

## Features

- ◆ Operating temperature: -40 to +85°C
- ◆ 1.5/3.0kVdc isolation
- ◆ 100% burn-in
- ◆ No external component required
- ◆ UL94V-0 package
- ◆ RoHS compliance

## Typical Applications

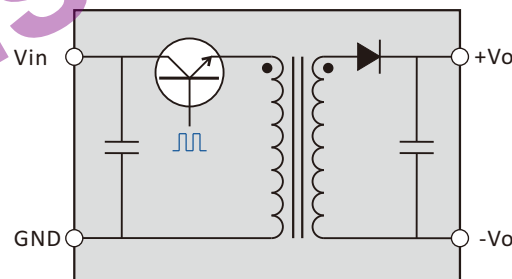
- ◆ Intelligent control, power monitoring equipment, security facilities, radio and television appliances power isolation & transform
- ◆ RS485/232, CAN bus interface, power supply isolation and other digital communication circuit
- ◆ Power ground circulation & interference suppression

## General Description

B/F-2W is unregulated single output series, in use can be simply understood as a common frequency transformer (see functional diagram), the only difference is that it can achieve the DC to DC voltage conversion. The family offers a variety of standard voltage combinations, isolation voltage 1.5/3.0kVdc two grades.



## Functional Diagram



## Selection Guide

**B 05 05 S - 2W**

Product Series	Input Voltage	Output Voltage	Package Style	Rated Power
B: isolated 1.5kVdc single F: isolated 3.0kVdc single	05 = 5Vdc 12 = 12Vdc 24 = 24Vdc 48 = 48Vdc	03 = 3.3Vdc 05 = 5Vdc 09 = 9Vdc 12 = 12Vdc 15 = 15Vdc 24 = 24Vdc	S,MS,M: single in-line D,N: dual in-line	2W = 2Watt

# B-2W & F-2W Series

2w, fixed input, isolated & unregulated single output dc-dc converter



## Input Specifications

Item	Min	Typ	Max	Units
Input Surge Voltage (1 sec max)	5V input	-0.7	7	Vdc
	12V input	-0.7	15	
	24V input	-0.7	28	
	48V input	-0.7	54	
Reverse Polarity Input Current			0.4	A
Internal Power Dissipation			0.45	W
Input Filter	"C" filter			

## Output Specifications

Item	Test Conditions	Min	Typ	Max	Units	
Output Power	Ta=-40-+85°C	0.2		2	W	
Line Regulation	For vin change of ±1%			±1.2	%/%	
Load Regulation	Nominal 10%-100% load		15	20	%	
		3.3V output		12.8		15
		5V output		8.3		15
		9V output		6.8		15
		12V output		6.3		15
		15V output		5		15
24V output						
Output Voltage Accuracy	See Tolerance Envelope Graph					
Temperature Drift	Nominal, 100% load			0.03	%/°C	
Ripple & Noise	DC-20MHz bandwidth		150	300	mVp-p	
Switching Frequency	Nominal, 100% load	80	100	130	KHz	
Short Circuit Protection				1	S	

## Isolation Specifications

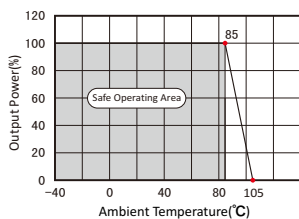
Item	Test Conditions	Min	Typ	Max	Units
Isolation Resistance	Test at 500Vdc	1000			MΩ
Isolation Voltage	Tested for 1S and 1mA max	B		1500	Vdc
		F		3000	

## Common Specification

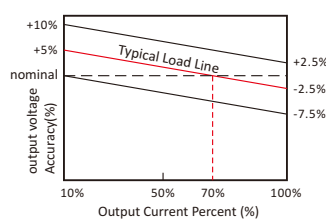
Item	Test Conditions	Min	Typ	Max	Units
Operating Temperature		-45		+85	°C
Maximum Case Temp.				55	
Storage Temperature		-50		+130	
Lead Temperature	1.5mm from case for 10 seconds			+300	
Storage Humidity				95	%
Case Material	Black Plastic (UL94V-0)				

## Typical Characteristic Curve

Temperature Derating Curve



Tolerance Envelope Graph



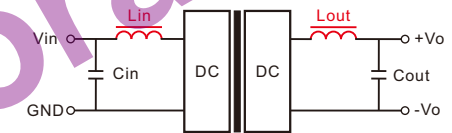
## Application Note

### 1. Requirement On Output Load

To ensure this DC/DC can operate efficiently and reliably, during operation, the minimum output load is not less than 10% of the full load, and that **this product should never be operated under no load!** If the actual output power is very small, please connect a resistor with proper resistance at the output end in parallel to increase the load.

### 2. Output filter

The DC/DC without any external filter components in the case that can be stable and reliable work. If you want to further reduce ripple and improve the EMC, please connect a external filter circuit at the inputs and outputs (see figure). General, recommended values 10-100uF with input capacitor, and recommended values with output capacitor see the following table.



"Lin, Lout" not required, recommended values 4.7-22uH

Table 1

Cin	Cout	
10~100uF	3.3V	10uF
	5V	10uF
	9V	4.7uF
	12V	2.2uF
	15V	1uF
	24V	1uF

It's not recommended to connect any external capacitor in the application field with less than 0.5 watt output.

If the maximum external output capacitor still does not meet your requirements of ripple may be required connect the filter inductor (see figure), Lout values recommended 4.7-100uH. It should be noted "LC" filtering network natural frequency should be staggered with the DC/DC operating frequency to avoid mutual interference.

3. This product cannot be used in parallel, can not hot-swappable.

# B\_S-2W & F\_S-2W Series

2w, fixed input, isolated & unregulated single output dc-dc converter



## Product Program

Model	Input		Output				Eff (%)	Certificate	Mechanical Dimensions First Angle Projection
	Voltage(Vdc)		Voltage(Vdc)	Current(mA)		Ripple (mVp-p)			
	Nominal	Range	Nominal	Max	Min				
B0503S-2W	5	4.5~5.5	3.3	600	60		75	<p>Weight: 2.2g</p>	
B0505S-2W			5	400	40		81		
B0509S-2W			9	222	23		84		
B0512S-2W			12	167	17		84		
B0515S-2W			15	133	14		84		
B0524S-2W			24	83	9		84		
B1203S-2W	12	10.8~13.2	3.3	600	60		75		
B1205S-2W			5	400	40		81		
B1209S-2W			9	222	23		84		
B1212S-2W			12	167	17		84		
B1215S-2W			15	133	14		84		
B1224S-2W			24	83	9		84		
B2403S-2W	24	21.6~26.4	3.3	600	60		75		<p>Weight: 2.2g</p>
B2405S-2W			5	400	40		81		
B2409S-2W			9	222	23		84		
B2412S-2W			12	167	17		84		
B2415S-2W			15	133	14		84		
B2424S-2W			24	83	9		84		
F0503S-2W	5	4.5~5.5	3.3	600	60		75	<p>Weight: 2.2g</p>	
F0505S-2W			5	400	40		81		
F0509S-2W			9	222	23		84		
F0512S-2W			12	167	17		84		
F0515S-2W			15	133	14		84		
F0524S-2W			24	83	9		84		
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F1209S-2W			9	222	23		84		
F1212S-2W			12	167	17		84		
F1215S-2W			15	133	14		84		
F1224S-2W			24	83	9		84		
F2403S-2W	24	21.6~26.4	3.3	600	60		75		<p>Weight: 2.2g</p>
F2405S-2W			5	400	40		81		
F2409S-2W			9	222	23		84		
F2412S-2W			12	167	17		84		
F2415S-2W			15	133	14		84		
F2424S-2W			24	83	9		84		

Isolation: 1500Vdc  
 Note: all size units mm, diameter of all terminal 0.5mm, distance between all adjacent terminal 2.54mm

Pin	1	2	4	6
Function	Vin	GND	-Vo	+Vo

Isolation: 3000Vdc  
 Note: all size units mm, diameter of all terminal 0.5mm, distance between all adjacent terminal 2.54mm

Pin	1	2	5	7
Function	Vin	GND	-Vo	+Vo

# B\_M-2W & F\_M-2W Series

2w, fixed input, isolated & unregulated single output dc-dc converter



## Product Program

Model	Input		Output				Eff (%)	Certificate	Mechanical Dimensions First Angle Projection
	Voltage(Vdc)		Voltage(Vdc)	Current(mA)		Ripple (mVp-p)			
	Nominal	Range	Nominal	Max	Min				
B0503M-2W	5	4.5~5.5	3.3	600	60		75	<p>Weight: 1.5g</p>	
B0505M-2W			5	400	40		81		
B0509M-2W			9	222	23		84		
B0512M-2W			12	167	17		84		
B0515M-2W			15	133	14		84		
B0524M-2W			24	83	9		84		
B1203M-2W	12	10.8~13.2	3.3	600	60		75		
B1205M-2W			5	400	40		81		
B1209M-2W			9	222	23		84		
B1212M-2W			12	167	17		84		
B1215M-2W			15	133	14		84		
B1224M-2W			24	83	9		84		
B2403M-2W	24	21.6~26.4	3.3	600	60		75		
B2405M-2W			5	400	40		81		
B2409M-2W			9	222	23		84		
B2412M-2W			12	167	17		84		
B2415M-2W			15	133	14		84		
B2424M-2W			24	83	9		84		

Isolation: 1500Vdc

Note: all size units mm, diameter of all terminal 0.5mm, distance between all adjacent terminal 2.54mm

Pin	1	2	3	4
Function	GND	Vin	-Vo	+Vo

F0503M-2W	5	4.5~5.5	3.3	600	60		75	<p>Weight: 1.5g</p>
F0505M-2W			5	400	40		81	
F0509M-2W			9	222	23		84	
F0512M-2W			12	167	17		84	
F0515M-2W			15	133	14		84	
F0524M-2W			24	83	9		84	
F1203M-2W	12	10.8~13.2	3.3	600	60		75	
F1205M-2W			5	400	40		81	
F1209M-2W			9	222	23		84	
F1212M-2W			12	167	17		84	
F1215M-2W			15	133	14		84	
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F2403M-2W	24	21.6~26.4	3.3	600	60		75	
F2405M-2W			5	400	40		81	
F2409M-2W			9	222	23		84	
F2412M-2W			12	167	17		84	
F2415M-2W			15	133	14		84	
F2424M-2W			24	83	9		84	

Isolation: 3000Vdc

Note: all size units mm, diameter of all terminal 0.5mm, distance between all adjacent terminal 2.54mm

Pin	1	2	3	4
Function	GND	Vin	-Vo	+Vo

# B\_MS-2W & F\_MS-2W Series

2w, fixed input, isolated & unregulated single output dc-dc converter



## Product Program

Model	Input		Output				Eff (%)	Certificate	Mechanical Dimensions First Angle Projection
	Voltage(Vdc)		Voltage(Vdc)	Current(mA)		Ripple (mVp-p)			
	Nominal	Range	Nominal	Max	Min				
B0503MS-2W	5	4.5~5.5	3.3	600	60		75	<p>Weight: 2.1g</p>	
B0505MS-2W			5	400	40		81		
B0509MS-2W			9	222	23		84		
B0512MS-2W			12	167	17		84		
B0515MS-2W			15	133	14		84		
B0524MS-2W			24	83	9		84		
B1203MS-2W	12	10.8~13.2	3.3	600	60		75		
B1205MS-2W			5	400	40		81		
B1209MS-2W			9	222	23		84		
B1212MS-2W			12	167	17		84		
B1215MS-2W			15	133	14		84		
B1224MS-2W			24	83	9		84		
B2403MS-2W	24	21.6~26.4	3.3	600	60		75		
B2405MS-2W			5	400	40		81		
B2409MS-2W			9	222	23		84		
B2412MS-2W			12	167	17		84		
B2415MS-2W			15	133	14		84		
B2424MS-2W			24	83	9		84		

Isolation: 1500Vdc  
Note: all size units mm, diameter of all terminal 0.5mm, distance between all adjacent terminal 2.54mm

Pin	1	2	4	6
Function	Vin	GND	-Vo	+Vo

F0503MS-2W	5	4.5~5.5	3.3	600	60		75	<p>Weight: 2.1g</p>
F0505MS-2W			5	400	40		81	
F0509MS-2W			9	222	23		84	
F0512MS-2W			12	167	17		84	
F0515MS-2W			15	133	14		84	
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F2405MS-2W			5	400	40		81	
F2409MS-2W			9	222	23		84	
F2412MS-2W			12	167	17		84	
F2415MS-2W			15	133	14		84	
F2424MS-2W			24	83	9		84	

Isolation: 3000Vdc  
Note: all size units mm, diameter of all terminal 0.5mm, distance between all adjacent terminal 2.54mm

Pin	1	2	4	6
Function	Vin	GND	-Vo	+Vo

# B\_D-2W & F\_D-2W Series

2w, fixed input, isolated & unregulated single output dc-dc converter



## Product Program

Model	Input		Output				Eff (%)	Certificate	Mechanical Dimensions First Angle Projection												
	Voltage(Vdc)		Voltage(Vdc)	Current(mA)		Ripple (mVp-p)															
	Nominal	Range	Nominal	Max	Min																
B0503D-2W	5	4.5~5.5	3.3	600	60		75	<p>Weight: 2.5g</p>													
B0505D-2W			5	400	40		81														
B0509D-2W			9	222	23		84														
B0512D-2W			12	167	17		84														
B0515D-2W			15	133	14		84														
B0524D-2W			24	83	9		84														
B1203D-2W	12	10.8~13.2	3.3	600	60		75														
B1205D-2W			5	400	40		81														
B1209D-2W			9	222	23		84														
B1212D-2W			12	167	17		84														
B1215D-2W			15	133	14		84														
B1224D-2W			24	83	9		84														
B2403D-2W	24	21.6~26.4	3.3	600	60		75		<p>Isolation: 1500Vdc</p> <p>Note: all size units mm, diameter of all terminal 0.5mm, distance between all adjacent terminal 2.54mm</p>												
B2405D-2W			5	400	40		81														
B2409D-2W			9	222	23		84														
B2412D-2W			12	167	17		84														
B2415D-2W			15	133	14		84														
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Function	GND	NC	-Vo	+Vo	Vin																

F0503D-2W	5	4.5~5.5	3.3	600	60		75	<p>Weight: 2.5g</p>													
F0505D-2W			5	400	40		81														
F0509D-2W			9	222	23		84														
F0512D-2W			12	167	17		84														
F0515D-2W			15	133	14		84														
F0524D-2W			24	83	9		84														
F1203D-2W	12	10.8~13.2	3.3	600	60		75														
F1205D-2W			5	400	40		81														
F1209D-2W			9	222	23		84														
F1212D-2W			12	167	17		84														
F1215D-2W			15	133	14		84														
F1224D-2W			24	83	9		84														
F2403D-2W	24	21.6~26.4	3.3	600	60		75		<p>Isolation: 3000Vdc</p> <p>Note: all size units mm, diameter of all terminal 0.5mm, distance between all adjacent terminal 2.54mm</p>												
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Function	GND	NC	-Vo	+Vo	Vin																

# B\_N-2W & F\_N-2W Series

2w, fixed input, isolated & unregulated single output dc-dc converter



## Product Program

Model	Input		Output				Eff (%)	Certificate	Mechanical Dimensions First Angle Projection									
	Voltage(Vdc)		Voltage(Vdc)	Current(mA)		Ripple (mVp-p)												
	Nominal	Range	Nominal	Max	Min													
B0503N-2W	5	4.5~5.5	3.3	600	60		75	<p>Weight: 2.1g</p> <p>Isolation: 1500Vdc Note: all size units mm, diameter of all terminal 0.5mm, distance between all adjacent terminal 2.54mm</p>										
B0505N-2W			5	400	40		81											
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Pin	1	4	5	7														
Function	GND	Vin	+Vo	-Vo														

# File Release Notes

DBN-102 Technical Data Sheet Version



No.	Version	Data	Description
1	V0	2011/11/01	First release
2			
3			
4			
5			

Delus Corporation

1. All data in addition to particular things, are Ta = 25°C, humidity<75%, nominal input voltage and output measured at rated load;  
2. Non-standard models with some of the following indicators may be different from the specific circumstances of the Secretary to direct contact with me;  
3. In the use of this manual, if some of them do not quite understand terms please refer to our <<DC / DC Converter Application Guide>>;  
4. The Company focused on technological improvements, product specifications and parameter updates without notice, to pay attention to the latest information on website: [www.delus.cn](http://www.delus.cn)

All Delus Corporation's products are manufactured, assembled and tested utilizing ISO9001 quality systems.  
For information regarding Delus Corporation and its products please see [www.delus.cn](http://www.delus.cn)