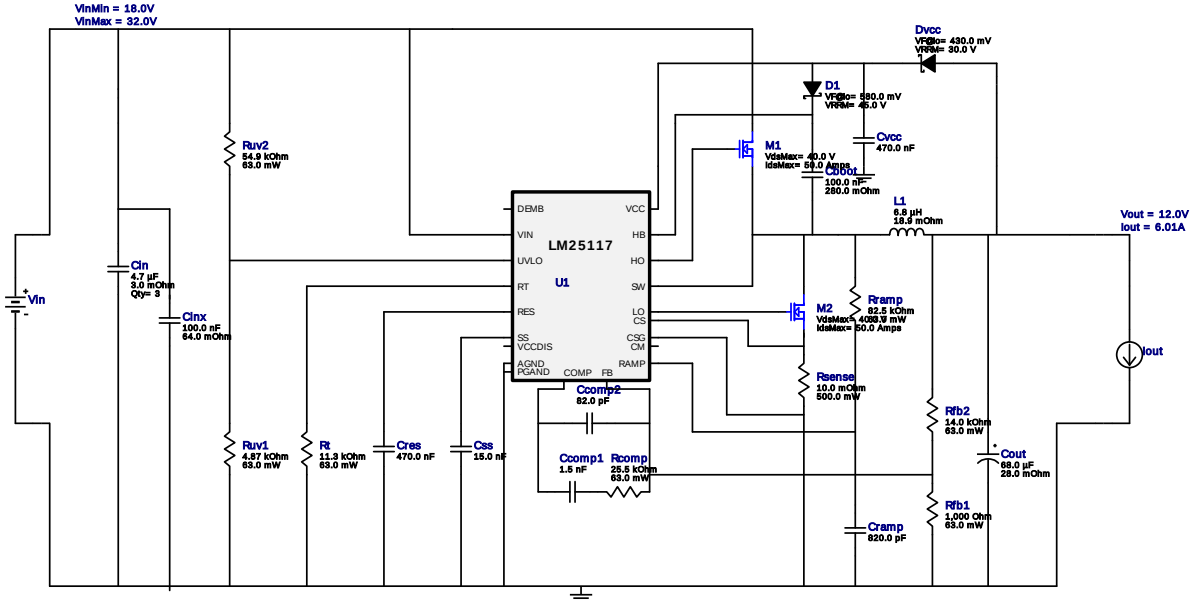


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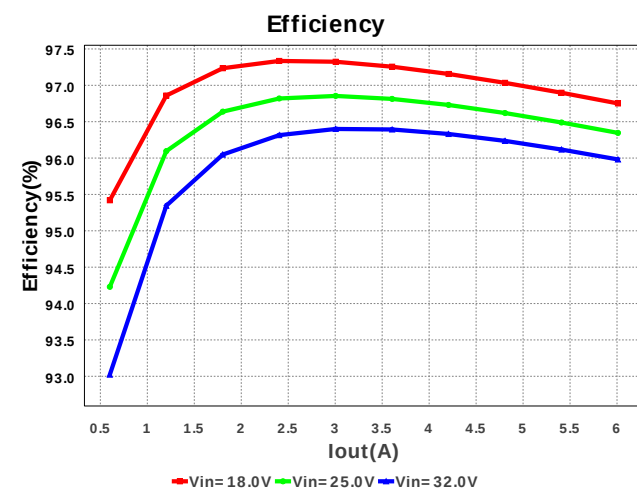
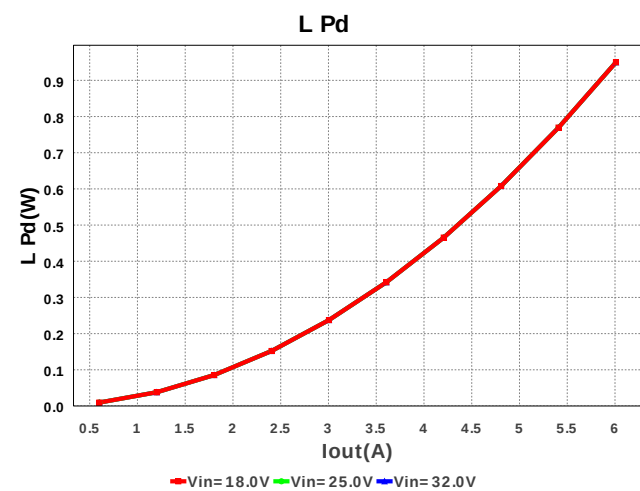
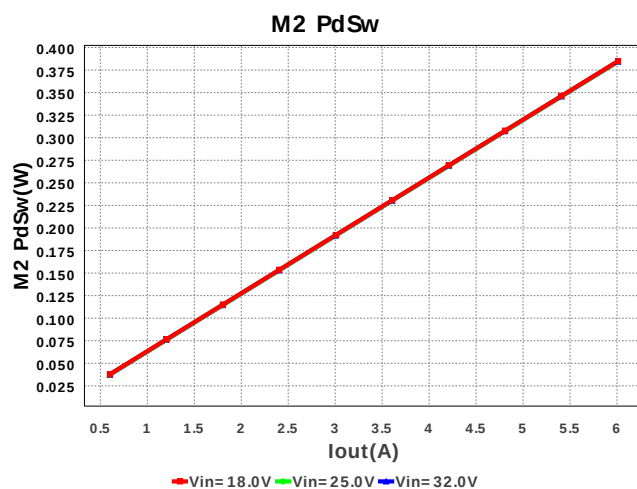
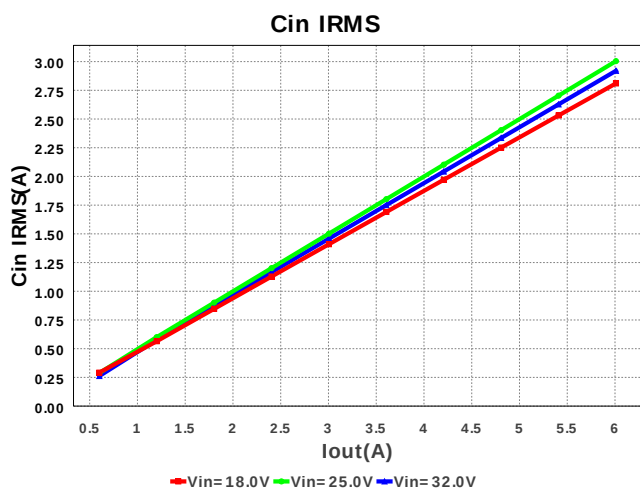
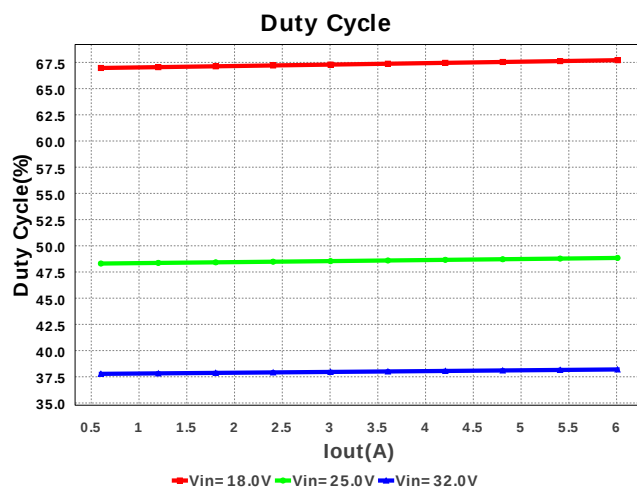
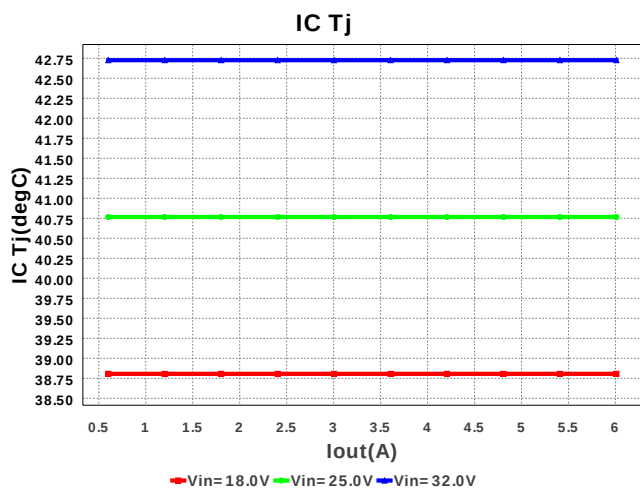
Design : 3767700/16 LM25117PMH/NOPB
LM25117PMH/NOPB 18.0V-32.0V to 12.0V @ 6.01A

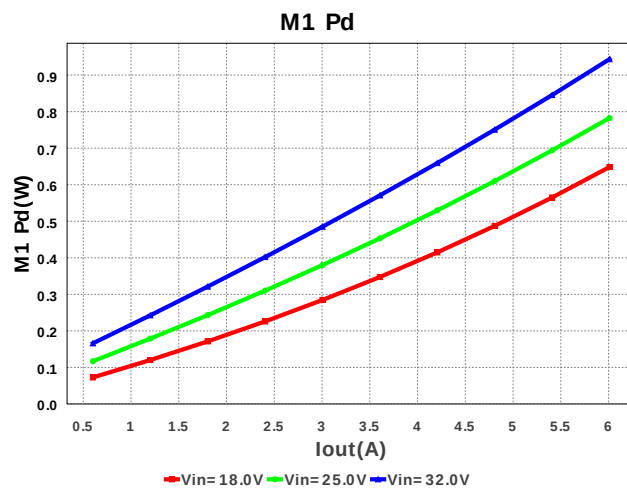
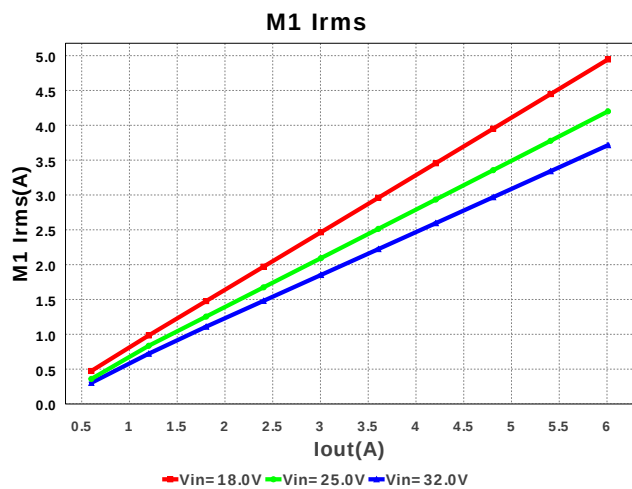
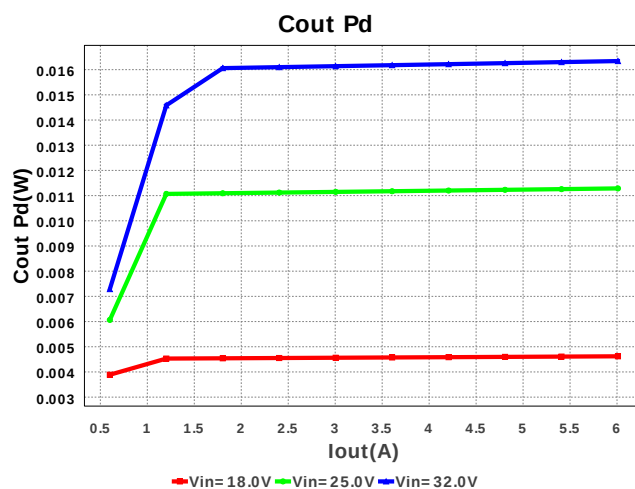
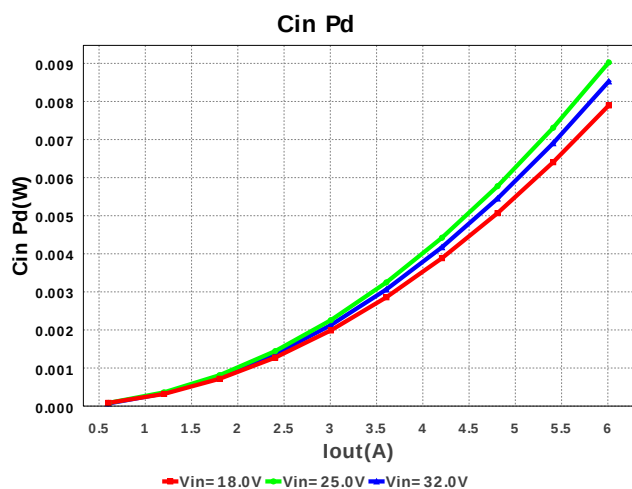
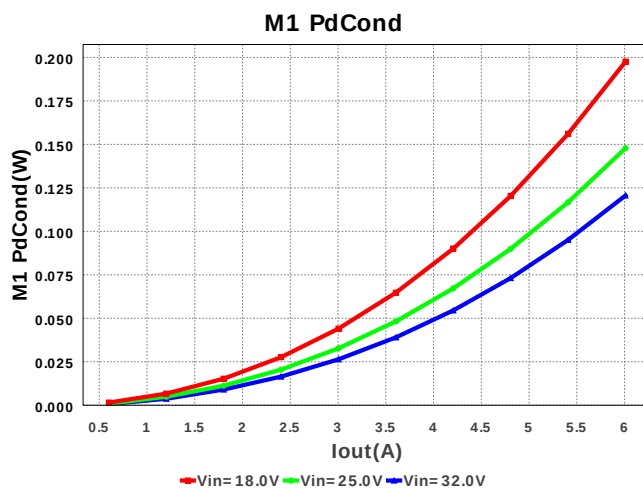
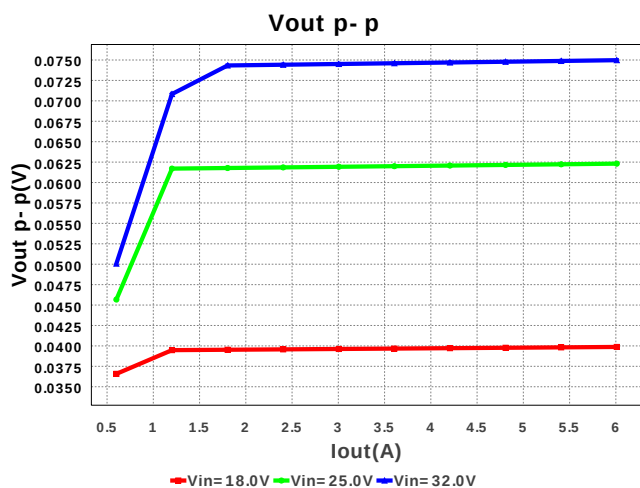


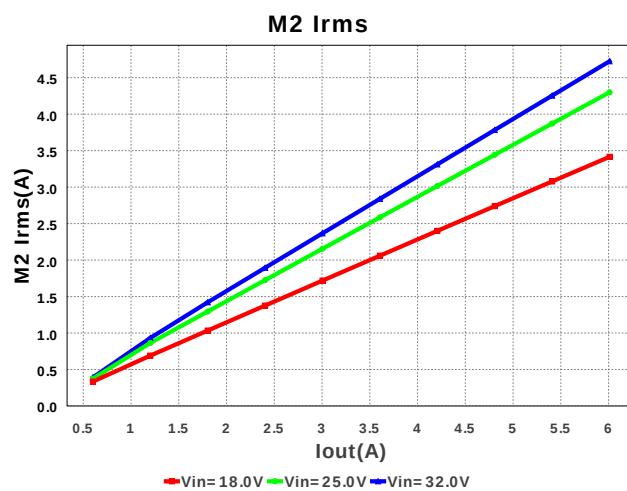
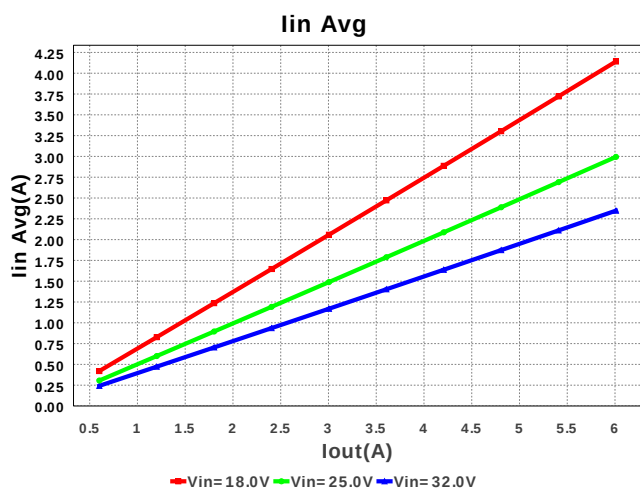
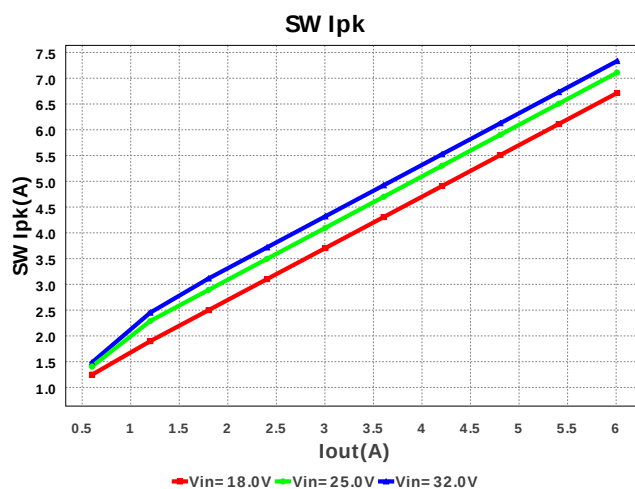
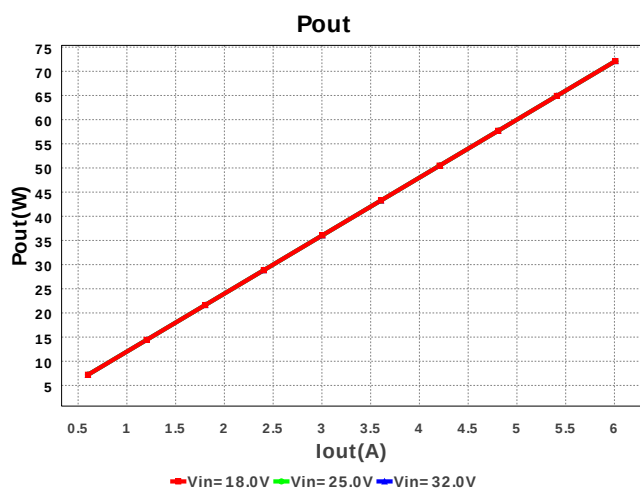
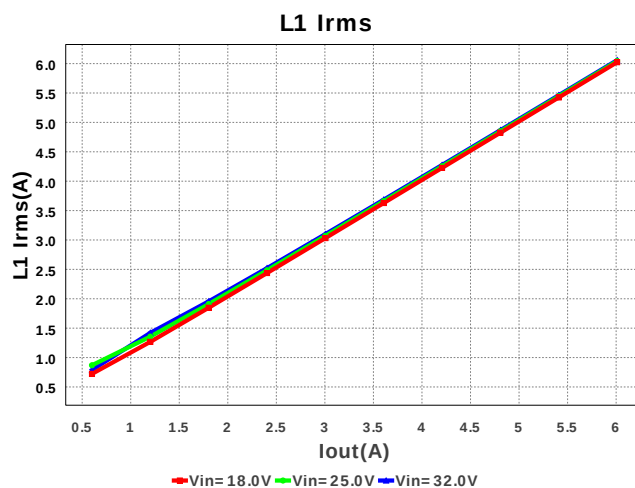
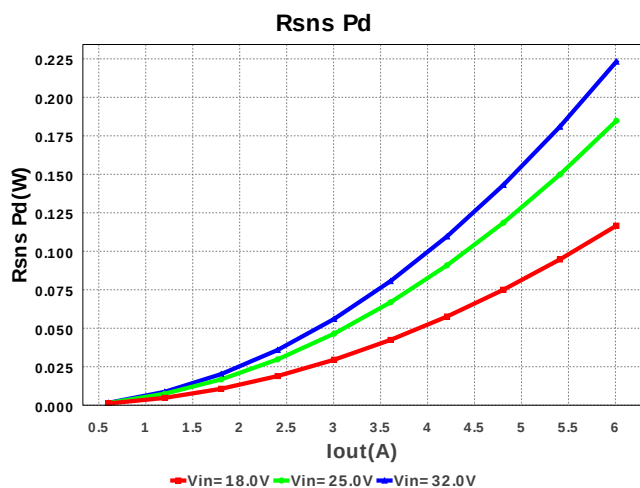
电气材料清单

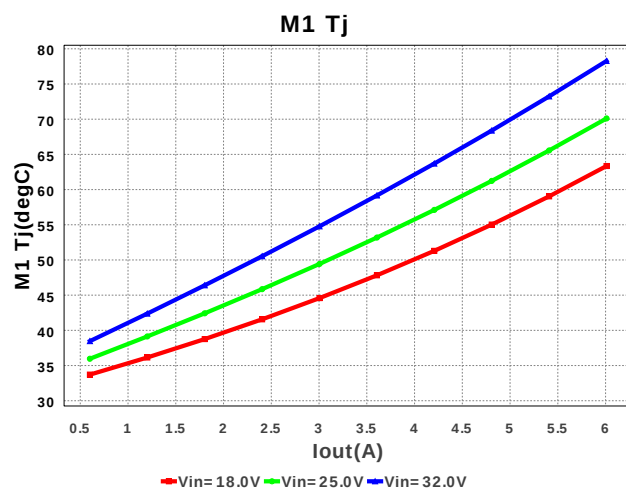
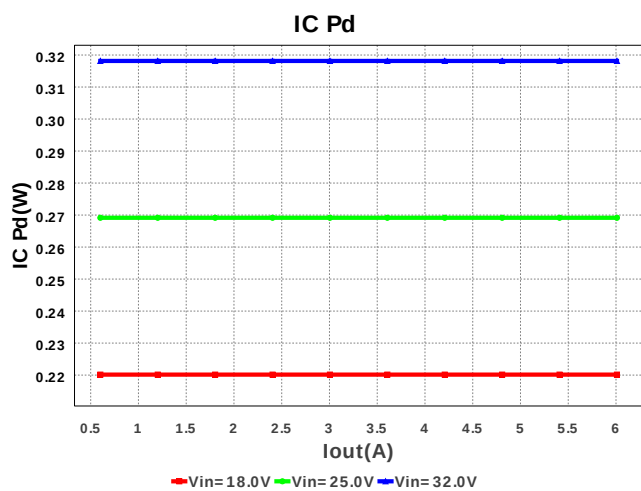
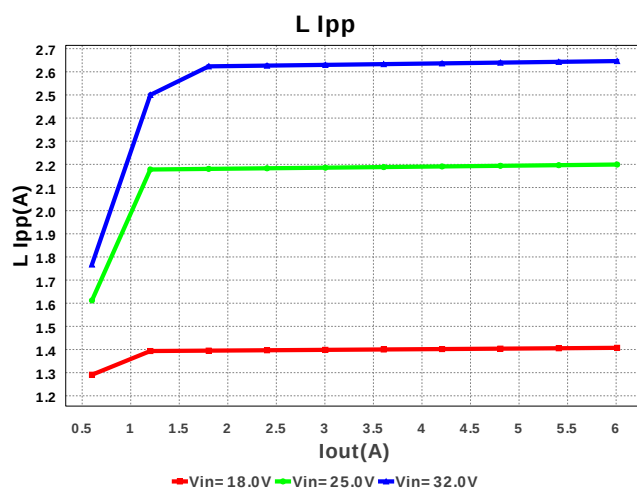
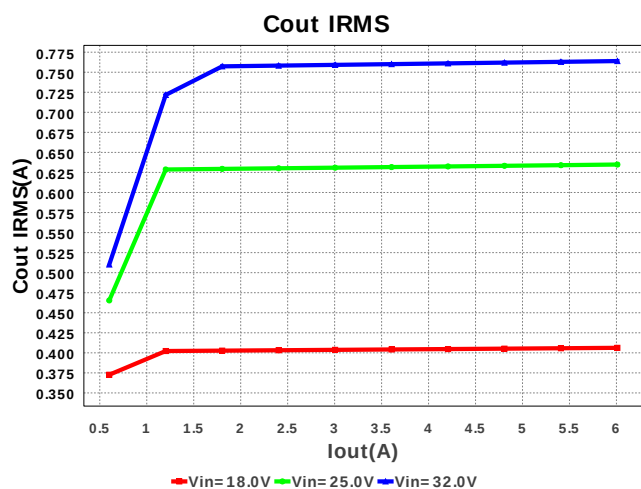
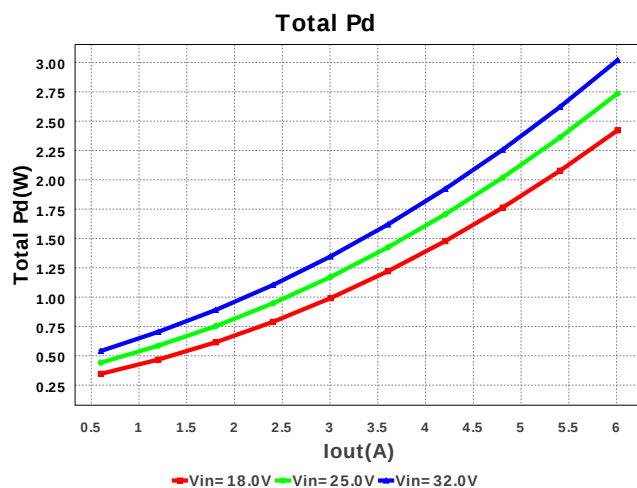
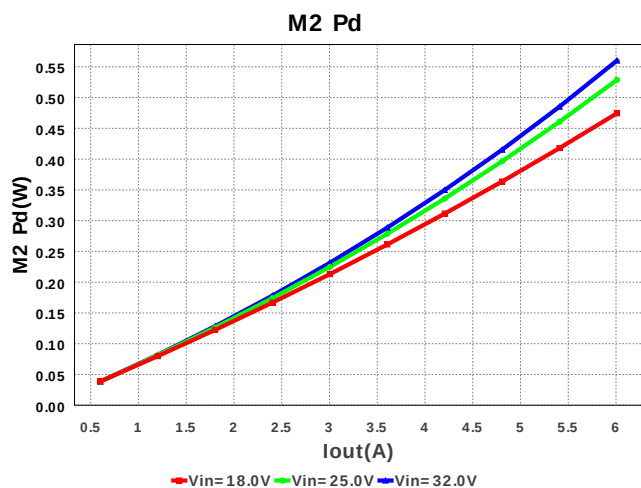
#	名称	制造商	零件编号	属性	Qty	Price	大小
1.	Cboot	AVX	08053C104KAT2A Series= X7R	Cap= 100.0 nF ESR= 280.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	 0805 7mm2
2.	Ccomp1	Yageo America	CC0805KRX7R9BB152 Series= X7R	Cap= 1.5 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7mm2
3.	Ccomp2	Yageo America	CC0805JRNPO9BN820 Series= C0G/NP0	Cap= 82.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7mm2
4.	Cin	MuRata	GRM31CR71H475KA12L Series= X7R	Cap= 4.7 μF ESR= 3.0 mOhm VDC= 50.0 V IRMS= 4.98 A	3	\$0.10	 1206 11mm2
5.	Cinx	Kemet	C0805C104K5RACTU Series= X7R	Cap= 100.0 nF ESR= 64.0 mOhm VDC= 50.0 V IRMS= 1.64 A	1	\$0.01	 0805 7mm2
6.	Cout	Nippon Chemi-Con	APXE160ARA680MF61G Series= PXE	Cap= 68.0 μF ESR= 28.0 mOhm VDC= 16.0 V IRMS= 2.39 A	1	\$0.44	 CAPSMT_62_F61 74mm2
7.	Cramp	Yageo America	CC0805KRX7R9BB821 Series= X7R	Cap= 820.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7mm2
8.	Cres	MuRata	GRM155R60J474KE19D Series= X5R	Cap= 470.0 nF VDC= 6.3 V IRMS= 0.0 A	1	\$0.01	 0402 3mm2
9.	Css	Yageo America	CC0805KRX7R9BB153 Series= X7R	Cap= 15.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7mm2

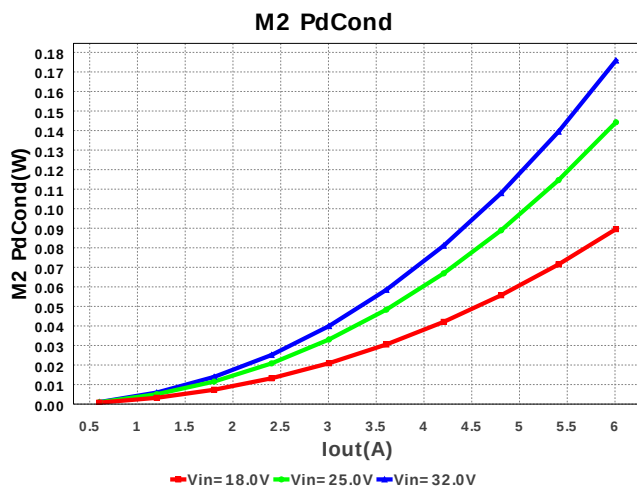
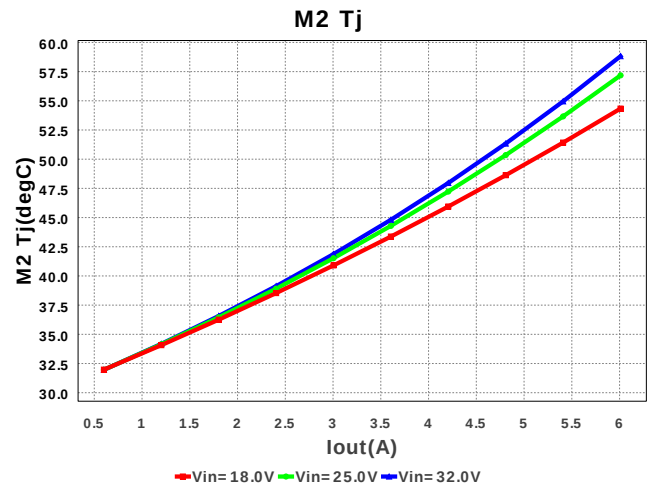
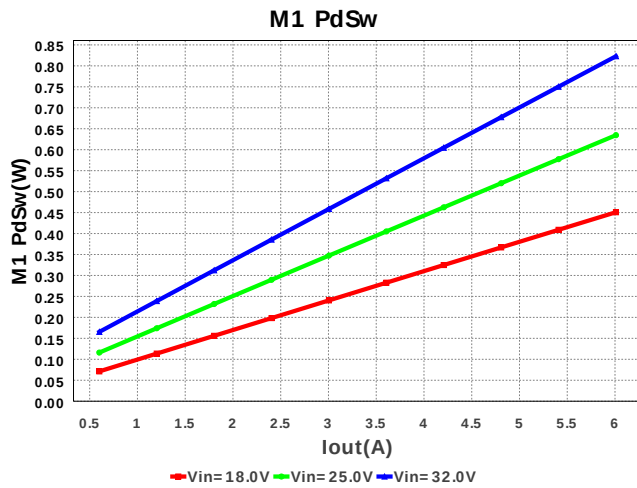
#	名称	制造商	零件编号	属性	Qty	Price	大小
10.	Cvcc	Taiyo Yuden	EMK212B7474KD-T Series= X7R	Cap= 470.0 nF VDC= 16.0 V IRMS= 0.0 A	1	\$0.02	 0805 7mm2
11.	D1	Diodes Inc.	SDM10U45-7-F	VF@Io= 580.0 mV VRRM= 45.0 V	1	\$0.06	 SOD-523 5mm2
12.	Dvcc	ON Semiconductor	MBR0530T1G	VF@Io= 430.0 mV VRRM= 30.0 V	1	\$0.06	 SOD-123 13mm2
13.	L1	Coilcraft	XAL6060-682MEB	L= 6.8 µH DCR= 18.9 mOhm	1	\$0.76	 XAL6060 72mm2
14.	M1	Texas Instruments	CSD18504Q5A	VdsMax= 40.0 V IdsMax= 50.0 Amps	1	\$0.56	 TRANS_NexFET_Q5A 55mm2
15.	M2	Texas Instruments	CSD18504Q5A	VdsMax= 40.0 V IdsMax= 50.0 Amps	1	\$0.56	 TRANS_NexFET_Q5A 55mm2
16.	Rcomp	Vishay-Dale	CRCW040225K5FKED Series= CRCW..e3	Res= 25.5 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
17.	Rfb1	Vishay-Dale	CRCW04021K00FKED Series= CRCW..e3	Res= 1,000 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
18.	Rfb2	Vishay-Dale	CRCW040214K0FKED Series= CRCW..e3	Res= 14.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
19.	Rramp	Vishay-Dale	CRCW040282K5FKED Series= CRCW..e3	Res= 82.5 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
20.	Rsense	Stackpole Electronics Inc	CSR1206FK10L0 Series= ?	Res= 10.0 mOhm Power= 500.0 mW Tolerance= 1.0%	1	\$0.11	 1206 11mm2
21.	Rt	Vishay-Dale	CRCW040211K3FKED Series= CRCW..e3	Res= 11.3 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
22.	Ruv1	Vishay-Dale	CRCW04024K87FKED Series= CRCW..e3	Res= 4.87 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
23.	Ruv2	Vishay-Dale	CRCW040254K9FKED Series= CRCW..e3	Res= 54.9 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
24.	U1	Texas Instruments	LM25117PMH/NOPB	Switcher	1	\$1.75	 MXA20A 71mm2











工作数值

#	名称	数值	类别	说明
1.	Cin IRMS	2.92 A	Current	输入电容器均方根纹波电流
2.	Cout IRMS	763.936 mA	Current	输出电容器均方根纹波电流
3.	Iin Avg	2.348 A	Current	平均输入电流
4.	L Ipp	2.646 A	Current	峰值到峰值电感器纹波电流
5.	L1 Irms	6.058 A	Current	电感器纹波电流
6.	M1 Irms	3.715 A	Current	MOSFET RMS 纹波电流
7.	M2 Irms	4.725 A	Current	MOSFET RMS 纹波电流
8.	SW Ipk	7.333 A	Current	峰值开关电流
9.	BOM 数量	26	General	Total Design BOM count
10.	大小	532.0 mm ²	General	BOM组件的总所占面积
11.	频率	424.559 kHz	General	开关频率
12.	IC Tolerance	12.0 mV	General	IC Feedback Tolerance
13.	Pout	72.12 W	General	总输出功率
14.	总 BOM	\$4.76	General	Total BOM Cost
15.	Vout OP	12.0 V	Op_Point	Operational Output Voltage
16.	交叉频率	39.129 kHz	Op_point	波特图交叉频率
17.	占空比	38.2 %	Op_point	占空比
18.	效率	95.976 %	Op_point	稳态效率
19.	IC Tj	42.868 degC	Op_point	电路接点温度
20.	IOUT_OP	6.01 A	Op_point	Iout 操作点
21.	M1 Tj	78.276 degC	Op_point	M1 MOSFET 接点温度
22.	M2 Tj	58.822 degC	Op_point	M2 MOSFET 接点温度
23.	相位裕度	69.755 deg	Op_point	波特图相位裕度
24.	VIN_OP	32.0 V	Op_point	Vin操作点
25.	Vout p-p	74.979 mV	Op_point	峰值到峰值输出纹波电压
26.	Cin Pd	8.527 mW	Power	输入电容器功率耗散
27.	Cout Pd	16.341 mW	Power	输出电容器功率耗散
28.	IC Pd	321.69 mW	Power	电路功率耗散
29.	L Pd	949.949 mW	Power	电感器功率耗散
30.	M1 Pd	943.52 mW	Power	M1 MOSFET 总功率耗散
31.	M1 PdCond	120.609 mW	Power	M1 MOSFET 传导损耗
32.	M1 PdSw	822.911 mW	Power	M1 MOSFET 开关损耗

#	名称	数值	类别	说明
33.	M2 Pd	560.183 mW	Power	M2 MOSFET 总功率耗散
34.	M2 PdCond	175.861 mW	Power	M2 MOSFET 传导损耗
35.	M2 PdSw	384.322 mW	Power	M2 MOSFET 开关损耗
36.	Rsns Pd	223.222 mW	Power	电流限幅传感电阻器功率耗散
37.	整体 Pd	3.024 W	Power	总功率耗散

设计输入

#	名称	数值	说明
1.	输出电流	6.01 A	最大输出电流
2.	Iout1	6.01 Amps	Output Current #1
3.	Vin 最大	32.0 V	最高输入电压
4.	Vin 最小	18.0 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	LM25117	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. Outline The LM5117 is a synchronous buck controller intended for step-down regulator applications from a high voltage or widely varying input supply. The control method is based upon current mode control utilizing an emulated current ramp. Current mode control provides inherent line feed-forward, cycle-by-cycle current limiting and ease of loop compensation. The use of an emulated control ramp reduces noise sensitivity of the pulse-width modulation circuit, allowing reliable control of very small duty cycles necessary in high input voltage applications. External Vcc An output voltage derived bias supply can be applied to the VCC pin to reduce the controller power dissipation at higher input voltage. This can also relax constraints on the driver supply current if your external source can supply more than the LM(2)5117 internal regulator. Please see Datasheet for more information. Diode Emulation A fully synchronous buck regulator implemented with a freewheel MOSFET rather than a diode has the capability to sink current from the output in certain conditions such as light load, over-voltage or pre-bias startup. The LM(2)5117 provides a diode emulation feature that can be enabled to prevent reverse (drain to source) current flow in the low side free-wheel MOSFET.

2. LM25117 Product Folder : <http://www.ti.com/product/lm25117> : contains the data sheet and other resources.

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You should completely validate and test your design implementation to confirm the system functionality for your application prior to production.

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