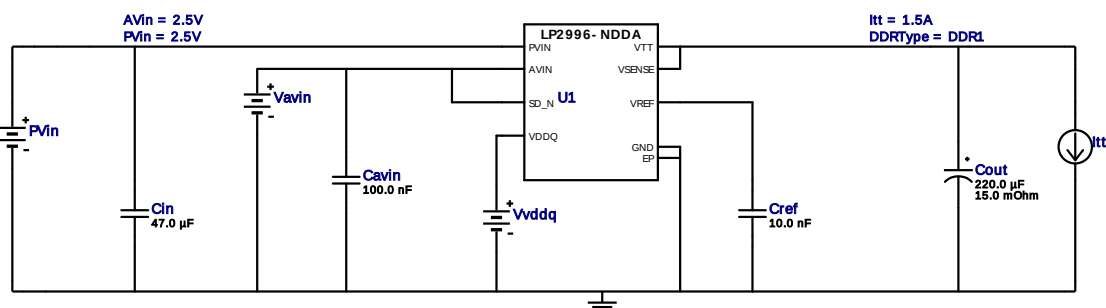


# WEBENCH® Design Report

Design : 4799701/5 LP2996MRX/NOPB  
Design 5 - LP2996MRX/NOPB

DDRTYPE = DDR1  
Pvin = 2.5V  
AVin = 2.5V  
I<sub>tt</sub> = 1.5A  
Ta = 25.0degC  
VDDQ = 2.5V  
VTT = 1.25V

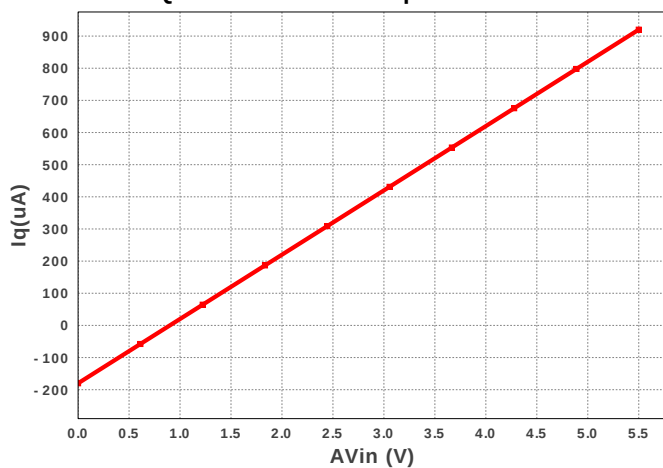
Device = LP2996MRX/NOPB  
Topology = DDRLDO  
Created = 9/21/16 2:07:41 AM  
BOM Cost = \$1.21  
BOM Count = 5  
Total Pd = 1.88W



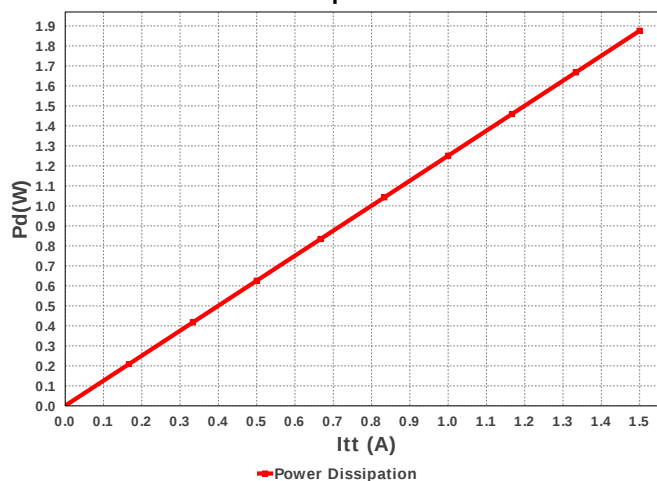
## Electrical BOM

| #  | Name  | Manufacturer      | Part Number                       | Properties                                                   | Qty | Price  | Footprint                       |
|----|-------|-------------------|-----------------------------------|--------------------------------------------------------------|-----|--------|---------------------------------|
| 1. | Cavin | MuRata            | GRM155R60J104KA01D<br>Series= X5R | Cap= 100.0 nF<br>VDC= 6.3 V<br>IRMS= 0.0 A                   | 1   | \$0.01 | 0402 3 mm <sup>2</sup>          |
| 2. | Cin   | Taiyo Yuden       | JMK212BJ476MG-T<br>Series= X5R    | Cap= 47.0 uF<br>VDC= 6.3 V<br>IRMS= 0.0 A                    | 1   | \$0.14 | 0805 7 mm <sup>2</sup>          |
| 3. | Cout  | Panasonic         | 2R5TPE220MAFB<br>Series= ?        | Cap= 220.0 uF<br>ESR= 15.0 mOhm<br>VDC= 2.5 V<br>IRMS= 2.0 A | 1   | \$0.50 | CAPSMT_6_B2S 17 mm <sup>2</sup> |
| 4. | Cref  | MuRata            | GRM155R60J103KA01D<br>Series= X5R | Cap= 10.0 nF<br>VDC= 6.3 V<br>IRMS= 0.0 A                    | 1   | \$0.01 | 0402 3 mm <sup>2</sup>          |
| 5. | U1    | Texas Instruments | LP2996MRX/NOPB                    | Switcher                                                     | 1   | \$0.55 | DDA0008A 57 mm <sup>2</sup>     |

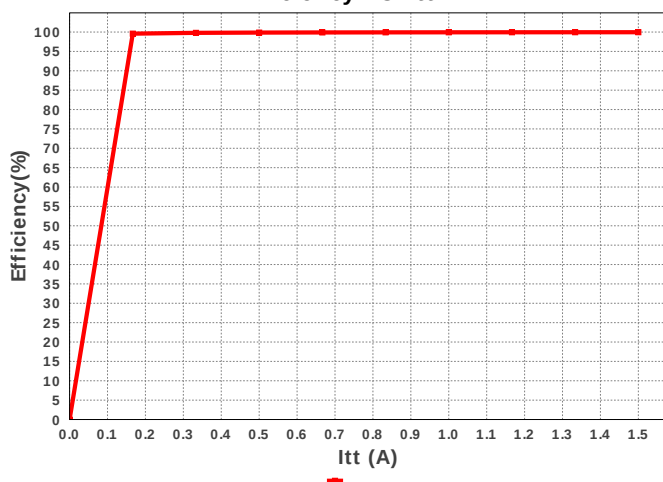
Quiescent Current Iq Vs. AVin



Power Dissipation Vs. Itt



Efficiency Vs. Itt



## Operating Values

| #   | Name       | Value                | Category   | Description                               |
|-----|------------|----------------------|------------|-------------------------------------------|
| 1.  | DDR Type   | DDR1                 | DDR Memory | DDR Memory Type                           |
| 2.  | BOM Count  | 5                    | General    | Total Design BOM count                    |
| 3.  | FootPrint  | 87.0 mm <sup>2</sup> | General    | Total Foot Print Area of BOM components   |
| 4.  | Total BOM  | \$1.21               | General    | Total BOM Cost                            |
| 5.  | AVin_OP    | 2.5 V                | Op_Point   | Pvin operating point                      |
| 6.  | Itt_OP     | 1.5 A                | Op_Point   | Itt Operating Point                       |
| 7.  | PVin_OP    | 2.5 V                | Op_Point   | Pvin operating point                      |
| 8.  | Ta_OP      | 25.0 degC            | Op_Point   | Operating Ambient Temperature             |
| 9.  | Vddq_OP    | 2.5 V                | Op_Point   | Vddq operating point                      |
| 10. | Vtt_OP     | 1.25 V               | Op_Point   | Vtt operating point                       |
| 11. | Efficiency | 99.954 %             | Op_point   | Steady state efficiency                   |
| 12. | IC Tj      | 105.662 degC         | Op_point   | IC junction temperature                   |
| 13. | ICThetaJA  | 43.0 degC/W          | Op_point   | IC junction-to-ambient thermal resistance |
| 14. | Total Pd   | 1.876 W              | Power      | Total Power Dissipation                   |

## Design Inputs

| #  | Name        | Value    | Description         |
|----|-------------|----------|---------------------|
| 1. | AVin        | 2.5 A    | AVin                |
| 2. | DDRTYPE     | DDR1     | DDRTYPE             |
| 3. | Itt         | 1.5 A    | Itt                 |
| 4. | PVin        | 2.5 A    | PVin                |
| 5. | application | DDRPower | application         |
| 6. | base_pn     | LP2996-N | Base Product Number |
| 7. | Ta          | 25.0 A   | Ambient temperature |

## Design Assistance

1. **LP2996-N** Product Folder : <http://www.ti.com/product/lp2996-n/description> : contains the data sheet and other resources.

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