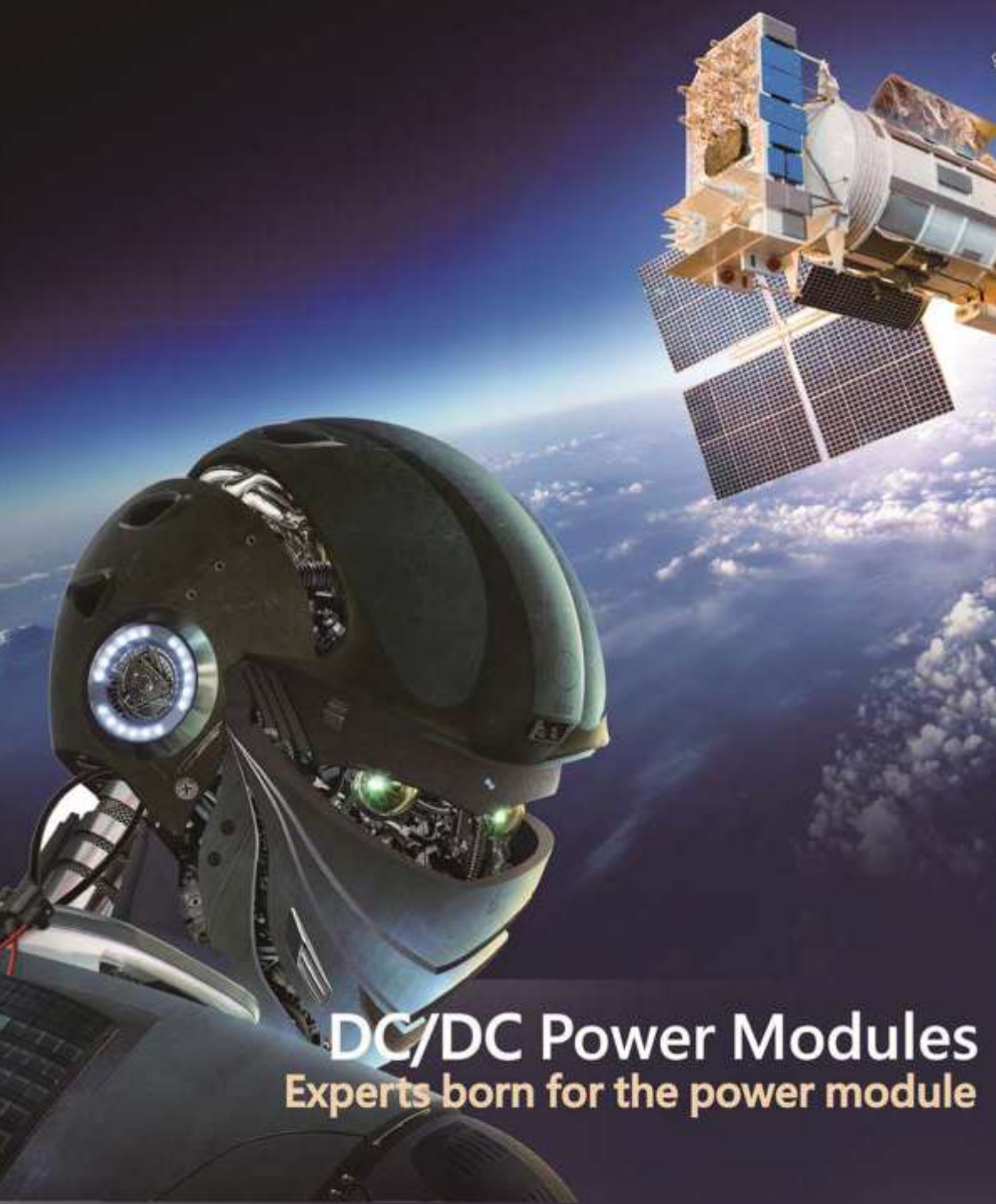


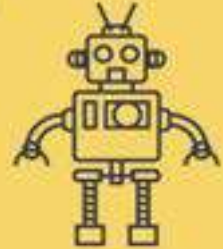


DC/DC Power Modules
Experts born for the power module

POWERGOOD was founded in 1989 and has been around for more than 30 years, we provide the best quality, patent topology circuit, stable Lead-Time, professional service and become a stronger supporter and partner for customers. PowerGood has completed product roadmap, we can provide standard products from AC/DC to DC/DC power converter to satisfy customers' requirement, we cooperate with customer to develop customized product as the solution to help customer to wins the project, deepen the cooperation level and strengthen the long-term partnership.

Power Module for Industry Application

POWERGOOD provides a variety of power converter modules, which can be applied to industry equipment and systems. We provide modules which has output power from 1W-600W, input voltage range covers 9-700Vin and conform to many countries' safety certification and EMC certification. Instead of power module, we provide flexible Power Supply Unit (PSU), fast customized service can closely foresee the pulsation of the market. POWERGOOD keep innovation internally, provide the most suitable products to customer and become a pioneer in Industry Equipment Application field.



Power Module for Railway Application

Railway Transit Construction has entered a stage of rapid development. In the face of more stringent design and challenging requirements, POWERGOOD modules are still highly reliable and durable. They can be applied to traction equipment, monitor equipment, communication equipment, driving equipment such systems in railway application. POWERGOOD rail series product with wide operating temperature, high isolation and withstand voltage, pass EN50155 certification and EN45545-2 fire proof certification, is the best solution for railway transit applications.



Power Module for Aviation Application

In addition to being small in size and light in weight, aviation applications require superior high output power and efficiency. POWERGOOD products have the largest power density ratio in the industrial, making it easy to meet customers' product design and create the best competitive advantage. POWERGOOD provides excellent EMI performance with metal case encapsulated that saves overall radiation and electrical interference. Additionally, due to wide operation temperature, our products can keep stable output under extremely low temperature and high temperature environment, making it a reliable support for customer in aviation applications.



Power Module for Medical Application

Power modules required by the medical industry tend to be small, professional and reliable. In response to harsh application for medical equipment and enhanced isolation system, POWERGOOD provide BF Grade design for medical power module, and increase the insulation to 4kVac, leakage current 100uA, making it suitable for ventilator, analyzer such medical equipment. As new medical equipment continue to emerge, POWERGOOD will design more and more power module for medical applications in response to the market demand.



Quality Policy and Green Environment



Quality Control and Green Environment

POWERGOOD's quality policy of "Quality First, Customer Satisfaction" has won many awards and recognitions in the industry for over 30 years. It is the responsibility of every PG person to protect the environment that we depend on to survive. From the cautiously use of carbon footprint, water footprint or conflict metals to the selection of packaging materials for process optimization. POWERGOOD has passed the internationally recognized quality and environmental management system certification, "compliance with regulations, waste reduction and energy saving, pollution prevention, full participation, continuous improvement, and good communication".

ISO 9001 Quality Control System

ISO 14001 Environment Control System



CE Qualification Declaration

POWERGOOD comply with industry safety standards, EU Low Voltage Directive (LVD) 2014/35/EU and EMC Directive 2014/30/EU.



RoHS Certificate of Compliance

POWERGOOD's products are manufactured in accordance with the EU 2011/65/EC and EU 2015/863 RoHS directive (products excluded from the sales plan are not included in this statement). We restrict the use of ten chemical substances in packaging materials (boxes, pipes, coils...) and waste disposal comply with EU directive 2004/12/EC, the total concentration of cadmium, hexavalent chromium, lead and mercury is less than 100ppm, the implementation of the concept of environmental protection in product design, manufacturing, use, scrap and recycling, to provide a positive contribution to sustainable development, but also for our next generation to preserve a pure earth.



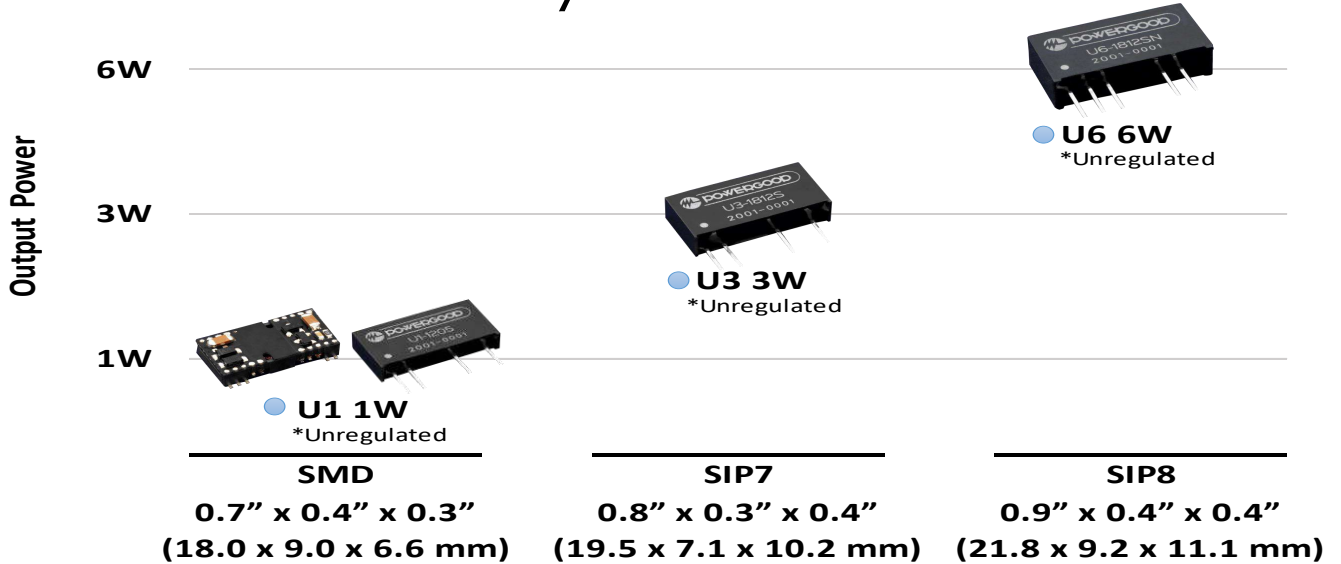
REACH Declaration of Conformity

In response to improving human health and maintaining the global environment, POWERGOOD is committed to REACH compliance (EC Regulation No.1907/2006, concerning Registration, Evaluation, Authorization and Restriction of Chemicals).

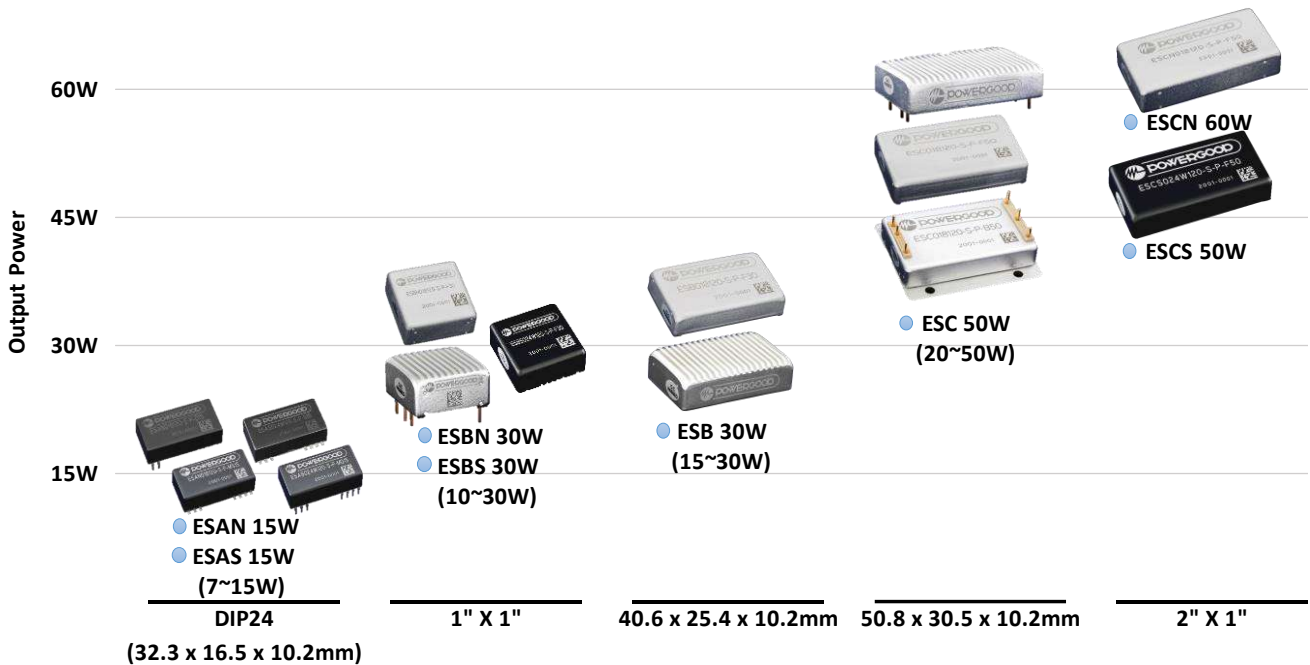
Product safety and reliability are the core values of POWERGOOD

- EMEA CE International certification
- Railway EN 50155 (IEC60571) certification
- Fire Proof protection EN 45545-2 certification
- UL/IEC/EN 62368-1 information type international certification
- EMC standard EN 55011 & EN 55032 certification
- MIL-STD-461 certification
- UL/IEC/EN 60601-1 Medical safety certification

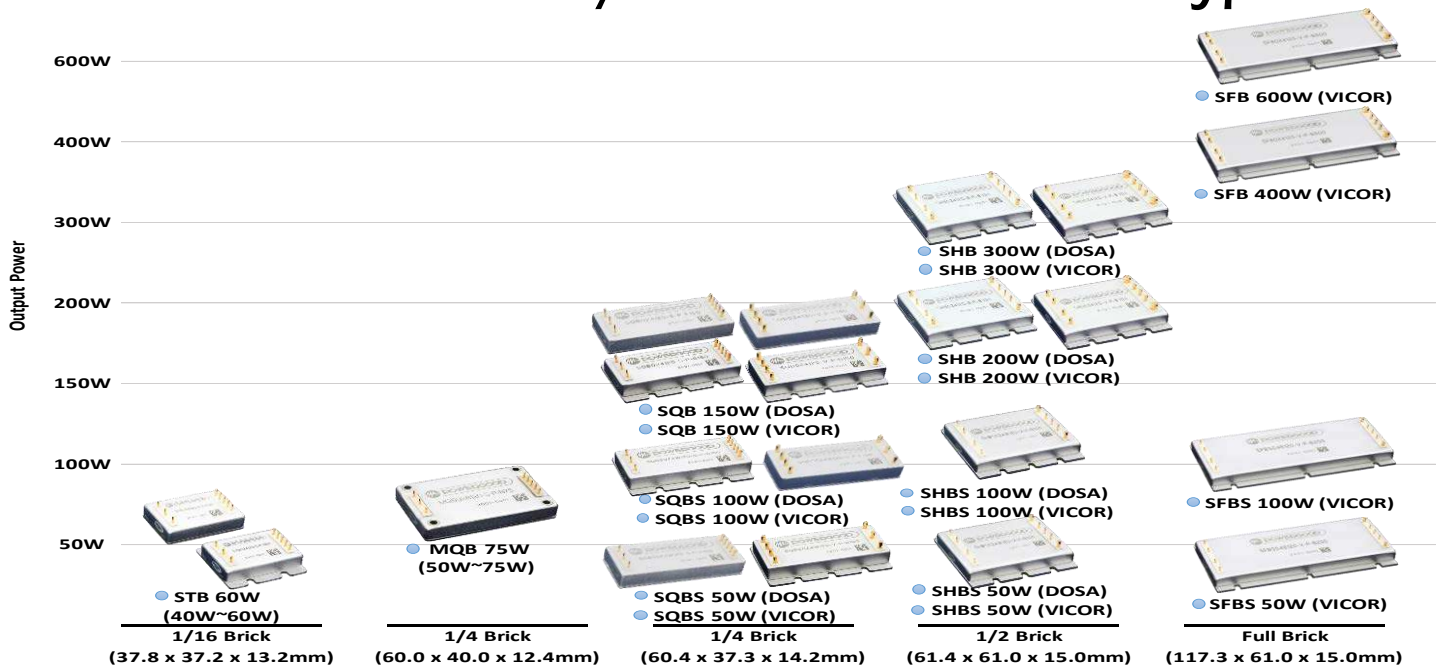
PowerGood DC/DC Converter -U Series



PowerGood DC/DC Converter - Encapsulated Type



PowerGood DC/DC Converter - Brick Type



U Series DC/DC Converter

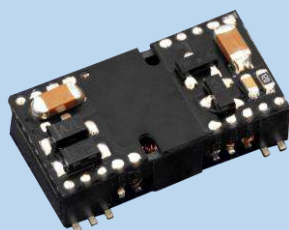


Feature

- Isolated unregulated DC-DC converter
- Single / Dual Outputs (Depends on different products)
- 2200uF high capacitive load
- Efficiency up to 82%
- -40°C to +105°C operation without power derating
(Depends on different products)
- Input-to-output isolation 4kVDC
(or 6kVDC optional)
- Industry-Standard pinout
- Reference : U1 Series 、 U3 Series 、 U6 Series

DC/DC Converter- U Series

● U1



- Isolated unregulated DC-DC converter
- Without minimum load requirement
- 1:1 Input range
- 2200uF high capacitive load
- Efficiency up to 82%
- -40°C to +105°C operation without power derating
- Operating Temperature -40°C ~+105°C
- Continuous short circuit protection
- Input-to-output isolation 4kVDC
(or 6kVDC optional)

Model Number Structure

U 1 - 05 A - xx x

Series Name	Output Power	Input Voltage	Output Voltage	Procurement Code	Product Version
Unicorn series	1 : 1 Watt	05 : 5Vdc 12 : 12Vdc 24 : 24Vdc	A : 5Vdc	"xx" can be 0~1 and/or A~Z. Default as "GP".	Blank : Standard H : 6kVdc I/O isolation.

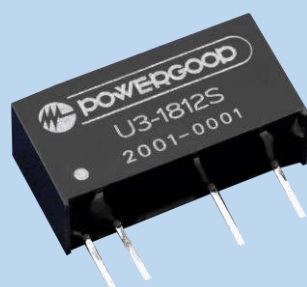
Model Selection Guide

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input				Output			Efficiency @FL
	Voltage(V)		Current(mA)		Voltage	Current	Power	
	Range	Nominal	No load	Full load	(V)	(mA)	(W)	Typ.(%)
U1-05A-xx	4.5-5.5	5	29	249	5	200	1	80%
U1-12A-xx	10.8-13.2	12	11	101	5	200	1	82%
U1-24A-xx	21.6-26.4	24	8	51	5	200	1	81%

DC/DC Converter- U Series

● U3



- Isolated unregulated DC-DC converter
- Single / Dual Outputs
- 3KVdc isolation voltage
- -40°C to +85°C operation without power derating
- Operating Temperature -40°C ~+85°C
- Efficiency up to 82%
- Embedded LC filter
- Continuous short circuit protection
- 2200uF high capacitive load

Model Number Structure

U	3	-	18	05	S	U	3
Series Name	Watt		Input Voltage (VDC)	Output Voltage (VDC)	Output Quantity	Series Name	Watt
Unicorn series	3 : 3 Watt		05 : 4.5-5.5 18 : 9-36	05 : 5Vdc 12 : 12Vdc	S: Single D: Dual	Unicorn series	3 : 3 Watt

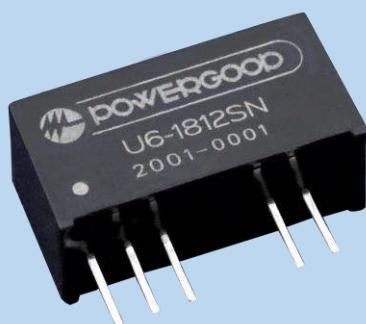
Model Selection Guide

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input		Output			Efficiency @FL
	Voltage(V)	Current(mA)	Voltage	Current	Power	Typ.(%)
	Range	Full load	(V)	(mA)	(W)	
U3-0505S	4.5-5.5	730	5.0	600	3	82%
U3-1805S	9-36	150	5.0	600	3	82%
U3-3605S	18-75	75	5.0	600	3	82%

DC/DC Converter- U Series

● U6



- Isolated unregulated DC-DC converter
- Single / Dual Outputs
- 4:1 Wide input range
- Efficiency up to 85%
- -40°C to +65°C operation without power derating
- Operating Temperature -40°C ~+100°C
- Continuous short circuit protection
- 2200uF high capacitive load
- Input-to-output isolation 2kVDC
(or 3kVDC optional)

Model Number Structure

U	3	-	18	05	S	U	3
Series Name	Watt		Input Voltage (VDC)	Output Voltage (VDC)	Output Quantity	Series Name	Watt
Unicorn series	3 : 3 Watt		05 : 4.5-5.5 18 : 9-36	05 : 5Vdc 12 : 12Vdc	S: Single D: Dual	Unicorn series	3 : 3 Watt

Model Selection Guide

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input		Output			Efficiency @FL
	Voltage(V)	Current(mA)	Voltage	Current	Power	
	Range	Full load	(V)	(mA)	(W)	Typ.(%)
U3-0505S	4.5-5.5	730	5.0	600	3	82%
U3-1805S	9-36	150	5.0	600	3	82%
U3-3605S	18-75	75	5.0	600	3	82%

Encapsulated Type DC/DC Converter



Feature

- Built-in EMI filter meets EN55032 Class A / EN55032 Class B without external components (Depends on different model)
- Single / Dual Outputs
- 2:1 / 4:1 Wide input range
- 6-sided metal case design and has excellent heat dissipation and EMI
- Wide Operating Temperature-45°C ~+115°C
(Optional:-55°C ~+125°C)
- Industrial standard pinout
- Reference : ESB Series 、 ESC Series 、 ESAN Series 、 ESBN Series 、 ESCN Series 、 ESAS Series 、 ESBS Series 、 ESCS Series

DC/DC Converter – E Series

- ESB



Feature

- Built-in EMI filter meets EN55032 Class A / EN55032 Class B without external components (Optional)
- Save up to 20% board space
- Single / Dual Outputs
- 2:1 / 4:1 Wide input range
- 6-sided metal case design and has excellent heat dissipation and EMI
- Wide Operating Temperature-45°C~+115°C (Optional:-55°C~+125°C)
- Industrial standard pinout; Fully replaceable with 1"x1" standard case
- Case shape: F : Flat / P : PV optional

UVLO

OCP

OVP

OTP

DC/DC Converter

Model Number Structure

ESB 018 033 - S - P - F 30

Series Name	Input Voltage (VDC)	Output Voltage (VDC)	Output Quantity	Remote Control Option	Shape	Watt
Evolving Sirius- Bishop series –	012 : 9-18 018 : 9-36 024 : 18-36 036 : 18-75 048 : 36-75	033 : 3.3	S : Single	P : Positive logic N : Negative logic	F : Flat P : Groove Cover	15
		050 : 5				
		120 : 12				
		150 : 15				
		240 : 24	D : Dual	1 : Positive logic + EMC Filter 0 : Negative logic + EMC Filter		20
		050 : ±5				25
		120 : ±12				30
		150 : ±15				
240 : ±24						

Model Selection Guide

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
ESB012033-S-□-□15	9-18	12	1.40	3.3	4.5	15	89%
ESB012050-S-□-□15	9-18	12	1.39	5	3	15	90%
ESB012120-S-□-□15	9-18	12	1.42	12	1.3	15	88%
ESB012150-S-□-□15	9-18	12	1.42	15	1	15	88%
ESB012240-S-□-□15	9-18	12	1.42	24	0.7	15	88%
ESB012120-D-□-□15	9-18	12	1.42	±12	±0.63	15	88%
ESB012150-D-□-□15	9-18	12	1.42	±15	±0.5	15	88%
ESB012240-D-□-□15	9-18	12	1.42	±24	±0.3	15	88%
ESB012033-S-□-□20	9-18	12	1.87	3.3	6	20	89%
ESB012050-S-□-□20	9-18	12	1.85	5	4	20	90%
ESB012120-S-□-□20	9-18	12	1.89	12	1.7	20	88%
ESB012150-S-□-□20	9-18	12	1.89	15	1.3	20	88%
ESB012240-S-□-□20	9-18	12	1.89	24	0.8	20	88%
ESB012120-D-□-□20	9-18	12	1.89	±12	±0.8	20	88%
ESB012150-D-□-□20	9-18	12	1.89	±15	±0.7	20	88%
ESB012240-D-□-□20	9-18	12	1.89	±24	±0.4	20	88%
ESB018033-S-□-□15	9-36	18	0.95	3.3	4.5	15	88%
ESB018050-S-□-□15	9-36	18	0.94	5	3	15	89%
ESB018120-S-□-□15	9-36	18	0.95	12	1.3	15	88%

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
ESB018150-S-□-□15	9-36	18	0.95	15	1	15	88%
ESB018240-S-□-□15	9-36	18	0.95	24	0.7	15	88%
ESB018120-D-□-□15	9-36	18	0.95	±12	±0.7	15	88%
ESB018150-D-□-□15	9-36	18	0.95	±15	±0.5	15	88%
ESB018240-D-□-□15	9-36	18	0.96	±24	±0.3	15	87%
ESB018033-S-□-□20	9-36	18	1.26	3.3	6	20	88%
ESB018050-S-□-□20	9-36	18	1.25	5	4	20	89%
ESB018120-S-□-□20	9-36	18	1.26	12	1.7	20	88%
ESB018150-S-□-□20	9-36	18	1.26	15	1.3	20	88%
ESB018240-S-□-□20	9-36	18	1.26	24	0.8	20	88%
ESB018120-D-□-□20	9-36	18	1.26	±12	±0.8	20	88%
ESB018150-D-□-□20	9-36	18	1.26	±15	±0.7	20	88%
ESB018240-D-□-□20	9-36	18	1.28	±24	±0.4	20	87%
ESB018033-S-□-□25	9-36	18	1.60	3.3	7.6	25	87%
ESB018050-S-□-□25	9-36	18	1.56	5	5	25	89%
ESB018120-S-□-□25	9-36	18	1.58	12	2.1	25	88%
ESB018150-S-□-□25	9-36	18	1.58	15	1.7	25	88%
ESB018240-S-□-□25	9-36	18	1.58	24	1	25	88%
ESB018120-D-□-□25	9-36	18	1.58	±12	±1.0	25	88%
ESB018150-D-□-□25	9-36	18	1.58	±15	±0.8	25	88%
ESB018240-D-□-□25	9-36	18	1.60	±24	±0.5	25	87%
ESB024033-S-□-□15	18-36	24	0.70	3.3	4.5	15	89%
ESB024050-S-□-□15	18-36	24	0.69	5	3	15	90%
ESB024120-S-□-□15	18-36	24	0.70	12	1.3	15	89%
ESB024150-S-□-□15	18-36	24	0.70	15	1	15	89%
ESB024240-S-□-□15	18-36	24	0.70	24	0.7	15	89%
ESB024120-D-□-□15	18-36	24	0.70	±12	±0.7	15	89%
ESB024150-D-□-□15	18-36	24	0.70	±15	±0.5	15	89%
ESB024240-D-□-□15	18-36	24	0.70	±24	±0.3	15	89%
ESB024033-S-□-□20	18-36	24	0.95	3.3	6	20	88%
ESB024050-S-□-□20	18-36	24	0.94	5	4	20	89%
ESB024120-S-□-□20	18-36	24	0.94	12	1.7	20	89%

DC/DC Converter

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
ESB024150-S-□-□20	18-36	24	0.94	15	1.3	20	89%
ESB024240-S-□-□20	18-36	24	0.94	24	0.8	20	89%
ESB024120-D-□-□20	18-36	24	0.94	±12	±0.8	20	89%
ESB024150-D-□-□20	18-36	24	0.94	±15	±0.7	20	89%
ESB024240-D-□-□20	18-36	24	0.95	±24	±0.4	20	88%
ESB024033-S-□-□30	18-36	24	1.42	3.3	9.1	30	88%
ESB024050-S-□-□30	18-36	24	1.39	5	6	30	90%
ESB024120-S-□-□30	18-36	24	1.42	12	2.5	30	88%
ESB024150-S-□-□30	18-36	24	1.42	15	2	30	88%
ESB024240-S-□-□30	18-36	24	1.42	24	1.3	30	88%
ESB024120-D-□-□30	18-36	24	1.42	±12	±1.3	30	88%
ESB024150-D-□-□30	18-36	24	1.40	±15	±1.0	30	89%
ESB024240-D-□-□30	18-36	24	1.42	±24	±0.6	30	88%
ESB036033-S-□-□15	18-75	36	0.48	3.3	4.5	15	87%
ESB036050-S-□-□15	18-75	36	0.47	5	3	15	89%
ESB036120-S-□-□15	18-75	36	0.47	12	1.3	15	88%
ESB036150-S-□-□15	18-75	36	0.47	15	1	15	88%
ESB036240-S-□-□15	18-75	36	0.47	24	0.7	15	88%
ESB036120-D-□-□15	18-75	36	0.47	±12	±0.7	15	88%
ESB036150-D-□-□15	18-75	36	0.47	±15	±0.5	15	88%
ESB036240-D-□-□15	18-75	36	0.48	±24	±0.3	15	87%
ESB036033-S-□-□20	18-75	36	0.64	3.3	6	20	87%
ESB036050-S-□-□20	18-75	36	0.62	5	4	20	89%
ESB036120-S-□-□20	18-75	36	0.63	12	1.7	20	88%
ESB036150-S-□-□20	18-75	36	0.63	15	1.3	20	88%
ESB036240-S-□-□20	18-75	36	0.63	24	0.8	20	88%
ESB036120-D-□-□20	18-75	36	0.63	±12	±0.8	20	88%
ESB036150-D-□-□20	18-75	36	0.63	±15	±0.7	20	88%
ESB036240-D-□-□20	18-75	36	0.64	±24	±0.4	20	87%
ESB048033-S-□-□15	36-75	48	0.35	3.3	4.5	15	89%
ESB048050-S-□-□15	36-75	48	0.35	5	3	15	90%

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
ESB048120-S-□-□15	36-75	48	0.36	12	1.3	15	88%
ESB048150-S-□-□15	36-75	48	0.36	15	1	15	88%
ESB048240-S-□-□15	36-75	48	0.35	24	0.7	15	89%
ESB048120-D-□-□15	36-75	48	0.35	±12	±0.7	15	89%
ESB048150-D-□-□15	36-75	48	0.35	±15	±0.5	15	90%
ESB048240-D-□-□15	36-75	48	0.35	±24	±0.3	15	89%
ESB048033-S-□-□20	36-75	48	0.46	3.3	6	20	90%
ESB048050-S-□-□20	36-75	48	0.46	5	4	20	91%
ESB048120-S-□-□20	36-75	48	0.46	12	1.7	20	90%
ESB048150-S-□-□20	36-75	48	0.46	15	1.3	20	90%
ESB048240-S-□-□20	36-75	48	0.47	24	0.8	20	89%
ESB048120-D-□-□20	36-75	48	0.46	±12	±0.8	20	91%
ESB048150-D-□-□20	36-75	48	0.46	±15	±0.7	20	91%
ESB048240-D-□-□20	36-75	48	0.47	±24	±0.4	20	89%
ESB048050-S-□-□30	36-75	48	0.69	5	6	30	90%
ESB048120-S-□-□30	36-75	48	0.70	12	2.5	30	89%
ESB048150-S-□-□30	36-75	48	0.70	15	2	30	89%

DC/DC Converter – E Series

- ESC



Feature

- Built-in EMI filter meets EN55032 Class A / EN55032 Class B without external components (Optional)
- Save up to 20% board space
- Single / Dual Outputs
- 2:1 / 4:1 Wide input range
- 6-sided metal case design and has excellent heat dissipation and EMI
- Wide Operating Temperature-45°C ~+115°C
- (Optional:-55°C ~+125°C)
- Industrial standard pinout; Fully replaceable with 2"x1" standard case
- Case shape: F : Flat / P : Groove Cover / B : Base Plate optional

UVLO

OCP

OVP

OTP

DC/DC Converter

Model Number Structure

ESC 018 033 - S - P - F 50

Series Name	Input Voltage (VDC)	Output Voltage (VDC)	Output Quantity	Remote Control Option	Shape	Watt
Evolving Sirius- Chivalry series –		033 : 3.3				
	012 : 9-18	050 : 5		P : Positive logic		
	018 : 9-36	120 : 12	S : Single	N : Negative logic	F : Flat	30
	024 : 18-36	150 : 15		1 : Positive logic	P : Groove	40
	036 : 18-75	240 : 24		+ EMC Filter	Cover	50
	048 : 36-75			0 : Negative logic	B : Base Plate	
	110 : 40-160	120 : ±12	D : Dual	+ EMC Filter		
		150 : ±15				
		240 : ±24				

Model Selection Guide

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
ESC012033-S-□-□30	9-18	12	2.81	3.3	9.1	30	89%
ESC012050-S-□-□30	9-18	12	2.78	5	6	30	90%
ESC012120-S-□-□30	9-18	12	2.81	12	2.5	30	89%
ESC012150-S-□-□30	9-18	12	2.81	15	2	30	89%
ESC012240-S-□-□30	9-18	12	2.81	24	1.3	30	89%
ESC012120-D-□-□30	9-18	12	2.81	±12	±1.3	30	89%
ESC012150-D-□-□30	9-18	12	2.81	±15	±1.0	30	89%
ESC012240-D-□-□30	9-18	12	2.84	±24	±0.6	30	88%
ESC012033-S-□-□40	9-18	12	3.75	3.3	12.1	40	89%
ESC012050-S-□-□40	9-18	12	3.70	5	8	40	90%
ESC012120-S-□-□40	9-18	12	3.75	12	3.3	40	89%
ESC012150-S-□-□40	9-18	12	3.75	15	2.7	40	89%
ESC012240-S-□-□40	9-18	12	3.75	24	1.7	40	89%
ESC012120-D-□-□40	9-18	12	3.75	±12	±1.7	40	89%
ESC012150-D-□-□40	9-18	12	3.75	±15	±1.3	40	89%
ESC012240-D-□-□40	9-18	12	3.79	±24	±0.8	40	88%
ESC012033-S-□-□50	9-18	12	4.68	3.3	15.1	50	89%
ESC012050-S-□-□50	9-18	12	4.63	5	10	50	90%
ESC012120-S-□-□50	9-18	12	4.68	12	4.2	50	89%

DC/DC Converter

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
ESC012150-S-□-□50	9-18	12	4.68	15	3.3	50	89%
ESC012240-S-□-□50	9-18	12	4.68	24	2.1	50	89%
ESC012120-D-□-□50	9-18	12	4.68	±12	±2.1	50	89%
ESC012150-D-□-□50	9-18	12	4.68	±15	±1.7	50	89%
ESC012240-D-□-□50	9-18	12	4.73	±24	±1.0	50	88%
ESC018033-S-□-□30	9-36	18	1.89	3.3	9.1	30	88%
ESC018050-S-□-□30	9-36	18	1.87	5	6	30	89%
ESC018120-S-□-□30	9-36	18	1.89	12	2.5	30	88%
ESC018150-S-□-□30	9-36	18	1.89	15	2	30	88%
ESC018240-S-□-□30	9-36	18	1.89	24	1.3	30	88%
ESC018120-D-□-□30	9-36	18	1.89	±12	±1.3	30	88%
ESC018150-D-□-□30	9-36	18	1.89	±15	±1.0	30	88%
ESC018240-D-□-□30	9-36	18	1.92	±24	±0.6	30	87%
ESC018033-S-□-□40	9-36	18	2.53	3.3	12.1	40	88%
ESC018050-S-□-□40	9-36	18	2.50	5	8	40	89%
ESC018120-S-□-□40	9-36	18	2.53	12	3.3	40	88%
ESC018150-S-□-□40	9-36	18	2.53	15	2.7	40	88%
ESC018240-S-□-□40	9-36	18	2.53	24	1.7	40	88%
ESC018120-D-□-□40	9-36	18	2.53	±12	±1.7	40	88%
ESC018150-D-□-□40	9-36	18	2.53	±15	±1.3	40	88%
ESC018240-D-□-□40	9-36	18	2.55	±24	±0.8	40	87%
ESC024033-S-□-□30	18-36	24	1.40	3.3	9.1	30	89%
ESC024050-S-□-□30	18-36	24	1.39	5	6	30	90%
ESC024120-S-□-□30	18-36	24	1.40	12	2.5	30	89%
ESC024150-S-□-□30	18-36	24	1.40	15	2	30	89%
ESC024240-S-□-□30	18-36	24	1.40	24	1.3	30	89%
ESC024120-D-□-□30	18-36	24	1.40	±12	±1.3	30	89%
ESC024150-D-□-□30	18-36	24	1.40	±15	±1.0	30	89%
ESC024240-D-□-□30	18-36	24	1.40	±24	±0.6	30	89%
ESC024033-S-□-□40	18-36	24	1.87	3.3	12.1	40	89%
ESC024050-S-□-□40	18-36	24	1.85	5	8	40	90%
ESC024120-S-□-□40	18-36	24	1.87	12	3.3	40	89%

DC/DC Converter

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
ESC024150-S-□-□40	18-36	24	1.87	15	2.7	40	89%
ESC024240-S-□-□40	18-36	24	1.87	24	1.7	40	89%
ESC024120-D-□-□40	18-36	24	1.87	±12	±1.7	40	89%
ESC024150-D-□-□40	18-36	24	1.87	±15	±1.3	40	89%
ESC024240-D-□-□40	18-36	24	1.87	±24	±0.8	40	89%
ESC024033-S-□-□50	18-36	24	2.34	3.3	15.1	50	89%
ESC024050-S-□-□50	18-36	24	2.31	5	10	50	90%
ESC024120-S-□-□50	18-36	24	2.34	12	4.2	50	89%
ESC024150-S-□-□50	18-36	24	2.34	15	3.3	50	89%
ESC024240-S-□-□50	18-36	24	2.34	24	2.1	50	89%
ESC024120-D-□-□50	18-36	24	2.34	±12	±2.1	50	89%
ESC024150-D-□-□50	18-36	24	2.34	±15	±1.7	50	89%
ESC024240-D-□-□50	18-36	24	2.37	±24	±1.0	50	88%
ESC036033-S-□-□30	18-75	36	0.95	3.3	9.1	30	88%
ESC036050-S-□-□30	18-75	36	0.94	5	6	30	89%
ESC036120-S-□-□30	18-75	36	0.95	12	2.5	30	88%
ESC036150-S-□-□30	18-75	36	0.95	15	2	30	88%
ESC036240-S-□-□30	18-75	36	0.95	24	1.3	30	88%
ESC036120-D-□-□30	18-75	36	0.95	±12	±1.3	30	88%
ESC036150-D-□-□30	18-75	36	0.95	±15	±1.0	30	88%
ESC036240-D-□-□30	18-75	36	0.96	±24	±0.6	30	87%
ESC036033-S-□-□40	18-75	36	1.26	3.3	12.1	40	88%
ESC036050-S-□-□40	18-75	36	1.25	5	8	40	89%
ESC036120-S-□-□40	18-75	36	1.26	12	3.3	40	88%
ESC036150-S-□-□40	18-75	36	1.26	15	2.7	40	88%
ESC036240-S-□-□40	18-75	36	1.26	24	1.7	40	88%
ESC036120-D-□-□40	18-75	36	1.26	±12	±1.7	40	88%
ESC036150-D-□-□40	18-75	36	1.26	±15	±1.3	40	88%
ESC036240-D-□-□40	18-75	36	1.28	±24	±0.8	40	87%
ESC048033-S-□-□30	36-75	48	0.70	3.3	9.1	30	89%
ESC048050-S-□-□30	36-75	48	0.69	5	6	30	90%

DC/DC Converter

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
ESC048120-S-□-□30	36-75	48	0.70	12	2.5	30	89%
ESC048150-S-□-□30	36-75	48	0.70	15	2	30	89%
ESC048240-S-□-□30	36-75	48	0.70	24	1.3	30	89%
ESC048120-D-□-□30	36-75	48	0.70	±12	±1.3	30	89%
ESC048150-D-□-□30	36-75	48	0.70	±15	±1.0	30	89%
ESC048240-D-□-□30	36-75	48	0.70	±24	±0.6	30	89%
ESC048033-S-□-□50	36-75	48	1.17	3.3	15.1	50	89%
ESC048050-S-□-□50	36-75	48	1.16	5	10	50	90%
ESC048120-S-□-□50	36-75	48	1.17	12	4.2	50	89%
ESC048150-S-□-□50	36-75	48	1.17	15	3.3	50	89%
ESC048240-S-□-□50	36-75	48	1.17	24	2.1	50	89%
ESC048120-D-□-□50	36-75	48	1.17	±12	±2.1	50	89%
ESC048150-D-□-□50	36-75	48	1.17	±15	±1.7	50	89%
ESC048240-D-□-□50	36-75	48	1.17	±24	±1.0	50	89%
ESC110033-S-□-□20	40-160	110	0.21	3.3	6.1	20	88%
ESC110050-S-□-□20	40-160	110	0.20	5	4	20	89%
ESC110120-S-□-□20	40-160	110	0.21	12	1.7	20	88%
ESC110150-S-□-□20	40-160	110	0.21	15	1.3	20	88%
ESC110240-S-□-□20	40-160	110	0.21	24	0.8	20	88%
ESC110120-D-□-□20	40-160	110	0.21	±12	±0.8	20	88%
ESC110150-D-□-□20	40-160	110	0.21	±15	±0.7	20	88%
ESC110240-D-□-□20	40-160	110	0.21	±24	±0.4	20	87%
ESC110033-S-□-□30	40-160	110	0.31	3.3	9.1	30	88%
ESC110050-S-□-□30	40-160	110	0.31	5	6	30	89%
ESC110120-S-□-□30	40-160	110	0.31	12	2.5	30	88%
ESC110150-S-□-□30	40-160	110	0.31	15	2	30	88%
ESC110240-S-□-□30	40-160	110	0.31	24	1.3	30	87%
ESC110120-D-□-□30	40-160	110	0.31	±12	±1.3	30	88%
ESC110150-D-□-□30	40-160	110	0.31	±15	±1.0	30	88%
ESC110240-D-□-□30	40-160	110	0.31	±24	±0.6	30	87%
ESC110033-S-□-□40	40-160	110	0.41	3.3	12.1	40	88%

DC/DC Converter

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
ESC110050-S-□-□40	40-160	110	0.41	5	8	40	89%
ESC110120-S-□-□40	40-160	110	0.41	12	3.3	40	88%
ESC110150-S-□-□40	40-160	110	0.41	15	2.7	40	88%
ESC110240-S-□-□40	40-160	110	0.42	24	1.7	40	87%
ESC110120-D-□-□40	40-160	110	0.41	±12	±1.7	40	88%
ESC110150-D-□-□40	40-160	110	0.41	±15	±1.3	40	88%
ESC110240-D-□-□40	40-160	110	0.42	±24	±0.8	40	87%
ESC110033-S-□-□50	40-160	110	0.52	3.3	15.1	50	88%
ESC110050-S-□-□50	40-160	110	0.51	5	10	50	89%
ESC110120-S-□-□50	40-160	110	0.52	12	4.2	50	88%
ESC110150-S-□-□50	40-160	110	0.52	15	3.3	50	88%
ESC110240-S-□-□50	40-160	110	0.52	24	2.1	50	87%
ESC110120-D-□-□50	40-160	110	0.52	±12	±2.1	50	88%
ESC110150-D-□-□50	40-160	110	0.52	±15	±1.7	50	88%
ESC110240-D-□-□50	40-160	110	0.52	±24	±1.0	50	87%

DC/DC Converter- N Series

- **ESAN**



Feature

- Built-in EMI filter meets EN55032 Class A without external components (Depends on different model)
- 2:1 / 4:1 Wide input range
- Encapsulated Power module
- Single / Dual Outputs
- Standard pinout; DIP24 packages compliant
- SMD optional
- Plastic / metal case optional
- -40°C to +70°C operation without derating
- Output voltage trim range of -10%, +10%
- 1600VDC / 2KV Basic Insulation (input to output)

UVLO

OCP

OVP

OTP

DC/DC Converter

Model Number Structure

ESAN 018 033 - S - P - S 15

Series Name	Input Voltage (VDC)	Output Voltage (VDC)	Output Quantity	Remote Control Option	Shape	Watt
Evolving Sirius- Agate series – New generation Model Selection Guide		033 : 3.3				
	018 : 9-36	050 : 5	S : Single		D : DIP	
	024 : 18-36	120 : 12			MD : Metal Case	07
	036 : 18-75	150 : 15		P : Positive logic		10
	048 : 36-75	050 : ±5	N : Negative logic		S : SMD	15
	110 : 40-160	120 : ±12		D : Dual	MS : Metal Case	
		150 : ±15				

Model Selection Guide

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
ESAN018033-S-□-□07	9-36	18	0.45	3.3	2.1	7	87%
ESAN018050-S-□-□07	9-36	18	0.44	5	1.4	7	88%
ESAN018120-S-□-□07	9-36	18	0.45	12	0.6	7	87%
ESAN018150-S-□-□07	9-36	18	0.45	15	0.5	7	87%
ESAN018050-D-□-□07	9-36	18	0.46	±5.0	±0.7	7	84%
ESAN018120-D-□-□07	9-36	18	0.45	±12.0	±0.3	7	87%
ESAN018150-D-□-□07	9-36	18	0.44	±15.0	±0.2	7	88%
ESAN018033-S-□-□10	9-36	18	0.63	3.3	3	10	88%
ESAN018050-S-□-□10	9-36	18	0.62	5	2	10	89%
ESAN018120-S-□-□10	9-36	18	0.64	12	0.83	10	87%
ESAN018150-S-□-□10	9-36	18	0.63	15	0.7	10	88%
ESAN018050-D-□-□10	9-36	18	0.65	±5.0	±1.0	10	85%
ESAN018120-D-□-□10	9-36	18	0.63	±12.0	±0.4	10	88%
ESAN018150-D-□-□10	9-36	18	0.63	±15.0	±0.3	10	88%
ESAN018033-S-□-□15	9-36	18	0.95	3.3	4.5	15	88%
ESAN018050-S-□-□15	9-36	18	0.94	5	3	15	89%
ESAN018120-S-□-□15	9-36	18	0.96	12	1.3	15	87%
ESAN018150-S-□-□15	9-36	18	0.95	15	1	15	88%
ESAN018050-D-□-□15	9-36	18	0.98	±5.0	±1.5	15	85%

DC/DC Converter

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
ESAN018120-D-□-□15	9-36	18	0.95	±12.0	±0.6	15	88%
ESAN018150-D-□-□15	9-36	18	0.95	±15.0	±0.5	15	88%
ESAN024033-S-□-□07	18-36	24	0.33	3.3	2.1	7	88%
ESAN024050-S-□-□07	18-36	24	0.33	5	1.4	7	89%
ESAN024120-S-□-□07	18-36	24	0.33	12	0.6	7	88%
ESAN024150-S-□-□07	18-36	24	0.33	15	0.5	7	88%
ESAN024050-D-□-□07	18-36	24	0.34	±5.0	±0.7	7	85%
ESAN024120-D-□-□07	18-36	24	0.33	±12.0	±0.3	7	88%
ESAN024150-D-□-□07	18-36	24	0.33	±15.0	±0.2	7	88%
ESAN024033-S-□-□10	18-36	24	0.47	3.3	3	10	88%
ESAN024050-S-□-□10	18-36	24	0.47	5	2	10	89%
ESAN024120-S-□-□10	18-36	24	0.47	12	0.8	10	88%
ESAN024150-S-□-□10	18-36	24	0.47	15	0.7	10	88%
ESAN024050-D-□-□10	18-36	24	0.48	±5.0	±1.0	10	86%
ESAN024120-D-□-□10	18-36	24	0.47	±12.0	±0.4	10	88%
ESAN024150-D-□-□10	18-36	24	0.47	±15.0	±0.3	10	88%
ESAN024033-S-□-□15	18-36	24	0.71	3.3	4.5	15	88%
ESAN024050-S-□-□15	18-36	24	0.70	5	3	15	89%
ESAN024120-S-□-□15	18-36	24	0.71	12	1.3	15	88%
ESAN024150-S-□-□15	18-36	24	0.71	15	1	15	88%
ESAN024050-D-□-□15	18-36	24	0.73	±5.0	±1.5	15	86%
ESAN024120-D-□-□15	18-36	24	0.71	±12.0	±0.6	15	88%
ESAN024150-D-□-□15	18-36	24	0.71	±15.0	±0.5	15	88%
ESAN036033-S-□-□07	18-75	36	0.22	3.3	2.1	7	87%
ESAN036050-S-□-□07	18-75	36	0.22	5	1.4	7	88%
ESAN036120-S-□-□07	18-75	36	0.22	12	0.6	7	87%
ESAN036150-S-□-□07	18-75	36	0.22	15	0.5	7	87%
ESAN036050-D-□-□07	18-75	36	0.23	±5.0	±0.7	7	84%
ESAN036120-D-□-□07	18-75	36	0.22	±12.0	±0.3	7	87%
ESAN036150-D-□-□07	18-75	36	0.22	±15.0	±0.2	7	88%
ESAN036033-S-□-□10	18-75	36	0.32	3.3	3	10	88%
ESAN036050-S-□-□10	18-75	36	0.31	5	2	10	89%
ESAN036120-S-□-□10	18-75	36	0.32	12	0.83	10	87%

DC/DC Converter

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
ESAN036150-S-□-□10	18-75	36	0.32	15	0.7	10	88%
ESAN036050-D-□-□10	18-75	36	0.33	±5.0	±1.0	10	85%
ESAN036120-D-□-□10	18-75	36	0.32	±12.0	±0.3	10	87%
ESAN036150-D-□-□10	18-75	36	0.32	±15.0	±0.2	10	88%
ESAN036033-S-□-□15	18-75	36	0.47	3.3	4.5	15	88%
ESAN036050-S-□-□15	18-75	36	0.47	5	3	15	89%
ESAN036120-S-□-□15	18-75	36	0.48	12	1.3	15	87%
ESAN036150-S-□-□15	18-75	36	0.47	15	1	15	88%
ESAN036050-D-□-□15	18-75	36	0.49	±5.0	±1.5	15	85%
ESAN036120-D-□-□15	18-75	36	0.48	±12.0	±0.6	15	87%
ESAN036150-D-□-□15	18-75	36	0.47	±15.0	±0.5	15	88%
ESAN048033-S-□-□07	36-75	48	0.17	3.3	2.1	7	88%
ESAN048050-S-□-□07	36-75	48	0.16	5	1.4	7	89%
ESAN048120-S-□-□07	36-75	48	0.17	12	0.6	7	88%
ESAN048150-S-□-□07	36-75	48	0.17	15	0.5	7	88%
ESAN048050-D-□-□07	36-75	48	0.17	±5.0	±0.7	7	85%
ESAN048120-D-□-□07	18-36	48	0.17	±12.0	±0.3	7	88%
ESAN048150-D-□-□07	18-36	48	0.17	±15.0	±0.2	7	88%
ESAN048033-S-□-□10	36-75	48	0.24	3.3	3	10	88%
ESAN048050-S-□-□10	36-75	48	0.23	5	2	10	89%
ESAN048120-S-□-□10	36-75	48	0.24	12	0.8	10	88%
ESAN048150-S-□-□10	36-75	48	0.24	15	0.7	10	88%
ESAN048050-D-□-□10	36-75	48	0.24	±5.0	±1.0	10	86%
ESAN048120-D-□-□10	18-36	48	0.24	±12.0	±0.4	10	88%
ESAN048150-D-□-□10	18-36	48	0.24	±15.0	±0.3	10	88%
ESAN048033-S-□-□15	36-75	48	0.36	3.3	4.5	15	88%
ESAN048050-S-□-□15	36-75	48	0.35	5	3	15	89%
ESAN048120-S-□-□15	36-75	48	0.36	12	1.3	15	88%
ESAN048150-S-□-□15	36-75	48	0.36	15	1	15	88%
ESAN048050-D-□-□15	36-75	48	0.36	±5.0	±1.5	15	86%
ESAN048120-D-□-□15	36-75	48	0.36	±12.0	±0.6	15	88%
ESAN048150-D-□-□15	36-75	48	0.36	±15.0	±0.5	15	88%
ESAN110033-S-□-□07	40-160	110	0.07	3.3	2.1	7	87%
ESAN110050-S-□-□07	40-160	110	0.07	5	1.4	7	88%

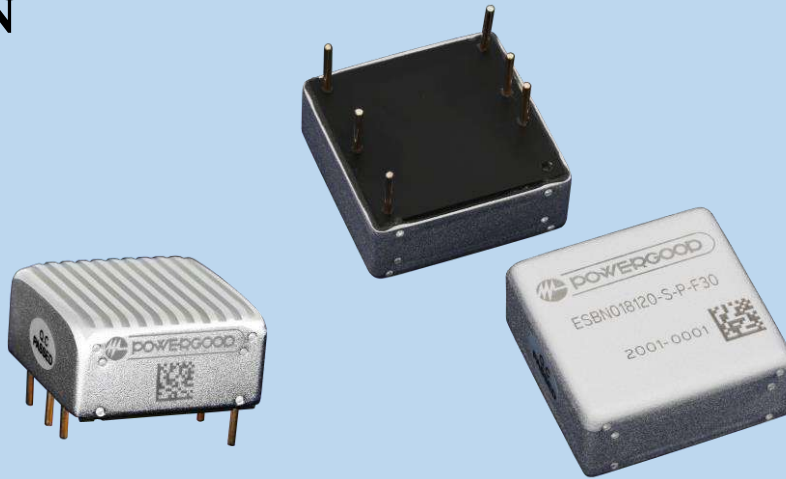
DC/DC Converter

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
ESAN110120-S-□-□07	40-160	110	0.07	12	0.6	7	87%
ESAN110150-S-□-□07	40-160	110	0.07	15	0.5	7	87%
ESAN110050-D-□-□07	40-160	110	0.08	±5.0	±0.7	7	84%
ESAN110120-D-□-□07	40-160	110	0.07	±12.0	±0.3	7	87%
ESAN110150-D-□-□07	40-160	110	0.07	±15.0	±0.2	7	87%
ESAN110033-S-□-□10	40-160	110	0.10	3.3	3	10	88%
ESAN110050-S-□-□10	40-160	110	0.10	5	2	10	89%
ESAN110120-S-□-□10	40-160	110	0.10	12	0.83	10	87%
ESAN110150-S-□-□10	40-160	110	0.10	15	0.7	10	88%
ESAN110050-D-□-□10	40-160	110	0.11	±5.0	±1.0	10	85%
ESAN110120-D-□-□10	40-160	110	0.10	±12.0	±0.4	10	87%
ESAN110150-D-□-□10	40-160	110	0.10	±15.0	±0.3	10	88%
ESAN110033-S-□-□15	40-160	110	0.15	3.3	4.5	15	88%
ESAN110050-S-□-□15	40-160	110	0.15	5	3	15	89%
ESAN110120-S-□-□15	40-160	110	0.15	12	1.3	15	88%
ESAN110150-S-□-□15	40-160	110	0.15	15	1	15	88%
ESAN110050-D-□-□15	40-160	110	0.16	±5.0	±1.5	15	85%
ESAN110120-D-□-□15	40-160	110	0.15	±12.0	±0.6	15	88%
ESAN110150-D-□-□15	40-160	110	0.15	±15.0	±0.5	15	88%

DC/DC Converter- N Series

- ESBN



Feature

- Built-in EMI filter meets EN55032 Class A without external components (Depends on different model)
- Single / Dual Outputs
- 5-sided metal case design and has excellent heat dissipation and EMI
- 2:1 / 4:1 Wide input range
- Operating Temperature $-45^{\circ}\text{C} \sim +115^{\circ}\text{C}$
- Industrial standard pinout
- Case shape: F : Flat / P : PV optional

UVLO

OCP

OVP

OTP

DC/DC Converter

Model Number Structure

ESBN 018 033 - S - P - F 20

Series Name	Input Voltage (VDC)	Output Voltage (VDC)	Output Quantity	Remote Control Option	Shape	Watt
Evolving Sirius- Bishop series – New generation		033 : 3.3	S : Single	P : Positive logic N : Negative logic	F : Flat P : PV	
	018 : 9-36	050 : 5				
	024 : 18-36	120 : 12				
	036 : 18-75	150 : 15				
	048 : 36-75	050 : ±5				
	110 : 40-160	120 : ±12	D : Dual			
Model Selection Guide		150 : ±15				

Model Selection Guide

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
ESBN018033-S-□-□10	9-36	18	0.64	3.3	3	10	87%
ESBN018050-S-□-□10	9-36	18	0.63	5	2	10	88%
ESBN018120-S-□-□10	9-36	18	0.64	12	0.8	10	87%
ESBN018150-S-□-□10	9-36	18	0.63	15	0.7	10	88%
ESBN018050-D-□-□10	9-36	18	0.66	± 5	± 1.0	10	84%
ESBN018120-D-□-□10	9-36	18	0.64	± 12	± 0.4	10	87%
ESBN018150-D-□-□10	9-36	18	0.63	± 15	± 0.3	10	88%
ESBN018033-S-□-□15	9-36	18	0.95	3.3	4.5	15	88%
ESBN018050-S-□-□15	9-36	18	0.94	5	3	15	89%
ESBN018120-S-□-□15	9-36	18	0.95	12	1.3	15	88%
ESBN018150-S-□-□15	9-36	18	0.94	15	1	15	89%
ESBN018050-D-□-□15	9-36	18	0.98	± 5	± 1.5	15	85%
ESBN018120-D-□-□15	9-36	18	0.95	± 12	± 0.6	15	88%
ESBN018150-D-□-□15	9-36	18	0.94	± 15	± 0.5	15	89%
ESBN018033-S-□-□20	9-36	18	1.26	3.3	6.1	20	88%
ESBN018050-S-□-□20	9-36	18	1.25	5	4	20	89%

DC/DC Converter

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
ESBN018120-S-□-□20	9-36	18	1.26	12	1.7	20	88%
ESBN018150-S-□-□20	9-36	18	1.25	15	1.3	20	89%
ESBN018120-D-□-□20	9-36	18	1.26	±12	±0.8	20	88%
ESBN018150-D-□-□20	9-36	18	1.25	±15	±0.7	20	89%
ESBN024033-S-□-□10	18-36	24	0.47	3.3	3	10	88%
ESBN024050-S-□-□10	18-36	24	0.47	5	2	10	89%
ESBN024120-S-□-□10	18-36	24	0.47	12	0.8	10	88%
ESBN024150-S-□-□10	18-36	24	0.47	15	0.7	10	89%
ESBN024050-D-□-□10	18-36	24	0.49	±5	±1.0	10	85%
ESBN024120-D-□-□10	18-36	24	0.47	±12	±0.4	10	88%
ESBN024150-D-□-□10	18-36	24	0.47	±15	±0.3	10	88%
ESBN024033-S-□-□15	18-36	24	0.70	3.3	4.5	15	89%
ESBN024050-S-□-□15	18-36	24	0.69	5	3	15	90%
ESBN024120-S-□-□15	18-36	24	0.70	12	1.3	15	89%
ESBN024150-S-□-□15	18-36	24	0.70	15	1	15	89%
ESBN024050-D-□-□15	18-36	24	0.73	±5	±1.5	15	86%
ESBN024120-D-□-□15	18-36	24	0.70	±12	±0.6	15	89%
ESBN024150-D-□-□15	18-36	24	0.70	±15	±0.5	15	89%
ESBN024033-S-□-□20	18-36	24	0.94	3.3	6.1	20	89%
ESBN024050-S-□-□20	18-36	24	0.93	5	4	20	90%
ESBN024120-S-□-□20	18-36	24	0.94	12	1.7	20	89%
ESBN024150-S-□-□20	18-36	24	0.94	15	1.3	20	89%
ESBN024120-D-□-□20	18-36	24	0.94	±12	±0.8	20	89%
ESBN024150-D-□-□20	18-36	24	0.94	±15	±0.7	20	89%
ESBN036033-S-□-□10	18-75	36	0.32	3.3	3	10	87%
ESBN036050-S-□-□10	18-75	36	0.32	5	2	10	88%
ESBN036120-S-□-□10	18-75	36	0.32	12	0.8	10	87%
ESBN036150-S-□-□10	18-75	36	0.32	15	0.7	10	88%
ESBN036050-D-□-□10	18-75	36	0.33	±5	±1.0	10	84%
ESBN036120-D-□-□10	18-75	36	0.32	±12	±0.4	10	87%

DC/DC Converter

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
ESBN036150-D-□-□10	18-75	36	0.32	±15	±0.3	10	88%
ESBN036033-S-□-□15	18-75	36	0.47	3.3	4.5	15	88%
ESBN036050-S-□-□15	18-75	36	0.47	5	3	15	89%
ESBN036120-S-□-□15	18-75	36	0.47	12	1.3	15	88%
ESBN036150-S-□-□15	18-75	36	0.47	15	1	15	89%
ESBN036120-D-□-□15	18-75	36	0.47	±12	±0.6	15	88%
ESBN036150-D-□-□15	18-75	36	0.47	±15	±0.5	15	89%
ESBN036033-S-□-□20	18-75	36	0.62	3.3	6.1	20	89%
ESBN036050-S-□-□20	18-75	36	0.62	5	4	20	90%
ESBN036120-S-□-□20	18-75	36	0.63	12	1.7	20	88%
ESBN036150-S-□-□20	18-75	36	0.62	15	1.3	20	89%
ESBN036120-D-□-□20	18-75	36	0.63	±12	±0.8	20	88%
ESBN036150-D-□-□20	18-75	36	0.62	±15	±0.7	20	89%
ESBN048033-S-□-□10	36-75	48	0.24	3.3	3	10	88%
ESBN048050-S-□-□10	36-75	48	0.23	5	2	10	89%
ESBN048120-S-□-□10	36-75	48	0.24	12	0.8	10	88%
ESBN048150-S-□-□10	36-75	48	0.23	15	0.7	10	89%
ESBN048050-D-□-□10	36-75	48	0.25	±5	±1.0	10	85%
ESBN048120-D-□-□10	36-75	48	0.24	±12	±0.4	10	88%
ESBN048150-D-□-□10	36-75	48	0.24	±15	±0.3	10	88%
ESBN048033-S-□-□15	36-75	48	0.35	3.3	4.5	15	89%
ESBN048050-S-□-□15	36-75	48	0.35	5	3	15	90%
ESBN048120-S-□-□15	36-75	48	0.35	12	1.3	15	89%
ESBN048150-S-□-□15	36-75	48	0.35	15	1	15	89%
ESBN048050-D-□-□15	36-75	48	0.36	±5	±1.5	15	86%
ESBN048120-D-□-□15	36-75	48	0.35	±12	±0.6	15	89%
ESBN048150-D-□-□15	36-75	48	0.35	±15	±0.5	15	89%
ESBN048033-S-□-□20	36-75	48	0.47	3.3	6.1	20	89%
ESBN048050-S-□-□20	36-75	48	0.46	5	4	20	90%
ESBN048120-S-□-□20	36-75	48	0.47	12	1.7	20	89%
ESBN048150-S-□-□20	36-75	48	0.47	15	1.3	20	89%
ESBN048120-D-□-□20	36-75	48	0.47	±12	±0.8	20	89%

DC/DC Converter

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
ESBN048150-D-□-□20	36-75	48	0.47	±15	±0.7	20	89%
ESBN110033-S-□-□10	40-160	110	0.10	3.3	3	10	87%
ESBN110050-S-□-□10	40-160	110	0.10	5	2	10	88%
ESBN110120-S-□-□10	40-160	110	0.10	12	0.8	10	87%
ESBN110150-S-□-□10	40-160	110	0.10	15	0.7	10	88%
ESBN110050-D-□-□10	40-160	110	0.11	±5	±1.0	10	84%
ESBN110120-D-□-□10	40-160	110	0.10	±12	±0.4	10	87%
ESBN110150-D-□-□10	40-160	110	0.10	±15	±0.3	10	88%
ESBN110033-S-□-□15	40-160	110	0.15	3.3	4.5	15	88%
ESBN110050-S-□-□15	40-160	110	0.15	5	3	15	89%
ESBN110120-S-□-□15	40-160	110	0.15	12	1.3	15	88%
ESBN110150-S-□-□15	40-160	110	0.15	15	1	15	89%
ESBN110050-D-□-□15	40-160	110	0.16	±5	±1.5	15	85%
ESBN110120-D-□-□15	40-160	110	0.15	±12	±0.6	15	88%
ESBN110150-D-□-□15	40-160	110	0.15	±15	±0.5	15	89%
ESBN110033-S-□-□20	40-160	110	0.21	3.3	6.1	20	88%
ESBN110050-S-□-□20	40-160	110	0.20	5	4	20	89%
ESBN110120-S-□-□20	40-160	110	0.21	12	1.7	20	88%
ESBN110150-S-□-□20	40-160	110	0.20	15	1.3	20	89%
ESBN110120-D-□-□20	40-160	110	0.21	±12	±0.8	20	88%
ESBN110150-D-□-□20	40-160	110	0.20	±15	±0.7	20	89%

DC/DC Converter- N Series

- ESCN



Feature

- Built-in EMI filter meets EN55032 Class A without external components (Depends on different model)
- Single / Dual Outputs
- 5-sided metal case design and has excellent heat dissipation and EMI
(6-sided metal case design optional)
- 2:1 / 4:1 Wide input range
- Operating Temperature $-45^{\circ}\text{C} \sim +115^{\circ}\text{C}$
- Industrial standard pinout
- Maximum power density ratio, reach 60W

UVLO

OCP

OVP

OTP

Model Number Structure

ESCN 018 033 - S - P - F 50

Series Name	Input Voltage (VDC)	Output Voltage (VDC)	Output Quantity	Remote Control Option	Shape	Watt			
Evolving Sirius- Chivalry series – New generation	018 : 9-36 024 : 18-36 036 : 18-75 048 : 36-75 110 : 40-160	033 : 3.3	S : Single	P : Positive logic N : Negative logic	F : Flat CS : Full metal jacket	30 40 50			
		050 : 5							
		120 : 12							
		150 : 15							
		240 : 24	D : Dual						
		120 : ±12							
		150 : ±15							

Model Selection Guide

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
ESCN018033-S-□-□30	9-36	18	1.87	3.3	9.1	30	89%
ESCN018050-S-□-□30	9-36	18	1.85	5	6.0	30	90%
ESCN018120-S-□-□30	9-36	18	1.87	12	2.5	30	89%
ESCN018150-S-□-□30	9-36	18	1.87	15	2.0	30	89%
ESCN018120-D-□-□30	9-36	18	1.87	±12	±1.3	30	89%
ESCN018150-D-□-□30	9-36	18	1.87	±15	±1.0	30	89%
ESCN018033-S-□-□40	9-36	18	2.50	3.3	12.1	40	89%
ESCN018050-S-□-□40	9-36	18	2.47	5	8.0	40	90%
ESCN018120-S-□-□40	9-36	18	2.50	12	3.3	40	89%
ESCN018150-S-□-□40	9-36	18	2.50	15	2.7	40	89%
ESCN018120-D-□-□40	9-36	18	2.50	±12	±1.7	40	89%
ESCN018150-D-□-□40	9-36	18	2.50	±15	±1.3	40	89%
ESCN018050-S-□-□50	9-36	18	3.09	5	10	50	90%
ESCN018120-S-□-□50	9-36	18	3.12	12	4.16	50	89%
ESCN018240-S-□-□50	9-36	18	3.12	24	2.08	50	89%

DC/DC Converter

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
ESCN024033-S-□-□30	18-36	24	1.40	3.3	9.1	30	89%
ESCN024050-S-□-□30	18-36	24	1.39	5	6.0	30	90%
ESCN024120-S-□-□30	18-36	24	1.40	12	2.5	30	89%
ESCN024150-S-□-□30	18-36	24	1.40	15	2.0	30	89%
ESCN024120-D-□-□30	18-36	24	1.40	±12	±1.3	30	89%
ESCN024150-D-□-□30	18-36	24	1.40	±15	±1.0	30	89%
ESCN024033-S-□-□40	18-36	24	1.87	3.3	12.1	40	89%
ESCN024050-S-□-□40	18-36	24	1.85	5	8.0	40	90%
ESCN024120-S-□-□40	18-36	24	1.87	12	3.3	40	89%
ESCN024150-S-□-□40	18-36	24	1.87	15	2.7	40	89%
ESCN024240-S-□-□40	18-36	24	1.87	24	1.66	40	89%
ESCN024120-D-□-□40	18-36	24	1.87	±12	±1.7	40	89%
ESCN024150-D-□-□40	18-36	24	1.87	±15	±1.3	40	89%
ESCN036033-S-□-□30	18-75	36	0.94	3.3	9.1	30	89%
ESCN036050-S-□-□30	18-75	36	0.93	5	6.0	30	90%
ESCN036120-S-□-□30	18-75	36	0.94	12	2.5	30	89%
ESCN036150-S-□-□30	18-75	36	0.94	15	2.0	30	89%
ESCN036120-D-□-□30	18-75	36	0.94	±12	±1.3	30	89%
ESCN036150-D-□-□30	18-75	36	0.94	±15	±1.0	30	89%
ESCN036033-S-□-□40	18-75	36	1.25	3.3	12.1	40	89%
ESCN036050-S-□-□40	18-75	36	1.23	5	8.0	40	90%
ESCN036120-S-□-□40	18-75	36	1.25	12	3.3	40	89%
ESCN036150-S-□-□40	18-75	36	1.25	15	2.7	40	89%
ESCN036120-D-□-□40	18-75	36	1.25	±12	±1.7	40	89%
ESCN036150-D-□-□40	18-75	36	1.25	±15	±1.3	40	89%
ESCN036050-S-□-□50	18-75	36	1.54	5	10	50	90%
ESCN036120-S-□-□50	18-75	36	1.56	12	4.16	50	89%
ESCN036240-S-□-□50	18-75	36	1.56	24	2.08	50	89%
ESCN048033-S-□-□30	36-75	48	0.70	3.3	9.1	30	89%
ESCN048050-S-□-□30	36-75	48	0.69	5	6.0	30	90%
ESCN048120-S-□-□30	36-75	48	0.70	12	2.5	30	89%

DC/DC Converter

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
ESCN048150-S-□-□30	36-75	48	0.70	15	2.0	30	89%
ESCN048120-D-□-□30	36-75	48	0.70	±12	±1.3	30	89%
ESCN048150-D-□-□30	36-75	48	0.70	±15	±1.0	30	89%
ESCN048033-S-□-□40	36-75	48	0.94	3.3	12.1	40	89%
ESCN048050-S-□-□40	36-75	48	0.93	5	8.0	40	90%
ESCN048120-S-□-□40	36-75	48	0.94	12	3.3	40	89%
ESCN048150-S-□-□40	36-75	48	0.94	15	2.7	40	89%
ESCN048120-D-□-□40	36-75	48	0.94	±12	±1.7	40	89%
ESCN048150-D-□-□40	36-75	48	0.94	±15	±1.3	40	89%
ESCN110033-S-□-□30	40-160	110	0.31	3.3	9.1	30	88%
ESCN110050-S-□-□30	40-160	110	0.31	5	6.0	30	89%
ESCN110120-S-□-□30	40-160	110	0.31	12	2.5	30	88%
ESCN110150-S-□-□30	40-160	110	0.31	15	2.0	30	88%
ESCN110240-S-□-□30	40-160	110	0.31	24	0.8	30	88%
ESCN110120-D-□-□30	40-160	110	0.31	±12	±1.3	30	88%
ESCN110150-D-□-□30	40-160	110	0.31	±15	±1.0	30	88%
ESCN110033-S-□-□40	40-160	110	0.41	3.3	12.1	40	88%
ESCN110050-S-□-□40	40-160	110	0.41	5	8.0	40	89%
ESCN110120-S-□-□40	40-160	110	0.41	12	3.3	40	88%
ESCN110150-S-□-□40	40-160	110	0.41	15	2.7	40	88%
ESCN110120-D-□-□40	40-160	110	0.41	±12	±1.6	40	88%
ESCN110150-D-□-□40	40-160	110	0.41	±15	±1.3	40	88%

DC/DC Converter- S Series

- ESAS



Feature

- Built-in EMI filter meets EN55032 Class A without external components (Depends on different model)
- 4:1 Wide input range
- Encapsulated Power module
- Single / Dual Outputs
- Standard pinout; DIP24 packages compliant
- SMD optional
- Plastic / metal case optional
- -40°C to +100°C operation without derating
- Output voltage trim range of -10%, +10%
- 1600VDC Basic Insulation (input to output)

UVLO

OCP

OVP

OTP

Model Number Structure

ESAS 024W 050 - S - P - S 15

Series Name	Input Voltage (VDC)	Output Voltage (VDC)	Output Quantity	Remote Control Option	Shape	Watt
Evolving Sirius- Agate series – Second	024W : 9-36 048W : 18-75 110 : 40-160	050 : 5 120 : 12 150 : 15 120 : ±12 150 : ±15	S : Single D : Dual	P : Positive logic N : Negative logic	D : DIP MD : Metal Case S : SMD MS : Metal Case	15

Model Selection Guide

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
ESAS024W050-S-□-□15	9-36	24	0.71	5	3	15	88%
ESAS024W120-S-□-□15	9-36	24	0.71	12	1.25	15	88%
ESAS024W150-S-□-□15	9-36	24	0.71	15	1	15	88%
ESAS024W120-D-□-□15	9-36	24	0.71	±12	±0.63	15	88%
ESAS024W150-D-□-□15	9-36	24	0.71	±15	±0.5	15	88%
ESAS048W050-S-□-□15	18-75	48	0.36	5	3	15	88%
ESAS048W120-S-□-□15	18-75	48	0.36	12	1.25	15	88%
ESAS048W150-S-□-□15	18-75	48	0.36	15	1	15	88%
ESAS048W120-D-□-□15	18-75	48	0.36	±12	±0.63	15	88%
ESAS048W150-D-□-□15	18-75	48	0.36	±15	±0.5	15	88%
ESAS110050-S-□-□15	40-160	110	0.15	5	3	15	88%
ESAS110120-S-□-□15	40-160	110	0.15	12	1.25	15	88%
ESAS110150-S-□-□15	40-160	110	0.15	15	1	15	88%
ESAS110120-D-□-□15	40-160	110	0.15	±12	±0.63	15	88%
ESAS110150-D-□-□15	40-160	110	0.15	±15	±0.5	15	88%

DC/DC Converter- S Series

● ESBS



Feature

- Built-in EMI filter meets EN55032 Class A without external components (Depends on different model)
- Single / Dual Outputs
- 5-sided metal case design and has excellent heat dissipation and EMI
- 4:1 Wide input range
- Operating Temperature $-40^{\circ}\text{C} \sim +100^{\circ}\text{C}$
- Industrial standard pinout
- Fully SMT manufacturing
- Standard product, good lead time, cost-effective

UVLO

OCP

OVP

OTP

Model Number Structure

ESBS 024W 050 - S - P - F 30

Series Name	Input Voltage (VDC)	Output Voltage (VDC)	Output Quantity	Remote Control Option	Shape	Watt
Evolving Sirius- Bishop series – Second	024W : 9-36 048W : 18-75 110 : 40-160	050 : 5	S : Single	P : Positive logic N : Negative logic	F : Flat	30
		120 : 12				
		150 : 15				
		120 : ±12 150 : ±15	D : Dual			

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
ESBS024W050-S-□-F30	9-36	24	1.42	5	6	30	88%
ESBS024W120-S-□-F30	9-36	24	1.42	12	2.5	30	88%
ESBS024W150-S-□-F30	9-36	24	1.42	15	2	30	88%
ESBS024W120-D-□-F30	9-36	24	1.42	±12	±1.25	30	88%
ESBS024W150-D-□-F30	9-36	24	1.42	±15	±1	30	88%
ESBS048W050-S-□-F30	18-75	48	0.71	5	6	30	88%
ESBS048W120-S-□-F30	18-75	48	0.71	12	2.5	30	88%
ESBS048W150-S-□-F30	18-75	48	0.71	15	2	30	88%
ESBS048W120-D-□-F30	18-75	48	0.71	±12	±1.25	30	88%
ESBS048W150-D-□-F30	18-75	48	0.71	±15	±1	30	88%
ESBS110050-S-□-F30	40-160	110	0.31	5	6	30	88%
ESBS110120-S-□-F30	40-160	110	0.31	12	2.5	30	88%
ESBS110150-S-□-F30	40-160	110	0.31	15	2	30	88%
ESBS110120-D-□-F30	40-160	110	0.31	±12	±1.25	30	88%
ESBS110150-D-□-F30	40-160	110	0.31	±15	±1	30	88%

DC/DC Converter- S Series

● ESCS



Feature

- Built-in EMI filter meets EN55032 Class A without external components (Depends on different model)
- Single / Dual Outputs
- 5-sided metal case design and has excellent heat dissipation and EMI
- 4:1 Wide input range
- Operating Temperature -40°C ~+100°C
- Industrial standard pinout
- Fully SMT manufacturing
- Standard product, good lead time, cost-effective

UVLO

OCP

OVP

OTP

Model Number Structure

ESCS 024W 050 - S - P - F 50

Series Name	Input Voltage (VDC)	Output Voltage (VDC)	Output Quantity	Remote Control Option	Shape	Watt
Evolving Sirius- Chivalry series – Second	024W : 9-36 048W : 18-75 110 : 40-180	050 : 5	S : Single	P : Positive logic N : Negative logic	F : Flat	50
		120 : 12				
		150 : 15				
		120 : ±12	D : Dual			
		150 : ±15				

Model Selection Guide

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
ESCS024W050-S-□-F50	9-36	24	2.37	5	10	50	88%
ESCS024W120-S-□-F50	9-36	24	2.34	12	4.16	50	89%
ESCS024W150-S-□-F50	9-36	24	2.34	15	3.33	50	89%
ESCS024W120-D-□-F50	9-36	24	2.37	±12	±2.08	50	88%
ESCS024W150-D-□-F50	9-36	24	2.37	±15	±1.66	50	88%
ESCS048W050-S-□-F50	18-75	48	1.19	5	10	50	88%
ESCS048W120-S-□-F50	18-75	48	1.17	12	4.16	50	89%
ESCS048W150-S-□-F50	18-75	48	1.17	15	3.33	50	89%
ESCS048W120-D-□-F50	18-75	48	1.19	±12	±2.08	50	88%
ESCS048W150-D-□-F50	18-75	48	1.19	±15	±1.66	50	88%
ESCS110050-S-□-F50	40-180	110	0.52	5	10	50	88%
ESCS110120-S-□-F50	40-180	110	0.51	12	4.16	50	89%
ESCS110150-S-□-F50	40-180	110	0.51	15	3.33	50	89%
ESCS110120-D-□-F50	40-180	110	0.52	±12	±2.08	50	88%
ESCS110150-D-□-F50	40-180	110	0.52	±15	±1.66	50	88%

Brick DC/DC Converter



Feature

- Built-in EMI filter
- 6-sided shielded metal case with excellent heat radiation and EMI
- No aluminum and tantalum electrolytic capacitor inside for High Reliability
- Wide range operating temperature $-45^{\circ}\text{C} \sim +105^{\circ}\text{C}$ (Optional: $-55^{\circ}\text{C} \sim +125^{\circ}\text{C}$)
- Covers 1/16 brick, 1/4 brick, 1/2 brick and full brick
- 2:1 & 4:1 & 8:1 & 12:1 Ultra-Wide input range
- Single / Dual / Multi output
- DOSA pinout / Vicor pinout (Optional)
- Reference : STB Series 、 SQB Series 、 SHB Series 、 SFB Series 、 MQB Series

DC/DC Converter- Brick-B Series

- STB



Feature

- Industry-Standard DOSA pinout
- 2:1 / 4:1 Wide input range
- Built-in EMI filter
- 6-sided shielded metal case with excellent heat radiation and EMI
- No aluminum and tantalum electrolytic capacitor inside for High Reliability
- Output voltage trim range of -10%, +10%
- Remote sense for the output voltage
- Wide Operating Temperature -45°C ~ +105°C

UVLO

OCP

OVP

OTP

DC/DC Converter

Model Number Structure

STB 018 033 - S - P - B 50

Series Name	Input Voltage (VDC)	Output Voltage (VDC)	Pin out	Remote Control Option	Shape	Watt
Supreme series	012 : 9-18	033 : 3.3				
Sixteenth Brick	018 : 9-36	050 : 5				
	024 : 18-36	120 : 12	S : Dosa	P : Positive logic	B : Base Plate	50
	036 : 18-75	150 : 15		N : Negative logic	F : No Flange	
	048 : 36-75	240 : 24				

Model Selection Guide

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
STB018033-S-□-□50	9-36	18	3.16	3.3	15.1	50	88
STB018050-S-□-□50	9-36	18	3.09	5	10.0	50	90
STB018120-S-□-□50	9-36	18	3.12	12	4.2	50	89
STB018240-S-□-□50	9-36	18	3.12	24	2.1	50	89
STB024033-S-□-□50	18-36	24	2.34	3.3	15.1	50	89
STB024050-S-□-□50	18-36	24	2.29	5	10.0	50	91
STB024120-S-□-□50	18-36	24	2.31	12	4.2	50	90
STB036033-S-□-□50	18-75	36	1.58	3.3	15.1	50	88
STB036050-S-□-□50	18-75	36	1.54	5	10.0	50	90
STB036120-S-□-□50	18-75	36	1.56	12	4.2	50	89
STB036240-S-□-□50	18-75	36	1.56	24	2.1	50	89
STB048033-S-□-□50	36-75	48	1.17	3.3	15.1	50	89
STB048050-S-□-□50	36-75	48	1.14	5	10.0	50	91
STB048120-S-□-□50	36-75	48	1.16	12	4.2	50	90

DC/DC Converter DC/DC Converter- Brick-B Series

- MQB



Feature

- Industry-Standard DOSA pinout
- 8:1 & 12:1 Ultra-Wide input range
- Built-in EMI filter
- 6-sided shielded metal case with excellent heat radiation and EMI
- No aluminum and tantalum electrolytic capacitor inside for High Reliability
- Input range can cover the major brands
- Wide Operating Temperature $-45^{\circ}\text{C} \sim +105^{\circ}\text{C}$
- Single / Dual / Multi output

UVLO

OCP

OVP

OTP

Model Number Structure

MQB 028 050 - S - P - B 75

Series Name	Input Voltage (VDC)	Output Voltage (VDC)	Output Quantity	Remote Control Option	Shape	Watt
Mercury series Quarter Brick	028 : 9-75 054 : 14-154	050 : 5	S : Single	P : Positive logic N : Negative logic	B : Base Plate	50 75
		120 : 12				
		150 : 15				
		240 : 24				
		120 : ±12	D : Dual			
		150 : ±15				
240 : ±24						

Model Selection Guide

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency	Max. capacitive Load
	Voltage (V)		Current (A)	Voltage	Current	Power		
	Range	Nominal	Full load	(V)	(A)	(W)		
MQB028050-S-□-B50	9 - 75	28	1.98	5	10.0	50	90	18000
MQB028120-S-□-B50	9 - 75	28	2.01	12	4.2	50	89	5000
MQB028150-S-□-B50	9 - 75	28	2.01	15	3.3	50	89	3200
MQB028240-S-□-B50	9 - 75	28	2.01	24	2.1	50	89	1200
MQB028120-D-□-B50	9 - 75	28	2.01	±12	2.1	50	89	1000
MQB028150-D-□-B50	9 - 75	28	2.01	±15	1.7	50	89	500
MQB028240-D-□-B50	9 - 75	28	2.01	±24	1.0	50	89	200
MQB028050-S-□-B75	9 - 75	28	3.01	5	15	75	89	18000
MQB028120-S-□-B75	9 - 75	28	3.04	12	6.25	75	88	5000
MQB028150-S-□-B75	9 - 75	28	3.04	15	5	75	88	3200
MQB028240-S-□-B75	9 - 75	28	3.04	24	3.125	75	88	1200
MQB028120-D-□-B75	9 - 75	28	3.04	±12	3.13	75	88	1000
MQB028150-D-□-B75	9 - 75	28	3.04	±15	2.5	75	88	500
MQB028240-D-□-B75	9 - 75	28	3.04	±24	1.56	75	88	200
MQB054050-S-□-B50	14 - 154	54	1.03	5	10.0	50	90	18000
MQB054120-S-□-B50	14 - 154	54	1.04	12	4.2	50	89	5000
MQB054150-S-□-B50	14 - 154	54	1.04	15	3.3	50	89	3200
MQB054240-S-□-B50	14 - 154	54	1.04	24	2.1	50	89	1200

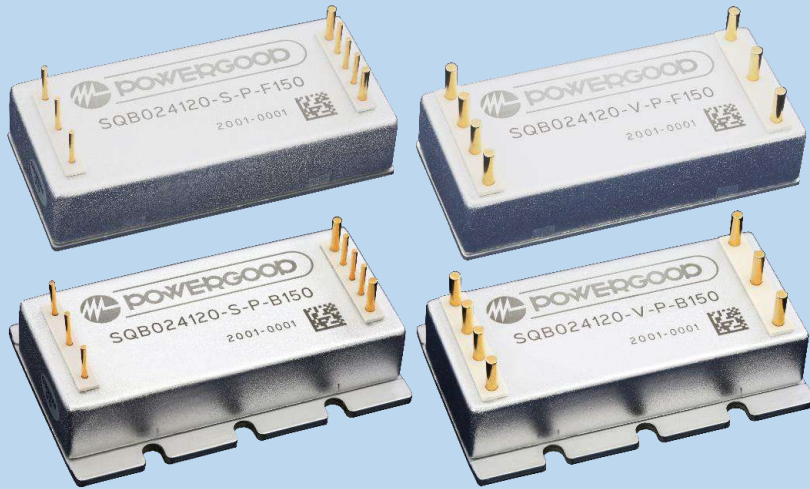
DC/DC Converter

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency	Max. capacitive Load
	Voltage (V)		Current (A)	Voltage	Current	Power		
	Range	Nominal	Full load	(V)	(A)	(W)		
MQB054120-D-□-B50	14 - 154	54	1.04	±12	2.1	50	89	1000
MQB054150-D-□-B50	14 - 154	54	1.04	±15	1.7	50	89	500
MQB054240-D-□-B50	14 - 154	54	1.04	±24	1.0	50	89	200
MQB054050-S-□-B75	14 - 154	54	1.56	5	15	75	89	18000
MQB054120-S-□-B75	14 - 154	54	1.58	12	6.25	75	88	5000
MQB054150-S-□-B75	14 - 154	54	1.58	15	5	75	88	3200
MQB054240-S-□-B75	14 - 154	54	1.58	24	3.125	75	88	1200
MQB054120-D-□-B75	14 - 154	54	1.58	±12	3.13	75	88	1000
MQB054150-D-□-B75	14 - 154	54	1.58	±15	2.5	75	88	500
MQB054240-D-□-B75	14 - 154	54	1.58	±24	1.56	75	88	200

DC/DC Converter- Brick-B Series

- SQB



Feature

- Built-in EMI filter
- DOSA pinout / Vicor pinout (Optional)
- 6-sided shielded metal case with excellent heat radiation and EMI
- 2:1 / 4:1 Wide input range
- No aluminum and tantalum electrolytic capacitor inside for High Reliability
- Input range can cover the major brands
- Output voltage trim range of -10%, +10%
- Wide range operating temperature $-45^{\circ}\text{C} \sim +105^{\circ}\text{C}$
(Optional: $-55^{\circ}\text{C} \sim +125^{\circ}\text{C}$)

UVLO

OCP

OVP

OTP

DC/DC Converter

Model Number Structure

SQB 110 120 - S - P - B 150

Series Name	Input Voltage (VDC)	Output Voltage (VDC)	Pin out	Remote Control Option	Shape	Watt
Supreme series Quarter Brick	018 : 9-36	050 : 5	S : Dosa V : Vicor	P : Positive logic N : Negative logic	B : Base Plate F : No Flange	150
	024 : 18-36	120 : 12				
	036 : 18-75	240 : 24				
	110 : 40-180	280 : 28				
	300 : 180-425	480 : 48				

Model Selection Guide

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
SQB018050-□-□-□150	9-36	18	9.80	5	30	150	85
SQB018120-□-□-□150	9-36	18	9.58	12	12.5	150	87
SQB018240-□-□-□150	9-36	18	9.69	24	6.25	150	86
SQB018280-□-□-□150	9-36	18	9.80	28	5.36	150	85
SQB018480-□-□-□150	9-36	18	9.92	48	3.16	150	84
SQB024050-□-□-□150	18-36	24	7.02	5	30	150	89
SQB024120-□-□-□150	18-36	24	6.94	12	12.5	150	90
SQB024240-□-□-□150	18-36	24	6.87	24	6.25	150	91
SQB024280-□-□-□150	18-36	24	6.79	28	5.36	150	92
SQB024480-□-□-□150	18-36	24	6.87	48	3.16	150	91
SQB036050-□-□-□150	18-75	36	4.68	5	30	150	89
SQB036120-□-□-□150	18-75	36	4.68	12	12.5	150	89
SQB036240-□-□-□150	18-75	36	4.68	24	6.25	150	89
SQB036280-□-□-□150	18-75	36	4.68	28	5.36	150	89
SQB036480-□-□-□150	18-75	36	4.68	48	3.16	150	89

DC/DC Converter

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
SQB110050-□-□-□150	40-180	110	1.53	5	30	150	89
SQB110120-□-□-□150	40-180	110	1.53	12	12.5	150	89
SQB110240-□-□-□150	40-180	110	1.53	24	6.25	150	89
SQB110280-□-□-□150	40-180	110	1.53	28	5.36	150	89
SQB110480-□-□-□150	40-180	110	1.53	48	3.16	150	89
SQB300050-□-□-□150	180-425	300	0.59	5	30	150	85
SQB300120-□-□-□150	180-425	300	0.57	12	12.5	150	87
SQB300240-□-□-□150	180-425	300	0.57	24	6.25	150	88
SQB300280-□-□-□150	180-425	300	0.57	28	5.36	150	88
SQB300480-□-□-□150	180-425	300	0.57	48	3.16	150	88

DC/DC Converter- Brick-B Series

- SHB



Feature

- Built-in EMI filter
- DOSA pinout / Vicor pinout (Optional)
- 6-sided shielded metal case with excellent heat radiation and EMI
- 2:1 / 4:1 Wide input range
- No aluminum and tantalum electrolytic capacitor inside for High Reliability
- Input range can cover the major brands
- Output voltage trim range of -10%, +10%
- Wide range operating temperature $-45^{\circ}\text{C} \sim +105^{\circ}\text{C}$ (Optional: $-55^{\circ}\text{C} \sim +125^{\circ}\text{C}$)

UVLO

OCP

OVP

OTP

DC/DC Converter

Model Number Structure

SHB 110 120 - S - P - B 300

Series Name	Input Voltage (VDC)	Output Voltage (VDC)	Pin out	Remote Control Option	Shape	Watt
Supreme series Half Brick	018 : 9-36	050 : 5	S : Dosa V : Vicor	P : Positive logic N : Negative logic	B : Base Plate	200 300
	024 : 18-36	120 : 12				
	036 : 18-75	240 : 24				
	110 : 40-180	280 : 28				
	300 : 180-425	480 : 48				

Model Selection Guide

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
SHB018050-□-□-B200	9-36	18	12.63	5	40	200	88
SHB018120-□-□-B200	9-36	18	12.35	12	16.67	200	90
SHB018240-□-□-B200	9-36	18	12.35	24	8.33	200	90
SHB018280-□-□-B200	9-36	18	12.35	28	7.14	200	90
SHB018480-□-□-B200	9-36	18	12.35	48	4.17	200	90
SHB018120-□-□-B300	9-36	18	12.48	12	25	300	89
SHB018240-□-□-B300	9-36	18	12.48	24	12.5	300	89
SHB018280-□-□-B300	9-36	18	12.48	28	10.71	300	88
SHB018480-□-□-B300	9-36	18	12.48	48	6.25	300	88
SHB024050-□-□-B200	18-36	24	9.26	5	40	200	90
SHB024120-□-□-B200	18-36	24	9.26	12	16.67	200	90
SHB024240-□-□-B200	18-36	24	9.26	24	8.33	200	90
SHB024280-□-□-B200	18-36	24	9.26	28	7.14	200	90
SHB024480-□-□-B200	18-36	24	9.26	48	4.17	200	90
SHB024120-□-□-B300	18-36	24	13.89	12	25	300	90
SHB024240-□-□-B300	18-36	24	13.89	24	12.5	300	90
SHB024280-□-□-B300	18-36	24	13.89	28	10.71	300	90
SHB024480-□-□-B300	18-36	24	13.89	48	6.25	300	90

DC/DC Converter

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
SHB036050-□-□-B200	18-75	36	6.31	5	40	200	88
SHB036120-□-□-B200	18-75	36	6.17	12	16.67	200	90
SHB036240-□-□-B200	18-75	36	6.17	24	8.33	200	90
SHB036280-□-□-B200	18-75	36	6.17	28	7.14	200	90
SHB036480-□-□-B200	18-75	36	6.17	48	4.17	200	90
SHB036120-□-□-B300	18-75	36	9.47	12	25	300	88
SHB036240-□-□-B300	18-75	36	9.47	24	12.5	300	88
SHB036280-□-□-B300	18-75	36	9.47	28	10.71	300	88
SHB036480-□-□-B300	18-75	36	9.47	48	6.25	300	88
SHB110050-□-□-B200	40-180	110	2.07	5	40	200	88
SHB110120-□-□-B200	40-180	110	2.02	12	16.67	200	90
SHB110240-□-□-B200	40-180	110	2.02	24	8.33	200	90
SHB110280-□-□-B200	40-180	110	2.02	28	7.14	200	90
SHB110480-□-□-B200	40-180	110	2.02	48	4.17	200	90
SHB110120-□-□-B300	40-180	110	3.10	12	25	300	88
SHB110240-□-□-B300	40-180	110	3.10	24	12.5	300	88
SHB110280-□-□-B300	40-180	110	3.10	28	10.71	300	88
SHB110480-□-□-B300	40-180	110	3.10	48	6.25	300	88
SHB300050-□-□-B200	180-425	300	0.75	5	40	200	89
SHB300120-□-□-B200	180-425	300	0.74	12	16.67	200	90
SHB300240-□-□-B200	180-425	300	0.74	24	8.33	200	90
SHB300280-□-□-B200	180-425	300	0.74	28	7.14	200	90
SHB300480-□-□-B200	180-425	300	0.74	48	4.17	200	90
SHB300120-□-□-B300	180-425	300	1.14	12	25	300	88
SHB300240-□-□-B300	180-425	300	1.14	24	12.5	300	88
SHB300280-□-□-B300	180-425	300	1.12	28	10.71	300	89
SHB300480-□-□-B300	180-425	300	1.12	48	6.25	300	89

DC/DC Converter- Brick-B Series

- SFB



Feature

- Built-in EMI filter
- Vicor pinout
- 6-sided shielded metal case with excellent heat radiation and EMI
- 2:1 / 4:1 Wide input range
- No aluminum and tantalum electrolytic capacitor inside for High Reliability
- Input range can cover the major brands
- Output voltage trim range of -10%, +10%
- Optional parallel output
- Wide range operating temperature $-45^{\circ}\text{C} \sim +105^{\circ}\text{C}$ (Optional: $-55^{\circ}\text{C} \sim +125^{\circ}\text{C}$)

UVLO

OCP

OVP

OTP

Model Number Structure

SFB 110 120 - V - P - B 600

Series Name	Input Voltage (VDC)	Output Voltage (VDC)	Pin out	Remote Control Option	Shape	Watt
Supreme series Full Brick	018 : 9-36	120 : 12	V : Vicor	P : Positive logic N : Negative logic	B : Base Plate	400 600
	024 : 18-36	240 : 24				
	036 : 18-75	280 : 28				
	110 : 40-180	480 : 48				
	300 : 180-425					

Model Selection Guide

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
SFB018120-V-□-B400	9-36	18	25.25	12	33.33	400	88
SFB018240-V-□-B400	9-36	18	25.25	24	16.67	400	88
SFB018280-V-□-B400	9-36	18	25.25	28	14.28	400	88
SFB018480-V-□-B400	9-36	18	25.25	48	8.33	400	88
SFB024120-V-□-B600	18-36	24	28.09	12	50	600	89
SFB024240-V-□-B600	18-36	24	28.09	24	25	600	89
SFB024280-V-□-B600	18-36	24	28.09	28	21.42	600	89
SFB024480-V-□-B600	18-36	24	28.09	48	12.5	600	89
SFB036120-V-□-B600	18-75	36	18.94	12	50	600	88
SFB036240-V-□-B600	18-75	36	18.94	24	25	600	88
SFB036280-V-□-B600	18-75	36	18.94	28	21.42	600	88
SFB036480-V-□-B600	18-75	36	18.94	48	12.5	600	88
SFB110120-V-□-B600	40-180	110	6.20	12	50	600	88
SFB110240-V-□-B600	40-180	110	6.20	24	25	600	88
SFB110280-V-□-B600	40-180	110	6.20	28	21.42	600	88
SFB110480-V-□-B600	40-180	110	6.20	48	12.5	600	88
SFB300120-V-□-B600	180-425	300	2.25	12	50	600	89
SFB300240-V-□-B600	180-425	300	2.25	24	25	600	89
SFB300280-V-□-B600	180-425	300	2.25	28	21.42	600	89
SFB300480-V-□-B600	180-425	300	2.25	48	12.5	600	89

DC/DC Converter- Brick-S Series

- SQBS



Feature

- Built-in EMI filter
- DOSA pin out / Vicor pinout (Optional)
- 6-sided shielded metal case with excellent heat radiation and EMI
- Fixed switching frequency provides predictable EMI
- Wide Operating Temperature $-40^{\circ}\text{C} \sim +100^{\circ}\text{C}$
- 2:1 / 4:1 Wide input range
- Output voltage trim range of -10%, +10%
- Fully SMT manufacturing
- Cost-effective

UVLO

OCP

OVP

OTP

DC/DC Converter

Model Number Structure

SQBS 110 120 - S - P - B 100

Series Name	Input Voltage (VDC)	Output Voltage (VDC)	Pin out	Remote Control Option	Shape	Watt
Supreme series	024W : 9-36 024 : 18-36	050 : 5 120 : 12	S : Dosa V : Vicor	P : Positive logic N : Negative logic	B : Base Plate F : No Flange	50 100
Quarter	048W : 18-75	240 : 24				
Brick	110 : 40-180	280 : 28				
Second	300 : 180-425	480 : 48				

Model Selection Guide

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
SQBS024W050-□-□-□50	9-36	24	2.37	5	10	50	88
SQBS024W120-□-□-□50	9-36	24	2.34	12	4.17	50	89
SQBS024W240-□-□-□50	9-36	24	2.34	24	2.08	50	89
SQBS024W280-□-□-□50	9-36	24	2.34	28	1.79	50	89
SQBS024W480-□-□-□50	9-36	24	2.34	48	1.04	50	89
SQBS024W050-□-□-□100	9-36	24	4.73	5	20	100	88
SQBS024W120-□-□-□100	9-36	24	4.68	12	8.4	100	89
SQBS024W240-□-□-□100	9-36	24	4.68	24	4.17	100	89
SQBS024W280-□-□-□100	9-36	24	4.68	28	3.57	100	89
SQBS024W480-□-□-□100	9-36	24	4.68	48	2.08	100	89
SQBS048W050-□-□-□50	18-75	48	1.18	5	10	50	88
SQBS048W120-□-□-□50	18-75	48	1.17	12	4.17	50	89
SQBS048W240-□-□-□50	18-75	48	1.17	24	2.08	50	89
SQBS048W280-□-□-□50	18-75	48	1.17	28	1.79	50	89
SQBS048W480-□-□-□50	18-75	48	1.17	48	1.04	50	89

DC/DC Converter

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
SQBS048W050-□-□-□100	18-75	48	2.37	5	20	100	88
SQBS048W120-□-□-□100	18-75	48	2.34	12	8.4	100	89
SQBS048W240-□-□-□100	18-75	48	2.34	24	4.17	100	89
SQBS048W280-□-□-□100	18-75	48	2.34	28	3.57	100	89
SQBS048W480-□-□-□100	18-75	48	2.34	48	2.08	100	89
SQBS110050-□-□-□50	40-180	110	0.52	5	10	50	88
SQBS110120-□-□-□50	40-180	110	0.51	12	4.17	50	89
SQBS110240-□-□-□50	40-180	110	0.51	24	2.08	50	89
SQBS110280-□-□-□50	40-180	110	0.51	28	1.79	50	89
SQBS110480-□-□-□50	40-180	110	0.51	48	1.04	50	89
SQBS110050-□-□-□100	40-180	110	1.02	5	20	100	88
SQBS110120-□-□-□100	40-180	110	1.02	12	8.4	100	89
SQBS110240-□-□-□100	40-180	110	1.02	24	4.17	100	89
SQBS110280-□-□-□100	40-180	110	1.02	28	3.57	100	89
SQBS110480-□-□-□100	40-180	110	1.02	48	2.08	100	89
SQBS300050-□-□-□50	180-425	300	0.19	5	10	50	88
SQBS300120-□-□-□50	180-425	300	0.19	12	4.17	50	89
SQBS300240-□-□-□50	180-425	300	0.19	24	2.08	50	89
SQBS300280-□-□-□50	180-425	300	0.19	28	1.79	50	89
SQBS300480-□-□-□50	180-425	300	0.19	48	1.04	50	89
SQBS300050-□-□-□100	180-425	300	0.37	5	20	100	88
SQBS300120-□-□-□100	180-425	300	0.37	12	8.4	100	89
SQBS300240-□-□-□100	180-425	300	0.37	24	4.17	100	89
SQBS300280-□-□-□100	180-425	300	0.37	28	3.57	100	89
SQBS300480-□-□-□100	180-425	300	0.37	48	2.08	100	89

DC/DC Converter- Brick-S Series

- SQBS



Feature

- Built-in EMI filter
- DOSA pin out / Vicor pinout (Optional)
- 6-sided shielded metal case with excellent heat radiation and EMI
- Fixed switching frequency provides predictable EMI
- Wide Operating Temperature $-40^{\circ}\text{C} \sim +100^{\circ}\text{C}$
- 2:1 / 4:1 Wide input range
- Output voltage trim range of -10%, +10%
- Fully SMT manufacturing
- Cost-effective

UVLO

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DC/DC Converter

Model Number Structure

SHBS 110 120 - V - P - B 100

Series Name	Input Voltage (VDC)	Output Voltage (VDC)	Pin out	Remote Control Option	Shape	Watt
Supreme series	024W : 9-36 024 : 18-36	050 : 5 120 : 12	V : Vicor	P : Positive logic N : Negative logic	B : Base Plate	50 100
Half	048W : 18-75	240 : 24				
Brick	110 : 40-180	280 : 28				
Second	300 : 180-425	480 : 48				

Model Selection Guide

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
SHBS024W050-V-□-B50	9-36	24	2.37	5	10	50	88
SHBS024W120-V-□-B50	9-36	24	2.34	12	4.17	50	89
SHBS024W240-V-□-B50	9-36	24	2.34	24	2.08	50	89
SHBS024W280-V-□-B50	9-36	24	2.34	28	1.79	50	89
SHBS024W480-V-□-B50	9-36	24	2.34	48	1.04	50	89
SHBS024W050-V-□-B100	9-36	24	4.73	5	20	100	88
SHBS024W120-V-□-B100	9-36	24	4.68	12	8.33	100	89
SHBS024W240-V-□-B100	9-36	24	4.68	24	4.17	100	89
SHBS024W280-V-□-B100	9-36	24	4.68	28	3.57	100	89
SHBS024W480-V-□-B100	9-36	24	4.68	48	2.08	100	89
SHBS024050-V-□-B50	18-36	24	2.37	5	10	50	88
SHBS024120-V-□-B50	18-36	24	2.34	12	4.17	50	89
SHBS024240-V-□-B50	18-36	24	2.34	24	2.08	50	89
SHBS024280-V-□-B50	18-36	24	2.34	28	1.79	50	89
SHBS024480-V-□-B50	18-36	24	2.34	48	1.04	50	89
SHBS024050-V-□-B100	18-36	24	4.73	5	20	100	88
SHBS024120-V-□-B100	18-36	24	4.68	12	8.33	100	89
SHBS024240-V-□-B100	18-36	24	4.68	24	4.17	100	89
SHBS024280-V-□-B100	18-36	24	4.68	28	3.57	100	89
SHBS024480-V-□-B100	18-36	24	4.68	48	2.08	100	89

DC/DC Converter

Typical @ Ta=+25 °C under nominal line voltage conditions unless noted

Model	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
SHBS048W050-V-□-B50	18-75	48	1.18	5	10	50	88
SHBS048W120-V-□-B50	18-75	48	1.17	12	4.17	50	89
SHBS048W240-V-□-B50	18-75	48	1.17	24	2.08	50	89
SHBS048W280-V-□-B50	18-75	48	1.17	28	1.79	50	89
SHBS048W480-V-□-B50	18-75	48	1.17	48	1.04	50	89
SHBS048W050-V-□-B100	18-75	48	2.37	5	20	100	88
SHBS048W120-V-□-B100	18-75	48	2.34	12	8.33	100	89
SHBS048W240-V-□-B100	18-75	48	2.34	24	4.17	100	89
SHBS048W280-V-□-B100	18-75	48	2.34	28	3.57	100	89
SHBS048W480-V-□-B100	18-75	48	2.34	48	2.08	100	89
SHBS110050-V-□-B50	40-180	110	0.52	5	10	50	88
SHBS110120-V-□-B50	40-180	110	0.51	12	4.17	50	89
SHBS110240-V-□-B50	40-180	110	0.51	24	2.08	50	89
SHBS110280-V-□-B50	40-180	110	0.51	28	1.79	50	89
SHBS110480-V-□-B50	40-180	110	0.51	48	1.04	50	89
SHBS110050-V-□-B100	40-180	110	1.03	5	20	100	88
SHBS110120-V-□-B100	40-180	110	1.02	12	8.33	100	89
SHBS110240-V-□-B100	40-180	110	1.02	24	4.17	100	89
SHBS110280-V-□-B100	40-180	110	1.02	28	3.57	100	89
SHBS110480-V-□-B100	40-180	110	1.02	48	2.08	100	89
SHBS300050-V-□-B50	180-425	300	0.19	5	10	50	88
SHBS300120-V-□-B50	180-425	300	0.19	12	4.17	50	89
SHBS300240-V-□-B50	180-425	300	0.19	24	2.08	50	89
SHBS300280-V-□-B50	180-425	300	0.19	28	1.79	50	89
SHBS300480-V-□-B50	180-425	300	0.19	48	1.04	50	89
SHBS300050-V-□-B100	180-425	300	0.38	5	20	100	88
SHBS300120-V-□-B100	180-425	300	0.37	12	8.33	100	89
SHBS300240-V-□-B100	180-425	300	0.37	24	4.17	100	89
SHBS300280-V-□-B100	180-425	300	0.37	28	3.57	100	89
SHBS300480-V-□-B100	180-425	300	0.37	48	2.08	100	89



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