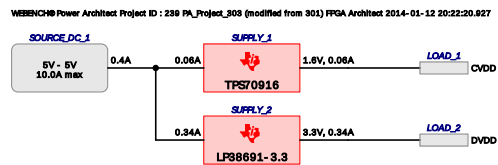


WEBENCH® Power Architect



Project Report

Project : 1284796/239 : PA_Project_303 (modified from 301)

Created : 2014-01-12 20:22:20.927

Optimize project optFactor=3

Project Summary

1. Total System Efficiency	60.867 %
2. Total System BOM Count	6.0
3. Total System Footprint	34.0 mm2
4. Total System BOM Cost	\$0.94
5. Total System Power Dissipation	783.1 mW

--> Launch WEBENCH Power Architect.

Power Supplies

#	Name	NSID	Description	Vout	Iout	Efficiency	Foot-print	Cost	Design	Page
1.	SUPPLY_1	TPS70916	LDO : Ultralow-Iq LDO with Enable	1.6 V	0.06 A	31.9%	12	\$0.42	2303	4
2.	SUPPLY_2	LP38691-3.3	LDO : Very low quiescent current	3.3 V	0.34 A	66%	22	\$0.52	2304	8

Power Loads

#	Name	VLoad	ILoad	Description
1.	CVDD	1.6 V	0.06 A	Requires a separate supply
2.	DVDD	3.3 V	0.34 A	Requires a separate supply

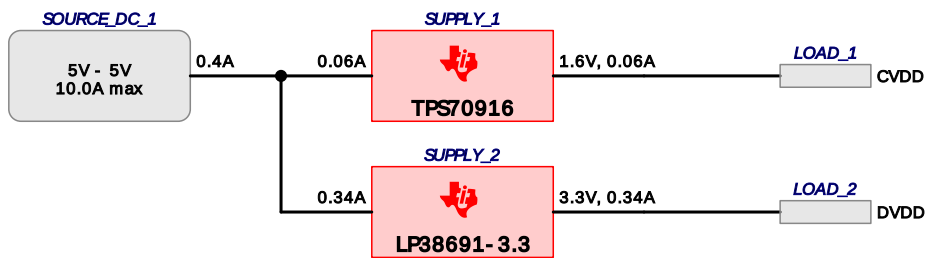
FPGAs, Processors

#	Manufacturer	Part Number	Name	Series	Description
1.	Texas Instruments	TMS320VC5416PGE160	FPGA_1	TMS320C5000	FPGA Texas Instruments TMS320C5000 TMS320VC5416PGE160

<http://focus.ti.com/lit/ds/symlink/tms320vc5416.pdf>

Project Diagram

WEBENCH® Power Architect Project ID : 239 PA_Project_303 (modified from 301) FPGA Architect 2014-01-12 20:22:20.927



Electrical Procurement BOM

Manufacturer	Part Number	Description	Quantity	Budgetary Price	Footprint (mm ²)
TDK	C1005X5R0J104K	0402	1	\$0.01	3
TDK	C1005X5R0J105M	0402	2	\$0.01	6
TDK	C1608X5R0J225M	0603	1	\$0.02	5
Texas Instruments	LP38691SD-3.3/NOPB	SDE06A	1	\$0.50	16
Texas Instruments	TPS70916DBVR	DBV	1	\$0.39	4
Total			6	\$0.94	34

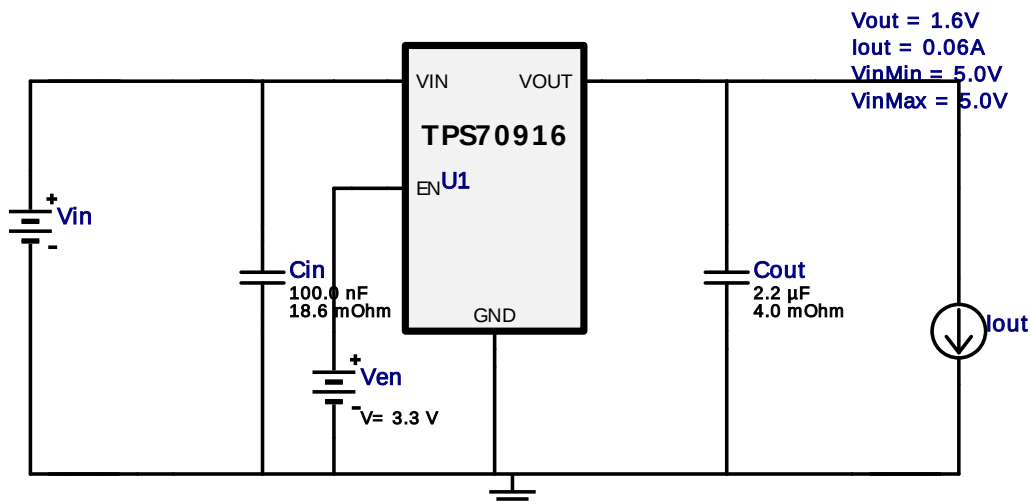


WEBENCH® Design Report

Design : 1284796/2303 TPS70916DBVR
TPS70916DBVR 5.0V-5.0V to 1.6V @ 0.06A

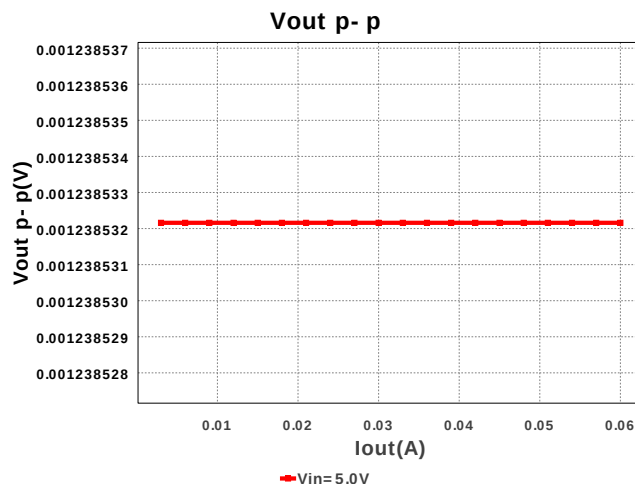
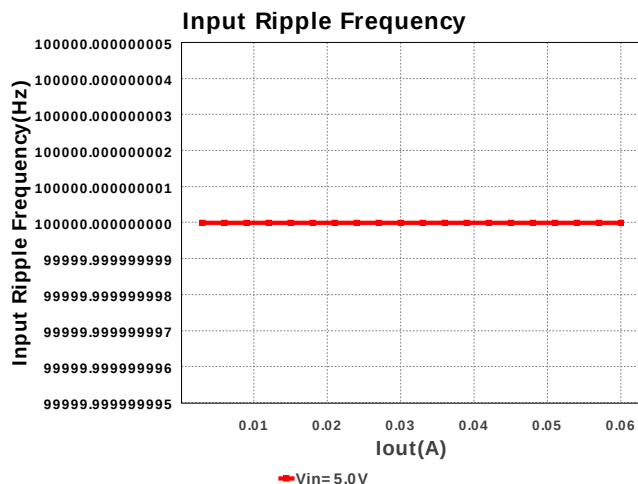
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Vout = 1.6V
Iout = 0.06A

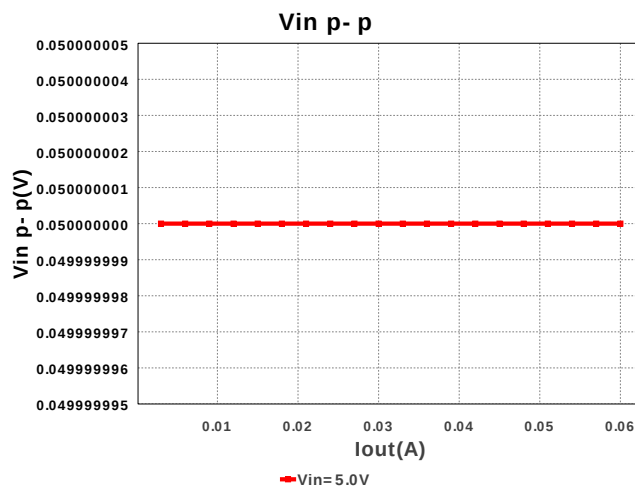
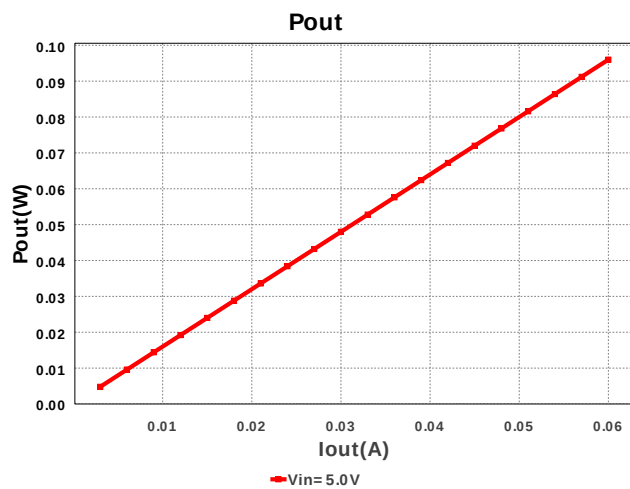
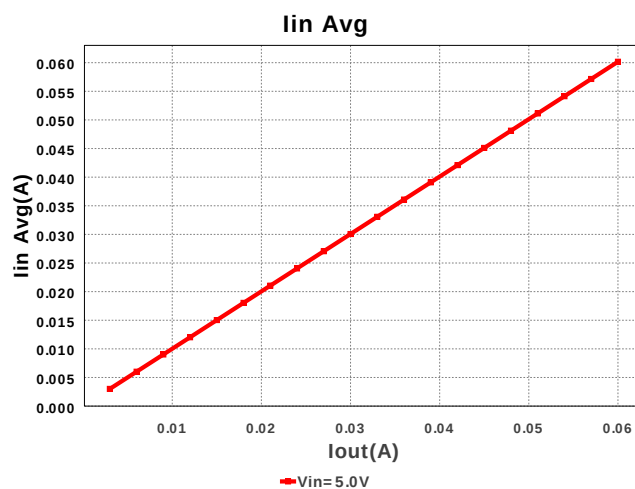
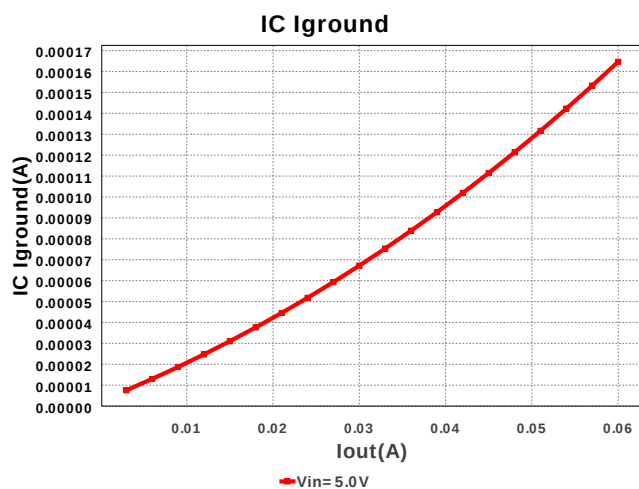
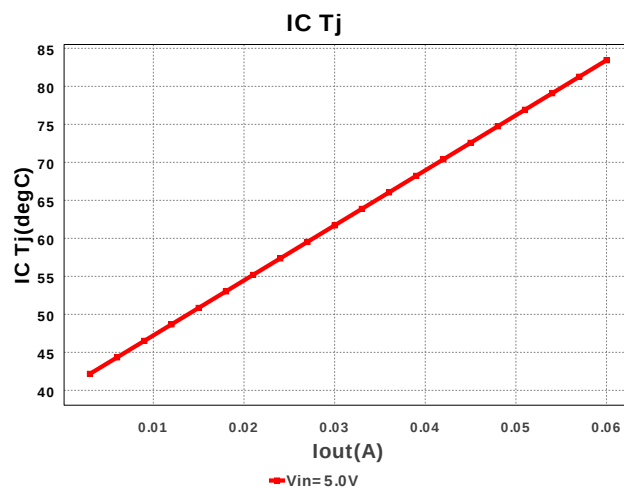
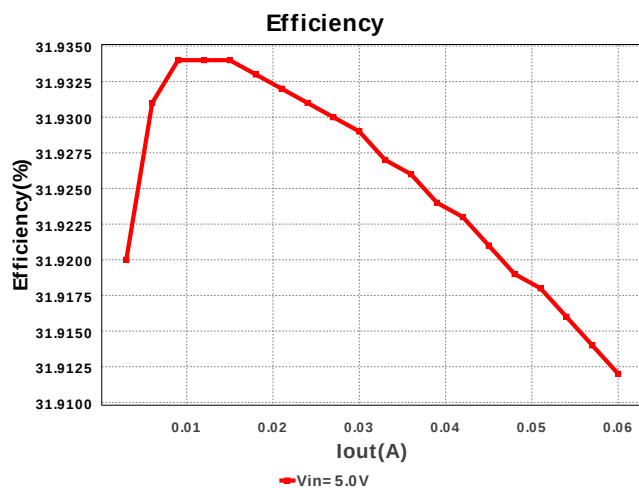
Device = TPS70916DBVR
Topology = LDO
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BOM Cost = \$0.42
Total Pd = 0.2W
Footprint = 12.0mm2
BOM Count = 3

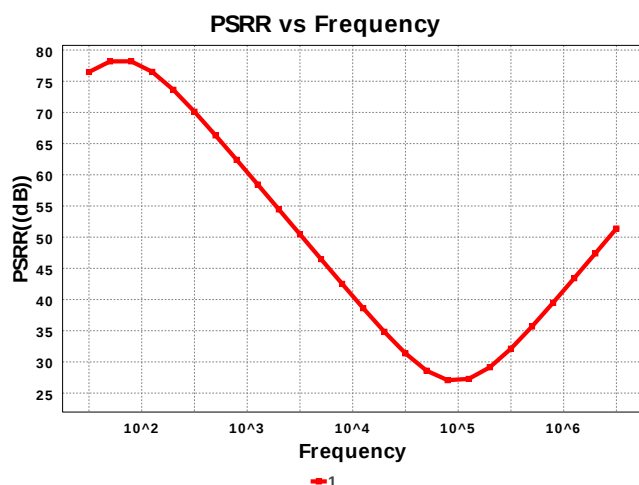
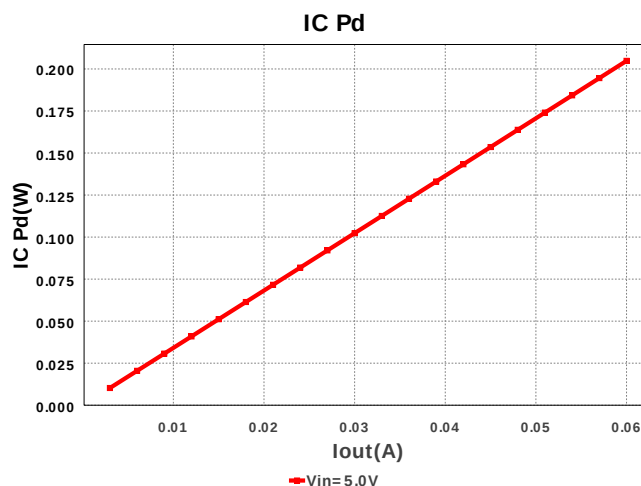
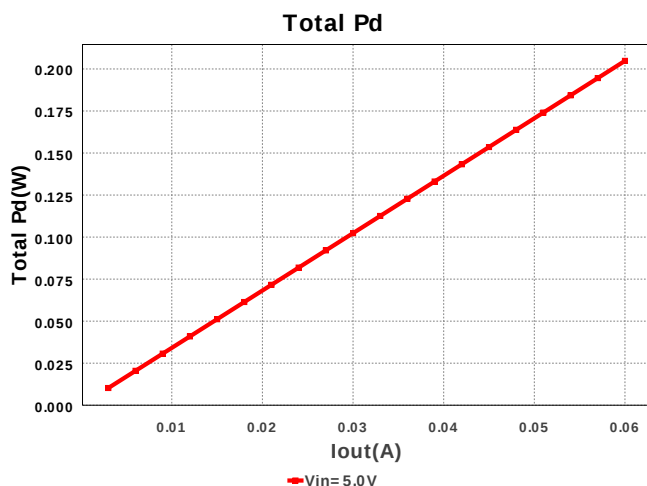


Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	TDK	C1005X5R0J104K Series= X5R	Cap= 100.0 nF ESR= 18.6 mOhm VDC= 6.3 V IRMS= 0.0 A	1	\$0.01	0402 3mm2
2.	Cout	TDK	C1608X5R0J225M Series= X5R	Cap= 2.2 μF ESR= 4.0 mOhm VDC= 6.3 V IRMS= 0.0 A	1	\$0.02	0603 5mm2
3.	U1	Texas Instruments	TPS70916DBVR	Switcher	1	\$0.39	DBV 4mm2







Operating Values

#	Name	Value	Category	Description
1.	IC Iground	164.652 μ A	Current	IC ground current
2.	Iin Avg	60.165 mA	Current	Average input current
3.	BOM Count	3	General	Total Design BOM count
4.	FootPrint	12.0 mm ²	General	Total Foot Print Area of BOM components
5.	IC Tolerance	32.0 mV	General	IC Feedback Tolerance
6.	Pout	96.0 mW	General	Total output power
7.	Total BOM	\$0.42	General	Total BOM Cost
8.	Vin p-p	50.0 mV	Op_point	Input Source ripple voltage
9.	Efficiency	31.912 %	Op_point	Steady state efficiency
10.	IC Tj	83.443 degC	Op_point	IC junction temperature
11.	ICThetaJA	212.1 degC/W	Op_point	IC junction-to-ambient thermal resistance
12.	IOUT_OP	60.0 mA	Op_point	Iout operating point
13.	Input Ripple Frequency	100.0 kHz	Op_point	Input Source Ripple Frequency for PSRR Calculation
14.	PSRR est.	-32.121 dB	Op_point	Power Supply Rejection Ratio, estimated
15.	VIN_OP	5.0 V	Op_point	Vin operating point
16.	Vout p-p	1.239 mV	Op_point	Peak-to-peak output ripple voltage
17.	IC Pd	204.823 mW	Power	IC power dissipation
18.	Total Pd	204.823 mW	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	60.0 mA	Maximum Output Current
2.	Iout1	60.0 mAmps	Output Current #1
3.	VinMax	5.0 V	Maximum input voltage
4.	VinMin	5.0 V	Minimum input voltage
5.	Vout	1.6 V	Output Voltage
6.	Vout1	1.6 Volt	Output Voltage #1
7.	base_pn	TPS70916	Texas Instruments Base Part Number
8.	source	DC	Input Source Type
9.	ta	40.0 degC	Ambient temperature

Design Assistance

- 1.
2. TPS70916 Product Folder : <http://www.ti.com/product/TPS70916> : contains the data sheet and other resources.

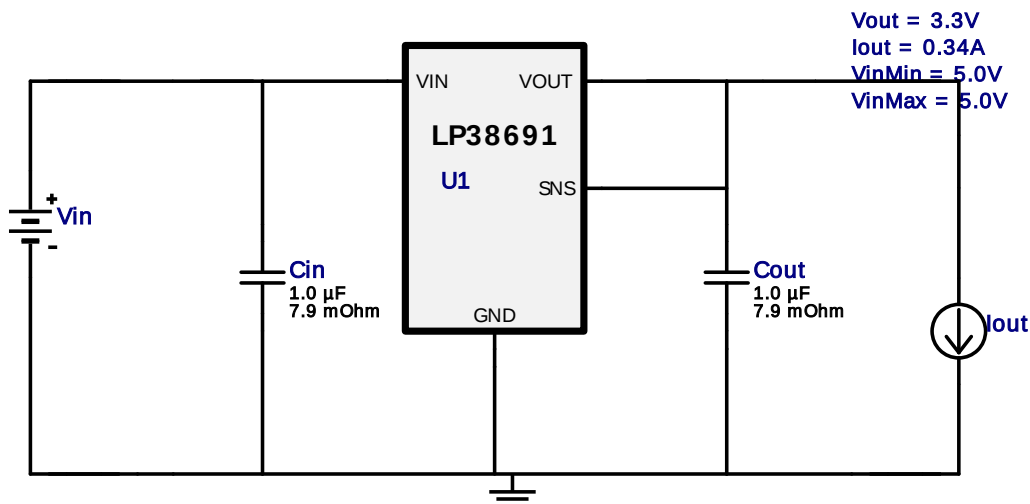


WEBENCH® Design Report

Design : 1284796/2304 LP38691SD-3.3/NOPB
LP38691SD-3.3/NOPB 5.0V-5.0V to 3.3V @ 0.34A

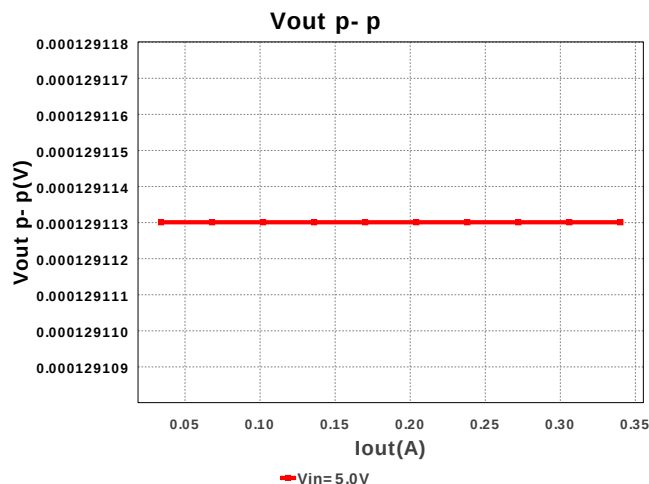
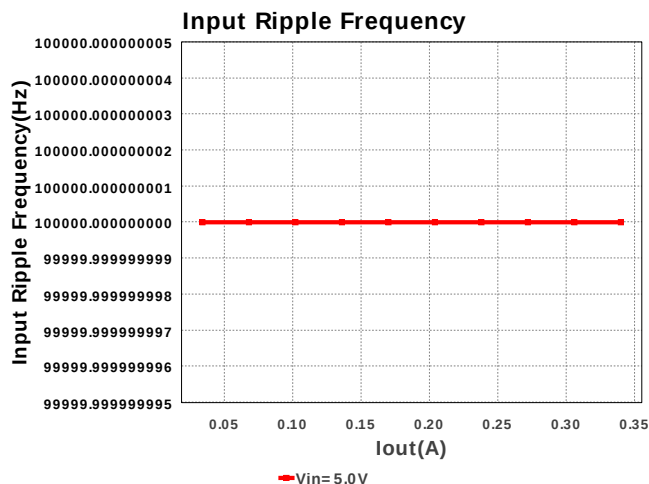
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VinMax = 5.0V
Vout = 3.3V
Iout = 0.34A

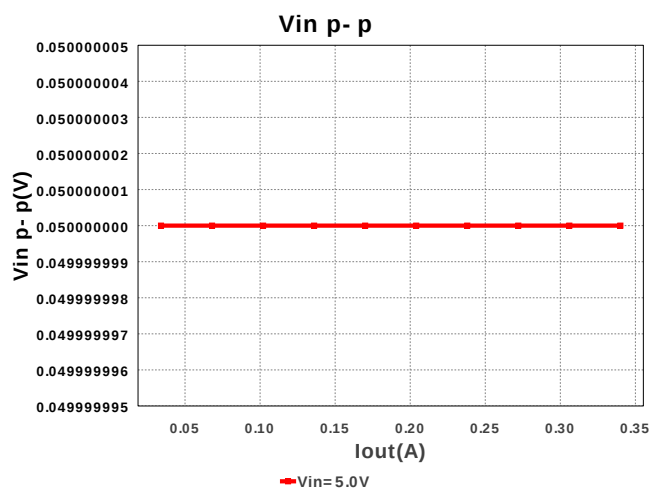
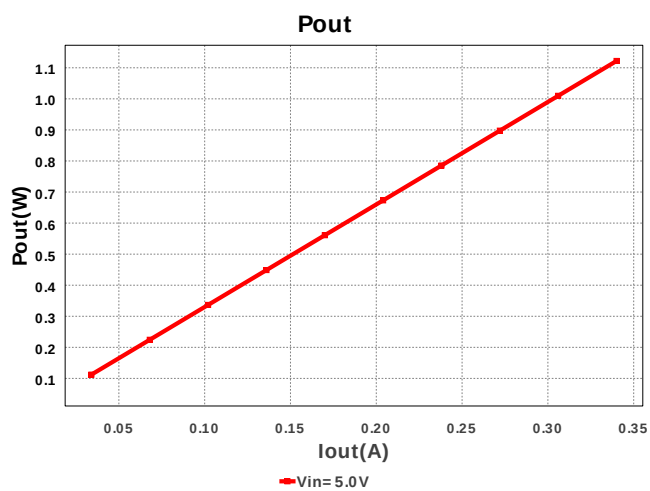
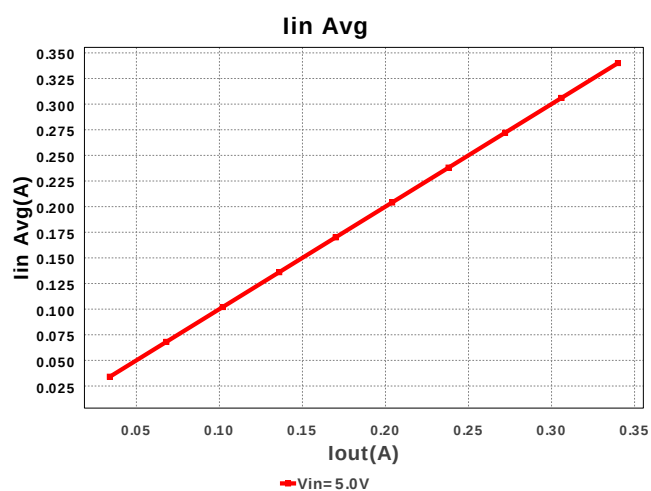
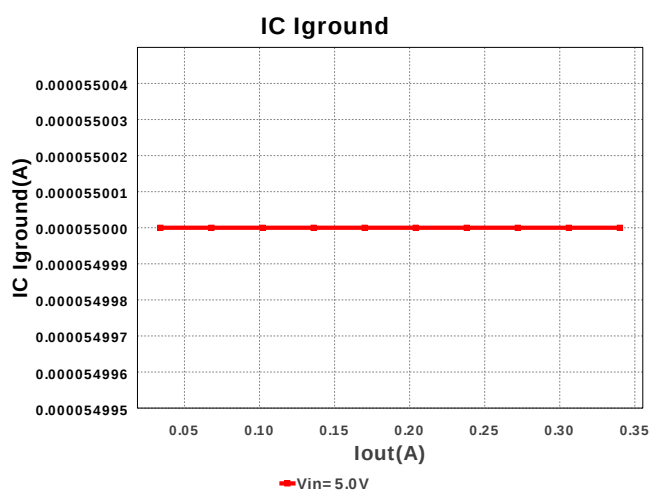
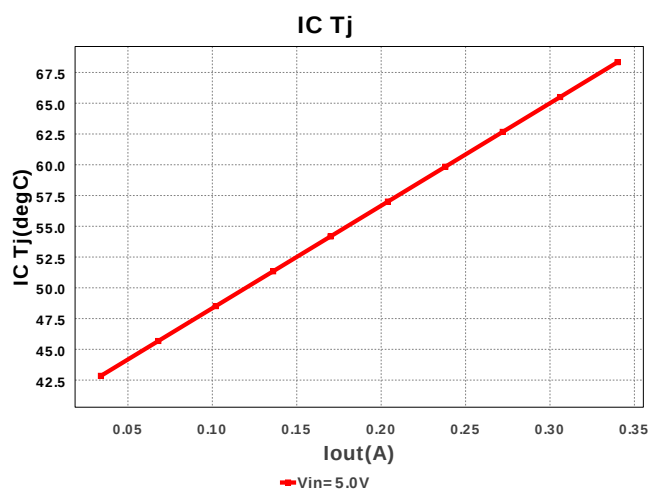
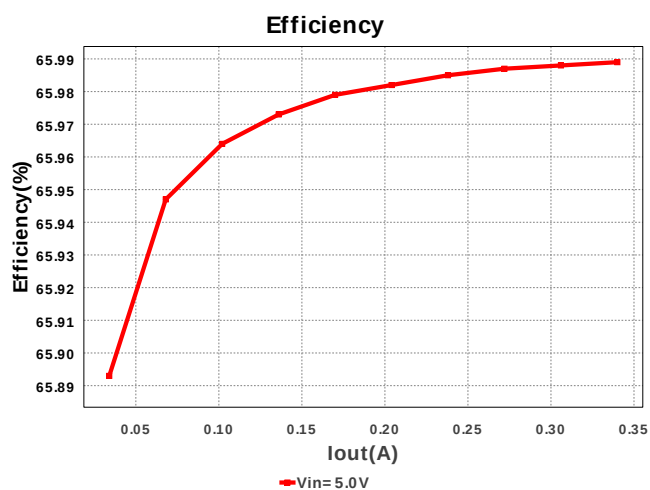
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Topology = LDO
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BOM Cost = \$0.52
Total Pd = 0.58W
Footprint = 22.0mm2
BOM Count = 3

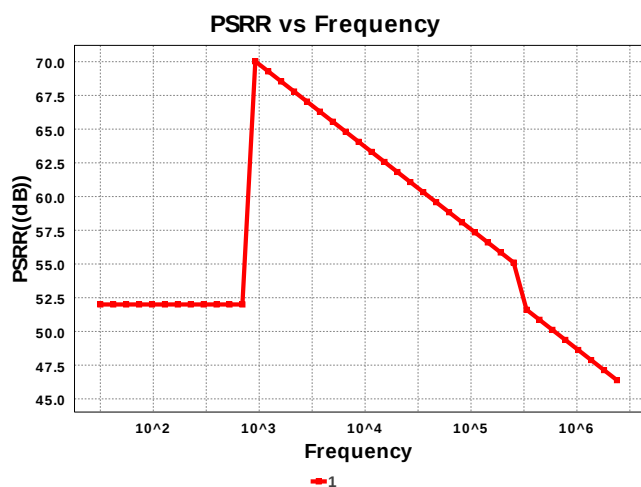
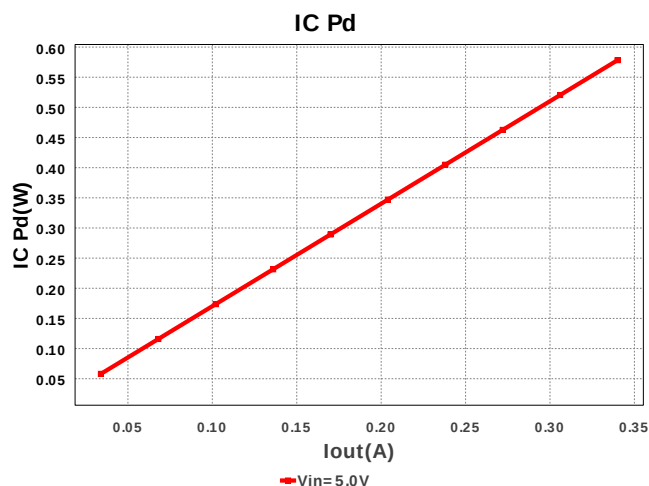
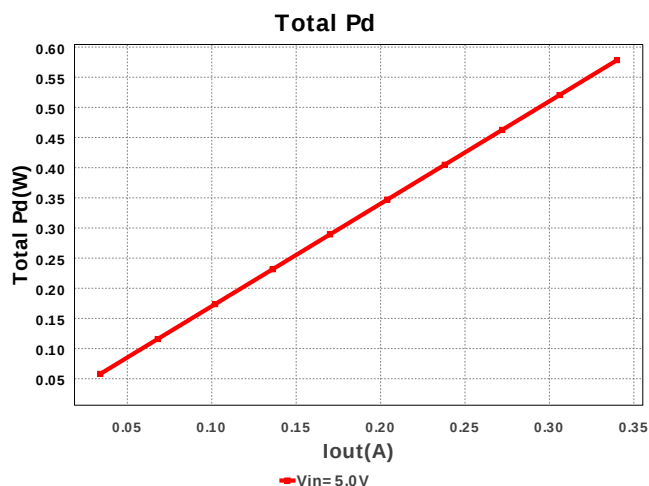


Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	TDK	C1005X5R0J105M Series= X5R	Cap= 1.0 µF ESR= 7.9 mOhm VDC= 6.3 V IRMS= 0.0 A	1	\$0.01	0402 3mm2
2.	Cout	TDK	C1005X5R0J105M Series= X5R	Cap= 1.0 µF ESR= 7.9 mOhm VDC= 6.3 V IRMS= 0.0 A	1	\$0.01	0402 3mm2
3.	U1	Texas Instruments	LP38691SD-3.3/NOPB	Switcher	1	\$0.50	SDE06A 16mm2







Operating Values

#	Name	Value	Category	Description
1.	IC Iground	55.0 μ A	Current	IC ground current
2.	Iin Avg	340.06 mA	Current	Average input current
3.	BOM Count	3	General	Total Design BOM count
4.	FootPrint	22.0 mm ²	General	Total Foot Print Area of BOM components
5.	IC Tolerance	132.0 mV	General	IC Feedback Tolerance
6.	Pout	1.122 W	General	Total output power
7.	Total BOM	\$0.52	General	Total BOM Cost
8.	Vin p-p	50.0 mV	Op_point	Input Source ripple voltage
9.	Efficiency	65.989 %	Op_point	Steady state efficiency
10.	IC Tj	68.335 degC	Op_point	IC junction temperature
11.	ICThetaJA	49.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
12.	IOUT_OP	340.0 mA	Op_point	Iout operating point
13.	Input Ripple Frequency	100.0 kHz	Op_point	Input Source Ripple Frequency for PSRR Calculation
14.	PSRR est.	-51.76 dB	Op_point	Power Supply Rejection Ratio, estimated
15.	VIN_OP	5.0 V	Op_point	Vin operating point
16.	Vout p-p	129.113 μ V	Op_point	Peak-to-peak output ripple voltage
17.	IC Pd	578.275 mW	Power	IC power dissipation
18.	Total Pd	578.275 mW	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	340.0 mA	Maximum Output Current
2.	Iout1	340.0 mAmps	Output Current #1
3.	VinMax	5.0 V	Maximum input voltage
4.	VinMin	5.0 V	Minimum input voltage
5.	Vout	3.3 V	Output Voltage
6.	Vout1	3.3 Volt	Output Voltage #1
7.	base_pn	LP38691	Texas Instruments Base Part Number
8.	source	DC	Input Source Type
9.	ta	40.0 degC	Ambient temperature

Design Assistance

1. LP38691 Product Folder : <http://www.ti.com/product/lp38691> : contains the data sheet and other resources.

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