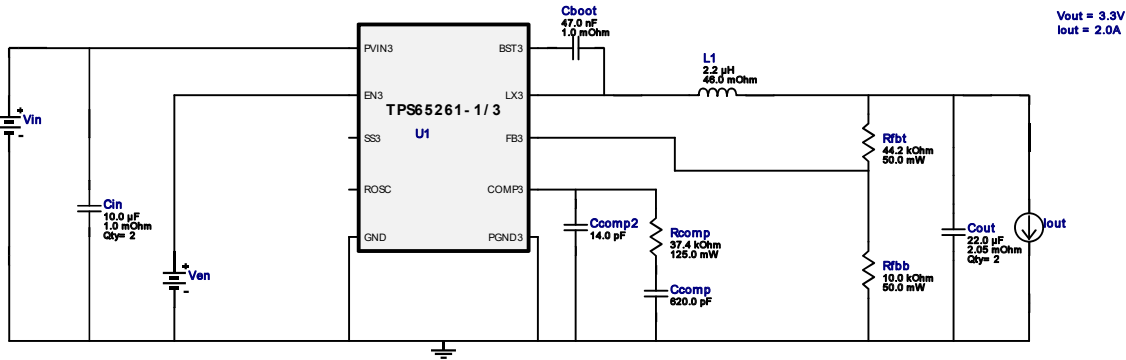


Vout = 3.3V
Iout = 2.0A

Device = TPS65261-1RHBR
Topology = Buck
Created = 2018-12-05 01:20:29.534
BOM Cost = \$2.63
BOM Count = 13
Total Pd = 1.03W


WEBENCH® Design Report

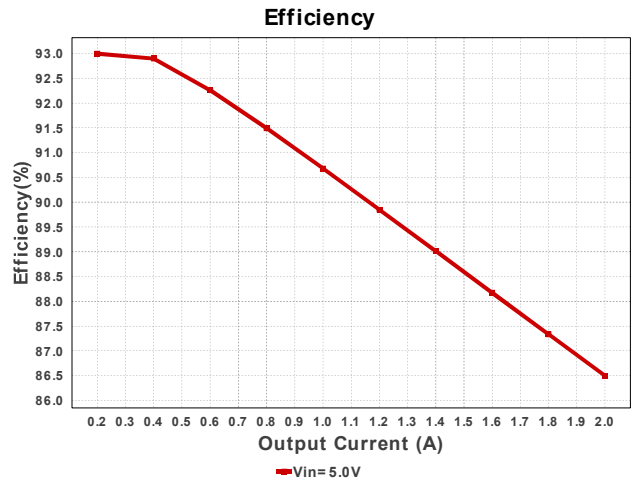
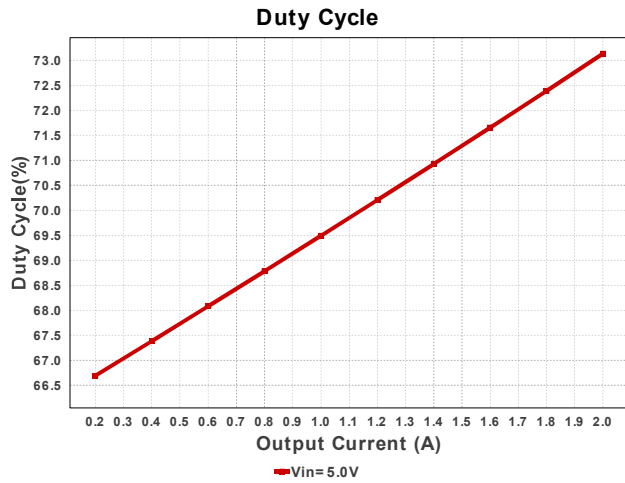
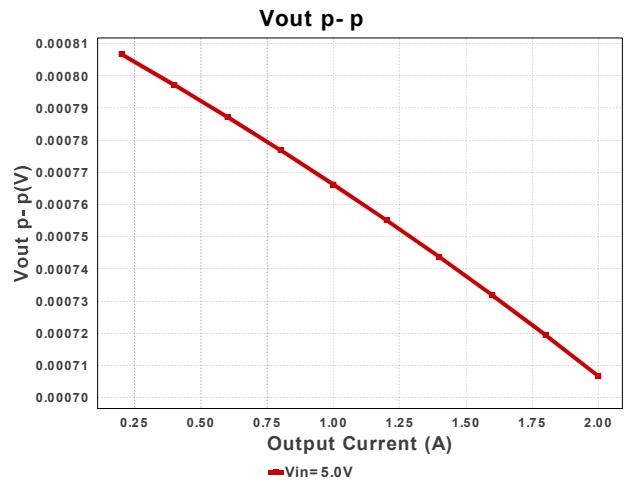
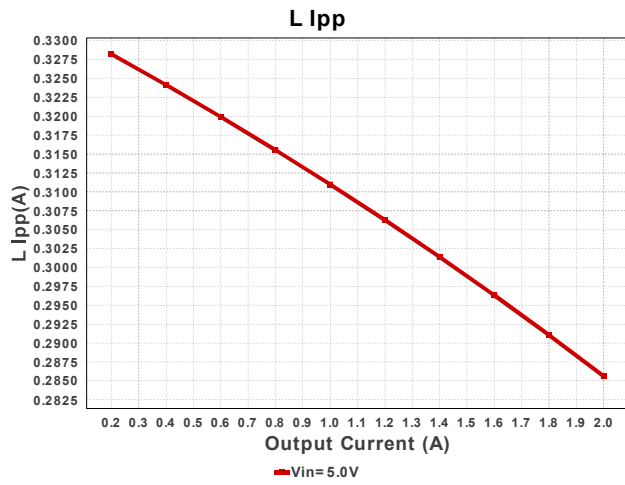
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TPS65261-1RHBR 5V-5V to 3.30V @ 2A

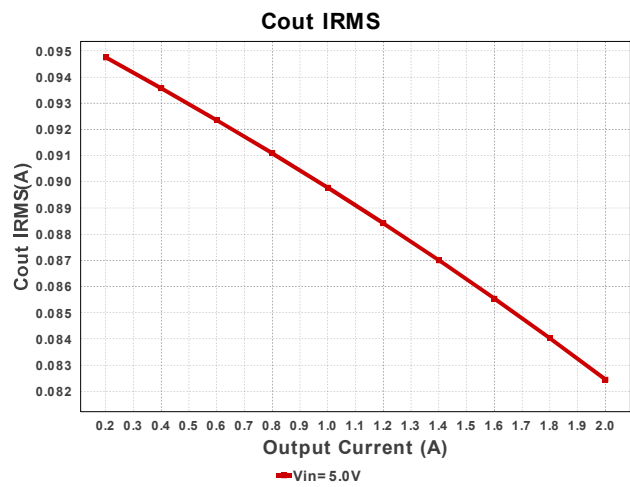
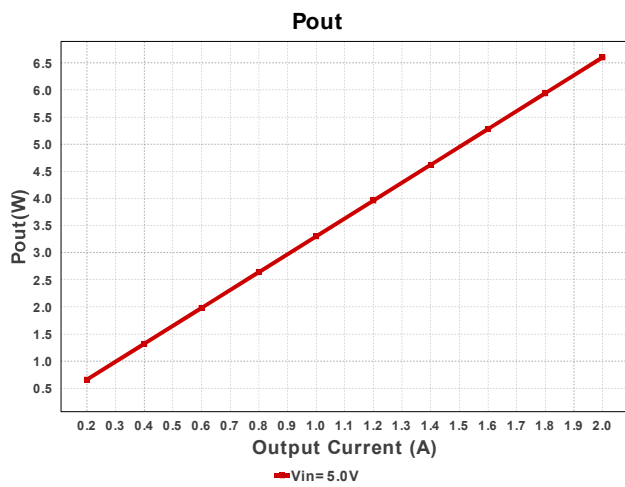
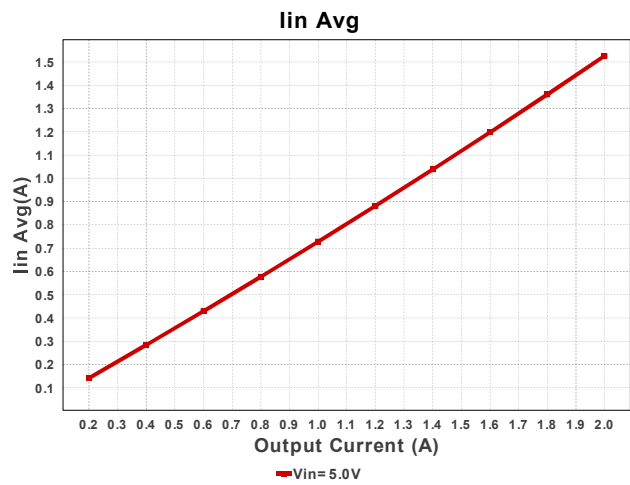
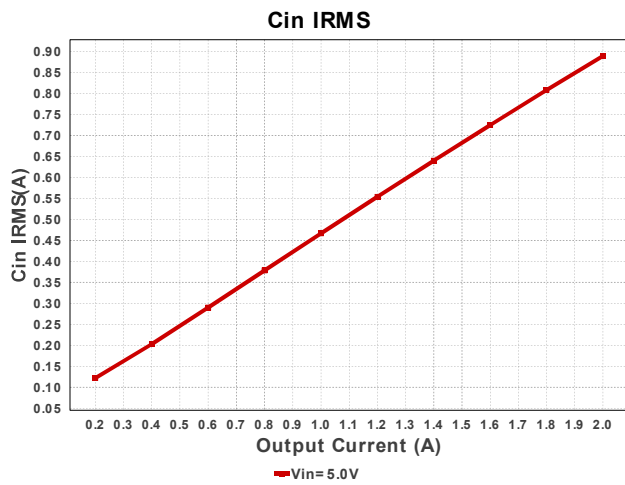
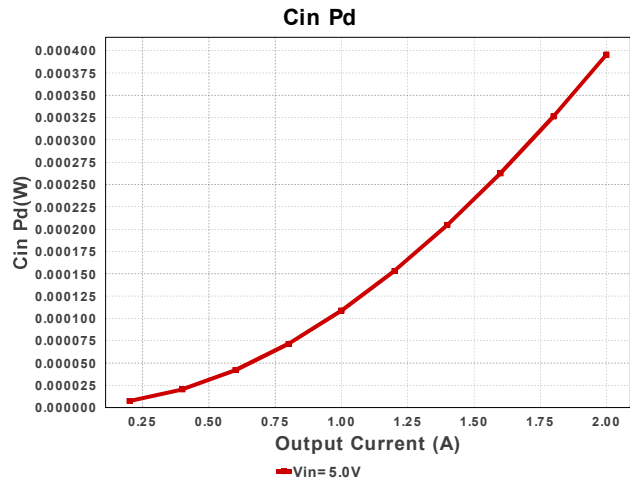
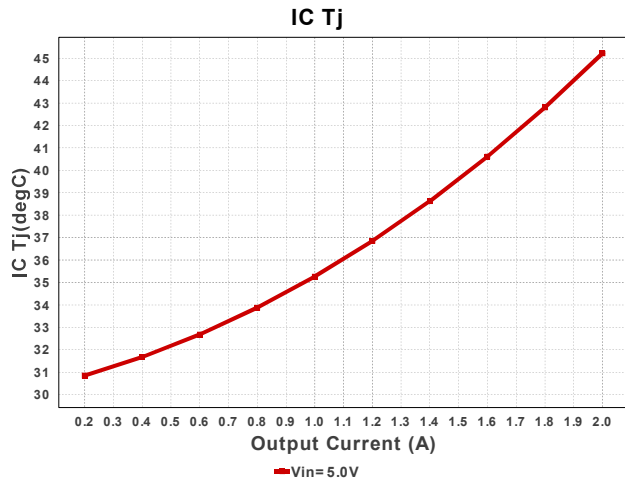


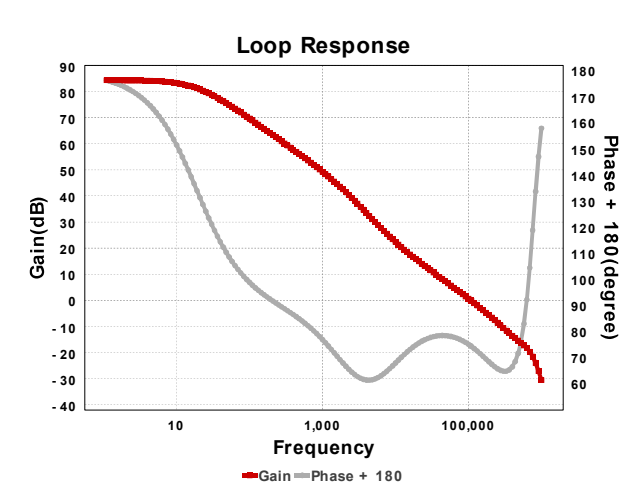
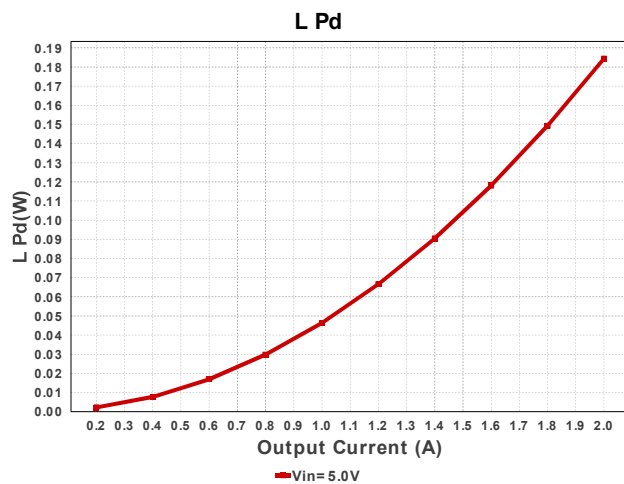
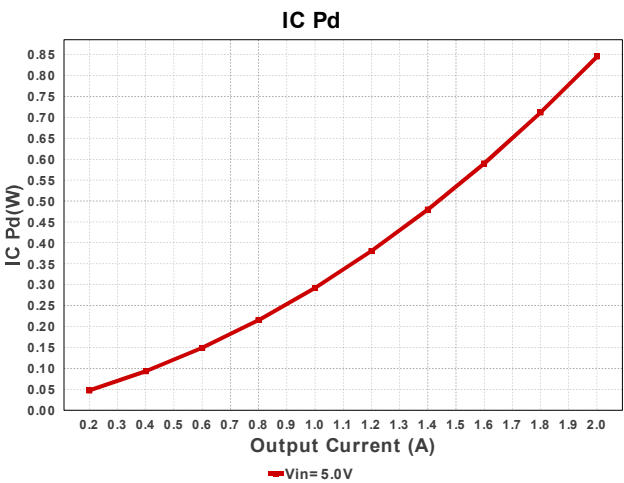
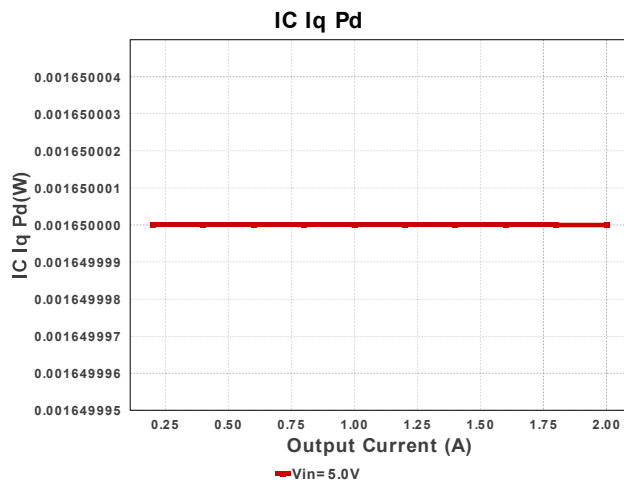
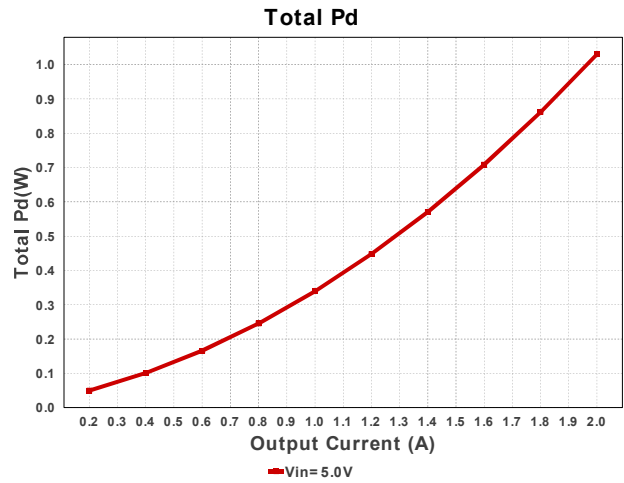
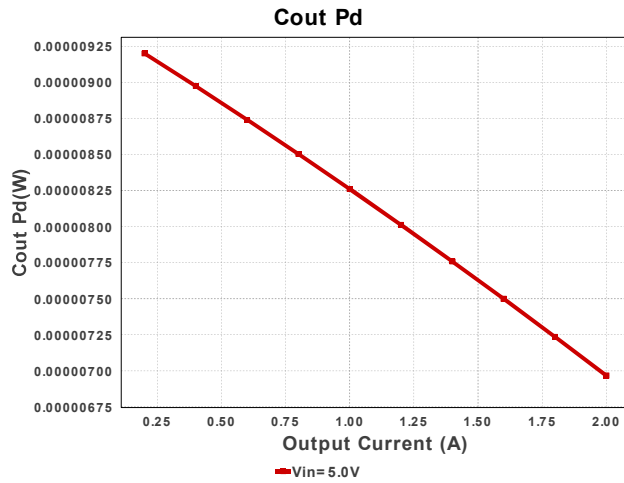
Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	MuRata	GRM155R61C473KA01D Series= X5R	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	CL21C621JBCNNNC Series= C0G/NP0	Cap= 620.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
3.	Ccomp2	Samsung Electro-Mechanics	CL21C140JBANNNC Series= C0G/NP0	Cap= 14.0 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	Taiyo Yuden	EMK212BJ106KG-T Series= X5R	Cap= 10.0 uF ESR= 1.0 mOhm VDC= 16.0 V IRMS= 0.0 A	2	\$0.03	0805 7 mm ²
6.	Cout	TDK	C2012X6S1C226M125AC Series= X6S	Cap= 22.0 uF ESR= 2.05 mOhm VDC= 16.0 V IRMS= 4.5559 A	2	\$0.27	0805 7 mm ²
7.	L1	Vishay-Dale	IHLP1212BZER2R2M11	L= 2.2 uH DCR= 46.0 mOhm	1	\$0.56	IHLP-1212BZ 19 mm ²
8.	Rcomp	Panasonic	ERJ-6ENF3742V Series= ERJ-6E	Res= 37400.0Ohm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7 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	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	TPS65261-1RHBR	Switcher	0	\$1.40	 RHB0032E 49 mm ²







Operating Values

#	Name	Value	Category	Description
1.	BOM Count	13		Total Design BOM count
2.	Total BOM	\$2.63		Total BOM Cost
3.	Cin IRMS	889.365 mA	Capacitor	Input capacitor RMS ripple current
4.	Cin Pd	395.48 μ W	Capacitor	Input capacitor power dissipation
5.	Cout IRMS	82.449 mA	Capacitor	Output capacitor RMS ripple current
6.	Cout Pd	6.968 μ W	Capacitor	Output capacitor power dissipation
7.	IC Iq Pd	1.65 mW	IC	IC Iq Pd
8.	IC Pd	845.29 mW	IC	IC power dissipation
9.	IC Tj	45.215 degC	IC	IC junction temperature
10.	ICThetaJA Effective	18.0 degC/W	IC	Applicable to the EVM in free space with no airflow
11.	Iin Avg	1.526 A	IC	Average input current

#	Name	Value	Category	Description
12.	L Ipp	285.612 mA	Inductor	Peak-to-peak inductor ripple current
13.	L Pd	184.31 mW	Inductor	Inductor power dissipation
14.	Cin Pd	395.48 μ W	Power	Input capacitor power dissipation
15.	Cout Pd	6.968 μ W	Power	Output capacitor power dissipation
16.	IC Pd	845.29 mW	Power	IC power dissipation
17.	L Pd	184.31 mW	Power	Inductor power dissipation
18.	Total Pd	1.03 W	Power	Total Power Dissipation
19.	Cross Freq	106.969 kHz	System Information	Bode plot crossover frequency
20.	Duty Cycle	73.13 %	System Information	Duty cycle
21.	Efficiency	86.498 %	System Information	Steady state efficiency
22.	FootPrint	126.0 mm ²	System Information	Total Foot Print Area of BOM components
23.	Frequency	1.535 MHz	System Information	Switching frequency
24.	Gain Marg	-9.789 dB	System Information	Bode Plot Gain Margin
25.	Iout	2.0 A	System Information	Iout operating point
26.	Low Freq Gain	84.292 dB	System Information	Gain at 1Hz
27.	Mode	CCM	System Information	Conduction Mode
28.	Phase Marg	74.876 deg	System Information	Bode Plot Phase Margin
29.	Pout	6.6 W	System Information	Total output power
30.	Vin	5.0 V	System Information	Vin operating point
31.	Vout	3.3 V	System Information	Operational Output Voltage
32.	Vout Actual	3.252 V	System Information	Vout Actual calculated based on selected voltage divider resistors
33.	Vout Tolerance	2.664 %	System Information	Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable
34.	Vout p-p	706.687 μ V	System Information	Peak-to-peak output ripple voltage

Design Inputs

#	Name	Value	Description
1.	Iout	2.0	Maximum Output Current
2.	SoftStart	1.2 ms	Soft Start Time (ms)
3.	VinMax	5.0	Maximum input voltage
4.	VinMin	5.0	Minimum input voltage
5.	Vout	3.3	Output Voltage
6.	acFrequency	0.0	AC Frequency
7.	base_pn	TPS65261-1/3	Base Product Number
8.	source	DC	Input Source Type
9.	Ta	30.0	Ambient temperature
10.	UserFsw	1.5 M	Customer Selected Frequency

Design Assistance

1. [TPS65261-1/3 Product Folder](http://www.ti.com/product/TPS65261%2D1) : <http://www.ti.com/product/TPS65261%2D1> : contains the data sheet and other resources.

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