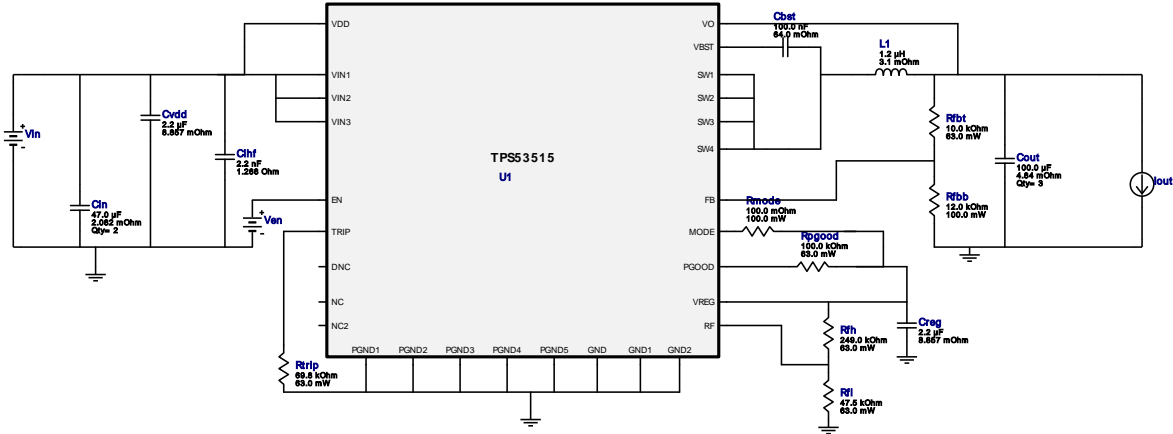


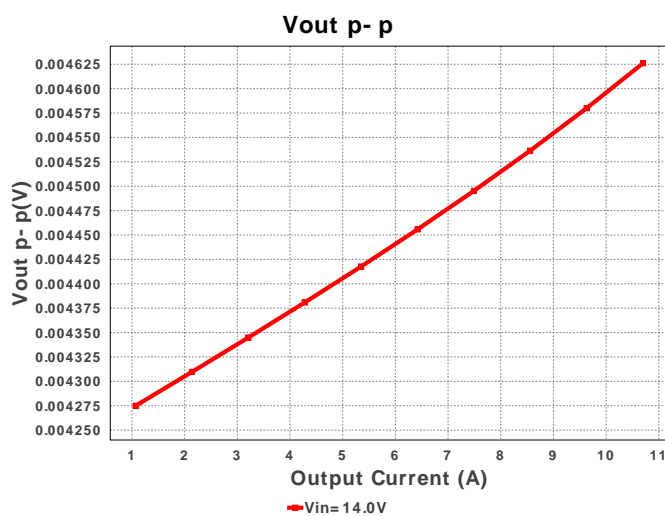
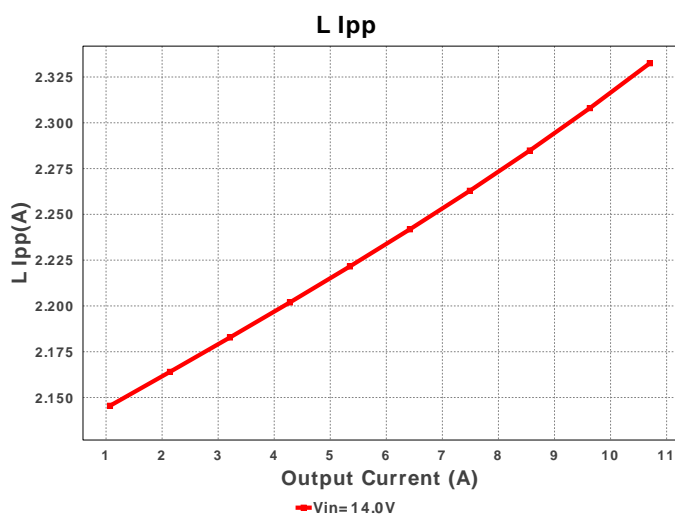
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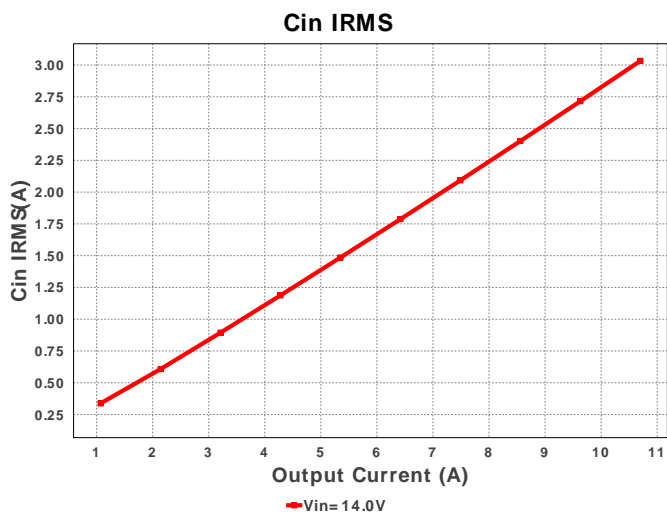
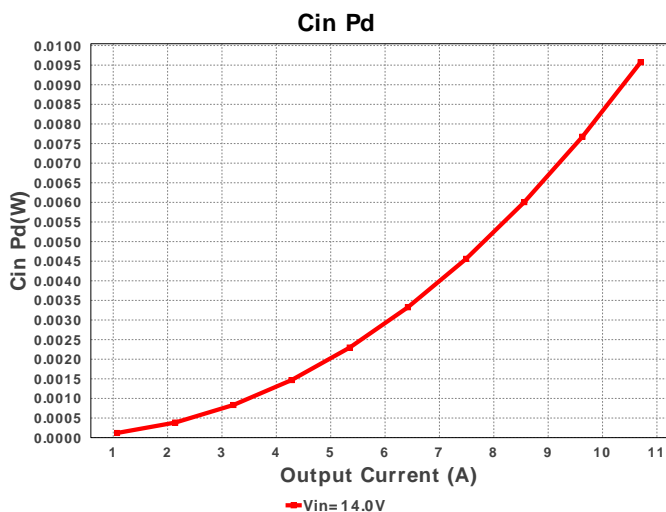
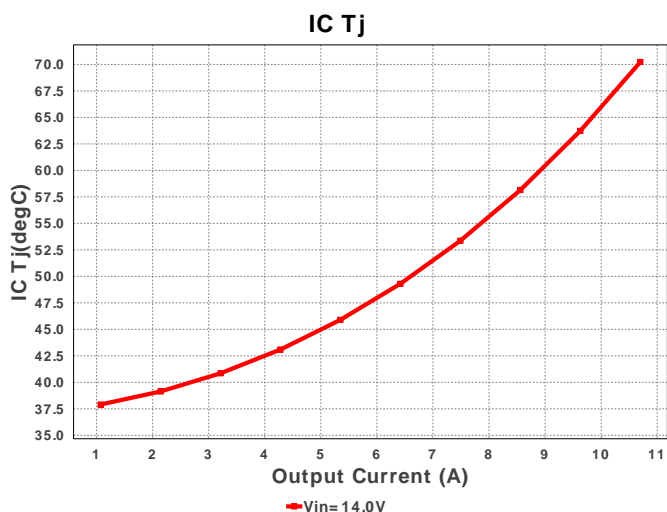
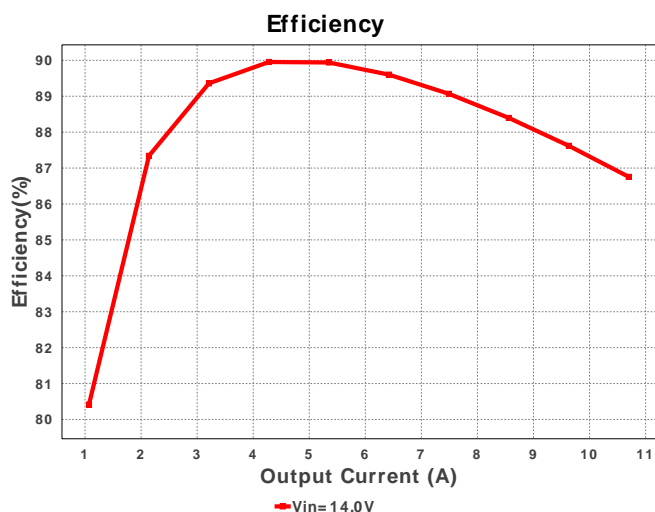
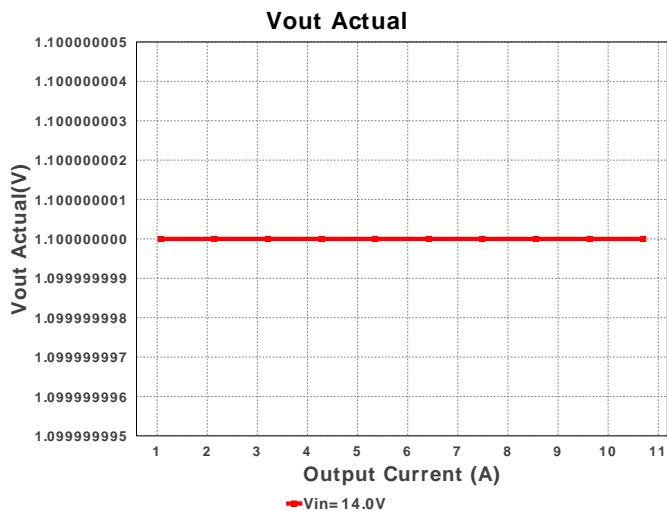
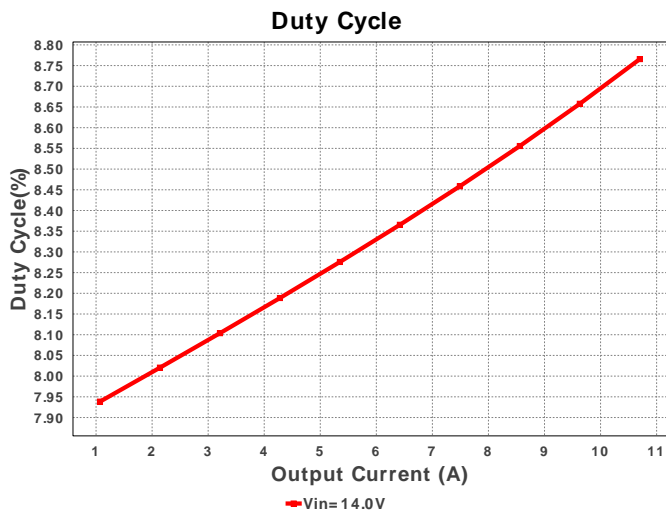
 Design : 3456224/1813 TPS53515RVER
 TPS53515RVER 14.0V-14.0V to 1.10V @ 10.7A

My Comments
 No comments

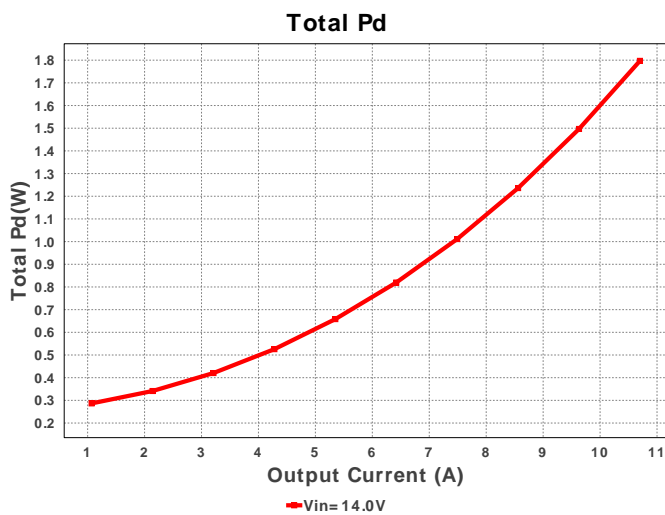
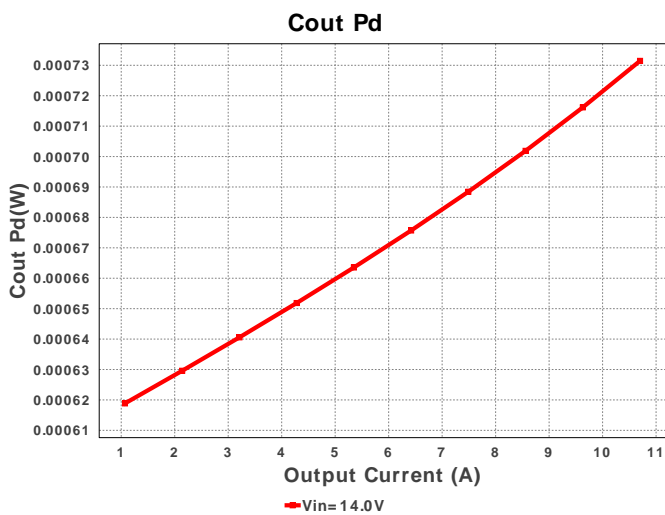
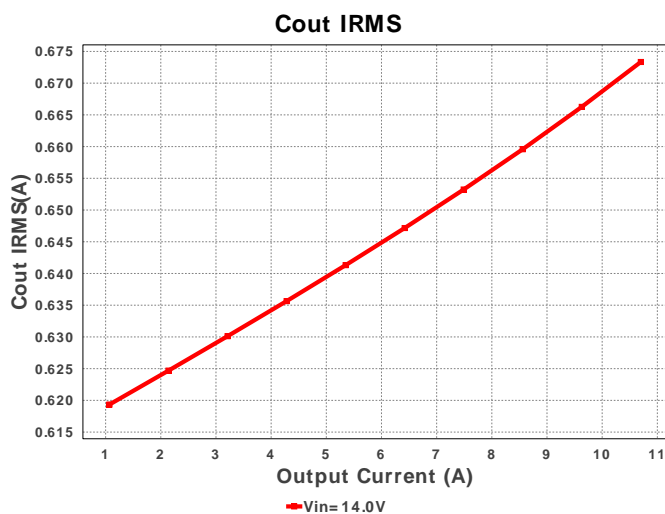
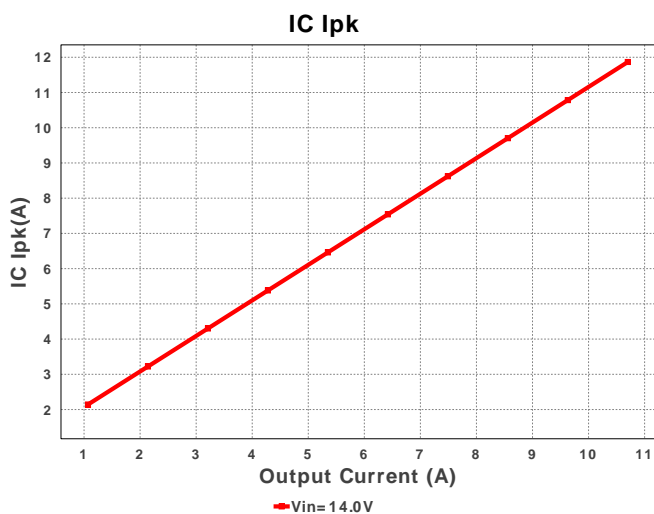
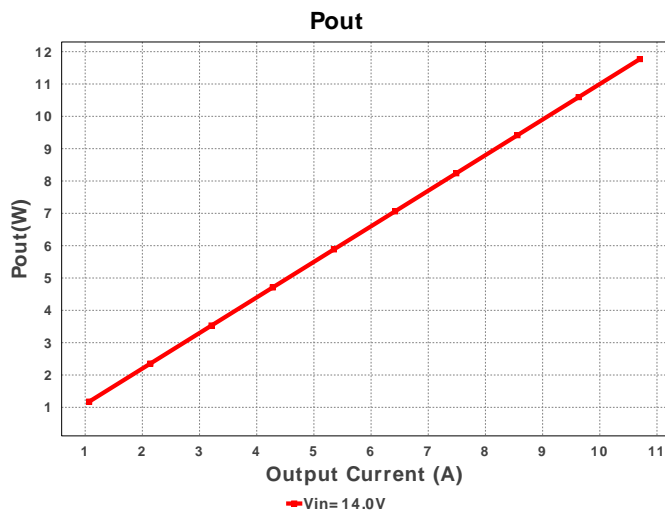
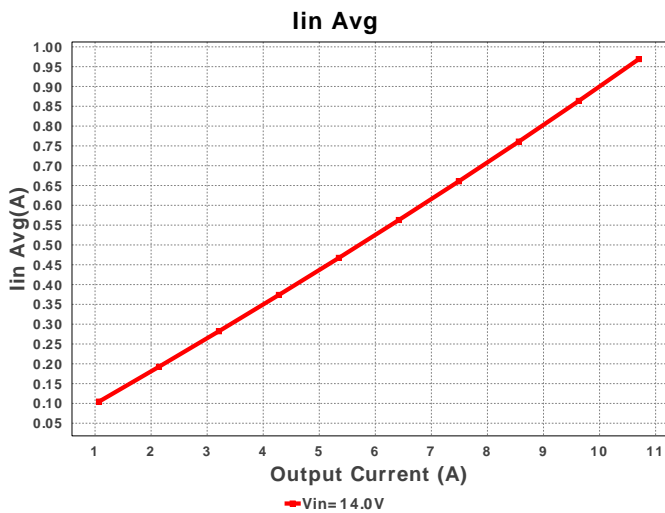
Electrical BOM

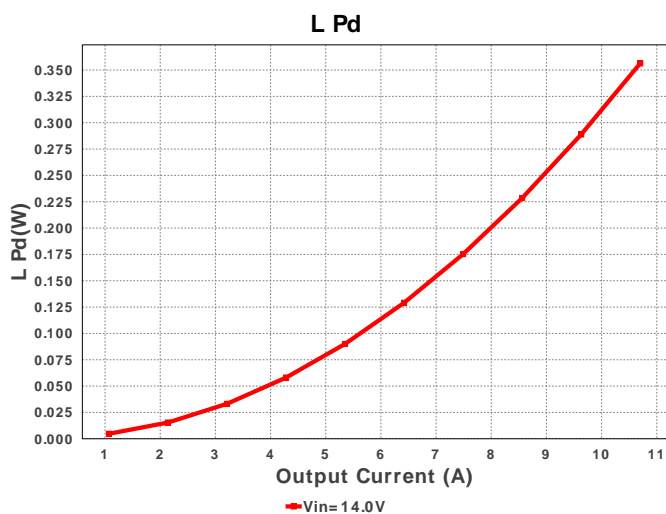
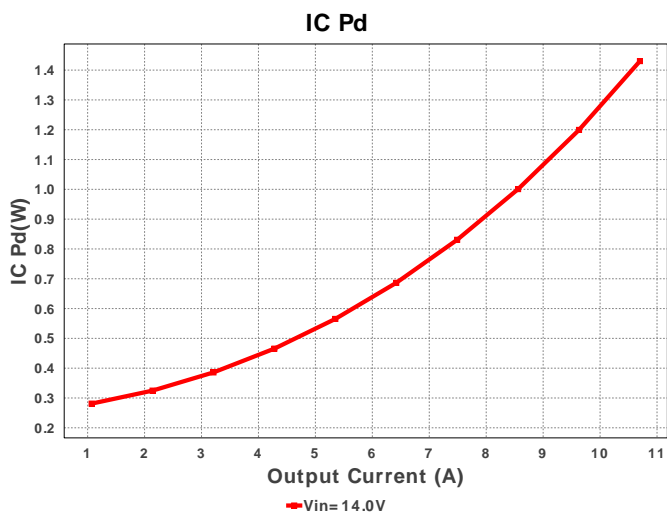
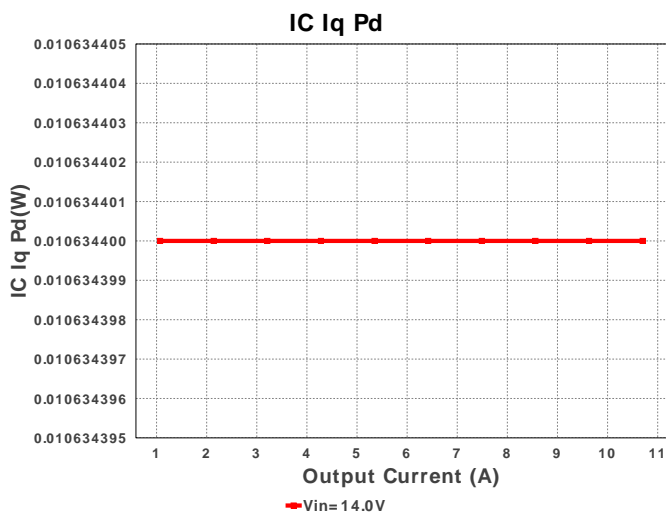
| # | Name | Manufacturer | Part Number | Properties | Qty | Price | Footprint |
|----|------|---------------|-------------------------------------|--|-----|--------|-----------------------------|
| 1. | Cbst | Kemet | C0805C104K5RACTU Series= X7R | Cap= 100.0 nF ESR= 64.0 mOhm VDC= 50.0 V IRMS= 1.64 A | 1 | \$0.01 | 0805 7 mm ² |
| 2. | Cihf | TDK | CGA1A2X7R1E222K030BA Series= X7R | Cap= 2.2 nF ESR= 1.26834 Ohm VDC= 25.0 V IRMS= 201.468 mA | 1 | \$0.01 | 0201_033 2 mm ² |
| 3. | Cin | TDK | C3216X5R1E476M160AC Series= X5R | Cap= 47.0 uF ESR= 2.082 mOhm VDC= 25.0 V IRMS= 5.0279 A | 2 | \$0.37 | 1206 11 mm ² |
| 4. | Cout | MuRata | GRM31CD80G107ME39L Series= X6T | Cap= 100.0 uF ESR= 4.84 mOhm VDC= 4.0 V IRMS= 4.3381 A | 3 | \$0.14 | 1206_190 11 mm ² |
| 5. | Creg | MuRata | GRM21BR61E225KA12L Series= X5R | Cap= 2.2 uF ESR= 8.857 mOhm VDC= 25.0 V IRMS= 1.3111 A | 1 | \$0.05 | 0805 7 mm ² |
| 6. | Cvdd | MuRata | GRM21BR61E225KA12L Series= X5R | Cap= 2.2 uF ESR= 8.857 mOhm VDC= 25.0 V IRMS= 1.3111 A | 1 | \$0.05 | 0805 7 mm ² |
| 7. | L1 | Coilcraft | XAL7070-122MEB | L= 1.2 µH DCR= 3.1 mOhm | 1 | \$1.19 | XAL7070 87 mm ² |
| 8. | Rfbb | Yageo America | RC0603FR-0712KL Series= ? | Res= 12.0 kOhm Power= 100.0 mW Tolerance= 1.0% | 1 | \$0.01 | 0603 5 mm ² |

| # | Name | Manufacturer | Part Number | Properties | Qty | Price | Footprint |
|-----|--------|-------------------|--------------------------------------|---|-----|--------|--------------------------------|
| 9. | Rfbt | Vishay-Dale | CRCW040210K0FKED Series= CRCW..e3 | Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0% | 1 | \$0.01 | 0402 3 mm ² |
| 10. | Rfh | Vishay-Dale | CRCW0402249KFKED Series= CRCW..e3 | Res= 249.0 kOhm Power= 63.0 mW Tolerance= 1.0% | 1 | \$0.01 | 0402 3 mm ² |
| 11. | Rfl | Vishay-Dale | CRCW040247K5FKED Series= CRCW..e3 | Res= 47.5 kOhm Power= 63.0 mW Tolerance= 1.0% | 1 | \$0.01 | 0402 3 mm ² |
| 12. | Rmode | Panasonic | ERJ-3RSFR10V Series= ERJ-3R | Res= 100.0 mOhm Power= 100.0 mW Tolerance= 1.0% | 1 | \$0.03 | 0603 5 mm ² |
| 13. | Rpgood | Vishay-Dale | CRCW0402100KFKED Series= CRCW..e3 | Res= 100.0 kOhm Power= 63.0 mW Tolerance= 1.0% | 1 | \$0.01 | 0402 3 mm ² |
| 14. | Rtrip | Vishay-Dale | CRCW040269K8FKED Series= CRCW..e3 | Res= 69.8 kOhm Power= 63.0 mW Tolerance= 1.0% | 1 | \$0.01 | 0402 3 mm ² |
| 15. | U1 | Texas Instruments | TPS53515RVER | Switcher | 1 | \$2.70 | R-PVQFN-N28 26 mm ² |









Operating Values

| # | Name | Value | Category | Description |
|-----|---------------------|-----------------------|----------|--|
| 1. | Cin IRMS | 3.032 A | Current | Input capacitor RMS ripple current |
| 2. | Cout IRMS | 673.336 mA | Current | Output capacitor RMS ripple current |
| 3. | IC Ipk | 11.866 A | Current | Peak switch current in IC |
| 4. | Iin Avg | 969.06 mA | Current | Average input current |
| 5. | L Ipp | 2.332 A | Current | Peak-to-peak inductor ripple current |
| 6. | BOM Count | 18 | General | Total Design BOM count |
| 7. | FootPrint | 214.0 mm ² | General | Total Foot Print Area of BOM components |
| 8. | Frequency | 397.87 kHz | General | Switching frequency |
| 9. | Mode | CCM | General | Conduction Mode |
| 10. | Pout | 11.77 W | General | Total output power |
| 11. | Total BOM | \$5.26 | General | Total BOM Cost |
| 12. | ICThetaJA Effective | 28.13 degC/W | Op_Point | Effective IC Junction-to-Ambient Thermal Resistance |
| 13. | Vout Actual | 1.1 V | Op_Point | Vout Actual calculated based on selected voltage divider resistors |
| 14. | Vout OP | 1.1 V | Op_Point | Operational Output Voltage |
| 15. | Duty Cycle | 8.766 % | Op_point | Duty cycle |
| 16. | Efficiency | 86.755 % | Op_point | Steady state efficiency |
| 17. | IC Tj | 70.232 degC | Op_point | IC junction temperature |
| 18. | IOUT_OP | 10.7 A | Op_point | Iout operating point |
| 19. | VIN_OP | 14.0 V | Op_point | Vin operating point |
| 20. | Vout p-p | 4.626 mV | Op_point | Peak-to-peak output ripple voltage |
| 21. | Cin Pd | 9.573 mW | Power | Input capacitor power dissipation |
| 22. | Cout Pd | 731.455 μW | Power | Output capacitor power dissipation |
| 23. | IC Iq Pd | 10.634 mW | Power | IC Iq Pd |
| 24. | IC Pd | 1.43 W | Power | IC power dissipation |
| 25. | L Pd | 356.324 mW | Power | Inductor power dissipation |
| 26. | Total Pd | 1.797 W | Power | Total Power Dissipation |
| 27. | Vout Tolerance | 1.625 % | | Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable |

Design Inputs

| # | Name | Value | Description |
|----|---------|----------|------------------------------------|
| 1. | Iout | 10.7 | Maximum Output Current |
| 2. | VinMax | 14.0 | Maximum input voltage |
| 3. | VinMin | 14.0 | Minimum input voltage |
| 4. | Vout | 1.1 | Output Voltage |
| 5. | base_pn | TPS53515 | Texas Instruments Base Part Number |
| 6. | source | DC | Input Source Type |
| 7. | ta | 30.0 | Ambient temperature |

Design Assistance

1. TPS53515 Product Folder : <http://www.ti.com/product/TPS53515> : contains the data sheet and other resources.

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