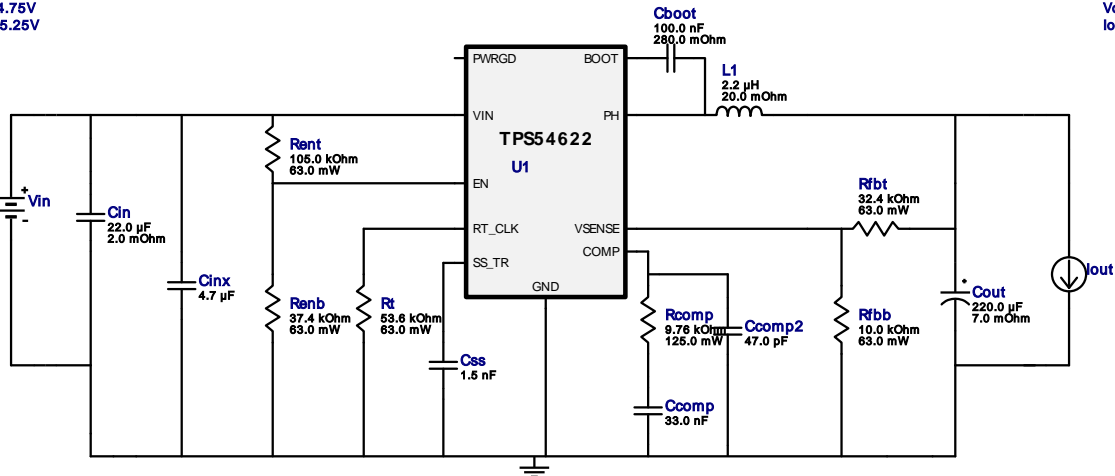


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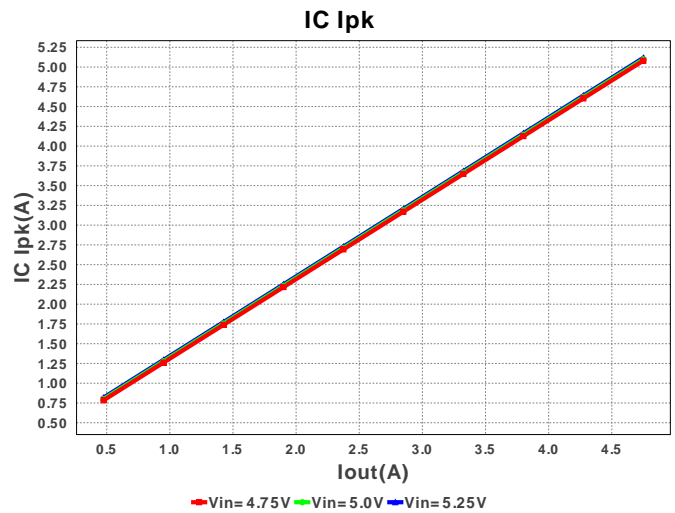
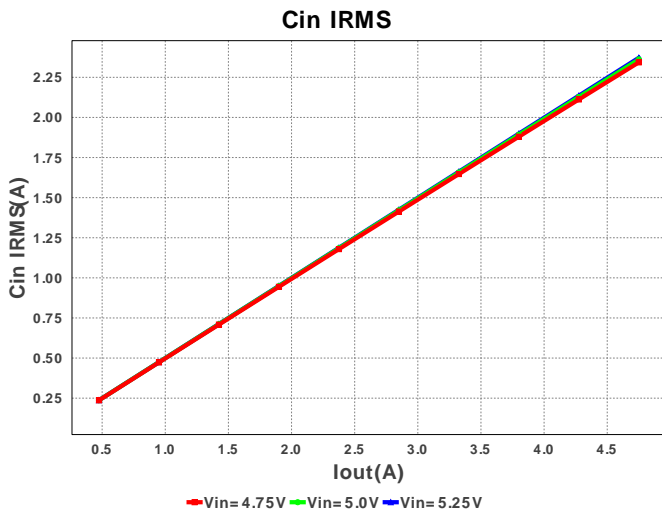
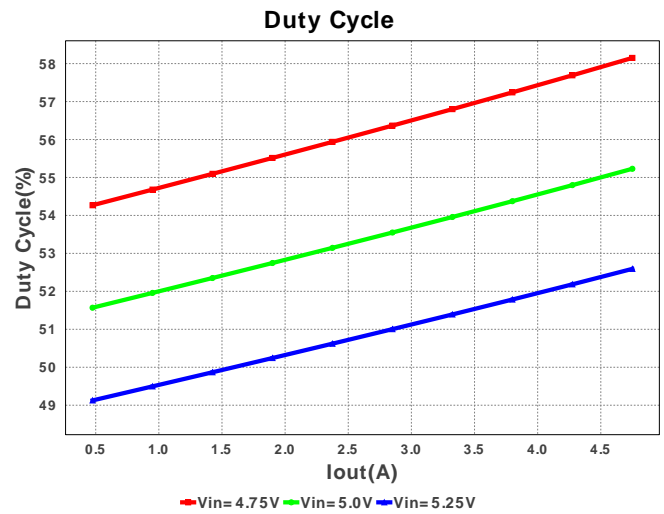
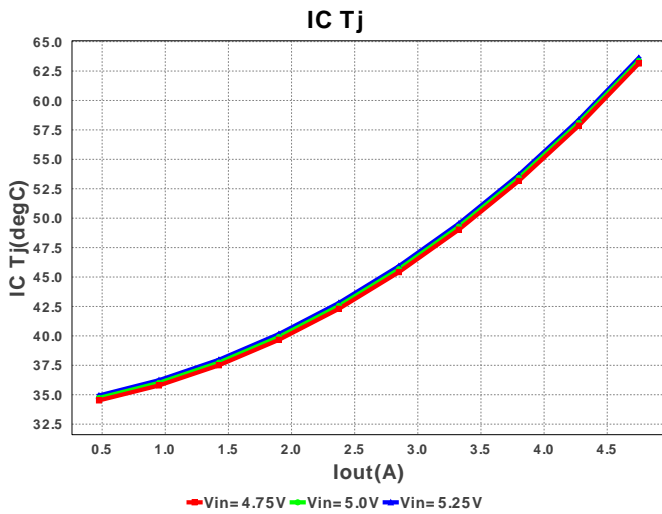
 Design : 1225200/2871 TPS54622RHLLR
 TPS54622RHLLR 4.75V-5.25V to 2.5V @ 4.75A

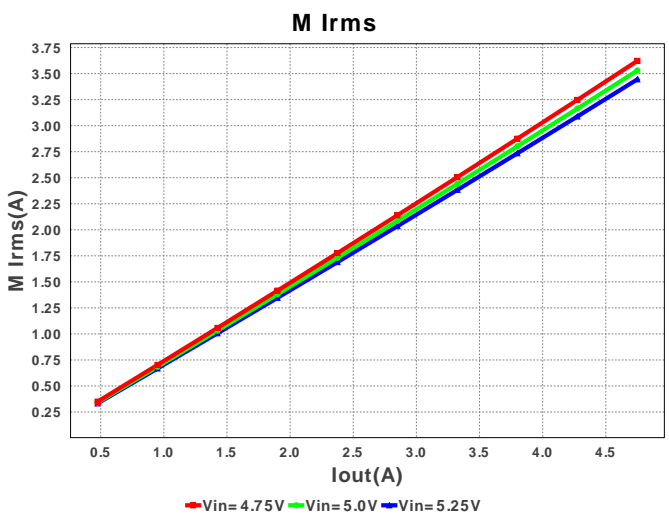
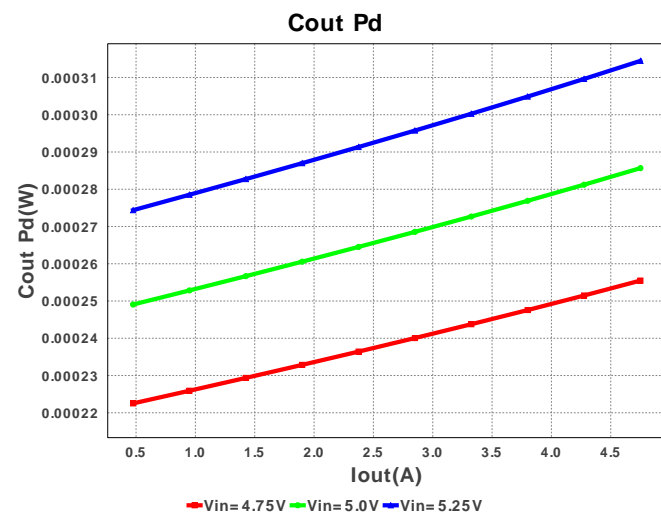
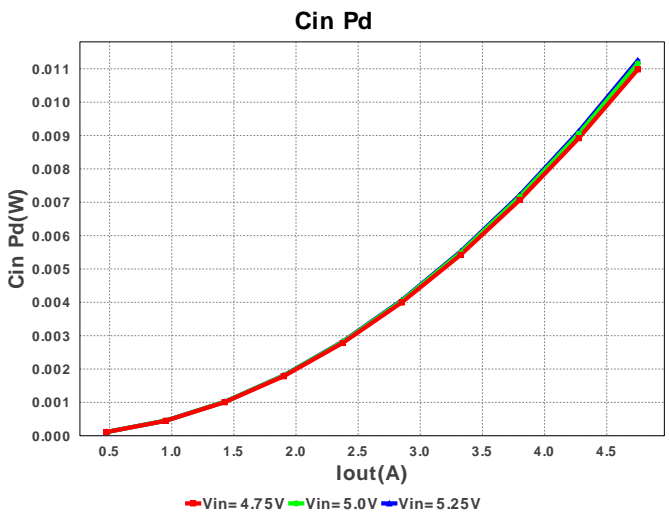
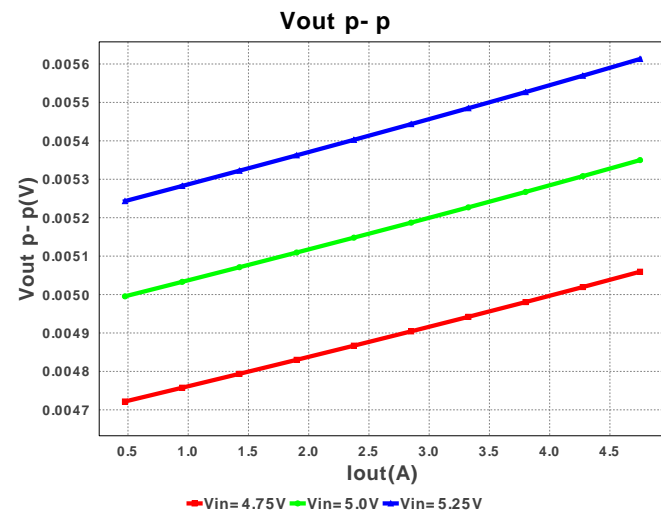
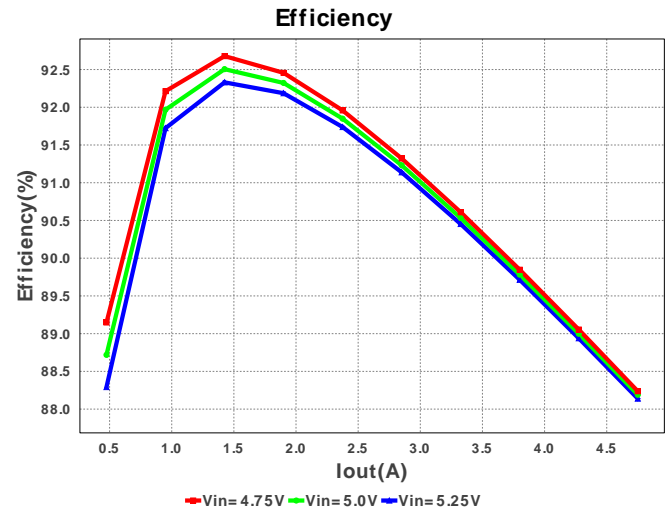
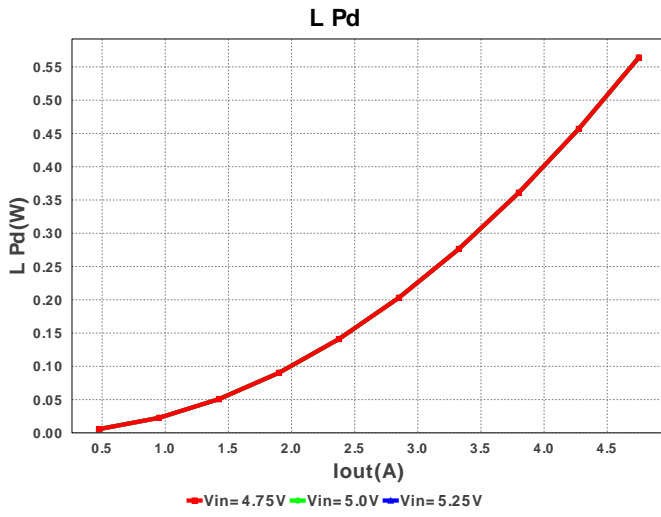
 VinMin = 4.75V
 VinMax = 5.25V

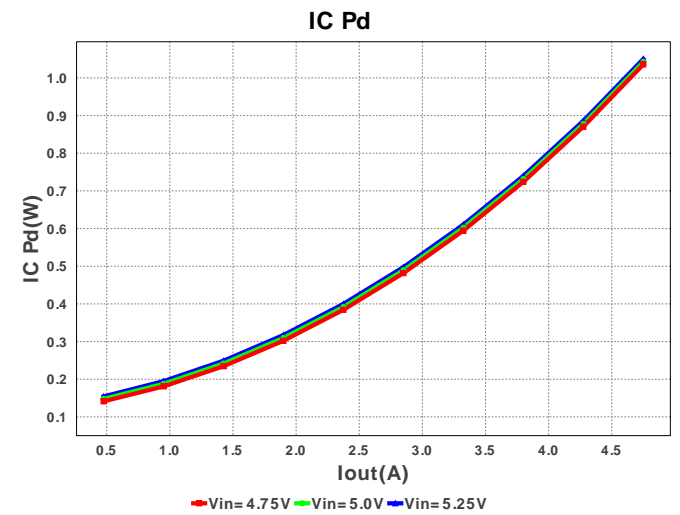
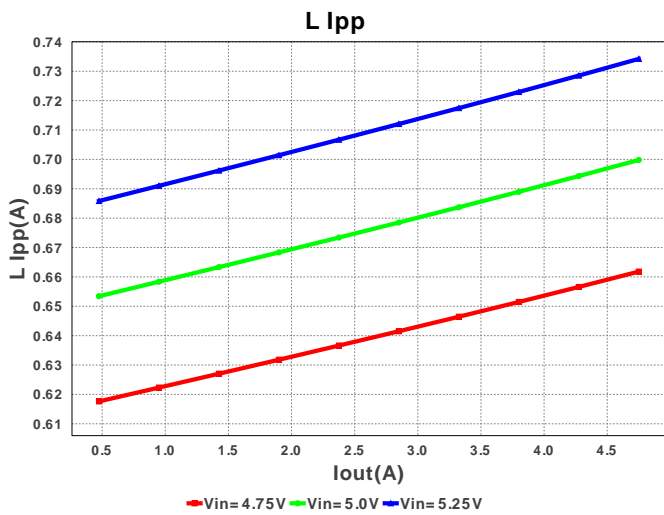
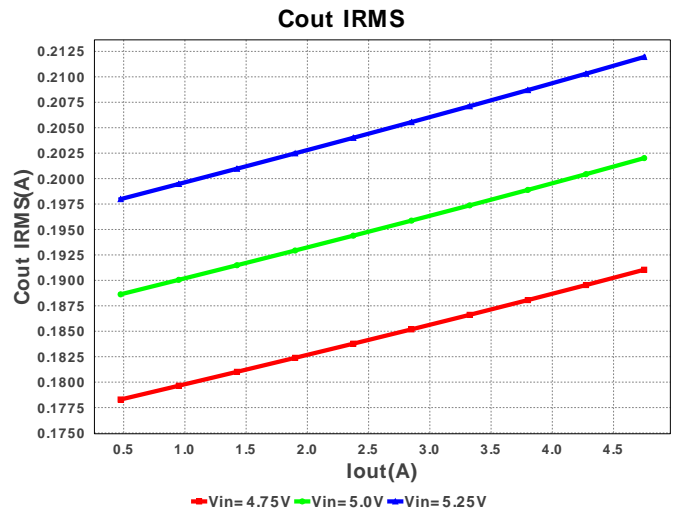
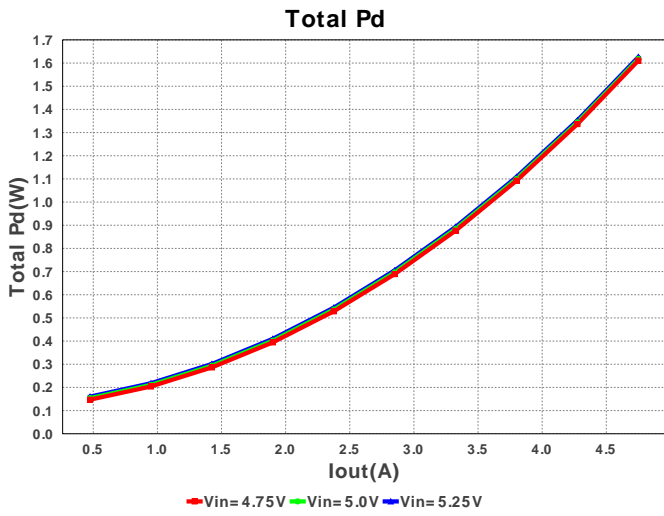
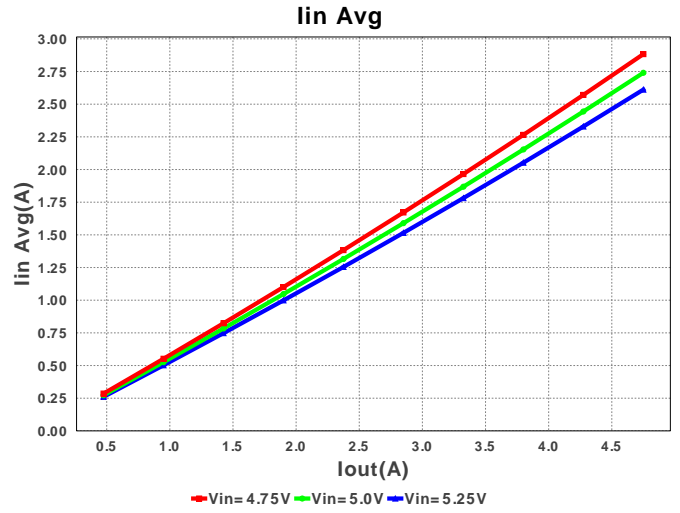
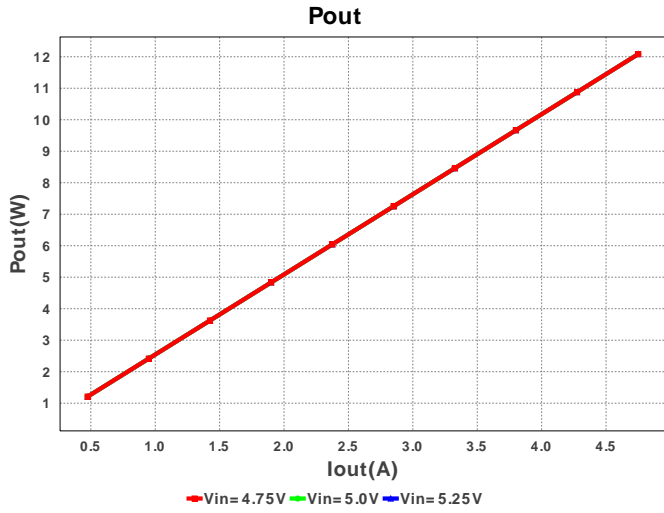
 Vout = 2.5V
 Iout = 4.75A

Electrical BOM

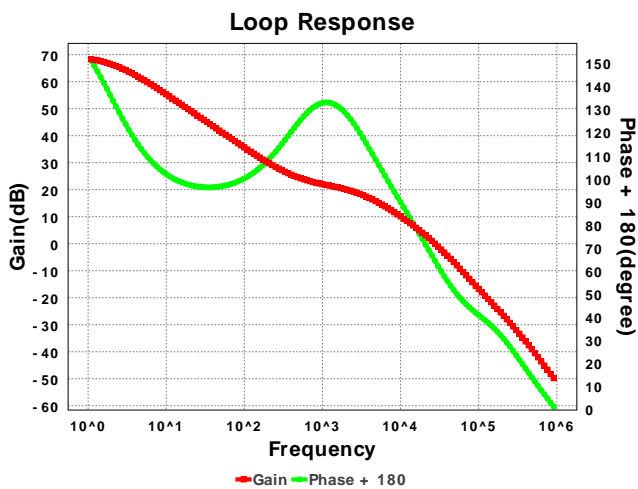
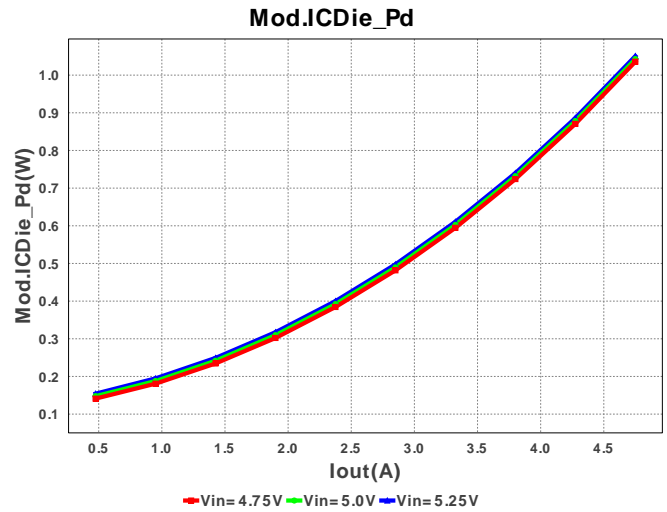
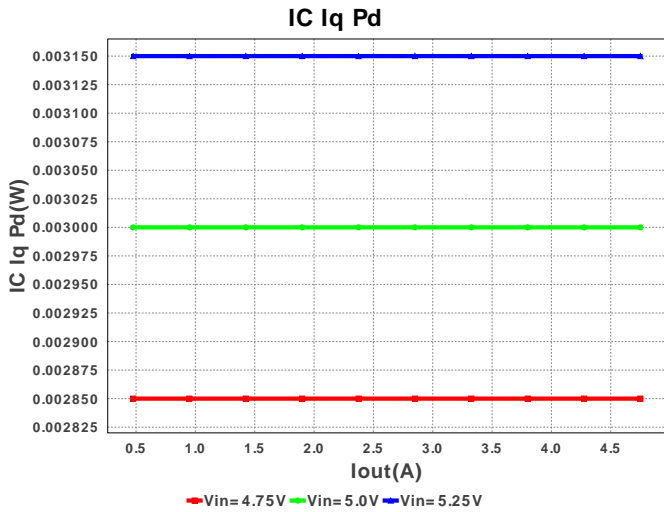
| # | Name | Manufacturer | Part Number | Properties | Qty | Price | Footprint |
|-----|--------|---------------|--------------------------------------|--|-----|--------|--|
| 1. | Cboot | AVX | 08053C104KAT2A Series= X7R | Cap= 100.0 nF ESR= 280.0 mOhm VDC= 25.0 V IRMS= 0.0 A | 1 | \$0.01 |  0805 7mm2 |
| 2. | Ccomp | MuRata | GRM155R61A333KA01D Series= X5R | Cap= 33.0 nF VDC= 10.0 V IRMS= 0.0 A | 1 | \$0.01 |  0402 3mm2 |
| 3. | Ccomp2 | Yageo America | CC0805JRNP09BN470 Series= C0G/NP0 | Cap= 47.0 pF VDC= 50.0 V IRMS= 0.0 A | 1 | \$0.01 |  0805 7mm2 |
| 4. | Cin | MuRata | GRM32ER61E226KE15L Series= X5R | Cap= 22.0 µF ESR= 2.0 mOhm VDC= 25.0 V IRMS= 3.67 A | 1 | \$0.28 |  1210 15mm2 |
| 5. | Cinx | MuRata | GRM21BC81E475KA12L Series= 379 | Cap= 4.7 µF VDC= 25.0 V IRMS= 0.0 A | 1 | \$0.04 |  0805 7mm2 |
| 6. | Cout | Panasonic | EEF-UE0G221LR Series= UE | Cap= 220.0 µF ESR= 7.0 mOhm VDC= 4.0 V IRMS= 3.7 A | 1 | \$1.32 |  CAPSMT_6_UE 59mm2 |
| 7. | Css | Yageo America | CC0805KRX7R9BB152 Series= X7R | Cap= 1.5 nF VDC= 50.0 V IRMS= 0.0 A | 1 | \$0.01 |  0805 7mm2 |
| 8. | L1 | Bourns | SRP7030-2R2M | L= 2.2 µH DCR= 20.0 mOhm | 1 | \$0.49 |  SRP7030 88mm2 |
| 9. | Rcomp | Panasonic | ERJ-6ENF9761V Series= 225 | Res= 9.76 kOhm Power= 125.0 mW Tolerance= 1.0% | 1 | \$0.01 |  0805 7mm2 |
| 10. | Renb | Vishay-Dale | CRCW040237K4FKED Series= CRCW..e3 | Res= 37.4 kOhm Power= 63.0 mW Tolerance= 1.0% | 1 | \$0.01 |  0402 3mm2 |

| # | Name | Manufacturer | Part Number | Properties | Qty | Price | Footprint |
|-----|------|-------------------|--------------------------------------|--|-----|--------|-------------------|
| 11. | Rent | Vishay-Dale | CRCW0402105KFKED Series= CRCW..e3 | Res= 105.0 kOhm Power= 63.0 mW Tolerance= 1.0% | 1 | \$0.01 | 0402 3mm2 |
| 12. | Rfbb | Vishay-Dale | CRCW040210K0FKED Series= CRCW..e3 | Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0% | 1 | \$0.01 | 0402 3mm2 |
| 13. | Rfbt | Vishay-Dale | CRCW040232K4FKED Series= CRCW..e3 | Res= 32.4 kOhm Power= 63.0 mW Tolerance= 1.0% | 1 | \$0.01 | 0402 3mm2 |
| 14. | Rt | Vishay-Dale | CRCW040253K6FKED Series= CRCW..e3 | Res= 53.6 kOhm Power= 63.0 mW Tolerance= 1.0% | 1 | \$0.01 | 0402 3mm2 |
| 15. | U1 | Texas Instruments | TPS54622RHLR | Switcher | 1 | \$2.50 | S-PVQFN-N14 22mm2 |









Operating Values

| # | Name | Value | Category | Description |
|-----|--------------|-------------|----------|---|
| 1. | BOM Count | 15 | | Total Design BOM count |
| 2. | Total BOM | \$4.73 | | Total BOM Cost |
| 3. | Cin IRMS | 2.372 A | Current | Input capacitor RMS ripple current |
| 4. | Cout IRMS | 211.951 mA | Current | Output capacitor RMS ripple current |
| 5. | IC Ipk | 5.117 A | Current | Peak switch current in IC |
| 6. | Iin Avg | 2.612 A | Current | Average input current |
| 7. | L Ipp | 734.219 mA | Current | Peak-to-peak inductor ripple current |
| 8. | M1 Irms | 3.445 A | Current | Q Iavg |
| 9. | FootPrint | 245.0 mm2 | General | Total Foot Print Area of BOM components |
| 10. | Frequency | 881.052 kHz | General | Switching frequency |
| 11. | IC Tolerance | 10.0 mV | General | IC Feedback Tolerance |
| 12. | Pout | 12.084 W | General | Total output power |
| 13. | Vout OP | 2.544 V | Op_Point | Operational Output Voltage |
| 14. | Cross Freq | 27.603 kHz | Op_point | Bode plot crossover frequency |
| 15. | Duty Cycle | 52.592 % | Op_point | Duty cycle |
| 16. | Efficiency | 88.139 % | Op_point | Steady state efficiency |
| 17. | IC Tj | 63.617 degC | Op_point | IC junction temperature |
| 18. | ICThetaJA | 32.0 degC/W | Op_point | IC junction-to-ambient thermal resistance |
| 19. | IOUT_OP | 4.75 A | Op_point | Iout operating point |
| 20. | Phase Marg | 64.685 deg | Op_point | Bode Plot Phase Margin |
| 21. | VIN_OP | 5.25 V | Op_point | Vin operating point |
| 22. | Vout p-p | 5.613 mV | Op_point | Peak-to-peak output ripple voltage |
| 23. | Cin Pd | 11.251 mW | Power | Input capacitor power dissipation |
| 24. | Cout Pd | 314.462 μW | Power | Output capacitor power dissipation |
| 25. | IC Iq Pd | 3.15 mW | Power | IC Iq Pd |
| 26. | IC Pd | 1.051 W | Power | IC power dissipation |
| 27. | L Pd | 564.062 mW | Power | Inductor power dissipation |
| 28. | Total Pd | 1.626 W | Power | Total Power Dissipation |

Design Inputs

| # | Name | Value | Description |
|----|---------|-----------|------------------------|
| 1. | Iout | 4.75 A | Maximum Output Current |
| 2. | Iout1 | 4.75 Amps | Output Current #1 |
| 3. | VinMax | 5.25 V | Maximum input voltage |
| 4. | VinMin | 4.75 V | Minimum input voltage |
| 5. | Vout | 2.5 V | Output Voltage |
| 6. | Vout1 | 2.5 Volt | Output Voltage #1 |
| 7. | base_pn | TPS54622 | Base Product Number |
| 8. | source | DC | Input Source Type |
| 9. | Ta | 30.0 degC | Ambient temperature |

Design Assistance

1. **TPS54622** Product Folder : <http://www.ti.com/product/tps54622> : contains the data sheet and other resources.

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