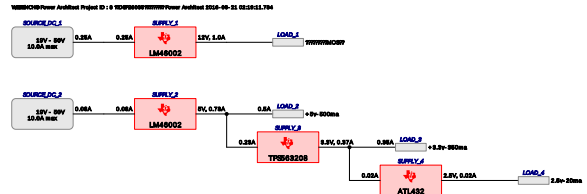


WEBENCH® Power Architect



Project Report

Project : 1066829/8 : ??DSP28035??????????

Created : 2016-06-21 02:19:11.784

Optimize project optFactor=5

Project Summary

1. Total System Efficiency	94.384 %
2. Total System BOM Count	34.0
3. Total System Footprint	1.979 kmm2
4. Total System BOM Cost	\$9.96
5. Total System Power Dissipation	728.8 mW

--> Launch WEBENCH Power Architect.

Sequencer Flag Table

Supply	Sequencer Flag	Load	Load Name
SUPPLY_1	0	LOAD_1	????????MOS??
SUPPLY_2	0	LOAD_2	+5v-500ma
SUPPLY_3	0	LOAD_3	+3.3v-350ma
SUPPLY_4	0	LOAD_4	2.5v-20ma

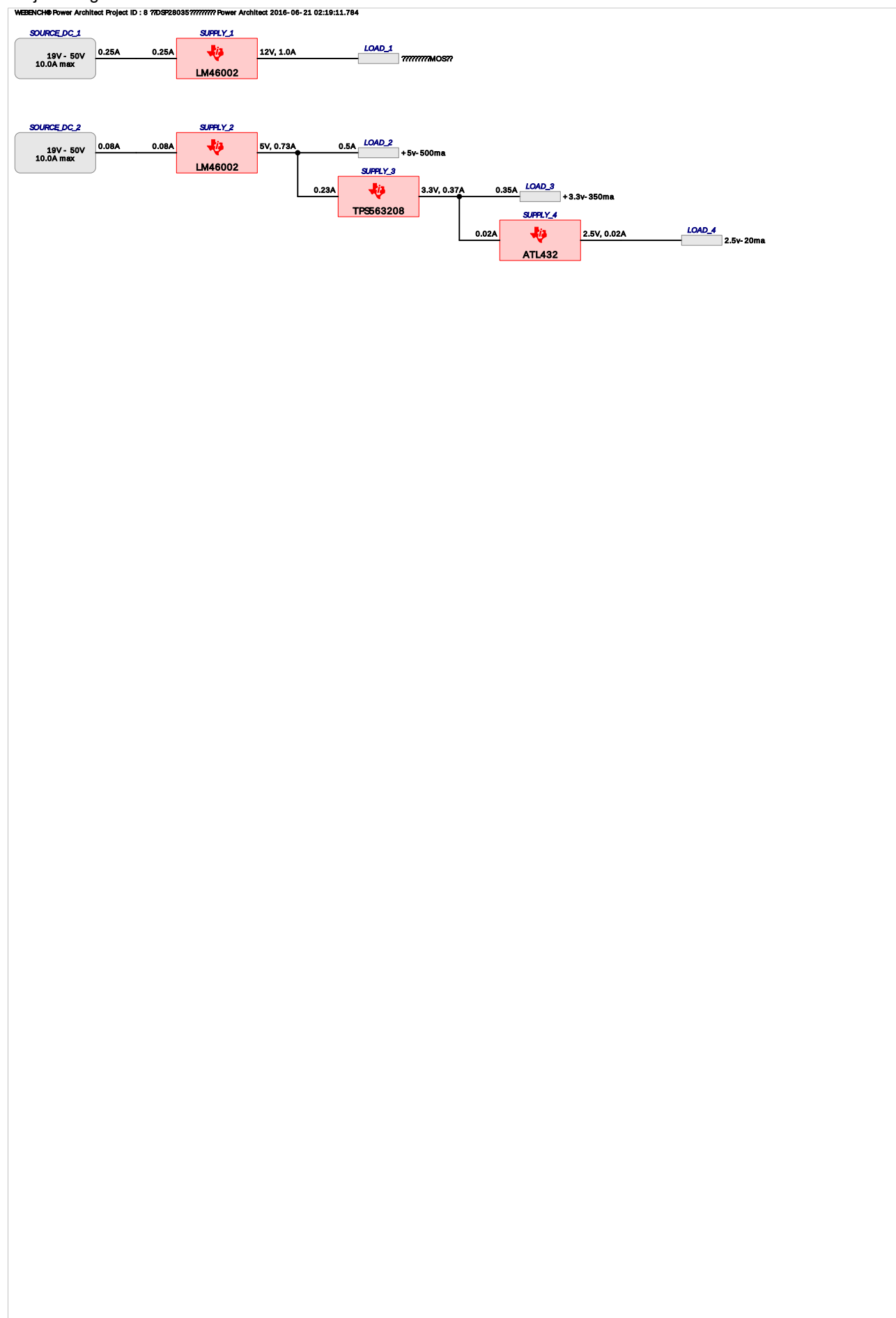
Power Supplies

#	Name	NSID	Description	Vout	Iout	Efficiency	Foot-print	Cost	Design	Page
1.	SUPPLY_1	LM46002	Switcher : SIMPLE SWITCHER Buck Regulator	12 V	1.0 A	96.7%	1054	\$4.03	59	4
2.	SUPPLY_2	LM46002	Switcher : SIMPLE SWITCHER Buck Regulator	5 V	0.731 A	93.7%	782	\$4.65	62	18
3.	SUPPLY_3	TPS563208	Switcher : 17V, 3A,6-pin, Low Iq Synchronous buck converter	3.3 V	0.37 A	95.9%	126	\$1.11	61	13
4.	SUPPLY_4	ATL432	LDO : 2.5V Precision Programmable Shunt Regulator	2.5 V	0.02 A	68.7%	17	\$0.17	60	10

Power Loads

#	Name	VLoad	ILoad	Description
1.	????????MOS??	12 V	1 A	VoutRipple=10%
2.	+5v-500ma	5 V	0.5 A	VoutRipple=10%
3.	+3.3v-350ma	3.3 V	0.35 A	VoutRipple=10%
4.	2.5v-20ma	2.5 V	0.02 A	VoutRipple=10%

Project Diagram

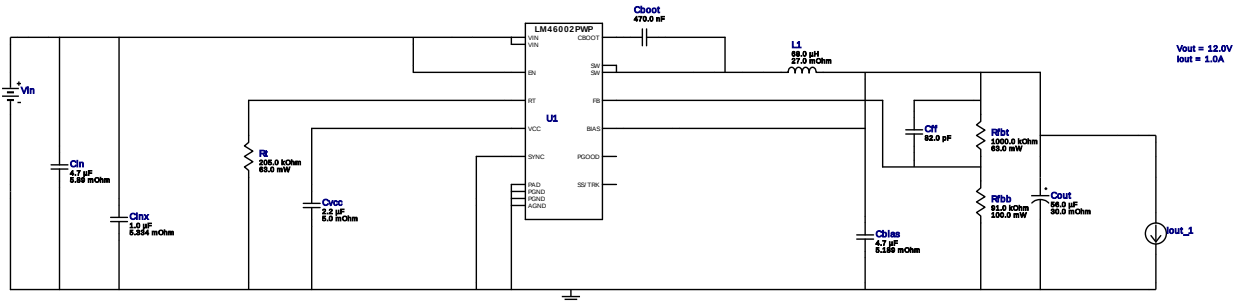


Electrical Procurement BOM

Manufacturer	Part Number	Description	Quantity	Budgetary Price	Footprint (mm ²)
AVX	08053C104KAT2A	0805	1	\$0.01	7
Panasonic	20SVPF56MX	CAPSMT_62_E61	1	\$0.35	53
Texas Instruments	ATL432BQDBZR	DBZ0003A	1	\$0.16	14
TDK	C0603C0G1E360G	0201	1	\$0.01	2
TDK	C0603C0G1E820K030BA	0201	1	\$0.01	2
TDK	C3216X5R1E476M160AC	1206	1	\$0.35	11
TDK	C3225X7S2A475M200AB	1210	2	\$0.42	29
Vishay-Dale	CRCW040210K0FKED	0402	1	\$0.01	3
Vishay-Dale	CRCW04021M00FKED	0402	2	\$0.01	6
Vishay-Dale	CRCW0402205KFKED	0402	2	\$0.01	6
Vishay-Dale	CRCW0402255KFKED	0402	1	\$0.01	3
Vishay-Dale	CRCW040233K2FKED	0402	1	\$0.01	3
Vishay-Dale	CRCW04029R53FKED	0402	1	\$0.01	3
MuRata	GRM155C80J474KE19D	0402	2	\$0.01	6
MuRata	GRM155R60J225ME15D	0402	2	\$0.02	6
MuRata	GRM21BR61E475KA12L	0805	2	\$0.02	14
MuRata	GRM31CR61A226KE19L	1206_190	1	\$0.07	11
MuRata	GRM31CR61A476KE15L	1206_190	2	\$0.15	11
MuRata	GRM31CR72A105KA01L	1206_190	2	\$0.11	22
Texas Instruments	LM46002PWPR	PWP0016F	2	\$1.85	118
Bourns	PM2110-680K-RC	PM2110	1	\$1.21	890
Yageo America	RC0603FR-0791KL	0603	1	\$0.01	5
Coilcraft	SER2915L-333KL	SER2915L	1	\$1.88	652
Bourns	SRR7032-3R3M	SRR7032	1	\$0.26	81
Texas Instruments	TPS563208DDCR	DDC0006A_N	1	\$0.40	10
Total			34	\$9.96	1967.7675

Device = LM46002PWPR
Topology = Buck
Created = 6/21/16 2:19:09 AM
BOM Cost = \$4.03
BOM Count = 12
Total Pd = 0.41W

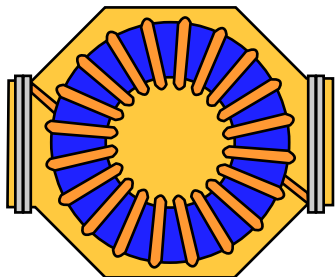
Design : 1066829/59 LM46002PWPR
LM46002PWPR 19.0V-50.0V to 12.00V @ 1.0A

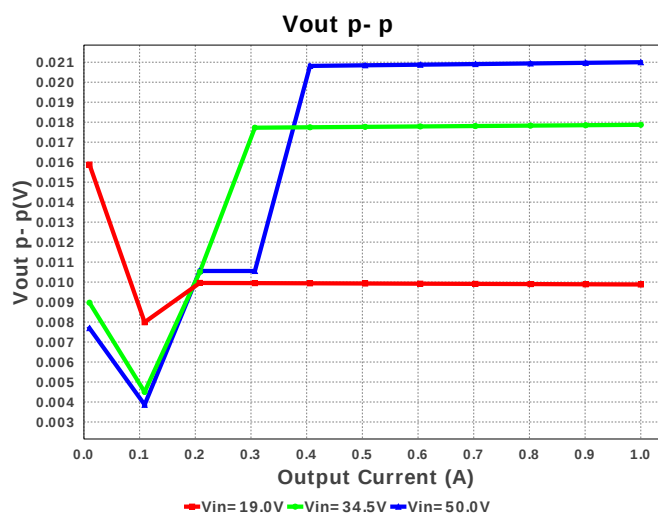
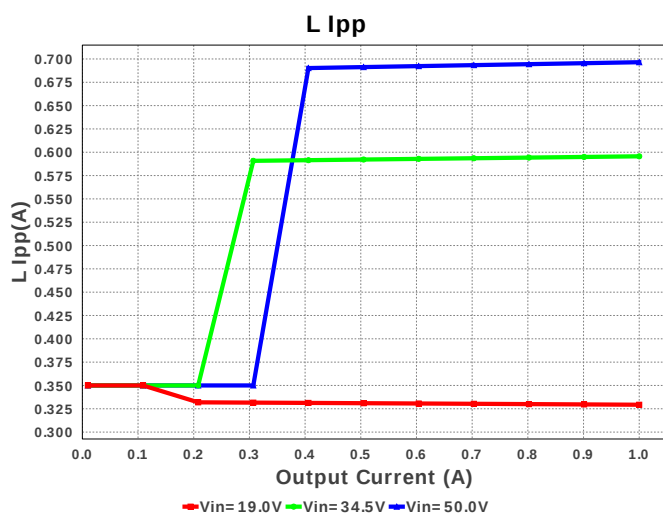


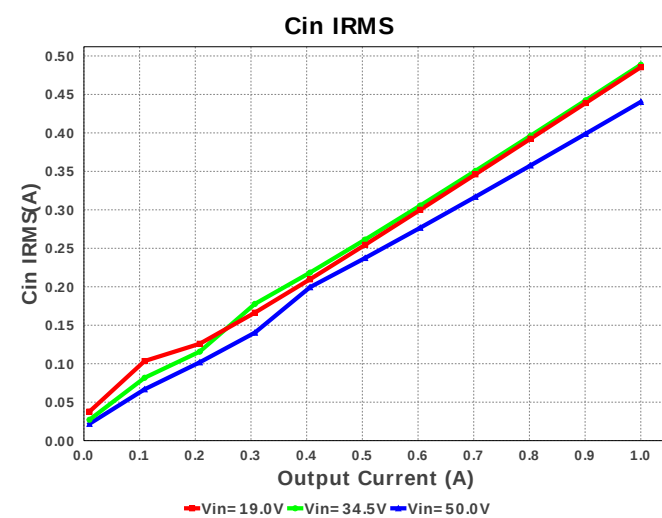
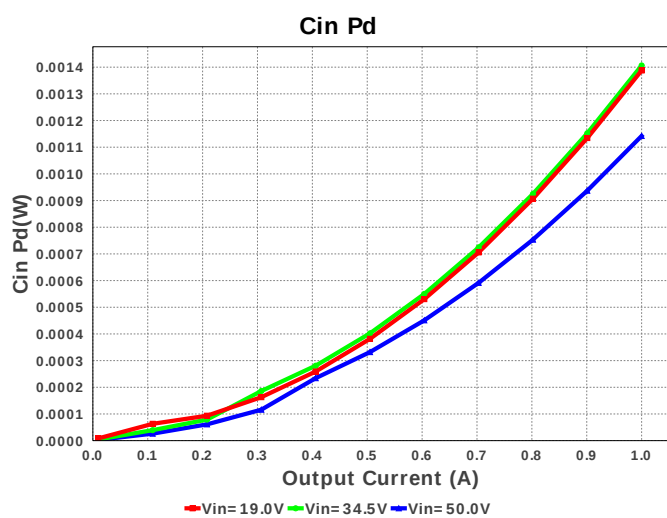
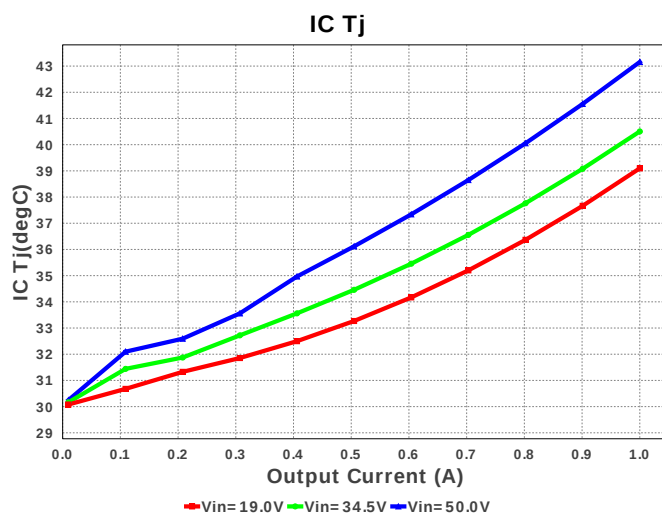
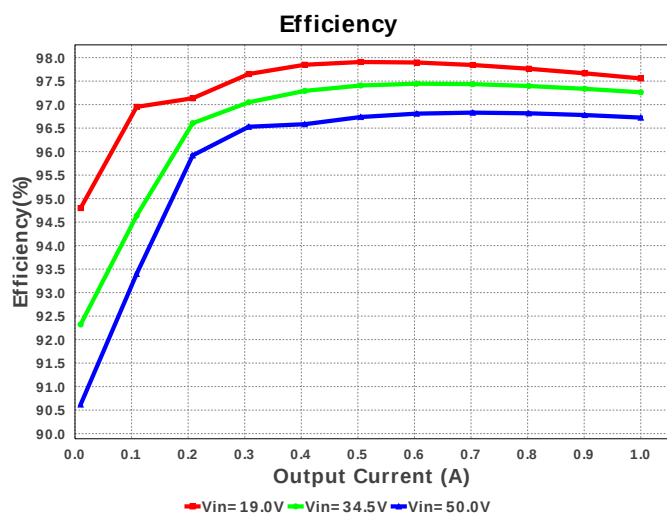
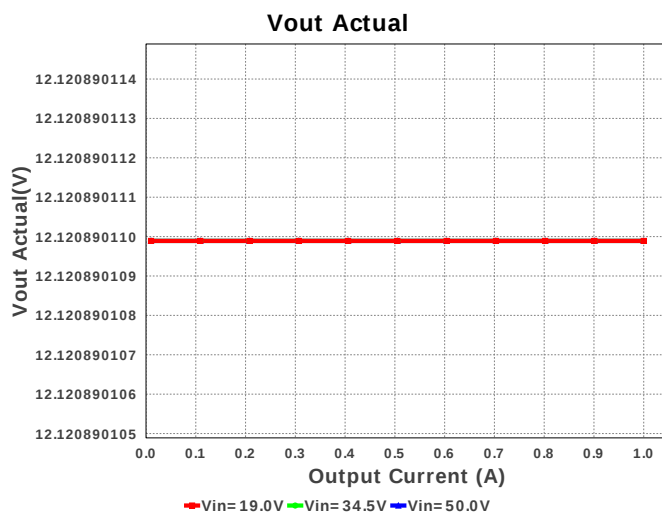
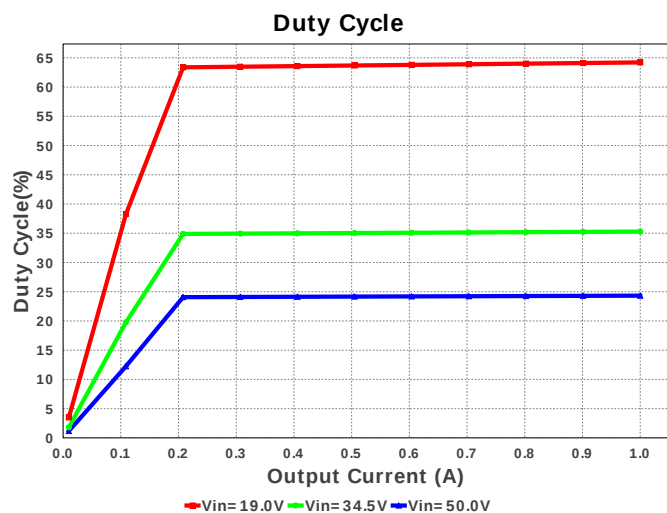
1. The input capacitor included in the BOM only contains a small filter capacitor that should be placed near the IC. Depending on where the power supply is laid out in the system additional bulk capacitance may need to be added to filter the line ripple.
2. If there is no VinTyp specified, WEBENCH will use the VinMax value. To change the VinTyp value, click on the "Change Design Inputs" button under the Optimization Tuning knob. In some applications, while the design requires the input voltage to be a wide range, for a majority of the time, it is operating at a much lower voltage than the maximum input voltage. Sizing the inductor based on the maximum input voltage may yield an inductance much larger than typically needed, causing a larger footprint for the overall design. At the same time, components such as the input capacitor must be rated based on the maximum input voltage. WEBENCH now supports the use of this additional input voltage specification.

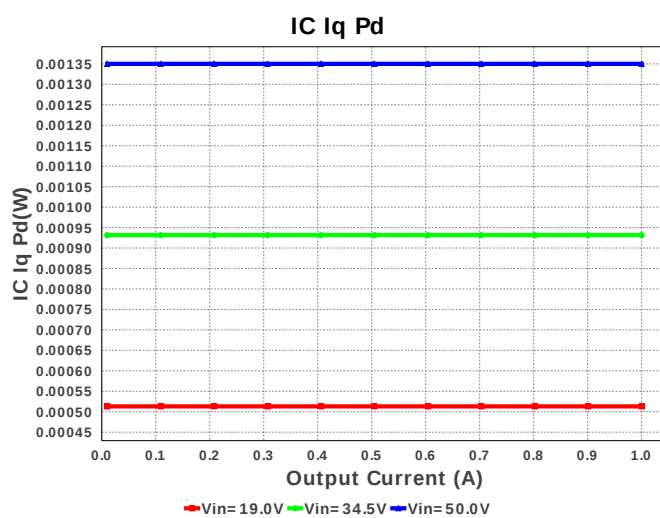
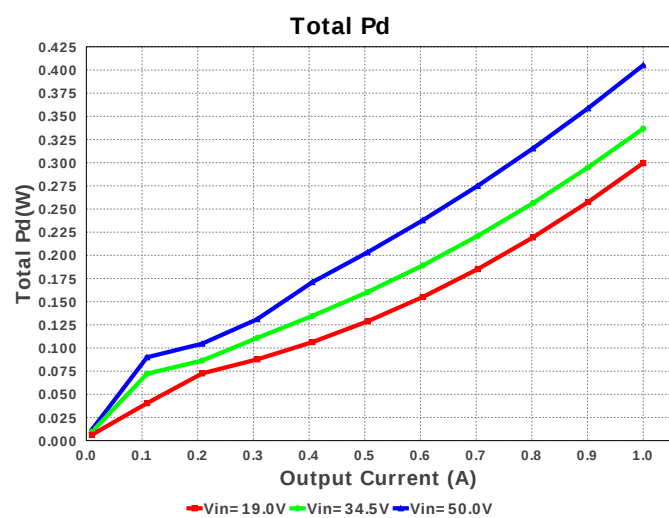
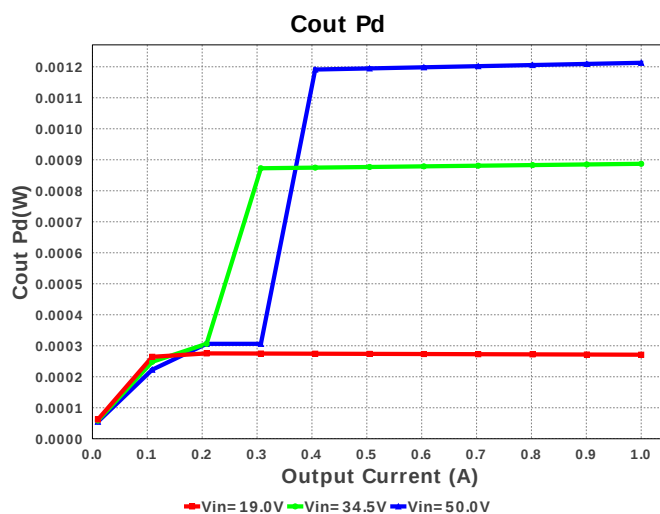
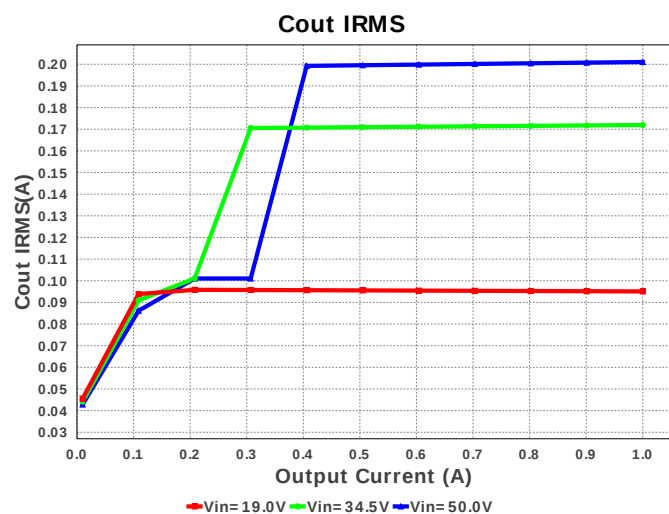
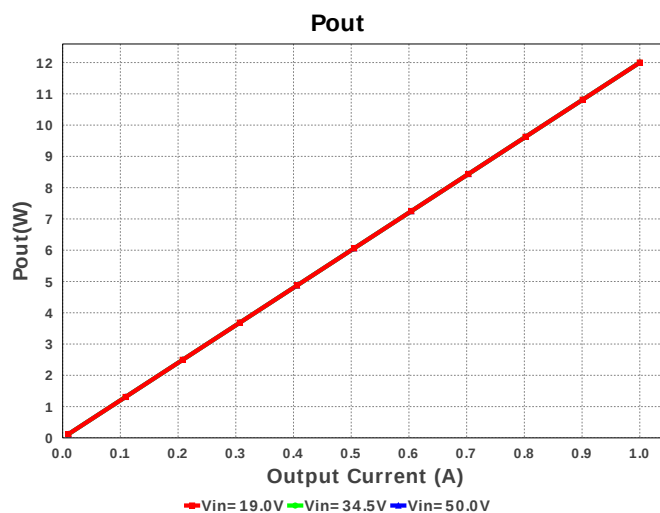
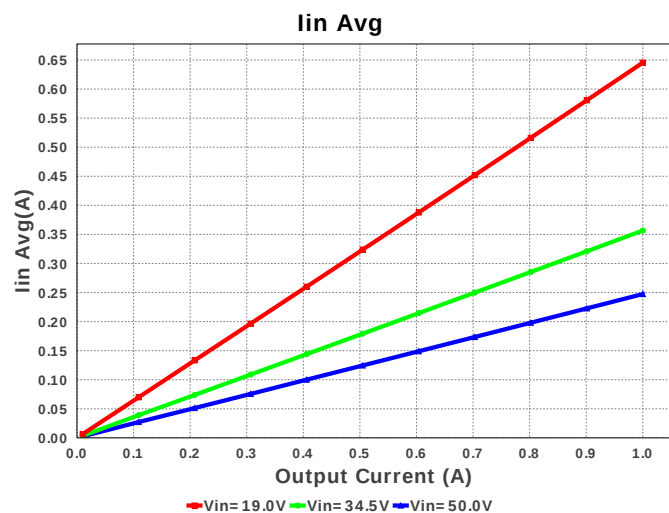
Electrical BOM

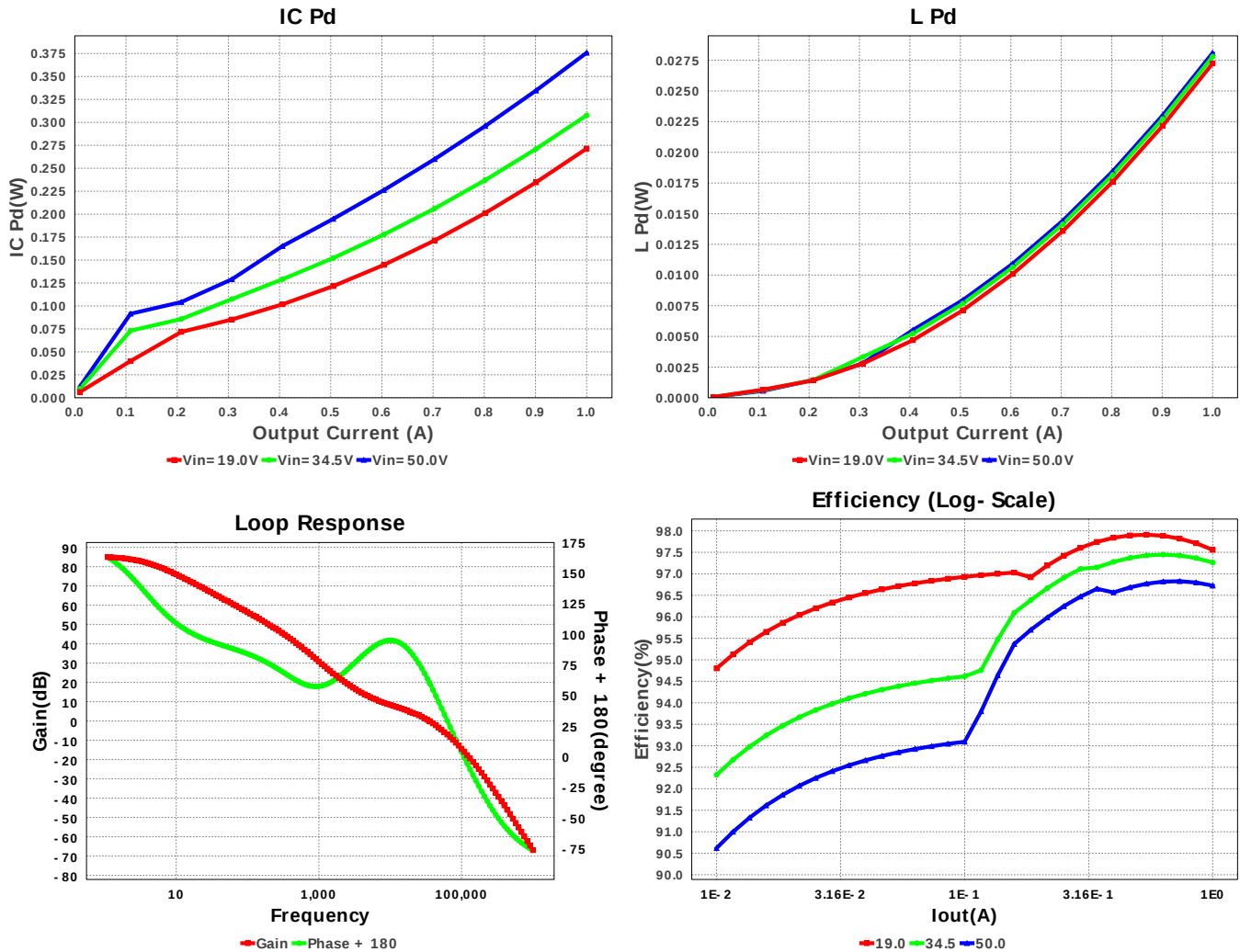
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbias	MuRata	GRM21BR61E475KA12L Series= X5R	Cap= 4.7 uF ESR= 5.189 mOhm VDC= 25.0 V IRMS= 2.03531 A	1	\$0.02	 0805 7 mm ²
2.	Cboot	MuRata	GRM155C80J474KE19D Series= X6S	Cap= 470.0 nF VDC= 6.3 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm ²
3.	Cff	TDK	C0603C0G1E820K030BA Series= C0G/NP0	Cap= 82.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	 0201 2 mm ²
4.	Cin	TDK	C3225X7S2A475M200AB Series= X7S	Cap= 4.7 uF ESR= 5.89 mOhm VDC= 100.0 V IRMS= 6.7739 A	1	\$0.42	 1210 15 mm ²
5.	Cinx	MuRata	GRM31CR72A105KA01L Series= X7R	Cap= 1.0 uF ESR= 5.334 mOhm VDC= 100.0 V IRMS= 1.55432 A	1	\$0.11	 1206_190 11 mm ²
6.	Cout	Panasonic	20SPVF56MX Series= SVPF	Cap= 56.0 uF ESR= 30.0 mOhm VDC= 20.0 V IRMS= 2.8 A	1	\$0.35	 CAPSMT_62_E61 53 mm ²
7.	Cvcc	MuRata	GRM155R60J225ME15D Series= X5R	Cap= 2.2 uF ESR= 5.0 mOhm VDC= 6.3 V IRMS= 3.67 A	1	\$0.02	 0402 3 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
8.	L1	Bourns	PM2110-680K-RC	L= 68.0 μ H DCR= 27.0 mOhm	1	\$1.21	 PM2110 890 mm ²
9.	Rfbb	Yageo America	RC0603FR-0791KL Series= ?	Res= 91.0 kOhm Power= 100.0 mW Tolerance= 1.0%	1	\$0.01	 0603 5 mm ²
10.	Rfbt	Vishay-Dale	CRCW04021M00FKED Series= CRCW..e3	Res= 1000.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
11.	Rt	Vishay-Dale	CRCW0402205KFKED Series= CRCW..e3	Res= 205.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
12.	U1	Texas Instruments	LM46002PWPR	Switcher	1	\$1.85	 PWP0016F 59 mm ²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	439.854 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	196.567 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	247.45 mA	Current	Average input current
4.	L Ipp	680.93 mA	Current	Peak-to-peak inductor ripple current
5.	BOM Count	12	General	Total Design BOM count
6.	FootPrint	1.054 k mm ²	General	Total Foot Print Area of BOM components
7.	Frequency	200.0 kHz	General	Switching frequency
8.	Pout	12.0 W	General	Total output power
9.	Total BOM	\$4.03	General	Total BOM Cost
10.	Low Freq Gain	84.983 dB	Op_Point	Gain at 10Hz
11.	Vout Actual	12.121 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
12.	Vout OP	12.0 V	Op_Point	Operational Output Voltage
13.	Cross Freq	35.293 kHz	Op_point	Bode plot crossover frequency
14.	Duty Cycle	24.324 %	Op_point	Duty cycle
15.	Efficiency	96.689 %	Op_point	Steady state efficiency
16.	Gain Marg	-16.148 dB	Op_point	Bode Plot Gain Margin
17.	IC Tj	43.307 degC	Op_point	IC junction temperature
18.	ICThetaJA	38.9 degC/W	Op_point	IC junction-to-ambient thermal resistance
19.	IOUT_OP	1.0 A	Op_point	Iout operating point
20.	Phase Marg	61.433 deg	Op_point	Bode Plot Phase Margin
21.	VIN_OP	50.0 V	Op_point	Vin operating point
22.	Vout p-p	20.5 mV	Op_point	Peak-to-peak output ripple voltage
23.	Cin Pd	1.14 mW	Power	Input capacitor power dissipation
24.	Cout Pd	1.159 mW	Power	Output capacitor power dissipation
25.	IC Iq Pd	1.35 mW	Power	IC Iq Pd
26.	IC Pd	380.476 mW	Power	IC power dissipation
27.	L Pd	28.043 mW	Power	Inductor power dissipation
28.	Total Pd	409.653 mW	Power	Total Power Dissipation
29.	Vout Tolerance	2.859 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	1.0	Maximum Output Current
2.	VinMax	50.0	Maximum input voltage
3.	VinMin	19.0	Minimum input voltage
4.	Vout	12.0	Output Voltage
5.	base_pn	LM46002	Texas Instruments Base Part Number
6.	source	DC	Input Source Type
7.	ta	30.0	Ambient temperature

Design Assistance

1. LM46002 Product Folder : <http://www.ti.com/product/LM46002> : contains the data sheet and other resources.

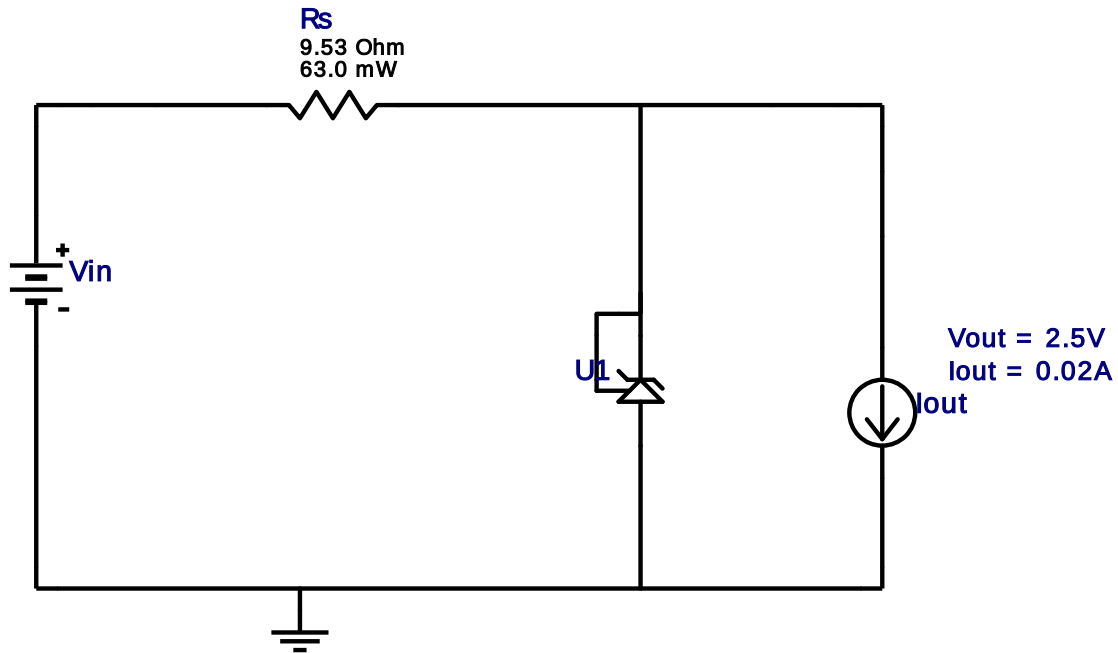


Vout = 2.5V
Iout = 0.02A

Device = ATL432BQDBZR
Topology = SHUNT_LINEAR
Created = 6/21/16 2:19:10 AM
BOM Cost = \$0.17
BOM Count = 2
Total Pd = 0.02W

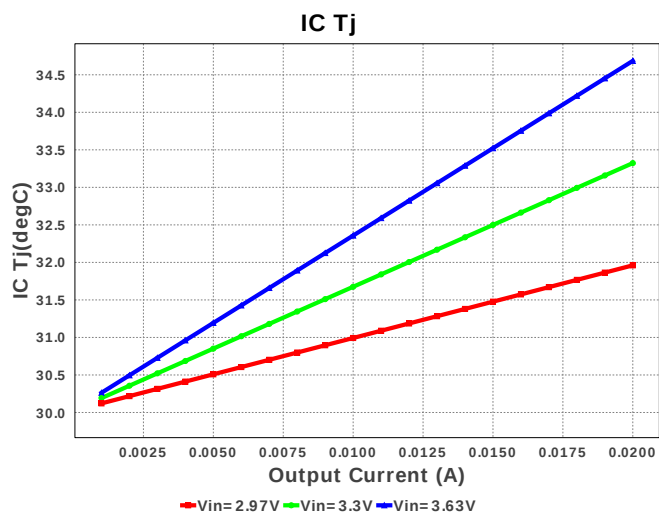
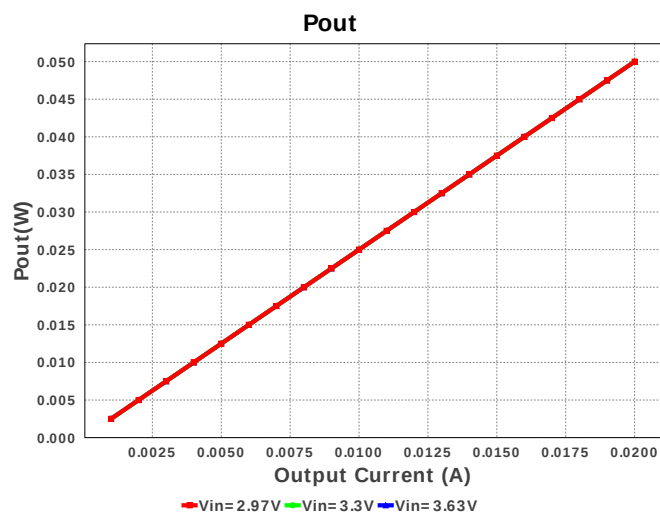
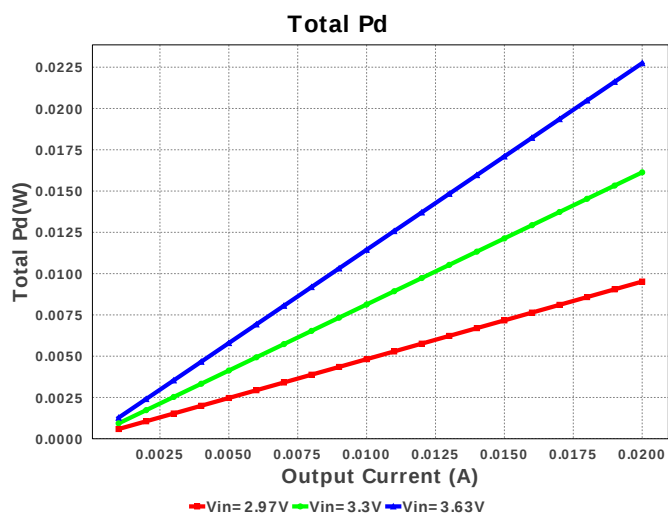
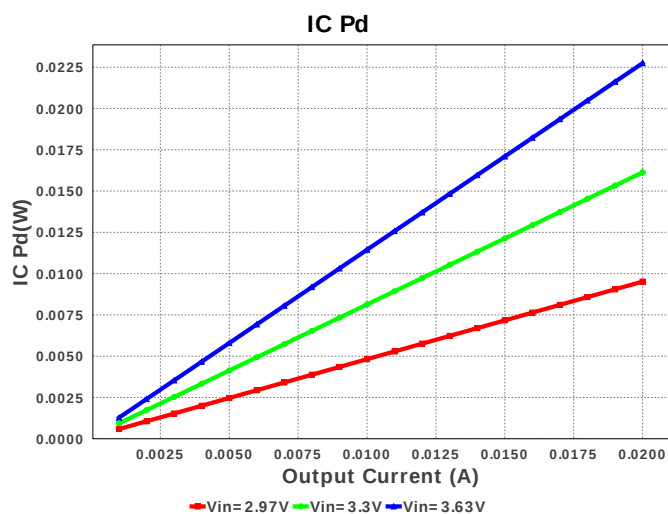
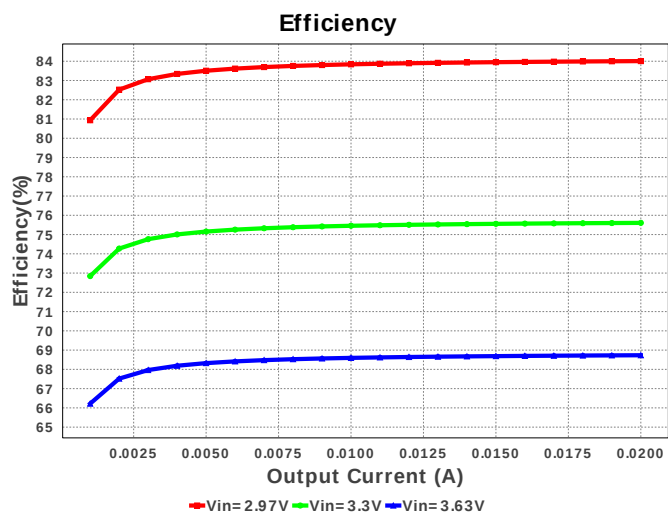
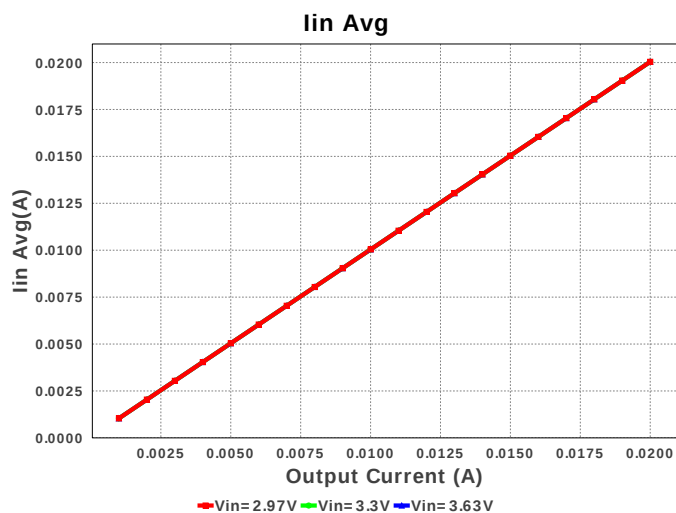
WEBENCH® Design Report

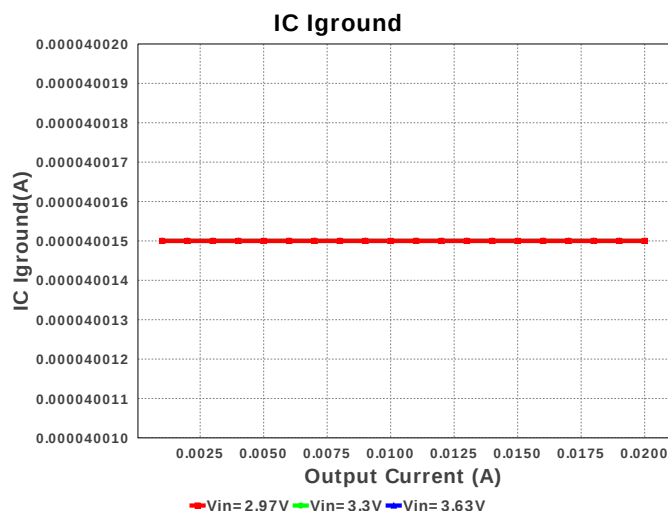
Design : 1066829/60 ATL432BQDBZR
ATL432BQDBZR 2.97V-3.63V to 2.50V @ 0.02A



Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Rs	Vishay-Dale	CRCW04029R53FKED Series= CRCW..e3	Res= 9.53 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
2.	U1	Texas Instruments	ATL432BQDBZR	Switcher	1	\$0.16	DBZ0003A 14 mm ²





Operating Values

#	Name	Value	Category	Description
1.	IC Iground	40.015 μ A	Current	IC ground current
2.	Iin Avg	20.04 mA	Current	Average input current
3.	BOM Count	2	General	Total Design BOM count
4.	FootPrint	17.0 mm ²	General	Total Foot Print Area of BOM components
5.	IC Tolerance	25.0 mV	General	IC Feedback Tolerance
6.	Pout	50.0 mW	General	Total output power
7.	Total BOM	\$0.17	General	Total BOM Cost
8.	Efficiency	68.733 %	Op_point	Steady state efficiency
9.	IC Tj	34.686 degC	Op_point	IC junction temperature
10.	ICThetaJA	206.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
11.	IOUT_OP	20.0 mA	Op_point	Iout operating point
12.	VIN_OP	3.63 V	Op_point	Vin operating point
13.	IC Pd	22.745 mW	Power	IC power dissipation
14.	Total Pd	22.745 mW	Power	Total Power Dissipation
15.	Vout Tolerance	1.0 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	20.0 m	Maximum Output Current
2.	VinMax	3.63	Maximum input voltage
3.	VinMin	2.97	Minimum input voltage
4.	Vout	2.5	Output Voltage
5.	base_pn	ATL432	Texas Instruments Base Part Number
6.	source	DC	Input Source Type
7.	ta	30.0	Ambient temperature

Design Assistance

-
- ATL432 Product Folder : <http://www.ti.com/product/atl432> : contains the data sheet and other resources.

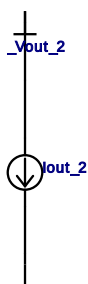
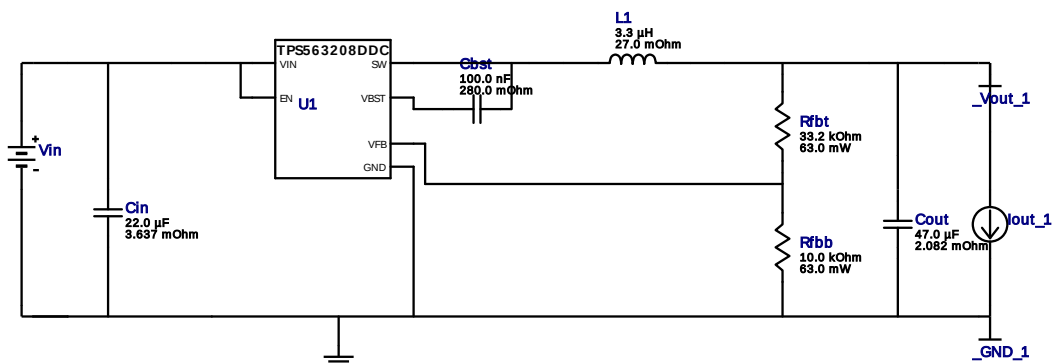


Vout = 3.3V
Iout = 0.37A

Device = TPS563208DDCR
Topology = Buck
Created = 6/21/16 2:19:10 AM
BOM Cost = \$1.11
BOM Count = 7
Total Pd = 0.05W

WEBENCH® Design Report

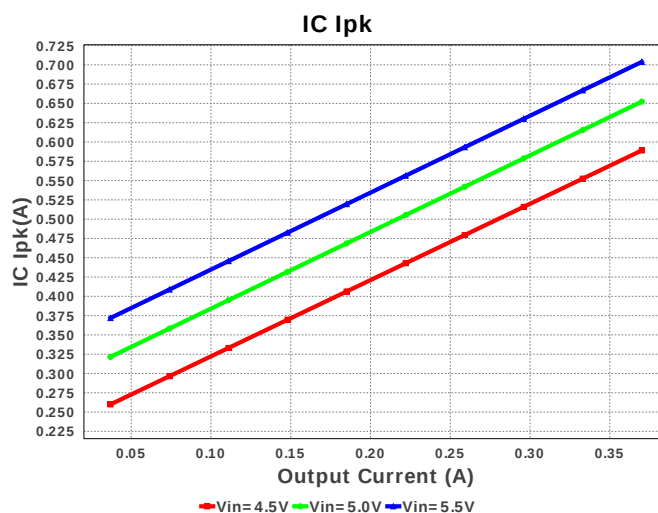
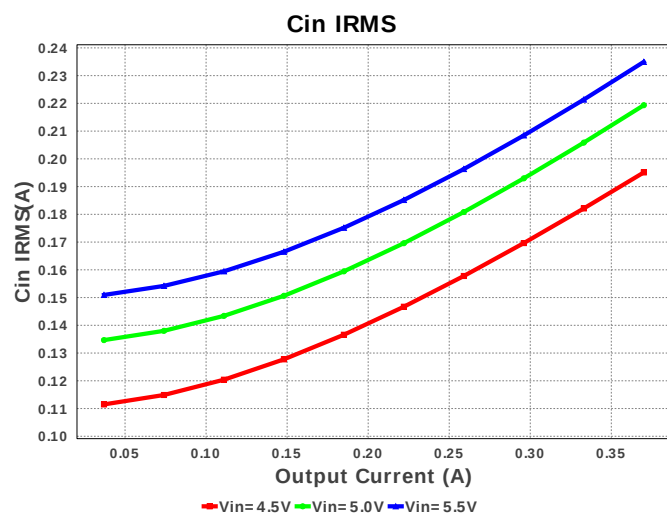
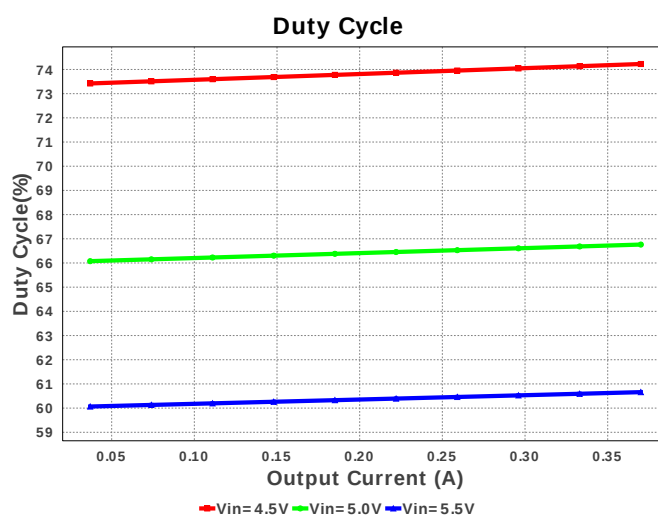
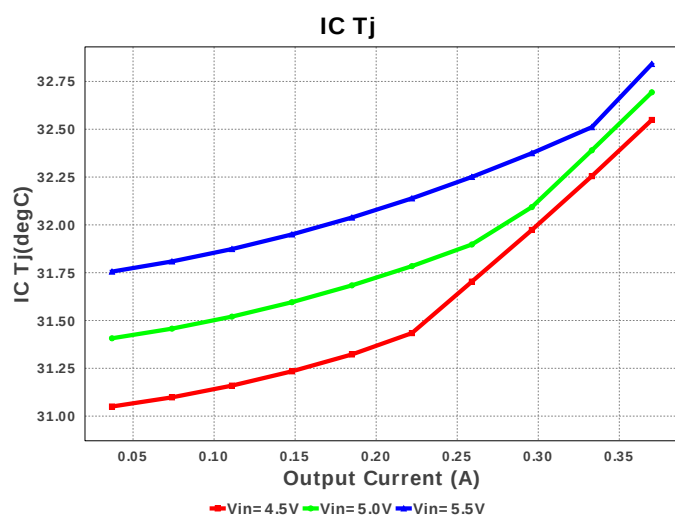
Design : 1066829/61 TPS563208DDCR
TPS563208DDCR 4.5V-5.5V to 3.30V @ 0.37004A

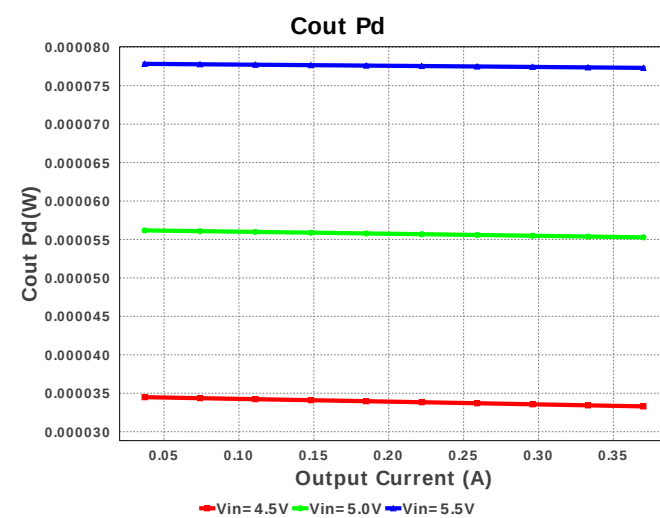
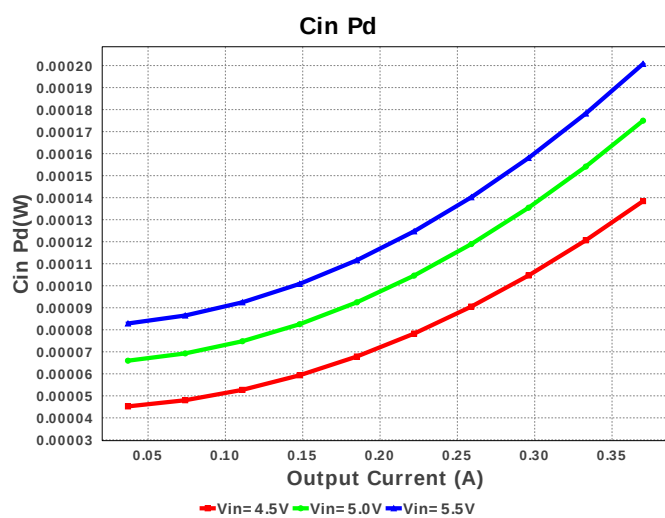
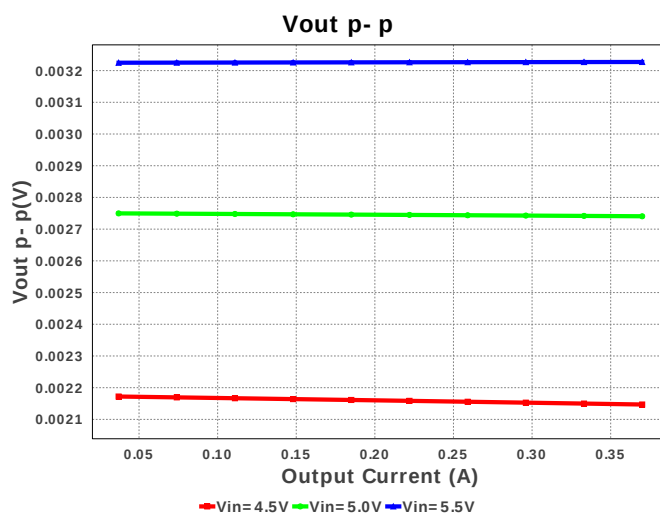
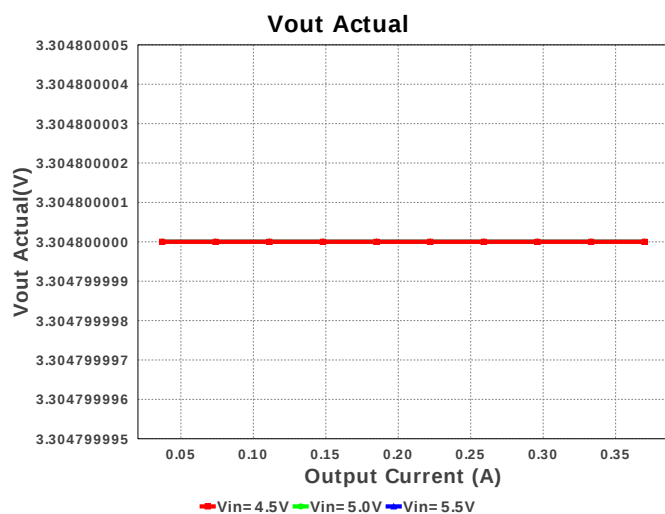
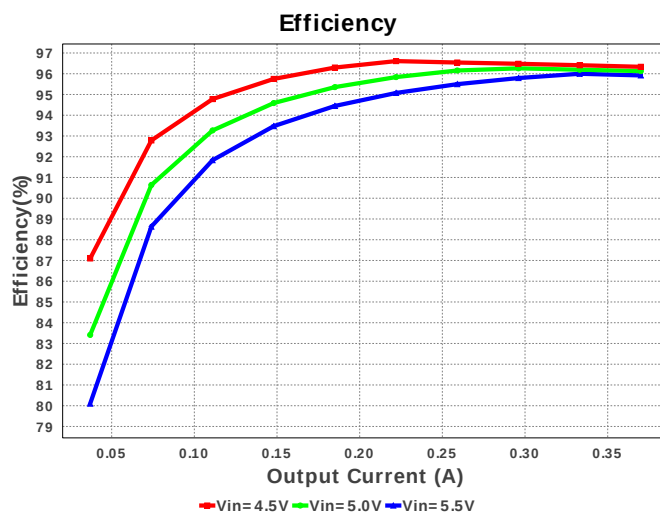
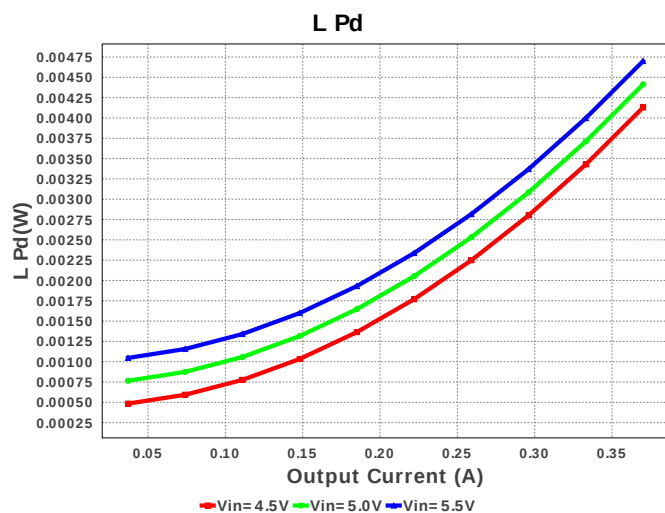


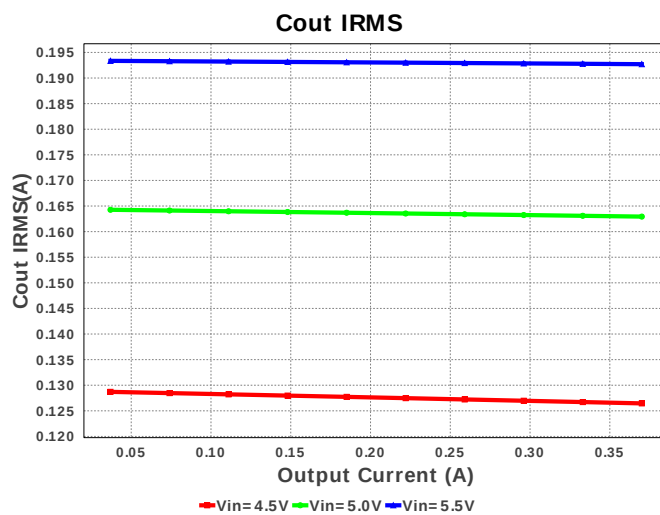
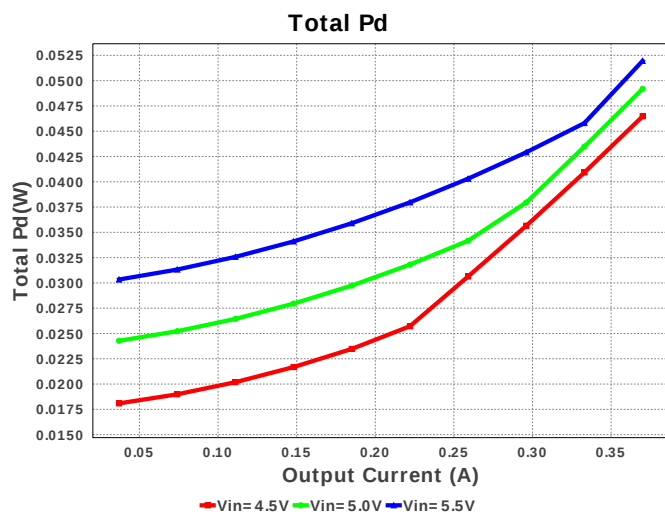
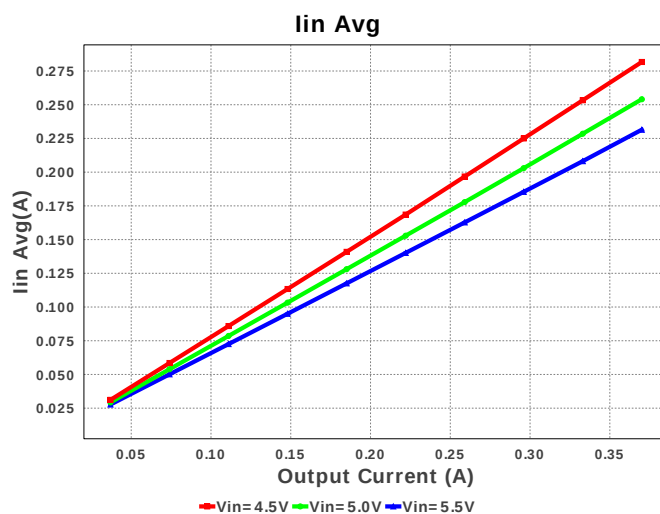
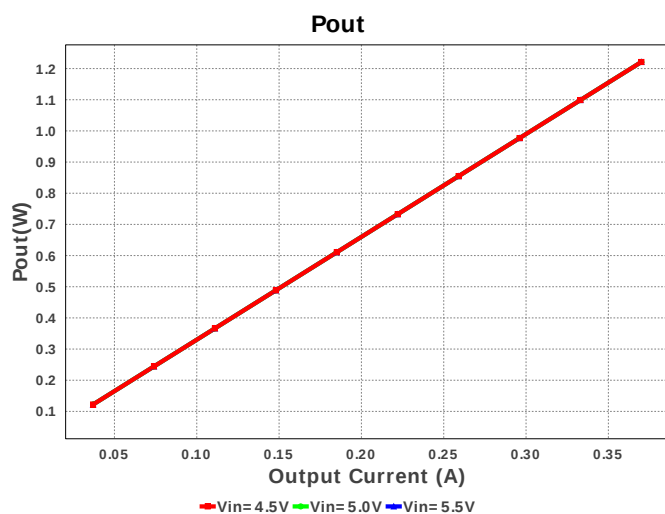
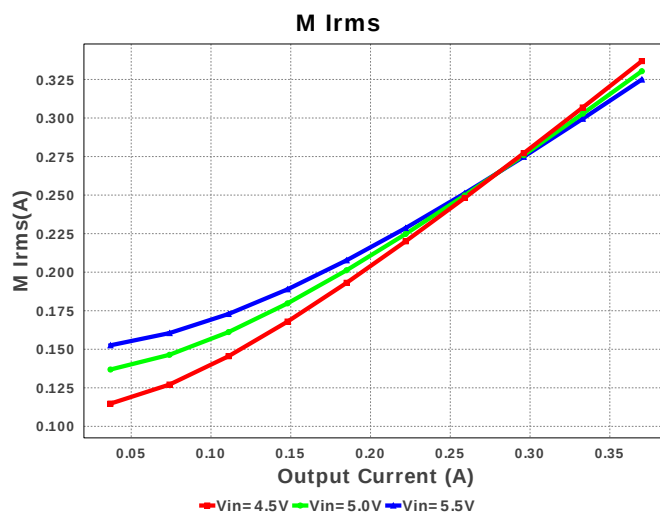
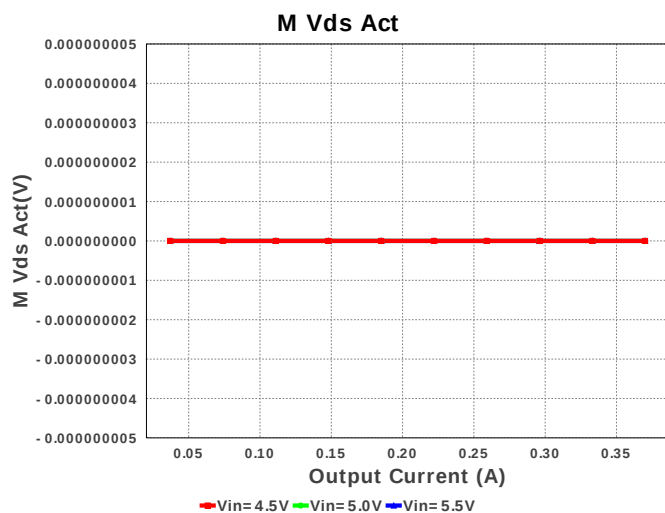
Electrical BOM

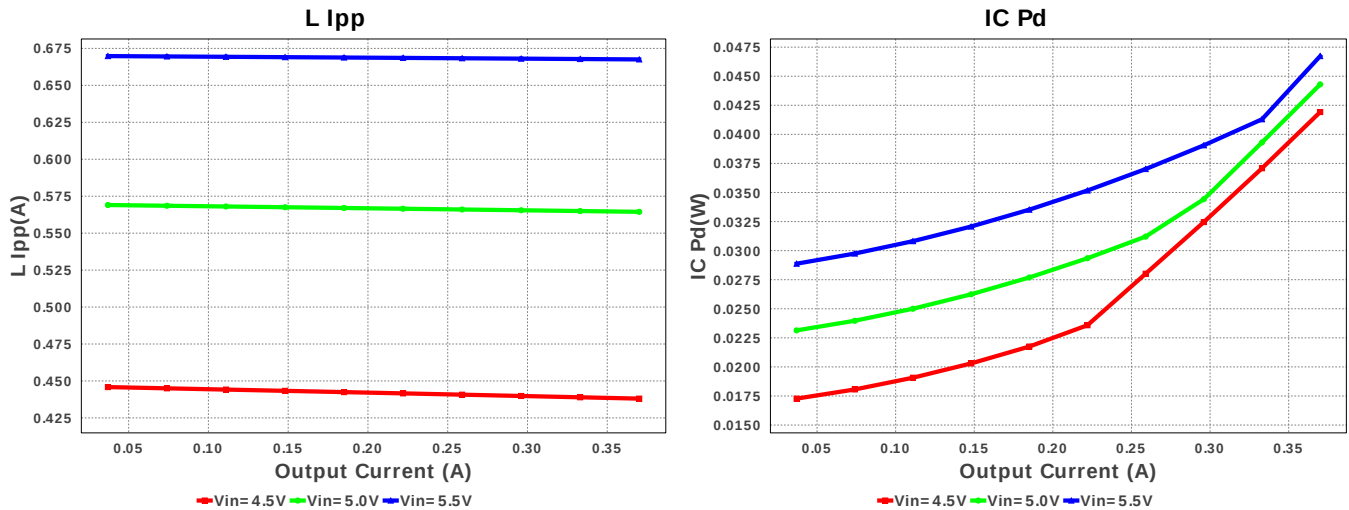
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbst	AVX	08053C104KAT2A Series= X7R	Cap= 100.0 nF ESR= 280.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm²
2.	Cin	MuRata	GRM31CR61A226KE19L Series= X5R	Cap= 22.0 uF ESR= 3.637 mOhm VDC= 10.0 V IRMS= 3.56456 A	1	\$0.07	 1206_190 11 mm²
3.	Cout	TDK	C3216X5R1E476M160AC Series= X5R	Cap= 47.0 uF ESR= 2.082 mOhm VDC= 25.0 V IRMS= 5.0279 A	1	\$0.35	 1206 11 mm²
4.	L1	Bourns	SRR7032-3R3M	L= 3.3 uH DCR= 27.0 mOhm	1	\$0.26	 SRR7032 81 mm²
5.	Rfbb	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
6.	Rfbt	Vishay-Dale	CRCW040233K2FKED Series= CRCW..e3	Res= 33.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
7.	U1	Texas Instruments	TPS563208DDCR	Switcher	1	\$0.40	 DDC0006A_N 10 mm ²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	234.951 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	192.703 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	703.812 mA	Current	Peak switch current in IC
4.	Iin Avg	231.47 mA	Current	Average input current
5.	L Ipp	667.54 mA	Current	Peak-to-peak inductor ripple current
6.	M Irms	324.942 mA	Current	MOSFET RMS current
7.	BOM Count	7	General	Total Design BOM count
8.	FootPrint	126.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	594.177 kHz	General	Switching frequency
10.	IC Tolerance	19.0 mV	General	IC Feedback Tolerance
11.	M Vds Act	0.0 V	General	Voltage drop across the MosFET
12.	Pout	1.221 W	General	Total output power
13.	Total BOM	\$1.11	General	Total BOM Cost
14.	Vout Actual	3.305 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
15.	Vout OP	3.3 V	Op_Point	Operational Output Voltage
16.	Duty Cycle	60.66 %	Op_point	Duty cycle
17.	Efficiency	95.919 %	Op_point	Steady state efficiency
18.	IC Tj	32.841 degC	Op_point	IC junction temperature
19.	ICThetaJA	60.8 degC/W	Op_point	IC junction-to-ambient thermal resistance
20.	IOUT_OP	370.04 mA	Op_point	Iout operating point
21.	VIN_OP	5.5 V	Op_point	Vin operating point
22.	Vout p-p	3.227 mV	Op_point	Peak-to-peak output ripple voltage
23.	Cin Pd	200.77 μW	Power	Input capacitor power dissipation
24.	Cout Pd	77.314 μW	Power	Output capacitor power dissipation
25.	IC Pd	46.73 mW	Power	IC power dissipation
26.	L Pd	4.7 mW	Power	Inductor power dissipation
27.	Total Pd	51.955 mW	Power	Total Power Dissipation
28.	Vout Tolerance	4.075 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	370.04 m	Maximum Output Current
2.	VinMax	5.5	Maximum input voltage
3.	VinMin	4.5	Minimum input voltage
4.	Vout	3.3	Output Voltage
5.	base_pn	TPS563208	Texas Instruments Base Part Number
6.	source	DC	Input Source Type
7.	ta	30.0	Ambient temperature

Design Assistance

1. TPS563208 Product Folder : <http://www.ti.com/product/TPS563208> : contains the data sheet and other resources.

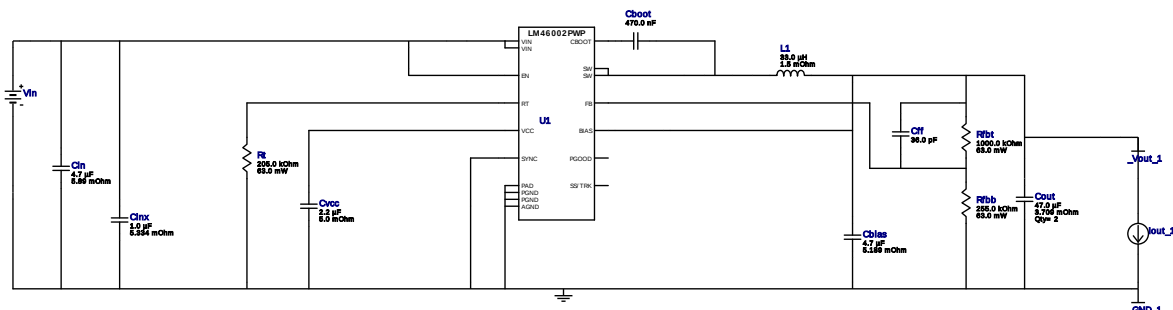


Vout = 5.0V
Iout = 0.73A

Device = LM46002PWPR
Topology = Buck
Created = 6/21/16 2:19:11 AM
BOM Cost = \$4.65
BOM Count = 13
Total Pd = 0.24W

WEBENCH® Design Report

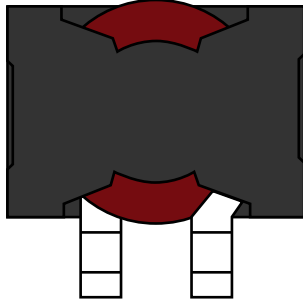
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LM46002PWPR 19.0V-50.0V to 5.00V @ 0.73147A

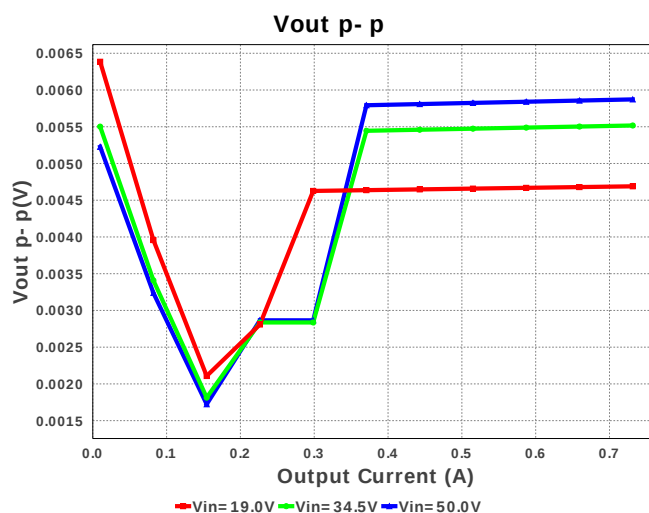
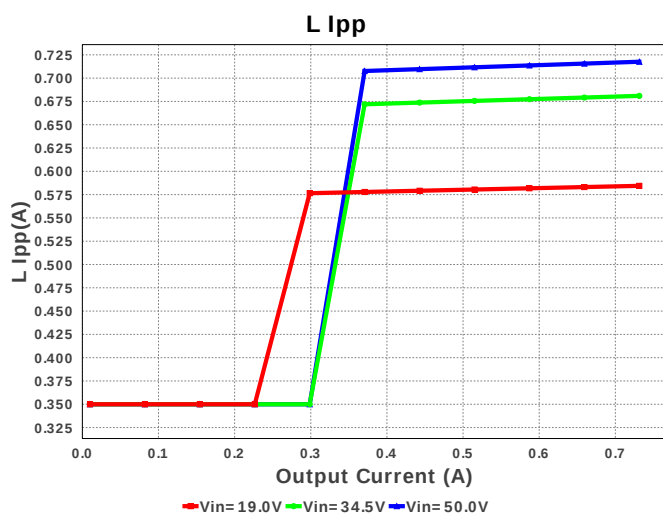


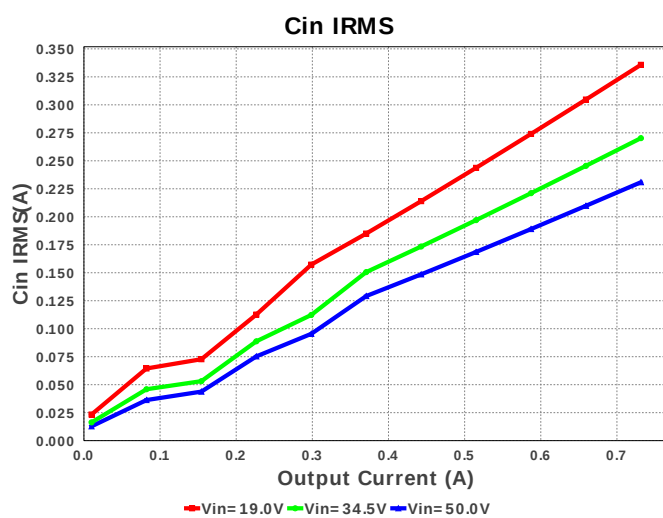
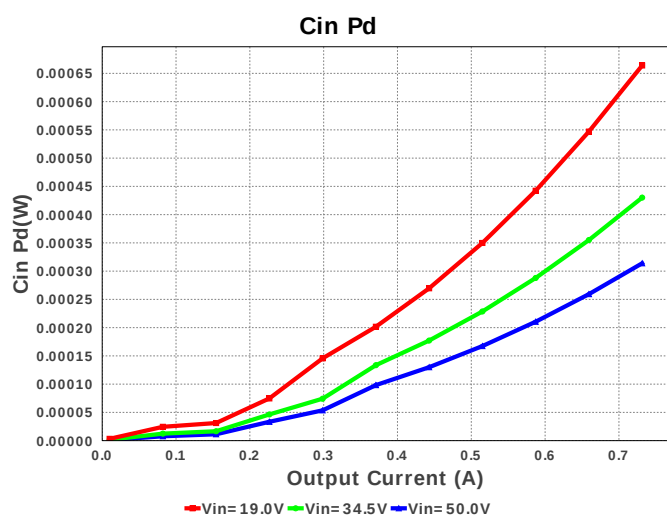
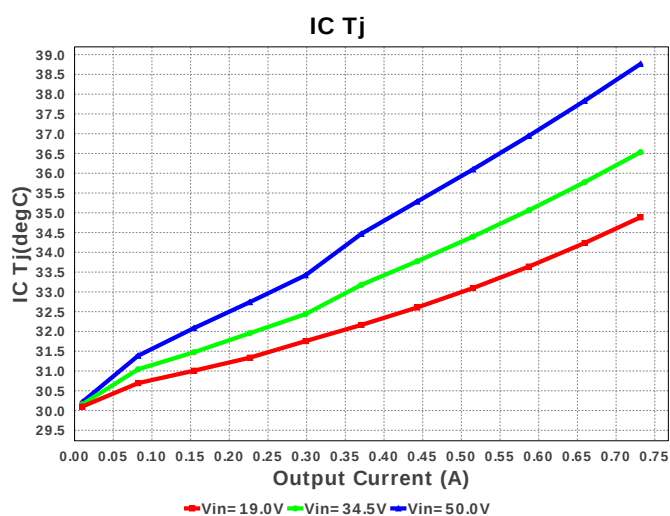
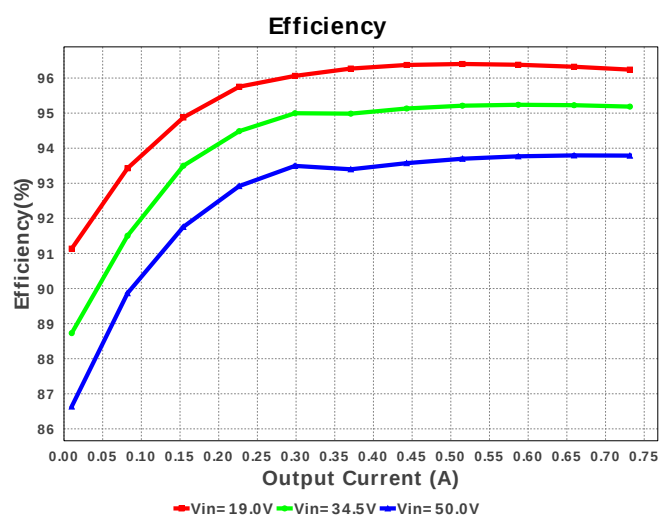
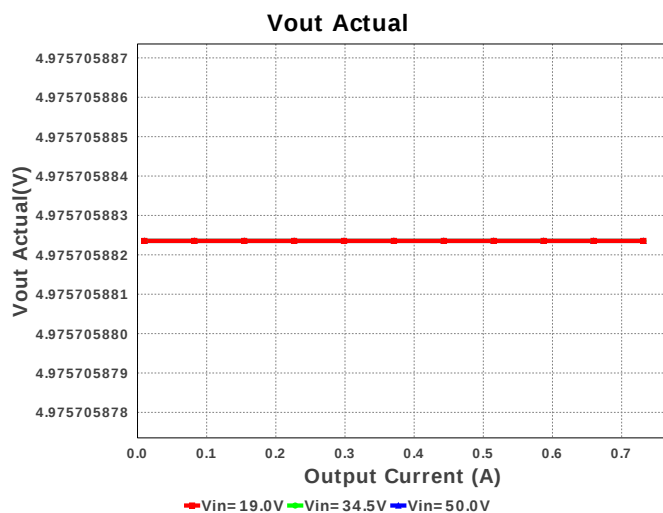
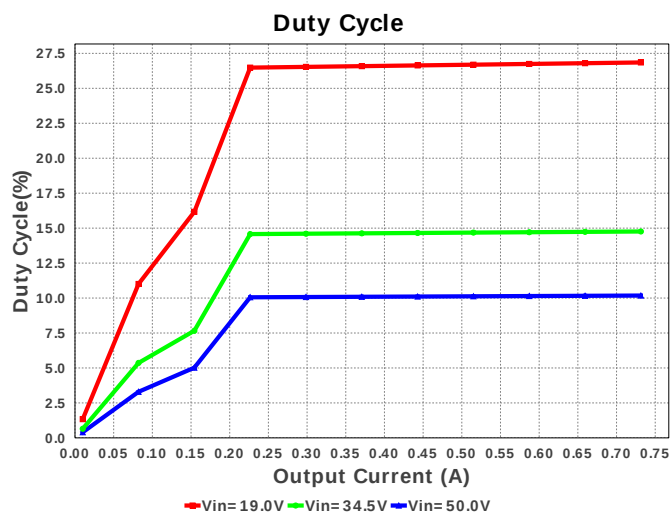
1. The input capacitor included in the BOM only contains a small filter capacitor that should be placed near the IC. Depending on where the power supply is laid out in the system additional bulk capacitance may need to be added to filter the line ripple.
2. If there is no VinTyp specified, WEBENCH will use the VinMax value. To change the VinTyp value, click on the "Change Design Inputs" button under the Optimization Tuning knob. In some applications, while the design requires the input voltage to be a wide range, for a majority of the time, it is operating at a much lower voltage than the maximum input voltage. Sizing the inductor based on the maximum input voltage may yield an inductance much larger than typically needed, causing a larger footprint for the overall design. At the same time, components such as the input capacitor must be rated based on the maximum input voltage. WEBENCH now supports the use of this additional input voltage specification.

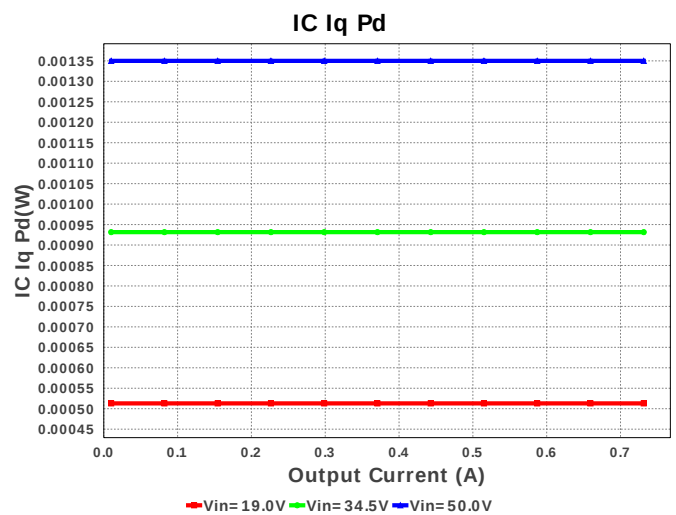
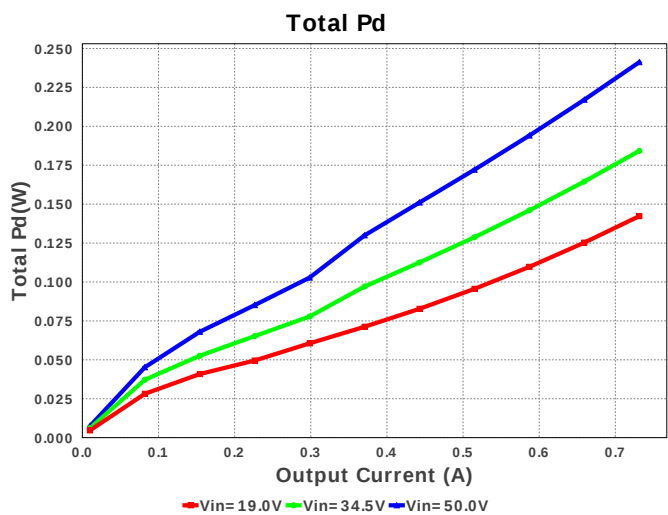
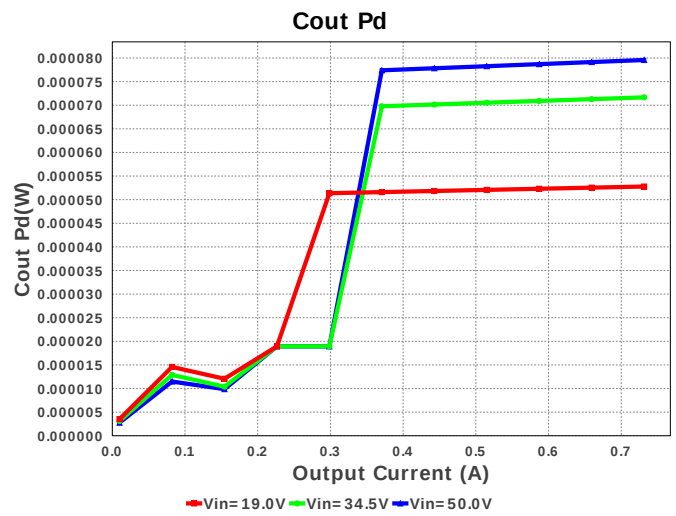
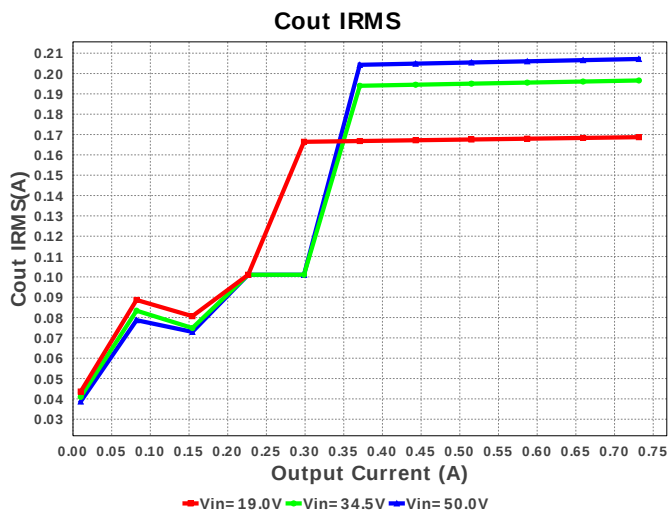
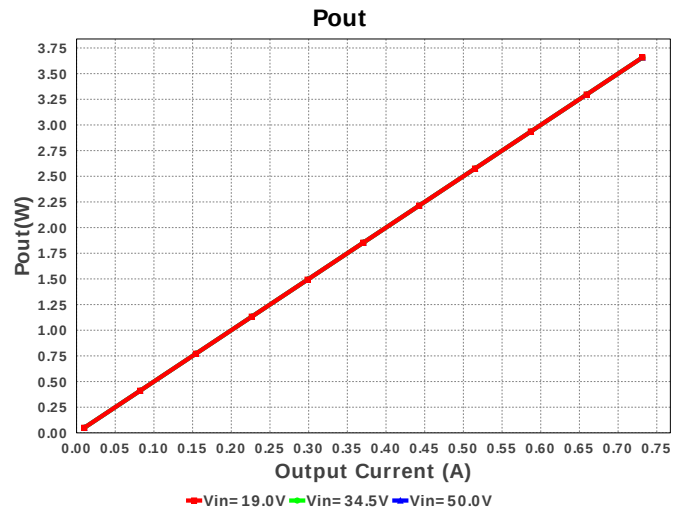
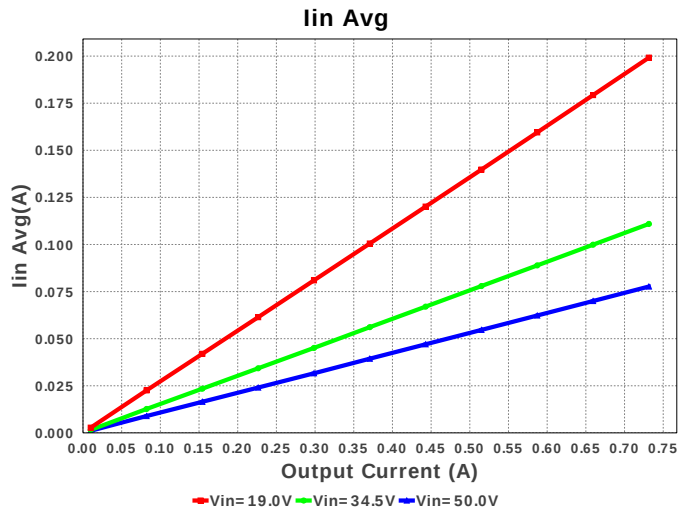
Electrical BOM

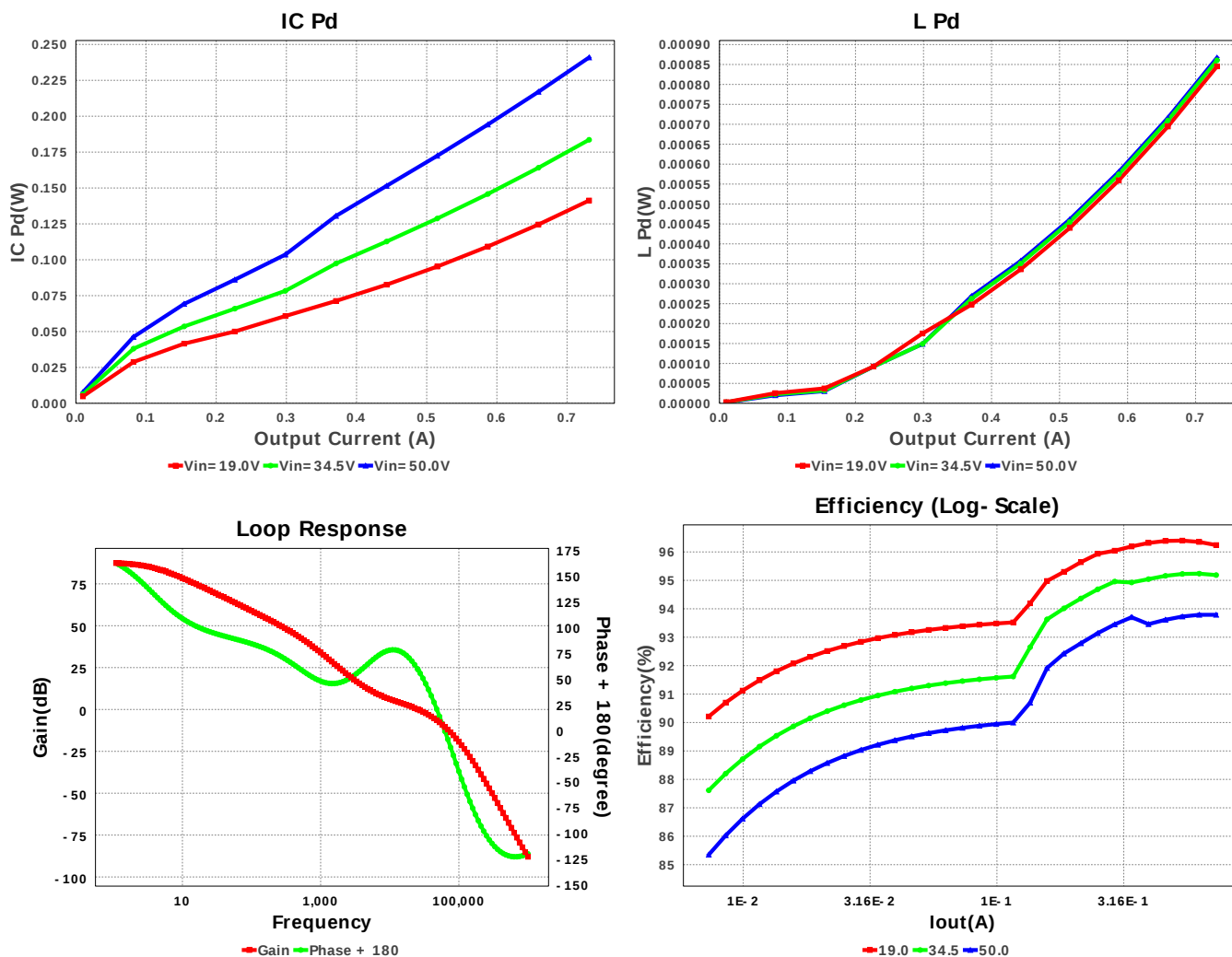
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbias	MuRata	GRM21BR61E475KA12L Series= X5R	Cap= 4.7 uF ESR= 5.189 mOhm VDC= 25.0 V IRMS= 2.03531 A	1	\$0.02	0805 7 mm ²
2.	Cboot	MuRata	GRM155C80J474KE19D Series= X6S	Cap= 470.0 nF VDC= 6.3 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
3.	Cff	TDK	C0603C0G1E360G Series= C0G/NP0	Cap= 36.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0201 2 mm ²
4.	Cin	TDK	C3225X7S2A475M200AB Series= X7S	Cap= 4.7 uF ESR= 5.89 mOhm VDC= 100.0 V IRMS= 6.7739 A	1	\$0.42	1210 15 mm ²
5.	Cinx	MuRata	GRM31CR72A105KA01L Series= X7R	Cap= 1.0 uF ESR= 5.334 mOhm VDC= 100.0 V IRMS= 1.55432 A	1	\$0.11	1206_190 11 mm ²
6.	Cout	MuRata	GRM31CR61A476KE15L Series= X5R	Cap= 47.0 uF ESR= 3.709 mOhm VDC= 10.0 V IRMS= 4.2862 A	2	\$0.15	1206_190 11 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
7.	Cvcc	MuRata	GRM155R60J225ME15D Series= X5R	Cap= 2.2 uF ESR= 5.0 mOhm VDC= 6.3 V IRMS= 3.67 A	1	\$0.02	 0402 3 mm²
8.	L1	Coilcraft	SER2915L-333KL	L= 33.0 µH DCR= 1.5 mOhm	1	\$1.88	 SER2915L 652 mm²
9.	Rfbb	Vishay-Dale	CRCW0402255KFKED Series= CRCW..e3	Res= 255.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
10.	Rfbt	Vishay-Dale	CRCW04021M00FKED Series= CRCW..e3	Res= 1000.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
11.	Rt	Vishay-Dale	CRCW0402205KFKED Series= CRCW..e3	Res= 205.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
12.	U1	Texas Instruments	LM46002PWPR	Switcher	1	\$1.85	 PWP0016F 59 mm²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	230.416 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	202.516 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	77.736 mA	Current	Average input current
4.	L Ipp	701.53 mA	Current	Peak-to-peak inductor ripple current
5.	BOM Count	13	General	Total Design BOM count
6.	FootPrint	782.0 mm ²	General	Total Foot Print Area of BOM components
7.	Frequency	200.0 kHz	General	Switching frequency
8.	Pout	3.657 W	General	Total output power
9.	Total BOM	\$4.65	General	Total BOM Cost
10.	Low Freq Gain	87.484 dB	Op_Point	Gain at 10Hz
11.	Vout Actual	4.976 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
12.	Vout OP	5.0 V	Op_Point	Operational Output Voltage
13.	Cross Freq	25.685 kHz	Op_point	Bode plot crossover frequency
14.	Duty Cycle	10.179 %	Op_point	Duty cycle
15.	Efficiency	93.711 %	Op_point	Steady state efficiency
16.	Gain Marg	-10.499 dB	Op_point	Bode Plot Gain Margin
17.	IC Tj	38.877 degC	Op_point	IC junction temperature
18.	ICThetaJA	38.9 degC/W	Op_point	IC junction-to-ambient thermal resistance
19.	IOUT_OP	731.47 mA	Op_point	Iout operating point
20.	Phase Marg	59.839 deg	Op_point	Bode Plot Phase Margin
21.	VIN_OP	50.0 V	Op_point	Vin operating point
22.	Vout p-p	5.622 mV	Op_point	Peak-to-peak output ripple voltage
23.	Cin Pd	312.71 μW	Power	Input capacitor power dissipation
24.	Cout Pd	76.058 μW	Power	Output capacitor power dissipation
25.	IC Iq Pd	1.35 mW	Power	IC Iq Pd
26.	IC Pd	244.19 mW	Power	IC power dissipation
27.	L Pd	864.091 μW	Power	Inductor power dissipation
28.	Total Pd	244.441 mW	Power	Total Power Dissipation
29.	Vout Tolerance	2.615 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	731.47 m	Maximum Output Current
2.	VinMax	50.0	Maximum input voltage
3.	VinMin	19.0	Minimum input voltage
4.	Vout	5.0	Output Voltage
5.	base_pn	LM46002	Texas Instruments Base Part Number
6.	source	DC	Input Source Type
7.	ta	30.0	Ambient temperature

Design Assistance

1. LM46002 Product Folder : <http://www.ti.com/product/LM46002> : contains the data sheet and other resources.

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