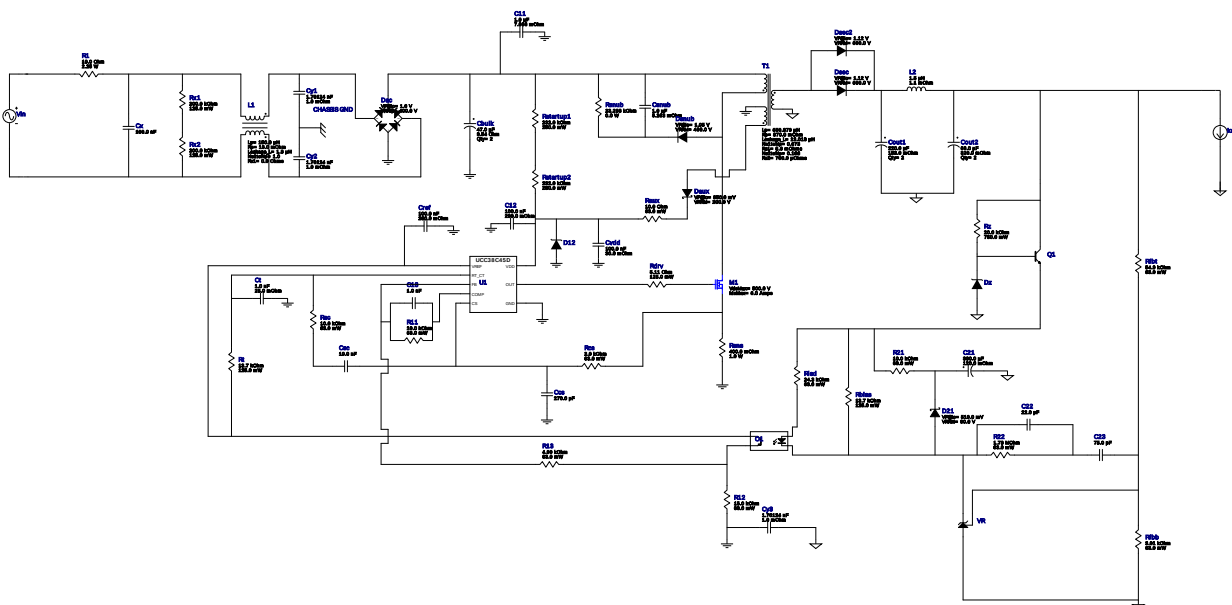


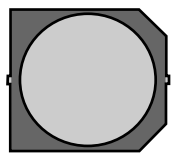
## WEBENCH® Design Report

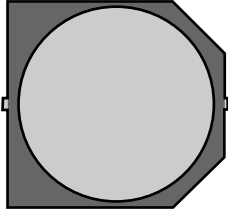
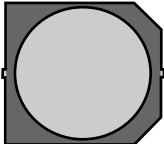
Design : 4738744/42 UCC38C45DR  
UCC38C45DR 110.0V-130.0V to 48.00V @ 1.0A

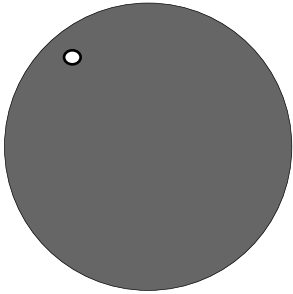
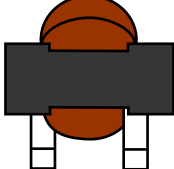


1. The EMI filter selected here contains the estimated values. The real numbers will depend on the attenuation needed at a particular frequency.

## Electrical BOM

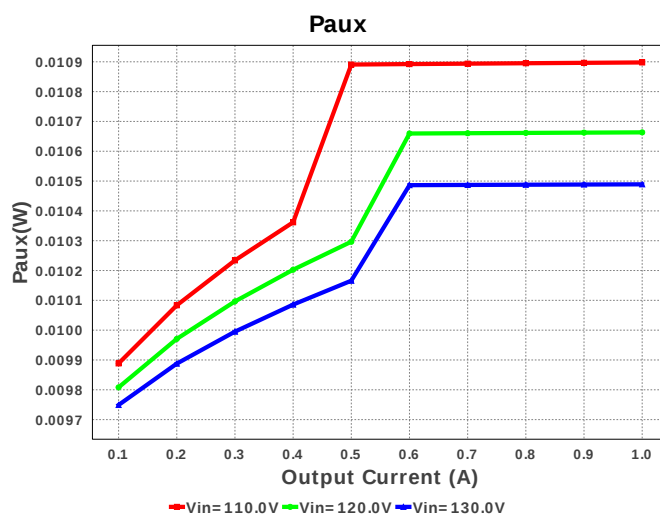
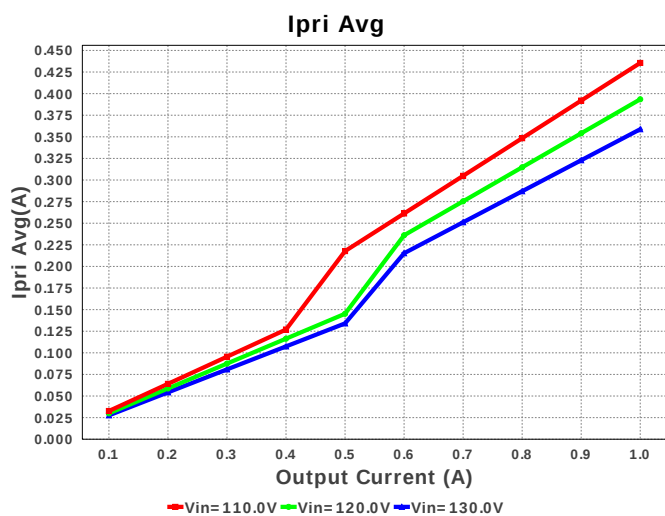
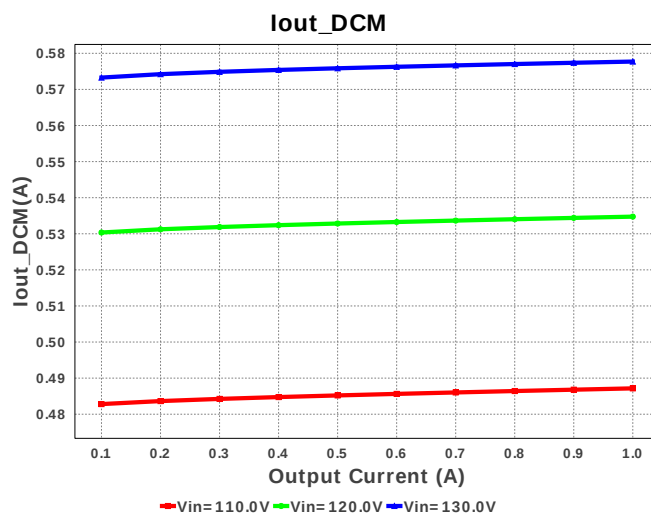
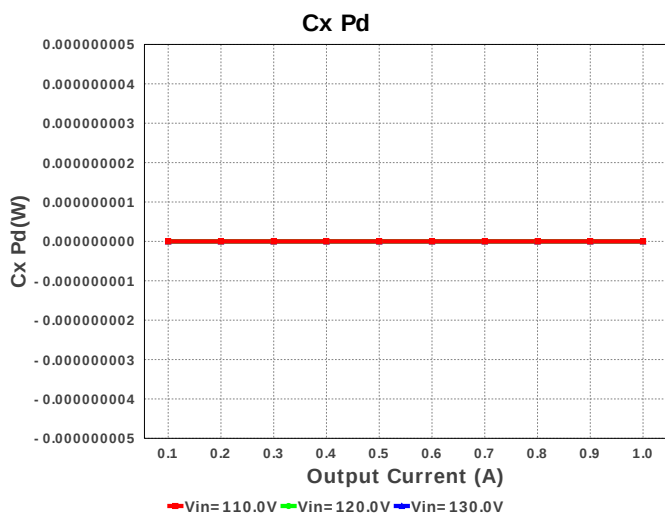
| #  | Name  | Manufacturer              | Part Number                         | Properties                                                        | Qty | Price  | Footprint                                                                                                                  |
|----|-------|---------------------------|-------------------------------------|-------------------------------------------------------------------|-----|--------|----------------------------------------------------------------------------------------------------------------------------|
| 1. | C11   | MuRata                    | GRM55DR72E105KW01L<br>Series= X7R   | Cap= 1.0 uF<br>ESR= 7.086 mOhm<br>VDC= 250.0 V<br>IRMS= 2.0605 A  | 1   | \$0.26 | <br>2220_200 54 mm <sup>2</sup>       |
| 2. | C12   | AVX                       | 08053C104KAT2A<br>Series= X7R       | Cap= 100.0 nF<br>ESR= 280.0 mOhm<br>VDC= 25.0 V<br>IRMS= 0.0 A    | 1   | \$0.01 | <br>0805 7 mm <sup>2</sup>            |
| 3. | C13   | Samsung Electro-Mechanics | CL21C102JBCNFNC<br>Series= C0G/NP0  | Cap= 1.0 nF<br>VDC= 50.0 V<br>IRMS= 0.0 A                         | 1   | \$0.01 | <br>0805 7 mm <sup>2</sup>            |
| 4. | C21   | Panasonic                 | EEV-FK1H331Q<br>Series= FK          | Cap= 330.0 uF<br>ESR= 120.0 mOhm<br>VDC= 50.0 V<br>IRMS= 900.0 mA | 1   | \$0.48 | <br>SM_RADIAL_H13 264 mm <sup>2</sup> |
| 5. | C22   | Kemet                     | C0805C220K3GACTU<br>Series= C0G/NP0 | Cap= 22.0 pF<br>VDC= 25.0 V<br>IRMS= 0.0 A                        | 1   | \$0.01 | <br>0805 7 mm <sup>2</sup>            |
| 6. | C23   | Samsung Electro-Mechanics | CL21C750JBANNNC<br>Series= C0G/NP0  | Cap= 75.0 pF<br>VDC= 50.0 V<br>IRMS= 0.0 A                        | 1   | \$0.01 | <br>0805 7 mm <sup>2</sup>            |
| 7. | Cbulk | Vishay-Bcomponents        | MAL215759479E3<br>Series= 2239      | Cap= 47.0 uF<br>ESR= 3.54 Ohm<br>VDC= 500.0 V<br>IRMS= 680.0 mA   | 2   | \$2.68 | 157PUM-SI_2200x2500 576 mm <sup>2</sup>                                                                                    |
| 8. | Ccs   | Yageo America             | CC0805KRX7R9BB271<br>Series= X7R    | Cap= 270.0 pF<br>VDC= 50.0 V<br>IRMS= 0.0 A                       | 1   | \$0.01 | <br>0805 7 mm <sup>2</sup>            |

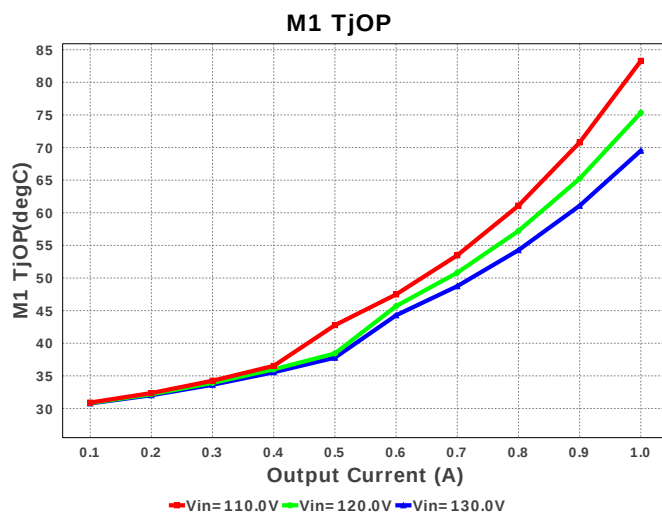
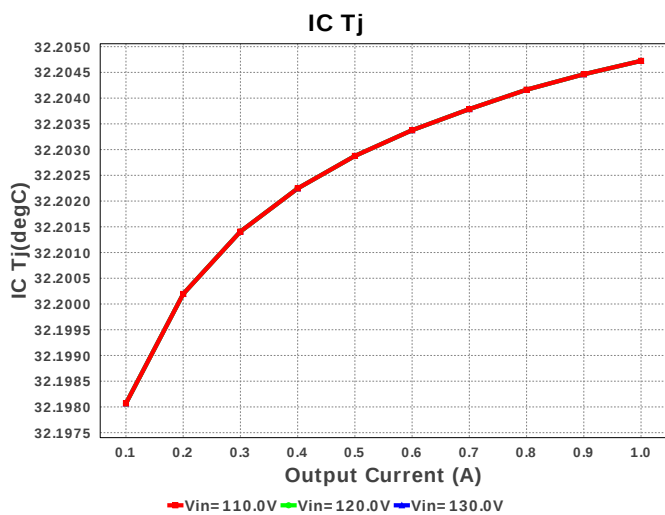
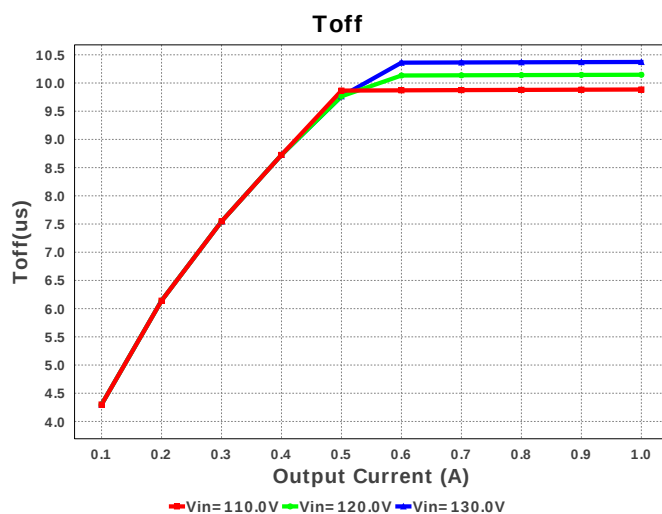
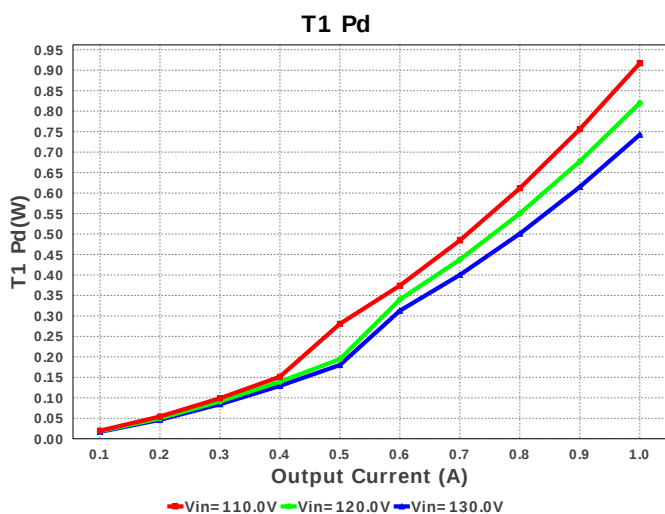
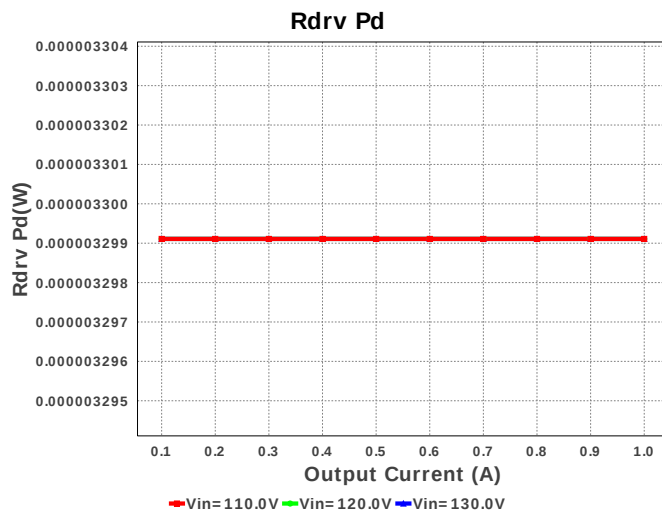
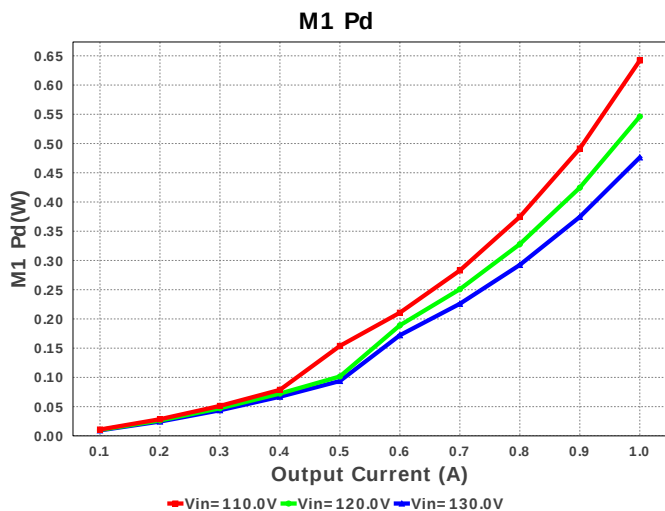
| #   | Name  | Manufacturer     | Part Number                         | Properties                                                          | Qty | Price  | Footprint                                                                                                                            |
|-----|-------|------------------|-------------------------------------|---------------------------------------------------------------------|-----|--------|--------------------------------------------------------------------------------------------------------------------------------------|
| 9.  | Cout1 | Panasonic        | EEV-FK2A221M<br>Series= FK          | Cap= 220.0 uF<br>ESR= 153.0 mOhm<br>VDC= 100.0 V<br>IRMS= 917.0 mA  | 2   | \$0.92 | <br>SM_RADIAL_K16 483 mm <sup>2</sup>             |
| 10. | Cout2 | Panasonic        | EEV-FK2A680Q<br>Series= FK          | Cap= 68.0 uF<br>ESR= 320.0 mOhm<br>VDC= 100.0 V<br>IRMS= 500.0 mA   | 2   | \$0.51 | <br>SM_RADIAL_H13 264 mm <sup>2</sup>             |
| 11. | Cref  | AVX              | 08053C104KAT2A<br>Series= X7R       | Cap= 100.0 nF<br>ESR= 280.0 mOhm<br>VDC= 25.0 V<br>IRMS= 0.0 A      | 1   | \$0.01 | <br>0805 7 mm <sup>2</sup>                        |
| 12. | Csc   | MuRata           | GRM216R71H103KA01D<br>Series= X7R   | Cap= 10.0 nF<br>VDC= 50.0 V<br>IRMS= 0.0 A                          | 1   | \$0.01 | <br>0805 7 mm <sup>2</sup>                        |
| 13. | Csnub | TDK              | C5750X6S2W105K<br>Series= X6S       | Cap= 1.0 uF<br>ESR= 5.263 mOhm<br>VDC= 400.0 V<br>IRMS= 0.0 A       | 1   | \$1.19 | <br>2220 54 mm <sup>2</sup>                       |
| 14. | Ct    | Kemet            | C0805C102J5GACTU<br>Series= C0G/NP0 | Cap= 1.0 nF<br>ESR= 25.0 mOhm<br>VDC= 50.0 V<br>IRMS= 1.71 A        | 1   | \$0.01 | <br>0805 7 mm <sup>2</sup>                        |
| 15. | Cvdd  | MuRata           | GRM188R71E104KA01D<br>Series= X7R   | Cap= 100.0 nF<br>ESR= 30.0 mOhm<br>VDC= 25.0 V<br>IRMS= 1.51 A      | 1   | \$0.01 | <br>0603 5 mm <sup>2</sup>                      |
| 16. | Cx    | TDK              | B32913A5104M000<br>Series= 2231     | Cap= 100.0 nF<br>VDC= 1000.0 V<br>IRMS= 0.0 A                       | 1   | \$0.46 | <br>B32913_2650x600x1500<br>228 mm <sup>2</sup> |
| 17. | Cy1   | CUSTOM           | CUSTOM<br>Series= ?                 | Cap= 1.70124 nF<br>ESR= 1.0 mOhm<br>VDC= 220.62 V<br>IRMS= 500.0 uA | 1   | NA     | CUSTOM 0 mm <sup>2</sup>                                                                                                             |
| 18. | Cy2   | CUSTOM           | CUSTOM<br>Series= ?                 | Cap= 1.70124 nF<br>ESR= 1.0 mOhm<br>VDC= 220.62 V<br>IRMS= 500.0 uA | 1   | NA     | CUSTOM 0 mm <sup>2</sup>                                                                                                             |
| 19. | Cy3   | CUSTOM           | CUSTOM<br>Series= ?                 | Cap= 1.70124 nF<br>ESR= 1.0 mOhm<br>VDC= 220.62 V<br>IRMS= 500.0 uA | 1   | NA     | CUSTOM 0 mm <sup>2</sup>                                                                                                             |
| 20. | D12   | Diodes Inc.      | MMSZ5248B-7-F                       | Zener                                                               | 1   | \$0.04 | <br>SOD-123 13 mm <sup>2</sup>                  |
| 21. | D21   | ON Semiconductor | MBRA160T3G                          | VF@Io= 510.0 mV<br>VRRM= 60.0 V                                     | 1   | \$0.12 | <br>SMA 37 mm <sup>2</sup>                      |
| 22. | Dac   | Diodes Inc.      | HD04-T                              | VF@Io= 1.0 V<br>VRRM= 400.0 V                                       | 1   | \$0.12 | <br>MiniDIP 62 mm <sup>2</sup>                  |
| 23. | Daux  | Diodes Inc.      | DFLS1200-7                          | VF@Io= 850.0 mV<br>VRRM= 200.0 V                                    | 1   | \$0.21 | <br>PowerDI123 13 mm <sup>2</sup>               |

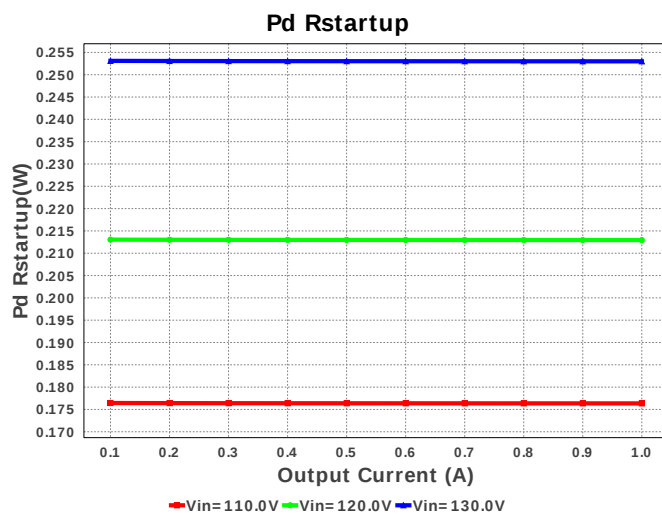
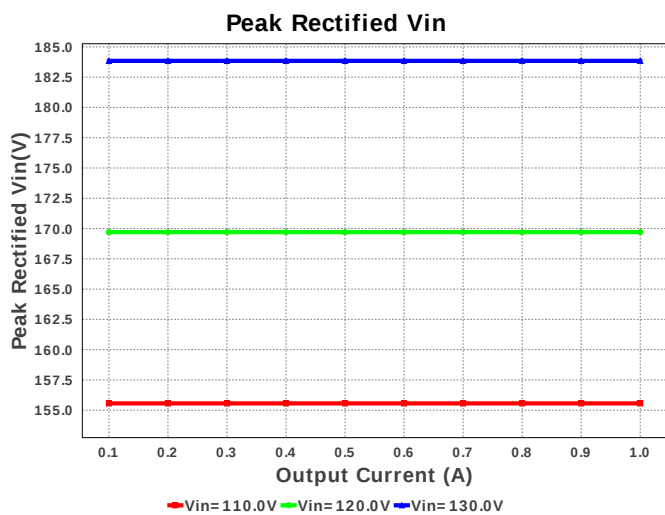
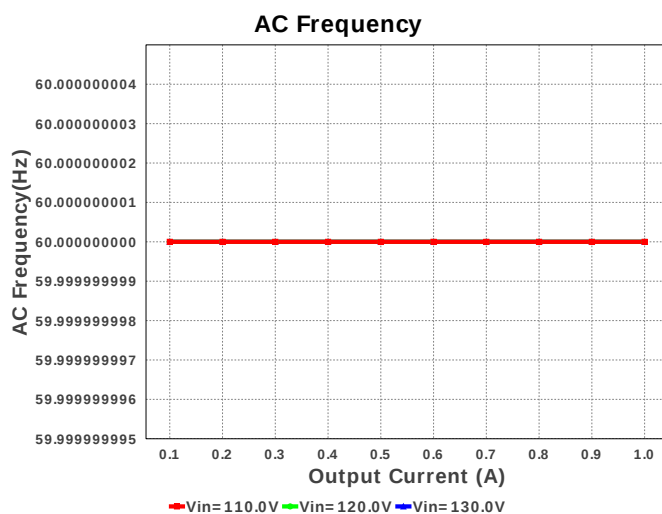
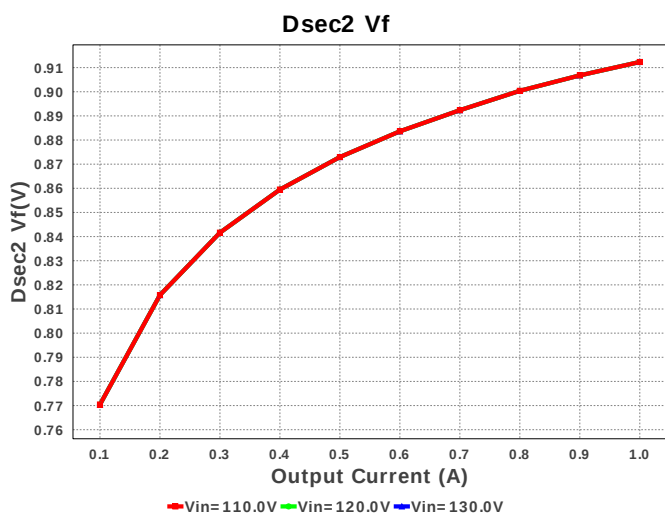
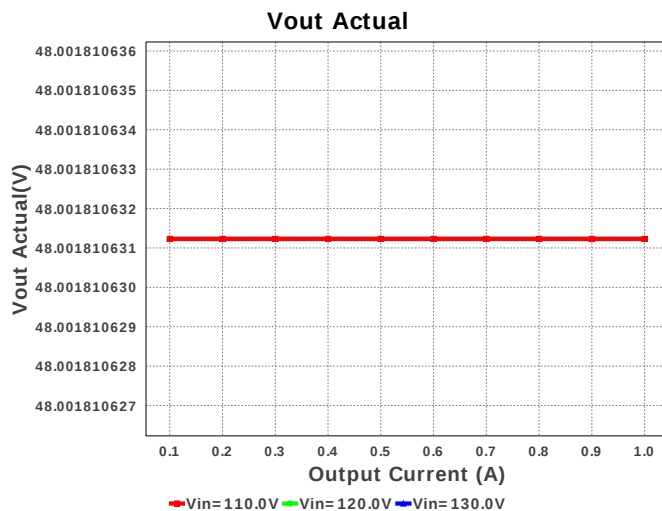
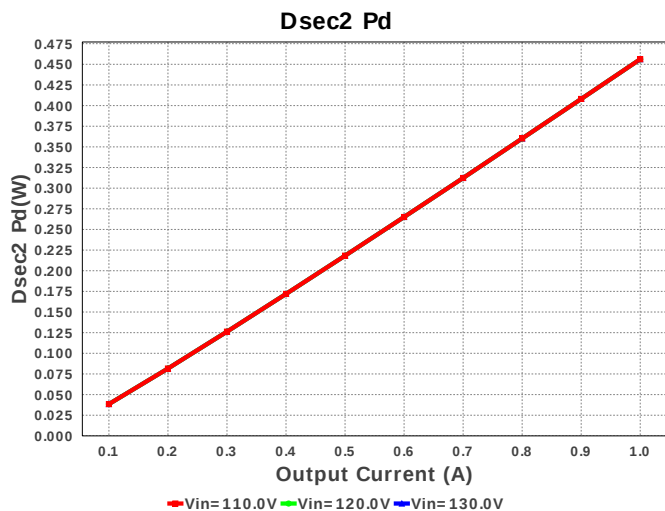
| #   | Name  | Manufacturer                | Part Number                          | Properties                                                                          | Qty | Price  | Footprint                                                                                                |
|-----|-------|-----------------------------|--------------------------------------|-------------------------------------------------------------------------------------|-----|--------|----------------------------------------------------------------------------------------------------------|
| 24. | Dsec  | Bourns                      | CD214C-F3600                         | VF@Io= 1.12 V<br>VRRM= 600.0 V                                                      | 1   | \$0.18 | <br>SMC 83 mm²        |
| 25. | Dsec2 | Bourns                      | CD214C-F3600                         | VF@Io= 1.12 V<br>VRRM= 600.0 V                                                      | 1   | \$0.18 | <br>SMC 83 mm²        |
| 26. | Dsnub | Bourns                      | CD1408-FU1400                        | VF@Io= 1.05 V<br>VRRM= 400.0 V                                                      | 1   | \$0.13 | <br>Diode_1408 13 mm² |
| 27. | Dz    | Micro Commercial Components | 3SMAJ5932B-TP                        | Zener                                                                               | 1   | \$0.12 | <br>SMA 37 mm²        |
| 28. | L1    | API Delevan                 | CM6296R-154                          | Lp= 150.0 µH<br>Rp= 16.0 mOhm<br>Leakage_L= 1.8 µH<br>Ns1toNp= 1.0<br>Rs1= 0.0 Ohms | 1   | \$5.95 | <br>CM6296 833 mm²    |
| 29. | L2    | Coilcraft                   | SER1590-152MLB                       | L= 1.5 µH<br>DCR= 1.1 mOhm                                                          | 1   | \$1.12 | <br>SER1590 324 mm²  |
| 30. | M1    | Fairchild Semiconductor     | FDD6N50TM                            | VdsMax= 500.0 V<br>IdsMax= 6.0 Amps                                                 | 1   | \$0.47 | <br>DPAK 102 mm²    |
| 31. | O1    | Vishay-Semiconductor        | TCMT1107                             | Optocoupler                                                                         | 1   | \$0.21 | <br>SOP-4 44 mm²    |
| 32. | Q1    | ON Semiconductor            | BC846BLT1G                           | Bipolar Transistor                                                                  | 1   | \$0.02 | <br>SOT-23 14 mm²   |
| 33. | R1    | Vishay-Dale                 | AC03000001009JACCS<br>Series= F_RES  | Res= 10.0 Ohm<br>Power= 2.25 W<br>Tolerance= 5.0%                                   | 1   | \$0.30 | <br>AC03 158 mm²    |
| 34. | R11   | Vishay-Dale                 | CRCW040210K0FKED<br>Series= CRCW..e3 | Res= 10.0 kOhm<br>Power= 63.0 mW<br>Tolerance= 1.0%                                 | 1   | \$0.01 | <br>0402 3 mm²      |
| 35. | R12   | Vishay-Dale                 | CRCW040215K0FKED<br>Series= CRCW..e3 | Res= 15.0 kOhm<br>Power= 63.0 mW<br>Tolerance= 1.0%                                 | 1   | \$0.01 | <br>0402 3 mm²      |
| 36. | R13   | Vishay-Dale                 | CRCW04024K99FKED<br>Series= CRCW..e3 | Res= 4.99 kOhm<br>Power= 63.0 mW<br>Tolerance= 1.0%                                 | 1   | \$0.01 | <br>0402 3 mm²      |
| 37. | R21   | Vishay-Dale                 | CRCW040210K0FKED<br>Series= CRCW..e3 | Res= 10.0 kOhm<br>Power= 63.0 mW<br>Tolerance= 1.0%                                 | 1   | \$0.01 | <br>0402 3 mm²      |
| 38. | R22   | Vishay-Dale                 | CRCW04021M78FKED<br>Series= CRCW..e3 | Res= 1.78 MOhm<br>Power= 63.0 mW<br>Tolerance= 1.0%                                 | 1   | \$0.01 | <br>0402 3 mm²      |
| 39. | Raux  | Vishay-Dale                 | CRCW040210R0FKED<br>Series= CRCW..e3 | Res= 10.0 Ohm<br>Power= 63.0 mW<br>Tolerance= 1.0%                                  | 1   | \$0.01 | <br>0402 3 mm²      |

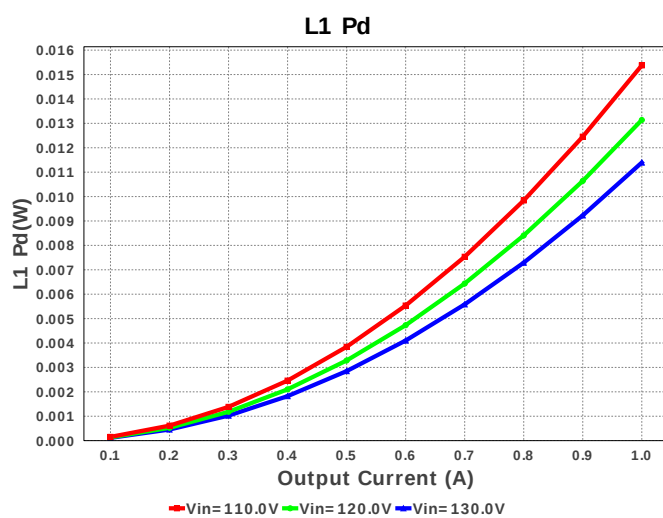
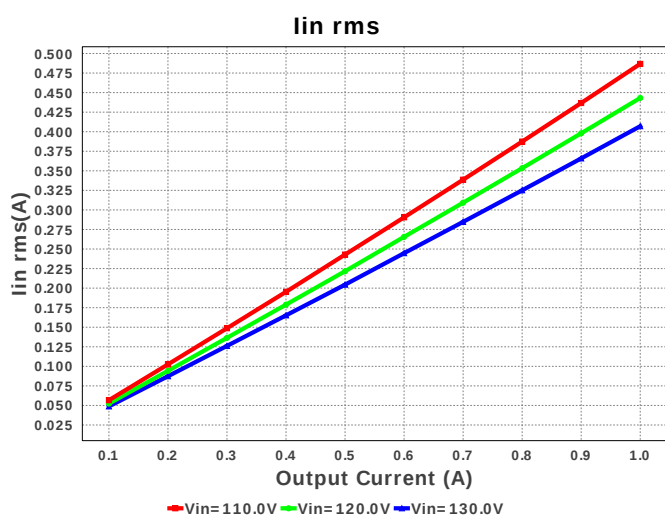
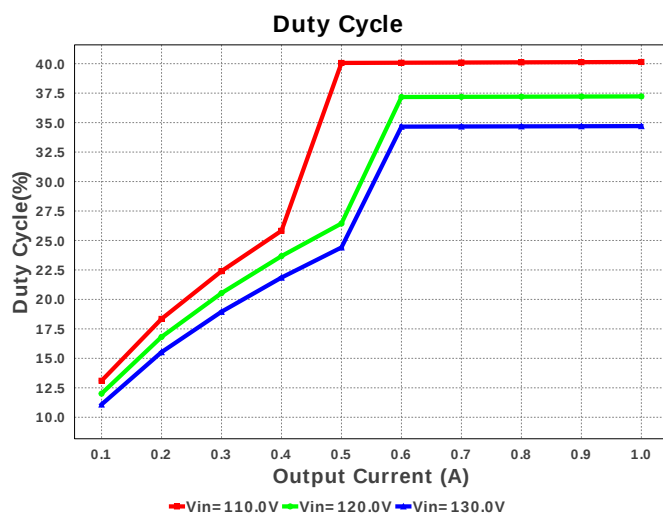
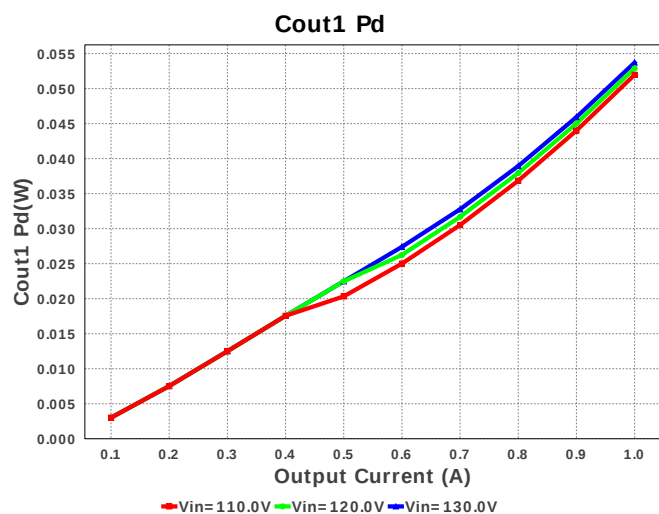
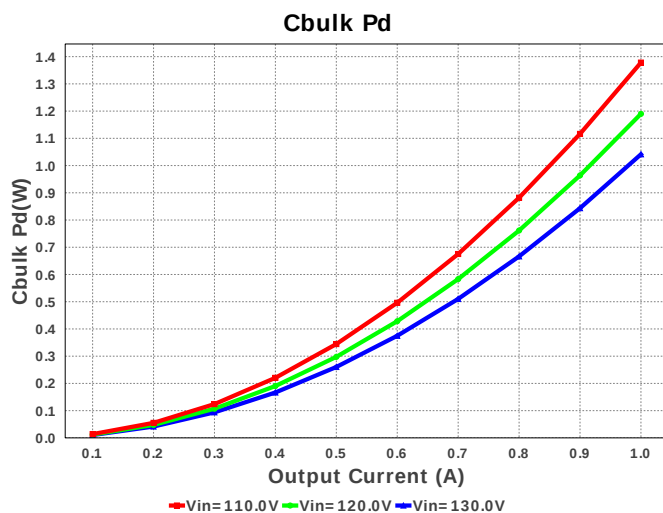
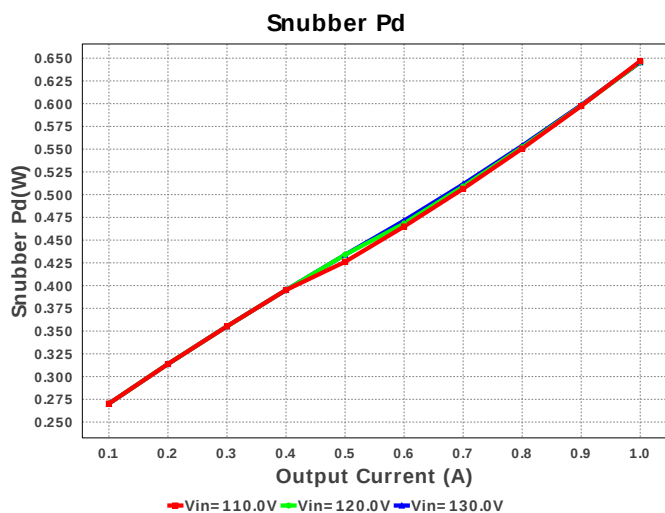
| #   | Name      | Manufacturer              | Part Number                          | Properties                                                                                                                         | Qty | Price  | Footprint                                                                                                       |
|-----|-----------|---------------------------|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-----|--------|-----------------------------------------------------------------------------------------------------------------|
| 40. | Rbias     | Panasonic                 | ERJ-6ENF1372V<br>Series= ERJ-6E      | Res= 13.7 kOhm<br>Power= 125.0 mW<br>Tolerance= 1.0%                                                                               | 1   | \$0.01 |  0805 7 mm <sup>2</sup>      |
| 41. | Rcs       | Vishay-Dale               | CRCW04022K00FKED<br>Series= CRCW..e3 | Res= 2.0 kOhm<br>Power= 63.0 mW<br>Tolerance= 1.0%                                                                                 | 1   | \$0.01 |  0402 3 mm <sup>2</sup>      |
| 42. | Rdrv      | Vishay-Dale               | CRCW08055R11FKEA<br>Series= CRCW..e3 | Res= 5.11 Ohm<br>Power= 125.0 mW<br>Tolerance= 1.0%                                                                                | 1   | \$0.01 |  0805 7 mm <sup>2</sup>      |
| 43. | Rfbb      | Vishay-Dale               | CRCW04023K01FKED<br>Series= CRCW..e3 | Res= 3.01 kOhm<br>Power= 63.0 mW<br>Tolerance= 1.0%                                                                                | 1   | \$0.01 |  0402 3 mm <sup>2</sup>      |
| 44. | Rfbt      | Vishay-Dale               | CRCW040254K9FKED<br>Series= CRCW..e3 | Res= 54.9 kOhm<br>Power= 63.0 mW<br>Tolerance= 1.0%                                                                                | 1   | \$0.01 |  0402 3 mm <sup>2</sup>      |
| 45. | Rled      | Vishay-Dale               | CRCW040224K3FKED<br>Series= CRCW..e3 | Res= 24.3 kOhm<br>Power= 63.0 mW<br>Tolerance= 1.0%                                                                                | 1   | \$0.01 |  0402 3 mm <sup>2</sup>      |
| 46. | Rsc       | Vishay-Dale               | CRCW040210K0FKED<br>Series= CRCW..e3 | Res= 10.0 kOhm<br>Power= 63.0 mW<br>Tolerance= 1.0%                                                                                | 1   | \$0.01 |  0402 3 mm <sup>2</sup>      |
| 47. | Rsns      | Stackpole Electronics Inc | CSRN2010FKR400<br>Series= ?          | Res= 400.0 mOhm<br>Power= 1.0 W<br>Tolerance= 1.0%                                                                                 | 1   | \$0.11 |  2010 32 mm <sup>2</sup>     |
| 48. | Rsnub     | CUSTOM                    | CUSTOM<br>Series= ?                  | Res= 23.288 kOhm<br>Power= 0.0 W<br>Tolerance= 0.0%                                                                                | 1   | NA     | CUSTOM 0 mm <sup>2</sup>                                                                                        |
| 49. | Rstartup1 | Panasonic                 | ERJ-8ENF2323V<br>Series= ERJ-8E      | Res= 232.0 kOhm<br>Power= 250.0 mW<br>Tolerance= 1.0%                                                                              | 1   | \$0.01 |  1206 11 mm <sup>2</sup>   |
| 50. | Rstartup2 | Panasonic                 | ERJ-8ENF2323V<br>Series= ERJ-8E      | Res= 232.0 kOhm<br>Power= 250.0 mW<br>Tolerance= 1.0%                                                                              | 1   | \$0.01 |  1206 11 mm <sup>2</sup>   |
| 51. | Rt        | Panasonic                 | ERJ-6ENF1372V<br>Series= ERJ-6E      | Res= 13.7 kOhm<br>Power= 125.0 mW<br>Tolerance= 1.0%                                                                               | 1   | \$0.01 |  0805 7 mm <sup>2</sup>    |
| 52. | Rx1       | Panasonic                 | ERJ-6ENF2003V<br>Series= ERJ-6E      | Res= 200.0 kOhm<br>Power= 125.0 mW<br>Tolerance= 1.0%                                                                              | 1   | \$0.01 |  0805 7 mm <sup>2</sup>    |
| 53. | Rx2       | Panasonic                 | ERJ-6ENF2003V<br>Series= ERJ-6E      | Res= 200.0 kOhm<br>Power= 125.0 mW<br>Tolerance= 1.0%                                                                              | 1   | \$0.01 |  0805 7 mm <sup>2</sup>    |
| 54. | Rz        | Vishay-Dale               | CRCW201020K0FKEF<br>Series= CRCW..e3 | Res= 20.0 kOhm<br>Power= 750.0 mW<br>Tolerance= 1.0%                                                                               | 1   | \$0.03 |  2010 32 mm <sup>2</sup>   |
| 55. | T1        | CUSTOM                    | CUSTOM                               | Lp= 650.879 µH<br>Rp= 870.0 mOhm<br>Leakage_L= 13.018 µH<br>Ns1toNp= 0.673<br>Rs1= 8.6 mOhms<br>Ns2toNp= 0.166<br>Rs2= 700.0 µOhms | 1   | NA     | CUSTOM 0 mm <sup>2</sup>                                                                                        |
| 56. | U1        | Texas Instruments         | UCC38C45DR                           | Switcher                                                                                                                           | 1   | \$0.60 |  D0008A 57 mm <sup>2</sup> |

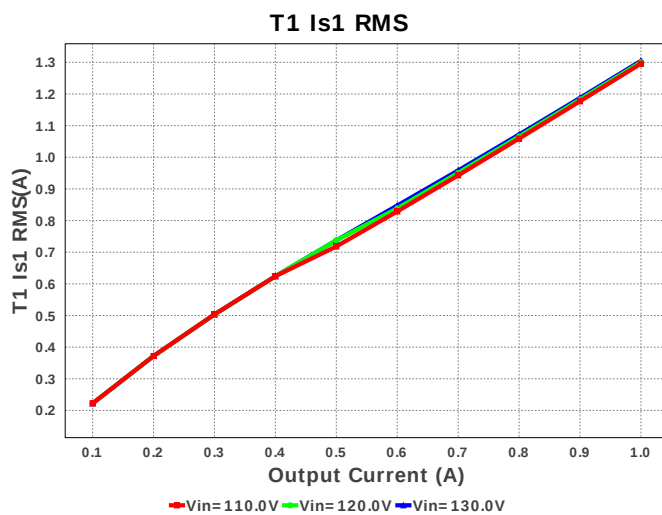
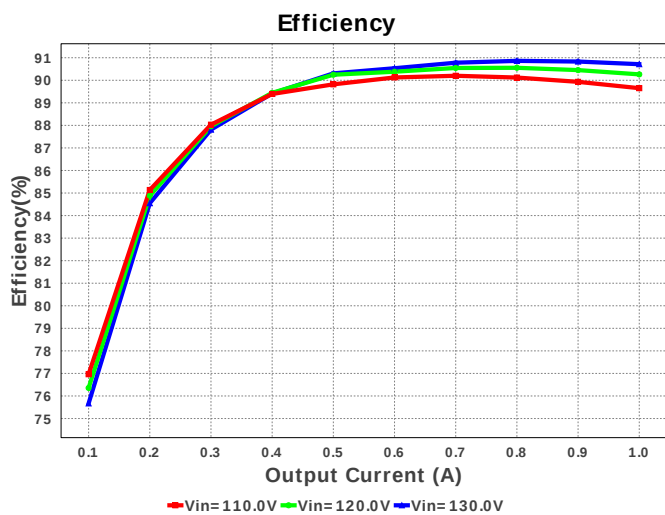
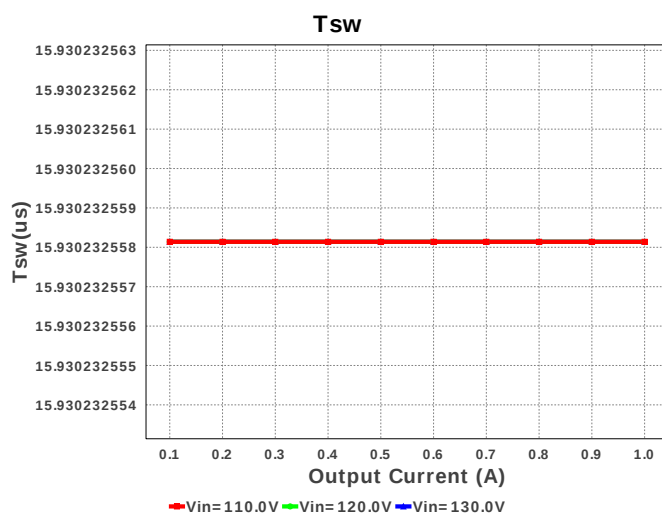
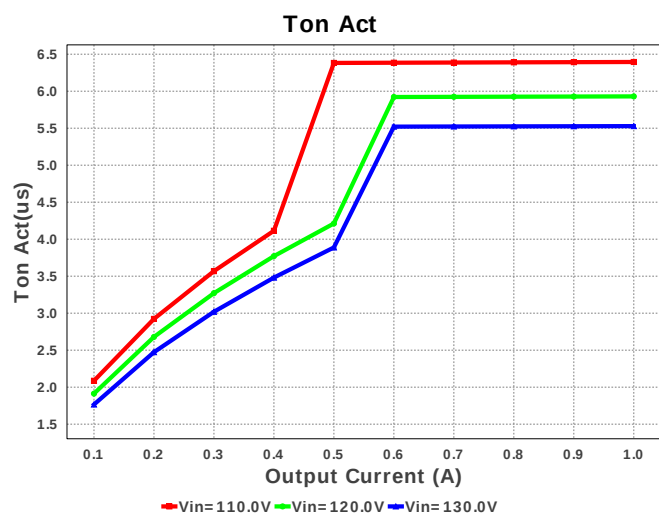
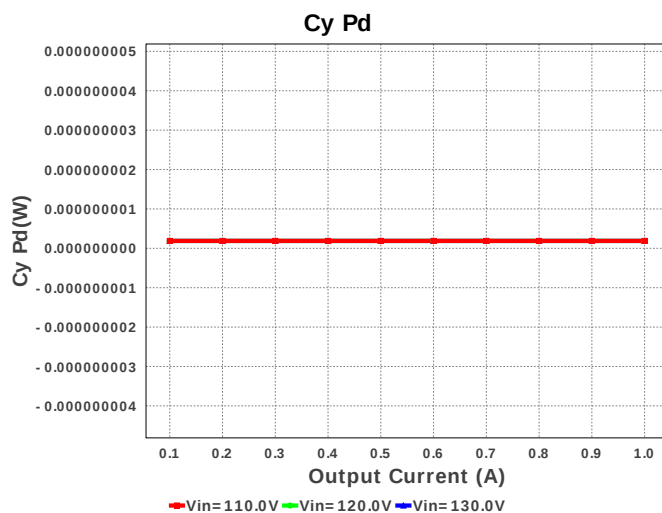
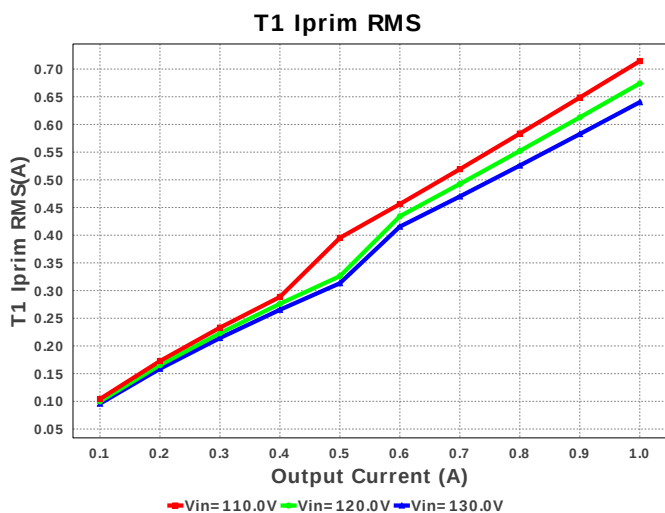
| #   | Name | Manufacturer      | Part Number | Properties         | Qty | Price  | Footprint                                                                                                        |
|-----|------|-------------------|-------------|--------------------|-----|--------|------------------------------------------------------------------------------------------------------------------|
| 57. | VR   | Texas Instruments | TL431AIDBVR | Voltage References | 1   | \$0.07 |  R-PDSO-G3 16 mm <sup>2</sup> |

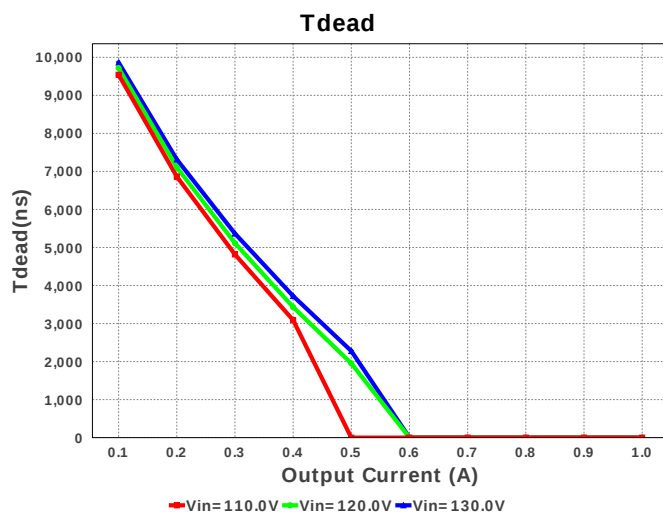
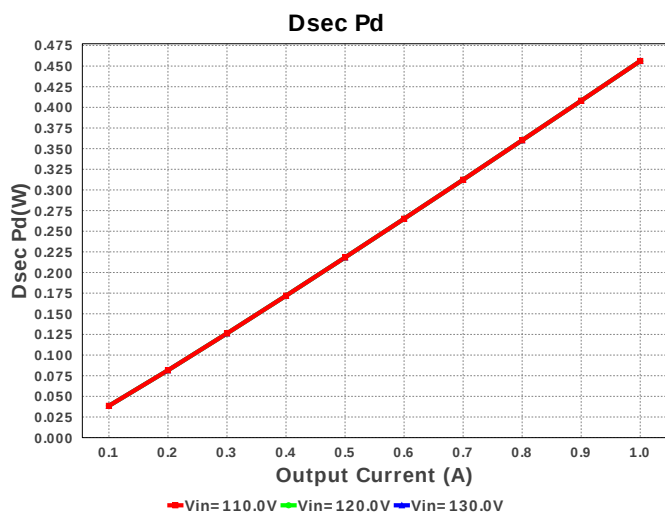
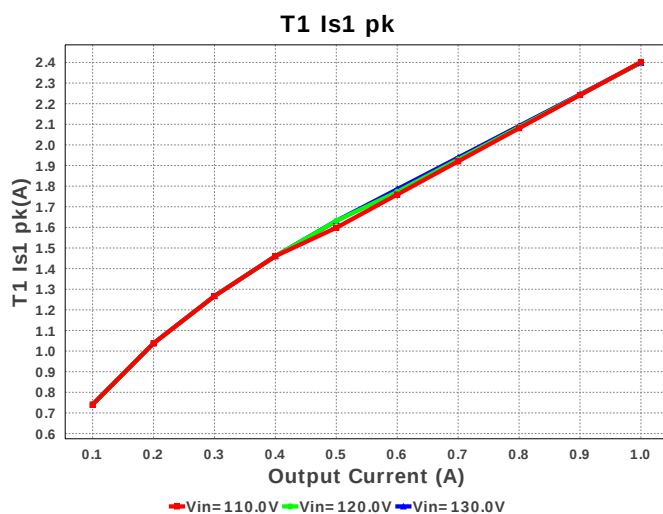
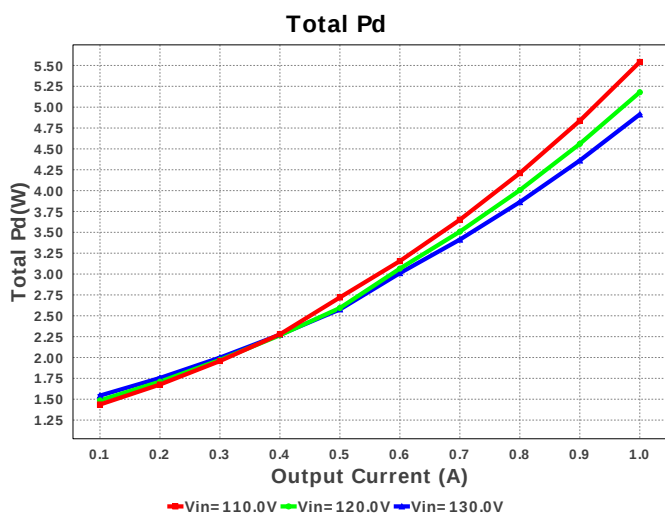
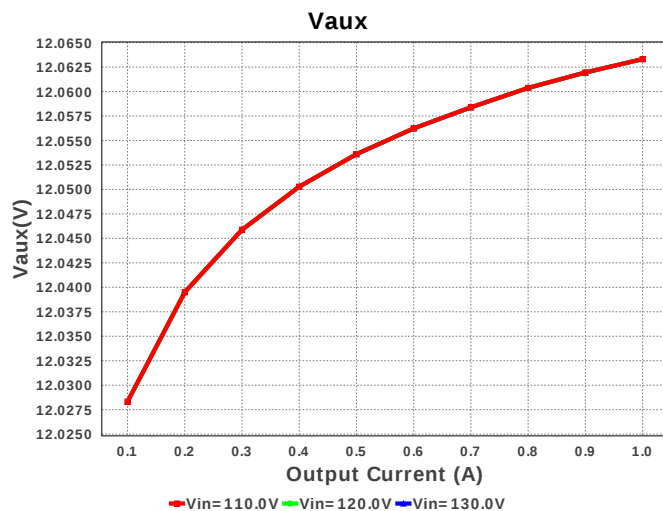
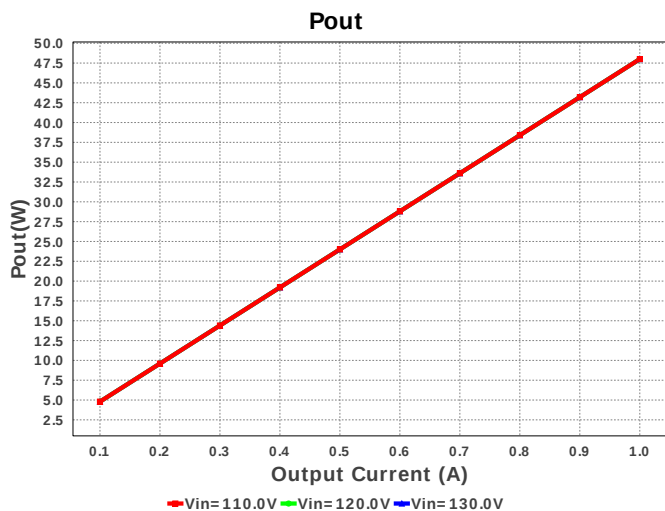


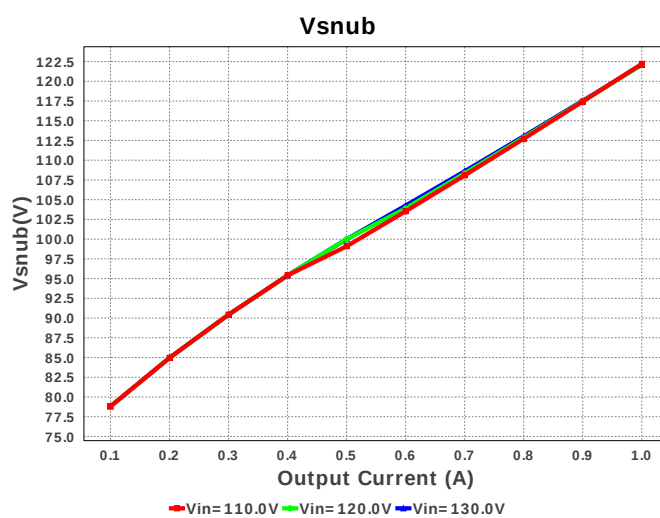
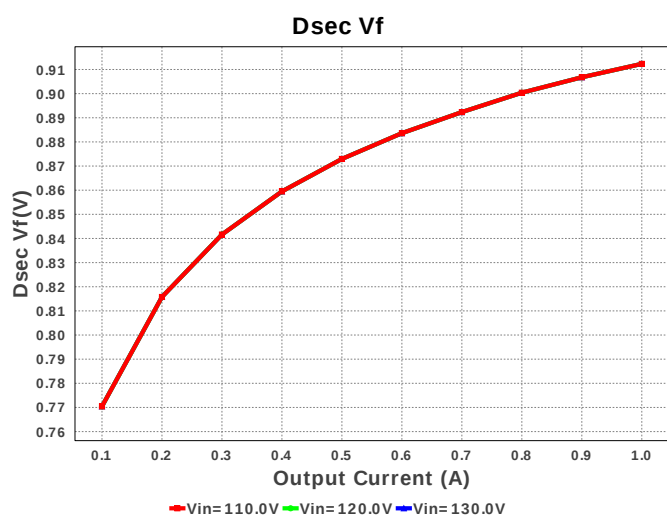
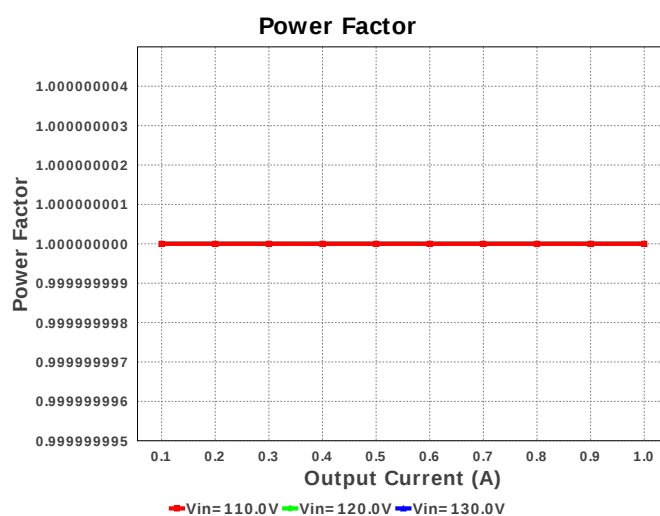
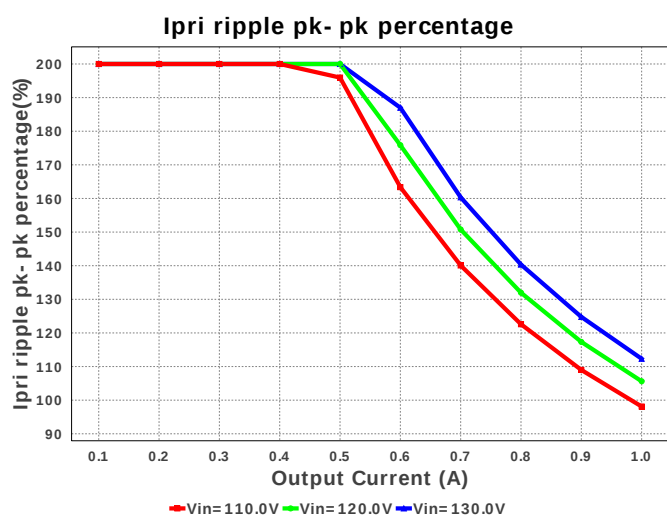
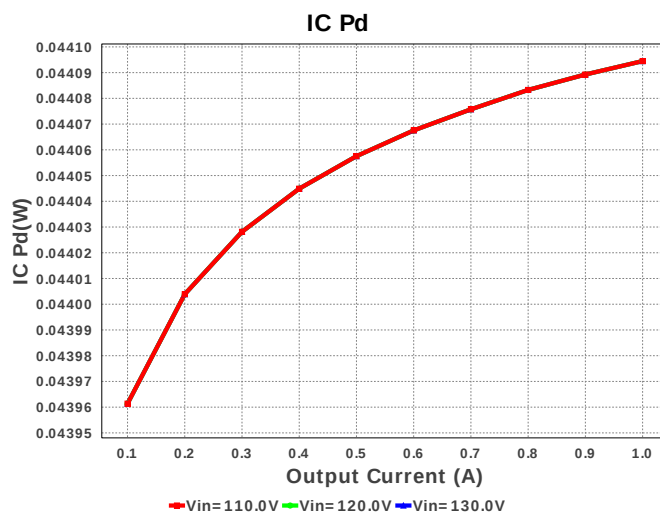
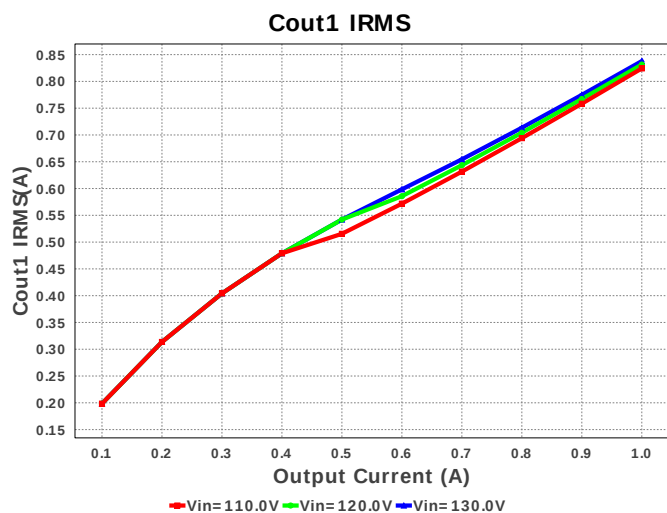


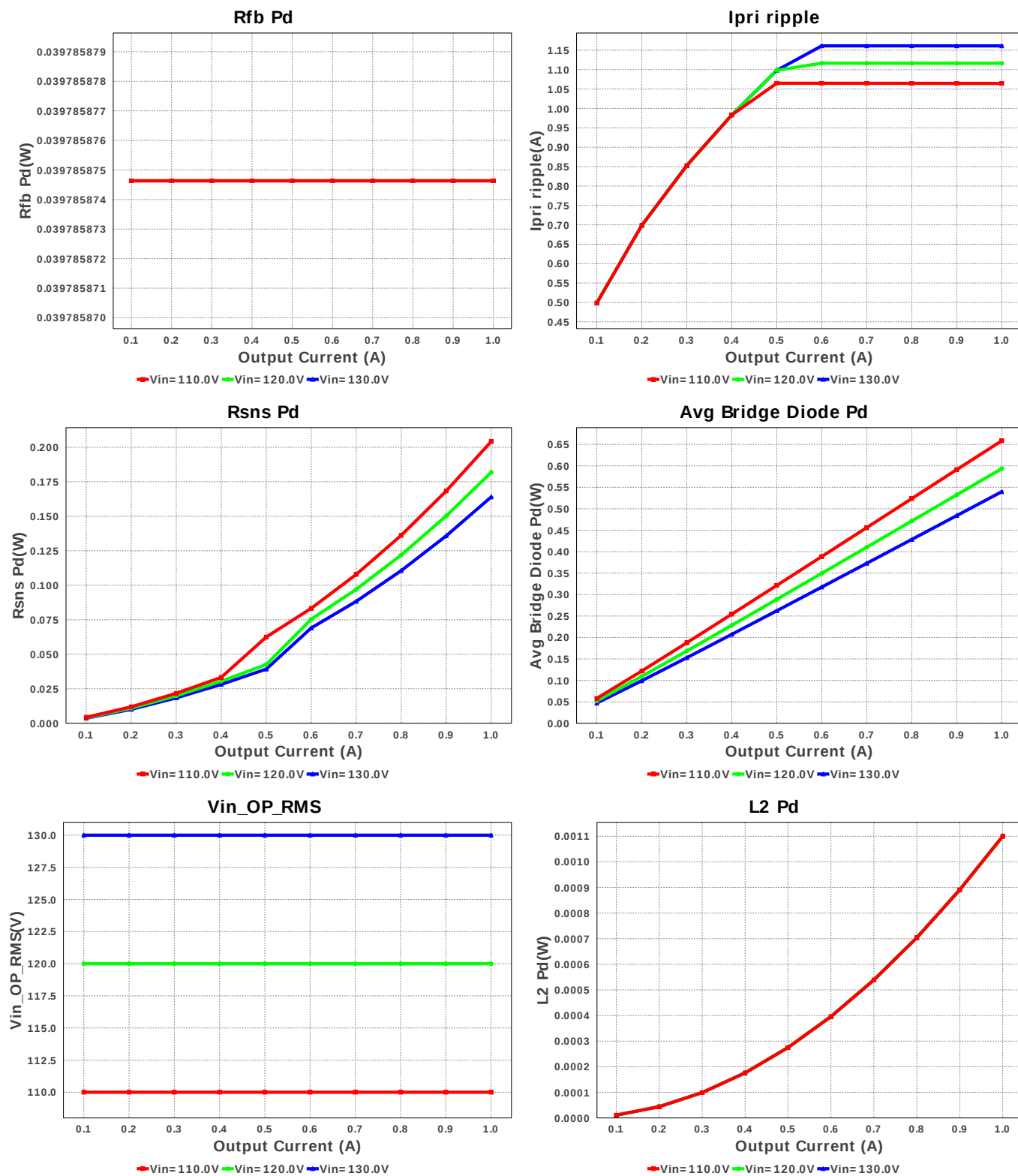


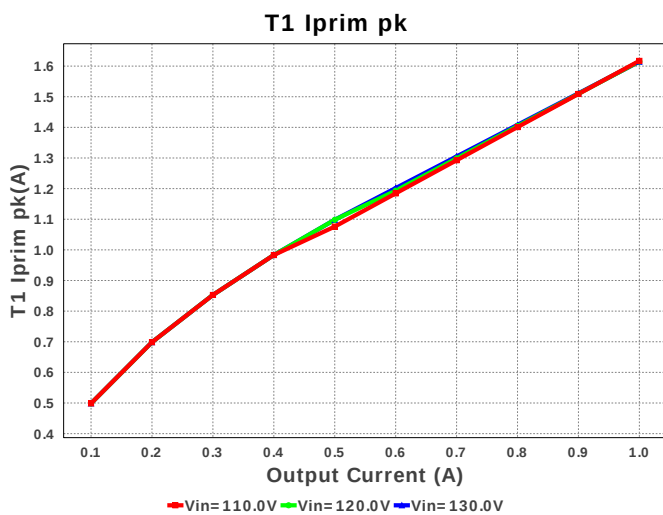
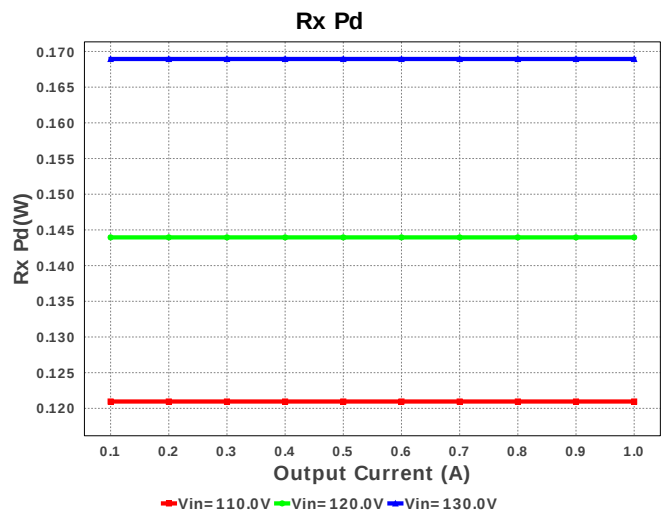
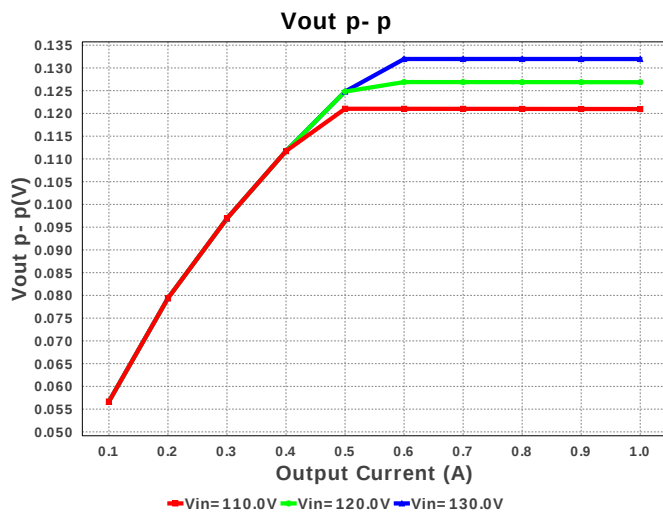
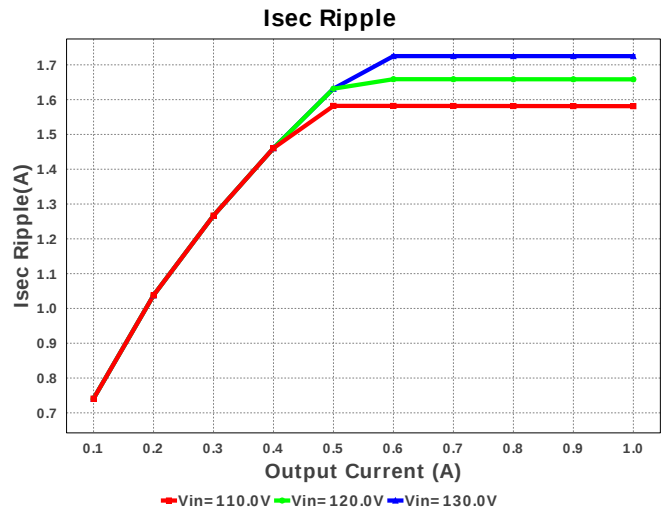
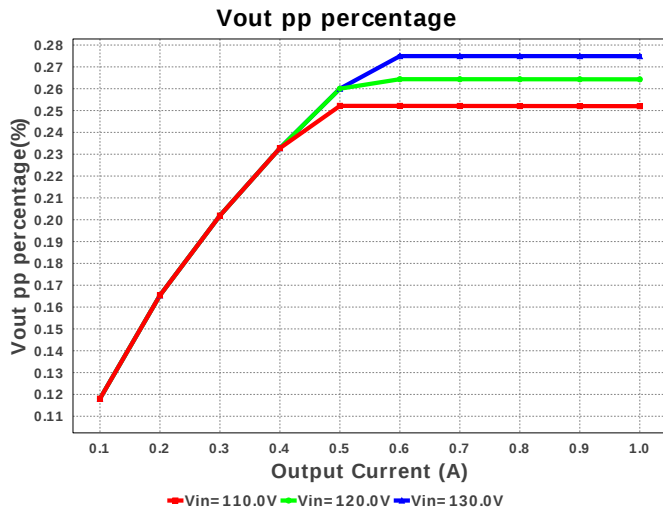












## Operating Values

| #  | Name                         | Value      | Category | Description                                                           |
|----|------------------------------|------------|----------|-----------------------------------------------------------------------|
| 1. | Cout1 IRMS                   | 824.217 mA | Current  | Output capacitor1 RMS ripple current                                  |
| 2. | Iin rms                      | 486.74 mA  | Current  | RMS Input Current                                                     |
| 3. | Iout_DCM                     | 487.161 mA | Current  | Approximate Current below which DCM mode of operation will begin      |
| 4. | Ipri Avg                     | 435.51 mA  | Current  | Average Current in Primary Winding over the complete Switching Period |
| 5. | Ipri ripple                  | 1.064 A    | Current  | Ripple Current in the Primary Winding                                 |
| 6. | Ipri ripple pk-pk percentage | 98.114 %   | Current  | Primary Current pk-pk ripple percentage(of Ipri avg during ton only)  |
| 7. | Isec Ripple                  | 1.581 A    | Current  | Ripple Current in the Secondary Winding                               |
| 8. | T1 Iprim RMS                 | 714.413 mA | Current  | Transformer Primary RMS Current                                       |
| 9. | T1 Iprim pk                  | 1.617 A    | Current  | Transformer Primary Peak Current                                      |

| #   | Name                | Value                   | Category | Description                                                                                |
|-----|---------------------|-------------------------|----------|--------------------------------------------------------------------------------------------|
| 10. | T1 Is1 RMS          | 1.296 A                 | Current  | Transformer Secondary1 RMS Current                                                         |
| 11. | T1 Is1 pk           | 2.402 A                 | Current  | Transformer Secondary1 Peak Current                                                        |
| 12. | AC Frequency        | 60.0 Hz                 | General  | Input AC frequency                                                                         |
| 13. | BOM Count           | 60                      | General  | Total Design BOM count                                                                     |
| 14. | Daux trr            | 0.0 ns                  | General  | Auxiliary Diode Reverse Recovery Time                                                      |
| 15. | Dsec Vf             | 912.33 mV               | General  | Effective Forward Voltage Drop at the Operating Current                                    |
| 16. | Dsec trr            | 30.0 ns                 | General  | Output Diode Reverse Recovery Time                                                         |
| 17. | Dsec2 Vf            | 912.33 mV               | General  | Effective Forward Voltage Drop at the Operating Current                                    |
| 18. | Dsnub trr           | 35.0 ns                 | General  | Snubber Diode Reverse Recovery Time                                                        |
| 19. | FootPrint           | 5.369 k mm <sup>2</sup> | General  | Total Foot Print Area of BOM components                                                    |
| 20. | Frequency           | 62.774 kHz              | General  | Switching frequency                                                                        |
| 21. | Pout                | 48.0 W                  | General  | Total output power                                                                         |
| 22. | Power Factor        | 1.0                     | General  | Assumed Power Factor for the Application                                                   |
| 23. | Tdead               | 0.0 ns                  | General  | Approximate Dead Time of the Regulator                                                     |
| 24. | Toff                | 9.885 us                | General  | Approximate Converter Off Time                                                             |
| 25. | Ton Act             | 6.395 us                | General  | Approximate Converter On Time                                                              |
| 26. | Total BOM           | \$0.0                   | General  | Total BOM Cost                                                                             |
| 27. | Tsw                 | 15.93 us                | General  | Switching Time Period                                                                      |
| 28. | Vaux                | 12.063 V                | General  | Auxiliary Voltage                                                                          |
| 29. | Vsnub               | 122.206 V               | General  | Voltage Across the Snubber                                                                 |
| 30. | Vout Actual         | 48.002 V                | Op_Point | Vout Actual calculated based on selected voltage divider resistors                         |
| 31. | Vout OP             | 48.0 V                  | Op_Point | Operational Output Voltage                                                                 |
| 32. | Duty Cycle          | 40.143 %                | Op_point | Duty cycle                                                                                 |
| 33. | Efficiency          | 89.65 %                 | Op_point | Steady state efficiency                                                                    |
| 34. | IC Tj               | 32.205 degC             | Op_point | IC junction temperature                                                                    |
| 35. | ICThetaJA           | 50.0 degC/W             | Op_point | IC junction-to-ambient thermal resistance                                                  |
| 36. | IOUT_OP             | 1.0 A                   | Op_point | Iout operating point                                                                       |
| 37. | M1 TjOP             | 83.29 degC              | Op_point | M1 MOSFET junction temperature                                                             |
| 38. | Peak Rectified Vin  | 155.562 V               | Op_point | Peak voltage seen at rectified input                                                       |
| 39. | Vin_OP_RMS          | 110.0 V                 | Op_point | AC Input RMS Voltage                                                                       |
| 40. | Vout p-p            | 120.962 mV              | Op_point | Peak-to-peak output ripple voltage                                                         |
| 41. | Avg Bridge Diode Pd | 658.467 mW              | Power    | Average Power Dissipation in the Bridge Diode over the AC Line Period                      |
| 42. | Cbulk Pd            | 1.378 W                 | Power    | Bulk capacitor power dissipation                                                           |
| 43. | Cout1 Pd            | 51.969 mW               | Power    | Output capacitor1 power dissipation                                                        |
| 44. | Cx Pd               | 0.0 W                   | Power    | X-cap Power Dissipation                                                                    |
| 45. | Cy Pd               | 187.5 pW                | Power    | Y-caps Power Dissipation                                                                   |
| 46. | Dsec Pd             | 456.165 mW              | Power    | Secondary Diode Power Dissipation                                                          |
| 47. | Dsec2 Pd            | 456.165 mW              | Power    | Secondary Diode Power Dissipation                                                          |
| 48. | IC Pd               | 44.094 mW               | Power    | IC power dissipation                                                                       |
| 49. | L1 Pd               | 15.376 mW               | Power    | Power Dissipation in the Inductor                                                          |
| 50. | L2 Pd               | 1.1 mW                  | Power    | Average Power Dissipation in the Inductor Over the AC Line Period                          |
| 51. | M1 Pd               | 642.042 mW              | Power    | M1 MOSFET total power dissipation                                                          |
| 52. | Paux                | 10.898 mW               | Power    | Power Dissipation in Raux and Daux                                                         |
| 53. | Pd Rstartup         | 176.355 mW              | Power    | Power Dissipation in Rstartup1 and Rstartup2                                               |
| 54. | Rdrv Pd             | 3.299 μW                | Power    | Power Dissipation in Gate Drive Resistor                                                   |
| 55. | Rfb Pd              | 39.786 mW               | Power    | Rfb Power Dissipation                                                                      |
| 56. | Rsns Pd             | 204.155 mW              | Power    | Current Limit Sense Resistor Power Dissipation                                             |
| 57. | Rx Pd               | 120.961 mW              | Power    | Total Power Dissipation in Rx1 and Rx2                                                     |
| 58. | Snubber Pd          | 646.792 mW              | Power    | Snubber Power Dissipation                                                                  |
| 59. | T1 Pd               | 916.957 mW              | Power    | Estimated Losses in Transformer                                                            |
| 60. | Total Pd            | 5.542 W                 | Power    | Total Power Dissipation                                                                    |
| 61. | Vout Tolerance      | 2.242 %                 |          | Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable |
| 62. | Vout pp percentage  | 252.004 m%              |          | Output Voltage ripple percentage                                                           |

## Design Inputs

| #   | Name        | Value    | Description                        |
|-----|-------------|----------|------------------------------------|
| 1.  | Iout        | 1.0      | Maximum Output Current             |
| 2.  | Iout1       | 1.0      | Output Current #1                  |
| 3.  | Iout2       | 1.0      | Output Current #2                  |
| 4.  | Iout3       | 2.0      | Output Current #3                  |
| 5.  | VinMax      | 130.0    | Maximum input voltage              |
| 6.  | VinMin      | 110.0    | Minimum input voltage              |
| 7.  | Vout        | 48.0     | Output Voltage                     |
| 8.  | Vout1       | 48.0     | Output Voltage #1                  |
| 9.  | Vout2       | 3.0      | Output Voltage #2                  |
| 10. | Vout3       | 2.0      | Output Voltage #3                  |
| 11. | acFrequency | 60.0     | Light Output in Lumen              |
| 12. | base_pn     | UCC38C45 | Texas Instruments Base Part Number |
| 13. | source      | AC       | Input Source Type                  |
| 14. | ta          | 30.0     | Ambient temperature                |

## Design Assistance

1. UCC38C45 Product Folder : <http://www.ti.com/product/UCC38C45> : contains the data sheet and other resources.

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