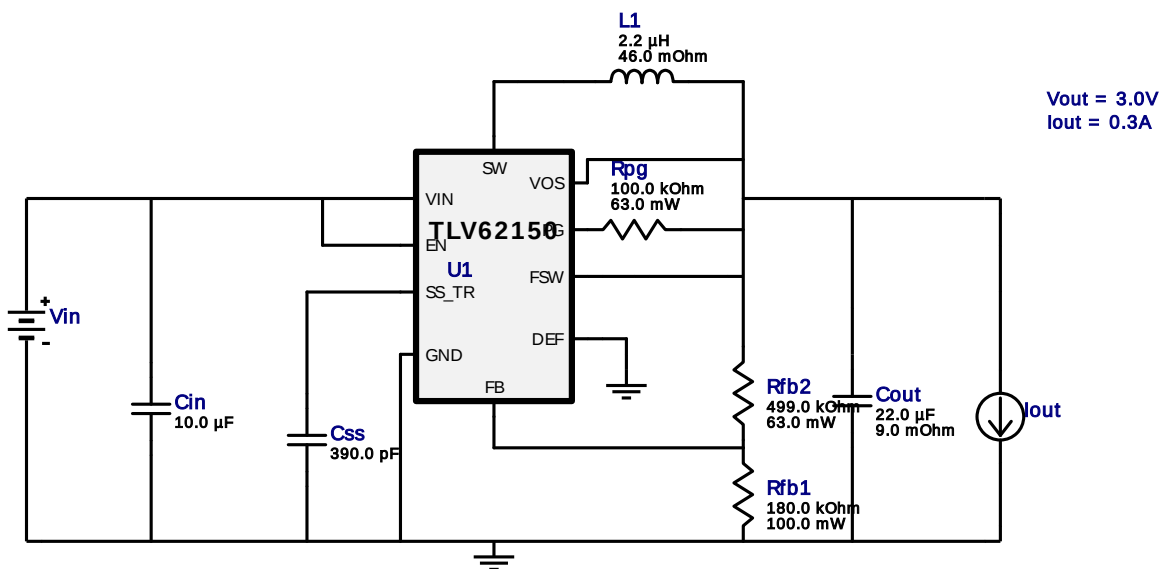


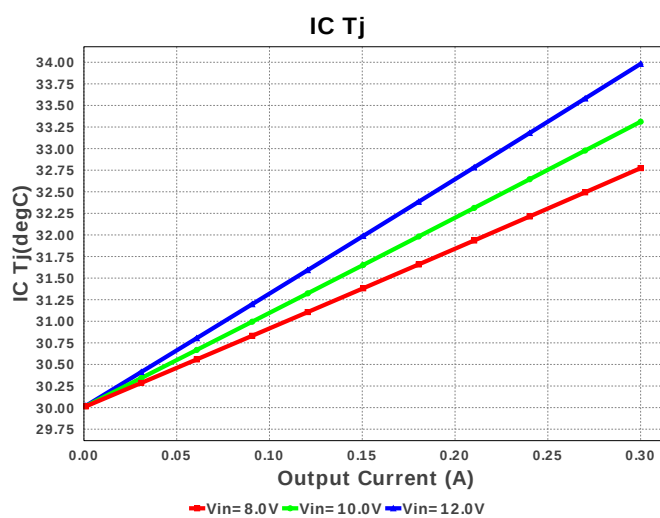
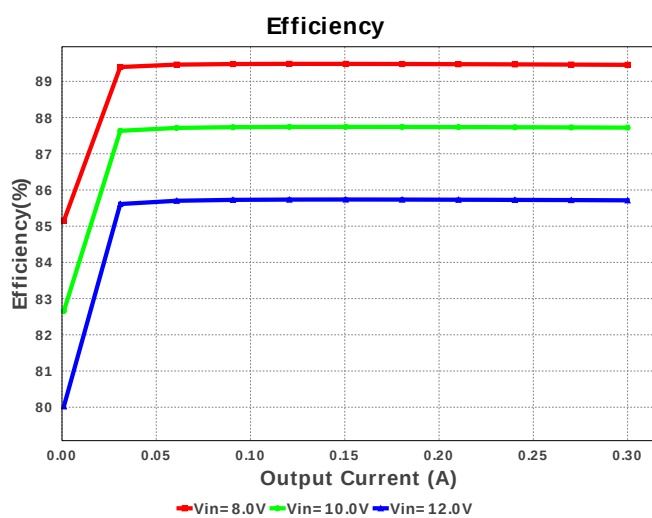
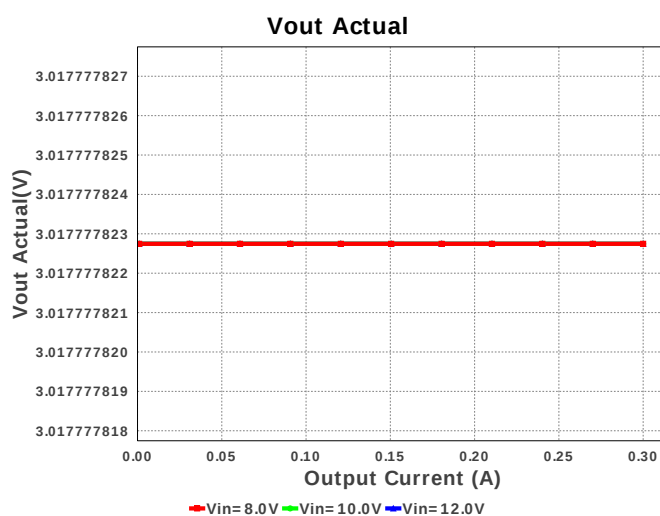
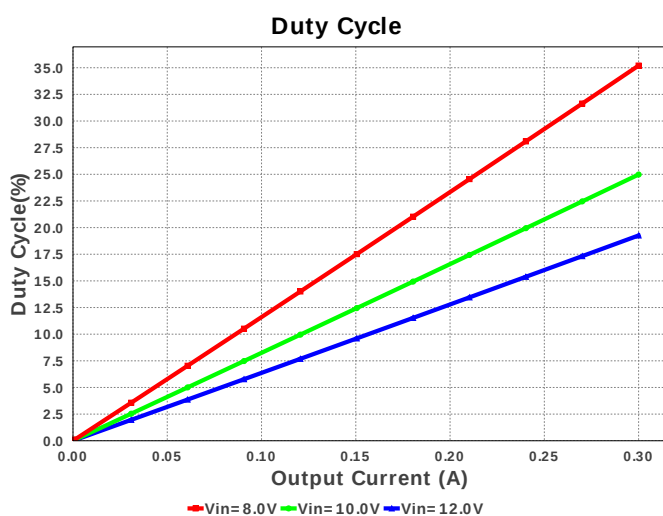
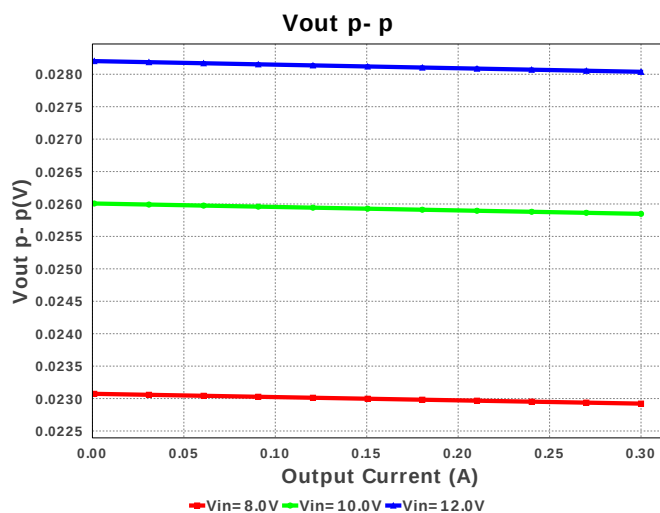
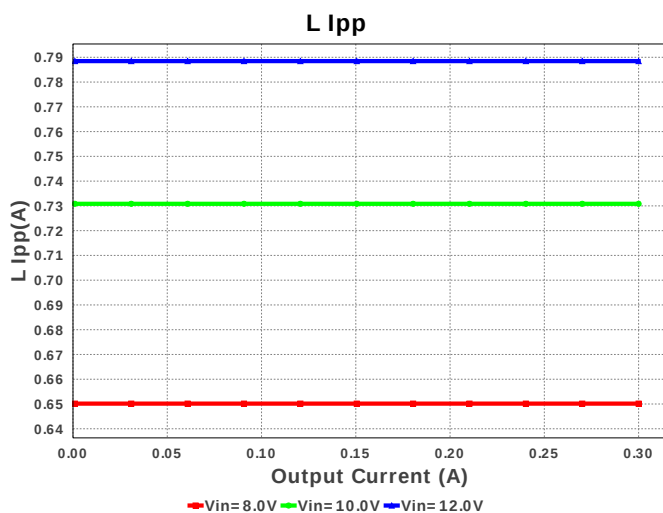
## WEBENCH® Design Report

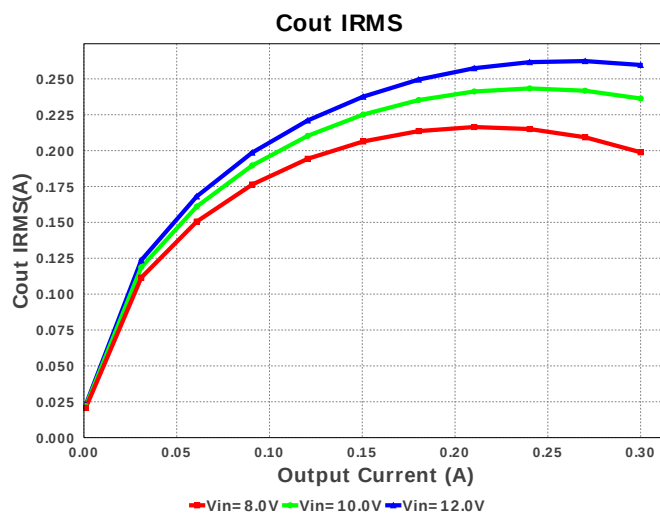
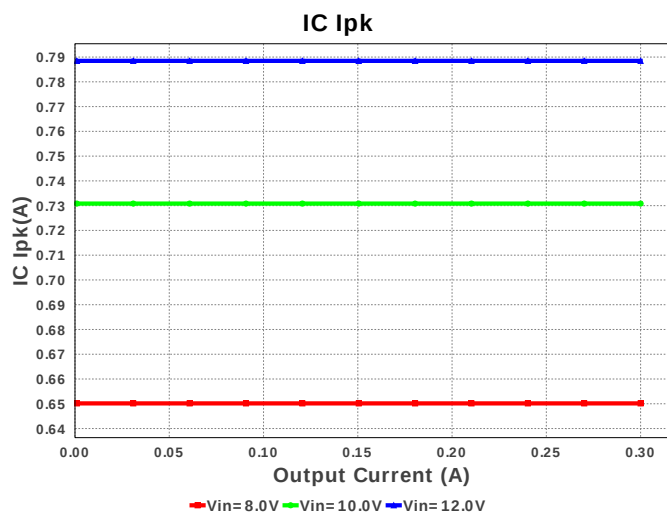
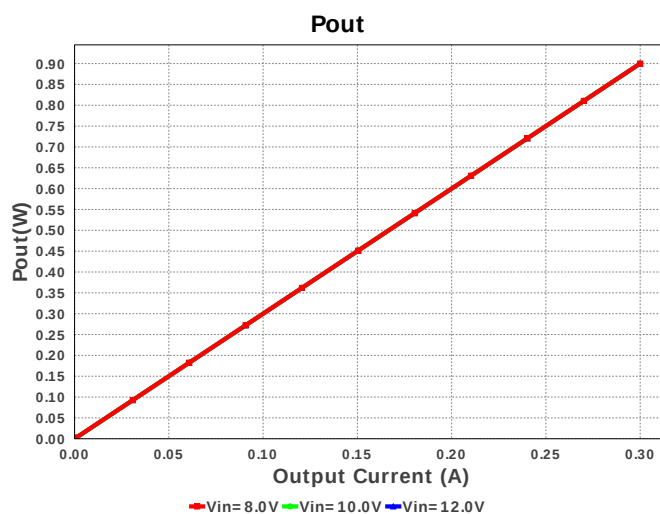
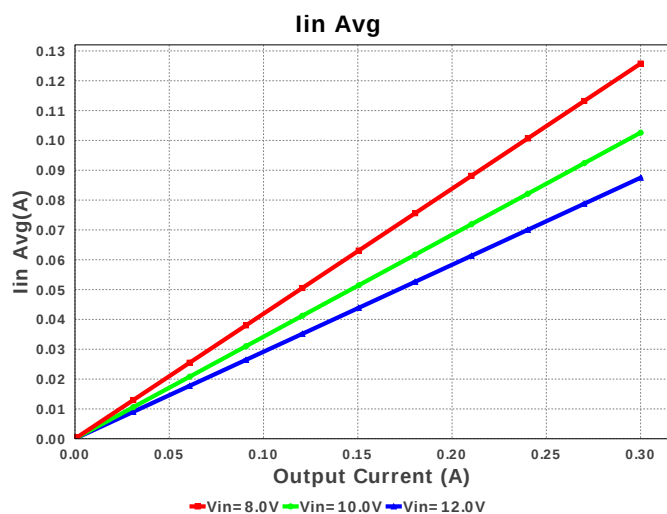
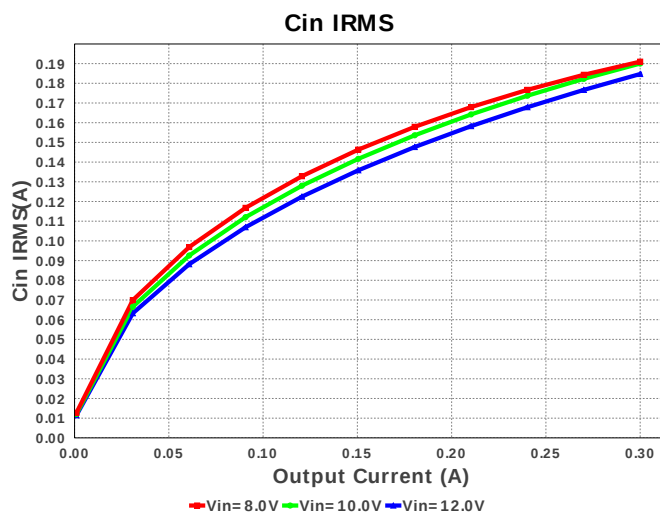
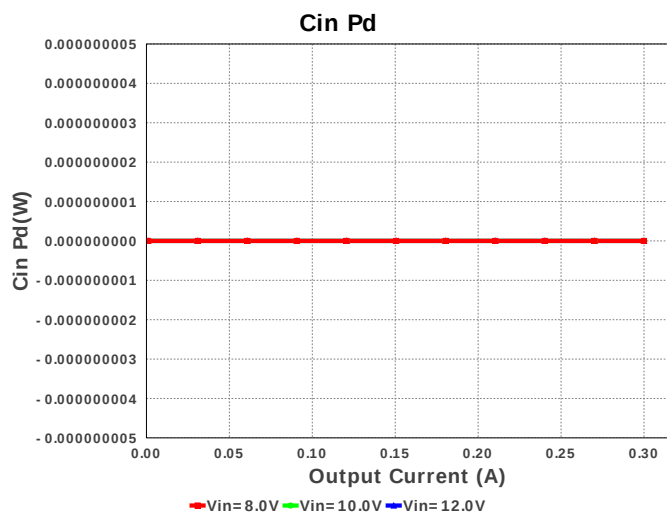
Design : 4743623/3 TLV62150RGTR  
TLV62150RGTR 8.0V-12.0V to 3.00V @ 0.3A

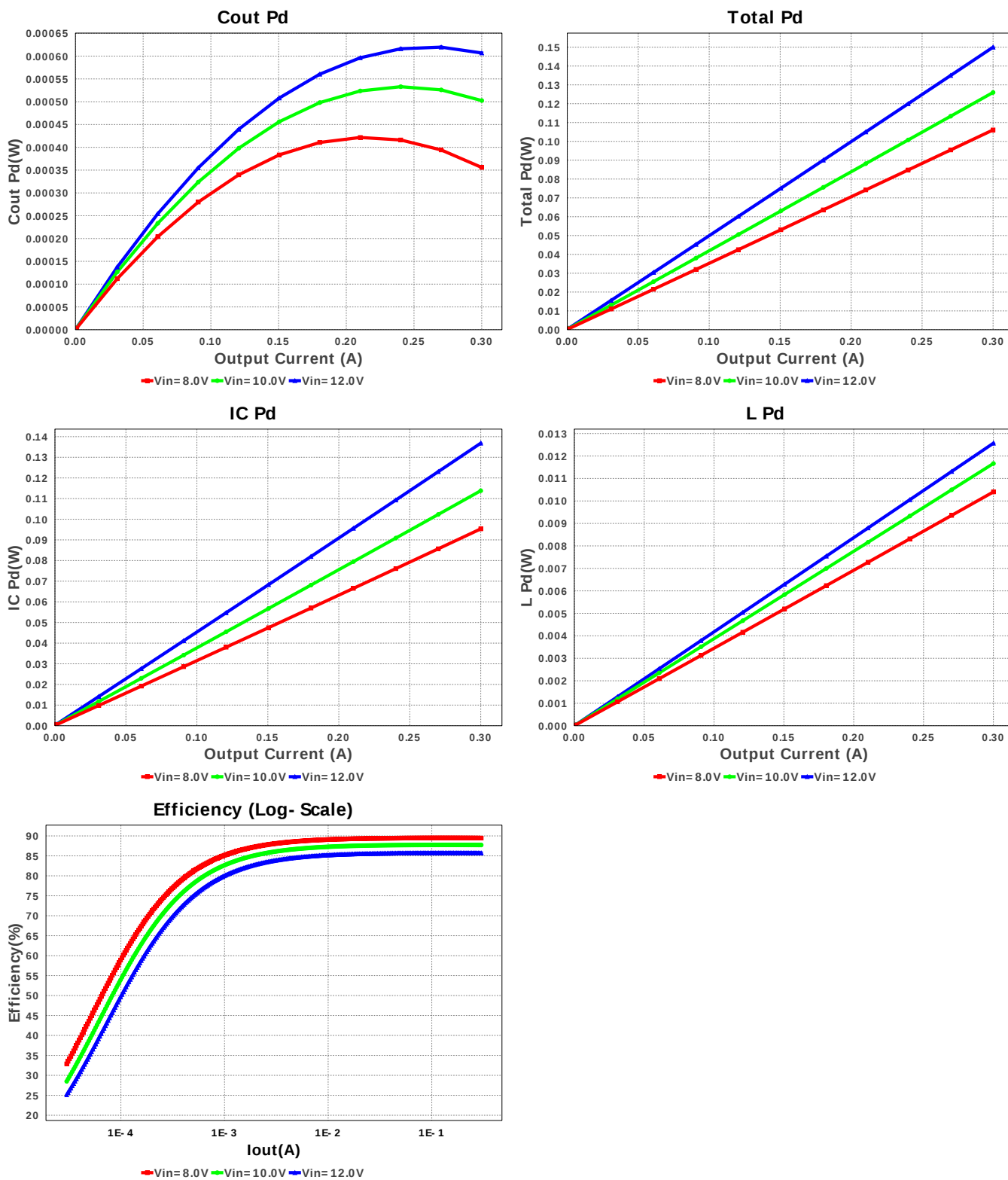


### Electrical BOM

| #  | Name | Manufacturer      | Part Number                          | Properties                                                 | Qty | Price  | Footprint                                                                                                               |
|----|------|-------------------|--------------------------------------|------------------------------------------------------------|-----|--------|-------------------------------------------------------------------------------------------------------------------------|
| 1. | Cin  | Taiyo Yuden       | TMK316BJ106KL-T<br>Series= X5R       | Cap= 10.0 uF<br>VDC= 25.0 V<br>IRMS= 0.0 A                 | 1   | \$0.05 | <br>1206 11 mm <sup>2</sup>        |
| 2. | Cout | MuRata            | GRM21BR60J226ME39L<br>Series= X5R    | Cap= 22.0 uF<br>ESR= 9.0 mOhm<br>VDC= 6.3 V<br>IRMS= 3.5 A | 1   | \$0.04 | <br>0805 7 mm <sup>2</sup>         |
| 3. | Css  | Yageo America     | CC0805KRX7R9BB391<br>Series= X7R     | Cap= 390.0 pF<br>VDC= 50.0 V<br>IRMS= 0.0 A                | 1   | \$0.01 | <br>0805 7 mm <sup>2</sup>         |
| 4. | L1   | Vishay-Dale       | IHLP1212BZER2R2M11                   | L= 2.2 uH<br>DCR= 46.0 mOhm                                | 1   | \$0.56 | <br>IHLP-1212BZ 19 mm <sup>2</sup> |
| 5. | Rfb1 | Yageo America     | RC0603FR-07180KL<br>Series= ?        | Res= 180.0 kOhm<br>Power= 100.0 mW<br>Tolerance= 1.0%      | 1   | \$0.01 | <br>0603 5 mm <sup>2</sup>         |
| 6. | Rfb2 | Vishay-Dale       | CRCW0402499KFKED<br>Series= CRCW..e3 | Res= 499.0 kOhm<br>Power= 63.0 mW<br>Tolerance= 1.0%       | 1   | \$0.01 | <br>0402 3 mm <sup>2</sup>         |
| 7. | Rpg  | Vishay-Dale       | CRCW0402100KFKED<br>Series= CRCW..e3 | Res= 100.0 kOhm<br>Power= 63.0 mW<br>Tolerance= 1.0%       | 1   | \$0.01 | <br>0402 3 mm <sup>2</sup>         |
| 8. | U1   | Texas Instruments | TLV62150RGTR                         | Switcher                                                   | 1   | \$0.61 | <br>S-PVQFN-N16 17 mm <sup>2</sup> |







## Operating Values

| #   | Name        | Value                | Category | Description                                                        |
|-----|-------------|----------------------|----------|--------------------------------------------------------------------|
| 1.  | Cin IRMS    | 184.716 mA           | Current  | Input capacitor RMS ripple current                                 |
| 2.  | Cout IRMS   | 259.674 mA           | Current  | Output capacitor RMS ripple current                                |
| 3.  | IC IpK      | 788.462 mA           | Current  | Peak switch current in IC                                          |
| 4.  | Iin Avg     | 87.5 mA              | Current  | Average input current                                              |
| 5.  | L Ipp       | 788.46 mA            | Current  | Peak-to-peak inductor ripple current                               |
| 6.  | BOM Count   | 8                    | General  | Total Design BOM count                                             |
| 7.  | FootPrint   | 71.0 mm <sup>2</sup> | General  | Total Foot Print Area of BOM components                            |
| 8.  | Frequency   | 999.417 kHz          | General  | Switching frequency                                                |
| 9.  | Pout        | 900.0 mW             | General  | Total output power                                                 |
| 10. | Total BOM   | \$1.3                | General  | Total BOM Cost                                                     |
| 11. | Vout Actual | 3.018 V              | Op_Point | Vout Actual calculated based on selected voltage divider resistors |

| #   | Name           | Value           | Category | Description                                                                                |
|-----|----------------|-----------------|----------|--------------------------------------------------------------------------------------------|
| 12. | Vout OP        | 3.0 V           | Op_Point | Operational Output Voltage                                                                 |
| 13. | Duty Cycle     | 19.262 %        | Op_point | Duty cycle                                                                                 |
| 14. | Efficiency     | 85.714 %        | Op_point | Steady state efficiency                                                                    |
| 15. | IC Tj          | 33.982 degC     | Op_point | IC junction temperature                                                                    |
| 16. | ICThetaJA      | 29.1 degC/W     | Op_point | IC junction-to-ambient thermal resistance                                                  |
| 17. | IOUT_OP        | 300.0 mA        | Op_point | Iout operating point                                                                       |
| 18. | VIN_OP         | 12.0 V          | Op_point | Vin operating point                                                                        |
| 19. | Vout p-p       | 28.038 mV       | Op_point | Peak-to-peak output ripple voltage                                                         |
| 20. | Cin Pd         | 0.0 W           | Power    | Input capacitor power dissipation                                                          |
| 21. | Cout Pd        | 606.875 $\mu$ W | Power    | Output capacitor power dissipation                                                         |
| 22. | IC Pd          | 136.823 mW      | Power    | IC power dissipation                                                                       |
| 23. | L Pd           | 12.569 mW       | Power    | Inductor power dissipation                                                                 |
| 24. | Total Pd       | 150.003 mW      | Power    | Total Power Dissipation                                                                    |
| 25. | Vout Tolerance | 4.022 %         |          | 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  | 12.0     | Maximum input voltage  |
| 3. | VinMin  | 8.0      | Minimum input voltage  |
| 4. | Vout    | 3.0      | Output Voltage         |
| 5. | base_pn | TLV62150 | Base Product Number    |
| 6. | source  | DC       | Input Source Type      |
| 7. | Ta      | 30.0     | Ambient temperature    |

## Design Assistance

1. Feature Highlights: DCS-Control(TM) Architecture with upto 1A output current, 4V to 17V Input Voltage Range, Adjustable output voltage from 0.9V to 6V Selectable operating frequency, Optional Softstart Capacitor for slow startup, Tracking, Pin selectable output voltage (nominal, +5%) Seamless Power Save Mode for Light Load Efficiency, Power Good Output, 100% Duty Cycle mode, Short Circuit Protection, Thermal Shutdown

2. **TLV62150** Product Folder : <http://www.ti.com/product/TLV62150> : 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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