All Measurements are done for 1phase input operation

1 Startup

Input voltage = 90VAC
Load current = full load (24V@0.5A, 6V@1.5A)
Input voltage = 230VAC
Load current  = full load (24V@0.5A, 6V@1.5A)

Input voltage = 273VAC
Load current  = full load (24V@0.5A, 6V@1.5A)
2 Shutdown

Input voltage = 230VAC
Load current = full load (24V@0.5A, 6V@1.5A)
3 Input ripple

Input voltage = 90VAC/60Hz
Load current = full load (24V@0.5A, 6V@1.5A)
4 Efficiency

![Efficiency Graph](image_url)

- **Vin=190VAC**
- **Vin=90VAC**

The graph shows the efficiency of PMP10129 in 1-phase operation for different output power levels and input voltages.
5 Load regulation

5.1 6Vout:
Input voltage = 190VAC
Load current 24V output = constant = 0.5A

5.2 24Vout:
Input voltage = 190VAC
Load current 6V output = constant = 1.5A
Load current = full load (24V@0.5A, 6V@1.5A)
Input voltage = 90VAC
Phase margin = 70°
Bandwidth = 2.5kHz

Load current = full load (24V@0.5A, 6V@1.5A)
Input voltage = 230VAC
Phase margin = 70°
Bandwidth = 3.1kHz

Load current = full load (24V@0.5A, 6V@1.5A)
Input voltage = 273VAC
Phase margin = 71°
Bandwidth = 3.2kHz
6 Switch Node

Input voltage = 90VDC
Load current = full load (24V@0.5A, 6V@1.5A)

Input voltage = 325VDC
Load current = full load (24V@0.5A, 6V@1.5A)
Input voltage = 630VDC
Load current = full load (24V@0.5A, 6V@1.5A)
7  Switch Nodes secondary side

Input voltage  = 630VDC
Load current   = full load (24V@0.5A, 6V@1.5A)
8  Output ripple voltage

8.1 6Vout:
Input voltage  = 230VAC
Load current  = full load (24V@0.5A, 6V@1.5A)

8.2 24Vout:
Input voltage  = 230VAC
Load current  = full load (24V@0.5A, 6V@1.5A)
9 Load Transients

9.1 6Vout:

Input voltage = 230VAC
Load current 24Vout = 0.5A
Load current 6Vout = 0.75A to 1.5A

Input voltage = 230VAC
Load current 24Vout = 0.5A
Load current 6Vout = 1.5A to 3A
9.2 24Vout:

Input voltage = 230VAC
Load current 6Vout = 1.5A
Load current 24Vout = 0.25A to 0.5A

Input voltage = 230VAC
Load current 6Vout = 1.5A
Load current 24Vout = 0.5A to 1A
10 Thermal Analysis

The images below show the infrared images taken from the FlexCam after 15min at 20W output power.

Input voltage = 190VAC
Load current = full load (24V @0.5A, 6V @1.5A)
Ambient temperature = 25°C
No heatsink, no airflow

<table>
<thead>
<tr>
<th>Name</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistor RF1</td>
<td>44.7°C</td>
</tr>
<tr>
<td>Mosfet Q1</td>
<td>46.6°C</td>
</tr>
<tr>
<td>Resistor R7</td>
<td>45.6°C</td>
</tr>
<tr>
<td>Diode D6</td>
<td>79.7°C</td>
</tr>
<tr>
<td>Diode D2</td>
<td>60.9°C</td>
</tr>
<tr>
<td>Transformer T1</td>
<td>51.5°C</td>
</tr>
</tbody>
</table>

Worst Case Measurement:

Minimum Input Voltage and just 1 phase is working:
Input voltage = 90VAC
Load current = full load (24V @0.5A, 6V @1.5A)
Ambient temperature = 25°C
No heatsink, no airflow
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