Efficiency

The efficiency of the converter is shown below:

<table>
<thead>
<tr>
<th>Iout</th>
<th>Vout</th>
<th>lin</th>
<th>Vin</th>
<th>Eff</th>
<th>Vout</th>
<th>lin</th>
<th>Vin</th>
<th>Eff</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>5.054</td>
<td>0.035</td>
<td>12.00</td>
<td>0.0%</td>
<td>5.054</td>
<td>0.028</td>
<td>24.00</td>
<td>0.0%</td>
</tr>
<tr>
<td>0.25</td>
<td>5.053</td>
<td>0.143</td>
<td>12.00</td>
<td>73.6%</td>
<td>5.053</td>
<td>0.082</td>
<td>24.00</td>
<td>64.2%</td>
</tr>
<tr>
<td>0.50</td>
<td>5.053</td>
<td>0.254</td>
<td>12.00</td>
<td>82.9%</td>
<td>5.053</td>
<td>0.137</td>
<td>24.00</td>
<td>76.8%</td>
</tr>
<tr>
<td>0.75</td>
<td>5.053</td>
<td>0.366</td>
<td>12.00</td>
<td>86.3%</td>
<td>5.053</td>
<td>0.192</td>
<td>24.00</td>
<td>82.2%</td>
</tr>
<tr>
<td>1.00</td>
<td>5.053</td>
<td>0.478</td>
<td>12.00</td>
<td>88.1%</td>
<td>5.053</td>
<td>0.248</td>
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<td>84.9%</td>
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<tr>
<td>1.25</td>
<td>5.053</td>
<td>0.590</td>
<td>12.00</td>
<td>89.2%</td>
<td>5.053</td>
<td>0.304</td>
<td>24.00</td>
<td>86.6%</td>
</tr>
<tr>
<td>1.50</td>
<td>5.053</td>
<td>0.703</td>
<td>12.00</td>
<td>89.8%</td>
<td>5.053</td>
<td>0.361</td>
<td>24.00</td>
<td>87.5%</td>
</tr>
<tr>
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<td>0.818</td>
<td>12.00</td>
<td>90.1%</td>
<td>5.052</td>
<td>0.417</td>
<td>24.00</td>
<td>88.3%</td>
</tr>
<tr>
<td>2.00</td>
<td>5.052</td>
<td>0.933</td>
<td>12.00</td>
<td>90.2%</td>
<td>5.052</td>
<td>0.473</td>
<td>24.00</td>
<td>89.0%</td>
</tr>
<tr>
<td>2.25</td>
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<td>1.048</td>
<td>12.00</td>
<td>90.4%</td>
<td>5.052</td>
<td>0.530</td>
<td>24.00</td>
<td>89.4%</td>
</tr>
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<td>1.167</td>
<td>12.00</td>
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<td>5.052</td>
<td>0.587</td>
<td>24.00</td>
<td>89.7%</td>
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<td>1.287</td>
<td>12.00</td>
<td>90.0%</td>
<td>5.052</td>
<td>0.644</td>
<td>24.00</td>
<td>89.9%</td>
</tr>
<tr>
<td>3.00</td>
<td>5.051</td>
<td>1.405</td>
<td>12.00</td>
<td>89.9%</td>
<td>5.051</td>
<td>0.703</td>
<td>24.00</td>
<td>89.8%</td>
</tr>
</tbody>
</table>

![PMP10491 Rev B Efficiency](image-url)
Ripple and Noise

Ripple measurements taken with a 3A load and 20MHz BWL.

Output Ripple (C9), 12Vin
50mV/div, 1usec/div
Measured 58mV pk-pk:

Input Ripple (C1), 12Vin
50mV/div, 1usec/div
Measured 123mV pk-pk:

Output Ripple (C9), 24Vin
50mV/div, 1usec/div
Measured 45mV pk-pk:

Input Ripple (C1), 24Vin
50mV/div, 1usec/div
Measured 127mV pk-pk:
Dynamic Loading

Load Step, 12Vin
1.5A to 3A step load
100mA/usec slew rate
500mV/div, 100usec/div
Measured 906mVpp:

Load Step, 24Vin
1.5A to 3A step load
100mA/usec slew rate
200mV/div, 100usec/div
Measured 700mVpp:

Turn On Response

12Vin, 3A Load, 1msec/div
Top: Output, 1V/div
Bottom: Input, 10V/div:

12Vin, 0A Load, 1msec/div
Top: Output, 1V/div
Bottom: Input, 10V/div:

24Vin, 3A Load, 1msec/div
Top: Output, 1V/div
Bottom: Input, 10V/div:

24Vin, 0A Load, 1msec/div
Top: Output, 1V/div
Bottom: Input, 10V/div:
Stability

Loop response of the converter with a 3A load.
Plot 1 (no markers): 24Vin. BW=7.1KHz; PM=56 degrees; GM=23dB.
Plot 2 (markers): 12Vin. BW=5.4KHz; PM=51 degrees; GM=22dB.

Loop response of the converter with a 300mA load:
Plot 1 (no markers): 24Vin. BW=6.9KHz; PM=55 degrees; GM=26dB.
Plot 2 (markers): 12Vin. BW=5.7KHz; PM=51 degrees; GM=28dB.
Thermal:

12V Input Top:

12V Input Bottom:
24V Input Top:

24V Input Bottom:
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