XDP™ Monitoring ICs Product Presentation

November 2024

How Infineon's Monitoring IC is positioned in the Protection IC family

XDP™ Protection ICs

NEW

Monitoring IC

XDM700-1 *

Key differentiating features of the product family:

- Wide input voltage range +5 V to +80 V
- Integrated 5 V regulator
- High/low-side current sensing
- PMBus® for highly accurate telemetry: 1MHz
- Analog current & power monitoring
- Superior reporting accuracy V≤0.4%, I≤0.75%, P≤1.15%, E≤2.7%
- Programmable alerts: OC, OV, UV, OP, OT
- Small footprint VQFN-24 4x4

NEW

Digital eFuse

XDP730-001 *

XDP720-001 *

XDP721-001 *

XDP722-001 *

Key differentiating features of the product family:

- Wide input voltage range +7 V to +80 V
- Integrated hot-swap controller, low $R_{DS(on)}$ FET 30 A or 20 A, and current sensor
- With/without PMBus® for accurate telemetry: 1 MHz
- Analog current monitoring
- Superior reporting accuracy V≤0.5 %, I≤1 %, P≤2%, E≤3%
- Extensive protection features
- Small footprint LIQFN-42 7x7 or LIQFN-23 6x5

Hot-swap controller

XDP711-001

XDP710-002

XDP710-001

XDP700-002

Key differentiating features of the product family:

- Wide input voltage range up to +80 V
- Integrated gate driver, drive capability up to 250 µA
- Pulsed SOA current control (Boost Mode) technology for safer turn-on
- PMBus® for highly accurate telemetry: 1MHz
- Superior reporting accuracy V≤0.4%, I≤0.75%, P≤1.15%, E≤2.7%
- Extensive protection features
- Small footprint VQFN-29 6x6

* Coming soon est. 2026 Q1 (eFuse) and 2025 Q4 (Monitoring IC)

Protection & Monitoring Family Overview

	Monitoring IC	Hot-swap Controller (HSC)			Digital eFuse		
Feature	XDM700 *	XDP700	XDP710	XDP711	XDP730 *	XDP720 *	XDP721/ XDP722 *
Input voltage	+5 V to +80 V	-9.5 V to -80 V	+5.5 V to +80 V	+7 V to +80 V	+7 V to +80 V	+7 V to +80 V	+7 V to +80 V
Telemetry accuracy	V ≤ 0.4%, I ≤ 0.75%, P ≤ 1.15%, E ≤ 2.7%	V ≤ 0.5%, I ≤ 1.3%, P ≤ 1.8%, E ≤ 5.0%	V ≤ 0.4%, I ≤ 0.75%, P ≤ 1.15%, E ≤ 2.7%	V ≤ 0.4%, I ≤ 0.75%, P ≤ 1.15%, E ≤ 2.7%	V ≤ 0.5%, I ≤ 1.0%, P ≤ 2.0%, E ≤ 3.0%	V ≤ 0.5%, I ≤ 1.0%, P ≤ 2.0%, E ≤ 3.0%	V ≤ 0.5%, I ≤ 1.0%, P ≤ 2.0%, E ≤ 3.0%
FET driver/controller	✗	✓	✓	✓	✓	✓	✓
Integrated FET	✗	✗	✗	✗	✓	✓	✓
Modes of operation	✗	AADM, FDM	AADM, FDM	AADM, FDM, Hybrid	FDM	FDM	✗
Energy readings	40-bit	24-bit	24-bit	40-bit	40-bit	40-bit	40-bit
Power averaging	3 s (32,768 samples)	13 ms (128 samples)	13 ms (128 samples)	3 s (32,768 samples)	3 s (32,768 samples)	3 s (32,768 samples)	3 s (32,768 samples)
Analog reporting	Current, Power	✗	✗	Current, Power	Current	Current	Current
Faults	✗	✓	✓	✓	✓	✓	✓
Warnings	✓	✓	✓	✓	✓	✓	✗
Telemetry	✓	✓	✓	✓	✓	✓	✗
OTP	✗	✓	✓	✓	✓	✓	✗
Analog programmability	✓	✓	✓	✓	✓	✓	✓
Supported rails	Positive	Negative	Positive	Positive	Positive	Positive	Positive
High Voltage Package	✗ **	✓	✓	✓	✓	✓	✓
Package	VQFN-24 4x4	VQFN-29 6x6	VQFN-29 6x6	VQFN-29 6x6	LIQFN-42 7x7	LIQFN-23 6x5	LIQFN-23 6x5

* Coming soon
** HV compliant if polymer coating is used during PCB assembly

XDP™ Monitoring IC

Infineon's XDP™ Monitoring IC XDM700-1 value propositions

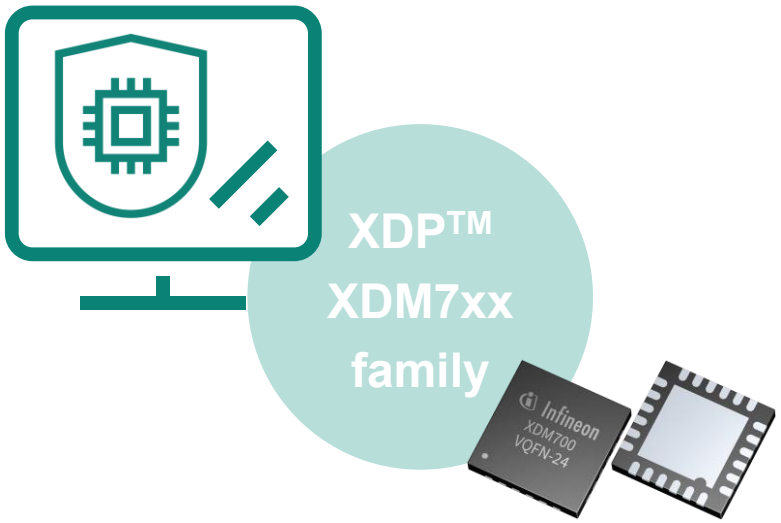
Monitoring IC Portfolio

XDM700-1

- **V/I monitor** with **wide input voltage** range up to 80 V for **high or low-side current sensing**
- Analog current and power monitoring at **AMON pin**
- Telemetry with I2C following **PMBus® protocol** and **Peaks and Valleys reporting**
- **Programmable ALERT**: OOC, OV, UV, OUV, OP

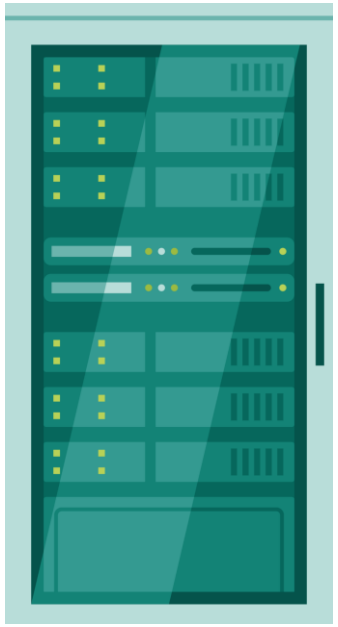
Value Proposition

- Wide V_{IN} range enables **usage in a wide range of applications**
- Dedicated high-speed current and voltage ADCs allow for accurate real-time monitoring thus enabling **optimized system performance**
- High-accuracy telemetry for early fault detection results in **improved system reliability** and **reduced system (maintenance) costs**
- Many current sense ranges for **increased flexibility**
- Small footprint and easier integration into the system allows for **space-saving designs** and **faster time-to-market**
- **Higher data throughput** and **system responsiveness** through 1 MHz PMBus® communication while guaranteeing **compliance with industry standards**



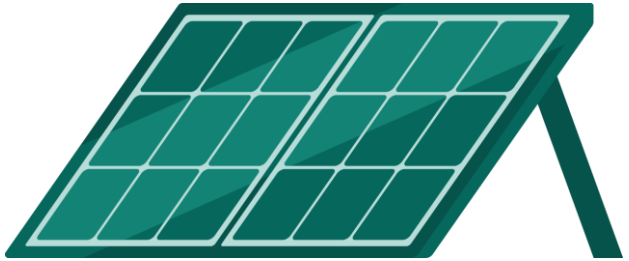
Overview of potential target applications for XDM700-1

Potential applications

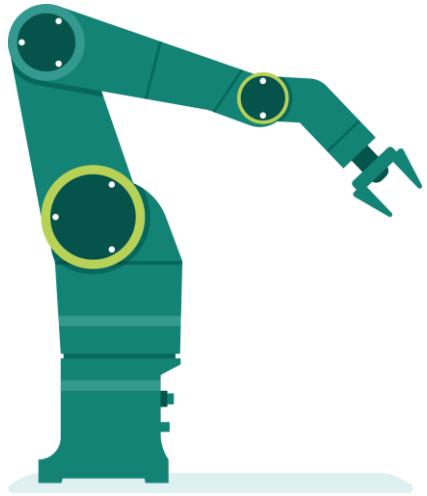


Server &
Data center

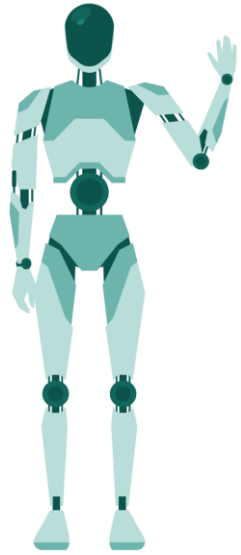
Industrial
power supplies



Renewables



(Industrial) Robotics



Humanoid Robots

XDP™ digital V/I/P/E/T monitoring IC XDM700-1 overview

STATUS: Coming soon

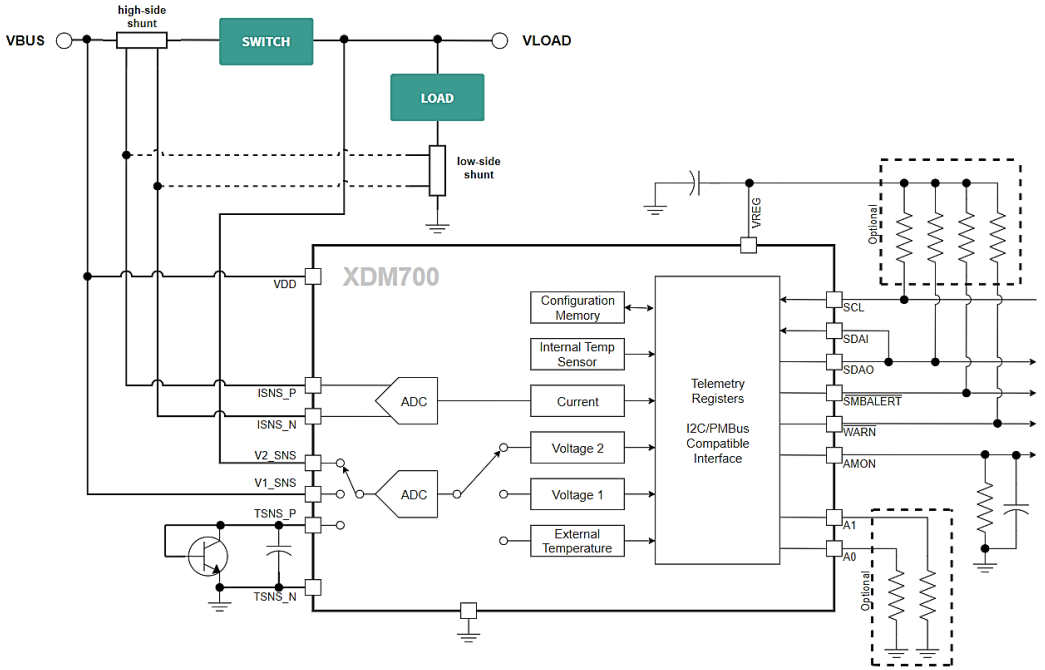
Key features

- Wide operating input voltage range: **5.0 V to 80 V**
- High- and low-side current sensing (**0 V to 80 V** common mode range)
- Voltage Sensing from **0 V to 80 V**
- Dedicated voltage and current ADCs: **12-bit** resolution, **~102 µs** refresh rate
- Analog monitor (current or power reporting) pin
- Active monitoring: **V ≤ 0.4%, I ≤ 0.75%, P ≤ 1.15%, E ≤ 2.7%**
- Telemetry via I²C/PMBus 1.3 interface @ **1MHz**
- Programmable ALERT: over-current, over- and under-voltage, over-power, over-temperature
- At least 16 programmable addresses
- Integrated **5 V** regulator (10 mA output capability)

Key Benefits

- Ultra-precise digital monitor with 12-bit ADCs for current and voltage monitoring
- Optimal sensitivity with a 4-levels programmable current sense differential range of 12.5mV / 25mV / 50mV / 100mV and a programmable voltage sense range of 0V to 22V / 0V to 44V / 0V to 88V
- Current, Bus Voltage, Load Voltage, Bus or Load Power and Energy, Internal and External Temperature reporting
- Peak (V/I/P/TEXT) and Valleys (V/I/TEXT) reporting
- Sample averaging: 1x to 128x (V/I); 1x to 32768x (P)
- Over-Current, Over-/Under-Voltage, Over-Power, Over-Temperature programmability

Application diagram

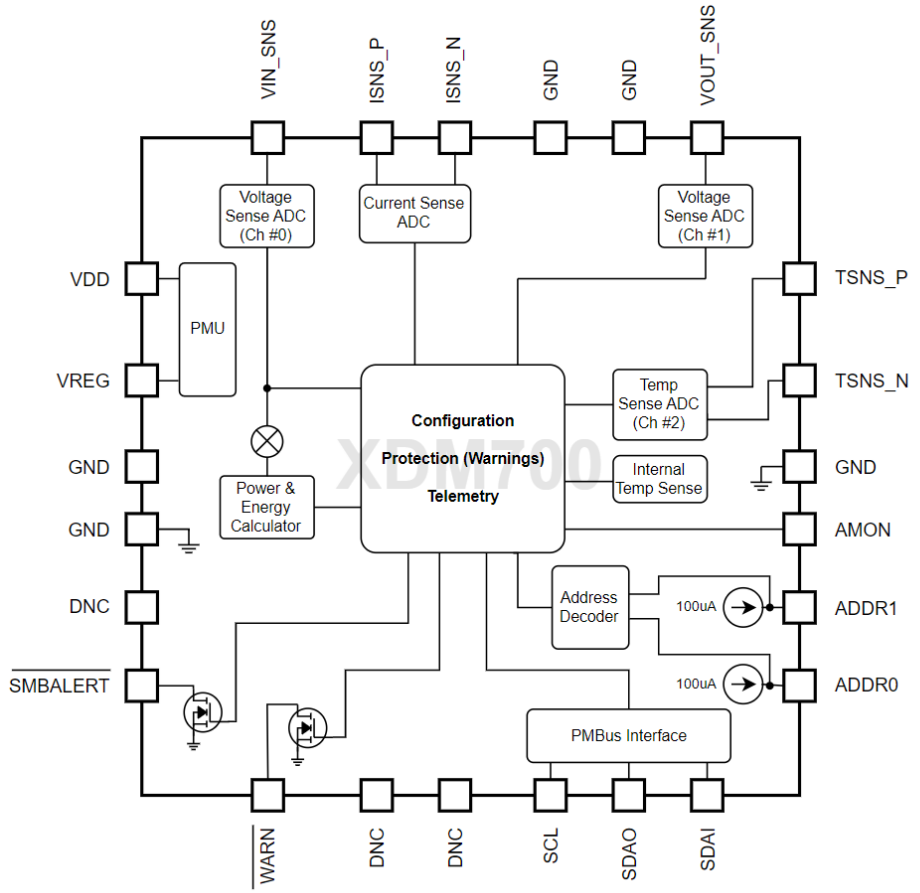


Small footprint

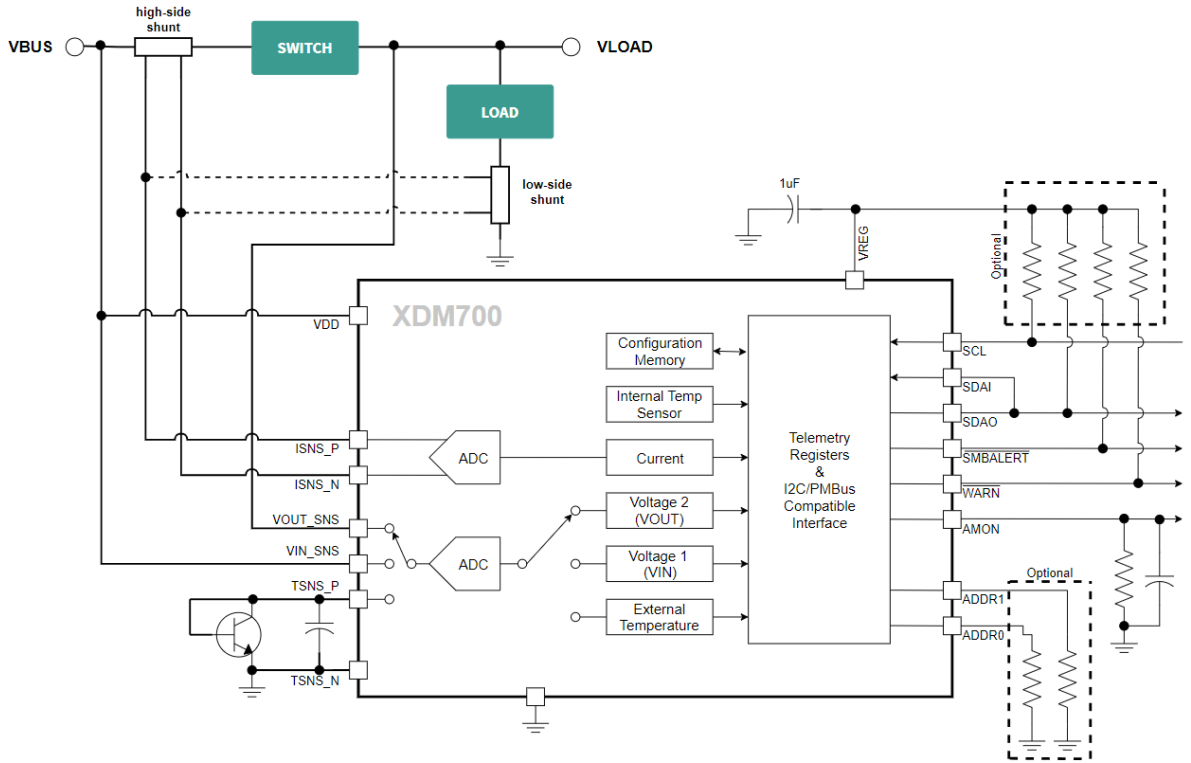
- VQFN-24 pin (4x4 mm2) package
- -40°C to 150°C junction temperature

Block diagram and application schematics of XDM700-1

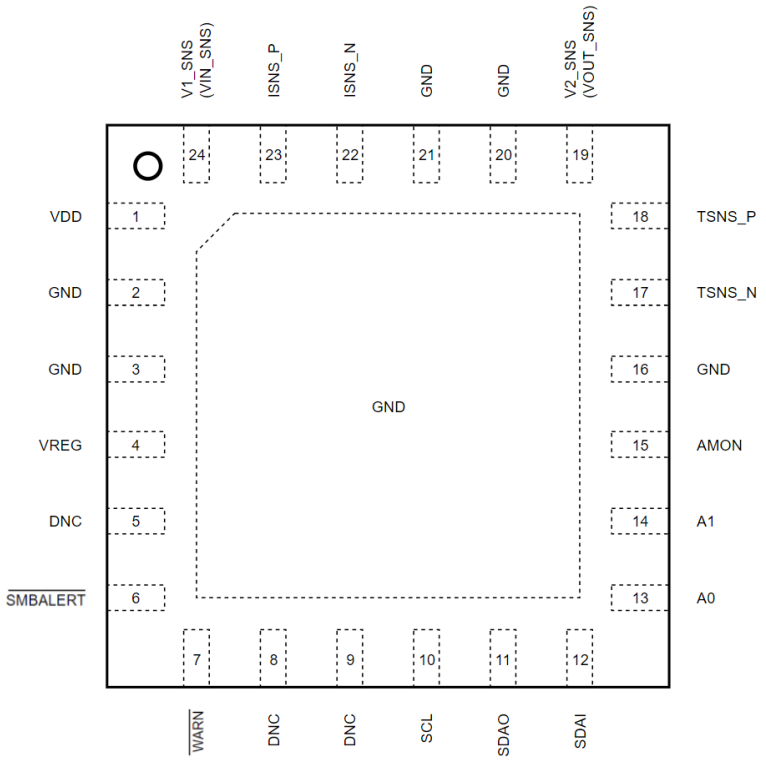
Block diagram



Application schematic



Pin-out and pin description of XDM700-1



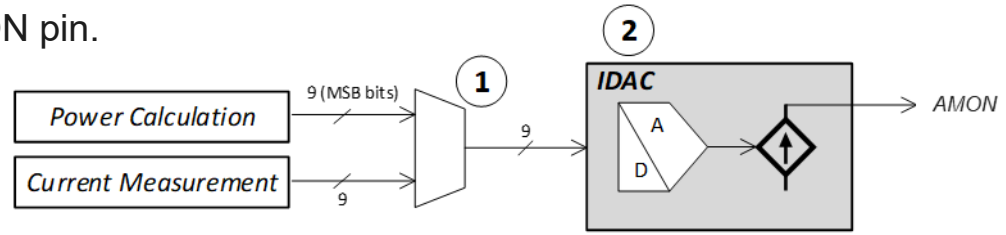
Pin #	Name	I/O	Type	Description
1	VDD		P	Power supply input.
2, 3	GND		G	Ground reference.
4	VREG		P	VREG (internal 5 V regulator) output. Connect 1uF capacitor from this pin to GND.
5	DNC			
6	SMBALERT	O	D	SMBALERT open drain output. This pin asserts low when a warning occurs.
7	WARN	O	D	WARN open drain output. This pin asserts high/low when a warning occurs.
8, 9	DNC			
10	SCL	I	D	PMBus clock input.
11	SDAO	O	D	PMBus data output.
12	SDAI	I	D	PMBus data input.
13	A0	I	A	Device address configuration inputs. These pins can be tied to GND, left open or tied to GND through a resistor for a total of 15 unique PMBus device addresses.
14	A1	I	A	
15	AMON	O	A	Analog monitor pin. Either current or power is reported on this pin.
16	GND			Ground reference.
17	TSNS_N	I	A	Temperature sense negative terminal.
18	TSNS_P	I	A	Temperature sense positive terminal.
19	V2_SNS	I	A	Output voltage sense pin.
20, 21	GND			Ground reference.
22	ISNS_N	I	A	Current sense negative input.
23	ISNS_P	I	A	Current sense positive input.
24	V1_SNS	I	A	Input voltage sense pin.
EP				Ground reference.

Description of key features of XDM700-1

Analog monitoring and reporting & Telemetry peaks and valleys

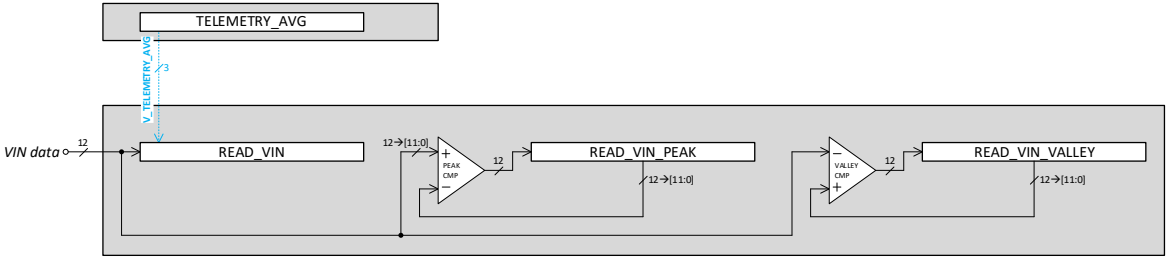
AMON / PMON

- An analog monitoring and reporting (AMON) of FET current (IMON) or input power (PMON) signal can be output at the AMON pin by configuring the corresponding bits in TELEMETRY_CFG PMBus command.
- As shown in the following figure, information is taken from IOUT data path and PIN data output, which goes into a digital multiplexer (1), configurable by means of TELEMETRY_CFG PMBus command. Output of the multiplexer then goes to an IDAC (2), which outputs a current level proportional to the corresponding current or power digital input at the AMON pin.



Peaks and Valleys

- X_PEAK and x_VALLEY commands report maximum and minimum values measured since last time the command was cleared.
- The x_PEAK and x_VALLEY commands are cleared after reading their contents or by means of a power on reset. After reset, the first value read is compared to 0x000 (peaks) or 0xFFF (valleys) and it becomes a new peak or valley respectively.



Description of key features of XDM700-1

Adjustable power averaging period up to 1s

Code	# of samples	Power averaging time
0000	1	102.4 us
0001	2	204.8 us
0010	4	409.6 us
0011	8	819.2 us
0100	16	1.6384 ms
0101	32	3.2768 ms
0110	64	6.5536 ms
0111	128	13.1072 ms
1000	**256**	**26.2144 ms**
1001	**512**	**52.4288 ms**
1010	**1024**	**104.8576 ms**
1011	**2048**	**209.7152 ms**
1100	**4096**	**419.4304 ms**
1101	**8192**	**838.8608 ms**
1110	**16384**	**1.6777 sec**
1111	**32768**	**3.3554 sec**

Description of key features of XDM700-1
Advanced energy readings & Warnings

Energy readings

- ROLLOVER_COUNT bit field in READ_EIN_EXT command has 16 extra bits compared to READ_EIN command for an extended energy reading.

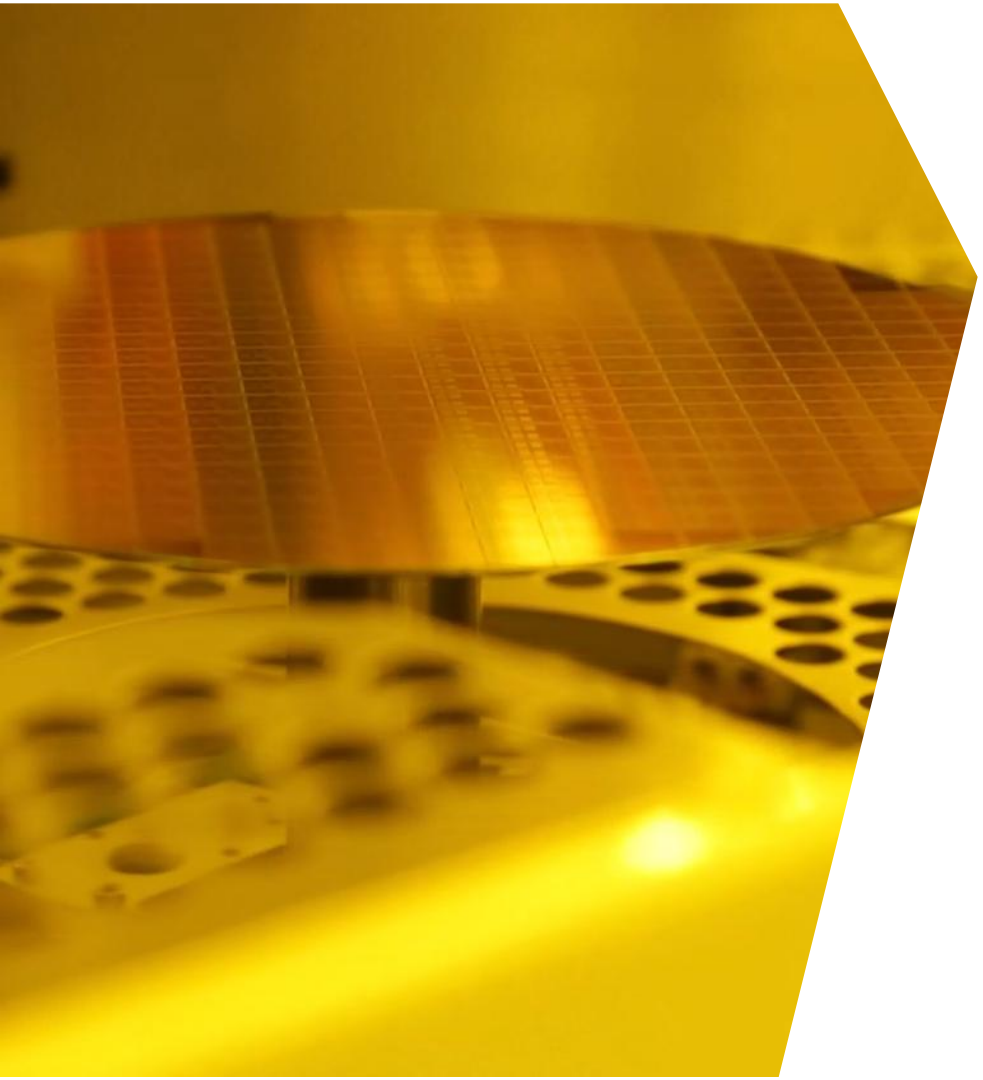
Warnings

- Warnings are alerted through the WARN pin to the processor/MCU so that it can decide if any action is needed in response.
- The SMBALERT# pin provides a summary of all triggered warnings. A mask command is also provided for the user to select which warnings are to be reflected on the WARN and SMBALERT# pins.
- **Warnings:**
  - Input under-voltage (UV)
  - Input over-voltage (OV)
  - Input over-power (OP)
  - On-chip thermal shut-down (TSD)
  - Output under-voltage (OUV)
  - Output over-voltage (OOV)
  - Output over-current (OOC)
  - Over-temperature (OT)
  - PMBUS Communication (COMM)

Evaluation Board

Summary

Protection and monitoring IC product status and links



Product status

XDM700-1 (A31) ***(coming soon)***

- M9: ~Dec'25, market release ~Feb'26
- **ES available**
- Evaluation board: TBA.

XDP730-001 ***(coming soon)***

- Est. M9: Q2/CY26
- **EES available**
- Evaluation board. TBA.
- Link to webpage

XDP720-001 ***(coming soon)***

- Est. M9: Q1/CY26
- **EES available**
- Evaluation board. TBA.
- Link to webpage

XDP72x-001 ***(coming soon)***

- Est. M9: Q2/CY26
- **EES available**
- Evaluation board. TBA.
- Link to webpage XDP721, XDP722

XDP711-001 (A31) ***(recommended for new designs)***

- New and improved features
- M9 released: July 2025
- Evaluation board + GUI: available
- Link to webpage

XDP710-002 (A21) ***(recommended for new designs)***

- New and improved features
- M9 released Dec. 2023
- Evaluation board + GUI: available
- Link to webpage

XDP710-001 (A11) ***(not recommended for new designs)***

- M9 released Nov. 2022
- Evaluation board + GUI: available
- Link to webpage

XDP700-002 (A21) ***(recommended for new designs)***

- M9 released Dec. 2023
- Evaluation board + GUI: available
- Link to webpage

Collaterals and support

** Coming soon*

Product Materials	• Webpages • Product Brief • Data Sheet • Selection Guide • Product presentation • Fighting Guide • Eval Boards	• Protection & Monitoring ICs | XDM700* | XDP730* | XDP720* | XDP721* | XDP722* | XDP711 | XDP710 | XDP700 • Product Brief XDM700* | XDP730/72x* | XDP711 | XDP710 | XDP700 • DS XDM700* | Prelim. XDP730* | Prelim. XDP720 | Prelim. XDP72x | XDP711 | XDP710 | XDP700 • Product Selection Guide • PP V/I Monitor XDM700* | eFuses XDP7xx* | Hot-swap controller XDP7x0 • FG XDM700* | XDP730/XDP72x | XDP711 | XDP7x0 • EVAL_XDM700-1* | EVAL_XDP730-001* | EVAL_XDP72x-001* | EVAL_XDP711-001 | EVAL_XDP710_V2 | EVAL_XDP700 |
Technical Materials	• App Notes • XDP™ GUI • PMBus® Document • User Manual • Qualification • Migration guide	• External fast switch-off circuit XDP710 App Note | • Designer GUI download https://softwaretools-preview.icp.infineon.com/tools/com.ifx.tb.tool.xdpdesigner • PMBus® Commands XDP711 | XDP710 | XDP700 • XDP7xx Gang Programmer User Manual • Product Qualification Report XDP711 | XDP710 | XDP700 • Migration XDP711
Other	• Whitepaper • Podcast4Engineers • Bodo's Power Article	• AI server hot-plugging Whitepaper | DR-HSC IBC topology solution Whitepaper • Podcast episode "Protection ICs in AI data centers" https://www.podbean.eu/ep/pb-dtmex-d4dfa2 • Technical article AI server hot-plugging https://www.bodospower.com/restricted/downloads/bp_2025_01.pdf


Infineon