

WEBENCH® Power Architect

Project Report

Project : 3496425/17 : PA_Project_304 (modified from 301)

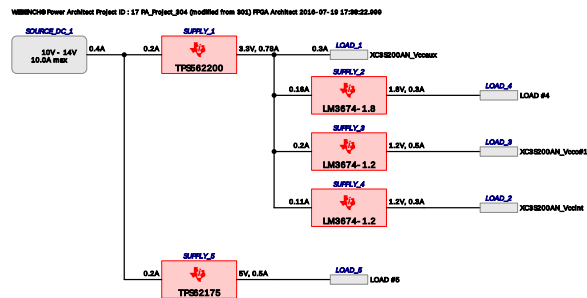
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Optimize project optFactor=3

Project Summary

1. Total System Efficiency	86.064 %
2. Total System BOM Count	26.0
3. Total System Footprint	257.0 mm ²
4. Total System BOM Cost	\$3.41
5. Total System Power Dissipation	808.0 mW

--> Launch WEBENCH Power Architect.



Sequencer Flag Table

Supply	Sequencer Flag	Load	Load Name
SUPPLY_1	0	LOAD_1	XC3S200AN_Vccaux
SUPPLY_2	0	LOAD_4	LOAD #4
SUPPLY_3	0	LOAD_3	XC3S200AN_Vcco#1
SUPPLY_4	0	LOAD_2	XC3S200AN_Vccint
SUPPLY_5	0	LOAD_5	LOAD #5

Power Supplies

#	Name	NSID	Description	Vout	Iout	Efficiency	Foot-print	Cost	Design	Page
1.	SUPPLY_1	TPS562200	Switcher : 17V, 2A,6-pin, Low Iq Synchronous buck converter with Advanced Eco-mode	3.3 V	0.781 A	90.9%	82	\$0.99	80	19
2.	SUPPLY_2	LM3674-1.8	Switcher : 2MHz, 600mA Step-Down DC-DC Converter in SOT 23-5	1.8 V	0.3 A	90.3%	38	\$0.45	77	4
3.	SUPPLY_3	LM3674-1.2	Switcher : 2MHz, 600mA Step-Down DC-DC Converter in SOT 23-5	1.2 V	0.5 A	81.8%	38	\$0.45	78	9
4.	SUPPLY_4	LM3674-1.2	Switcher : 2MHz, 600mA Step-Down DC-DC Converter in SOT 23-5	1.2 V	0.3 A	86.7%	38	\$0.45	79	14
5.	SUPPLY_5	TPS62175	Switcher : High Light-Load Efficiency Buck Converter	5 V	0.5 A	89.2%	61	\$1.07	81	24

Power Loads

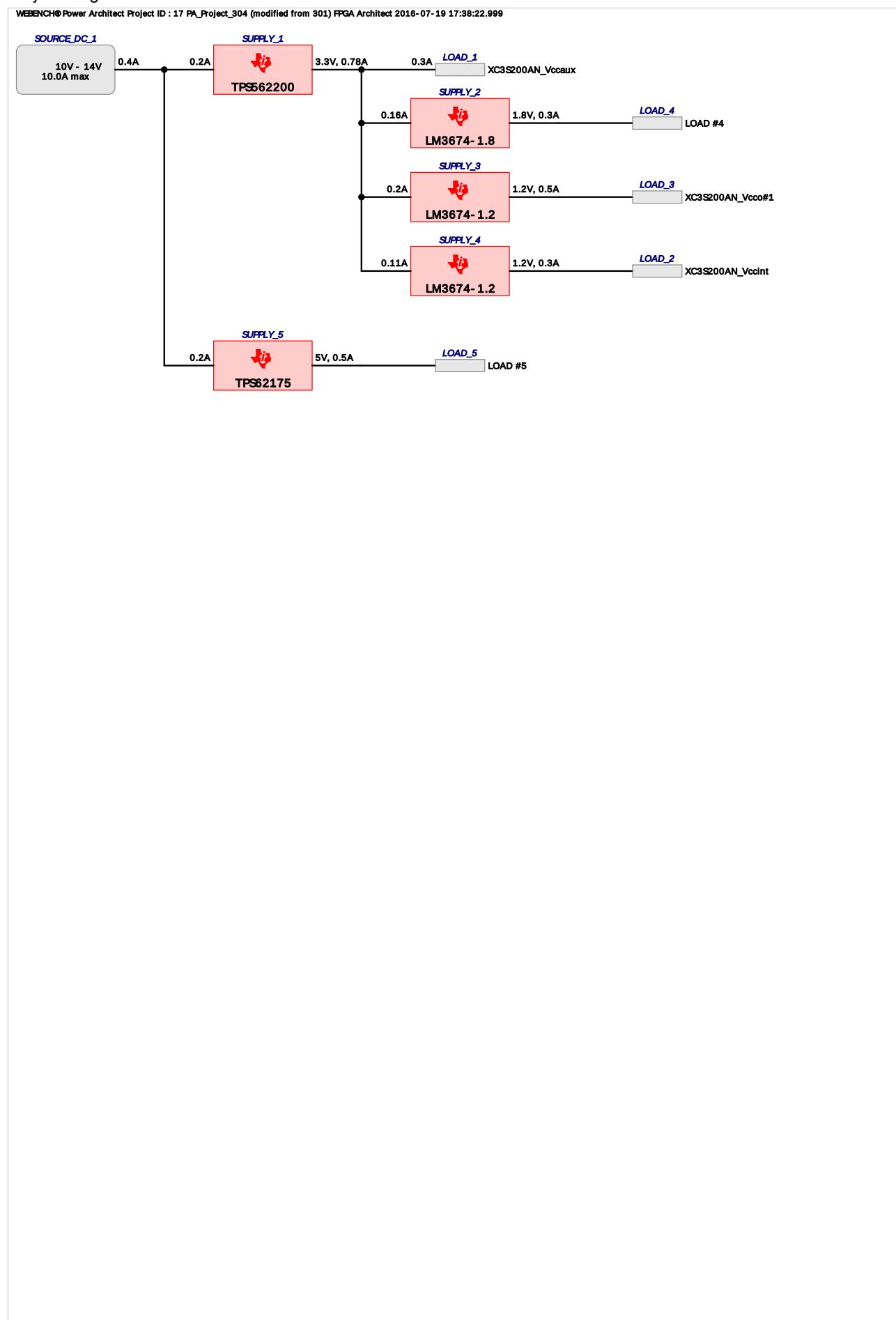
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1.	XC3S200AN_Vccaux	3.3 V	0.3 A	VoutRipple=18%, SoftStart delay=1.0 mSec
2.	LOAD #4	1.8 V	0.3 A	VoutRipple=5%
3.	XC3S200AN_Vcco#1	1.2 V	0.5 A	VoutRipple=5%
4.	XC3S200AN_Vccint	1.2 V	0.3 A	VoutRipple=5%, SoftStart delay=1.0 mSec
5.	LOAD #5	5 V	0.5 A	VoutRipple=5%

FPGAs, Processors

#	Manufacturer	Part Number	Name	Series	Description
1.	Xilinx	XC3S200AN	FPGA_1	Spartan-3AN	FPGA Xilinx Spartan-3AN XC3S200AN

http://www.xilinx.com/support/documentation/data_sheets/ds557.pdf

Project Diagram



Electrical Procurement BOM

Manufacturer	Part Number	Description	Quantity	Budgetary Price	Footprint (mm ²)
AVX	08053C104KAT2A	0805	1	\$0.01	7
Vishay-Dale	CRCW0402100KFKED	0402	1	\$0.01	3
Vishay-Dale	CRCW040210K0FKED	0402	1	\$0.01	3
Vishay-Dale	CRCW04022M00FKED	0402	1	\$0.01	3
Vishay-Dale	CRCW040233K2FKED	0402	1	\$0.01	3
Vishay-Dale	CRCW0402383KFKED	0402	1	\$0.01	3
MuRata	GRM188R60J106ME47D	0603	3	\$0.02	14
MuRata	GRM188R60J475KE19D	0603	3	\$0.01	14
MuRata	GRM188R61C225KE15D	0603	1	\$0.02	5
MuRata	GRM31CR61A226KE19L	1206_190	2	\$0.07	22
MuRata	GRM32ER61E226KE15L	1210	1	\$0.16	15
Texas Instruments	LM3674MFX-1.2/NOPB	MF05A	2	\$0.32	30
Texas Instruments	LM3674MFX-1.8/NOPB	MF05A	1	\$0.32	15
Coilcraft	LPS4018-103MRB	LPS4018	1	\$0.35	24
TDK	NLCV32T-2R2M-PFR	NLCV32	3	\$0.10	40
Bourns	SRR4028-3R3Y	SRR4028	1	\$0.26	34
Texas Instruments	TPS562200DDCR	DDC0006A	1	\$0.47	10
Texas Instruments	TPS62175DQCR	R- PWSN- N10	1	\$0.60	12
Total			26	\$3.41	256.6459

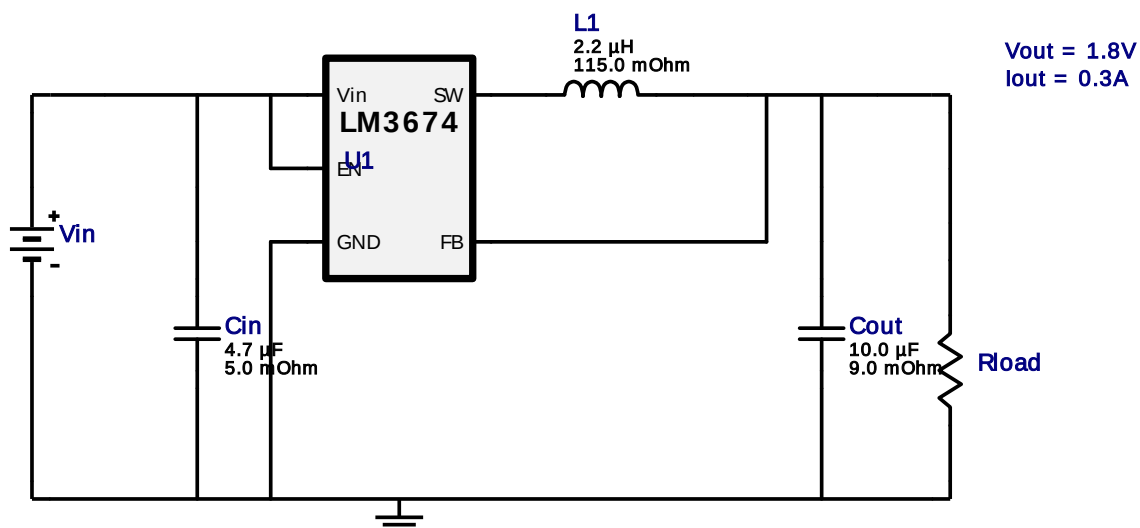


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BOM Count = 4
Total Pd = 0.06W

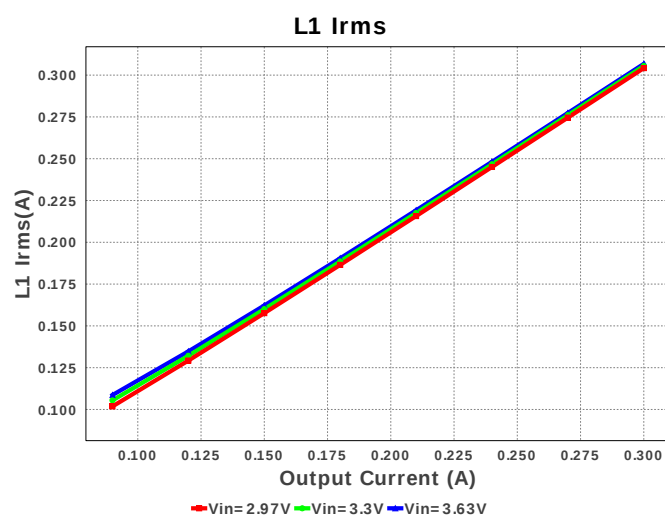
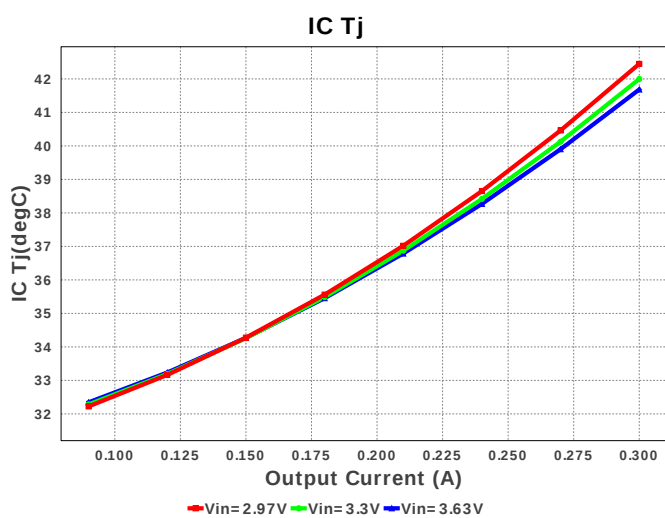
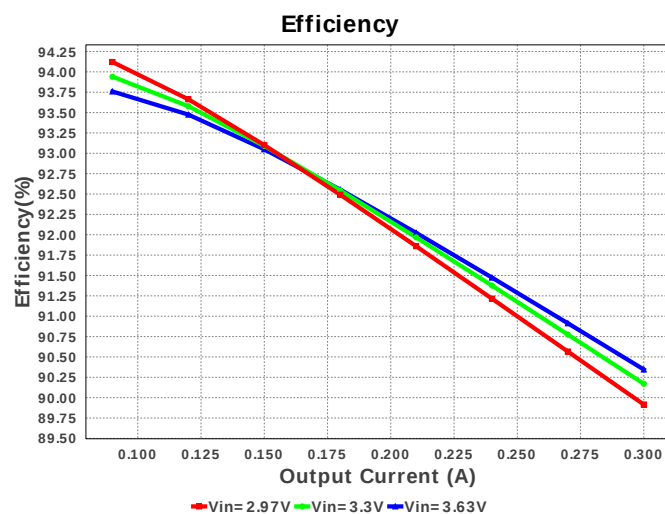
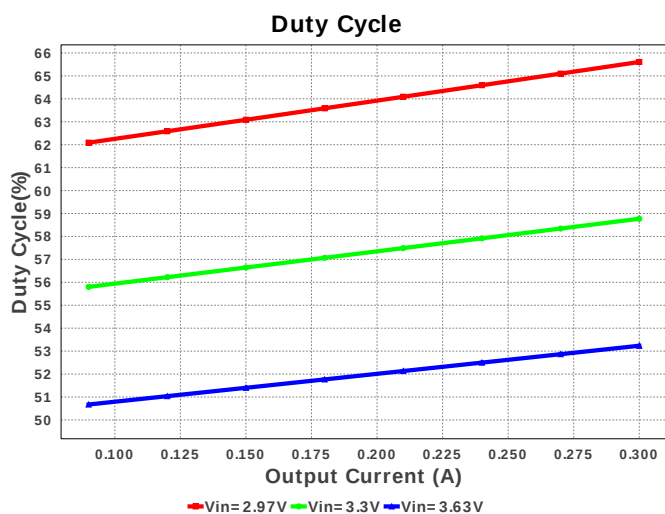
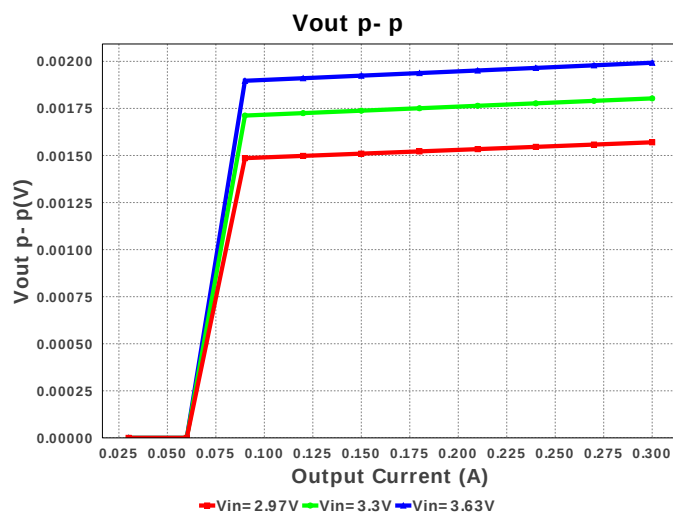
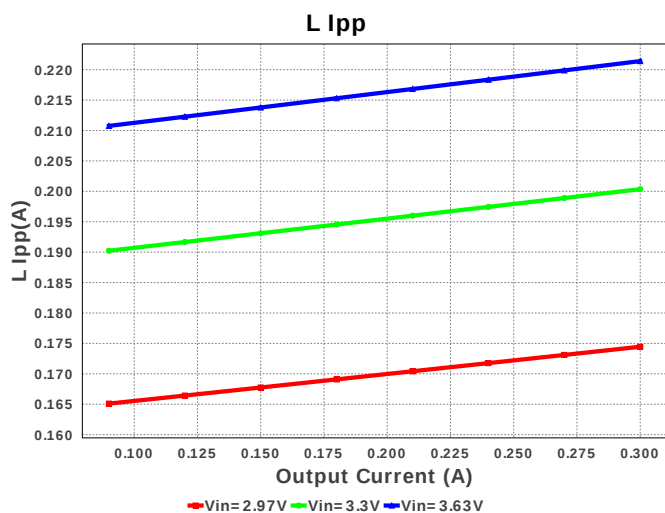
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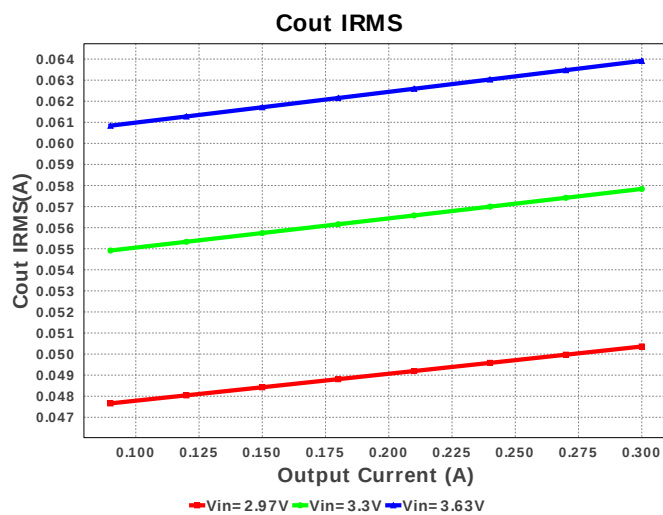
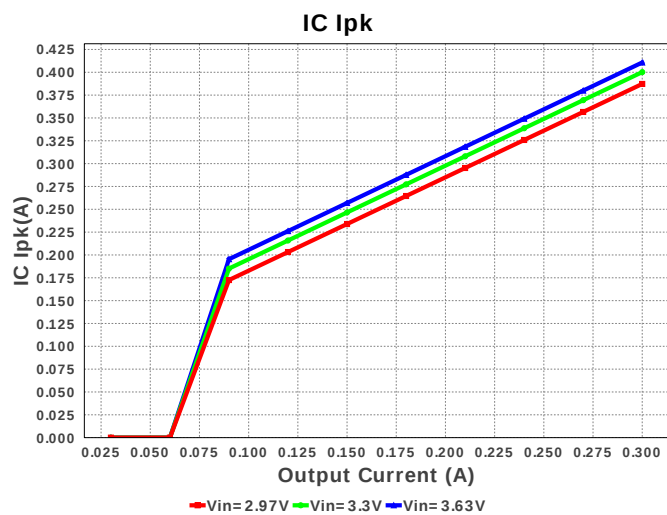
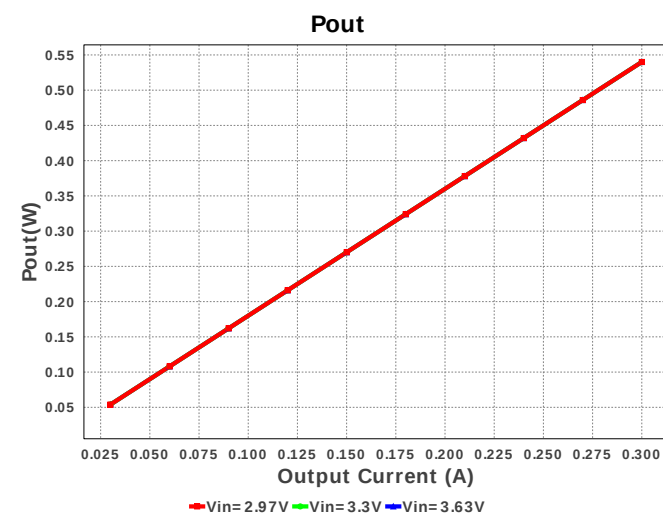
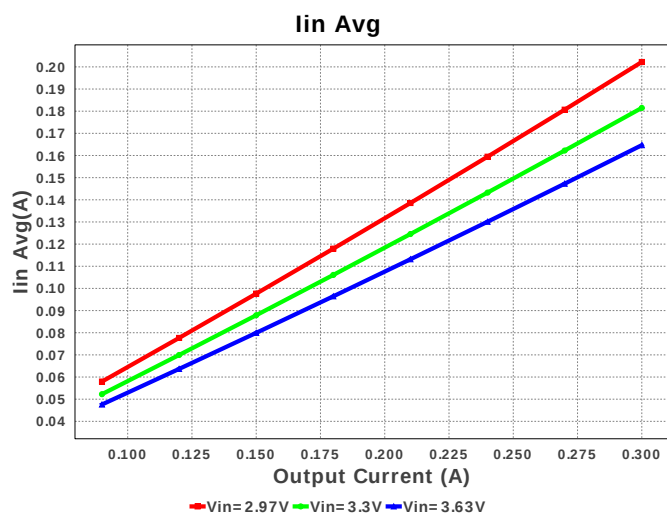
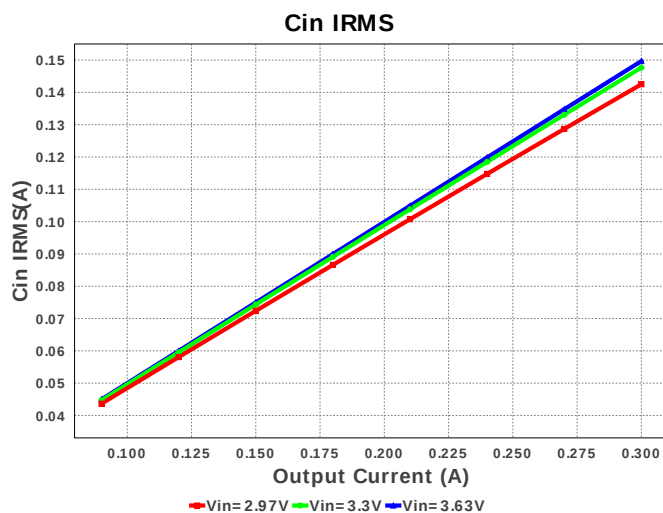
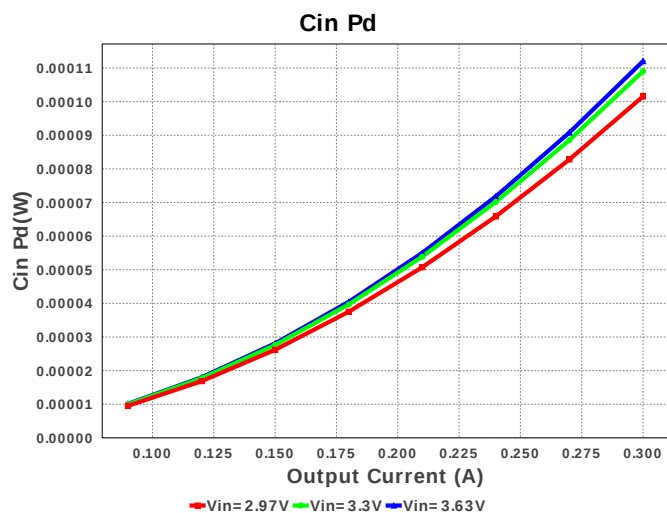
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LM3674MFX-1.8/NOPB 2.97V-3.63V to 1.80V @ 0.3A

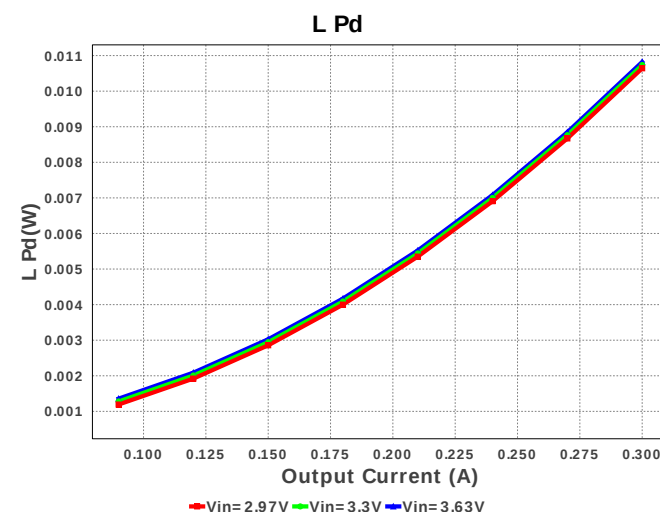
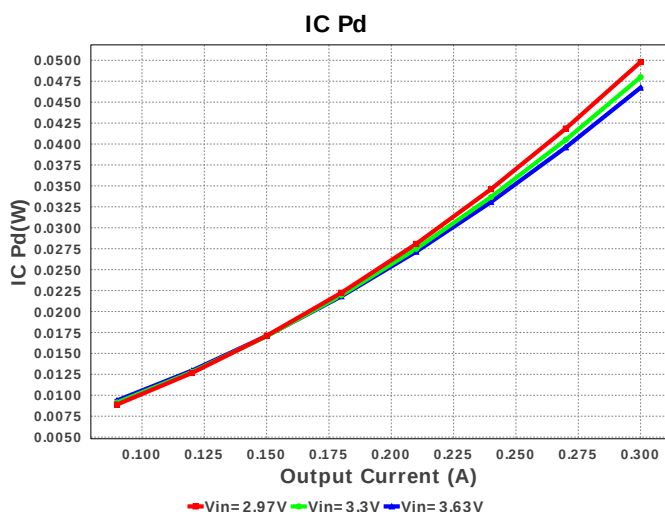
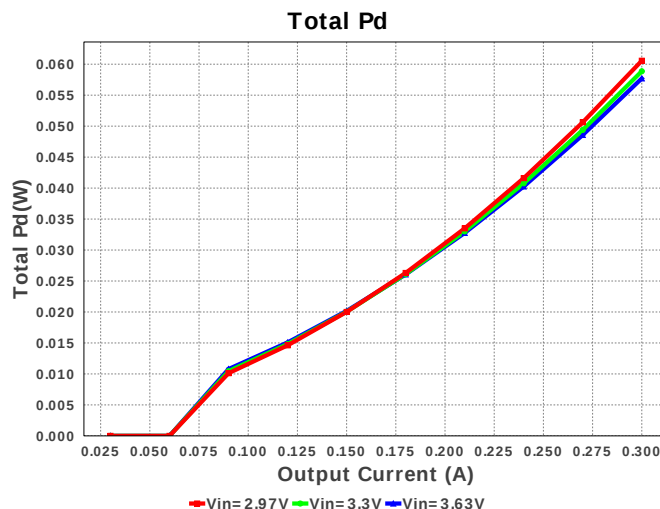
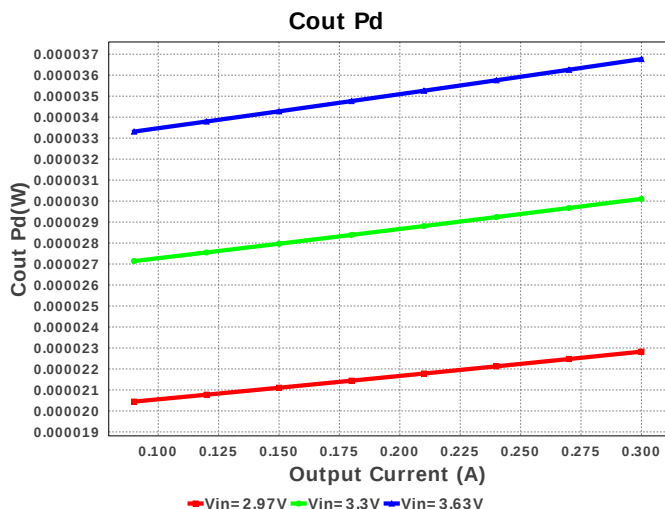


Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	MuRata	GRM188R60J475KE19D Series= X5R	Cap= 4.7 uF ESR= 5.0 mOhm VDC= 6.3 V IRMS= 2.0 A	1	\$0.01	0603 5 mm ²
2.	Cout	MuRata	GRM188R60J106ME47D Series= X5R	Cap= 10.0 uF ESR= 9.0 mOhm VDC= 6.3 V IRMS= 2.74 A	1	\$0.02	0603 5 mm ²
3.	L1	TDK	NLCV32T-2R2M-PFR	L= 2.2 uH DCR= 115.0 mOhm	1	\$0.10	NLCV32 13 mm ²
4.	U1	Texas Instruments	LM3674MFX-1.8/NOPB	Switcher	1	\$0.32	MF05A 15 mm ²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	149.686 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	63.915 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	410.705 mA	Current	Peak switch current in IC
4.	Iin Avg	164.66 mA	Current	Average input current
5.	L Ipp	221.41 mA	Current	Peak-to-peak inductor ripple current
6.	L1 Irms	306.733 mA	Current	Inductor ripple current
7.	BOM Count	4	General	Total Design BOM count
8.	FootPrint	38.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	2.0 MHz	General	Switching frequency
10.	IC Tolerance	0.0 V	General	IC Feedback Tolerance
11.	Pout	540.0 mW	General	Total output power
12.	Total BOM	\$0.45	General	Total BOM Cost
13.	Duty Cycle	53.235 %	Op_point	Duty cycle
14.	Efficiency	90.346 %	Op_point	Steady state efficiency
15.	IC Tj	41.684 degC	Op_point	IC junction temperature
16.	ICThetaJA	250.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
17.	IOUT_OP	300.0 mA	Op_point	Iout operating point
18.	VIN_OP	3.63 V	Op_point	Vin operating point
19.	Vout p-p	1.993 mV	Op_point	Peak-to-peak output ripple voltage
20.	Cin Pd	112.029 μ W	Power	Input capacitor power dissipation
21.	Cout Pd	36.767 μ W	Power	Output capacitor power dissipation
22.	IC Pd	46.736 mW	Power	IC power dissipation
23.	L Pd	10.82 mW	Power	Inductor power dissipation
24.	Total Pd	57.703 mW	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	300.0 m	Maximum Output Current
2.	VinMax	3.63	Maximum input voltage
3.	VinMin	2.97	Minimum input voltage

#	Name	Value	Description
4.	Vout	1.8	Output Voltage
5.	base_pn	LM3674	Texas Instruments Base Part Number
6.	source	DC	Input Source Type
7.	ta	30.0	Ambient temperature

Design Assistance

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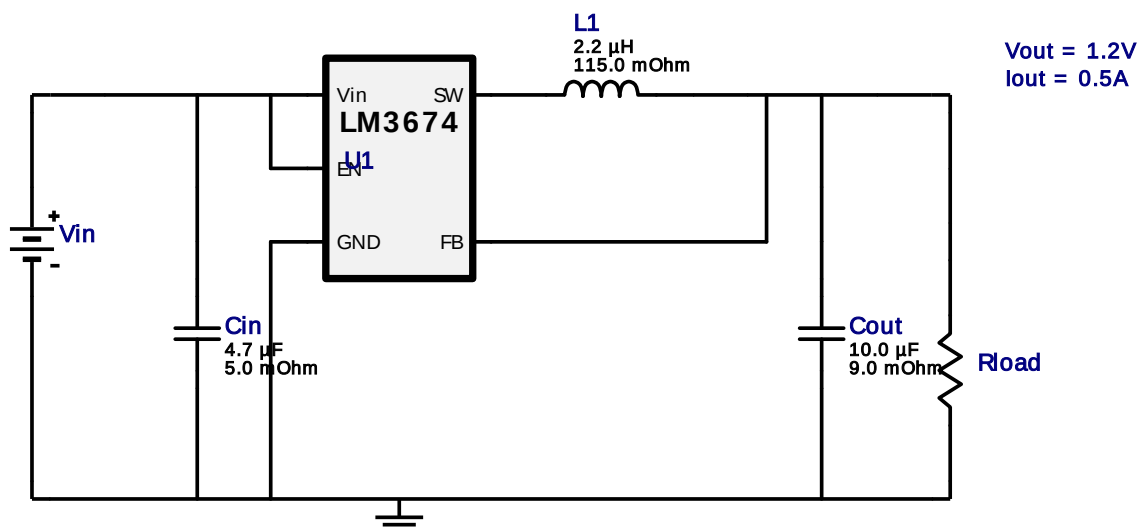


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Iout = 0.5A

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BOM Count = 4
Total Pd = 0.13W

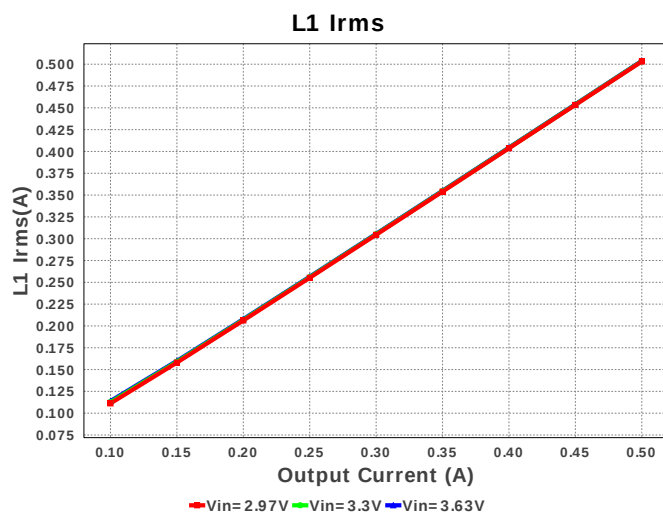
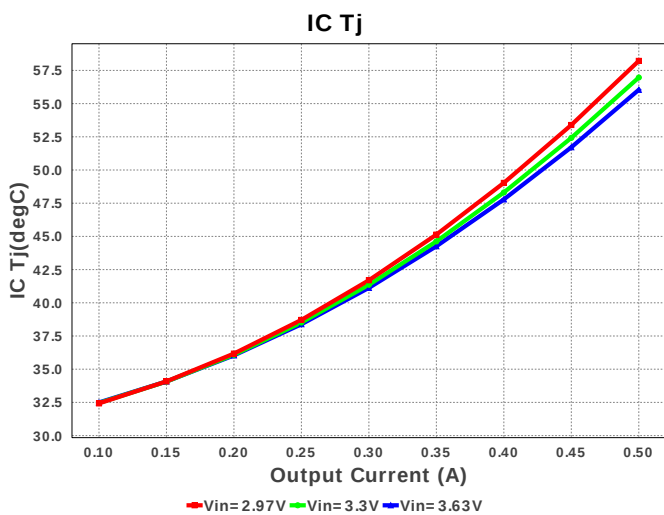
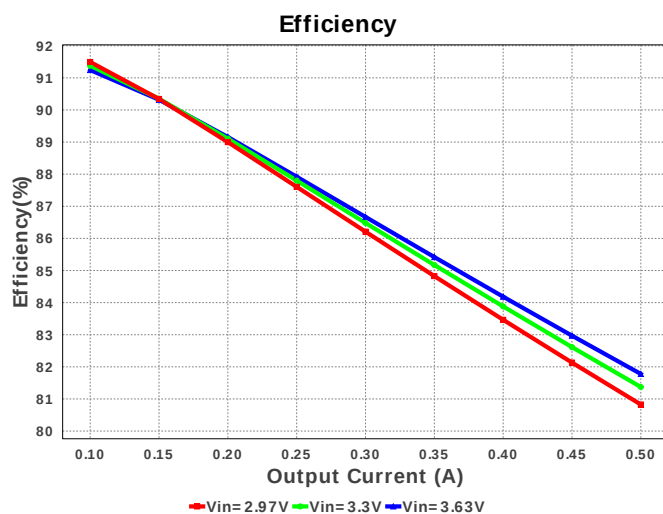
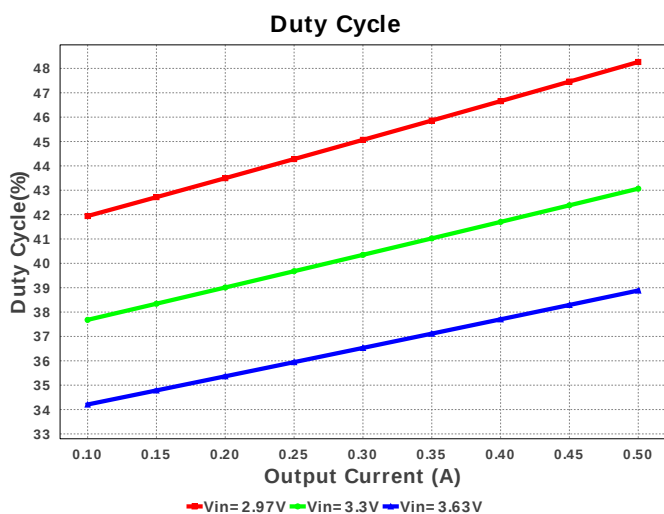
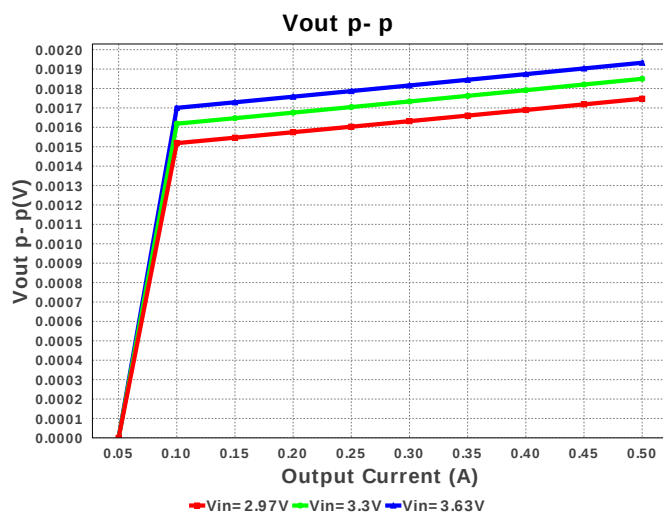
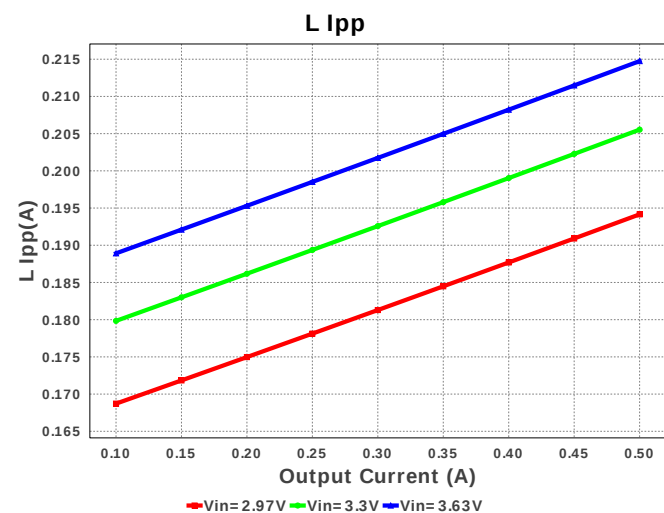
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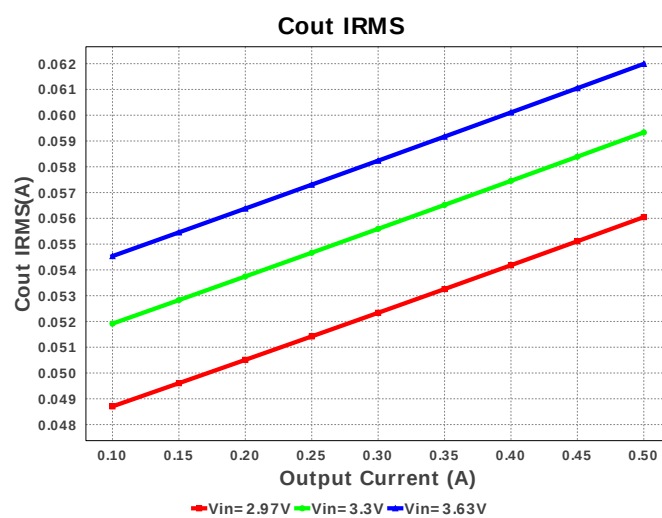
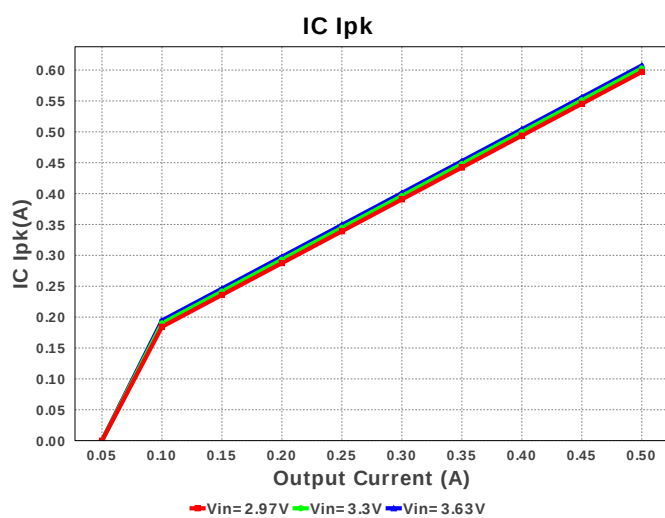
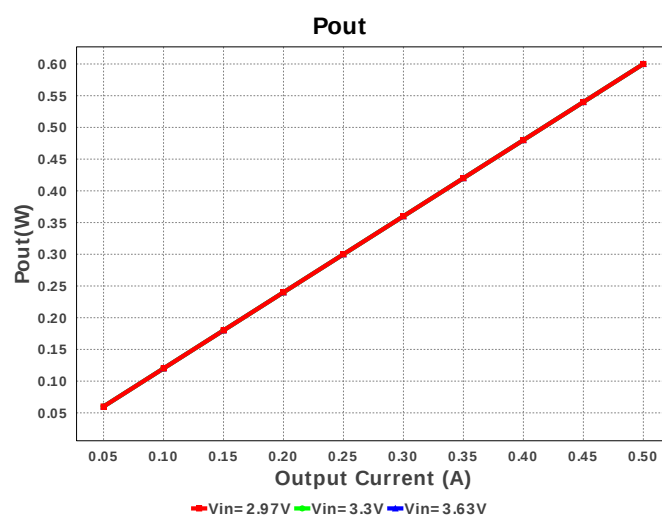
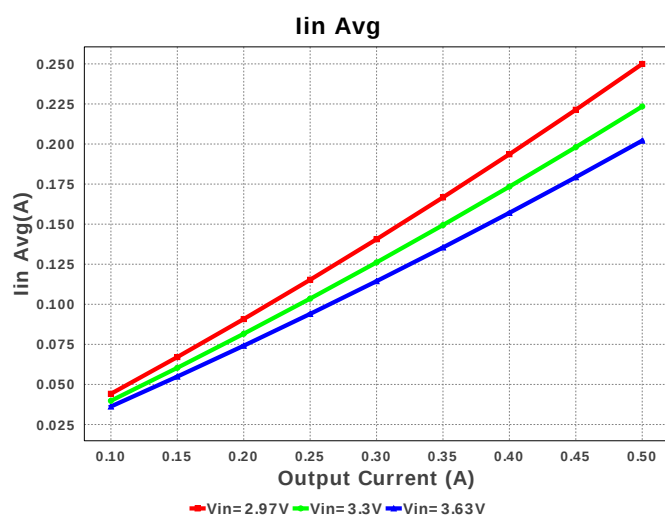
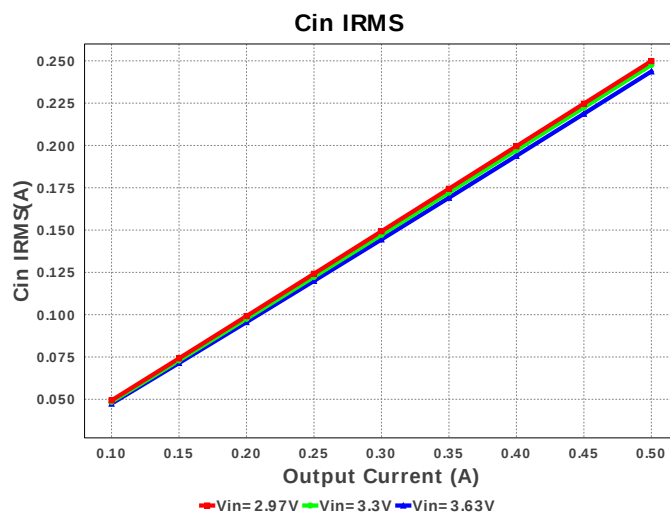
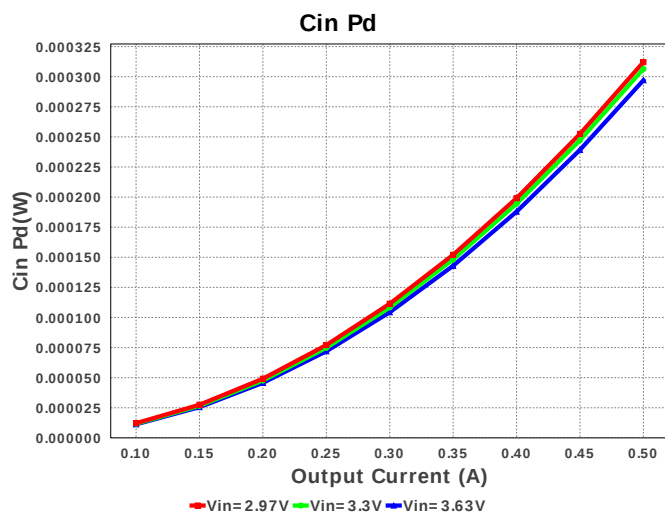
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LM3674MFX-1.2/NOPB 2.97V-3.63V to 1.20V @ 0.5A

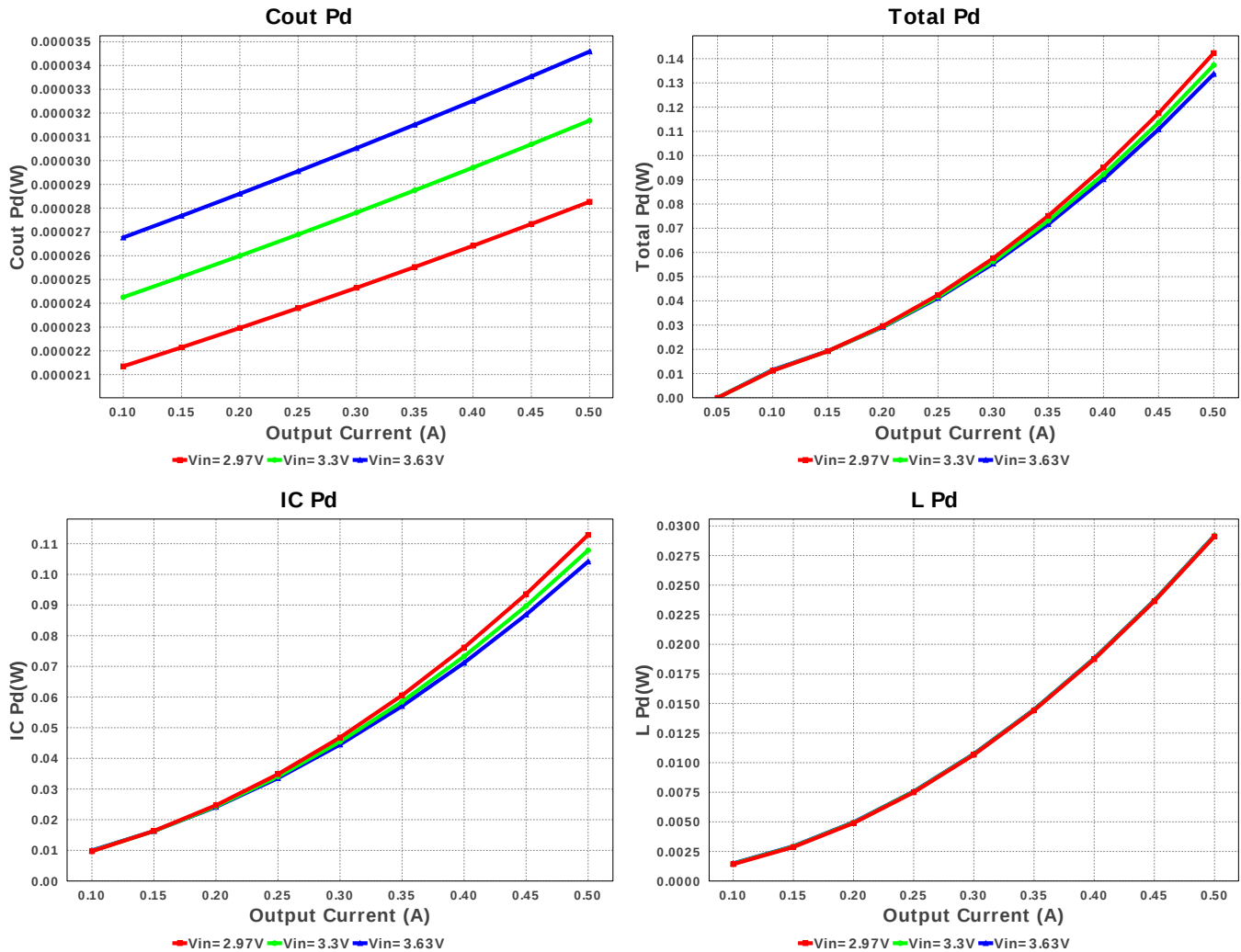


Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	MuRata	GRM188R60J475KE19D Series= X5R	Cap= 4.7 uF ESR= 5.0 mOhm VDC= 6.3 V IRMS= 2.0 A	1	\$0.01	0603 5 mm ²
2.	Cout	MuRata	GRM188R60J106ME47D Series= X5R	Cap= 10.0 uF ESR= 9.0 mOhm VDC= 6.3 V IRMS= 2.74 A	1	\$0.02	0603 5 mm ²
3.	L1	TDK	NLCV32T-2R2M-PFR	L= 2.2 uH DCR= 115.0 mOhm	1	\$0.10	NLCV32 13 mm ²
4.	U1	Texas Instruments	LM3674MFX-1.2/NOPB	Switcher	1	\$0.32	MF05A 15 mm ²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	243.744 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	61.992 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	607.374 mA	Current	Peak switch current in IC
4.	Iin Avg	202.12 mA	Current	Average input current
5.	L Ipp	214.75 mA	Current	Peak-to-peak inductor ripple current
6.	L1 Irms	503.828 mA	Current	Inductor ripple current
7.	BOM Count	4	General	Total Design BOM count
8.	FootPrint	38.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	2.0 MHz	General	Switching frequency
10.	IC Tolerance	0.0 V	General	IC Feedback Tolerance
11.	Pout	600.0 mW	General	Total output power
12.	Total BOM	\$0.45	General	Total BOM Cost
13.	Duty Cycle	38.884 %	Op_point	Duty cycle
14.	Efficiency	81.779 %	Op_point	Steady state efficiency
15.	IC Tj	56.041 degC	Op_point	IC junction temperature
16.	ICThetaJA	250.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
17.	IOUT_OP	500.0 mA	Op_point	Iout operating point
18.	Vin_OP	3.63 V	Op_point	Vin operating point
19.	Vout p-p	1.933 mV	Op_point	Peak-to-peak output ripple voltage
20.	Cin Pd	297.055 μW	Power	Input capacitor power dissipation
21.	Cout Pd	34.587 μW	Power	Output capacitor power dissipation
22.	IC Pd	104.162 mW	Power	IC power dissipation
23.	L Pd	29.192 mW	Power	Inductor power dissipation
24.	Total Pd	133.687 mW	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	500.0 m	Maximum Output Current
2.	VinMax	3.63	Maximum input voltage
3.	VinMin	2.97	Minimum input voltage

#	Name	Value	Description
4.	Vout	1.2	Output Voltage
5.	base_pn	LM3674	Texas Instruments Base Part Number
6.	source	DC	Input Source Type
7.	ta	30.0	Ambient temperature

Design Assistance

1. LM3674 Product Folder : <http://www.ti.com/product/LM3674> : contains the data sheet and other resources.

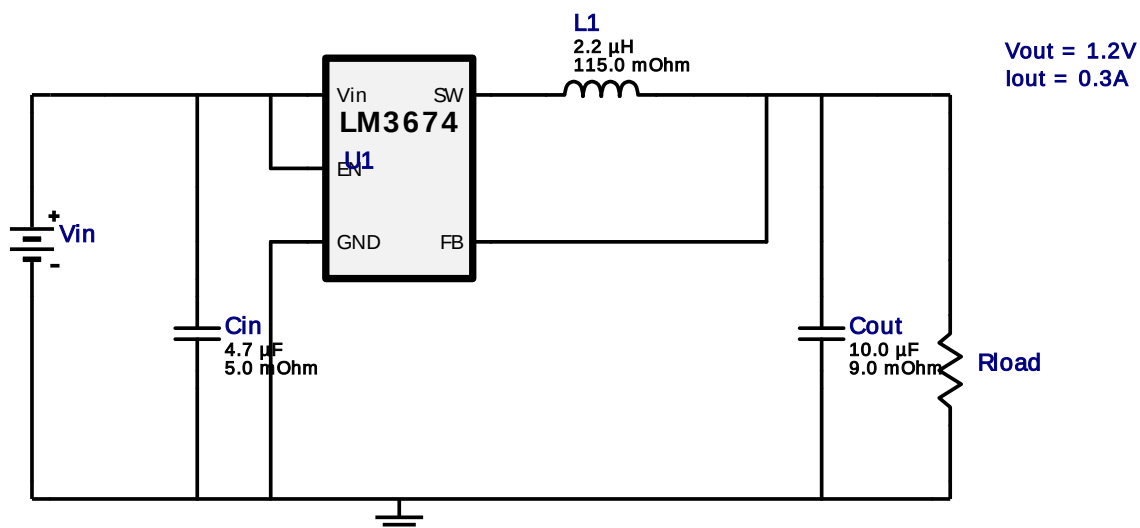


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Iout = 0.3A

Device = LM3674MFX-1.2/NOPB
Topology = Buck
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BOM Cost = \$0.45
BOM Count = 4
Total Pd = 0.06W

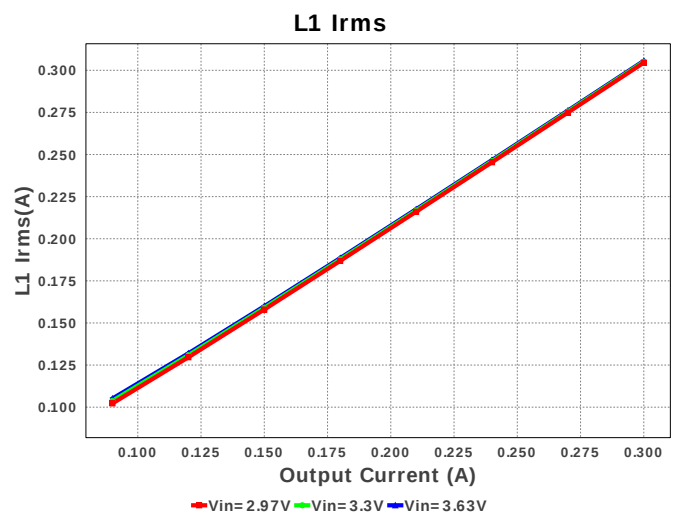
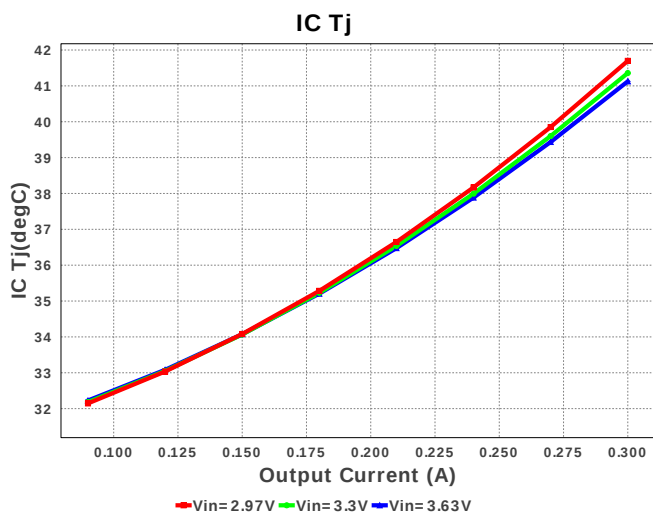
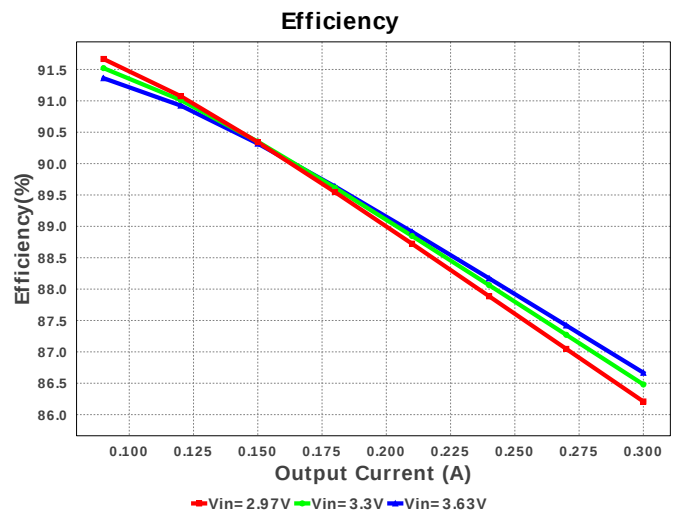
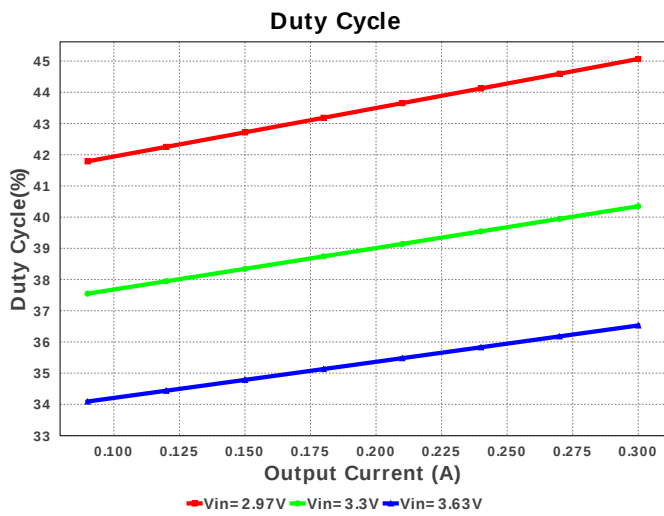
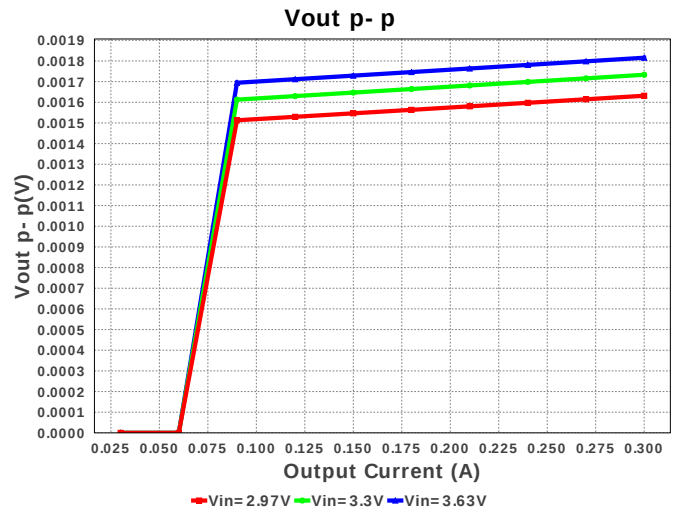
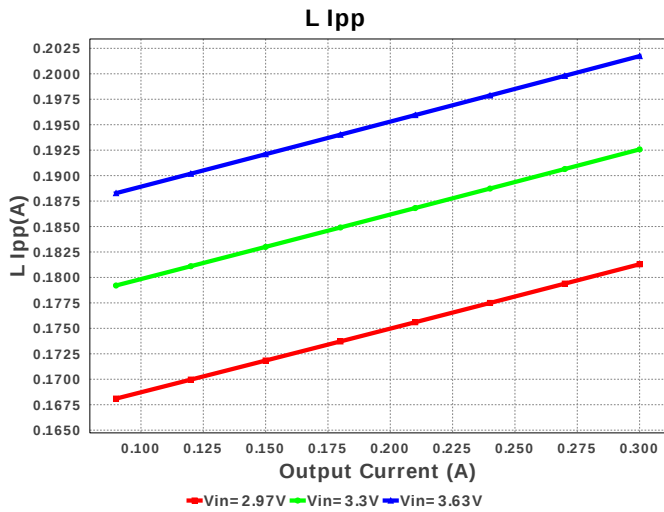
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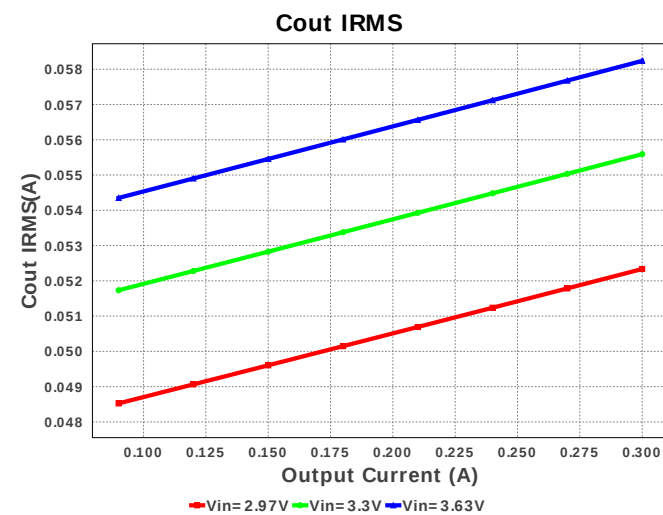
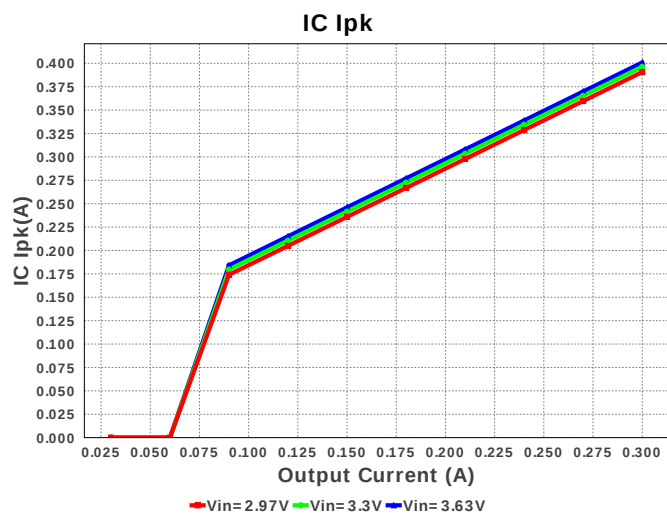
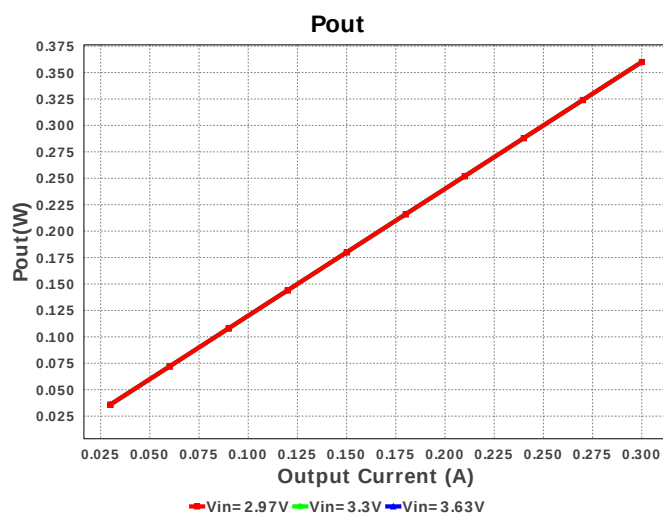
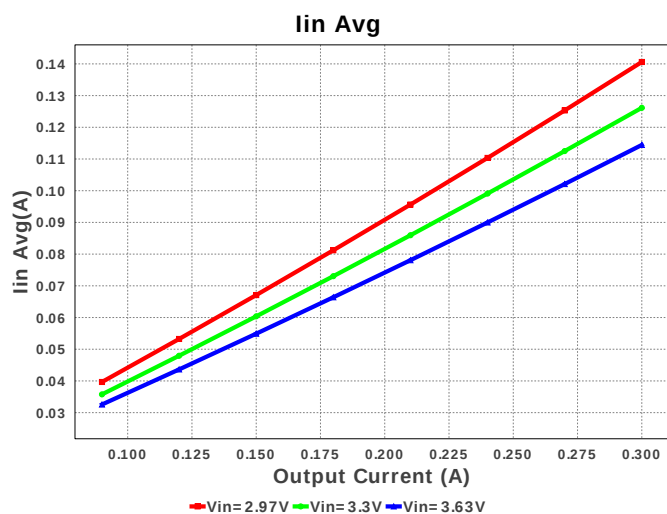
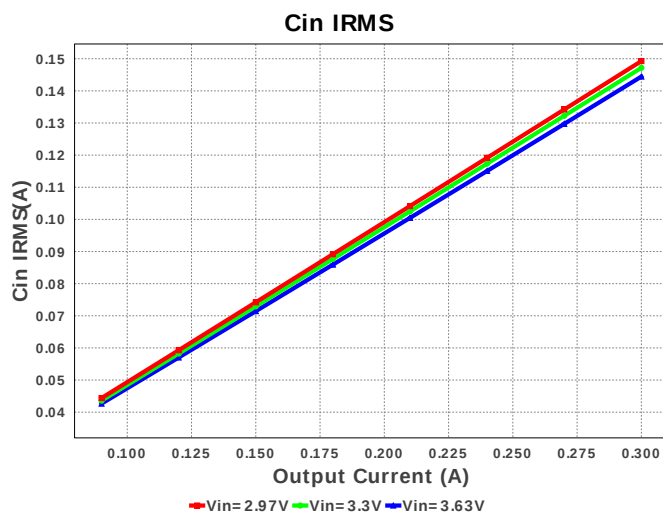
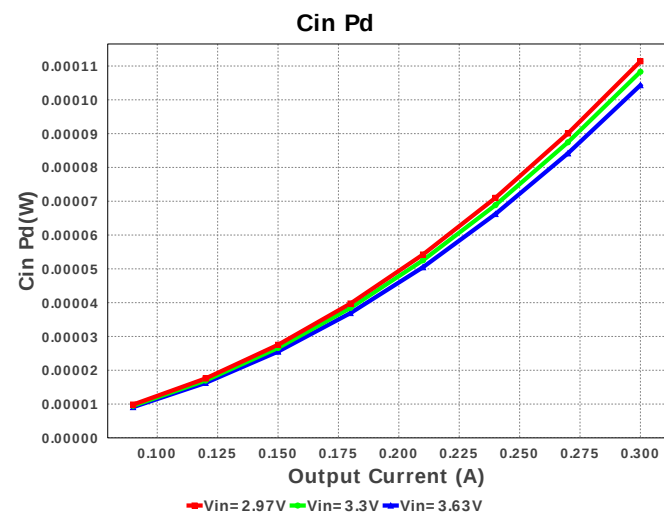
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LM3674MFX-1.2/NOPB 2.97V-3.63V to 1.20V @ 0.3A

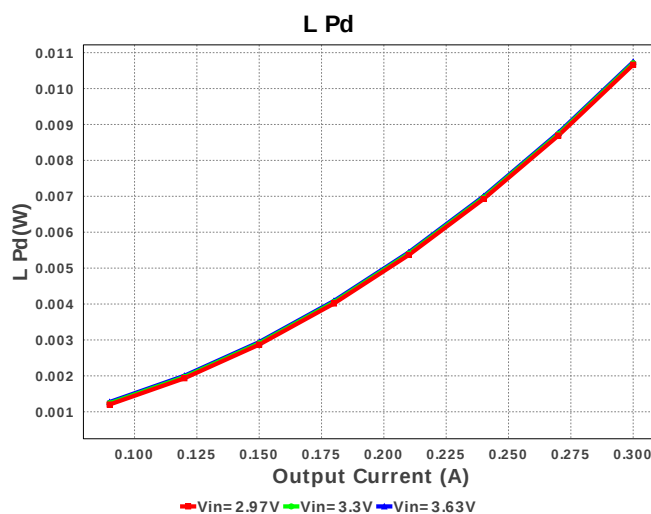
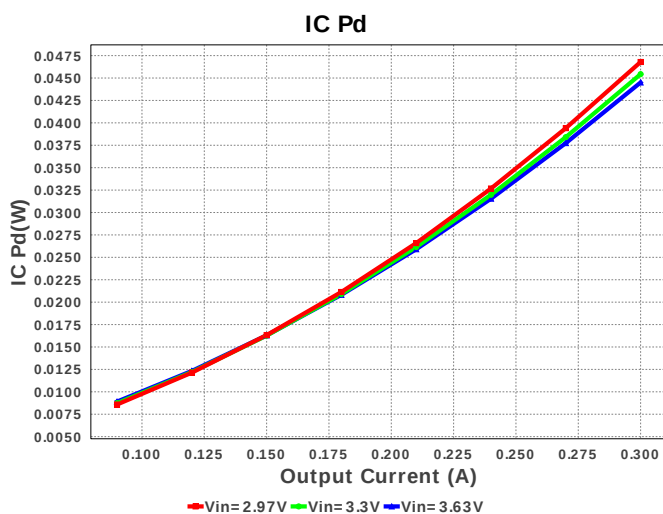
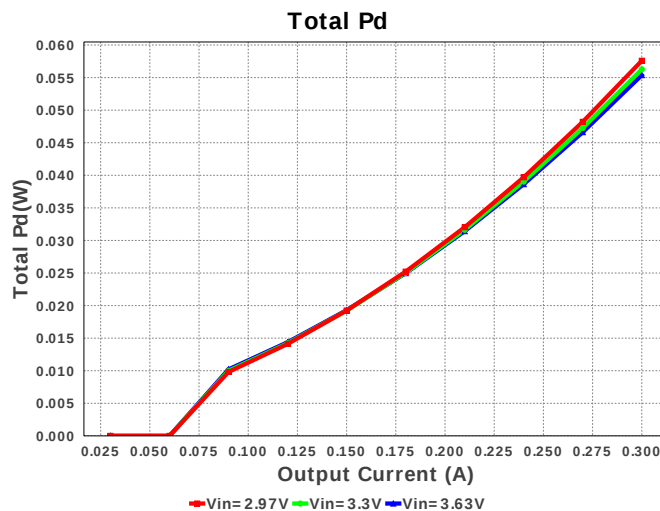
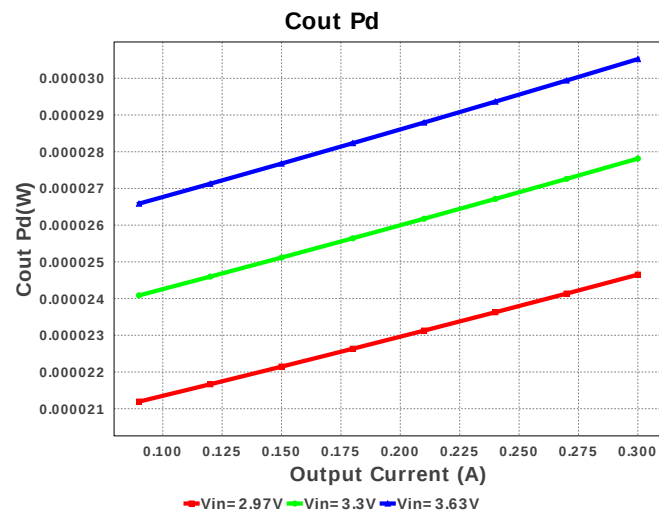


Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	MuRata	GRM188R60J475KE19D Series= X5R	Cap= 4.7 uF ESR= 5.0 mOhm VDC= 6.3 V IRMS= 2.0 A	1	\$0.01	0603 5 mm ²
2.	Cout	MuRata	GRM188R60J106ME47D Series= X5R	Cap= 10.0 uF ESR= 9.0 mOhm VDC= 6.3 V IRMS= 2.74 A	1	\$0.02	0603 5 mm ²
3.	L1	TDK	NLCV32T-2R2M-PFR	L= 2.2 uH DCR= 115.0 mOhm	1	\$0.10	NLCV32 13 mm ²
4.	U1	Texas Instruments	LM3674MFX-1.2/NOPB	Switcher	1	\$0.32	MF05A 15 mm ²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	144.453 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	58.237 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	400.869 mA	Current	Peak switch current in IC
4.	Iin Avg	114.43 mA	Current	Average input current
5.	L Ipp	201.74 mA	Current	Peak-to-peak inductor ripple current
6.	L1 Irms	305.6 mA	Current	Inductor ripple current
7.	BOM Count	4	General	Total Design BOM count
8.	FootPrint	38.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	2.0 MHz	General	Switching frequency
10.	IC Tolerance	0.0 V	General	IC Feedback Tolerance
11.	Pout	360.0 mW	General	Total output power
12.	Total BOM	\$0.45	General	Total BOM Cost
13.	Duty Cycle	36.529 %	Op_point	Duty cycle
14.	Efficiency	86.668 %	Op_point	Steady state efficiency
15.	IC Tj	41.126 degC	Op_point	IC junction temperature
16.	ICThetaJA	250.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
17.	IOUT_OP	300.0 mA	Op_point	Iout operating point
18.	VIN_OP	3.63 V	Op_point	Vin operating point
19.	Vout p-p	1.816 mV	Op_point	Peak-to-peak output ripple voltage
20.	Cin Pd	104.334 μ W	Power	Input capacitor power dissipation
21.	Cout Pd	30.524 μ W	Power	Output capacitor power dissipation
22.	IC Pd	44.505 mW	Power	IC power dissipation
23.	L Pd	10.74 mW	Power	Inductor power dissipation
24.	Total Pd	55.379 mW	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	300.0 m	Maximum Output Current
2.	SoftStart	1.0 ms	Soft Start Time (ms)
3.	VinMax	3.63	Maximum input voltage

#	Name	Value	Description
4.	VinMin	2.97	Minimum input voltage
5.	Vout	1.2	Output Voltage
6.	base_pn	LM3674	Texas Instruments Base Part Number
7.	source	DC	Input Source Type
8.	ta	30.0	Ambient temperature

Design Assistance

1. LM3674 Product Folder : <http://www.ti.com/product/LM3674> : contains the data sheet and other resources.

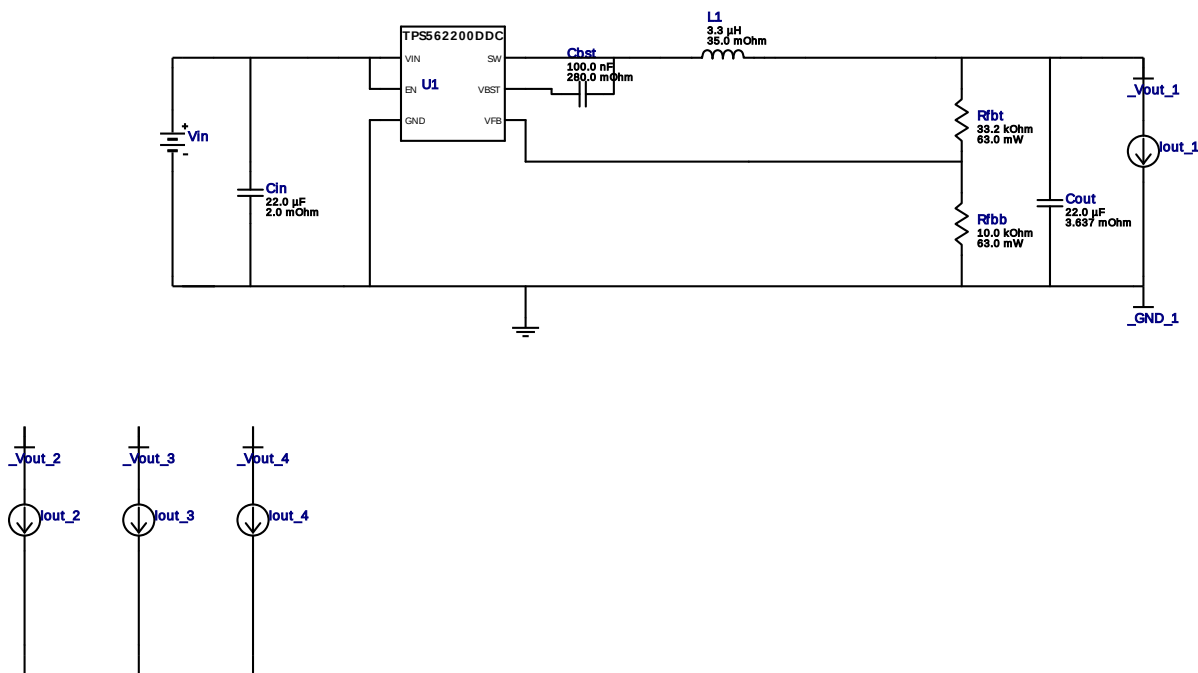


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Iout = 0.78A

Device = TPS562200DDCR
Topology = Buck
Created = 7/19/16 5:38:20 PM
BOM Cost = \$0.99
BOM Count = 7
Total Pd = 0.26W

WEBENCH® Design Report

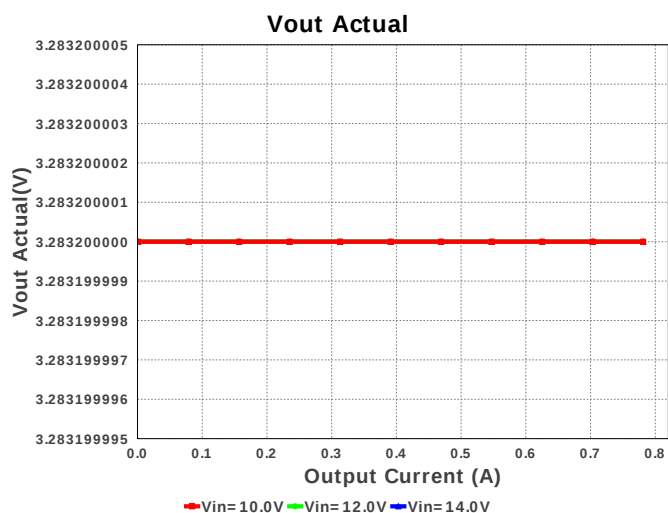
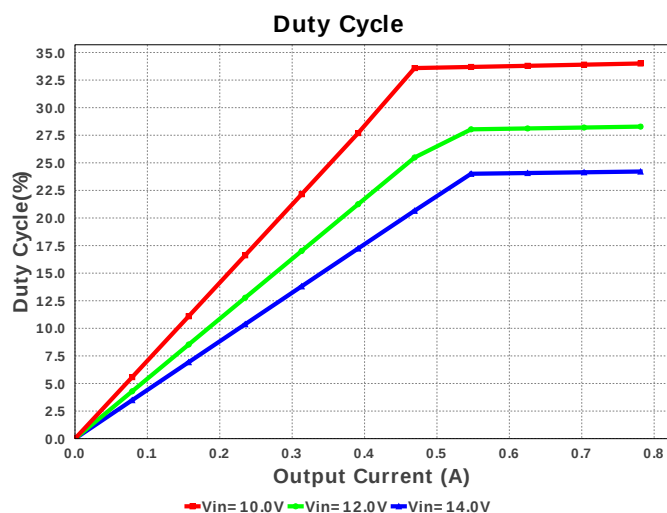
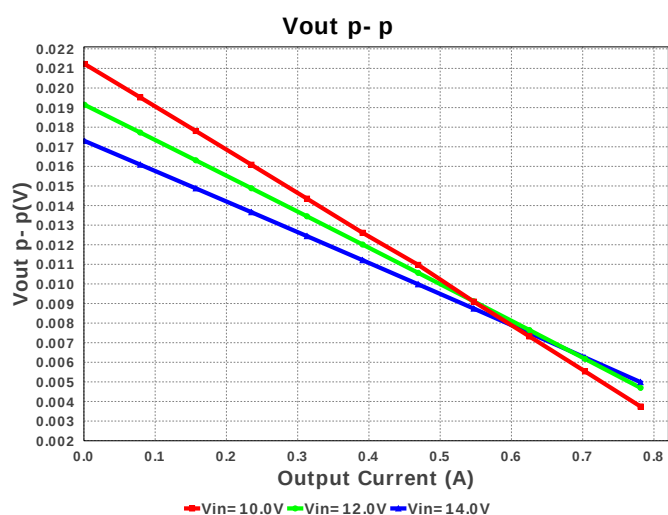
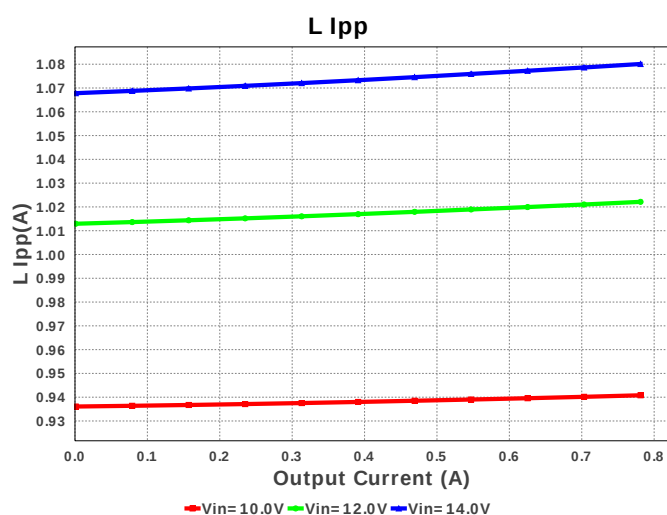
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TPS562200DDCR 10.0V-14.0V to 3.30V @ 0.78121A

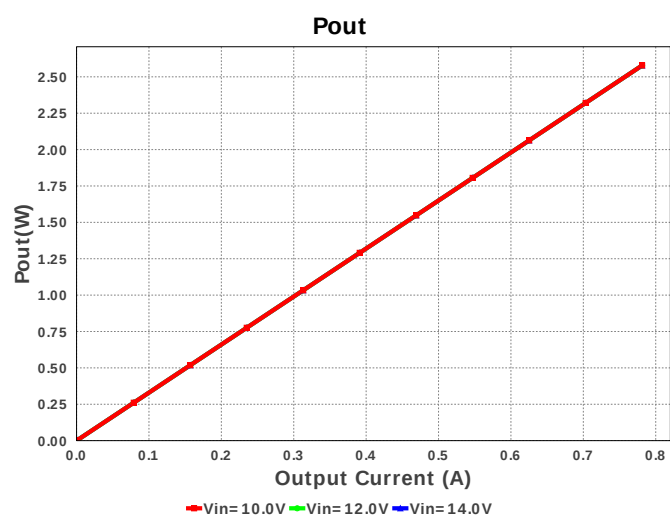
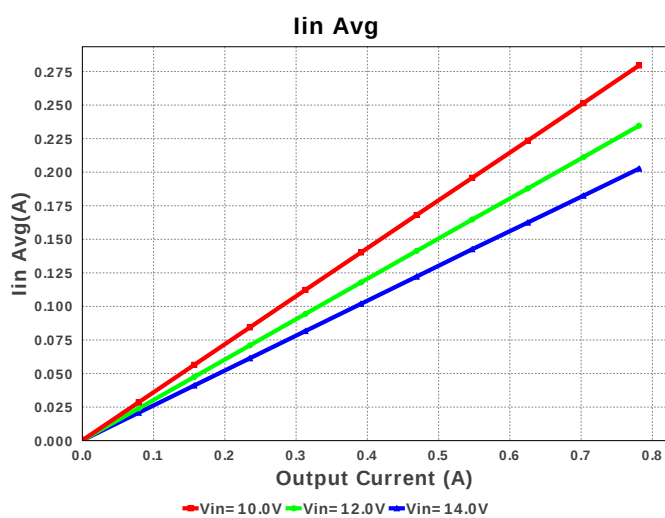
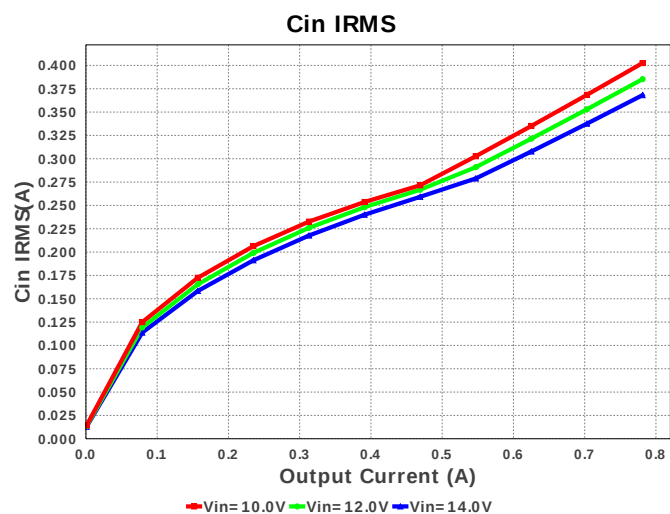
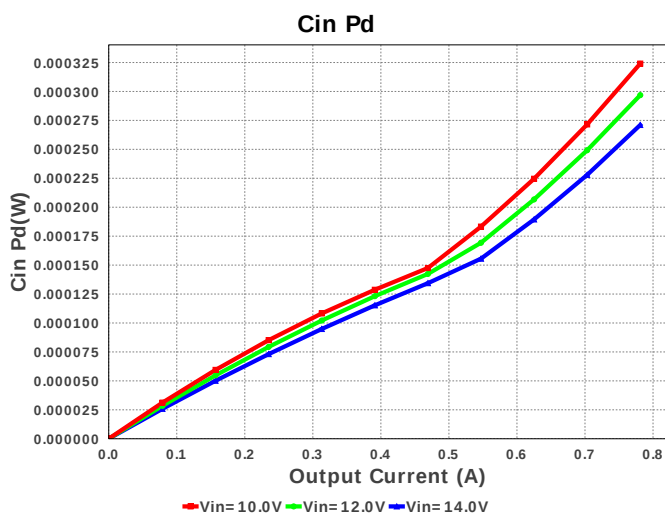
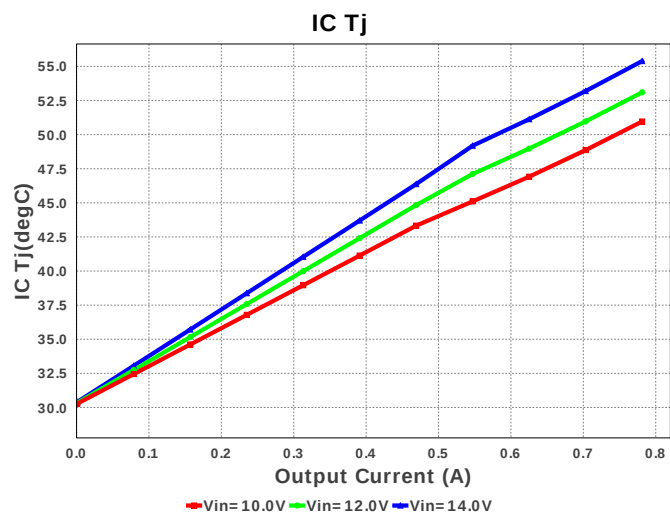
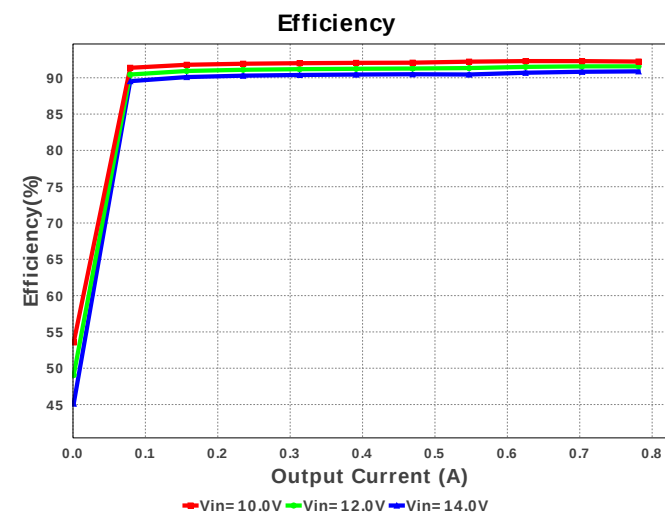


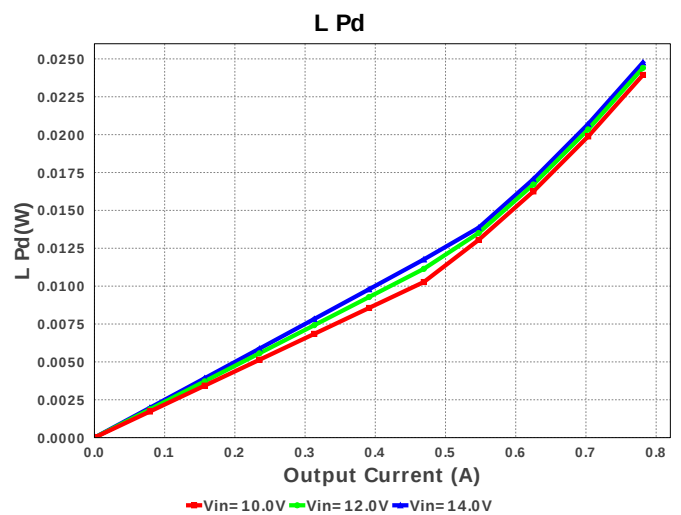
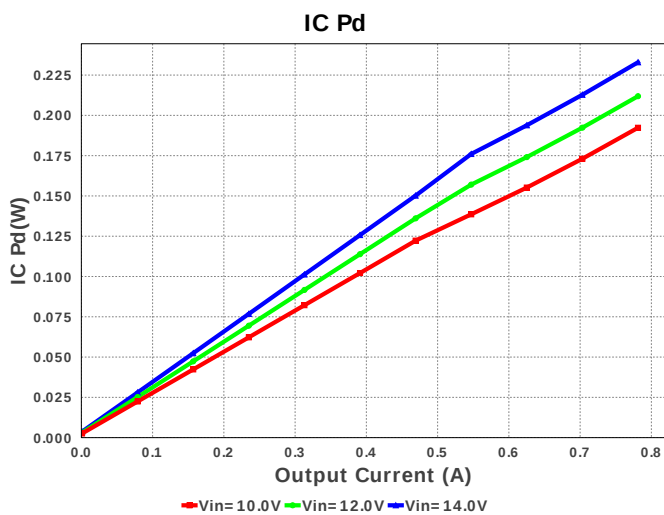
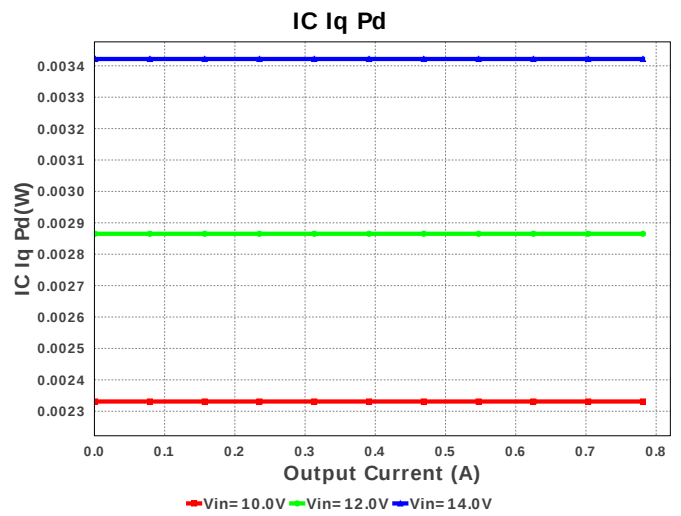
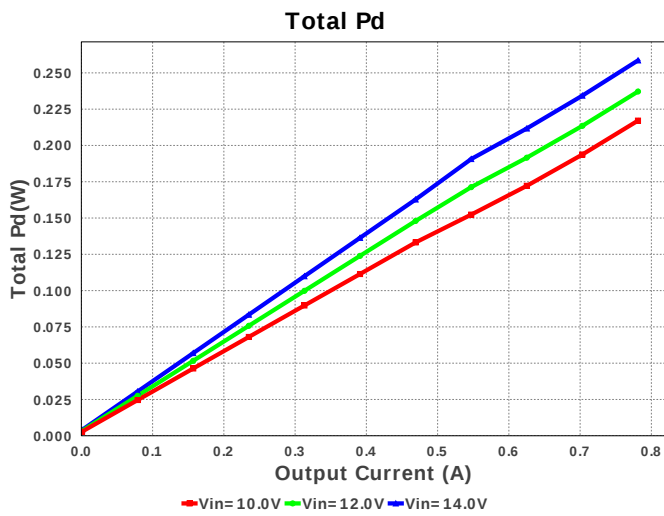
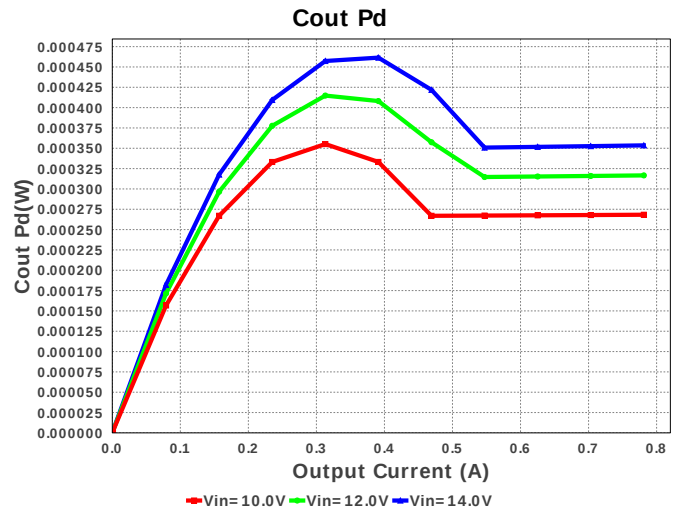
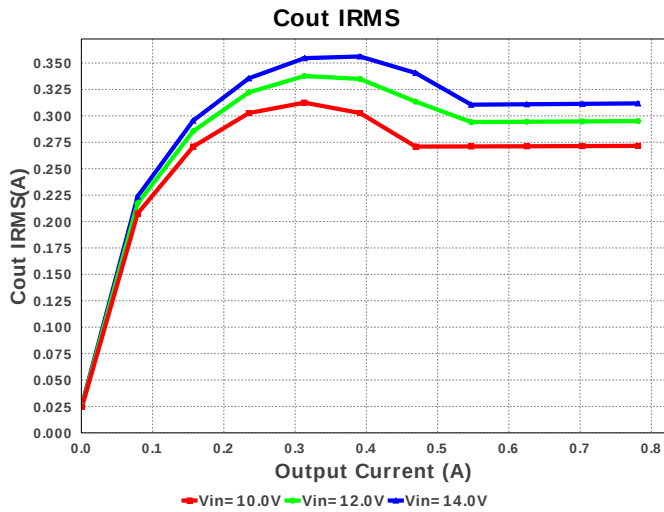
Electrical BOM

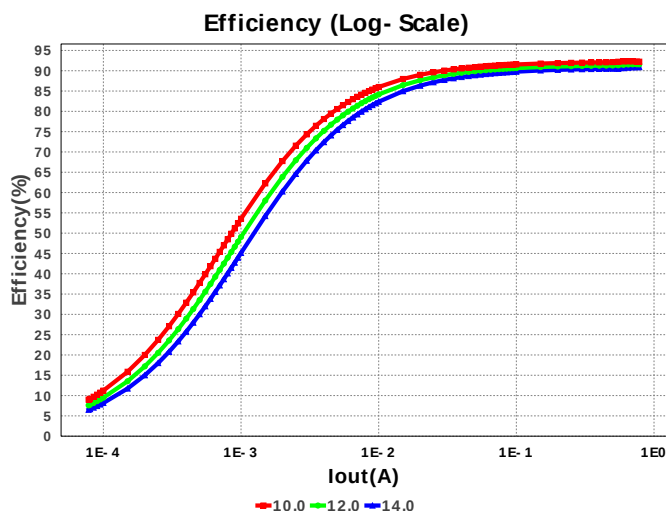
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1.	Cbst	AVX	08053C104KAT2A Series= X7R	Cap= 100.0 nF ESR= 280.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm²
2.	Cin	MuRata	GRM32ER61E226KE15L Series= X5R	Cap= 22.0 uF ESR= 2.0 mOhm VDC= 25.0 V IRMS= 3.67 A	1	\$0.16	1210 15 mm²
3.	Cout	MuRata	GRM31CR61A226KE19L 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
4.	L1	Bourns	SRR4028-3R3Y	L= 3.3 µH DCR= 35.0 mOhm	1	\$0.26	SRR4028 34 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.	Rfht	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	TPS562200DDCR	Switcher	1	\$0.47	 DDC0006A 10 mm ²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	368.132 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	311.795 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	202.61 mA	Current	Average input current
4.	L Ipp	1.08 A	Current	Peak-to-peak inductor ripple current
5.	BOM Count	7	General	Total Design BOM count
6.	FootPrint	82.0 mm ²	General	Total Foot Print Area of BOM components
7.	Frequency	714.484 kHz	General	Switching frequency
8.	Pout	2.578 W	General	Total output power
9.	Total BOM	\$0.99	General	Total BOM Cost
10.	Vout Actual	3.283 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
11.	Vout OP	3.3 V	Op_Point	Operational Output Voltage
12.	Duty Cycle	24.211 %	Op_point	Duty cycle
13.	Efficiency	90.884 %	Op_point	Steady state efficiency
14.	IC Tj	55.389 degC	Op_point	IC junction temperature
15.	ICThetaJA	109.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
16.	IOUT_OP	781.21 mA	Op_point	Iout operating point
17.	VIN_OP	14.0 V	Op_point	Vin operating point
18.	Vout p-p	9.868 mV	Op_point	Peak-to-peak output ripple voltage
19.	Cin Pd	271.042 μ W	Power	Input capacitor power dissipation
20.	Cout Pd	353.574 μ W	Power	Output capacitor power dissipation
21.	IC Iq Pd	3.422 mW	Power	IC Iq Pd
22.	IC Pd	232.931 mW	Power	IC power dissipation
23.	L Pd	24.763 mW	Power	Inductor power dissipation
24.	Total Pd	258.579 mW	Power	Total Power Dissipation
25.	Vout Tolerance	2.889 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	781.21 m	Maximum Output Current
2.	SoftStart	1.0 ms	Soft Start Time (ms)
3.	VinMax	14.0	Maximum input voltage
4.	VinMin	10.0	Minimum input voltage
5.	Vout	3.3	Output Voltage
6.	base_pn	TPS562200	Texas Instruments Base Part Number
7.	source	DC	Input Source Type
8.	ta	30.0	Ambient temperature

Design Assistance

1. TPS562200 Product Folder : <http://www.ti.com/product/TPS562200> : contains the data sheet and other resources.

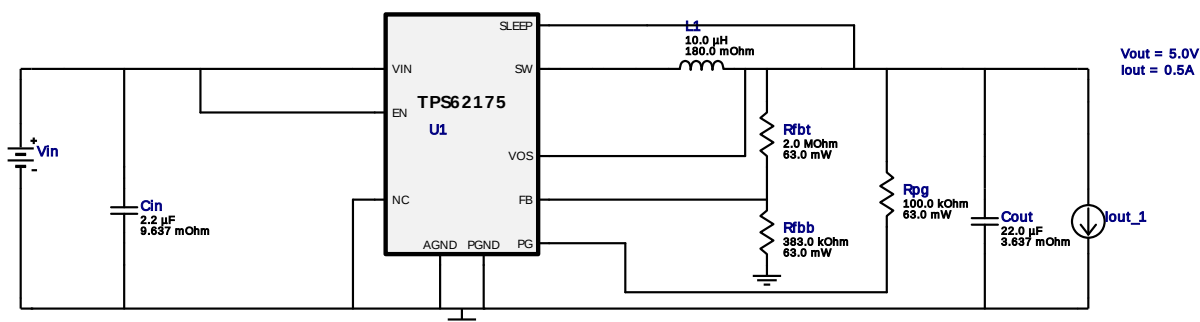


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Iout = 0.5A

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Topology = Buck
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BOM Cost = \$1.07
BOM Count = 7
Total Pd = 0.3W

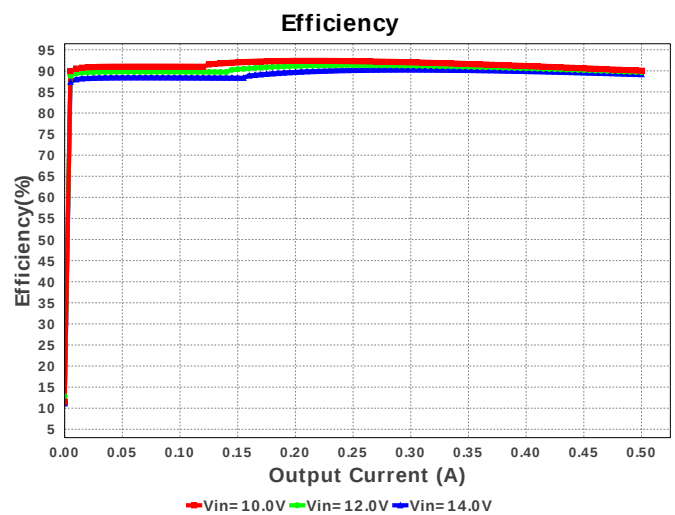
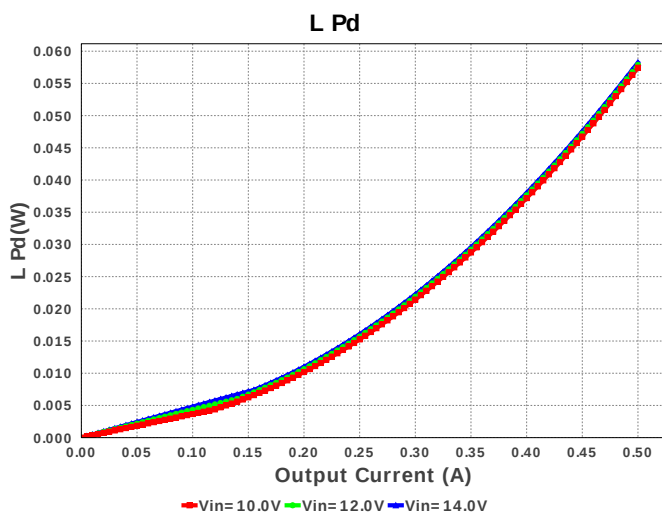
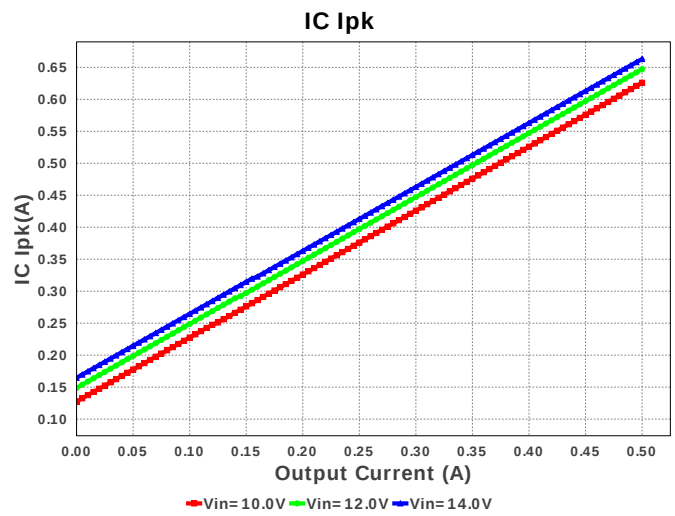
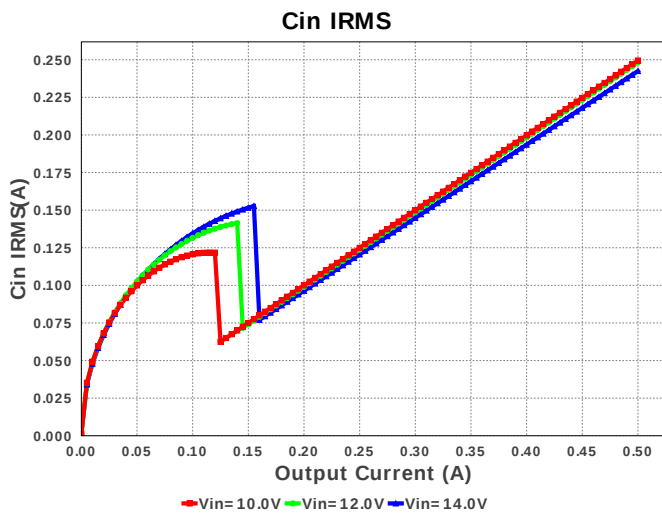
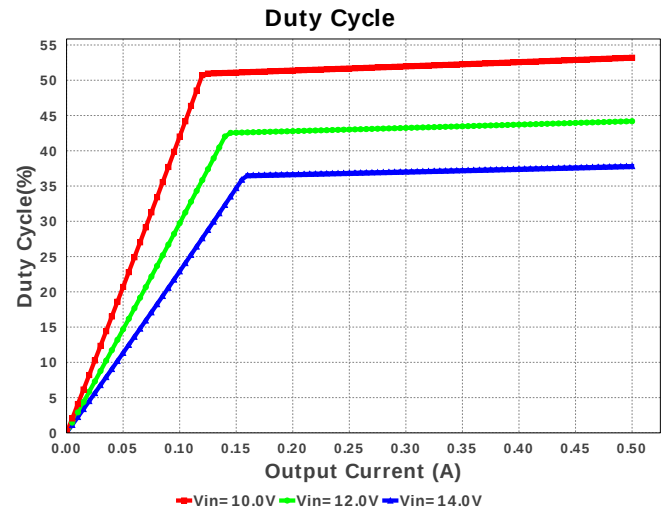
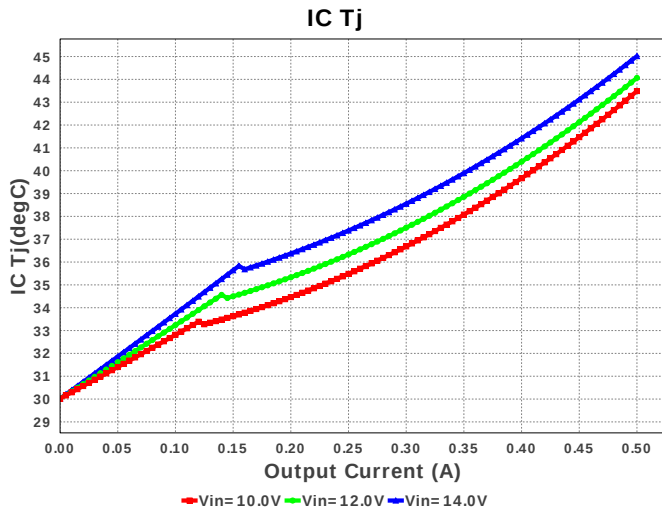
WEBENCH® Design Report

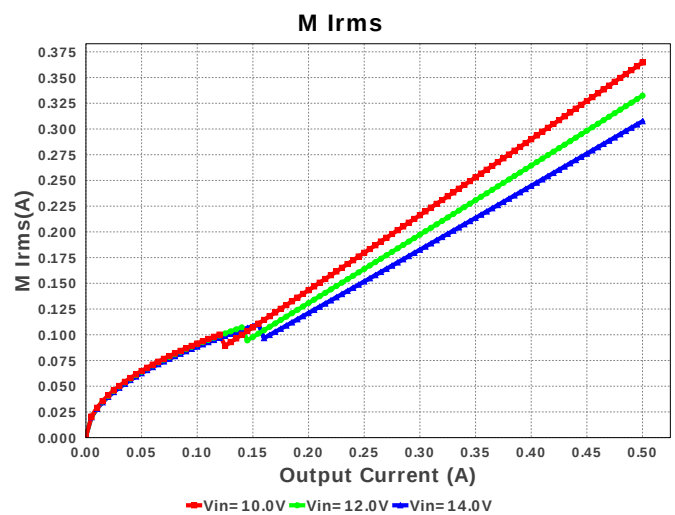
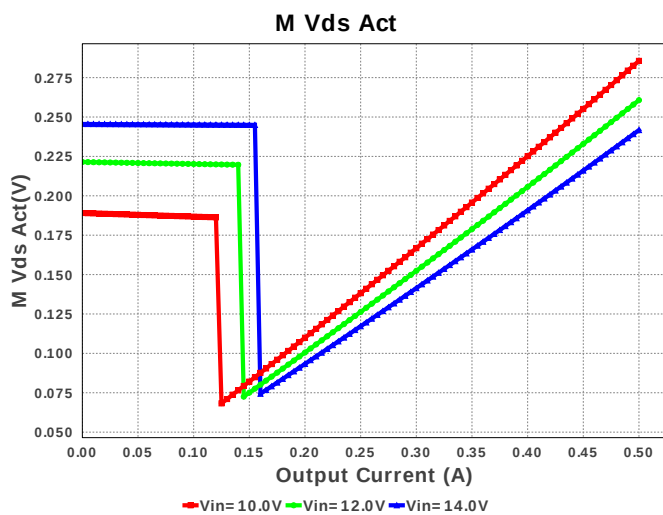
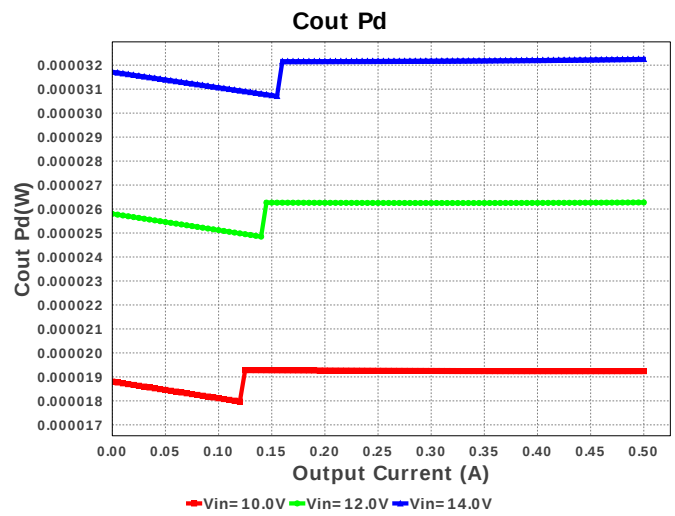
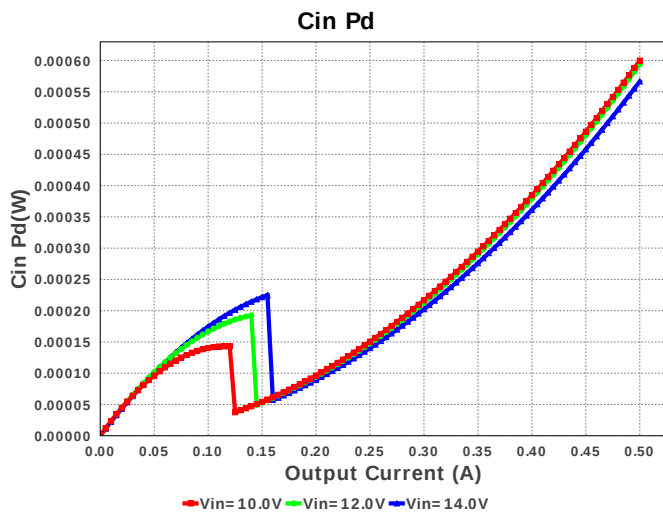
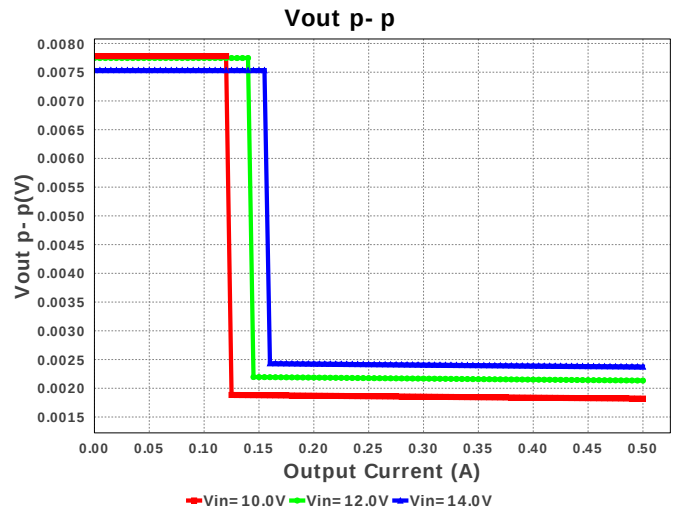
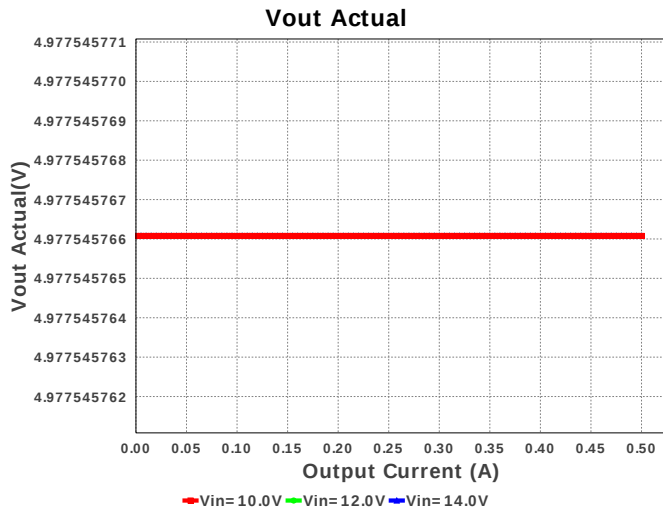
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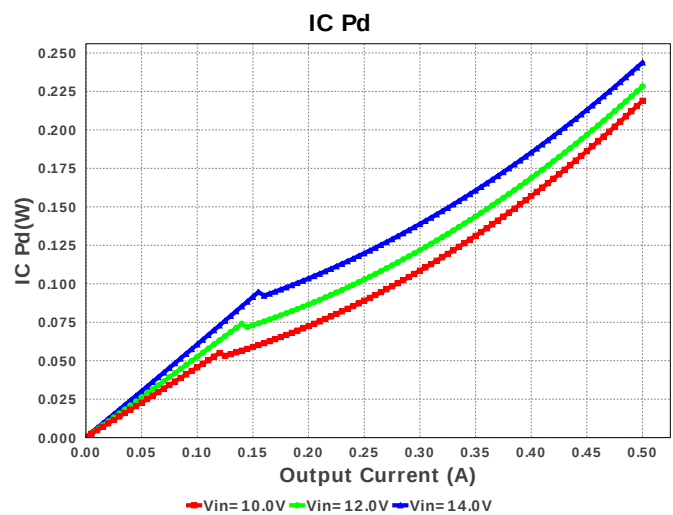
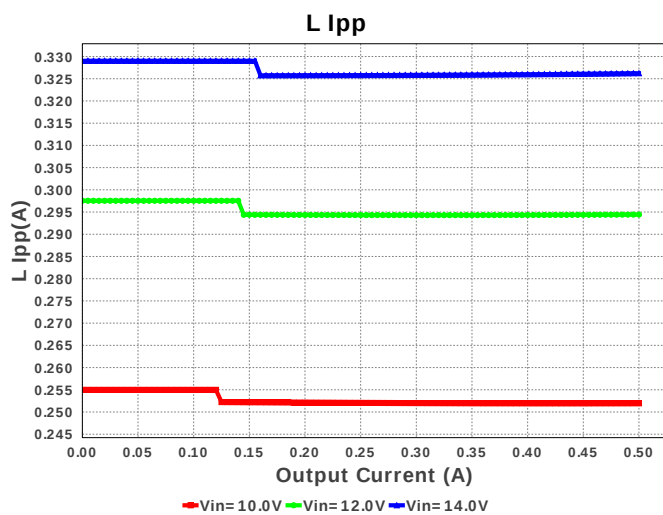
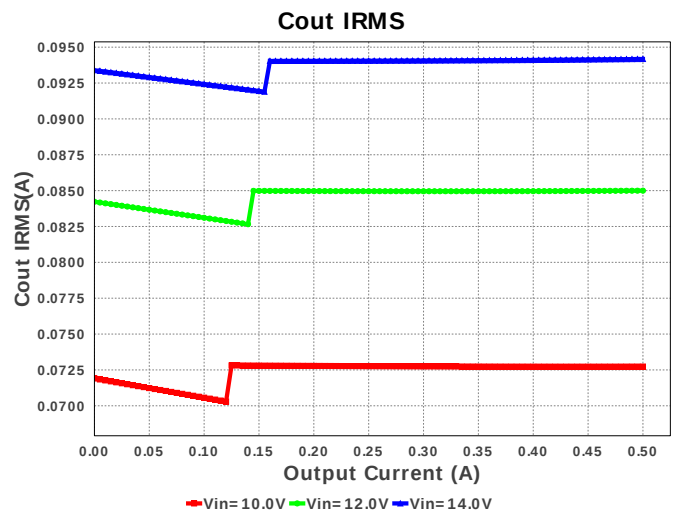
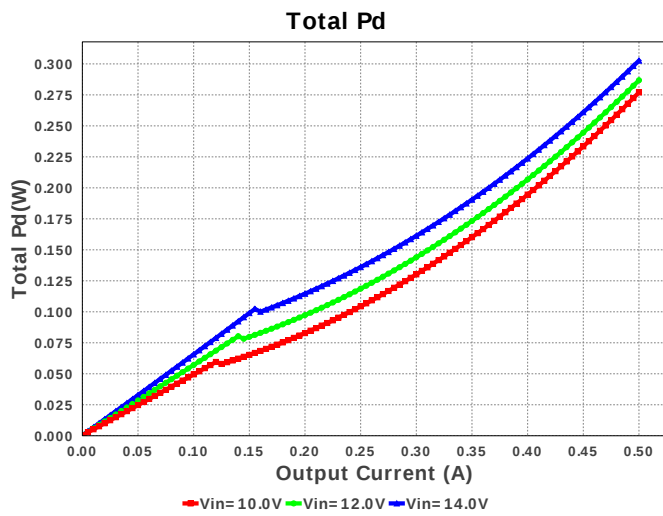
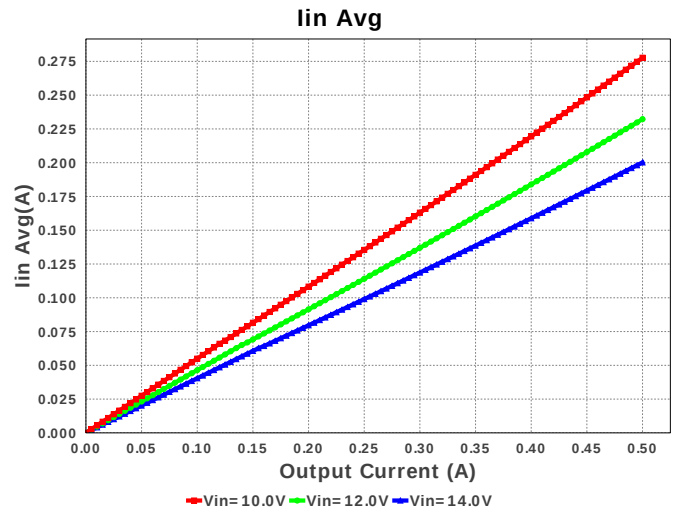
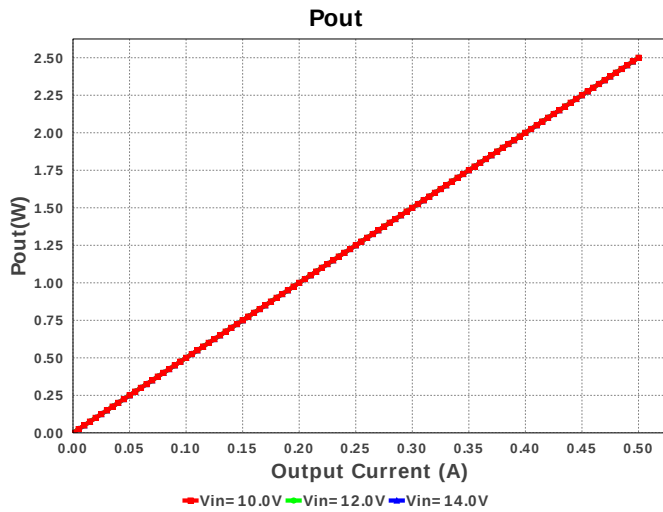


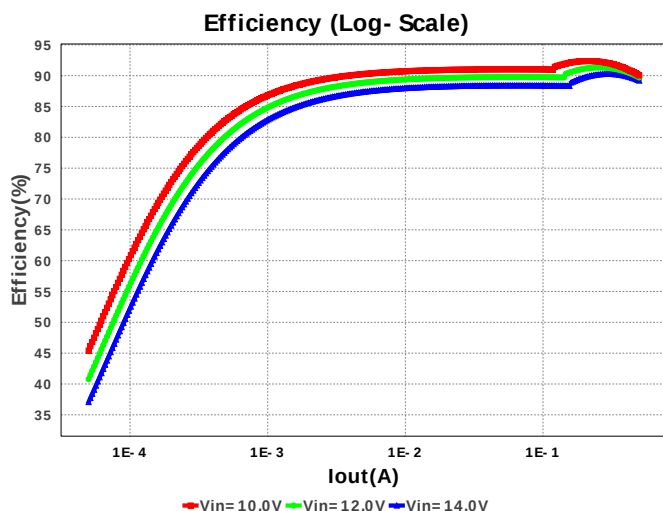
Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	MuRata	GRM188R61C225KE15D Series= X5R	Cap= 2.2 uF ESR= 9.637 mOhm VDC= 16.0 V IRMS= 1.20373 A	1	\$0.02	0603 5 mm ²
2.	Cout	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 mm ²
3.	L1	Coilcraft	LPS4018-103MRB	L= 10.0 uH DCR= 180.0 mOhm	1	\$0.35	LPS4018 24 mm ²
4.	Rfbb	Vishay-Dale	CRCW0402383KFKED Series= CRCW..e3	Res= 383.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
5.	Rfbb	Vishay-Dale	CRCW04022M00FKED Series= CRCW..e3	Res= 2.0 MOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
6.	Rpg	Vishay-Dale	CRCW0402100KFKED Series= CRCW..e3	Res= 100.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
7.	U1	Texas Instruments	TPS62175DQCR	Switcher	1	\$0.60	R-PWSON-N10 12 mm ²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	242.477 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	94.177 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	663.119 mA	Current	Peak switch current in IC
4.	Iin Avg	200.19 mA	Current	Average input current
5.	L Ipp	326.24 mA	Current	Peak-to-peak inductor ripple current
6.	M Irms	307.517 mA	Current	MOSFET RMS current
7.	BOM Count	7	General	Total Design BOM count
8.	FootPrint	61.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	1.044 MHz	General	Switching frequency
10.	IC Tolerance	24.0 mV	General	IC Feedback Tolerance
11.	M Vds Act	241.709 mV	General	Voltage drop across the MosFET
12.	Pout	2.5 W	General	Total output power
13.	Total BOM	\$1.07	General	Total BOM Cost
14.	Vout Actual	4.978 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
15.	Vout OP	5.0 V	Op_Point	Operational Output Voltage
16.	Duty Cycle	37.827 %	Op_point	Duty cycle
17.	Efficiency	89.201 %	Op_point	Steady state efficiency
18.	IC Tj	45.019 degC	Op_point	IC junction temperature
19.	ICThetaJA	61.6 degC/W	Op_point	IC junction-to-ambient thermal resistance
20.	IOUT_OP	500.0 mA	Op_point	Iout operating point
21.	VIN_OP	14.0 V	Op_point	Vin operating point
22.	Vout p-p	2.377 mV	Op_point	Peak-to-peak output ripple voltage
23.	Cin Pd	566.61 µW	Power	Input capacitor power dissipation
24.	Cout Pd	32.257 µW	Power	Output capacitor power dissipation
25.	IC Pd	243.813 mW	Power	IC power dissipation
26.	L Pd	58.246 mW	Power	Inductor power dissipation
27.	Total Pd	302.659 mW	Power	Total Power Dissipation
28.	Vout Tolerance	4.746 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	500.0 m	Maximum Output Current
2.	VinMax	14.0	Maximum input voltage
3.	VinMin	10.0	Minimum input voltage
4.	Vout	5.0	Output Voltage
5.	base_pn	TPS62175	Texas Instruments Base Part Number
6.	source	DC	Input Source Type
7.	ta	30.0	Ambient temperature

Design Assistance

1. TPS62175 Product Folder : <http://www.ti.com/product/TPS62175> : contains the data sheet and other resources.

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