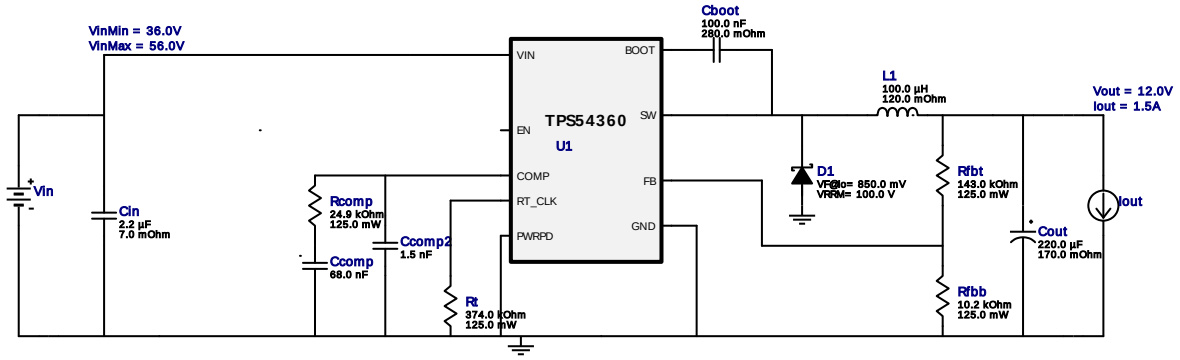
WEBENCH® 设计报告

VinMin = 36.0V
VinMax = 56.0V
Vout = 12.0V
Iout = 1.5A

Device = TPS54360DDAR
Topology = Buck
创建 = 5/13/13 9:39:48 PM
BOM成本 = $3.52
Total Pd = 1.31W
大小 = 762.0mm2
BOM 数量 = 12

Design : 3728439/23 TPS54360DDAR
TPS54360DDAR 36.0V-56.0V to 12.0V @ 1.5A



电气材料清单

#	名称	制造商	零件编号	属性	Qty	Price	大小
1.	Cboot	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
2.	Ccomp	MuRata	GRM155R61A683KA01D Series= X5R	Cap= 68.0 nF VDC= 10.0 V IRMS= 0.0 A	1	$0.01	0402 8mm2
3.	Ccomp2	Yageo America	CC0805KRX7R9BB152 Series= X7R	Cap= 1.5 nF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 13mm2
4.	Cin	MuRata	GRM32ER72A225KA35L Series= X7R	Cap= 2.2 µF ESR= 7.0 mOhm VDC= 100.0 V IRMS= 4.4 A	1	$0.38	1210 23mm2
5.	Cout	Nichicon	UUD1E221MNL1GS Series= uD	Cap= 220.0 µF ESR= 170.0 mOhm VDC= 25.0 V IRMS= 450.0 mA	1	$0.16	SM_RADIAL_8MM 113mm2
6.	D1	Micro Commercial Components	SK310A-TP	VF@Io= 850.0 mV VRRM= 100.0 V	1	$0.10	SMA 37mm2
7.	L1	Coilcraft	DO5040H-104MLB	L= 100.0 µH DCR= 120.0 mOhm	1	$0.71	DO5040H 445mm2
8.	Rcomp	Vishay-Dale	CRCW080524K9FKEA Series= CRCW..e3	Res= 24.9 kOhm Power= 125.0 mW Tolerance= 1.0%	1	$0.01	0805 13mm2
9.	Rfbb	Vishay-Dale	CRCW080510K2FKEA Series= CRCW..e3	Res= 10.2 kOhm Power= 125.0 mW Tolerance= 1.0%	1	$0.01	0805 13mm2
10.	Rfbt	Vishay-Dale	CRCW0805143KFKEA Series= CRCW..e3	Res= 143.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	$0.01	0805 13mm2

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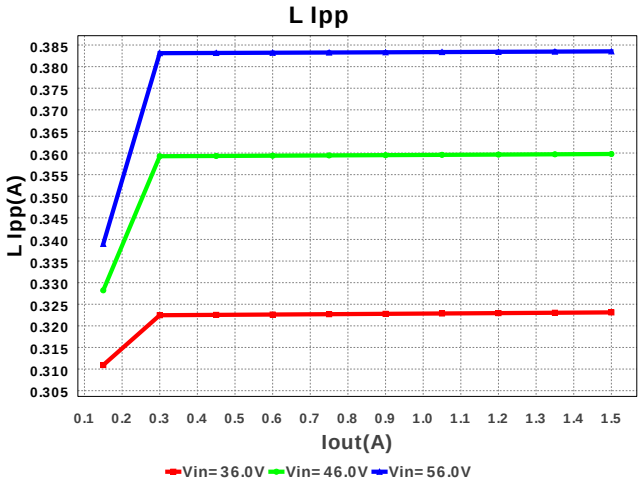
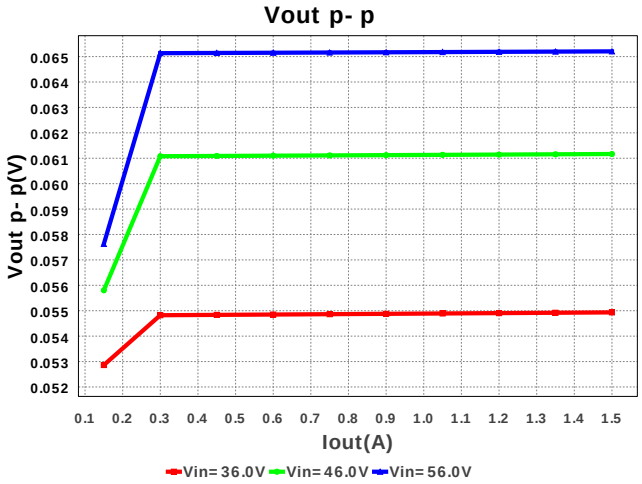
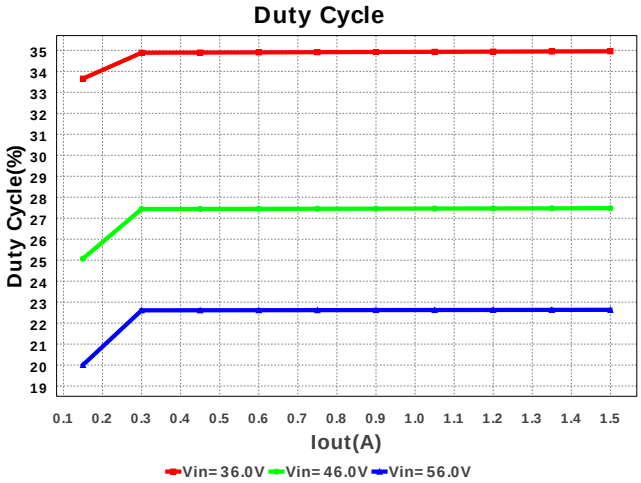
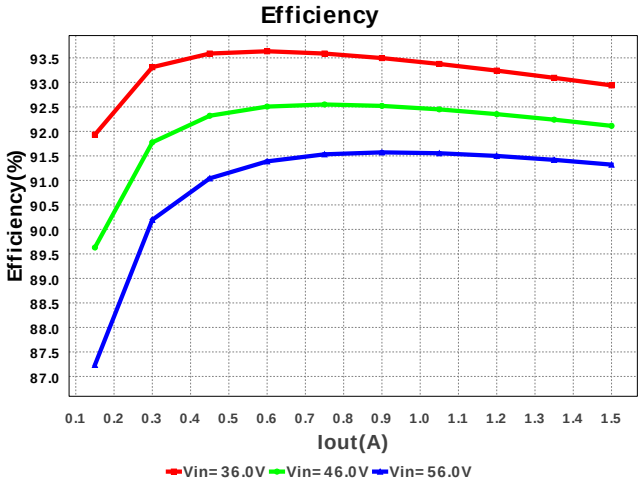
#	名称	制造商	零件编号	属性	Qty	Price	大小
11.	Rt	Vishay-Dale	CRCW0805374KFKEA Series= CRCW..e3	Res= 374.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	$0.01	0805 13mm2
12.	U1	Texas Instruments	TPS54360DDAR	Switcher	1	$2.10	R-PDSO-G8 57mm2









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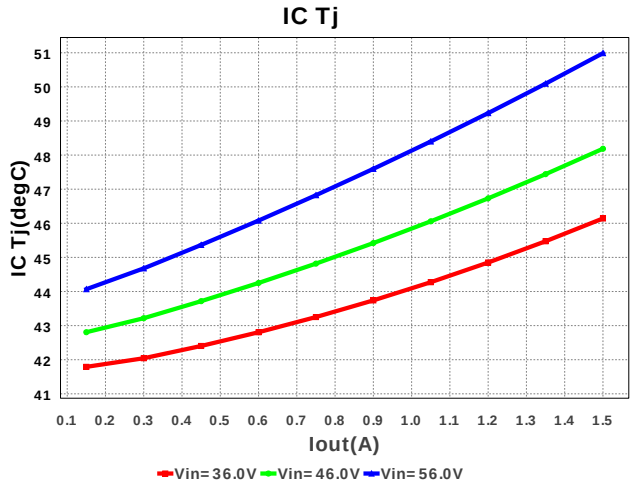

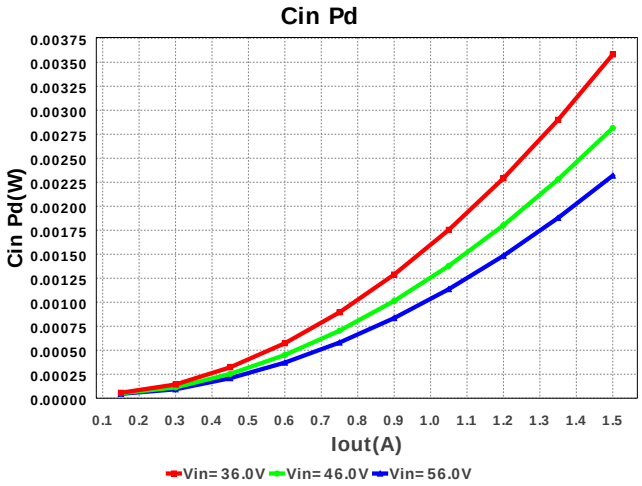

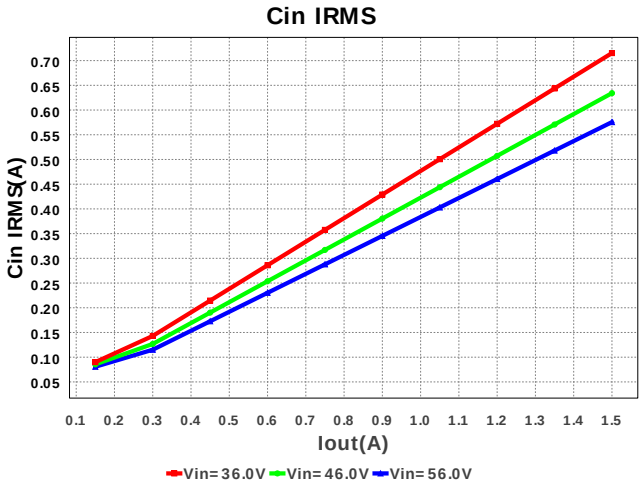

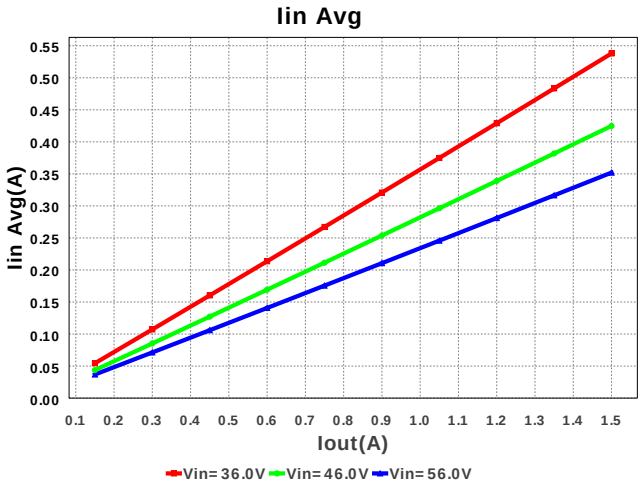

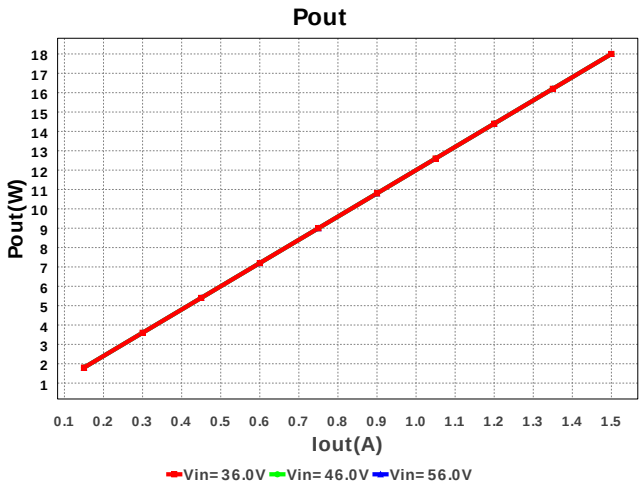

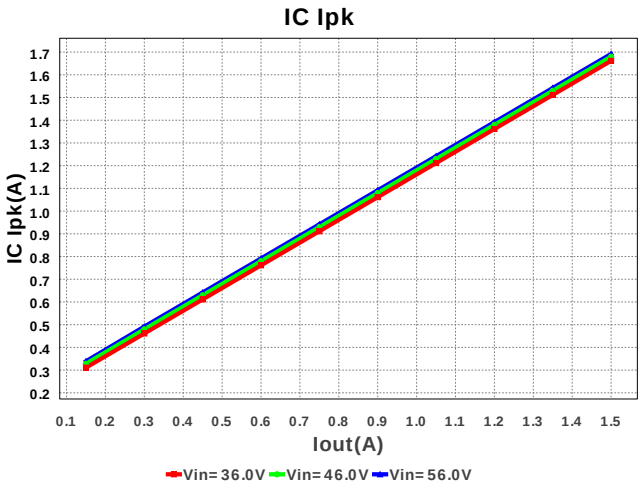

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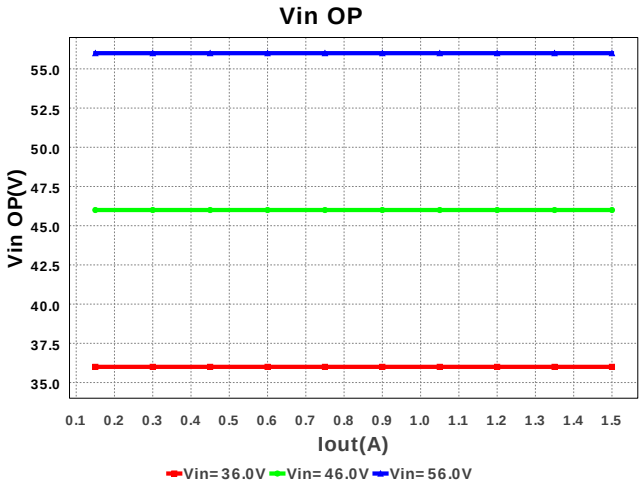

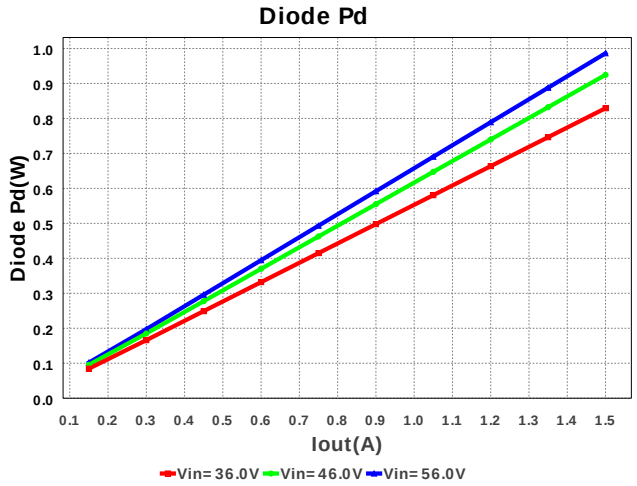

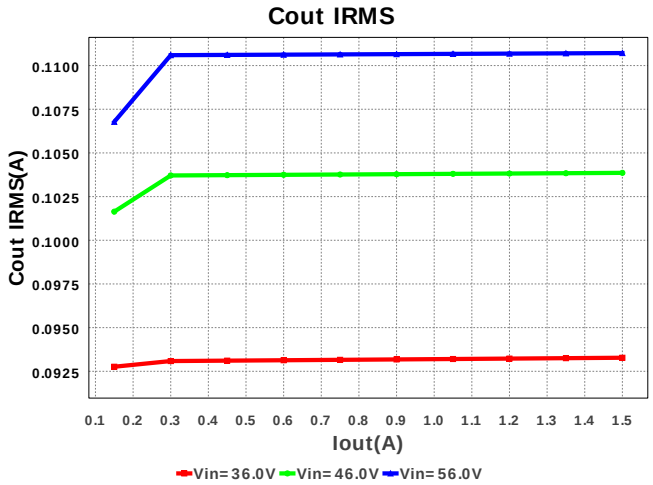

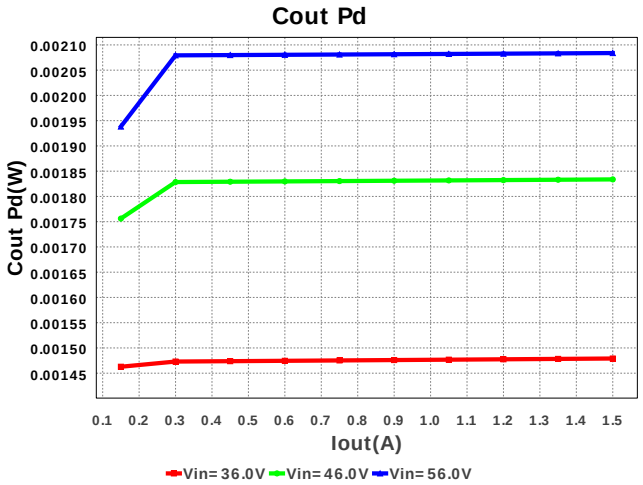

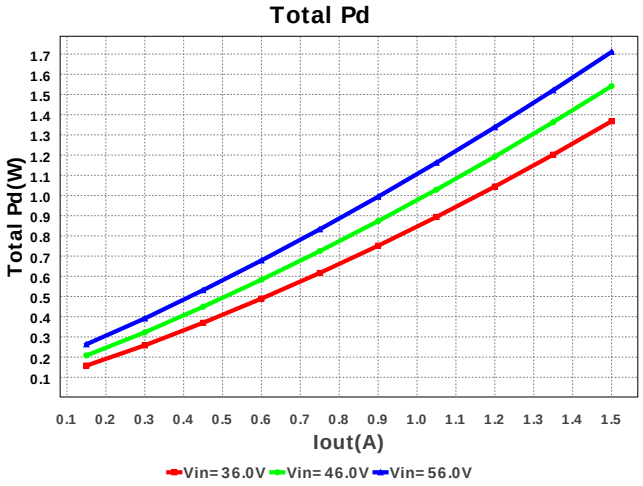

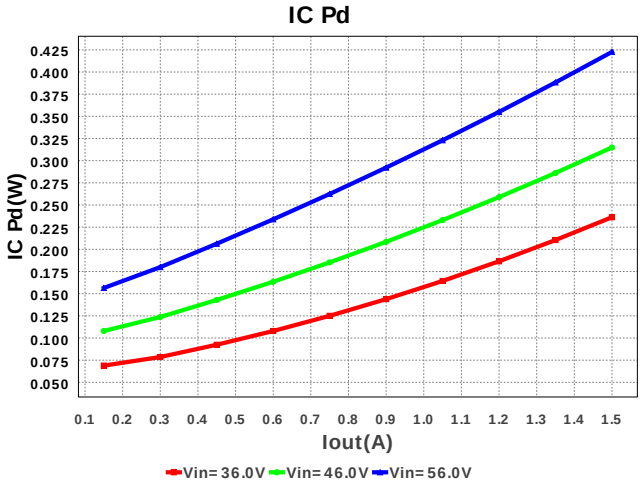

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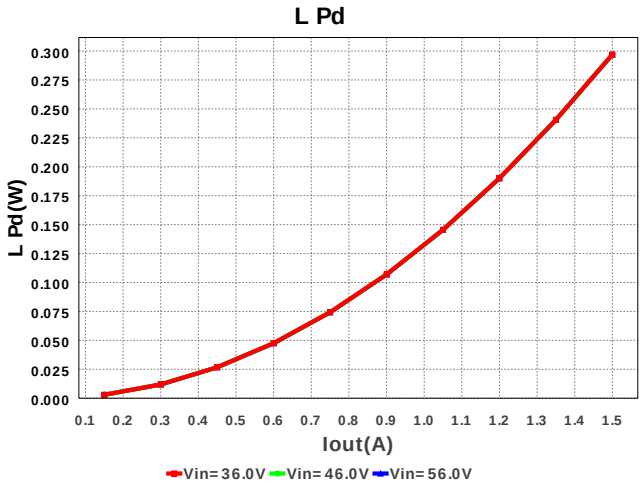

工作数值

#	名称	数值	类别	说明
1.	Cin IRMS	572.271 mA	Current	输入电容器均方根纹波电流
2.	Cout IRMS	109.187 mA	Current	输出电容器均方根纹波电流
3.	IC Ipk	1.689 A	Current	电路内的峰值开关电流
4.	Iin Avg	344.89 mA	Current	平均输入电流
5.	L Ipp	378.235 mA	Current	峰值到峰值电感器纹波电流
6.	BOM 数量	12	General	Total Design BOM count
7.	大小	762.0 mm2	General	BOM组件的总所占面积
8.	频率	257.851 kHz	General	开关频率
9.	模式	CCM	General	传导模式
10.	Pout	18.0 W	General	总输出功率
11.	总 BOM	$3.52	General	Total BOM Cost
12.	Vout OP	12.0 V	Op_Point	Operational Output Voltage
13.	交叉频率	4.865 kHz	Op_point	波特图交叉频率
14.	占空比	22.165 %	Op_point	占空比
15.	效率	93.197 %	Op_point	稳态效率
16.	IC Tj	50.893 degC	Op_point	电路接点温度
17.	ICThetaJA	26.0 degC/W	Op_point	电路接点到环境热敏电阻
18.	IOUT_OP	1.5 A	Op_point	Iout 操作点
19.	相位裕度	79.576 deg	Op_point	波特图相位裕度
20.	VIN_OP	56.0 V	Op_point	Vin操作点
21.	Vout p-p	64.305 mV	Op_point	峰值到峰值输出纹波电压
22.	Cin Pd	2.292 mW	Power	输入电容器功率耗散
23.	Cout Pd	2.027 mW	Power	输出电容器功率耗散
24.	二极管 Pd	593.75 mW	Power	二极管功率耗散
25.	IC Pd	418.947 mW	Power	电路功率耗散
26.	L Pd	297.0 mW	Power	电感器功率耗散
27.	整体 Pd	1.314 W	Power	总功率耗散

设计输入

#	名称	数值	说明
1.	输出电流	1.5 A	最大输出电流
2.	Iout1	1.5 Amps	Output Current #1
3.	Vin 最大	56.0 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	TPS54360	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	40.0 degC	环境温度

设计协助

1. TPS54360 Product Folder : http://www.ti.com/product/TPS54360 : contains the data sheet and other resources.

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