Power Modules

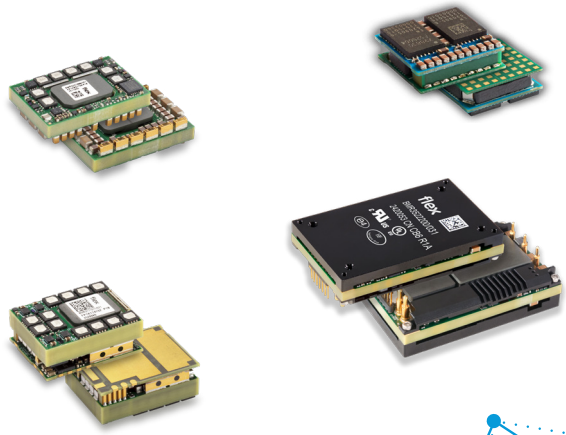
DC/DC converters for artificial intelligence and cloud applications

Artificial intelligence is advancing at an exceptional pace, and the infrastructure behind it needs to keep up. As workloads grow more complex and move deeper into cloud environments, system efficiency and power delivery become central design challenges. Modern GPUs and ASICs now draw far more power than earlier generations, pushing rack requirements from below 10 kW to well above 100 kW. To support this shift, data centre architects are increasingly moving from 12 V to 48 V rack architectures to improve distribution efficiency and enable higher power density.

As compute density increases, so does the heat it generates. Even highly efficient systems must manage significant thermal loads. Effective cooling and power density are now critical design considerations. Flex Power Modules develops solutions that address these needs, directly focusing on high efficiency, compact integration, and strong thermal performance. Our thermal approach centers on top side heat removal, used across our standard eighth brick and quarter brick modules, where heat is transferred from key components directly to the top baseplate for improved cooling.

The transition to 48 V also introduces the opportunity to remove isolation in the first DC/DC conversion stage when the application allows it. This enables the use of more efficient non-isolated topologies. For systems that accept an unregulated intermediate bus, fixed ratio converters offer additional benefits, including higher efficiency and improved peak power delivery.

In two stage architectures, a growing design strategy is to parallel multiple two phase power modules. These modules are coordinated by an external multiphase controller, which manages phase count and overall system performance. This approach offers scalability, high efficiency, and consistent power delivery across a wide range of AI and cloud applications.



Latest power modules for AI and Cloud

BMR317 – 8:1 fixed ratio IBC (800W$_{TDP}$/2000W$_{peak}$)

- Non-isolated, open frame converter
- Fixed 8:1 input-output ratio
- Peak power capabilities up to 2kW
- LGA standard footprint

Dimensions:
23.4 x 17.8 x 8.7 mm / 0.39 x 0.35 x 0.29 in

BMR316 – 4:1 fixed ratio IBC (1000W$_{TDP}$ /2800W$_{peak}$)

- Compact non-isolated converter
- High density IBC up to 15kW/in^3 (900W/cm^3)
- Digital PMBus interface
- LGA industry standard footprint and pinout
- Halogen-free
- High efficiency up to 97.7% peak

Dimensions:
23.4 x 17.8 x 7.6 mm / 0.92 x 0.7 x 0.29 in

BMR323 – 8:1 fixed ratio converter (600W$_{TDP}$/1200W$_{peak}$)

- Unregulated 8:1 fixed ratio converter
- Peak power capabilities up to 1.2kW
- Non-isolated converter
- High efficiency up to 97.8%
- Parallelable up to 6 units

Dimensions:
27 x 18 x 6.7 mm / 1.06 x 0.71 x 0.26 in

BMR352 – digital quarter brick IBC (2000W$_{TDP}$/3000W$_{peak}$)

- Fully regulated output
- Non-isolated converter
- Peak power capabilities up to 3kW
- Paralleling with Active Current Share

Dimensions:
58.4 x 36.8 x 14.7 mm / 2.4 x 1.45 x 0.58 in

BMR353 – digital eighth brick IBC (860W$_{TDP}$ /1200W$_{peak}$)

- Fully regulated 12V output
- Non-isolated converter
- Digital PMBus interface
- Peak efficiency at 97.8%
- Event data recorder
- Paralleling option with ACS

Dimensions:
58.4 x 22.7 x 12.1 mm / 2.30 x 0.89 x 0.48 in

Renesas partner products: RRV series - 2 phase power tower (80A$_{TDC}$/160A$_{peak}$)

- Optimized for top side cooling
- Efficiency up to 90%
- TLVR variant available
- LGA footprint

Powered by flex

Dimensions:
9 x 10 x 5 mm / 0.35 x 0.39 x 0.2 in

Focus products

PRODUCT NUMBER	V_{in}	V_{out}	I_{out}	I_{out_peak}	P_{out}	P_{out_peak}	EFFICIENCY
RRV28830	3-15V	0.4-1.8V	80A	160A	144W	288W	87%
RRV29830	3-15V	0.4-1.8V	80A	160A	144W	288W	90%
BMR350x250/531	40-60V	12V	108A	140A	1300W	1700W	97.7%
BMR3512202/002	40-60V	12.2V	136A	200A	1600W	2320W	97.7%
BMR3520200/001	40-60V	12.2V	167A	250A	2000W	3000W	97.7%
BMR3530100/001	40-60V	12.2V	72A	100A	860W	1200W	97.8%
BMR3211000/001	40-60V	5-7.5V	111A	—	750W	1500W	98.05%
BMR3231000/001	40-60V	5-7.5V	90A	—	600W	1200W	97.8%
BMR3161011/021	38-60V	9.5-15V	80A	—	1000W	2800W	97.7%
BMR3170011/021C	40-60V	5-7.5V	120A	—	800W	2000W	97.4%
BMR4912408/857	48-60V	12V	128A	205A	1540W	2450W	97.5%
BMR4920300/864	40-60V	12V	67.3A	91.7A	800W	1100W	97.5%

Visit flexpowermodules.com for more product variants and a wide range of non-isolated Point of Load converters.

flex Power Modules

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