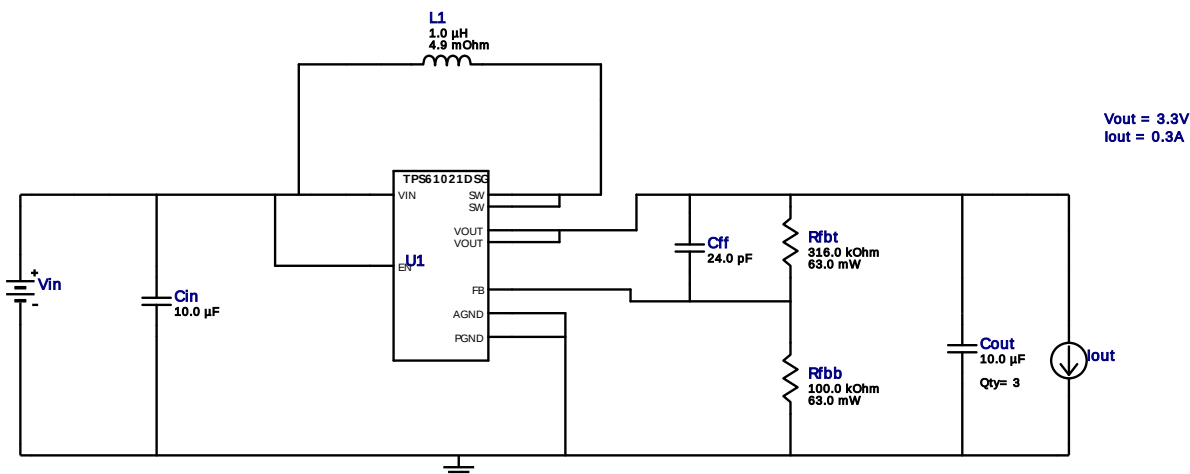


## WEBENCH® Design Report

Design : 1177446/103 TPS61021ADSGR  
TPS61021ADSGR 1.2V-1.6V to 3.30V @ 0.3A

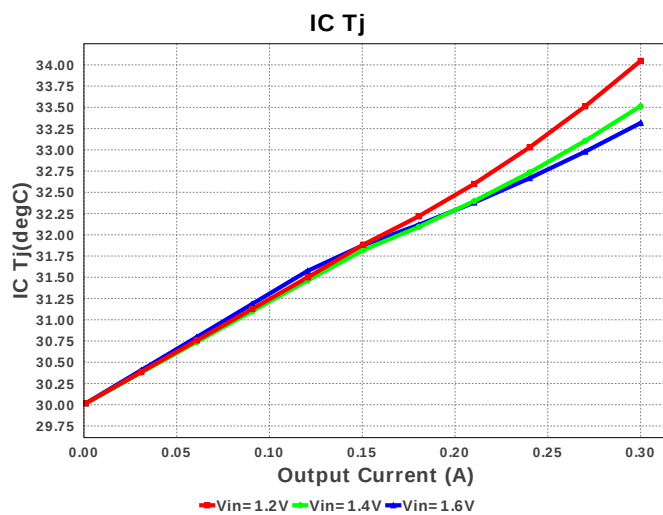
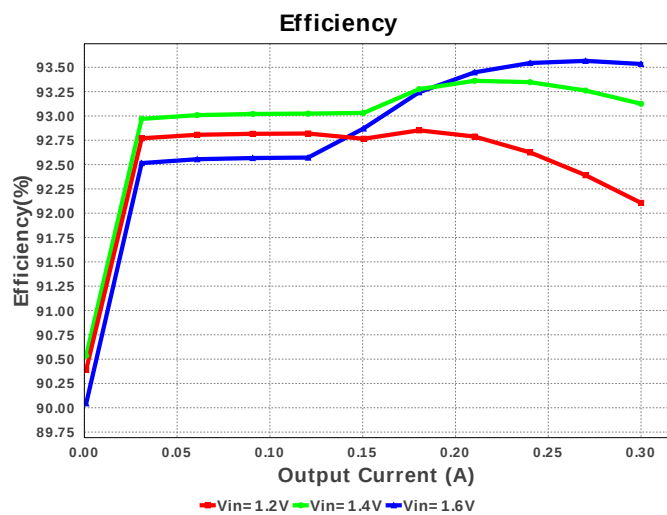
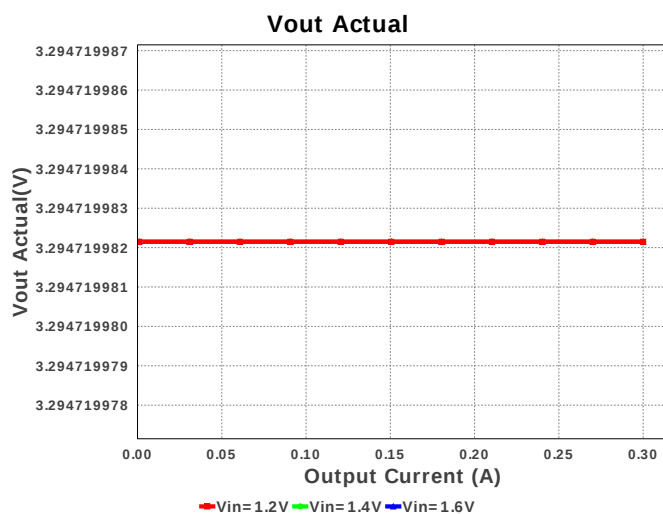
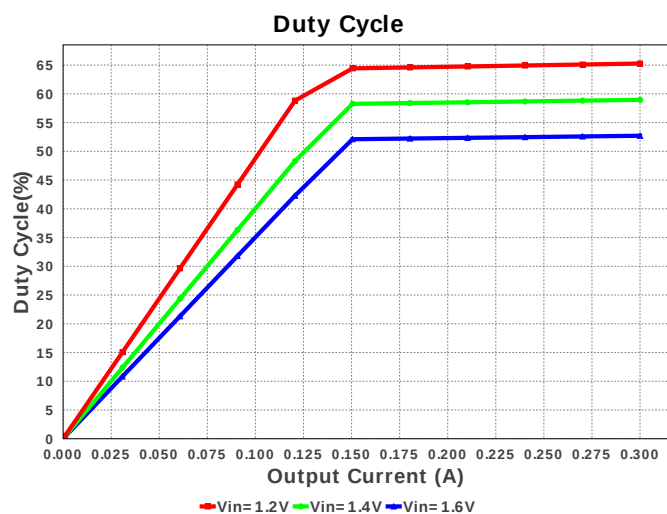
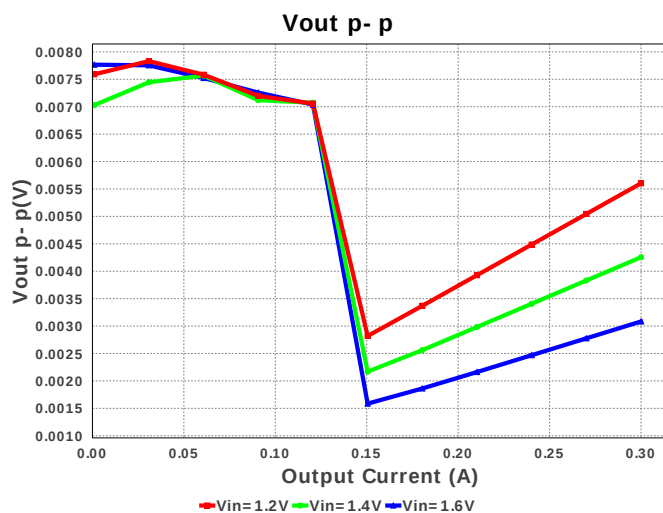
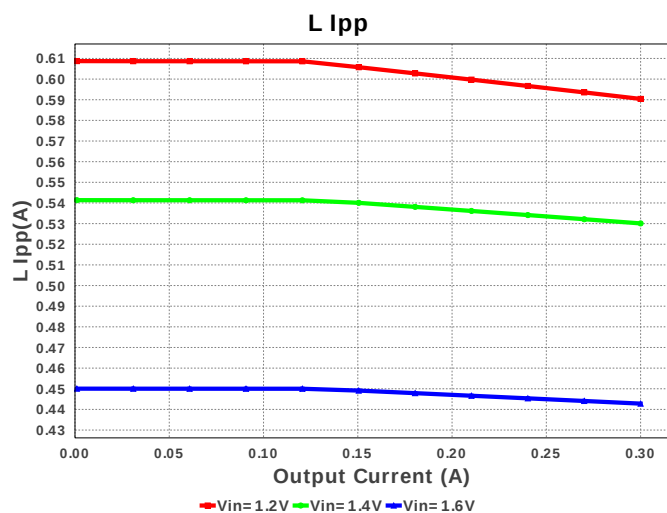


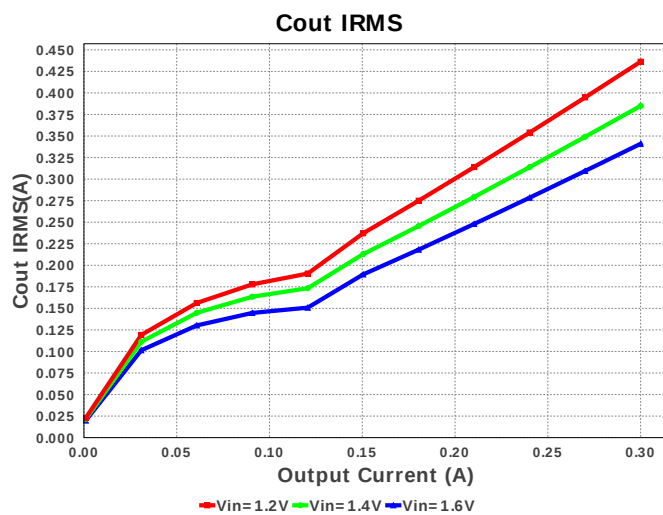
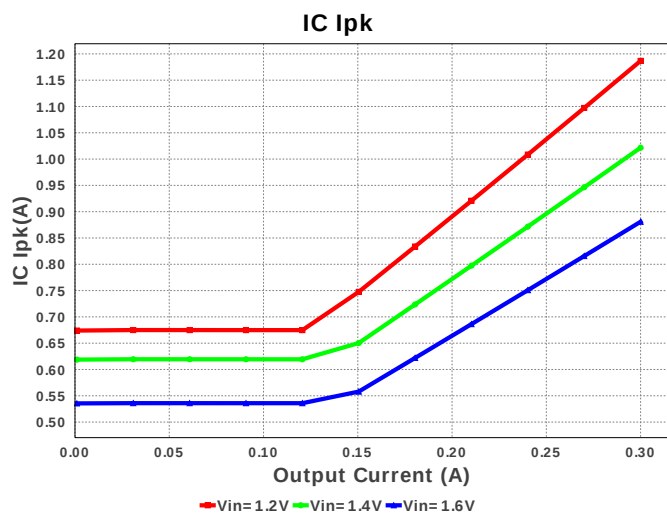
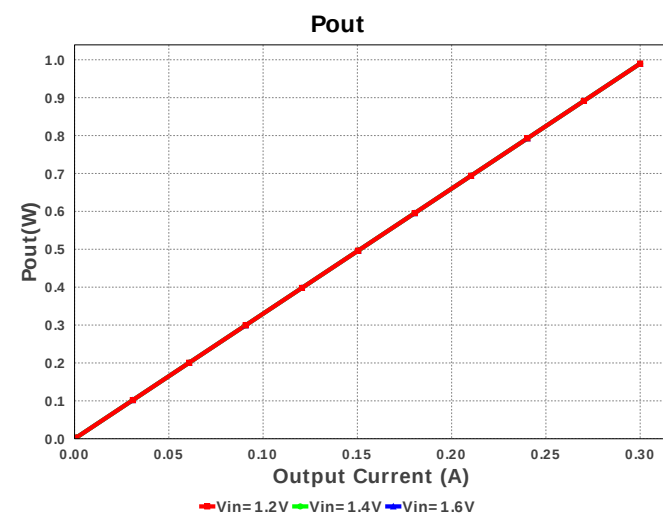
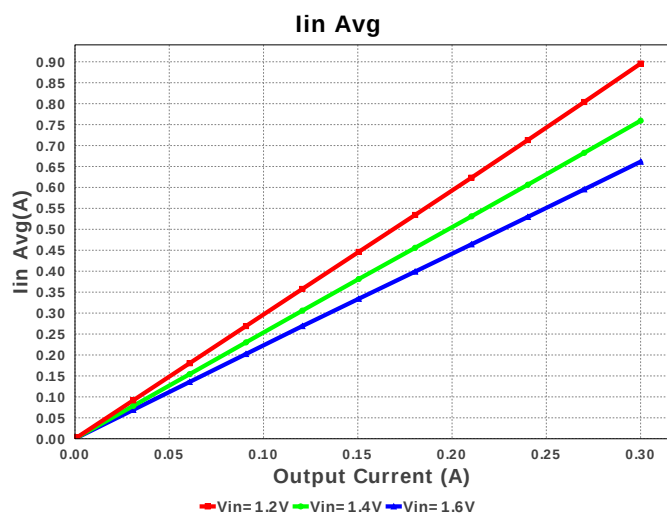
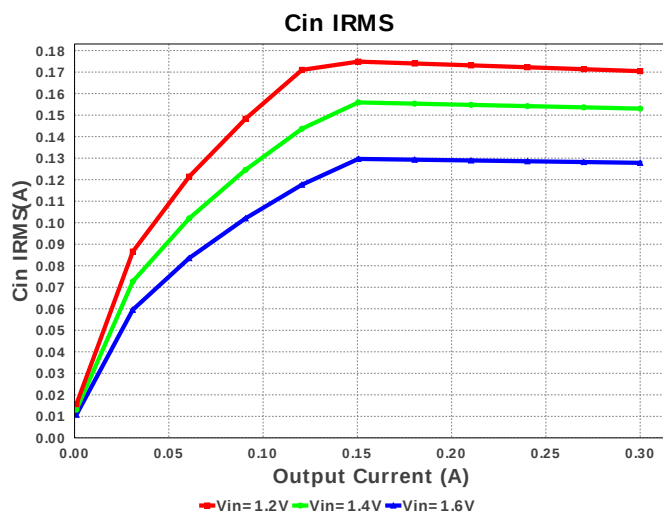
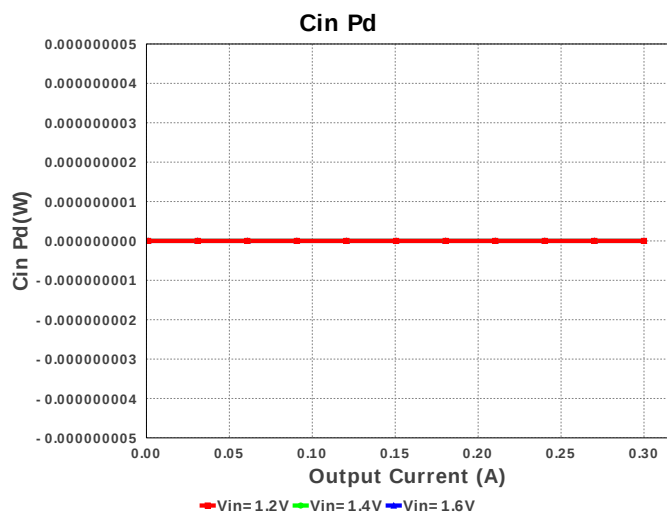
### My Comments

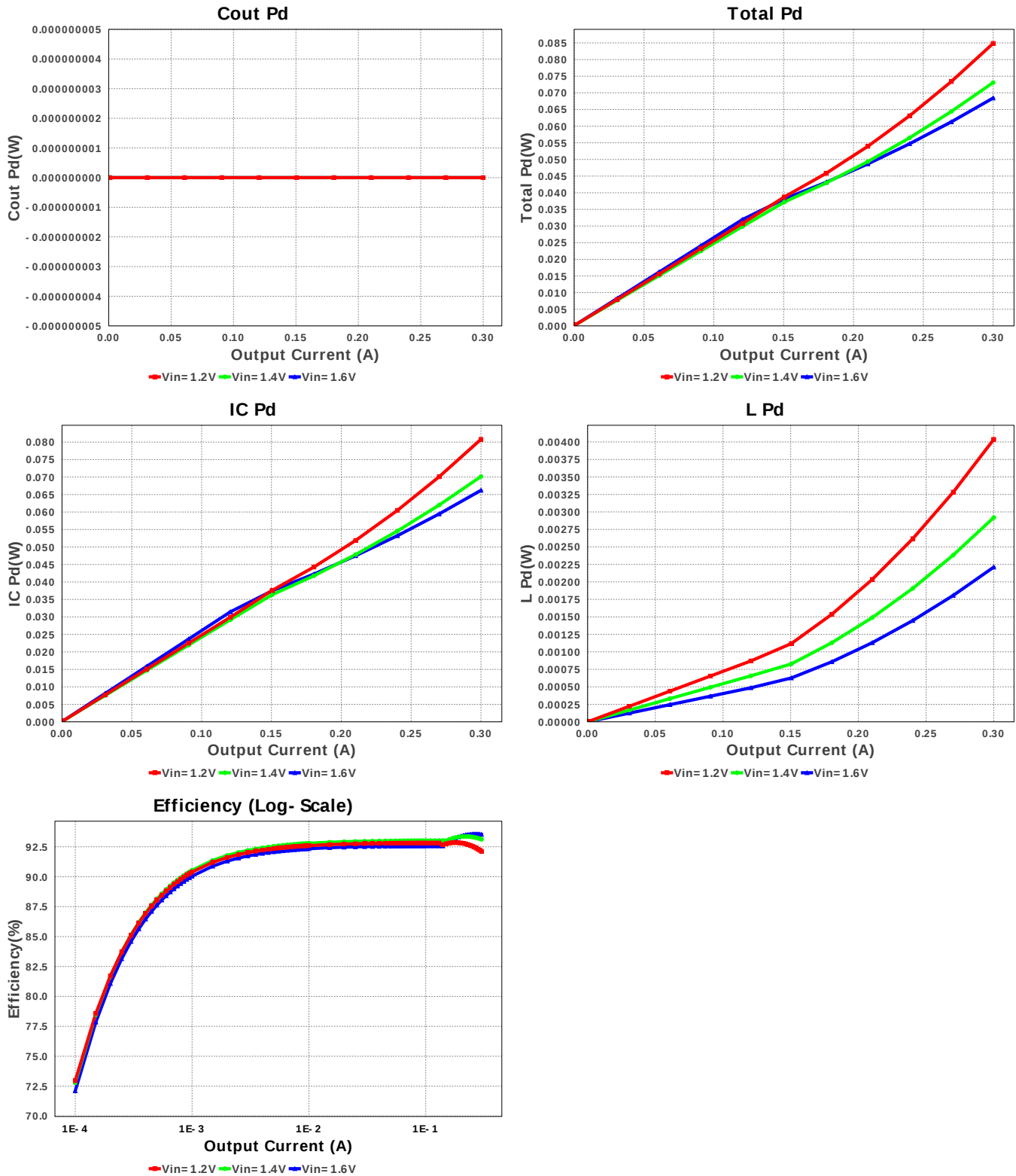
No comments

### Electrical BOM

| #  | Name | Manufacturer              | Part Number                          | Properties                                           | Qty | Price  | Footprint                   |
|----|------|---------------------------|--------------------------------------|------------------------------------------------------|-----|--------|-----------------------------|
| 1. | Cff  | Samsung Electro-Mechanics | CL10C240JB8NCNC<br>Series= C0G/NP0   | Cap= 24.0 pF<br>VDC= 50.0 V<br>IRMS= 0.0 A           | 1   | \$0.01 | 0603 5 mm <sup>2</sup>      |
| 2. | Cin  | Samsung Electro-Mechanics | CL10A106MQ8NNNC<br>Series= X5R       | Cap= 10.0 uF<br>VDC= 6.3 V<br>IRMS= 0.0 A            | 1   | \$0.03 | 0603 5 mm <sup>2</sup>      |
| 3. | Cout | Taiyo Yuden               | LMK212BJ106KG-T<br>Series= X5R       | Cap= 10.0 uF<br>VDC= 10.0 V<br>IRMS= 0.0 A           | 3   | \$0.03 | 0805 7 mm <sup>2</sup>      |
| 4. | L1   | Bourns                    | SRU1028-1R0Y                         | L= 1.0 uH<br>DCR= 4.9 mOhm                           | 1   | \$0.33 | SRU1028 144 mm <sup>2</sup> |
| 5. | Rfbb | Vishay-Dale               | CRCW0402100KFKED<br>Series= CRCW..e3 | Res= 100.0 kOhm<br>Power= 63.0 mW<br>Tolerance= 1.0% | 1   | \$0.01 | 0402 3 mm <sup>2</sup>      |
| 6. | Rfbb | Vishay-Dale               | CRCW0402316KFKED<br>Series= CRCW..e3 | Res= 316.0 kOhm<br>Power= 63.0 mW<br>Tolerance= 1.0% | 1   | \$0.01 | 0402 3 mm <sup>2</sup>      |
| 7. | U1   | Texas Instruments         | TPS61021ADSGR                        | Switcher                                             | 1   | \$0.60 | DSG0008A 9 mm <sup>2</sup>  |







## Operating Values

| #   | Name      | Value                 | Category | Description                             |
|-----|-----------|-----------------------|----------|-----------------------------------------|
| 1.  | Cin IRMS  | 170.433 mA            | Current  | Input capacitor RMS ripple current      |
| 2.  | Cout IRMS | 436.265 mA            | Current  | Output capacitor RMS ripple current     |
| 3.  | IC Ipk    | 1.187 A               | Current  | Peak switch current in IC               |
| 4.  | Iin Avg   | 895.71 mA             | Current  | Average input current                   |
| 5.  | L Ipp     | 590.4 mA              | Current  | Peak-to-peak inductor ripple current    |
| 6.  | BOM Count | 9                     | General  | Total Design BOM count                  |
| 7.  | FootPrint | 189.0 mm <sup>2</sup> | General  | Total Foot Print Area of BOM components |
| 8.  | Frequency | 1.262 MHz             | General  | Switching frequency                     |
| 9.  | Mode      | BOOST PWM CCM         | General  | PWM/PFM Mode                            |
| 10. | Pout      | 990.0 mW              | General  | Total output power                      |
| 11. | Total BOM | \$1.08                | General  | Total BOM Cost                          |

| #   | Name           | Value       | Category | Description                                                                                |
|-----|----------------|-------------|----------|--------------------------------------------------------------------------------------------|
| 12. | Vout Actual    | 3.295 V     | Op_Point | Vout Actual calculated based on selected voltage divider resistors                         |
| 13. | Vout OP        | 3.3 V       | Op_Point | Operational Output Voltage                                                                 |
| 14. | Duty Cycle     | 65.272 %    | Op_point | Duty cycle                                                                                 |
| 15. | Efficiency     | 92.106 %    | Op_point | Steady state efficiency                                                                    |
| 16. | IC Tj          | 34.047 degC | Op_point | IC junction temperature                                                                    |
| 17. | ICThetaJA      | 50.1 degC/W | Op_point | IC junction-to-ambient thermal resistance                                                  |
| 18. | IOUT_OP        | 300.0 mA    | Op_point | Iout operating point                                                                       |
| 19. | VIN_OP         | 1.2 V       | Op_point | Vin operating point                                                                        |
| 20. | Vout p-p       | 5.603 mV    | Op_point | Peak-to-peak output ripple voltage                                                         |
| 21. | Cin Pd         | 0.0 W       | Power    | Input capacitor power dissipation                                                          |
| 22. | Cout Pd        | 0.0 W       | Power    | Output capacitor power dissipation                                                         |
| 23. | IC Pd          | 80.783 mW   | Power    | IC power dissipation                                                                       |
| 24. | L Pd           | 4.037 mW    | Power    | Inductor power dissipation                                                                 |
| 25. | Total Pd       | 84.849 mW   | Power    | Total Power Dissipation                                                                    |
| 26. | Vout Tolerance | 3.458 %     |          | Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable |

## Design Inputs

| #  | Name    | Value     | Description                        |
|----|---------|-----------|------------------------------------|
| 1. | Iout    | 300.0 m   | Maximum Output Current             |
| 2. | VinMax  | 1.6       | Maximum input voltage              |
| 3. | VinMin  | 1.2       | Minimum input voltage              |
| 4. | Vout    | 3.3       | Output Voltage                     |
| 5. | base_pn | TPS61021A | Texas Instruments Base Part Number |
| 6. | source  | DC        | Input Source Type                  |
| 7. | ta      | 30.0      | Ambient temperature                |

## Design Assistance

1. TPS61021A Product Folder : <http://www.ti.com/product/TPS61021A> : contains the data sheet and other resources.

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