



Using Power Design Manager (PDM) for AMD Spartan™ UltraScale+™ Devices

AMD Power Design Manager Overview

AMD Power Design Manager



Standalone tool for estimating power requirements of Versal, UltraScale+, and Kria™ devices



Integrated in AMD Unified Installer, supporting file import from Vivado and XPE.



Refer to PDM user guide [UG1556](#) for installation details

Using PDM for AMD Spartan™ US+



Design Entry Flows in PDM



Design Creation (Manual Estimation Flow)

- > Select your Spartan™ UltraScale+™ device
- > Use IP wizards or Pages to add new design blocks
- > Estimate device resource counts and toggle rates



Design Analysis (Import Flow)

- > Import Spartan UltraScale+ design from AMD Vivado™ Report Power
- > Automatically populate architecture and device details
- > Perform “what-if” analysis



Manual Estimation Flow



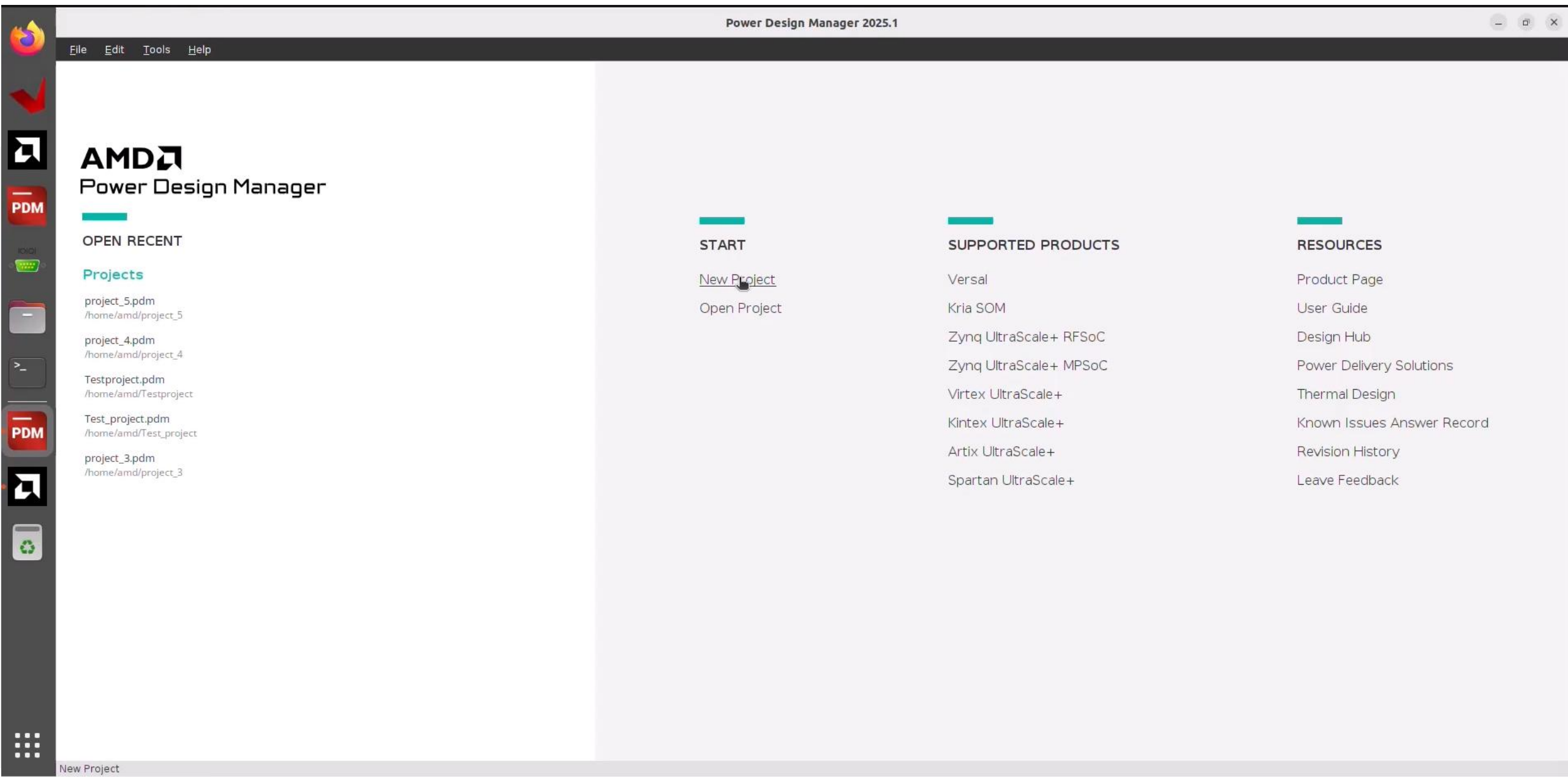
Home





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Import Flow



Exporting the Power Constraints

Export XDC constraints to guide the AMD Vivado™ or Vitis™ tools and enable reporting

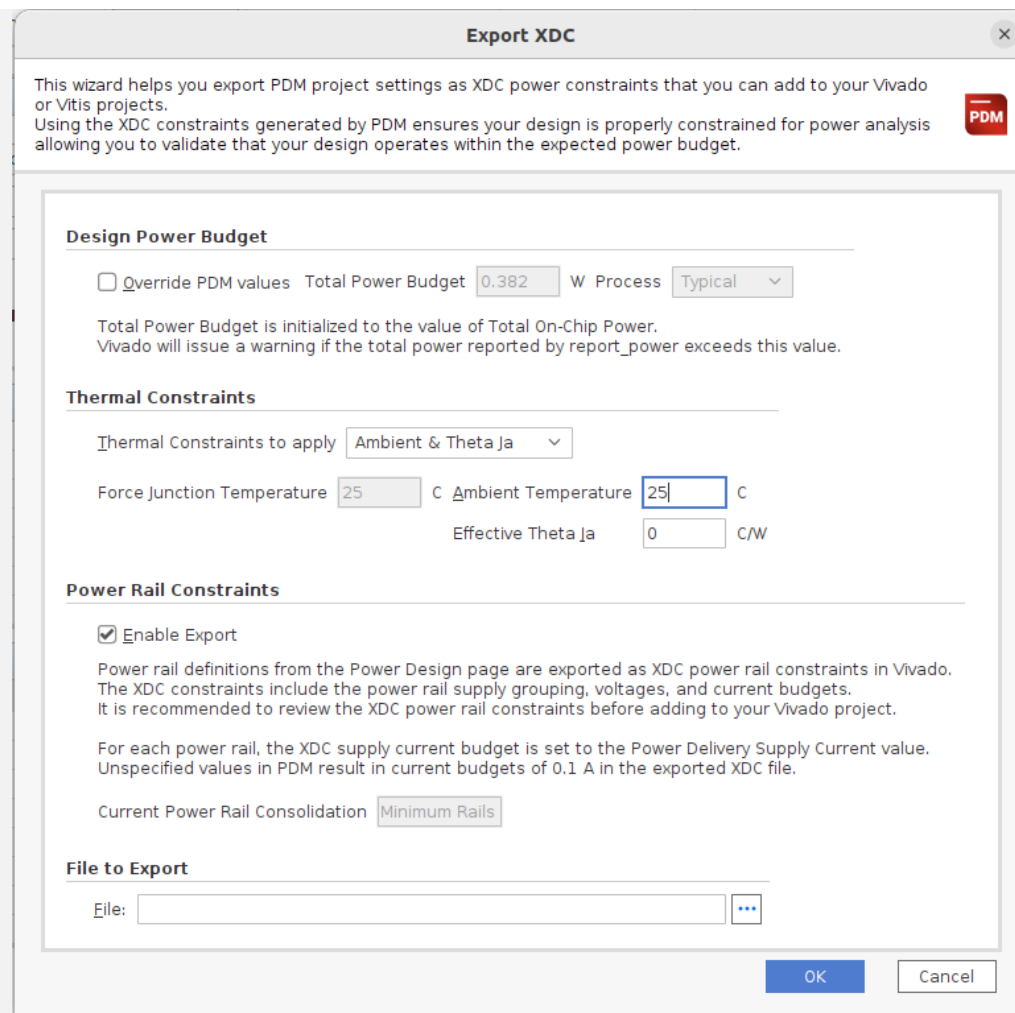
1 Device process

2 Junction temperature

3 Ambient temperature

4 Design power budget

5 Supply voltage and current budget for specified power rail consolidation



The screenshot shows the 'Export XDC' wizard dialog box. It contains the following sections:

- Design Power Budget:** Includes an 'Override PDM values' checkbox, a 'Total Power Budget' field set to 0.382 W, and a 'Process' dropdown set to 'Typical'. A note states: 'Total Power Budget is initialized to the value of Total On-Chip Power. Vivado will issue a warning if the total power reported by report_power exceeds this value.'
- Thermal Constraints:** Includes a 'Thermal Constraints to apply' dropdown set to 'Ambient & Theta Ja'. It has fields for 'Force Junction Temperature' (25 C), 'Ambient Temperature' (25 C), and 'Effective Theta Ja' (0 C/W).
- Power Rail Constraints:** Includes a checked 'Enable Export' checkbox. A note explains that power rail definitions are exported as XDC power rail constraints. Below, it states: 'For each power rail, the XDC supply current budget is set to the Power Delivery Supply Current value. Unspecified values in PDM result in current budgets of 0.1 A in the exported XDC file.' There is a 'Current Power Rail Consolidation' dropdown set to 'Minimum Rails'.
- File to Export:** Includes a text field for the file name and a browse button (three dots).

At the bottom right are 'OK' and 'Cancel' buttons.

PDM Project Report

PDM allows exporting of project data to text file

From Summary Page

Export PDM Project Report

```
30
31 1. Summary
32 -----
33
34 1.1 Summary
35 -----
36
37 +-----+-----+-----+
38 | Total On-Chip Power | 0.413 W |
39 | Static Power       | 0.161 W |
40 | Dynamic Power      | 0.252 W |
41 | Junction Temperature | 70 C   |
42 | Thermal Margin     | 30 C   |
43 | Thermal Power Margin |        |
44 | Characterization    | Production (+/- 15% accuracy) |
45 +-----+-----+-----+
46
47
48 1.2 Environment
49 -----
50
51 +-----+-----+-----+
52 | Junction Temperature (Tj) | Force Tj | 70 C |
53 | Ambient Temperature (Ta) |          | 30 C |
54 | Effective Theta JA       | Calculated | 96.8523 C/W |
55 | JESD51-14 Specification Airflow |          |      |
56 | Max. Junction Temperature |          | 100 C |
57 +-----+-----+-----+
58
59
60 1.3 On-Chip Static Power
61 -----
62
63 +-----+-----+-----+
64 | Resource | Power | Power % |
65 +-----+-----+-----+
66 | Static   |      |         |
67 | PL       | 0.16146 W | 39.0953 % |
68 | GTs      |          |         |
69 +-----+-----+-----+
70
71
```

Summary



AMD Power Design Manager offers:



Page-based workflows for device setup, power estimation, and rail design



Support for both manual and import flows



Export options available for constraints and reports



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