flex Power Modules

DC/DC Converters for Artificial Intelligence & Machine Learning applications

Artificial Intelligence is evolving rapidly and has surpassed human decision making capabilities in several instances. It is already producing some of the most effective and impactful results seen in today's businesses.

Many new AI-based products and services rely heavily on the cloud. AI can be extremely compute-intensive where local or edge devices struggle to manage everything independently. As such, power delivery and power efficiency have become key concerns in large scale computing systems. The industry is experiencing a dramatic increase in power consumption through processors with ASICs and GPUs that process complex AI functions.

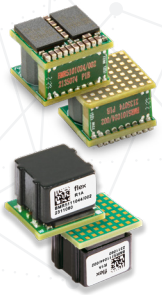
Rack power is also increasing with the deployment of Machine Learning and AI applications. In most cases, power delivery is now a limiting factor in computing performance with new CPUs consuming ever increasing currents. Power delivery impacts not only the distribution of power but also the efficiency, size, cost and thermal performance.

There is an increasing demand for power density – rack power levels previously needing less than 10kW now require more than 30kW to power intensive AI applications. There is also an increase in preferred rack voltage from 12V to 48V for improved DC distribution.

Additionally, an emerging trend is to reduce power system loss through eliminating isolation at the board level, which opens the market for non-isolated topologies.

Our innovative products are designed to match all these criteria.

Latest power modules for AI/ML



BMR510/BMR511 – 2-phase Integrated Power Stage (80A_{TDC}/140A_{peak})

- Optimized for top-side (BMR510) or bottom-side (BMR511) cooling
- Current and temperature sense
- Accepts tri-state PWM signals
- LGA or solder bump mount version
- Halogen-free

Dimensions: 10 x 9 x 7.6-8 mm / 0.39 x 0.35 x 0.29-0.31 in

BMR350 – Digital quarter brick Intermediate Bus Converter (600-1700W_{peak})

- Fully regulated output
- Digital interface compatible with 7-pin industry standard
- Non-isolated
- Parallelable
- Event data recorder

Dimensions: 58.4 x 36.8 x 12 mm / 2.3 x 1.45 x 0.47 in

BMR351 – Digital quarter brick Intermediate Bus Converter (1600W_{TDP}/2320W_{peak})

- Fully regulated output
- Excellent thermal performance
- Non-isolated
- Parallelable
- Event data recorder

Dimensions: 58.4 x 36.8 x 14.7 mm / 2.3 x 1.45 x 0.58 in

BMR320 – 8:1 fixed ratio digital Intermediate Bus Converter (400W)

- Unregulated 8:1 fixed ratio converter
- Non-isolated
- Digital interface compatible with PMBus
- Parallelable up to 3 units
- Small form factor 0.75 in^2

Dimensions: 27 x 18 x 6.4 mm / 1.06 x 0.71 x 0.25 in

BMR313 – Ultra-small 4:1 fixed ratio IBC (1000W_{TDP}/3000W_{peak})

- Compact non-isolated DC/DC converter
- High density IBC up to 14,875W/in^3 (908W/cm^3)
- Digital PMBus interface
- LGA industry standard footprint and pinout
- Halogen-free
- Optimized thermal design for cold wall mounting

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

BMR314 – Ultra-small 4:1 fixed ratio IBC (800W_{TDP}/1500W_{peak})

- Compact non-isolated DC/DC converter
- Input output ratio 4:1
- Digital PMBus interface
- LGA industry standard footprint and pinout
- Halogen-free
- Optimized thermal design for cold wall

Dimensions: 23.4 x 17.8 x 9.65 mm / 0.92 x 0.7 x 0.38 in

Focus products

PRODUCT NUMBER	V_{in}	V_{out}	I_{out}	I_{out_peak}	P_{out}	P_{out_peak}	EFFICIENCY
BMR5101034/002	4.5-15V	0.5-1.3V	40A (TDC)* per phase 80A (TDC)* total	70A per phase 140A total	—	—	92%
BMR511x044/002	5-15V	0.5-1.8V	40A (TDC)* per phase 80A (TDC)* total	70A per phase 140A total	—	—	94.5%
BMR350x250/531	40-60V	12V	108A	140A	1300W	1700W	97.7%
BMR3512202/002	40-60V	12.2V	136A	200A	1600W	2320W	97.7%
BMR3201000/001	40-60V	5-7.5V	80A	—	400W	—	97.6%
BMR3131011/001	38-60V	9.5-15V	—	—	1000W	3000W	97.2%
BMR3141011/001	38-60V	9.5-15V	—	—	800W	1500W	97.4%

* Thermal Design Current

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

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