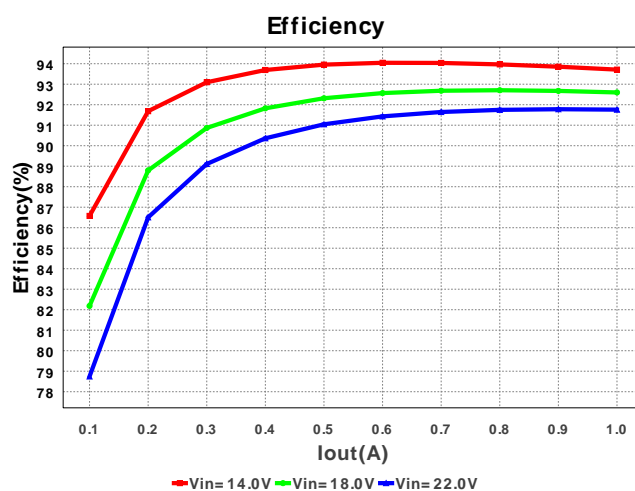
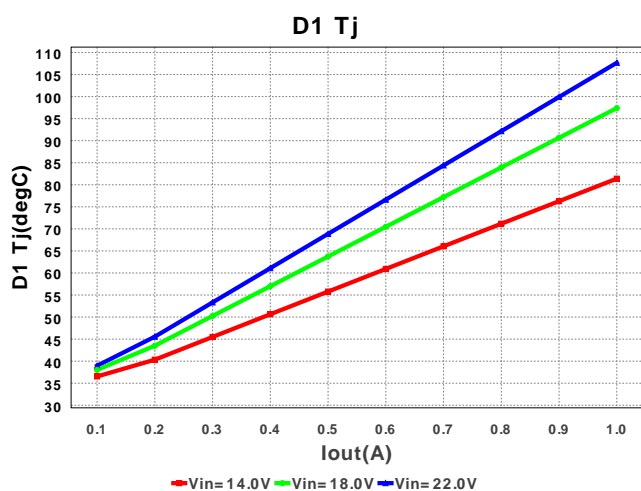
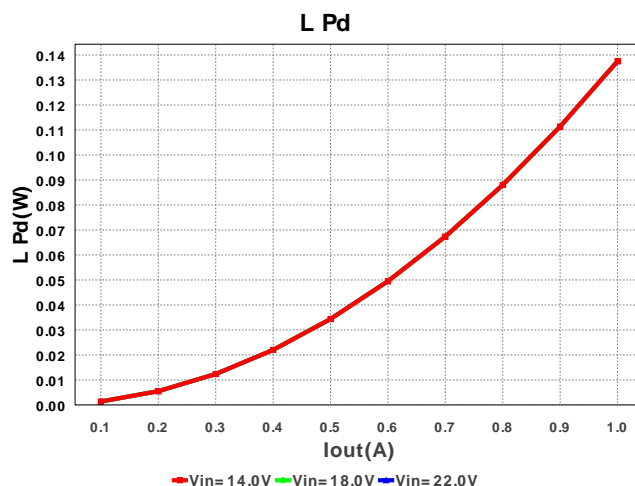
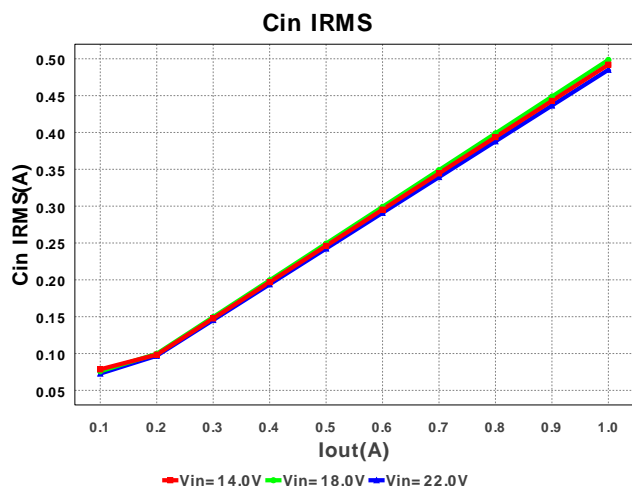
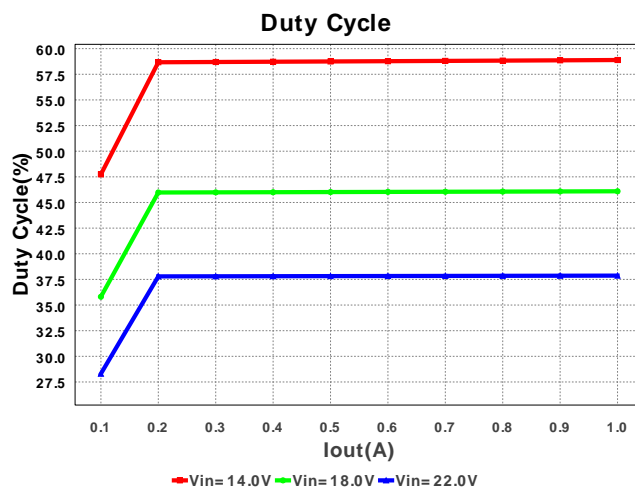
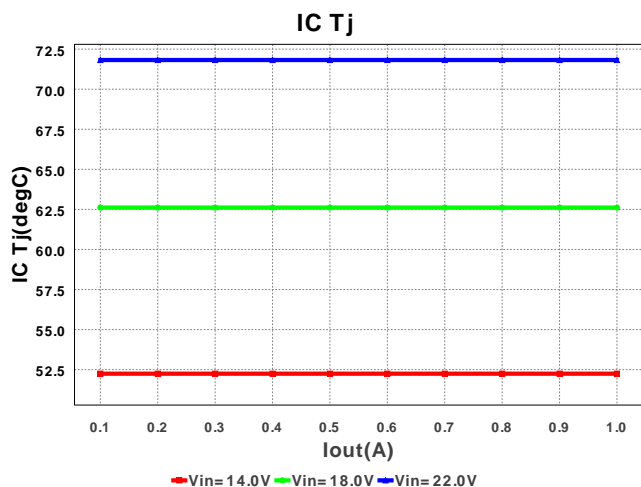
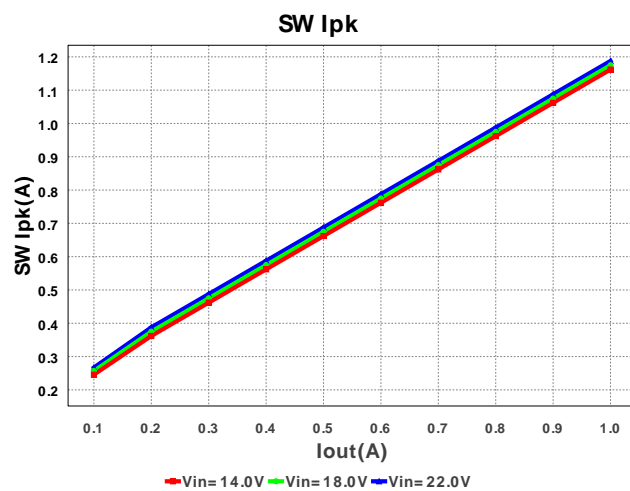
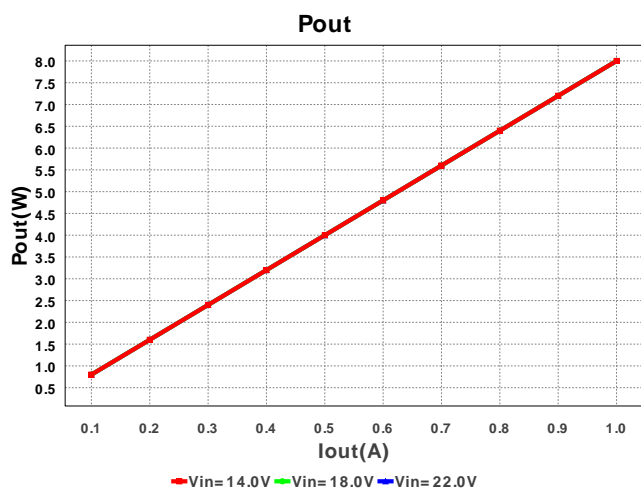
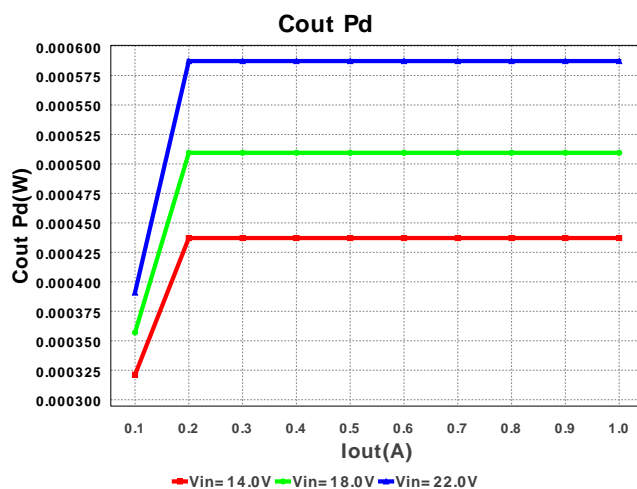
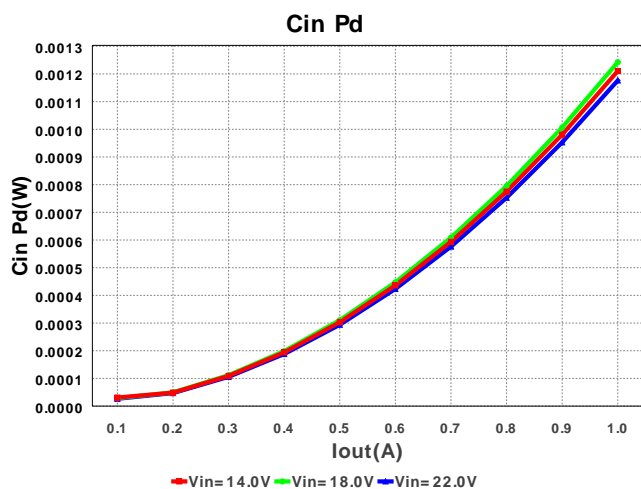
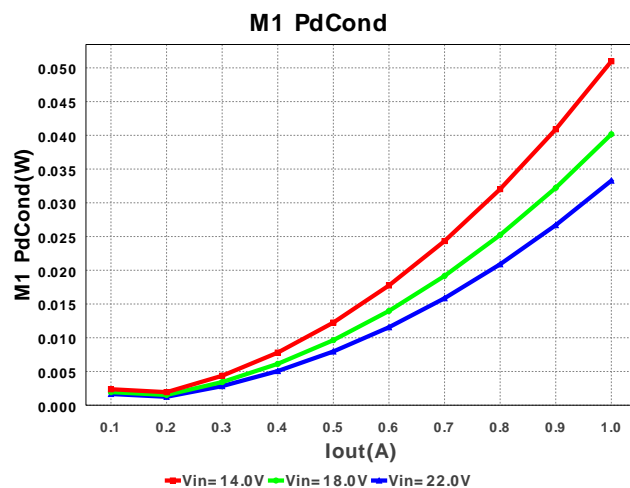
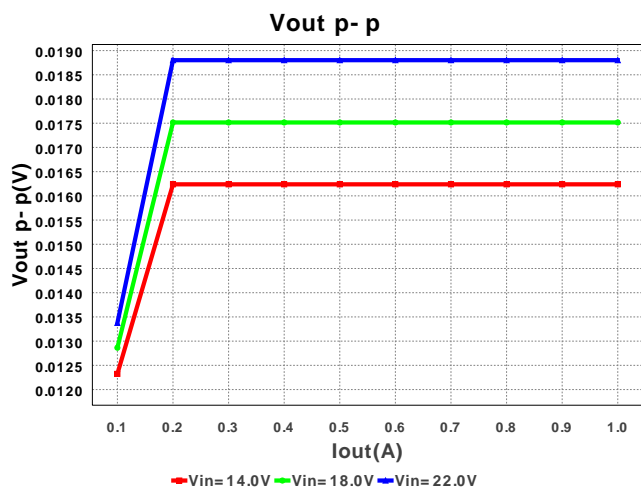


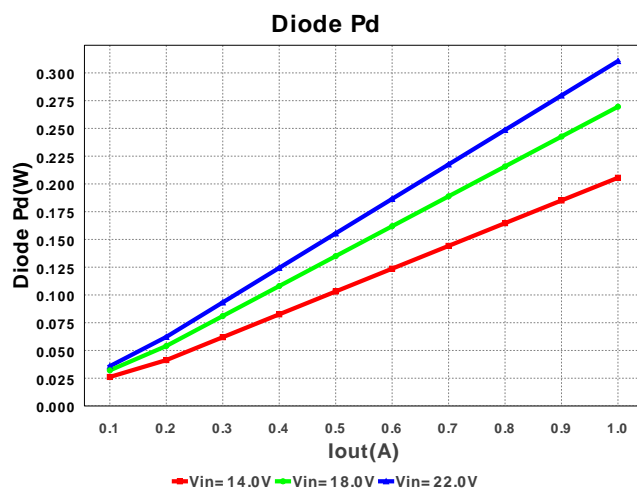
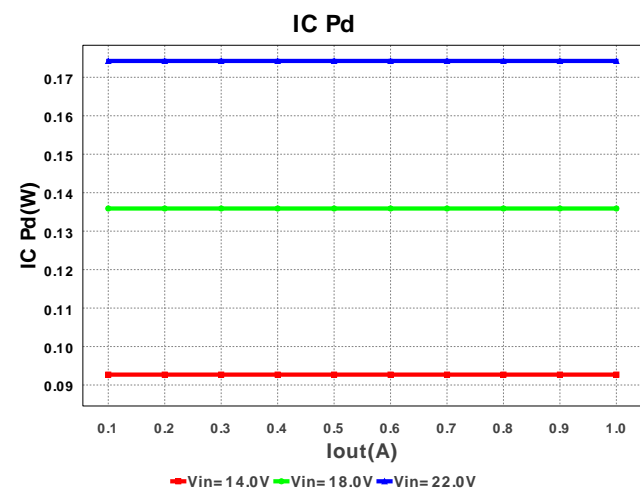
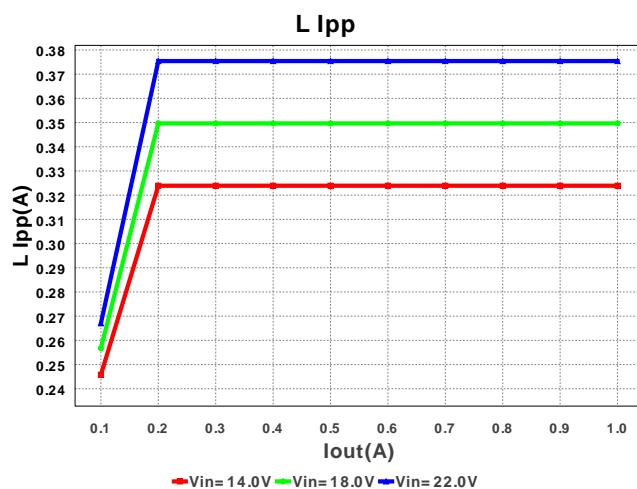
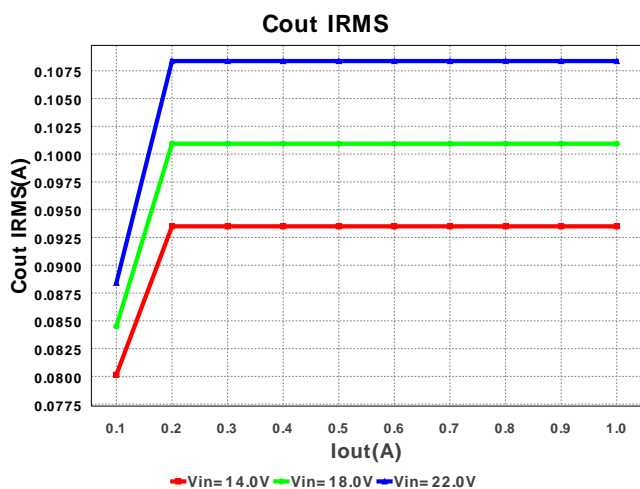
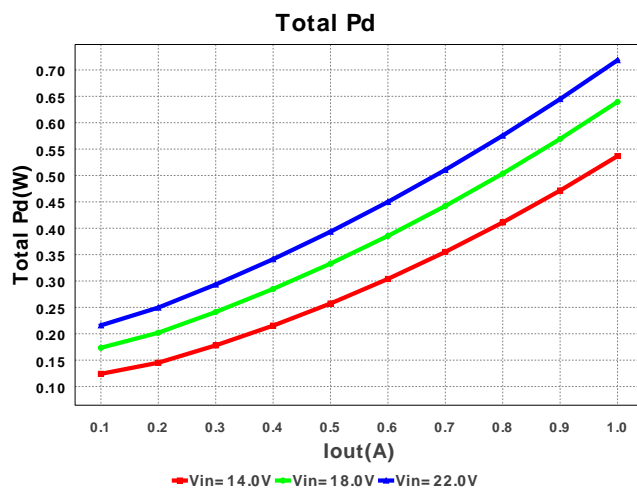
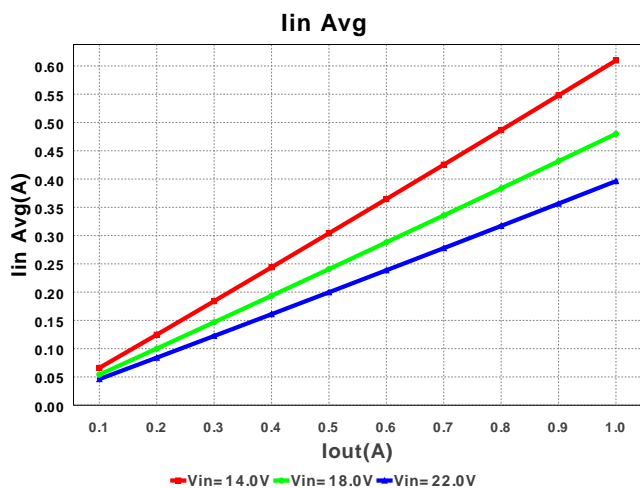
## 电气材料清单

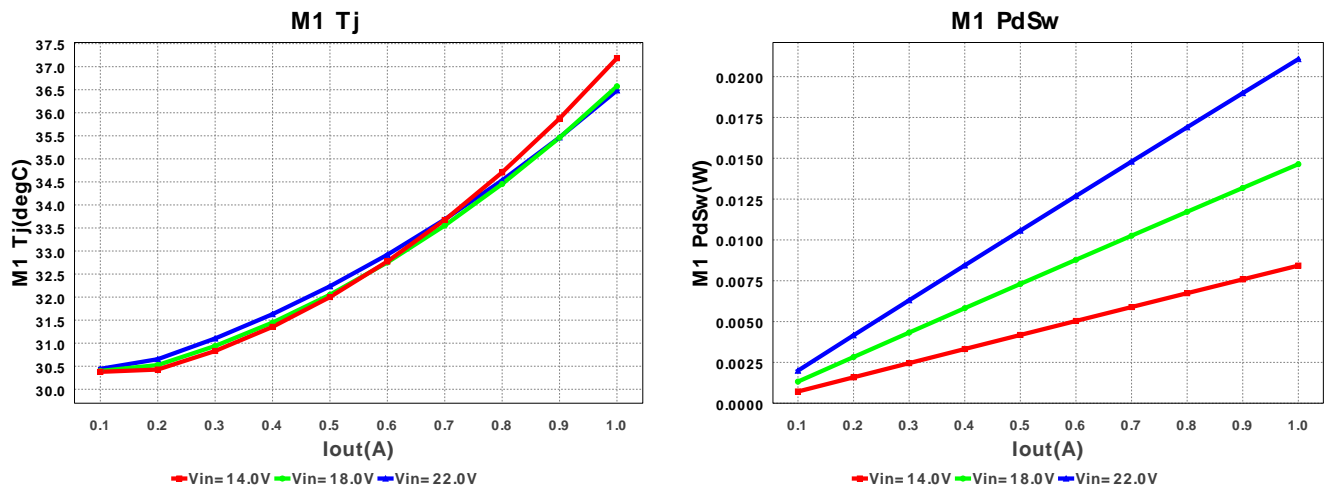
| #   | 名称   | 制造商                       | 零件编号                                 | 属性  | Qty | Price  | 大小  |
|-----|------|---------------------------|--------------------------------------|---|-----|--------|---|
| 1.  | Cadj | Yageo America             | CC0805KRX7R9BB102<br>Series= X7R     | Cap= 1.0 nF<br>VDC= 50.0 V<br>IRMS= 0.0 A                       | 1   | \$0.01 | <br>0805 13mm2     |
| 2.  | Cff  | Yageo America             | CC0805JRNPO9BN470<br>Series= C0G/NP0 | Cap= 47.0 pF<br>VDC= 50.0 V<br>IRMS= 0.0 A                      | 1   | \$0.01 | <br>0805 13mm2     |
| 3.  | Cin  | TDK                       | C3216X7R1H105K<br>Series= X7R        | Cap= 1.0 µF<br>ESR= 10.0 mOhm<br>VDC= 50.0 V<br>IRMS= 3.2 A     | 2   | \$0.04 | <br>1206 19mm2     |
| 4.  | Cout | Kemet                     | T495D476K020ATE100<br>Series= T495   | Cap= 47.0 µF<br>ESR= 100.0 mOhm<br>VDC= 20.0 V<br>IRMS= 1.102 A | 2   | \$0.56 | <br>7343-31 59mm2  |
| 5.  | D1   | Diodes Inc.               | B140-13-F                            | VF@Io= 500.0 mV<br>VRRM= 40.0 V                                 | 1   | \$0.06 | <br>SMA 37mm2      |
| 6.  | L1   | TDK                       | VLP8040T-330M                        | L= 33.0 µH<br>DCR= 110.0 mOhm                                   | 1   | \$0.22 | <br>VLP8040 113mm2 |
| 7.  | M1   | Vishay-Siliconix          | SI2319DS-T1-E3                       | VdsMax= -40.0 V<br>IdsMax= -2.3 Amps                            | 1   | \$0.28 | <br>SOT-23 22mm2   |
| 8.  | Radj | Vishay-Dale               | CRCW040217K8FKED<br>Series= CRCW..e3 | Res= 17.8 kOhm<br>Power= 63.0 mW<br>Tolerance= 1.0%             | 1   | \$0.01 | <br>0402 8mm2      |
| 9.  | Rfb1 | Yageo America             | RC0603FR-0712KL<br>Series= 233       | Res= 12.0 kOhm<br>Power= 100.0 mW<br>Tolerance= 1.0%            | 1   | \$0.10 | <br>0603 10mm2     |
| 10. | Rfb2 | Vishay-Dale               | CRCW040264K9FKED<br>Series= CRCW..e3 | Res= 64.9 kOhm<br>Power= 63.0 mW<br>Tolerance= 1.0%             | 1   | \$0.01 | <br>0402 8mm2      |
| 11. | Rns  | Stackpole Electronics Inc | CSRN2010FK40L0<br>Series= ?          | Res= 40.0 mOhm<br>Power= 1.0 W<br>Tolerance= 1.0%               | 1   | \$0.15 | <br>2010 32mm2     |

| #   | 名称 | 制造商               | 零件编号          | 属性       | Qty | Price  | 大小   |
|-----|----|-------------------|---------------|----------|-----|--------|--|
| 12. | U1 | Texas Instruments | LM3485MM/NOPB | Switcher | 1   | \$0.52 |  MUA08A 34mm2 |









## 工作数值

| #   | 名称           | 数值           | 类别       | 说明                         |
|-----|--------------|--------------|----------|----------------------------|
| 1.  | Cin IRMS     | 485.063 mA   | Current  | 输入电容器均方根纹波电流               |
| 2.  | Cout IRMS    | 83.972 mA    | Current  | 输出电容器均方根纹波电流               |
| 3.  | Iin Avg      | 397.86 mA    | Current  | 平均输入电流                     |
| 4.  | L Ipp        | 290.889 mA   | Current  | 峰值到峰值电感纹波电流                |
| 5.  | SW Ipk       | 1.145 A      | Current  | 峰值开关电流                     |
| 6.  | BOM 数量       | 14           | General  | Total Design BOM count     |
| 7.  | 大小           | 446.0 mm2    | General  | BOM组件的总所占面积                |
| 8.  | 频率           | 462.81 kHz   | General  | 开关频率                       |
| 9.  | IC Tolerance | 0.0 V        | General  | IC Feedback Tolerance      |
| 10. | 模式           | CCM          | General  | 传导模式                       |
| 11. | Pout         | 8.0 W        | General  | 总输出功率                      |
| 12. | 总 BOM        | \$2.57       | General  | Total BOM Cost             |
| 13. | D1 Tj        | 107.662 degC | Op_Point | D1接点温度                     |
| 14. | Vout OP      | 8.0 V        | Op_Point | Operational Output Voltage |
| 15. | 占空比          | 37.87 %      | Op_point | 占空比                        |
| 16. | 效率           | 91.399 %     | Op_point | 稳态效率                       |
| 17. | IC Tj        | 71.673 degC  | Op_point | 电路接点温度                     |
| 18. | ICThetaJA    | 200.0 degC/W | Op_point | 电路接点到环境热敏电阻                |
| 19. | IOUT_OP      | 1.0 A        | Op_point | Iout 操作点                   |
| 20. | M1 Tj        | 36.485 degC  | Op_point | M1 MOSFET 接点温度             |
| 21. | VIN_OP       | 22.0 V       | Op_point | Vin操作点                     |
| 22. | Vout p-p     | 14.568 mV    | Op_point | 峰值到峰值输出纹波电压                |
| 23. | Cin Pd       | 1.176 mW     | Power    | 输入电容器功率耗散                  |
| 24. | Cout Pd      | 352.568 μW   | Power    | 输出电容器功率耗散                  |
| 25. | 二极管 Pd       | 310.65 mW    | Power    | 二极管功率耗散                    |
| 26. | IC Pd        | 208.364 mW   | Power    | 电路功率耗散                     |
| 27. | L Pd         | 137.5 mW     | Power    | 电感器功率耗散                    |
| 28. | M1 PdCond    | 33.741 mW    | Power    | M1 MOSFET 传导损耗             |
| 29. | M1 PdSw      | 21.073 mW    | Power    | M1 MOSFET 开关损耗             |
| 30. | 整体 Pd        | 752.839 mW   | Power    | 总功率耗散                      |

## 设计输入

| #  | 名称      | 数值        | 说明                |
|----|---------|-----------|-------------------|
| 1. | 输出电流    | 1.0 A     | 最大输出电流            |
| 2. | Iout1   | 1.0 Amps  | Output Current #1 |
| 3. | Vin 最大  | 22.0 V    | 最高输入电压            |
| 4. | Vin 最小  | 14.0 V    | 最低输入电压            |
| 5. | 输出电压:   | 8.0 V     | 输出电压              |
| 6. | Vout1   | 8.0 Volt  | Output Voltage #1 |
| 7. | base_pn | LM3485    | 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 LM3485 is a hysteretic PFET controller. The hysteretic control architecture provides for a stable design without the use of a control loop. The switching frequency depends on the inductance value, output capacitor ESR, and the input voltage. Therefore depending on the chosen BOM, the frequency at different input voltages would vary.

2. LM3485 Product Folder : <http://www.ti.com/product/lm3485> : 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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