

An Innovative New Series of Surface Mount DC/DC Converters

Overview

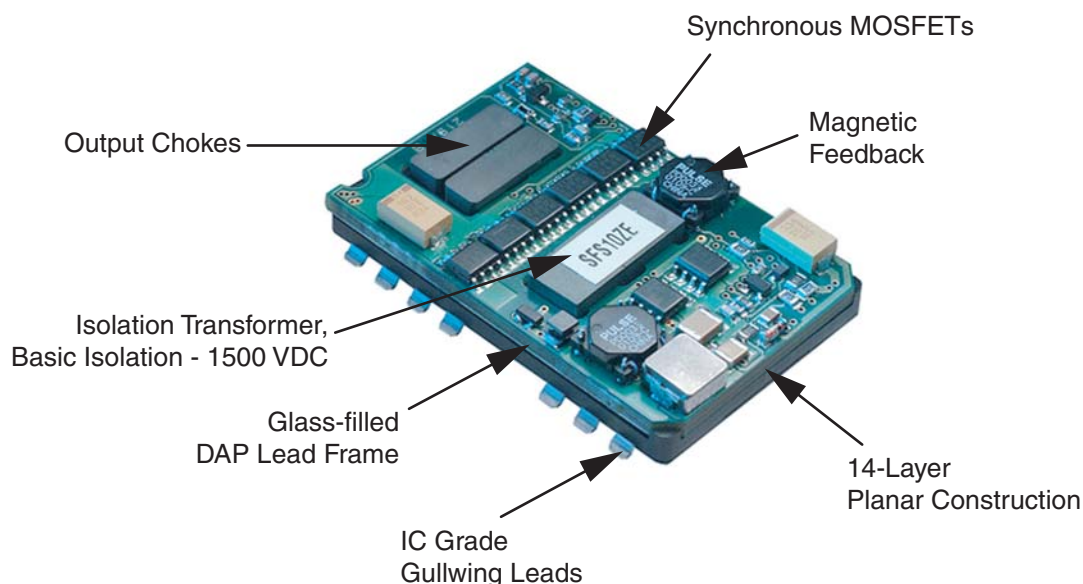
The One-SMarT™ family of surface mountable DC/DC converters provide isolated low voltage outputs from 1.5 to 24VDC. These Distributed Power Architecture (DPA) compatible products are available in a comprehensive range of ultra-low profile form factors, most under 8.5mm. High efficiencies and current densities are achieved through sophisticated design techniques such as integrated single-substrate planar transformers. These techniques also increase reliability through uniform heat dissipation. Additional benefits of this advanced thermal management include 60°C operation at full-rated power with no airflow for selected models. Automated manufacturing processes facilitate high quality, including exceptional lead co-planarity. JEDEC trays are utilized for high-volume SMT lines with vacuum pick-up capabilities.

Features

- ▶ Comprehensive selection of power ranges and packages.
- ▶ Compatible with high volume SMT processes.
- ▶ Excellent low-load regulation, stability, and EMC performance.
- ▶ Ultra-low profiles, most under 8.5mm.
- ▶ High efficiencies and current densities.
- ▶ Wide input ranges on selected models.
- ▶ Exceptional lead co-planarity.

Please consult the Power-One web-based product selector for other surface-mount product families.

Advanced Designs Provide Ultra-High Current Densities



This innovative product family uses open-board construction, with a single substrate planar transformer as the motherboard onto which all other components are mounted in a completely automated, 'hands-off' manufacturing process. This process is streamlined with patented in-line testing and robotized handling to assure very high quality and precise control of lead-out co-planarity. The open-board format eliminates the need for expensive transfer molding, enabling rapid introduction of manufacturing to any of Power-One's high volume SMT plants globally. The products are supplied in JEDEC trays and are suitable for use in high volume SMT lines with vacuum pick-up capabilities.

Ideal Components for Distributed Power Architectures

The combination of advanced topologies and comprehensive product breadth make One-SMaRT™ products ideal components for Distributed Power Architectures (DPAs). Power-One also supports DPA applications with through-hole DC/DC converters and a broad line of AC/DC power supplies including DPA front ends.

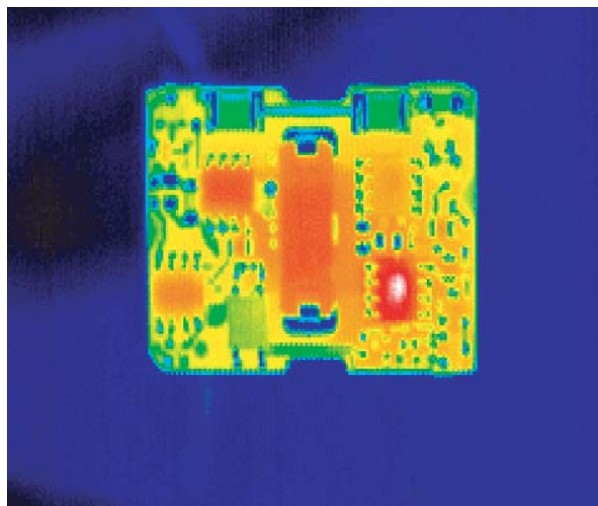
Typical Thermal Profile of a One-SMaRT™ Converter

Industry-leading power densities are the result of high efficiencies and sophisticated thermal management techniques. Typical One-SMaRT™ construction includes integration of planar transformer windings into a multiple-layer PWB to provide additional thermal mass for uniform heat dissipation. This advanced design also facilitates low component temperature rises above ambient, for increased reliability.

Temperature Rise

White:	51°C
Red:	49°C
Orange:	47°C
Yellow:	41°C
Green:	35°C
Sky Blue:	32°C
Navy Blue:	29°C
Black:	21°C

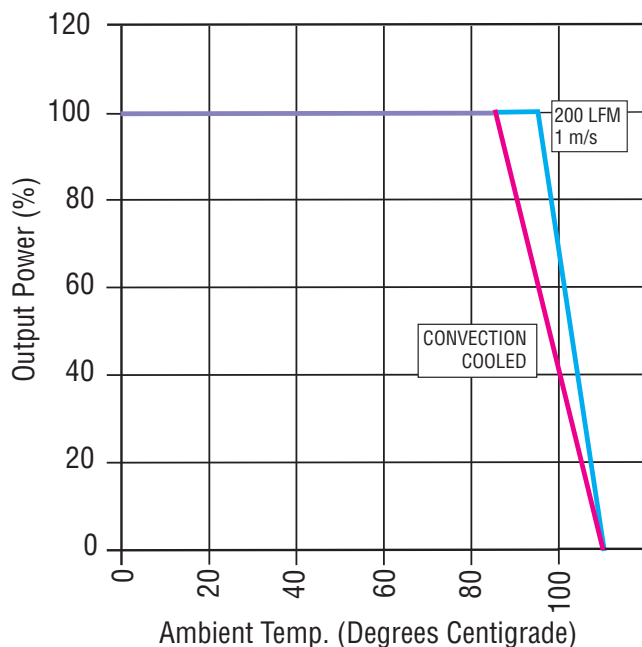
Ambient Trise 30°C



NDS Series Temperature Profile with 200 LFM Cooling
Vin = 48V, Iout = 3A

Selected Models Fully Rated to 85°C with No Airflow

Output Power Vs. Ambient Temp. and Airflow



One-SMaRT™ products are designed to provide high currents in elevated ambient temperature environments with minimal cooling. This graph depicts the thermal derating characteristics of 9-36V and 18-75V input NV Series products. In addition other NV models feature a 4:1 input voltage range and provide full power operation at 85°C ambient temperature using only convection cooling. Please consult data sheets for thermal characteristic curves for other One-SMaRT products.

Isolated Single & Dual Output Products Under 50 Watts

NV

- 4 to 6 Watts
- Single/Dual Outputs
- 1500 VDC Isolation
- Operation from -40 to 85°C
- Wide Input Range



1.30 x 0.81 x 0.33 inch
33.0 x 20.6 x 8.5 mm

NDS

- 4 to 10 Watts
- Single Outputs, 1.5 to 5 VDC
- 1500 VDC Isolation
- Remote On/Off
- Output Voltage Trim



1.30 x 0.91 x 0.33 inch
33.0 x 23.0 x 8.5 mm

RNS/RND

- 5 to 10 Watts
- Single/Dual Outputs
- 1500 VDC Isolation
- Operation to 85°C
- Wide Input Range



1.87 x 1.00 x 0.37 inch
47.4 x 25.4 x 9.5 mm

RDS

- 10 to 20 Watts
- 1500 VDC Isolation
- Operation to 85°C
- Very High Performance
- Inhibit Option Available



1.87 x 1.00 x 0.33 inch
47.4 x 25.4 x 8.4 mm

RFS

- 9 to 20 Watts
- Single Outputs, 1.5 to 5 VDC
- 1500 VDC Isolation
- Remote On/Off
- Output Voltage Trim



1.87 x 1.00 x 0.37 inch
47.4 x 25.4 x 9.5 mm

SFS

- 20 to 43 Watts
- Single Outputs, 1.5 to 5 VDC
- 1500 VDC Isolation
- Remote On/Off
- Output Voltage Trim



2.00 x 1.28 x 0.32 inch
50.8 x 32.5 x 8.2 mm

Full product data sheets are available on:

www.power-one.com

Single Output Models

Output Voltage	Output Current (Amps)	Input Voltage	Power (Watts)	Model
1.5	3	36 to 75	4.5	NDS03ZA-M6
1.5	6	36 to 75	9	RFS06ZA-M6
1.5	13	36 to 72	19.5	SFS13ZA-M6 ★
1.8	3	36 to 75	5.4	NDS03ZB-M6
1.8	6	36 to 75	10.8	RDS06ZB-M6
1.8	6	36 to 75	10.8	RFS06ZB-M6 ★
1.8	13	36 to 72	23.4	SFS13ZB-M6 ★
2.5	3	36 to 75	7.5	NDS03ZD-M6
2.5	6	36 to 75	15	RFS06ZD-M6 ★
2.5	13	36 to 72	32.5	SFS13ZD-M6 ★
3.3	0.9	9 to 36	3	NVS0.9CE-M6
3.3	0.9	18 to 75	3	NVS0.9EE-M6
3.3	1.5	18 to 72	5	RNS01EE-M6
3.3	3	36 to 75	10	NDS03ZE-M6 ★
3.3	3	38 to 75	10	RNS03ZE-M6 ★
3.3	5	36 to 75	16.5	RDS05ZE-M6
3.3	6	36 to 75	20	RFS06ZE-M6 ★
3.3	13	36 to 72	43	SFS13ZE-M6 ★
5	0.7	9 to 36	3.5	NVS0.7CG-M6
5	0.7	18 to 75	3.5	NVS0.7EG-M6
5	1	18 to 36	5	NVS01YG-M6
5	1	36 to 75	5	NVS01ZG-M6
5	2	36 to 75	10	NDS02ZG-M6 ★
5	4	36 to 75	20	RDS04ZG-M6
5	4	36 to 75	20	RFS04ZG-M6 ★
5	8	36 to 72	40	SFS08ZG-M6 ★
5.05	1.2	18 to 72	6	RNS01EG-M6
5.05	2	38 to 75	10	RNS02ZG-M6 ★
7	0.86	18 to 72	6	RNS0.9ET-M6
12	0.34	9 to 36	4	NVS0.3CH-M6
12	0.34	18 to 75	4	NVS0.3EH-M6
12	0.5	18 to 36	6	NVS0.5YH-M6
12	0.5	36 to 75	6	NVS0.5ZH-M6
12	0.6	38 to 75	7.2	RNS0.6ZH-M6 ★
15	0.28	9 to 36	4.2	NVS0.3CJ-M6
15	0.28	18 to 75	4.2	NVS0.3EJ-M6
15	0.4	18 to 36	6	NVS0.4YJ-M6
15	0.4	36 to 75	6	NVS0.4ZJ-M6

Unsigned output voltages are isolated and can be used as either + or - polarities.

★ QUICK EVALUATION DELIVERY (QED) PRODUCTS

These latest technology products are readily available at Power-One, or your local distributor, to quickly get power to your prototype system. In addition to fast delivery, Power-One's QED solutions provide industry-leading current and power densities.

Dual Output Models

Output Voltage	Output Current (Amps)	Input Voltage	Power (Watts)	Model
Dual Output Models, 5-5.2V and 3.3Vout				
5.2, 3.3	1, 1	38 to 75	8.3	RND02ZGE-M6 ★
Dual Output Models, 5V Both Outputs				
+5, -5	0.35, 0.35	9 to 36	3.5	NVD0.7CGG-M6
+5, -5	0.35, 0.35	18 to 75	3.5	NVD0.7EGG-M6
+5, -5	0.5, 0.5	18 to 36	5	NVD01YGG-M6
+5, -5	0.5, 0.5	36 to 75	5	NVD01ZGG-M6
+5, -5	1, 1	38 to 75	10	RND02ZGG-M6
Dual Output Models, 12V Both Outputs				
+12, -12	0.17, 0.17	9 to 36	4	NVD0.3CHH-M6
+12, -12	0.17, 0.17	18 to 75	4	NVD0.3EHH-M6
+12, -12	0.25, 0.25	18 to 36	6	NVD0.5YHH-M6
+12, -12	0.25, 0.25	36 to 75	6	NVD0.5ZHH-M6
+12, -12	0.42, 0.42	36 to 75	10	RND0.8ZHH-M6 ★
Dual Output Models, 15V Both Outputs				
+15, -15	0.14, 0.14	9 to 36	4	NVD0.3CJJ-M6
+15, -15	0.14, 0.14	18 to 75	4	NVD0.3EJJ-M6
+15, -15	0.2, 0.2	18 to 36	6	NVD0.4YJJ-M6
+15, -15	0.2, 0.2	36 to 75	6	NVD0.4ZJJ-M6
Dual Output Models, 24V Both Outputs				
+24, -24	0.08, 0.08	9 to 36	4	NVD0.2CKK-M6
+24, -24	0.08, 0.08	18 to 75	4	NVD0.2EKK-M6

Unsigned output voltages are isolated and can be used as either + or - polarities.

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NUCLEAR AND MEDICAL APPLICATIONS- Power-One products are not authorized for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems without the express written consent of the respective divisional president of Power-One, Inc.

TECHNICAL REVISIONS- The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.

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