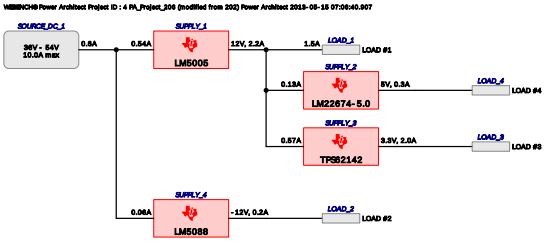
WEBENCH® Power Architect



项目报告

项目 : 3728439/4 : PA_Project_206 (modified from 202)
创建 : 2013-05-15 07:06:40.907
Optimize project optFactor=2

项目概览

1.	整体系统效率	85.728 %
2.	总系统 BOM 数量	56.0
3.	整体系统大小	1.462 kmm2
4.	总系统 BOM 成本	$8.65
5.	Total System Power Dissipation	4.745 W

--> 发布 WEBENCH Power Architect.

电源供应

#	名称	NSID	说明	Vout	Iout	效率	Foot-print	Cost	Design	页面
1.	SUPPLY_1	LM5005	Switcher : Fast Transient Response	12 V	2.2 A	90.4%	733	$2.94	29	14
2.	SUPPLY_2	LM22674-5.0	Switcher : Low Part Count	5 V	0.3 A	85%	179	$1.64	27	4
3.	SUPPLY_3	TPS62142	Switcher : 3V-17V,3.3Vout,2A,Buck,DCS-Control,pin selectable frequency	3.3 V	2.0 A	88.4%	152	$1.46	28	9
4.	SUPPLY_4	LM5088	Switcher : Positive to negative inverting buck boost converter with dither	-12 V	0.2 A	74.6%	398	$2.61	30	20

电源负载

#	名称	VLoad	ILoad	说明
1.	LOAD #1	12 V	1.5 A	VoutRipple=10%
2.	LOAD #4	5 V	0.3 A	VoutRipple=20%, Requires a separate supply
3.	LOAD #3	3.3 V	2 A	VoutRipple=10%
4.	LOAD #2	-12 V	0.2 A	VoutRipple=20%

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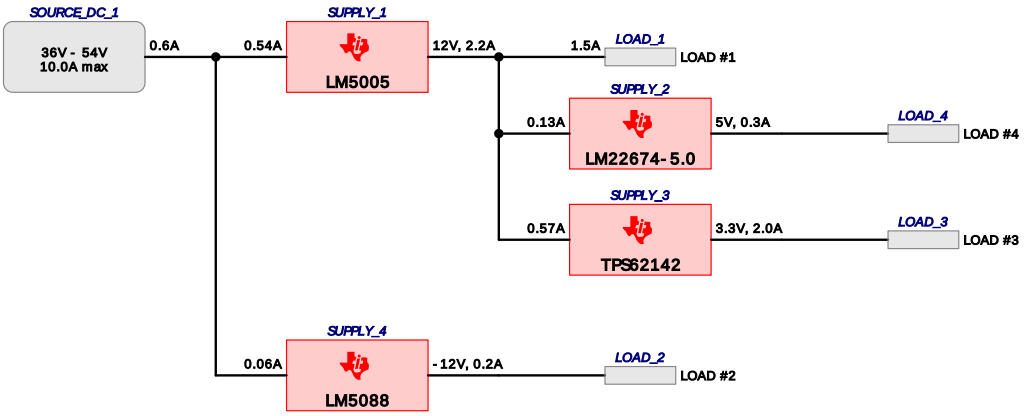
Project Diagram

WEBENCH® Power Architect Project ID : 4 PA_Project_206 (modified from 202) Power Architect 2013-05-15 07:06:40.907



电气采购BOM

制造商	零件编号	说明	数量	Budgetary Price	大小 (mm^2)
AVX	08053C104KAT2A	0805	1	$0.01	13
Diodes Inc.	BSS123W-7-F	SOT-323	1	$0.08	18
Kemet	C0805C103K5RACTU	0805	1	$0.01	13
Kemet	C0805C106K8PACTU	0805	1	$0.05	13
Kemet	C0805C223K5RACTU	0805	1	$0.01	13
Kemet	C0805C332K5RACTU	0805	1	$0.01	13
Kemet	C0805C471K5RACTU	0805	1	$0.01	13
TDK	C1608X5R1C105K	0603	1	$0.01	10
TDK	C2012X5R0J226M	0805	1	$0.06	13
TDK	C2012X7R2A104K	0805	1	$0.03	13
TDK	C3216X5R1C106M	1206	3	$0.06	19
TDK	C3216X7R2A105M	1206	3	$0.11	56
Yageo America	CC0805JRNP09BN100	0805	1	$0.01	13
Yageo America	CC0805KRX7R9BB271	0805	1	$0.01	13
Yageo America	CC0805KRX7R9BB391	0805	1	$0.01	13
Vishay-Dale	CRCW0402100KFKED	0402	1	$0.01	8
Vishay-Dale	CRCW040210K0FKED	0402	1	$0.01	8
Vishay-Dale	CRCW040214K7FKED	0402	1	$0.01	8
Vishay-Dale	CRCW04021K62FKED	0402	1	$0.01	8
Vishay-Dale	CRCW04021K65FKED	0402	1	$0.01	8
Vishay-Dale	CRCW0402221KFKED	0402	1	$0.01	8
Vishay-Dale	CRCW0402432RFKED	0402	1	$0.01	8
Vishay-Dale	CRCW040269K8FKED	0402	1	$0.01	8
Vishay-Dale	CRCW04026K34FKED	0402	1	$0.01	8
Vishay-Dale	CRCW080514K3FKEA	0805	1	$0.01	13
Vishay-Dale	CRCW08051K02FKEA	0805	1	$0.01	13
Vishay-Dale	CRCW080522K1FKEA	0805	1	$0.01	13
Vishay-Dale	CRCW08058K87FKEA	0805	1	$0.01	13
Coilcraft	DO5040H-473MLB	DO5040H	1	$0.71	445
Panasonic	ERJ-3RQFR22V	0603	1	$0.02	10
MuRata	GRM033C80G273KE01D	0201	1	$0.01	6
MuRata	GRM033R71C182KA88D	0201	1	$0.01	6
MuRata	GRM1555C1H910JA01D	0402	1	$0.01	8
MuRata	GRM155C80J334KE01D	0402	1	$0.01	8
MuRata	GRM155R61A124KE19D	0402	2	$0.01	15
MuRata	GRM155R71E822KA01D	0402	1	$0.01	8
MuRata	GRM188R61E105KA12D	0603	1	$0.02	10
MuRata	GRM188R72A104KA35D	0603	1	$0.03	10
MuRata	GRM21BR61E475MA12L	0805	1	$0.06	13
MuRata	GRM31CR61E106KA12L	1206	1	$0.07	19
MuRata	GRM32ER61C226KE20L	1210	1	$0.30	23
Texas Instruments	LM22674MR-5.0/NOPB	MRA08B	1	$1.25	56
Texas Instruments	LM5005MH/NOPB	MXA20A	1	$1.75	71
Texas Instruments	LM5088MH-1/NOPB	MXA16A	1	$1.47	59
Rohm	RF071M2S	SOD-123	1	$0.11	22
Diodes Inc.	SDM20U40-7-F	SOD-523	1	$0.06	11
Bourns	SDR0604-121KL	SDR0604	1	$0.17	61
Micro Commercial Components	SK310A-TP	SMA	1	$0.10	37
Bourns	SRN6045-2R2Y	SRN6045	1	$0.16	64
Texas Instruments	TPS62142RGTR	S-PVQFN-N16	1	$1.15	36
TDK	VLC6045T-151M	VLC6045	1	$0.20	64
Total			56	$8.65	1,425

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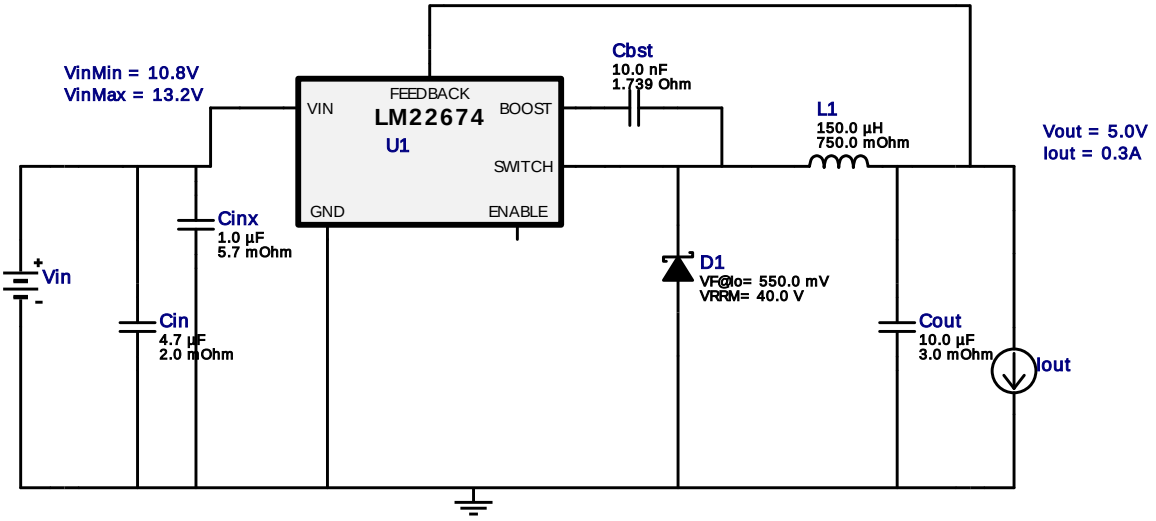
WEBENCH® 设计报告

VinMin = 10.8V
VinMax = 13.2V
Vout = 5.0V
Iout = 0.3A

Device = LM22674MR-5.0/NOPB
Topology = Buck
创建 = 5/15/13 7:05:13 AM
BOM成本 = $1.64
Total Pd = 0.26W
大小 = 179.0mm2
BOM 数量 = 7

Design : 3728439/27 LM22674MR-5.0/NOPB
LM22674MR-5.0/NOPB 10.8V-13.2V to 5.0V @ 0.3A



电气材料清单

#	名称	制造商	零件编号	属性	Qty	Price	大小
1.	Cbst	Kemet	C0805C103K5RACTU Series= X7R	Cap= 10.0 nF ESR= 1.739 Ohm VDC= 50.0 V IRMS= 411.0 mA	1	$0.01	0805 13mm2
2.	Cin	MuRata	GRM21BR61E475MA12L Series= X5R	Cap= 4.7 µF ESR= 2.0 mOhm VDC= 25.0 V IRMS= 7.29 A	1	$0.06	0805 13mm2
3.	Cinx	TDK	C1608X5R1C105K Series= X5R	Cap= 1.0 µF ESR= 5.7 mOhm VDC= 16.0 V IRMS= 0.0 A	1	$0.01	0603 10mm2
4.	Cout	Kemet	C0805C106K8PACTU Series= X5R	Cap= 10.0 µF ESR= 3.0 mOhm VDC= 10.0 V IRMS= 11.43 A	1	$0.05	0805 13mm2
5.	D1	Diodes Inc.	SDM20U40-7-F	VF@Io= 550.0 mV VRRM= 40.0 V	1	$0.06	SOD-523 11mm2
6.	L1	TDK	VLC6045T-151M	L= 150.0 µH DCR= 750.0 mOhm	1	$0.20	VLC6045 64mm2
7.	U1	Texas Instruments	LM22674MR-5.0/NOPB	Switcher	1	$1.25	MRA08B 56mm2

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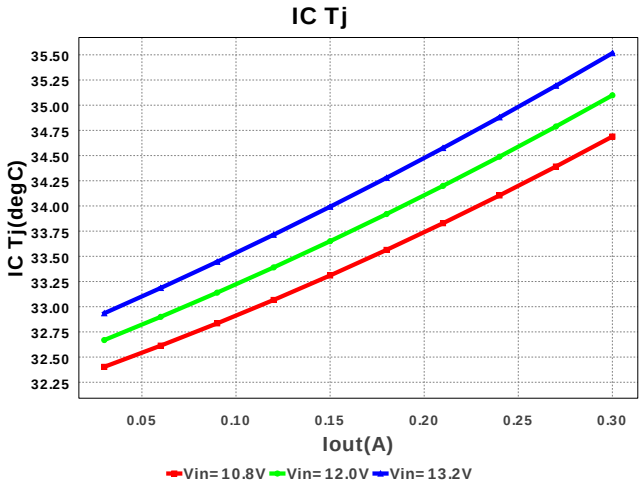

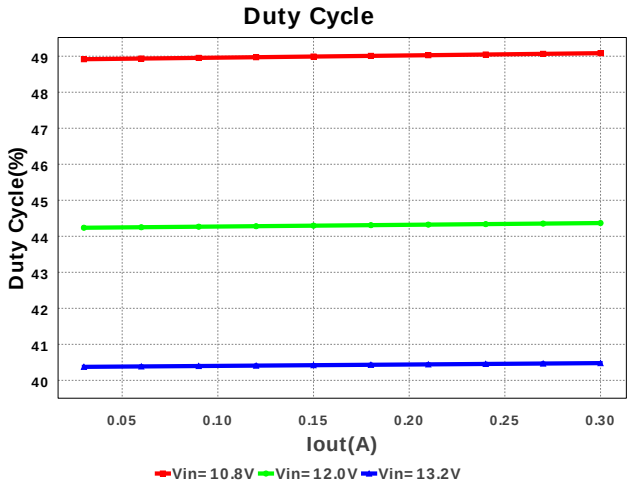

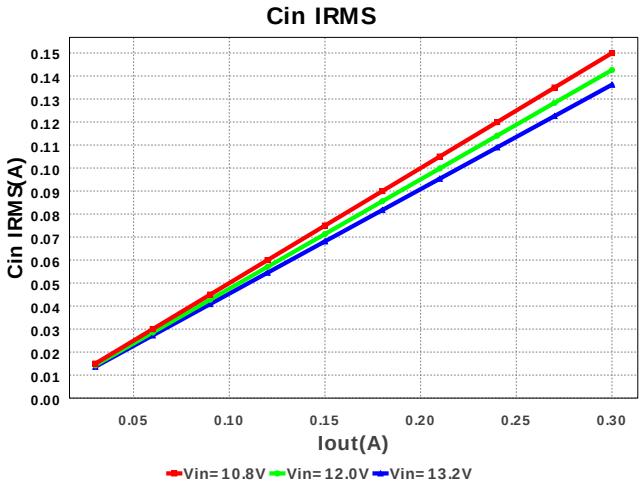

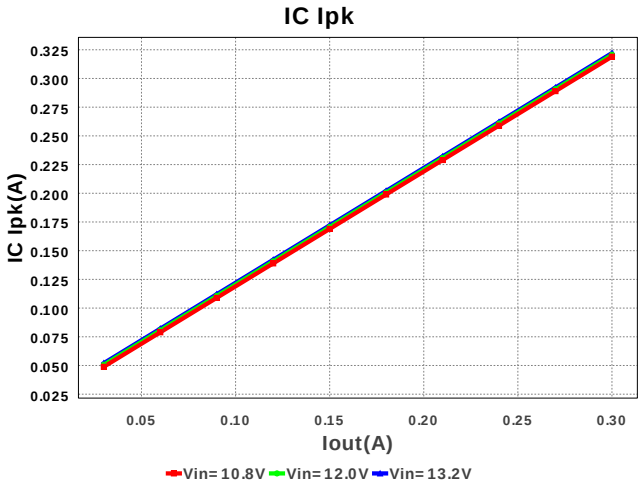

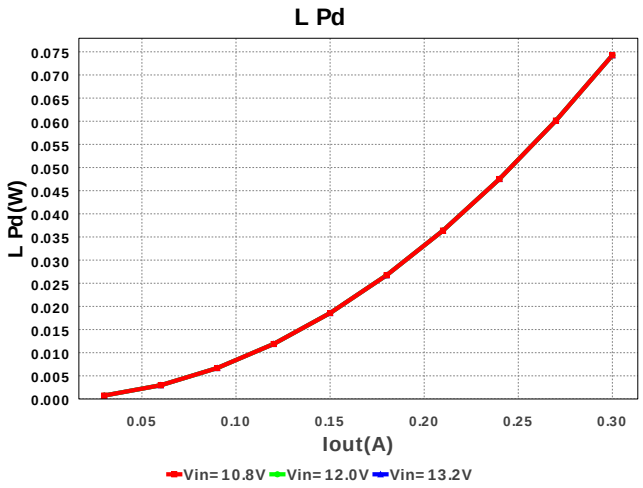

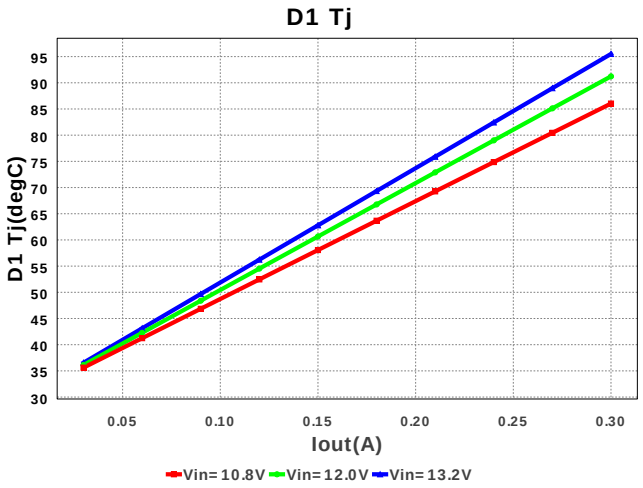

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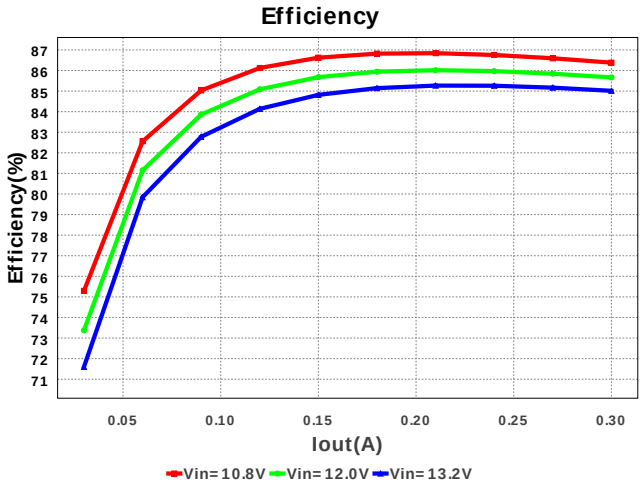

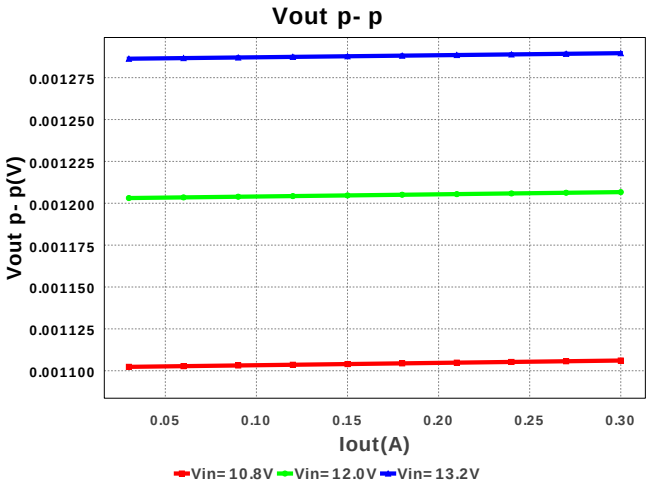

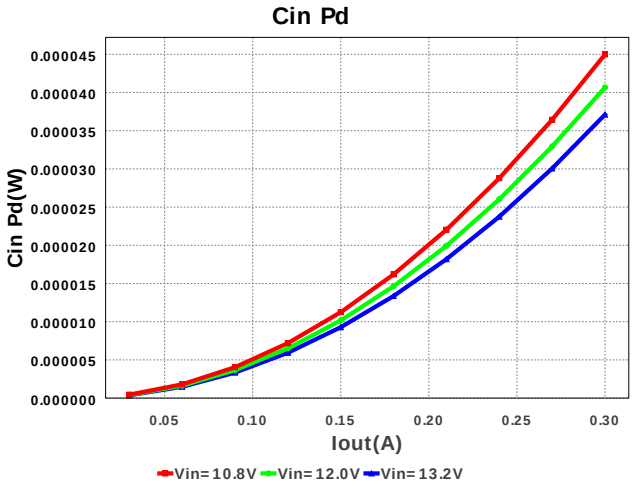

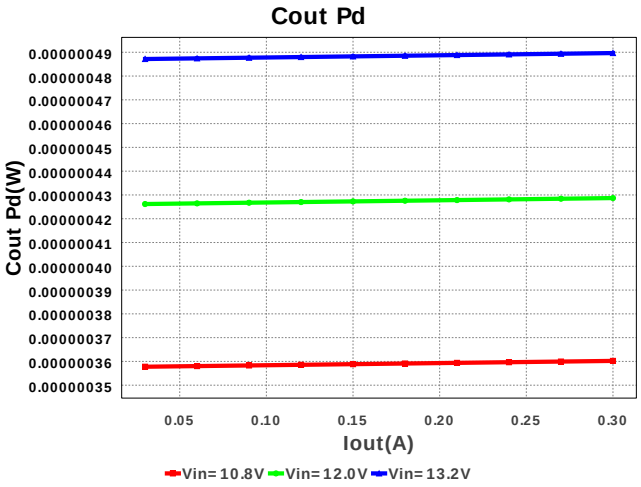

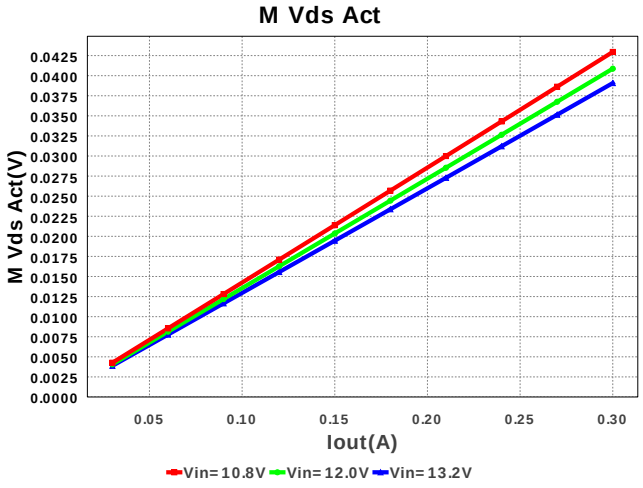

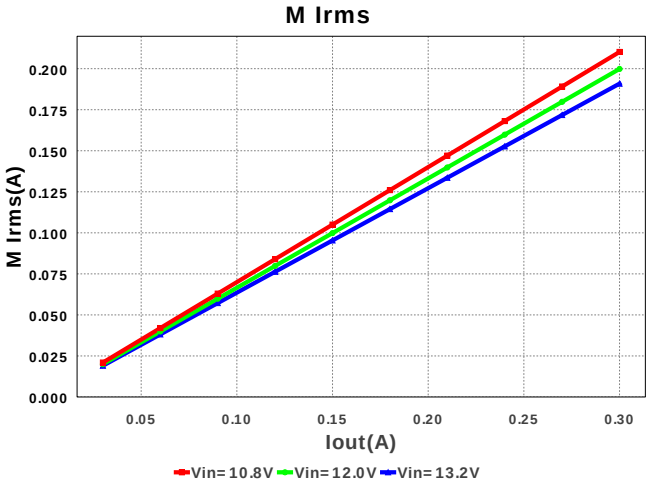

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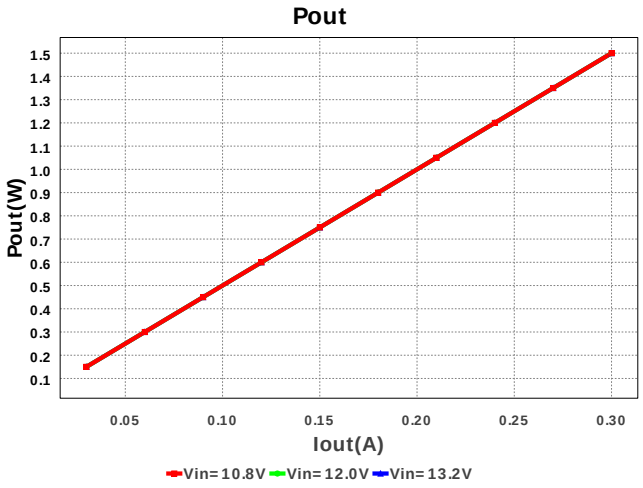

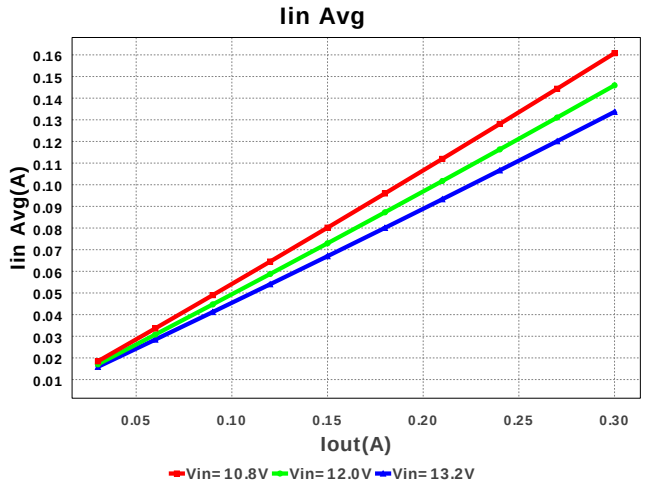

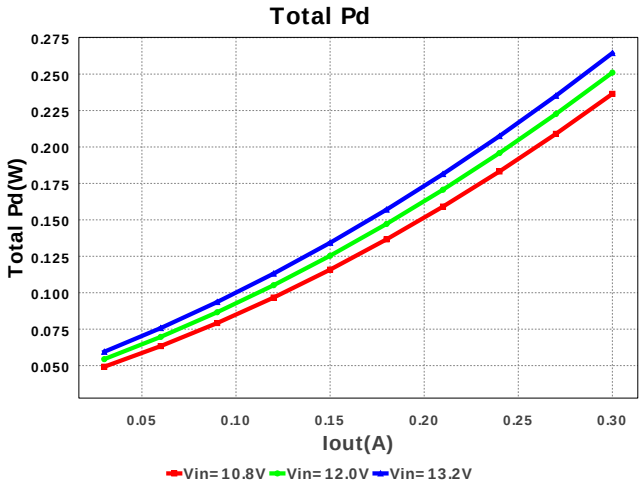

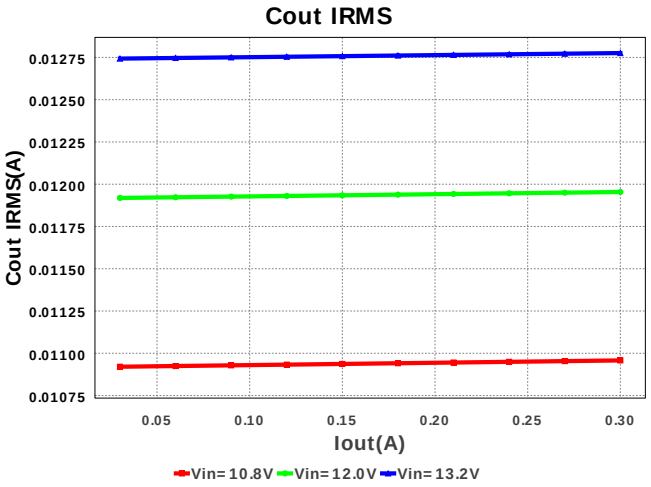

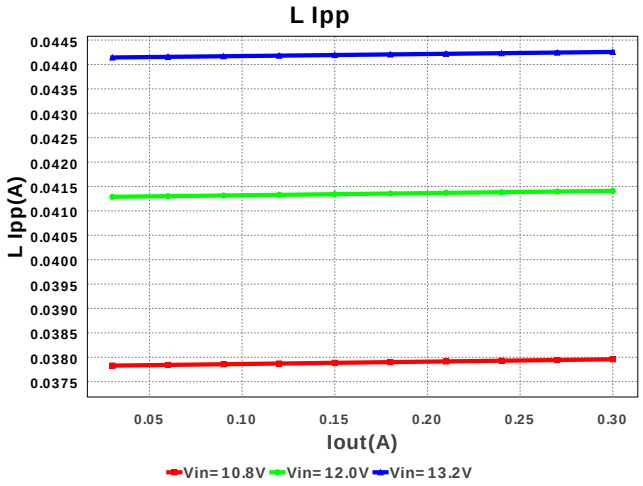

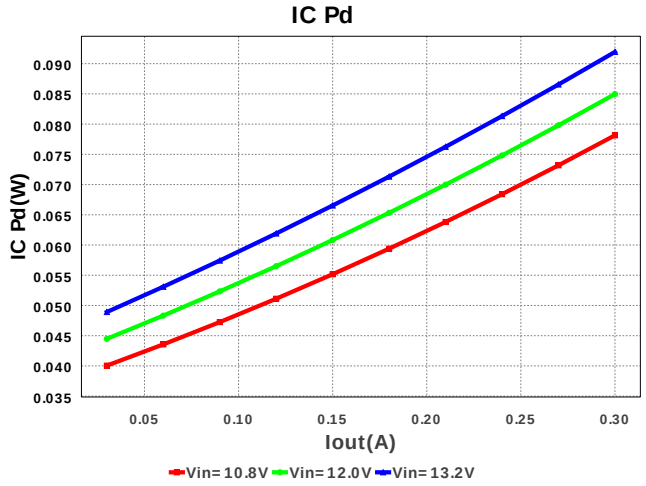

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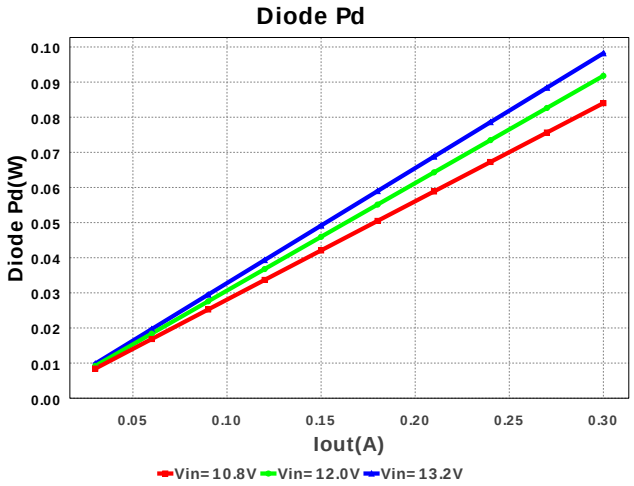

工作数值

#	名称	数值	类别	说明
1.	Cin IRMS	136.217 mA	Current	输入电容器均方根纹波电流
2.	Cout IRMS	12.776 mA	Current	输出电容器均方根纹波电流
3.	IC Ipk	322.128 mA	Current	电路内的峰值开关电流
4.	Iin Avg	133.67 mA	Current	平均输入电流
5.	L Ipp	44.257 mA	Current	峰值到峰值电感器纹波电流
6.	M1 Irms	190.869 mA	Current	Q Iavg
7.	BOM 数量	7	General	Total Design BOM count
8.	大小	179.0 mm2	General	BOM组件的总所占面积
9.	频率	500.0 kHz	General	开关频率
10.	IC Tolerance	75.0 mV	General	IC Feedback Tolerance
11.	M Vds Act	39.077 mV	General	Voltage drop across the MosFET
12.	模式	CCM	General	传导模式
13.	Pout	1.5 W	General	总输出功率
14.	总 BOM	$1.64	General	Total BOM Cost
15.	D1 Tj	95.506 degC	Op_Point	D1接点温度
16.	Vout OP	5.0 V	Op_Point	Operational Output Voltage
17.	交叉频率	34.285 kHz	Op_point	波特图交叉频率
18.	占空比	40.479 %	Op_point	占空比
19.	效率	85.013 %	Op_point	稳态效率
20.	IC Tj	35.516 degC	Op_point	电路接点温度
21.	ICThetaJA	60.0 degC/W	Op_point	电路接点到环境热敏电阻
22.	IOUT_OP	300.0 mA	Op_point	Iout 操作点
23.	相位裕度	47.065 deg	Op_point	波特图相位裕度
24.	VIN_OP	13.2 V	Op_point	Vin操作点
25.	Vout p-p	1.29 mV	Op_point	峰值到峰值输出纹波电压
26.	Cin Pd	37.11 µW	Power	输入电容器功率耗散
27.	Cout Pd	489.664 nW	Power	输出电容器功率耗散
28.	二极管 Pd	98.21 mW	Power	二极管功率耗散
29.	IC Pd	91.939 mW	Power	电路功率耗散
30.	L Pd	74.25 mW	Power	电感器功率耗散
31.	整体 Pd	264.437 mW	Power	总功率耗散

设计输入

#	名称	数值	说明
1.	输出电流	300.0 mA	最大输出电流
2.	Iout1	300.0 mAmps	Output Current #1
3.	Vin 最大	13.2 V	最高输入电压
4.	Vin 最小	10.8 V	最低输入电压
5.	输出电压:	5.0 V	输出电压
6.	Vout1	5.0 Volt	Output Voltage #1
7.	base_pn	LM22674	美国国家半导体的产品编号
8.	源	DC	输入源类别
9.	工作环境温度	30.0 degC	环境温度

设计协助

1. Part Description The LM22674 is a monolithic integrated circuit that provides all of the active functions for a step-down (buck) switching regulator capable of driving up to 0.5A loads with excellent line and load regulation characteristics. High efficiency (>90%) is obtained through the use of a low ON-resistance N-channel MOSFET.

2. LM22674 Product Folder : http://www.ti.com/product/lm22674 : contains the data sheet and other resources.

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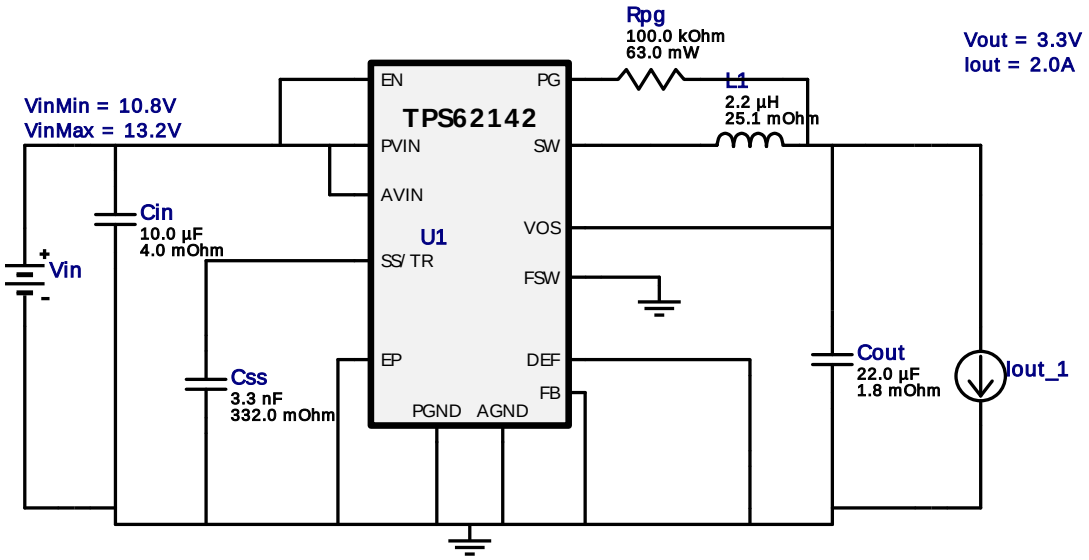
WEBENCH® 设计报告

Design : 3728439/28 TPS62142RGTR
TPS62142RGTR 10.8V-13.2V to 3.3V @ 2.0A

VinMin = 10.8V
VinMax = 13.2V
Vout = 3.3V
Iout = 2.0A

Device = TPS62142RGTR
Topology = Buck
创建 = 5/15/13 7:05:17 AM
BOM成本 = $1.46
Total Pd = 0.87W
大小 = 152.0mm2
BOM 数量 = 6



电气材料清单

#	名称	制造商	零件编号	属性	Qty	Price	大小
1.	Cin	MuRata	GRM31CR61E106KA12L Series= X5R	Cap= 10.0 µF ESR= 4.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.07	1206 19mm2
2.	Cout	TDK	C2012X5R0J226M Series= X5R	Cap= 22.0 µF ESR= 1.8 mOhm VDC= 6.3 V IRMS= 0.0 A	1	$0.06	0805 13mm2
3.	Css	Kemet	C0805C332K5RACTU Series= X7R	Cap= 3.3 nF ESR= 332.0 mOhm VDC= 50.0 V IRMS= 319.0 mA	1	$0.01	0805 13mm2
4.	L1	Bourns	SRN6045-2R2Y	L= 2.2 µH DCR= 25.1 mOhm	1	$0.16	SRN6045 64mm2
5.	Rpg	Vishay-Dale	CRCW0402100KFKED Series= CRCW..e3	Res= 100.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 8mm2
6.	U1	Texas Instruments	TPS62142RGTR	Switcher	1	$1.15	S-PVQFN-N16 36mm2

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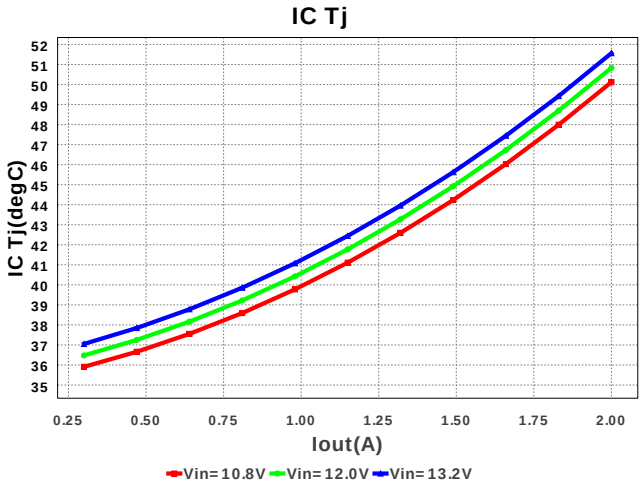

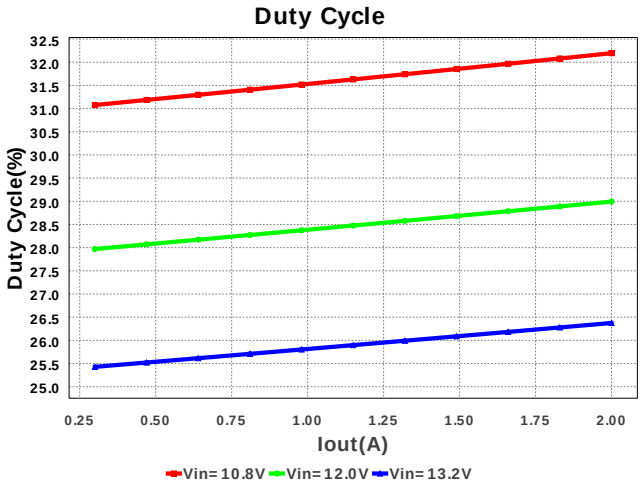

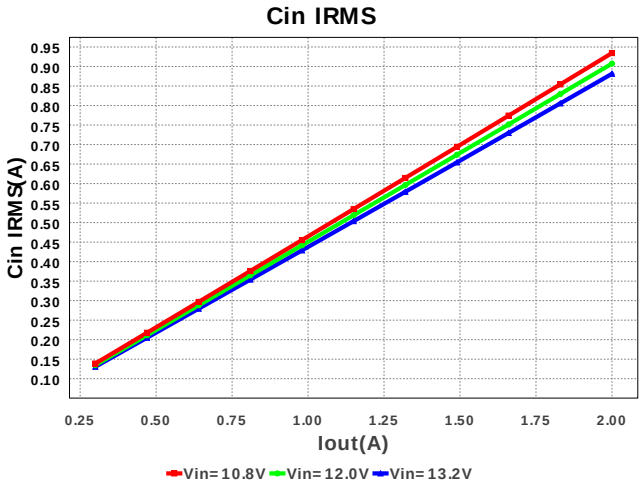

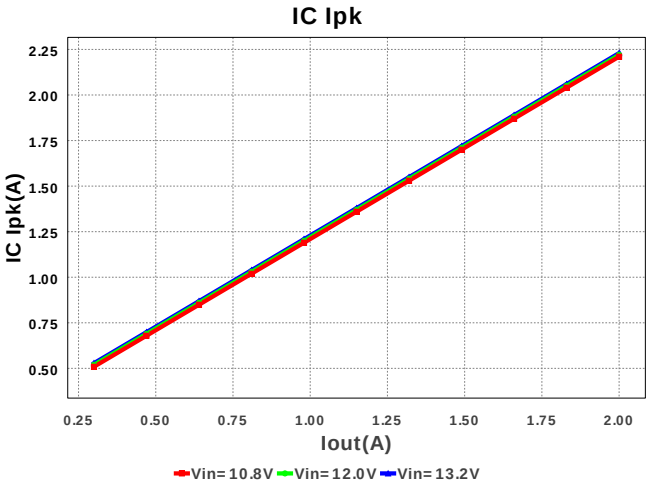

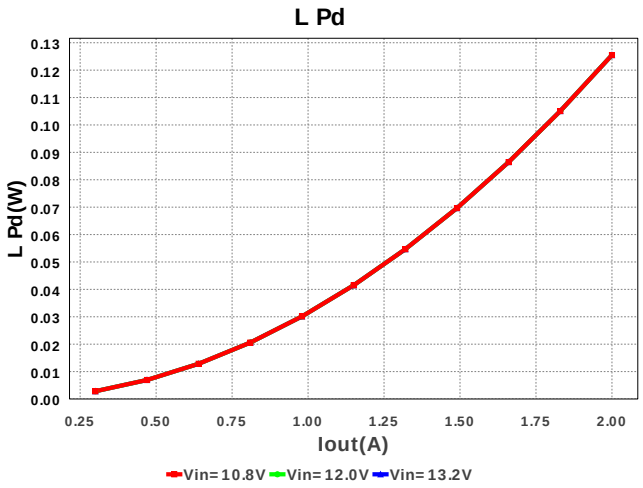

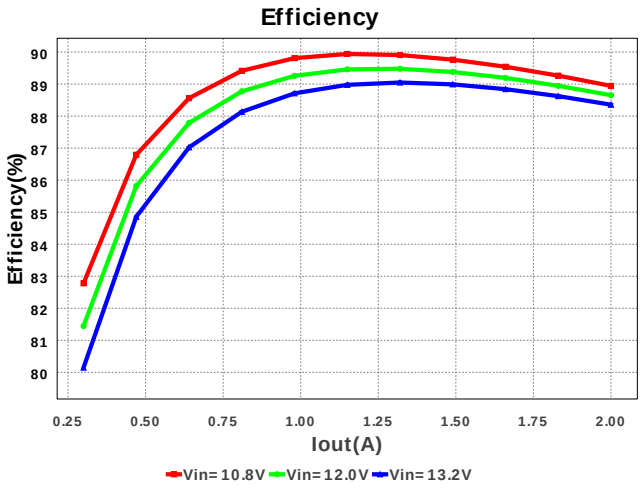

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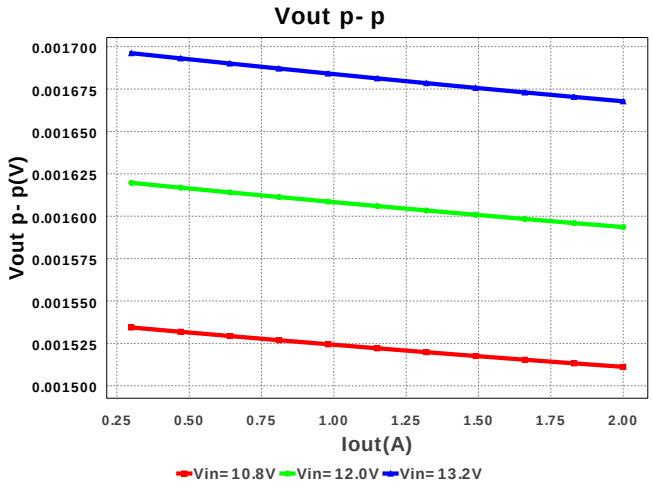

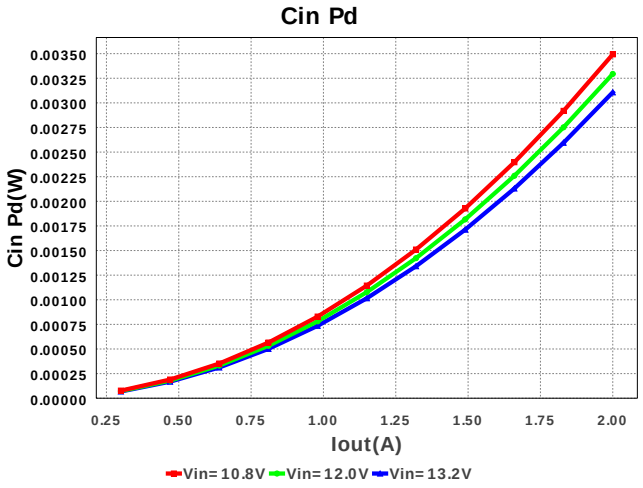

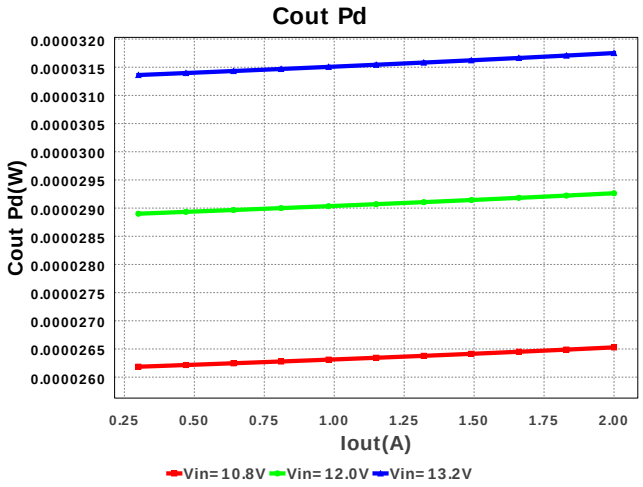

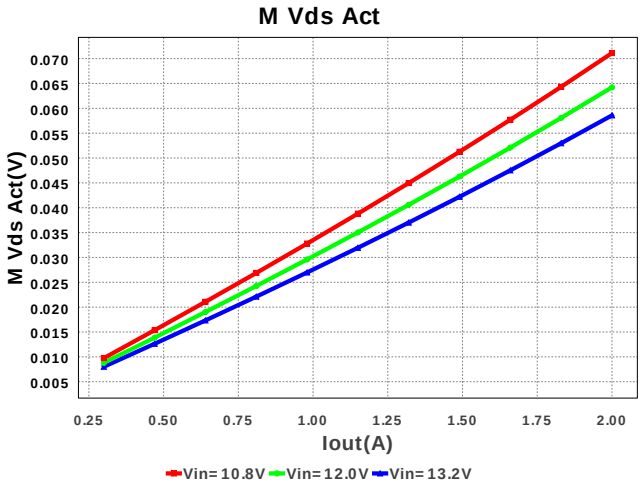

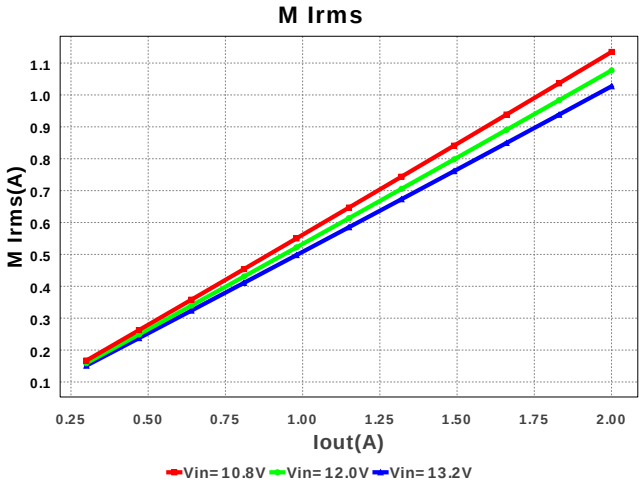

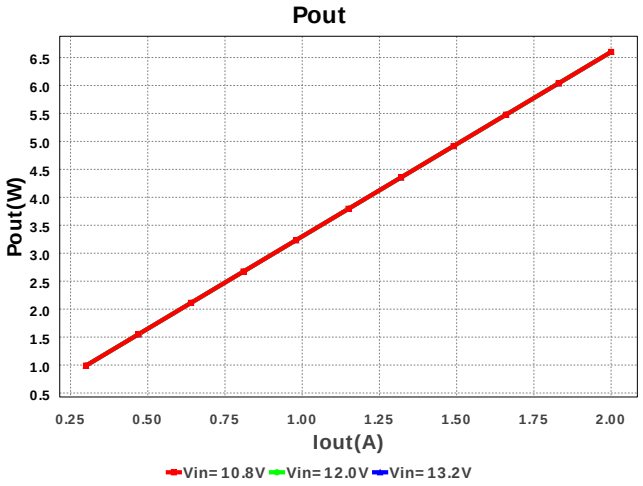

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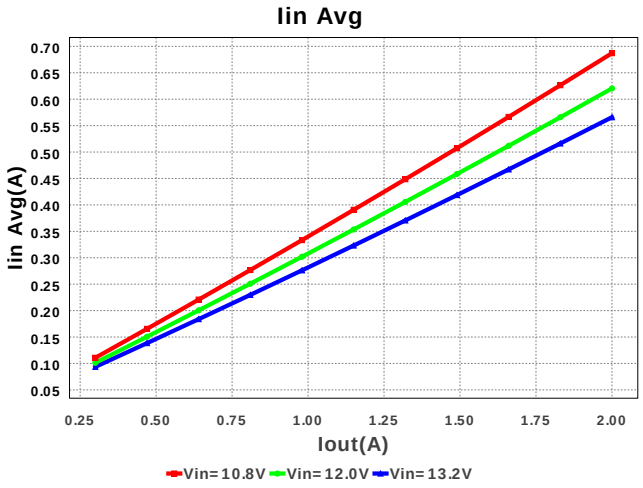

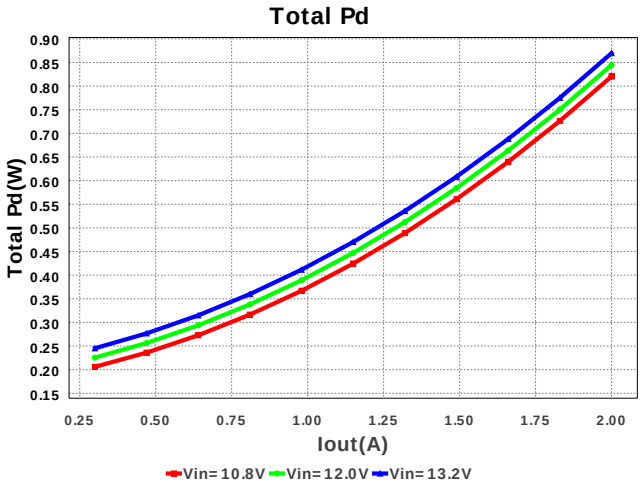

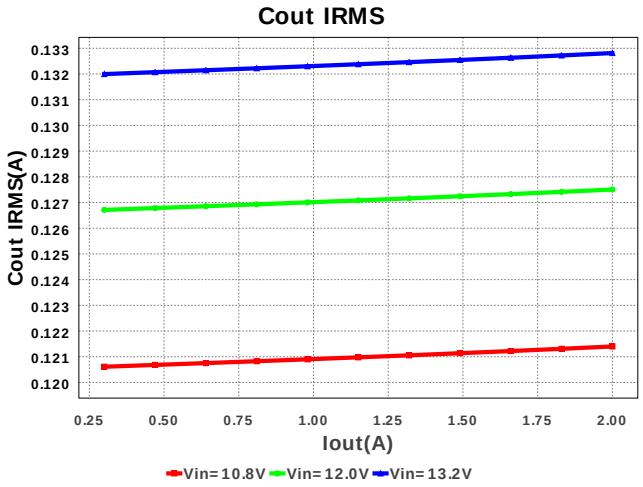

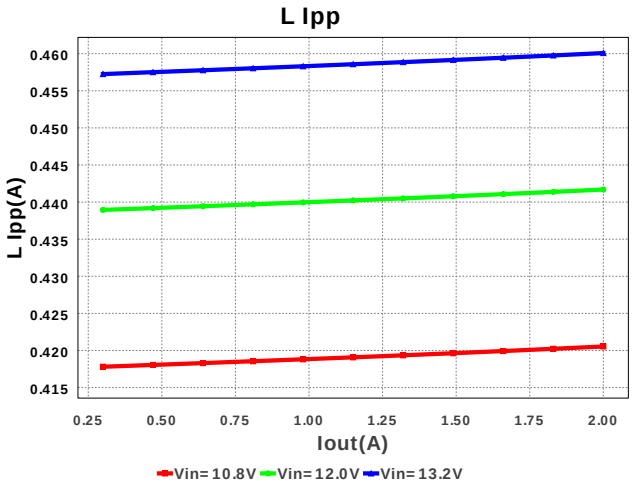

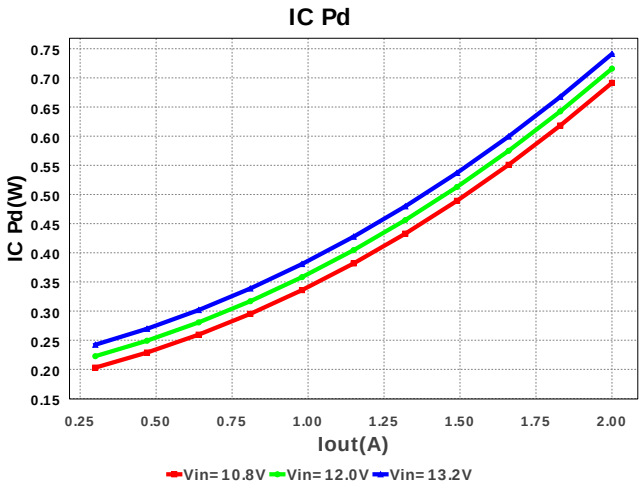

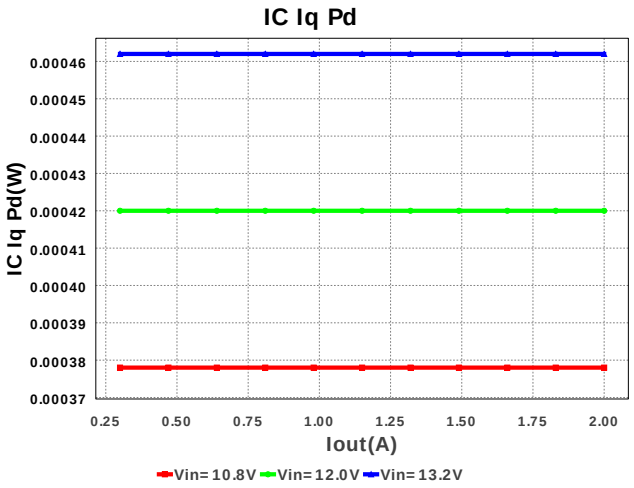

工作数值

#	名称	数值	类别	说明
1.	Cin IRMS	881.329 mA	Current	输入电容器均方根纹波电流
2.	Cout IRMS	132.814 mA	Current	输出电容器均方根纹波电流
3.	IC Ipk	2.23 A	Current	电路内的峰值开关电流
4.	Iin Avg	565.89 mA	Current	平均输入电流
5.	L Ipp	460.082 mA	Current	峰值到峰值电感器纹波电流
6.	M1 Irms	1.027 A	Current	Q Iavg
7.	BOM 数量	6	General	Total Design BOM count
8.	大小	152.0 mm2	General	BOM组件的总所占面积
9.	频率	2.58 MHz	General	开关频率
10.	IC Tolerance	59.4 mV	General	IC Feedback Tolerance
11.	M Vds Act	58.579 mV	General	Voltage drop across the MosFET

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#	名称	数值	类别	说明
12.	模式	CCM	General	传导模式
13.	Pout	6.6 W	General	总输出功率
14.	总 BOM	$1.46	General	Total BOM Cost
15.	Vout OP	3.3 V	Op_Point	Operational Output Voltage
16.	占空比	26.375 %	Op_point	占空比
17.	效率	88.357 %	Op_point	稳态效率
18.	IC Tj	51.565 degC	Op_point	电路接点温度
19.	ICThetaJA	29.1 degC/W	Op_point	电路接点到环境热敏电阻
20.	IOUT_OP	2.0 A	Op_point	Iout 操作点
21.	VIN_OP	13.2 V	Op_point	Vin操作点
22.	Vout p-p	1.668 mV	Op_point	峰值到峰值输出纹波电压
23.	Cin Pd	3.107 mW	Power	输入电容器功率耗散
24.	Cout Pd	31.751 µW	Power	输出电容器功率耗散
25.	IC Pd	741.053 mW	Power	电路功率耗散
26.	L Pd	125.5 mW	Power	电感器功率耗散
27.	整体 Pd	869.703 mW	Power	总功率耗散

设计输入

#	名称	数值	说明
1.	输出电流	2.0 A	最大输出电流
2.	Iout1	2.0 Amps	Output Current #1
3.	Vin 最大	13.2 V	最高输入电压
4.	Vin 最小	10.8 V	最低输入电压
5.	输出电压:	3.3 V	输出电压
6.	Vout1	3.3 Volt	Output Voltage #1
7.	base_pn	TPS62142	美国国家半导体的产品编号
8.	源	DC	输入源类别
9.	工作环境温度	30.0 degC	环境温度

设计协助

1. Feature Highlights: DCS-Control(TM) Architecture with upto 2A output current, 3V to 17V Input Voltage Range, 3.3V Fixed Output voltageSelectable operating frequency, Optional Softstart Capacitor for slow startup, Tracking,Pin selectable output voltage (nominal, +5%) Seamless Power Save Mode for Light Load Efficiency, Power Good Output, 100% Duty Cycle mode, Short Circuit Protection, Thermal Shutdown

2. TPS62142 Product Folder : http://www.ti.com/product/tps62142 : contains the data sheet and other resources.

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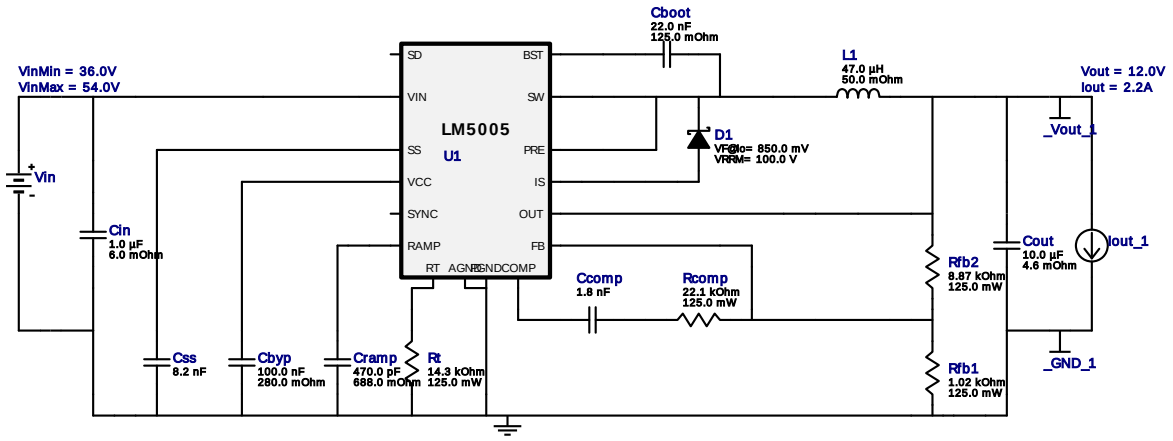
TEXAS INSTRUMENTS

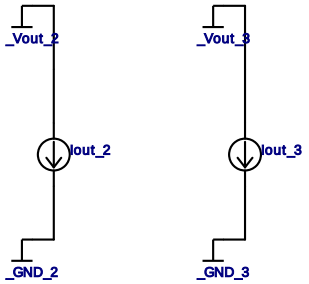
WEBENCH® 设计报告

VinMin = 36.0V
VinMax = 54.0V
Vout = 12.0V
Iout = 2.2A

Device = LM5005MH/NOPB
Topology = Buck
创建 = 5/15/13 7:05:18 AM
BOM成本 = $2.94
Total Pd = 2.79W
大小 = 733.0mm2
BOM 数量 = 16

Design : 3728439/29 LM5005MH/NOPB
LM5005MH/NOPB 36.0V-54.0V to 12.0V @ 2.2A





电气材料清单

#	名称	制造商	零件编号	属性	Qty	Price	大小
1.	Cboot	Kemet	C0805C223K5RACTU Series= X7R	Cap= 22.0 nF ESR= 125.0 mOhm VDC= 50.0 V IRMS= 645.0 mA	1	$0.01	0805 13mm2
2.	Cbyp	AVX	08053C104KAT2A Series= X7R	Cap= 100.0 nF ESR= 280.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.01	0805 13mm2
3.	Ccomp	MuRata	GRM033R71C182KA88D Series= X7R	Cap= 1.8 nF VDC= 16.0 V IRMS= 0.0 A	1	$0.01	0201 6mm2
4.	Cin	TDK	C3216X7R2A105M Series= 285	Cap= 1.0 µF ESR= 6.0 mOhm VDC= 100.0 V IRMS= 4.5 A	1	$0.11	1206 19mm2
5.	Cout	TDK	C3216X5R1C106M Series= X5R	Cap= 10.0 µF ESR= 4.6 mOhm VDC= 16.0 V IRMS= 2.7 A	3	$0.06	1206 19mm2
6.	Cramp	Kemet	C0805C471K5RACTU Series= X7R	Cap= 470.0 pF ESR= 688.0 mOhm VDC= 50.0 V IRMS= 213.0 mA	1	$0.01	0805 13mm2

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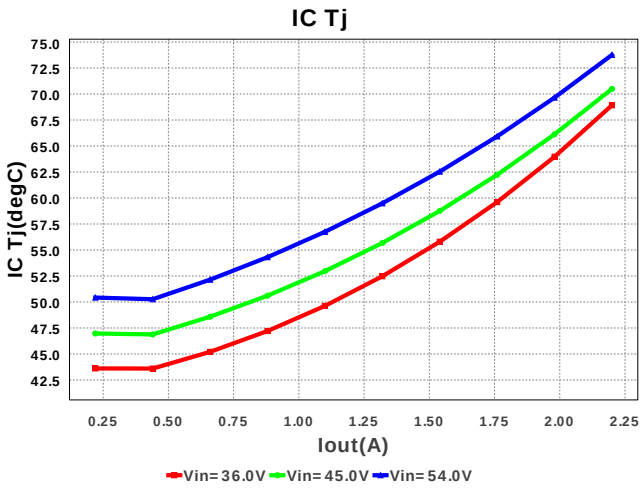
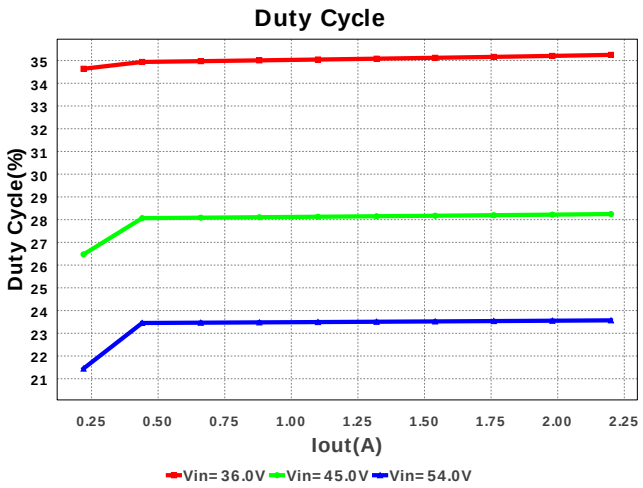
#	名称	制造商	零件编号	属性	Qty	Price	大小
7.	Css	MuRata	GRM155R71E822KA01D Series= X7R	Cap= 8.2 nF VDC= 25.0 V IRMS= 0.0 A	1	$0.01	0402 8mm2
8.	D1	Micro Commercial Components	SK310A-TP	VF@Io= 850.0 mV VRRM= 100.0 V	1	$0.10	SMA 37mm2
9.	L1	Coilcraft	DO5040H-473MLB	L= 47.0 µH DCR= 50.0 mOhm	1	$0.71	DO5040H 445mm2
10.	Rcomp	Vishay-Dale	CRCW080522K1FKEA Series= CRCW..e3	Res= 22.1 kOhm Power= 125.0 mW Tolerance= 1.0%	1	$0.01	0805 13mm2
11.	Rfb1	Vishay-Dale	CRCW08051K02FKEA Series= CRCW..e3	Res= 1.02 kOhm Power= 125.0 mW Tolerance= 1.0%	1	$0.01	0805 13mm2
12.	Rfb2	Vishay-Dale	CRCW08058K87FKEA Series= CRCW..e3	Res= 8.87 kOhm Power= 125.0 mW Tolerance= 1.0%	1	$0.01	0805 13mm2
13.	Rt	Vishay-Dale	CRCW080514K3FKEA Series= CRCW..e3	Res= 14.3 kOhm Power= 125.0 mW Tolerance= 1.0%	1	$0.01	0805 13mm2
14.	U1	Texas Instruments	LM5005MH/NOPB	Switcher	1	$1.75	MXA20A 71mm2





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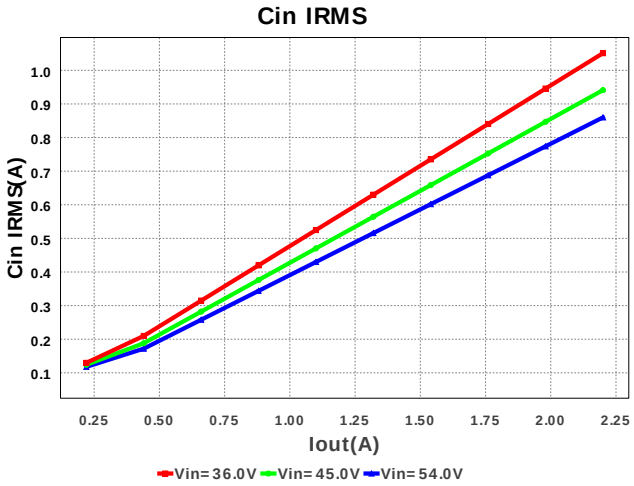

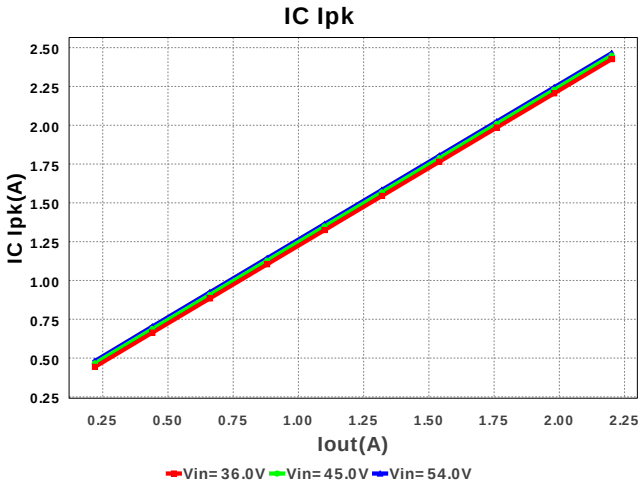

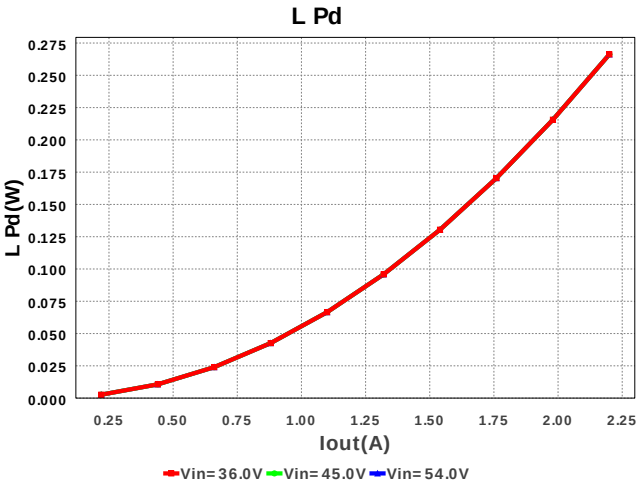

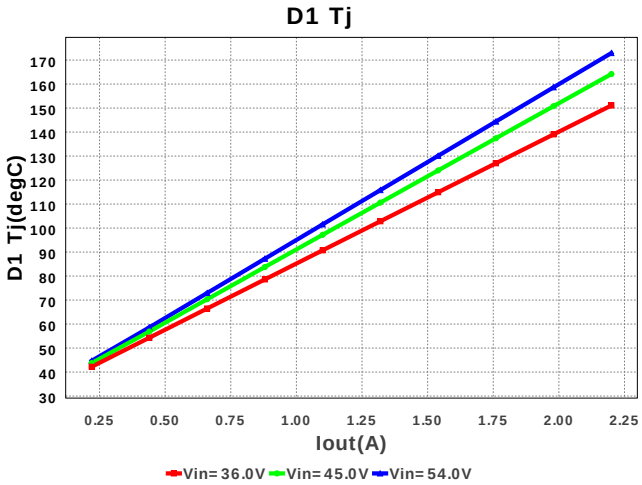

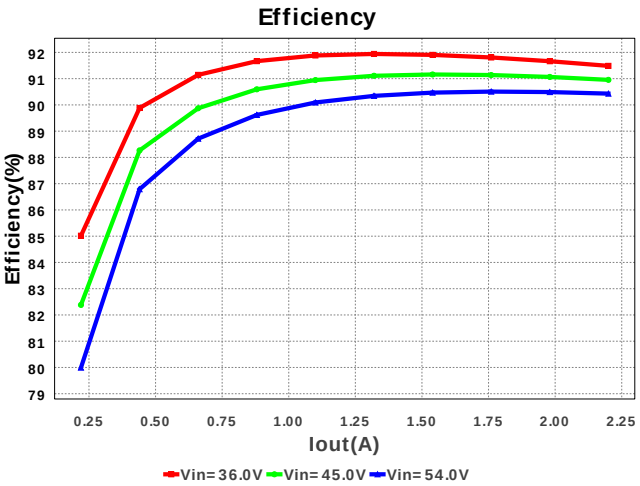

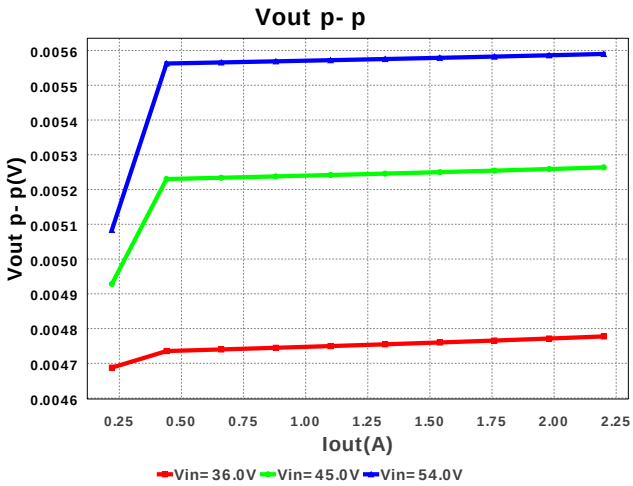

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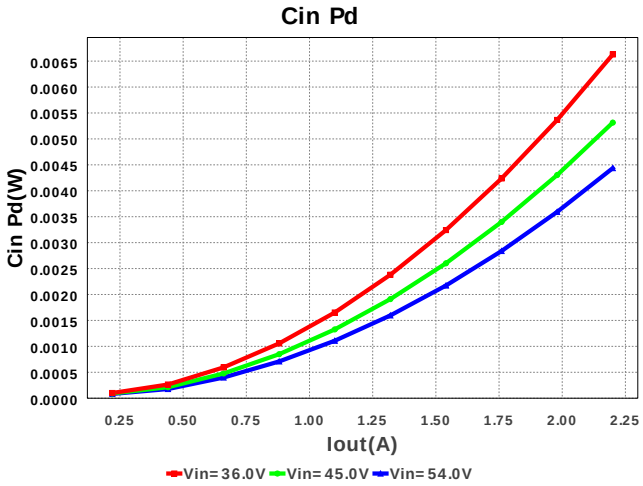

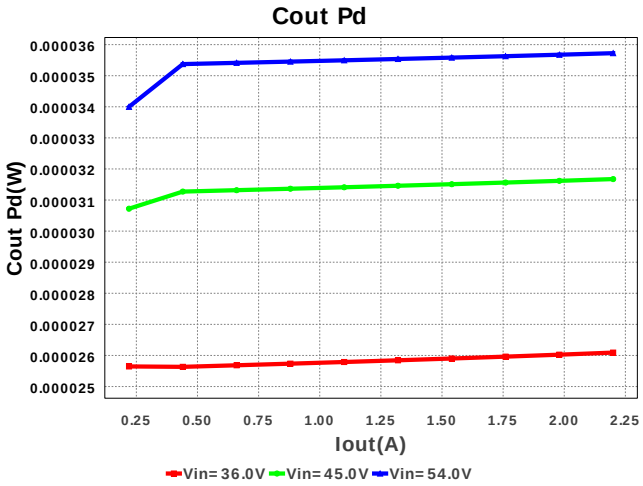

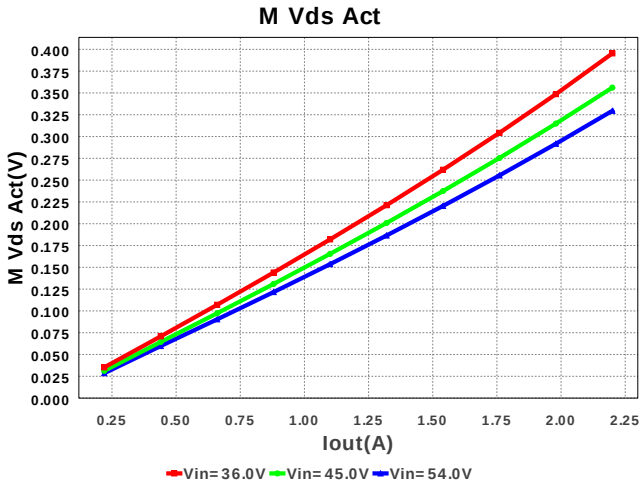

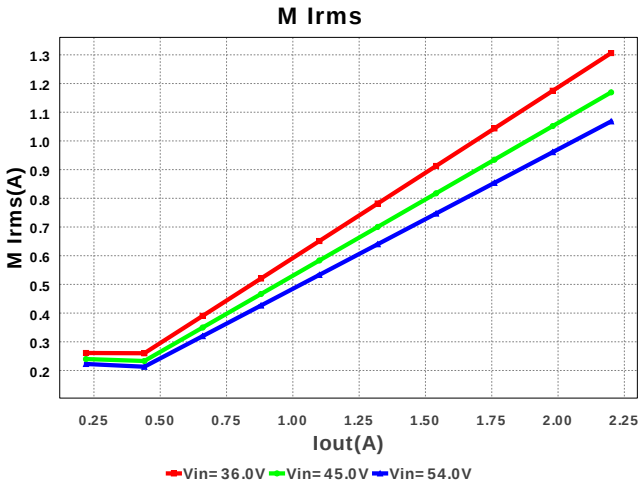

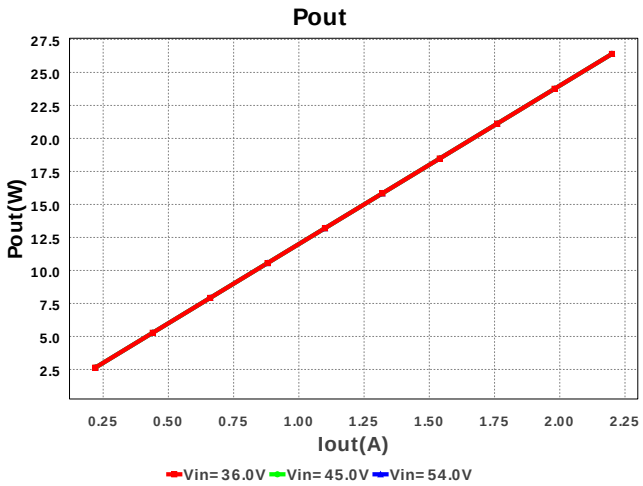

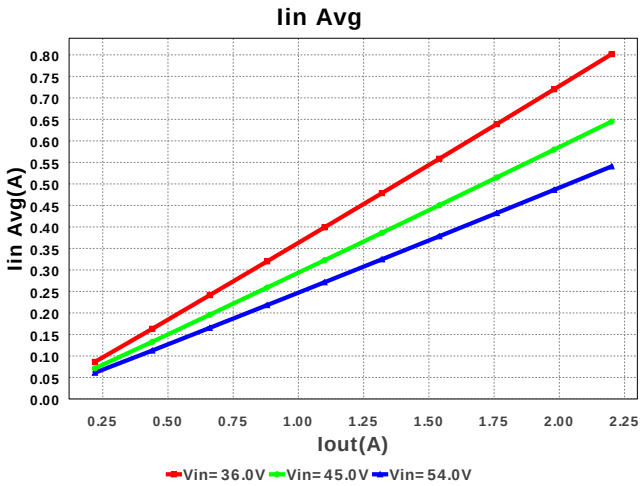

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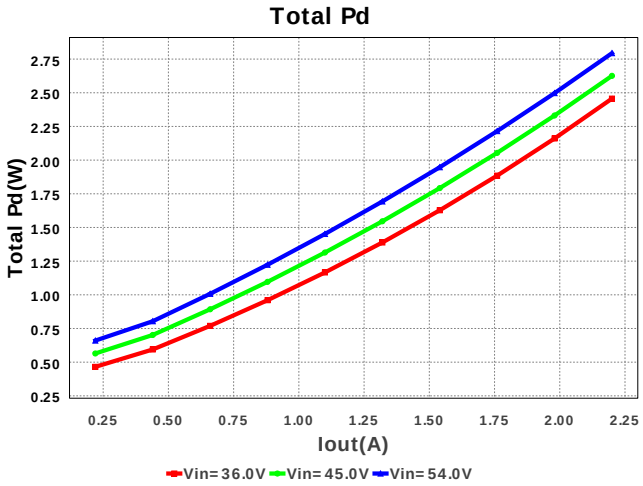

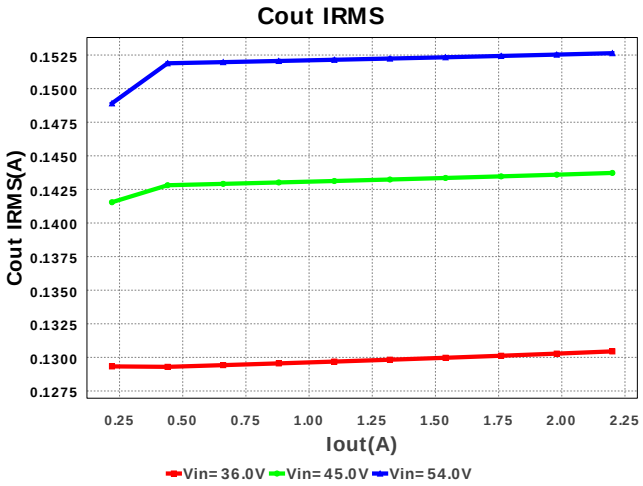

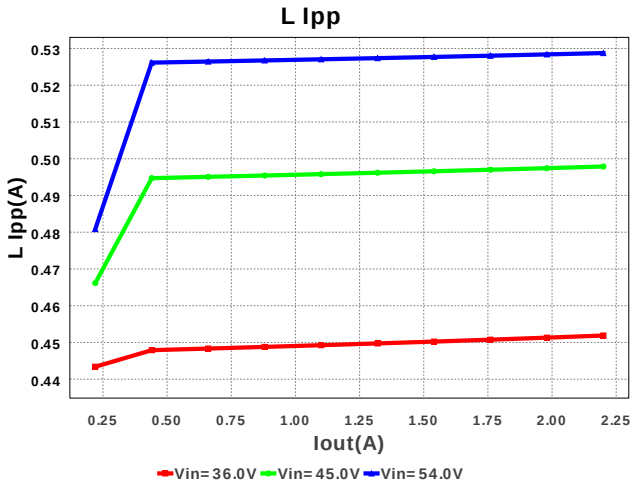

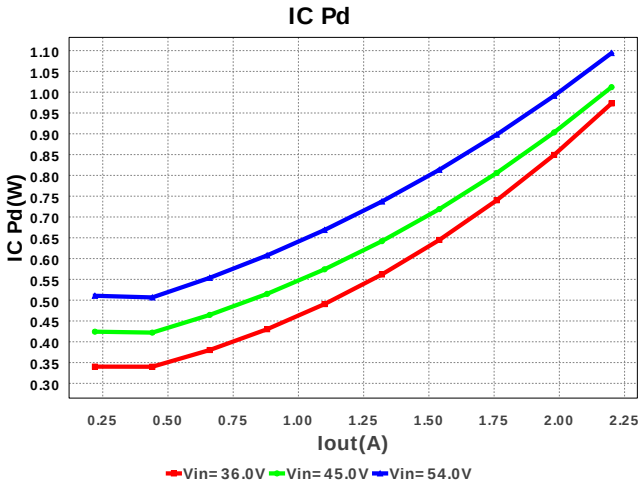

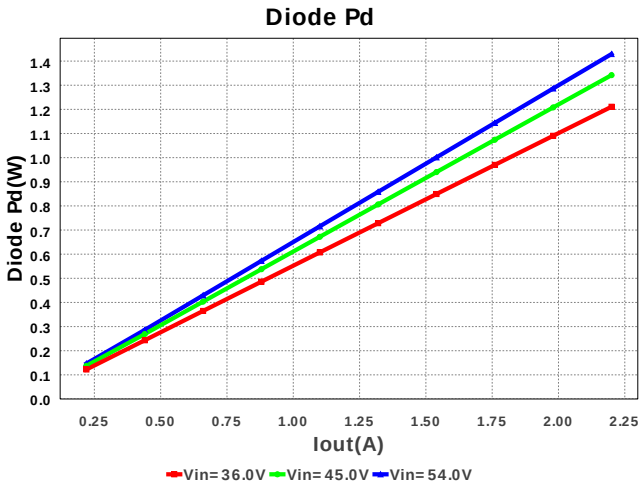

工作数值

#	名称	数值	类别	说明
1.	Cin IRMS	859.864 mA	Current	输入电容器均方根纹波电流
2.	Cout IRMS	152.639 mA	Current	输出电容器均方根纹波电流
3.	IC Ipk	2.463 A	Current	电路内的峰值开关电流
4.	Iin Avg	540.63 mA	Current	平均输入电流
5.	L Ipp	528.756 mA	Current	峰值到峰值电感器纹波电流
6.	M1 Irms	1.068 A	Current	Q Iavg
7.	BOM 数量	16	General	Total Design BOM count
8.	大小	733.0 mm2	General	BOM组件的总所占面积
9.	频率	398.327 kHz	General	开关频率
10.	IC Tolerance	18.0 mV	General	IC Feedback Tolerance
11.	M Vds Act	329.512 mV	General	Voltage drop across the MosFET

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#	名称	数值	类别	说明
12.	模式	CCM	General	传导模式
13.	Pout	26.4 W	General	总输出功率
14.	总 BOM	$2.94	General	Total BOM Cost
15.	D1 Tj	172.926 degC	Op_Point	D1接点温度
16.	Vout OP	12.0 V	Op_Point	Operational Output Voltage
17.	占空比	23.569 %	Op_point	占空比
18.	效率	90.43 %	Op_point	稳态效率
19.	IC Tj	73.763 degC	Op_point	电路接点温度
20.	ICThetaJA	40.0 degC/W	Op_point	电路接点到环境热敏电阻
21.	IOUT_OP	2.2 A	Op_point	Iout 操作点
22.	VIN_OP	54.0 V	Op_point	Vin操作点
23.	Vout p-p	5.59 mV	Op_point	峰值到峰值输出纹波电压
24.	Cin Pd	4.436 mW	Power	输入电容器功率耗散
25.	Cout Pd	35.724 µW	Power	输出电容器功率耗散
26.	二极管 Pd	1.429 W	Power	二极管功率耗散
27.	IC Pd	1.094 W	Power	电路功率耗散
28.	L Pd	266.2 mW	Power	电感器功率耗散
29.	整体 Pd	2.794 W	Power	总功率耗散

设计输入

#	名称	数值	说明
1.	输出电流	2.2 A	最大输出电流
2.	Iout1	2.2 Amps	Output Current #1
3.	Vin 最大	54.0 V	最高输入电压
4.	Vin 最小	36.0 V	最低输入电压
5.	输出电压:	12.0 V	输出电压
6.	Vout1	12.0 Volt	Output Voltage #1
7.	base_pn	LM5005	美国国家半导体的产品编号
8.	源	DC	输入源类别
9.	工作环境温度	30.0 degC	环境温度

设计协助

1. LM5005 Product Folder : http://www.ti.com/product/lm5005 : contains the data sheet and other resources.

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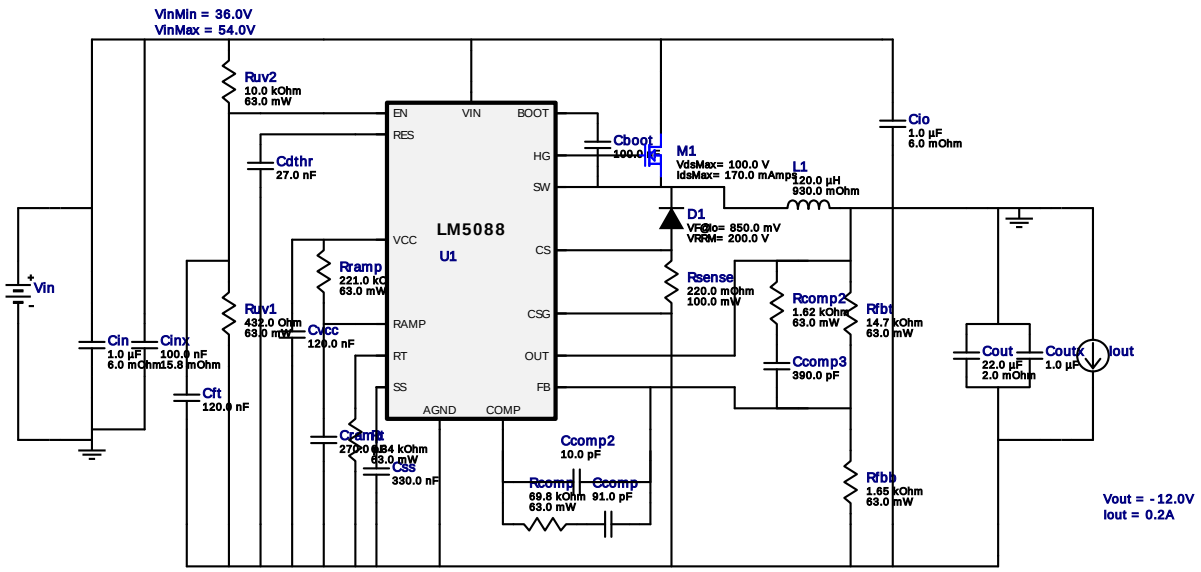
TEXAS INSTRUMENTS

WEBENCH ® 设计报告

VinMin = 36.0V
VinMax = 54.0V
Vout = -12.0V
Iout = 0.2A

Device = LM5088MH-1/NOPB
Topology = Inverting_Buck_Boost
创建 = 5/15/13 7:05:22 AM
BOM成本 = $2.61
Total Pd = 0.82W
大小 = 398.0mm2
BOM 数量 = 27

Design : 3728439/30 LM5088MH-1/NOPB
LM5088MH-1/NOPB 36.0V-54.0V to -12.0V @ 0.2A



电气材料清单

#	名称	制造商	零件编号	属性	Qty	Price	大小
1.	Cboot	MuRata	GRM188R72A104KA35D Series= X7R	Cap= 100.0 nF VDC= 100.0 V IRMS= 0.0 A	1	$0.03	0603 10mm2
2.	Ccomp	MuRata	GRM1555C1H910JA01D Series= C0G/NP0	Cap= 91.0 pF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0402 8mm2
3.	Ccomp2	Yageo America	CC0805JRNP09BN100 Series= C0G/NP0	Cap= 10.0 pF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 13mm2
4.	Ccomp3	Yageo America	CC0805KRX7R9BB391 Series= X7R	Cap= 390.0 pF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 13mm2
5.	Cdthr	MuRata	GRM033C80G273KE01D Series= 379	Cap= 27.0 nF VDC= 4.0 V IRMS= 0.0 A	1	$0.01	0201 6mm2
6.	Cft	MuRata	GRM155R61A124KE19D Series= X5R	Cap= 120.0 nF VDC= 10.0 V IRMS= 0.0 A	1	$0.01	0402 8mm2
7.	Cin	TDK	C3216X7R2A105M Series= 285	Cap= 1.0 µF ESR= 6.0 mOhm VDC= 100.0 V IRMS= 4.5 A	1	$0.11	1206 19mm2
8.	Cinx	TDK	C2012X7R2A104K Series= X7R	Cap= 100.0 nF ESR= 15.8 mOhm VDC= 100.0 V IRMS= 0.0 A	1	$0.03	0805 13mm2
9.	Cio	TDK	C3216X7R2A105M Series= 285	Cap= 1.0 µF ESR= 6.0 mOhm VDC= 100.0 V IRMS= 4.5 A	1	$0.11	1206 19mm2

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#	名称	制造商	零件编号	属性	Qty	Price	大小
10.	Cout	MuRata	GRM32ER61C226KE20L Series= X5R	Cap= 22.0 µF ESR= 2.0 mOhm VDC= 16.0 V IRMS= 3.68 A	1	$0.30	1210 23mm2
11.	Coutx	MuRata	GRM188R61E105KA12D Series= X5R	Cap= 1.0 µF VDC= 25.0 V IRMS= 0.0 A	1	$0.02	0603 10mm2
12.	Cramp	Yageo America	CC0805KRX7R9BB271 Series= X7R	Cap= 270.0 pF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 13mm2
13.	Css	MuRata	GRM155C80J334KE01D Series= 379	Cap= 330.0 nF VDC= 6.3 V IRMS= 0.0 A	1	$0.01	0402 8mm2
14.	Cvcc	MuRata	GRM155R61A124KE19D Series= X5R	Cap= 120.0 nF VDC= 10.0 V IRMS= 0.0 A	1	$0.01	0402 8mm2
15.	D1	Rohm	RF071M2S	VF@Io= 850.0 mV VRRM= 200.0 V	1	$0.11	SOD-123 22mm2
16.	L1	Bourns	SDR0604-121KL	L= 120.0 µH DCR= 930.0 mOhm	1	$0.17	SDR0604 61mm2
17.	M1	Diodes Inc.	BSS123W-7-F	VdsMax= 100.0 V IdsMax= 170.0 mAmps	1	$0.08	SOT-323 18mm2
18.	Rcomp	Vishay-Dale	CRCW040269K8FKED Series= CRCW..e3	Res= 69.8 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 8mm2
19.	Rcomp2	Vishay-Dale	CRCW04021K62FKED Series= CRCW..e3	Res= 1.62 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 8mm2
20.	Rfbb	Vishay-Dale	CRCW04021K65FKED Series= CRCW..e3	Res= 1.65 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 8mm2
21.	Rfbt	Vishay-Dale	CRCW040214K7FKED Series= CRCW..e3	Res= 14.7 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 8mm2
22.	Rramp	Vishay-Dale	CRCW0402221KFKED Series= CRCW..e3	Res= 221.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 8mm2
23.	Rsense	Panasonic	ERJ-3RQFR22V Series= 227	Res= 220.0 mOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.02	0603 10mm2
24.	Rt	Vishay-Dale	CRCW04026K34FKED Series= CRCW..e3	Res= 6.34 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 8mm2
25.	Ruv1	Vishay-Dale	CRCW0402432RFKED Series= CRCW..e3	Res= 432.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 8mm2
26.	Ruv2	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 8mm2
27.	U1	Texas Instruments	LM5088MH-1/NOPB	Switcher	1	$1.47	MXA16A 59mm2

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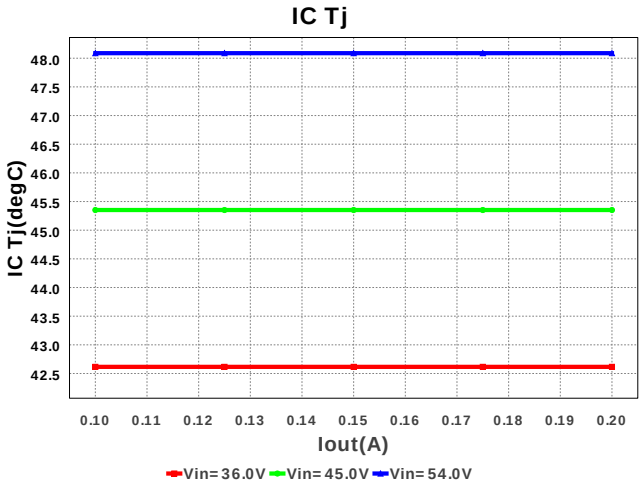

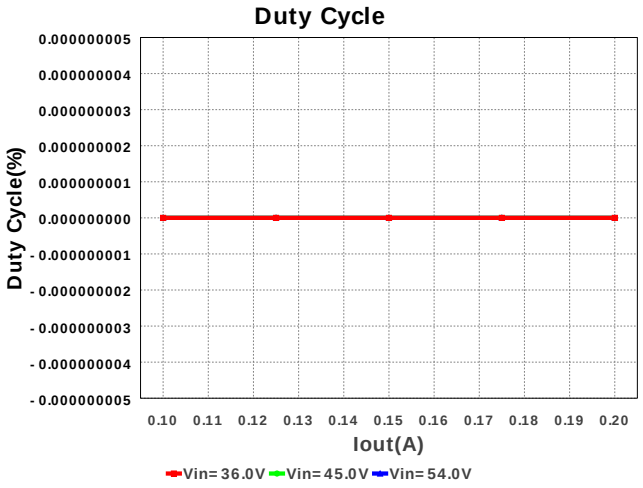

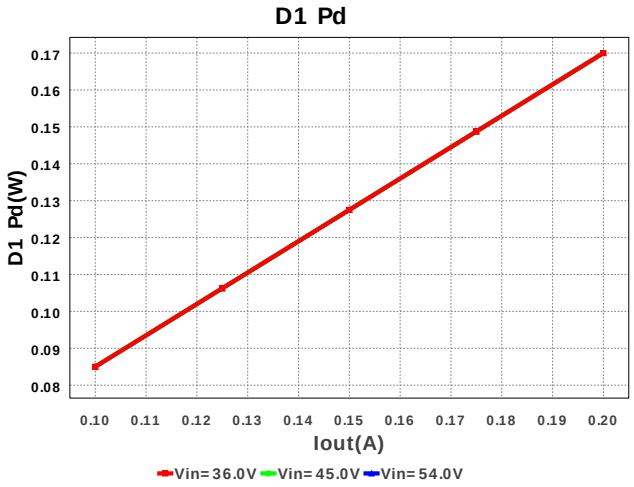

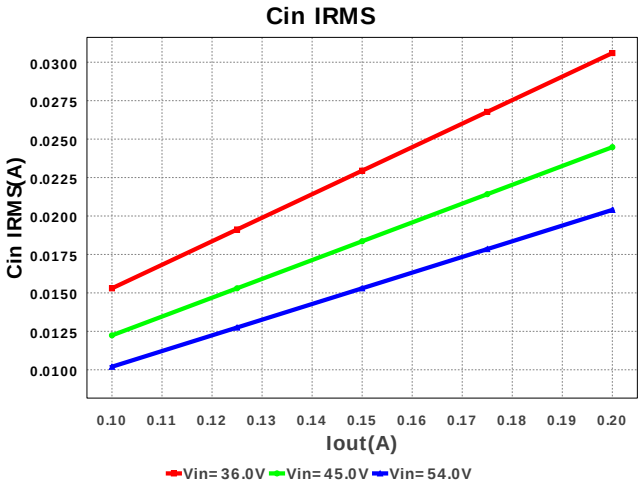

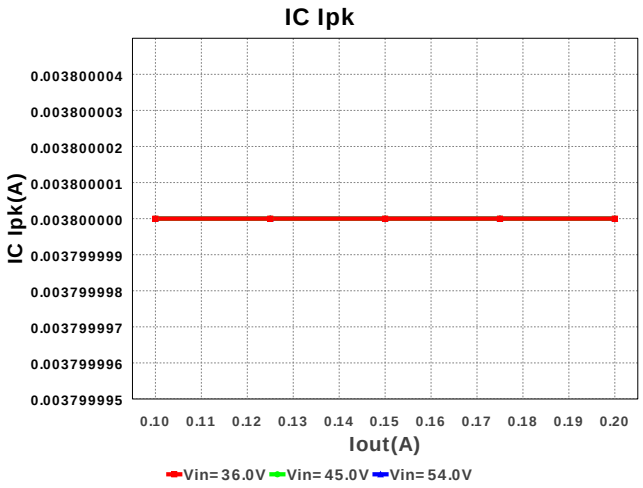

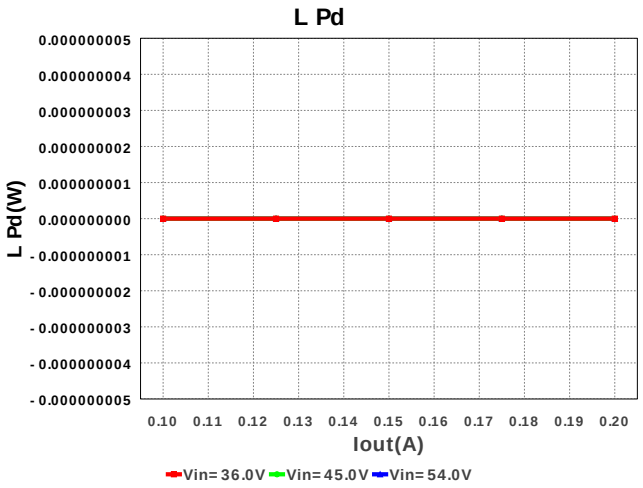

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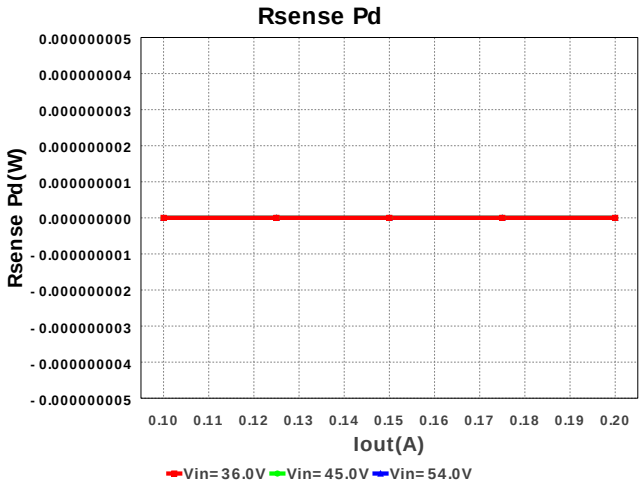

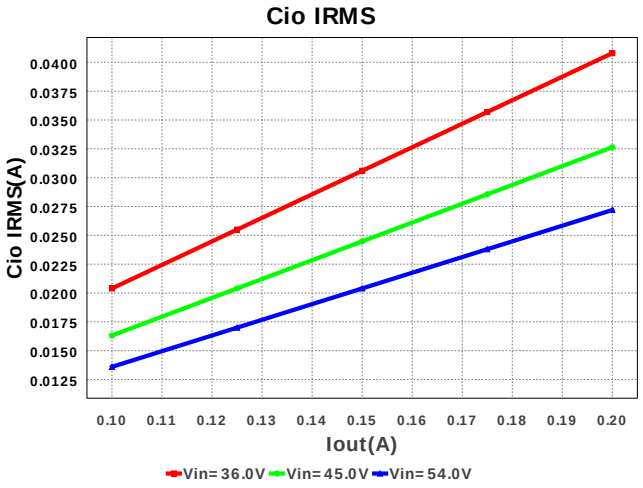

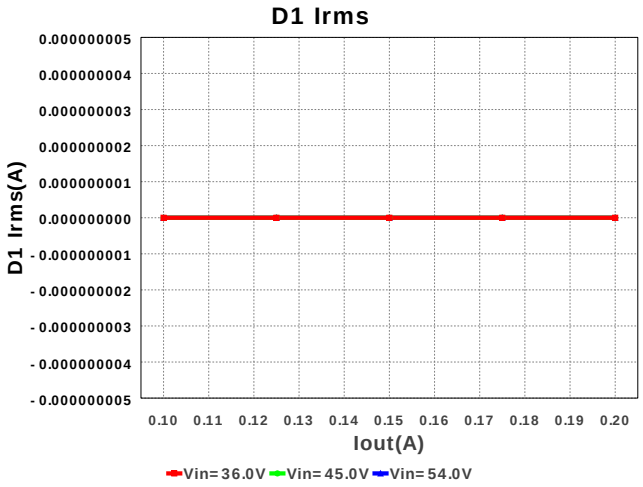

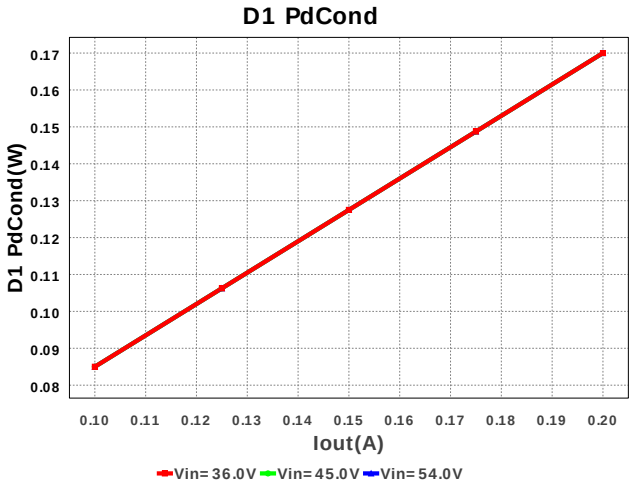

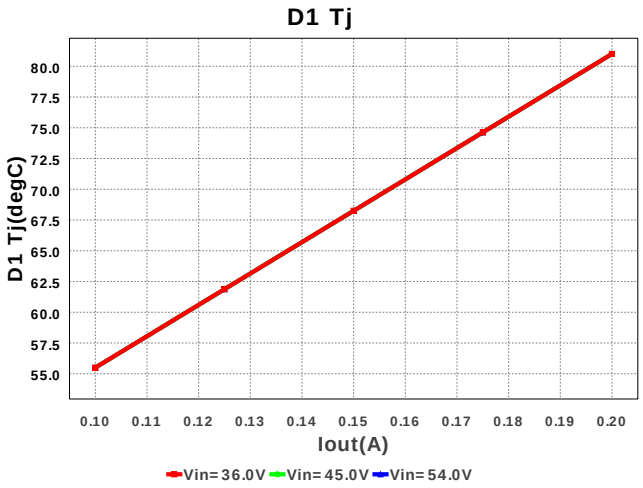

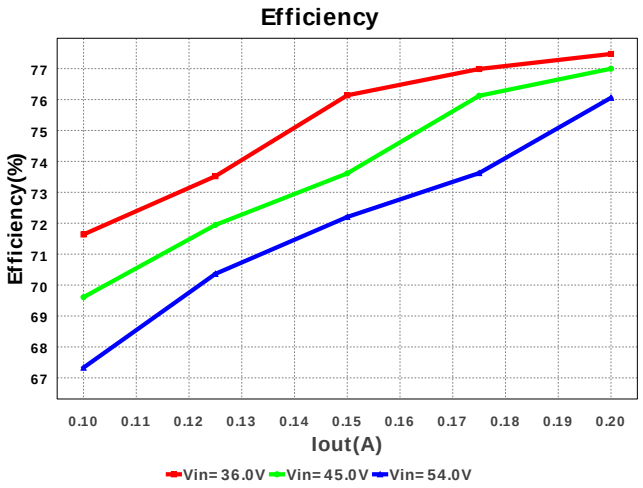

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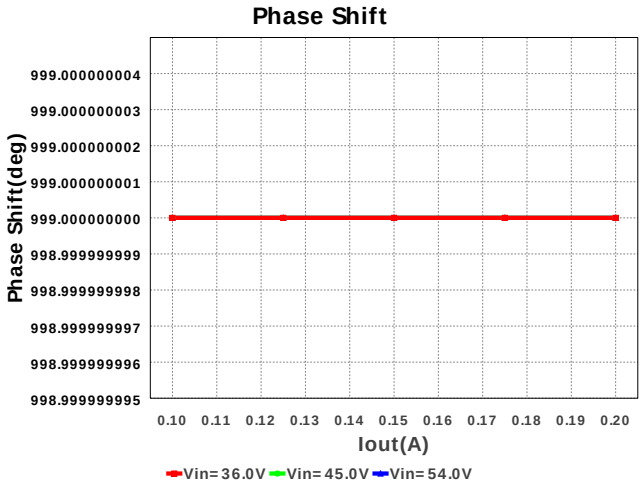

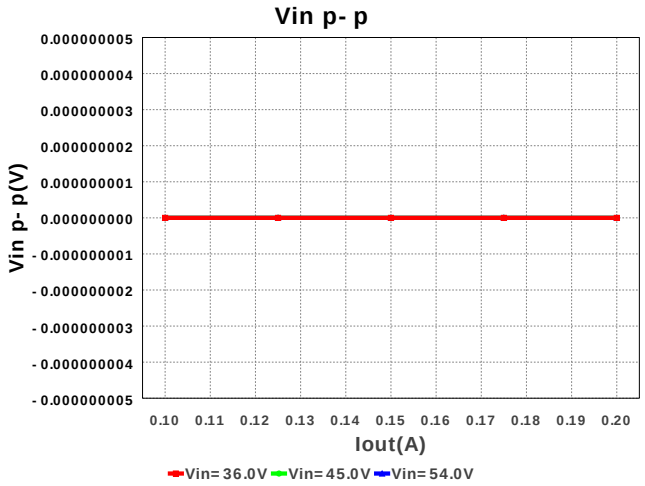

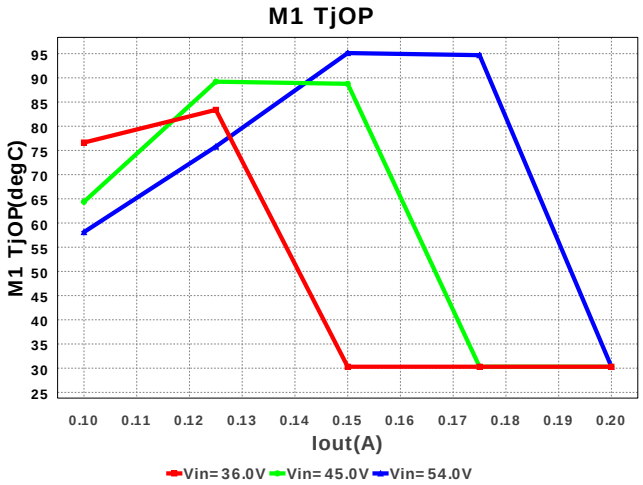

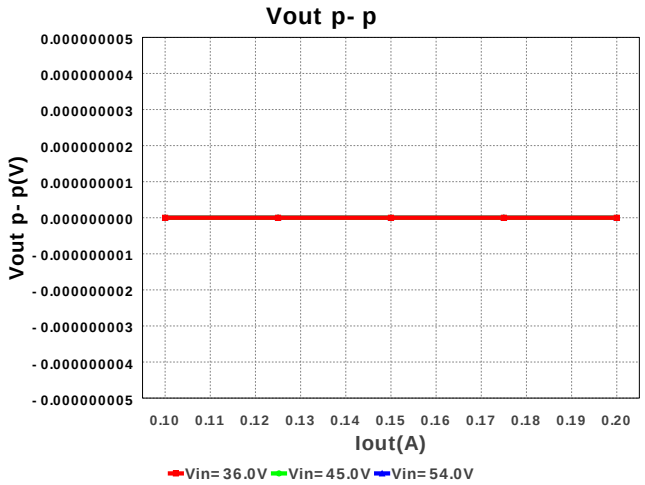

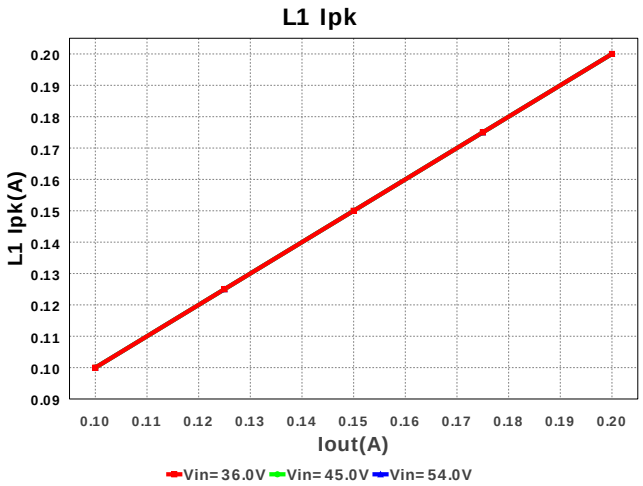

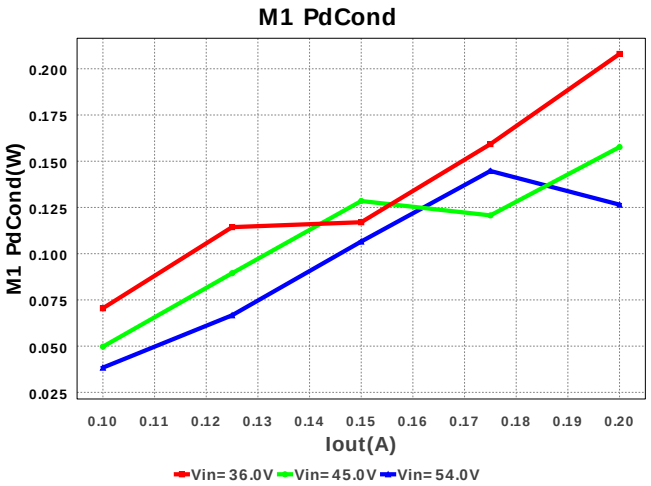

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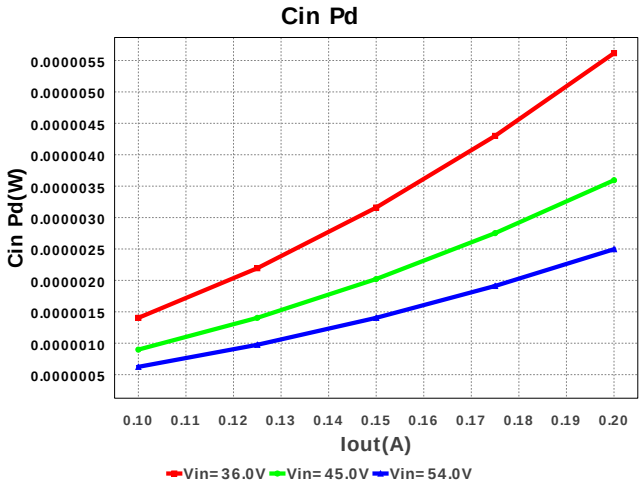

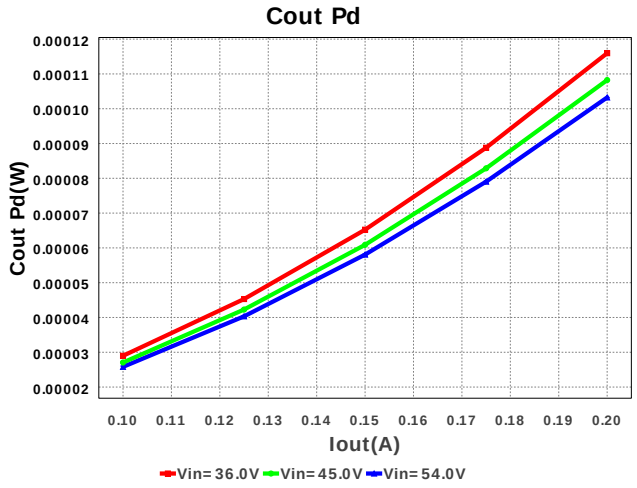

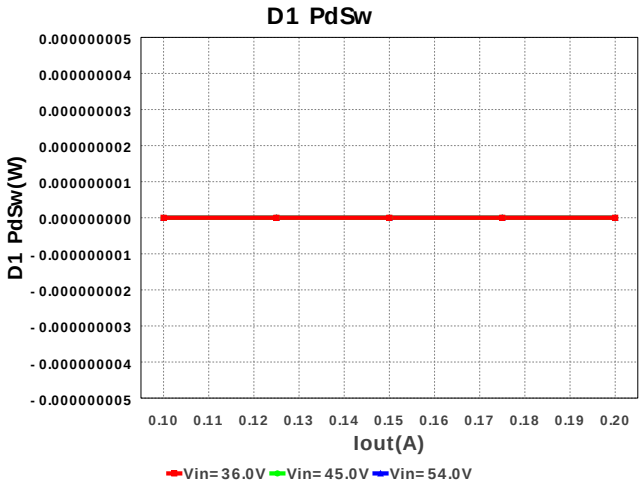

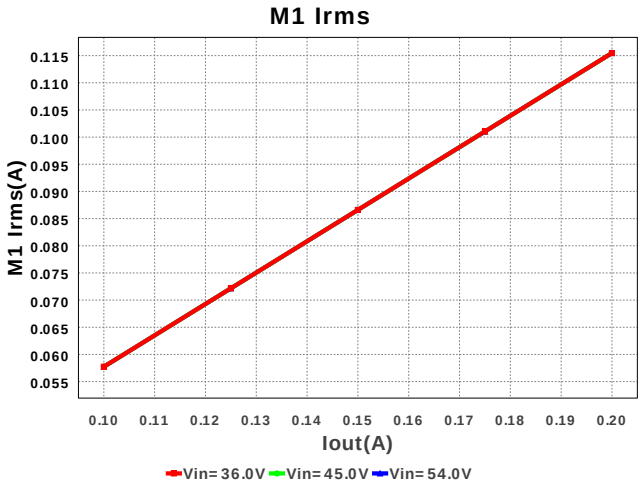

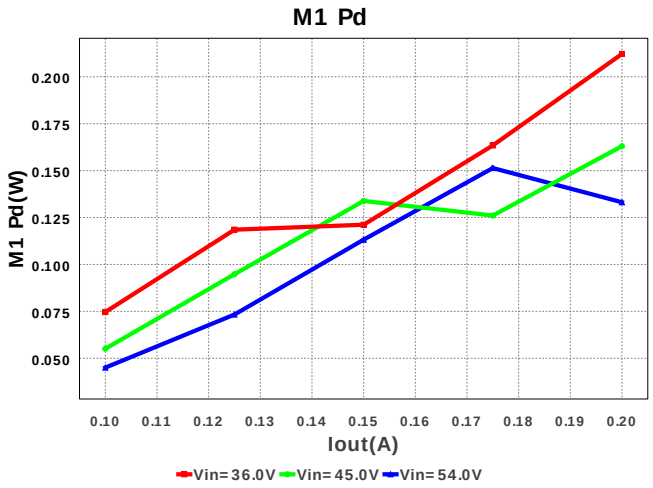

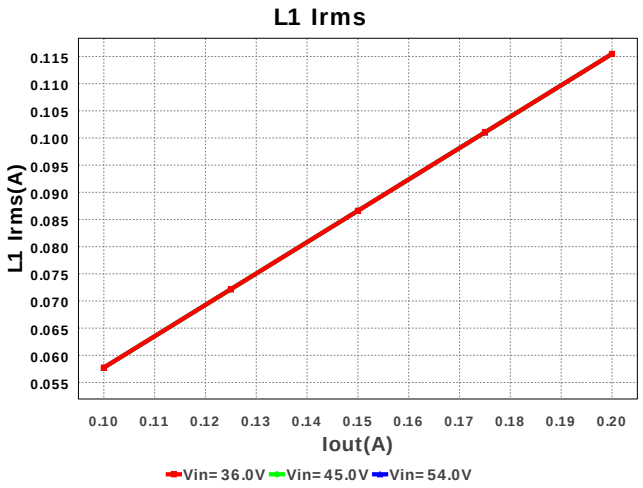

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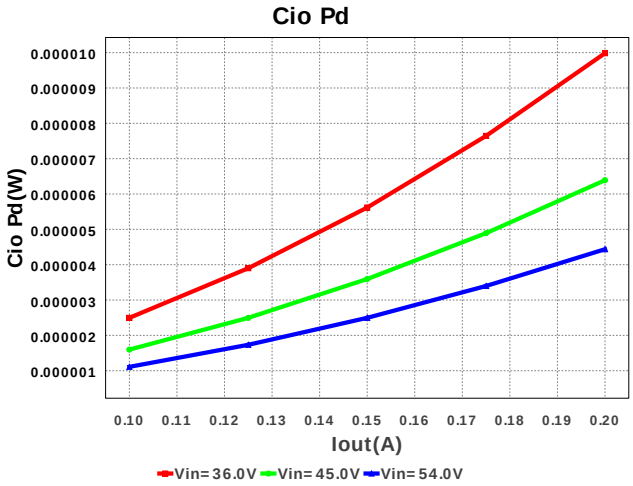

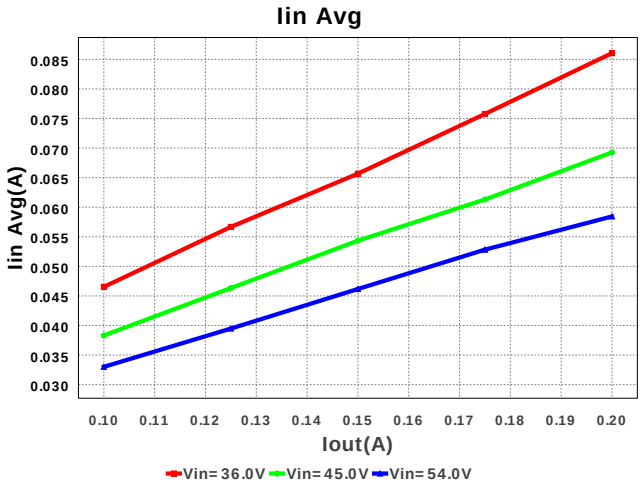

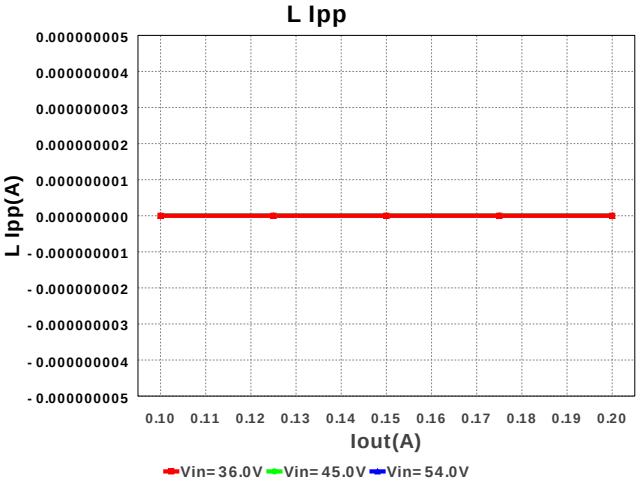

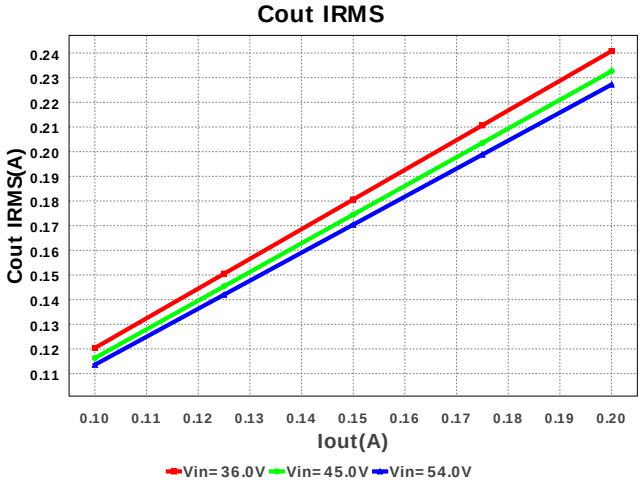

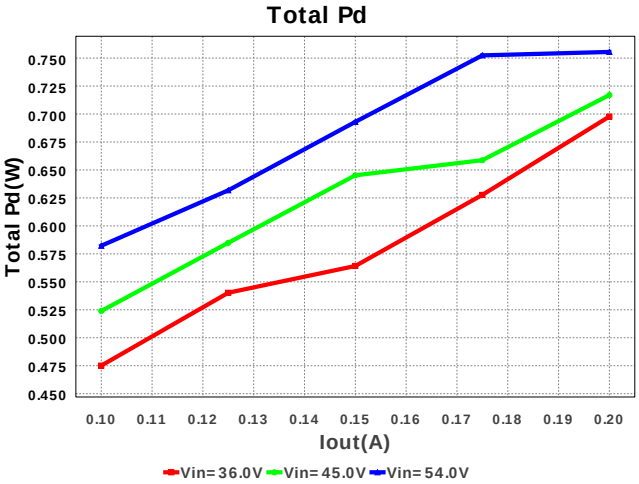

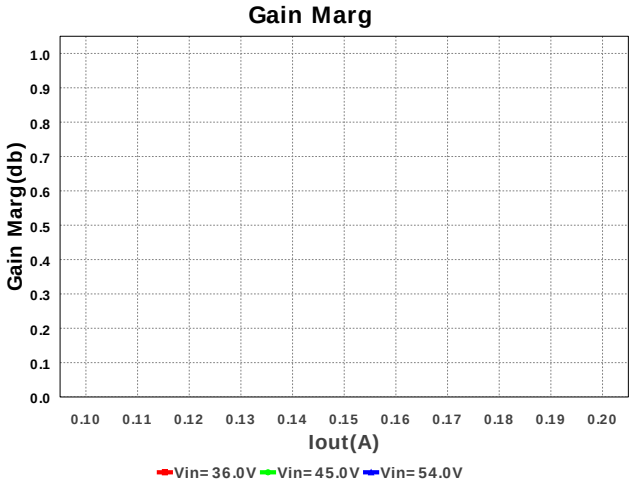

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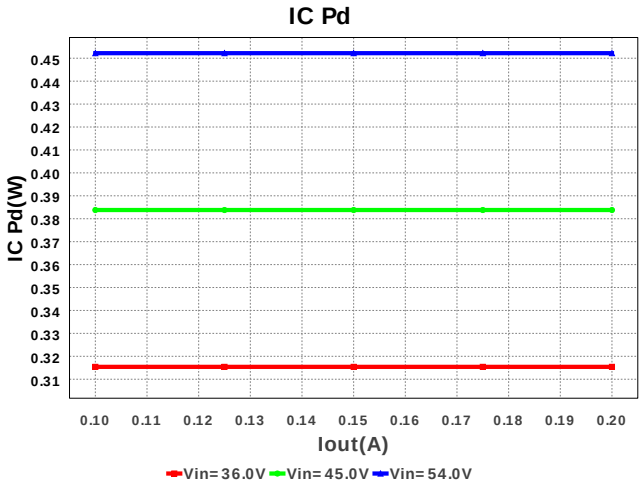

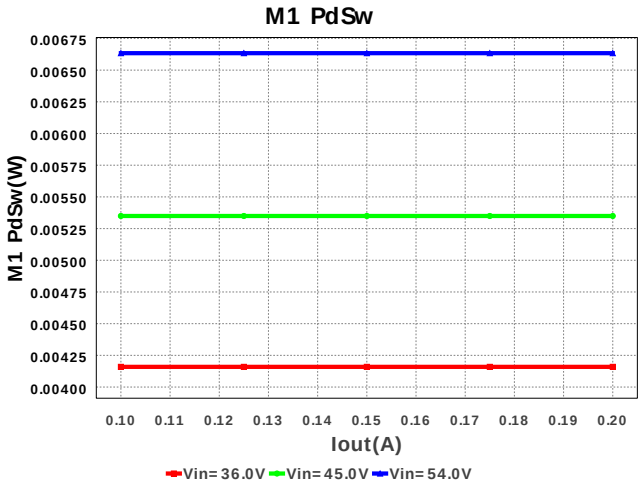

工作数值

#	名称	数值	类别	说明
1.	Cin IRMS	74.413 mA	Current	输入电容器均方根纹波电流
2.	Cio IRMS	68.839 mA	Current	Input to output capacitor RMS ripple current
3.	Cout IRMS	82.608 mA	Current	输出电容器均方根纹波电流
4.	D1 Irms	79.794 mA	Current	D1 Irms
5.	IC Ipk	3.8 mA	Current	电路内的峰值开关电流
6.	Iin Avg	59.567 mA	Current	平均输入电流
7.	L Ipp	107.352 mA	Current	峰值到峰值输出电感器纹波电流
8.	L1 Ipk	305.248 mA	Current	电感器峰值电流
9.	L1 Irms	176.235 mA	Current	电感器纹波电流
10.	M1 Irms	157.136 mA	Current	M1 MOSFET Irms
11.	BOM 数量	27	General	Total Design BOM count
12.	大小	398.0 mm2	General	BOM组件的总所占面积
13.	频率	797.5 kHz	General	开关频率
14.	IC Tolerance	18.0 mV	General	IC Feedback Tolerance
15.	模式	DCM	General	传导模式
16.	总 BOM	$2.61	General	Total BOM Cost
17.	D1 Tj	81.0 degC	Op_Point	D1接点温度
18.	Vin p-p	30.769 mV	Op_Point	峰值到峰值输入电压
19.	交叉频率	19.564 kHz	Op_point	波特图交叉频率
20.	占空比	20.5 %	Op_point	占空比
21.	效率	74.613 %	Op_point	稳态效率
22.	增益裕度	14.626 db	Op_point	波特图增益裕度
23.	IC Tj	48.088 degC	Op_point	电路接点温度
24.	IOUT_OP	200.0 mA	Op_point	Iout 操作点
25.	M1 TjOP	30.3 degC	Op_point	M1 MOSFET 接点温度
26.	相位裕度	50.807 deg	Op_point	波特图相位裕度
27.	相移	26.44 deg	Op_point	波特图相移
28.	VIN_OP	54.0 V	Op_point	Vin操作点
29.	Vout p-p	2.501 mV	Op_point	峰值到峰值输出纹波电压
30.	Cin Pd	33.224 µW	Power	输入电容器功率耗散
31.	Cio Pd	28.432 µW	Power	Input to output capacitor power dissipation
32.	Cout Pd	13.648 µW	Power	输出电容器功率耗散
33.	D1 Pd	170.0 mW	Power	二极管功率耗散
34.	D1 PdCond	170.0 mW	Power	二极管传导损耗
35.	D1 PdSw	0.0 W	Power	二极管开关损耗
36.	IC Pd	452.2 mW	Power	电路功率耗散
37.	L Pd	51.385 mW	Power	电感器功率耗散
38.	M1 Pd	133.151 mW	Power	M1 MOSFET 总功率耗散
39.	M1 PdCond	126.517 mW	Power	M1 MOSFET 传导损耗
40.	M1 PdSw	6.634 mW	Power	M1 MOSFET 开关损耗
41.	Rsense Pd	9.617 mW	Power	LED 电流 Rsns 功率耗散
42.	整体 Pd	816.603 mW	Power	总功率耗散

设计输入

#	名称	数值	说明
1.	输出电流	200.0 mA	最大输出电流
2.	Iout1	200.0 mAmps	Output Current #1
3.	Vin 最大	54.0 V	最高输入电压
4.	Vin 最小	36.0 V	最低输入电压
5.	输出电压:	-12.0 V	输出电压
6.	Vout1	-12.0 Volt	Output Voltage #1

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#	名称	数值	说明
7.	base_pn	LM5088	美国国家半导体的产品编号
8.	源	DC	输入源类别
9.	工作环境温度	30.0 degC	环境温度

设计协助

1. LM5088 Product Folder : http://www.ti.com/product/lm5088 : contains the data sheet and other resources.

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