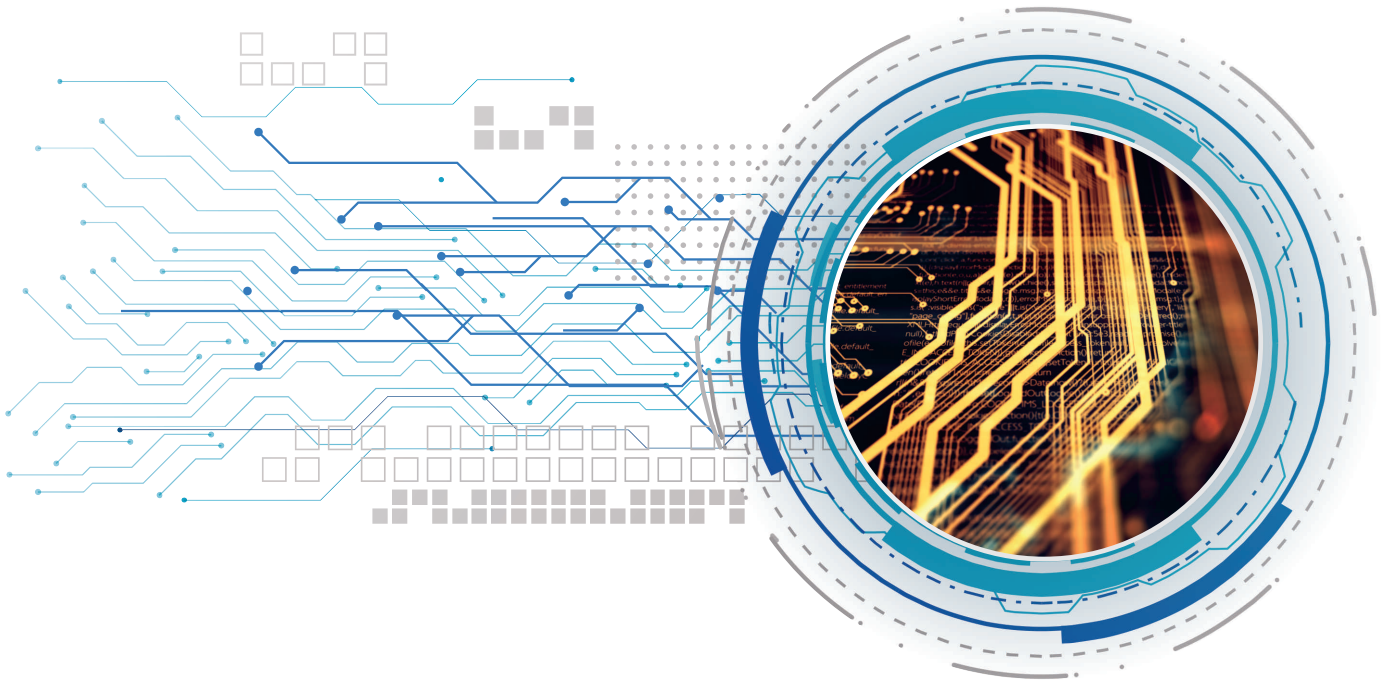




LEADING THE ADVANCEMENT OF POWER CONVERSION

DC-DC PRODUCT SELECTION GUIDE 2023 - 2024





Your Reliable Partner

NetPower is committed to meeting customer requirements and increasing customer satisfaction through the continual improvement of its products and the quality management system.

- Extensive Experience in High-Reliability Designs
- Leading Efficiencies - up to 97%
- High Power Density - up to 800W in a Quarter Brick Package
- Millions of Hours of MTBF
- Millions of Products Used Worldwide
- In-Depth Application Support and Flexible Order Fulfillment
- ISO9001, ISO14001, IATF 16949 Certified Facilities

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Isolated DC-DC Converters

Features

- High efficiency
- 8:1, 4:1 and 2:1 input ranges
- Output power from 15W to multi-kilowatts
- Over-voltage, over-current, short-circuit, and over temperature protections
- Adjustable output voltage
- Fixed frequency operation
- Current sharing on selected products
- Wide operating temperature range

Packaging

- Industry standard footprint
 - Full brick: 4.46" x 2.28"
 - Half brick: 2.41" x 2.28"
 - Quarter brick: 2.28" x 1.46"
 - Eighth brick: 2.30" x 0.91"
 - Sixteenth brick: 1.31" x 0.91"
 - Thirty-second brick: 0.93" x 0.76"
- Open frame, baseplate, encapsulated, conformal coating, SMD, DIP

Safety

- UL 62368 recognized
- Basic or reinforced insulation



Industrial and Telecom DC-DC Converters

9-36VDC Input

Brick Converters (15W~300W)

Series	Power	Efficiency	Output Voltage									Isolation	Package	
			3.3V	5V	6V	8V	12V	15V	28V	48V	56V			
M(Y)RS1 ^①	15W 28W	Up to 88%	7A	3A 5A		3A	2A			1A			1500VDC	Thirty-second brick
LRS1	18W	Up to 86.5%					1.5A						1500VDC	1x1
S(Y)RS1 ^①	30W 60W	Up to 92%	10A 15A	8A 12A	5A	4A 7A	3A 5A	2A 4A					1500VDC	Sixteenth brick
E(Y)RS1 ^①	75W 144W	Up to 92%		20A 25A			10A 12A	5A 8A	3A 5A				2250VDC	Eighth brick
Q(Y)PS1 ^①	100W 200W	Up to 93%	30A	40A			12A		5A	3A	2A		2250VDC	Quarter brick
H(Y)PS1 ^①	240W 300W	Up to 91%		50A			20A	20A	10A	6A ^②			2250VDC	Half brick

9-75VDC Input

Brick Converters (26W~120W)

Series	Power	Efficiency	Output Voltage				Isolation	Package
			3.3V	5V	12V	15V		
S(Y)RS5 ^①	26W 36W	Up to 93%	8A	6A	3A		1500VDC	Sixteenth brick
Q(Y)PS5 ^①	84W 120W	Up to 93%			7A 10A	8A	2250VDC	Quarter brick

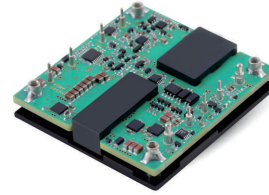
①: Y stands for encapsulated converters

②: To be released

18-36VDC Input

Brick Converters (15W~600W)

Series	Power	Efficiency	Output Voltage								Isolation	Package
			3.3V	5V	6V	8V	12V	15V	28V	48V		
M(Y)RS2 ^①	15W ↓ 45W	Up to 88%	10A	8A	5A	5A	3A	1A 3A	1.5A		1500VDC	Thirty-second brick
S(Y)RS2 ^①	18W ↓ 70W	Up to 92%			3A 6A 10A				2.5A		1500VDC	Sixteenth brick
E(Y)RS2 ^①	96W ↓ 140W	Up to 92.5%							4A 5A	2A	2250VDC	Eighth brick
Q(Y)PS2 ^①	120W ↓ 240W	Up to 92%		25A		25A	10A 17A 20A	7A	5A 7A	4A	2250VDC	Quarter brick
Q(Y)BC2 ^①	250W ↓ 420W	Up to 92.5%		50A			25A 35A		11A		2250VDC	Quarter brick
H(Y)PS2 ^①	280W ↓ 600W	Up to 93%		80A		50A 65A	38A 50A		10A 17A	10.5A	2250VDC	Half brick



18-75VDC Input

Brick Converters (15W~360W)

Series	Power	Efficiency	Output Voltage							Isolation	Package	
			3.3V	5V	8V	12V	15V	28V	48V			
LRS3-W	15W ↓ 23W	Up to 87%	7A	4A		1.5A	1A			2250VDC	1x1	
S(Y)RS3-W ^①	32W ↓ 72W	Up to 92%	10A 15A 20A	8A 10A 12A	4A 7A	3A 5A 6A	3A 4A			1500VDC	Sixteenth brick	
E(Y)RS3-W ^①	72W ↓ 144W	Up to 92%	30A	20A	15A	6A 10A			4A 5A	3A	2250VDC	Eighth brick
Q(Y)PS3-W ^①	96W ↓ 228W	Up to 93.5%		25A 40A	25A	17A 19A	13A		5A	2A	2250VDC	Quarter brick
H(Y)PS3-W ^①	250W ↓ 360W	Up to 91%		50A		30A				6A ^②	2250VDC	Half brick

①: Y stands for encapsulated converters

②: To be released

36-75VDC Input

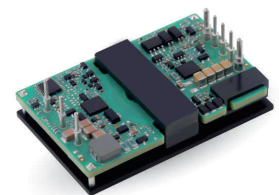
Brick Converters (15W~800W)

Series	Power	Efficiency	Output Voltage								Isolation	Package
			3.3V	5V	8V	9.6V	12V	15V	28V	48V		
MRS4	15W 40W	Up to 89.2%	10A	3A 5A 8A			3A				1500VDC	Thirty-second brick
SRS4	36W 96W	Up to 92%			11A		3A 5A 8A		2.5A		1500VDC	Sixteenth brick
ERS4	50W 144W	Up to 92.5%	15A 25A 30A	10A 15A			5A 7A	5A	5A	3A	2250VDC	Eighth brick
EBC4	175W 280W	Up to 95%	60A	35A 42A		26A			10A		2250VDC	Eighth brick
EBE4	204W 400W	Up to 95%					17A 22A 30A 33A				2250VDC	Eighth brick
QPS4	120W 240W	Up to 93.5%			30A		19A	13A		2.5A	2250VDC	Quarter brick
QBC4	300W 400W	Up to 95.5%		60A 70A		41.5A	28A 33A				2250VDC	Quarter brick
QBE4	420W 720W	Up to 95.5%			53A	53A	42A 50A 60A		14.5A 20A [Ⓜ]	12A	2250VDC	Quarter brick
HPS4	400W 480W	Up to 94%		80A			40A		17A		2250VDC	Half brick
FPS4	700W 800W	Up to 93.5%							25A 28A		2250VDC	Full brick

40-60VDC Input

Brick Converters (500W~800W)

Series	Power	Efficiency	Output Voltage	Isolation	Package
			12V		
EBE4	500W	Up to 95.2%	40A	2250VDC	Eighth brick
QBE4	800W	Up to 96.8%	67A	2250VDC	Quarter brick



Ⓜ: To be released

Railway DC-DC Converters (Compliant to EN50155)

Highlights

- ⦿ High efficiency up to 92%
- ⦿ Output power up to 800W
- ⦿ 3000VAC input to output isolation
- ⦿ Wide input ranges: 4:1, 8:1, 12:1
- ⦿ Encapsulated for harsh environments



16-160VDC Input

Series	Power	Efficiency	Output Voltage			Isolation	Package
			5V	12V	24V		
QYR9S	50W	Up to 87%	10A	4.2A	2.1A	3000VAC	Quarter brick

34-160VDC Input

Series	Power	Efficiency	Output Voltage				Isolation	Package
			5V	12V	24V	48V		
QYR6A	60W 150W	Up to 91%	24A	5A 10A	3A 5A	2.5A 3.2A	3000VAC	Quarter brick
HYR6A	250W	Up to 91%	50A	20A	10A		3000VAC	Half brick

66-160VDC Input

Series	Power	Efficiency	Output Voltage						Isolation	Package
			5V	12V	13.8V	24V	48V	56V		
QYR7A	150W	Up to 90%	25A	12A	7A ^①	6A	3A	3.3A	3000VAC	Quarter brick
HYR7A	240W 300W	Up to 91%	50A 60A	20A 25A	22A ^①	10A 12.5A	5A 6.3A		3000VAC	Half brick

①: Input Voltage 43-160V

②: To be released

Battery Charging DC-DC Converters

Highlights

- ⦿ Programmable battery charging current
- ⦿ High efficiency up to 92.5%
- ⦿ Output power up to 800W
- ⦿ Current share available
- ⦿ 4250VDC input to output isolation
- ⦿ Industry standard footprint
- ⦿ Encapsulated for harsh environments



200-420VDC Input

Series	Power	Efficiency	Output Voltage			Isolation	Package
			14V	28V	56V		
HYUEB	300W	Up to 92.5%	22A ^②			4250VDC	Half brick
FYUEB	800W	Up to 92.5%	54A	28A	14A	4250VDC	Full brick

300-520VDC Input

Series	Power	Efficiency	Output Voltage	Isolation	Package
			14V		
HYVEB	350W	Up to 90%	25A	4242VDC	Half brick

②: To be released

High Input Voltage DC-DC Converters

Highlights

- ⦿ High efficiency up to 94%
- ⦿ Output power up to 1008W
- ⦿ Current share available
- ⦿ 4250VDC or 2250VDC input to output isolation
- ⦿ Industry standard footprint
- ⦿ Encapsulated for harsh environments



180-400VDC Input

Series	Power	Efficiency	Output Voltage						Isolation	Package
			5V	12V	15V	28V	48V	56V		
HYUEA	300W 400W	Up to 92%	60A	25A		11A	7A	6A	4250VDC	Half brick
FYUEA	500W 800W	Up to 94%	100A	67A	54A	28A	17A	14A	4250VDC	Full brick

300-500VDC Input

Series	Power	Efficiency	Output Voltage					Isolation	Package
			5V	8.5V	12V	28V	48V		
HYVEC	300W 400W	Up to 91.5%	60A			14.5A		2250VDC	Half brick
FYVEC	663W 1000W	Up to 93%		78A	80A	28A 36A	21A	2250VDC	Full brick

400-650VDC Input

Series	Power	Efficiency	Output Voltage				Isolation	Package
			12V	28V	36V	48V		
HYVGA	360W	Up to 90%	30A	12.5A			2250VDC	Half brick
FYVGA	540W 1008W	Up to 92%	57A	28A 36A	17A 22A	17A	2250VDC	Full brick



Non-isolated DC-DC Converters

Features

- ⦿ High efficiency up to 96%
- ⦿ Multiple input voltage ranges
- ⦿ Over-voltage, over-current, short-circuit, and over temperature protections
- ⦿ Output voltage tracking on selected codes
- ⦿ High current up to 60A
- ⦿ Load sharing on selected codes

Packaging

- ⦿ Standard footprints
- ⦿ SMT, SIP and BMP packages
- ⦿ Open frame, baseplate and encapsulated

Safety

- ⦿ UL 60950-1 2nd recognized

2.5-18VDC Input

Input Voltage (V)	Series	Output Voltage (V)	Output Current (A)	Efficiency	Package	Size (in)
2.5-5.5	NAS0 NBS0	0.75-3.63 0.75-3.63	12-20 8	Up to 96%	SMT SMT	1.30 x 0.53 x 0.25 1.10 x 0.45 x 0.25
4.5-14	NKS1	0.59-5.5	6-12	Up to 93.3%	SMT	0.48 x 0.48 x 0.35
8.0-16	NCT1	0.8-5.5	45-60	Up to 93%	SMT, SIP, Horizontal TH	2.00 x 0.68 x 0.39
8.5-16	NBS1	0.75-5.5	8	Up to 91%	SMT	1.10 x 0.45 x 0.25
8.5-18	NAT1 NAS1 NES1	0.75-5.5 0.75-5.5 0.75-5.5	12-20 12-20 16-30	Up to 96%	SIP SMT SMT	2.00 x 0.50 x 0.25 1.30 x 0.53 x 0.25 1.30 x 0.53 x 0.38

9-36VDC Input

Input Voltage (V)	Series	Output Voltage (V)	Output Current (A)	Efficiency	Package	Size (in)
9-36	NAT2 NAS2 NBS2	3-6 3-6 3-6	10 10 3.5	Up to 88%	SIP SMT SMT	2.00 x 0.50 x 0.25 1.30 x 0.53 x 0.25 1.10 x 0.45 x 0.25
18-36	NAT3 NAS3 NBS3	5-15.5 5-15.5 5-15.5	9 9 3.5	Up to 94%	SIP SMT SMT	2.00 x 0.50 x 0.25 1.30 x 0.53 x 0.25 1.10 x 0.45 x 0.25
18-36	NPS3	0.9-3.3	15	Up to 80%	SMT	1.10 x 0.72 x 0.37

9-60VDC Input

Input Voltage (V)	Series	Output Voltage (V)	Output Current (A)	Efficiency	Package	Size
9-53	N(Y)XS	3.3-36	12, 20, 26	Up to 97%	BMP	Sixteenth brick
9-60	NYWQ5	0-60	25	Up to 97%	BMP	Quarter brick
9-60	NYWH5	0-60	40	Up to 97%	BMP	Half brick



EMI Filters

The PFT series EMI filters are designed to attenuate both differential-mode and common-mode conducted noises generated by DC-DC converters. These filters are optimized to provide high insertion loss over the entire frequency range regulated by FCC and CISPR for conducted emissions. These EMI filter modules support up to 80V operating voltages.

Highlights

- ⦿ 80V maximum input voltage
- ⦿ Compatible to most industry standard DC-DC converters
- ⦿ Industry standard package
- ⦿ Wide operating temperature range: -40°C to +100°C

Part Number	Description	Input	Output	Size (in)
PFT0H005J8	Filter	80V/5A	80V/5A	1.04 x 1.04 x 0.50
PFT0H007J8	Filter	80V/7A	80V/7A	1.04 x 1.04 x 0.50
PFT0H010J8	Filter	80V/10A	80V/10A	2.04 x 1.04 x 0.50
PFT0H020J8	Filter	80V/20A	80V/20A	2.04 x 1.69 x 0.50
PFT0H030J8	Filter	80V/30A	80V/30A	2.42 x 1.02 x 0.50

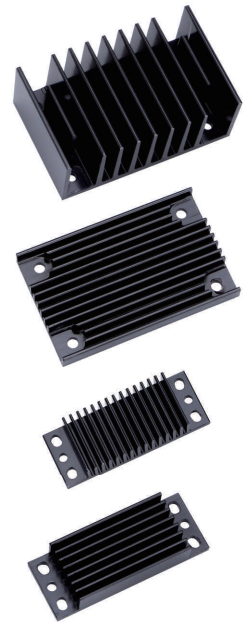


Heatsinks

Standard Brick Size Heatsinks

NetPower heatsinks are suitable for industry standard DC-DC power modules and are available in various sizes and fin orientations. These heatsinks improve thermal performance of power modules in convection cooling.

Part Number	Size	Height Options (in)	Orientation
HSxxxLSA	1/16 Brick	0.24 / 0.45 / 0.90	Lengthwise
HSxxxCSA	1/16 Brick	0.24 / 0.45 / 0.90	Crosswise
HSxxxLEx	1/8 Brick	0.24 / 0.45 / 0.90	Lengthwise
HSxxxCEx	1/8 Brick	0.24 / 0.45 / 0.90	Crosswise
HSxxxLQA	1/4 Brick	0.24 / 0.45 / 0.90	Lengthwise
HSxxxCQA	1/4 Brick	0.24 / 0.45 / 0.90	Crosswise
HSxxxLHA [Ⓢ]	1/2 Brick	0.24 / 0.45 / 0.90	Lengthwise
HSxxxCHA	1/2 Brick	0.24 / 0.45 / 0.90	Crosswise
HSxxxLFA	Full Brick	0.24 / 0.45 / 0.90	Lengthwise
HSxxxCFA [Ⓢ]	Full Brick	0.24 / 0.45 / 0.90	Crosswise



Ⓢ: To be released



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