



### FEATURES

- Efficiency up to 81%
- SIP Package with Industry Standard Pinout
- Package Dimension:  
5V&12V Models:  
19.5 x 10.2 x 6.1 mm (0.77"x 0.4"x 0.24")  
15V&24V Models  
19.5 x 10.2 x 7.1 mm (0.77"x 0.4"x 0.28")
- Isolation Voltage 1000 VDC
- OperatingTemp. Range -40°C to +85°C
- Lead free , RoSH Compliant
- Single and Dual Outputs
- >2 MHours MTBF
- 3 Years Product Warranty

The PB01S/D series are miniature, SIP Package, isolated 1W DC/DC converters with 1,000VDC isolation. It offers single and dual output models, short circuit protection, and allows a wide operating temperature range of -40°C to +85°C. These isolated DC/DC converters are the latest offering from a world leader in power systems technology and manufacturing — Delta Electronics, Inc

### Model List

Model Number	Input Voltage (Range) VDC	Output Voltage VDC	Output Current		Input Current		Load Regulation % (max.)	Max capacitive Load uF	Efficiency (typ.) @Max. Load %
			Max.	Min.	@Max. Load	@No Load			
			mA	mA	mA(typ.)	mA(typ.)			
PB01S0503A	5 (4.5 ~ 5.5)	3.3	260	5	235	30	10	220	73
PB01S0505A		5	200	4	281		10		71
PB01S0509A		9	110	2	260		8		76
PB01S0512A		12	84	1.5	258		7	78	
PB01S0515A		15	67	1	258		7	78	
PB01D0505A		±5	±100	±2	278		10	100*	72
PB01D0509A		±9	±56	±1	262		8		77
PB01D0512A		±12	±42	±0.8	258		7		78
PB01D0515A		±15	±34	±0.7	258		7		79
PB01S1203A		12 (10.8 ~ 13.2)	3.3	260	5		96	12	8
PB01S1205A	5		200	4	114	8	73		
PB01S1209A	9		110	2	106	5	78		
PB01S1212A	12		84	1.5	105	5	80		
PB01S1215A	15		67	1	104	5	80		
PB01D1205A	±5		±100	±2	113	8	100*		74
PB01D1209A	±9		±56	±1	106	5			79
PB01D1212A	±12		±42	±0.8	104	5			81
PB01D1215A	±15		±34	±0.7	105	5			81
PB01S1505A	15 (13.5 ~ 16.5)		5	200	4	93	11		8
PB01S1512A		12	84	1.5	85	5		79	
PB01S1515A		15	67	1	85	5		79	
PB01D1505A		±5	±100	±2	93	8		100*	72
PB01D1512A		±12	±42	±0.8	85	5			80
PB01D1515A		±15	±34	±0.7	85	5			80
PB01S2403A	24 (21.6 ~ 26.4)	3.3	260	5	49	7	8	220	73
PB01S2405A		5	200	4	59		8		71
PB01S2409A		9	110	2	54		5		76



### Model List

Model Number	Input Voltage (Range)	Output Voltage	Output Current		Input Current		Load Regulation	Maxcapacitive Load	Efficiency (typ.)
			Max.	Min.	@Max. Load	@No Load			@Max. Load
	VDC	VDC	mA	mA	mA(typ.)	mA(typ.)	% (max.)	uF	%
PB01S2412A	24 (21.6 ~ 26.4)	12	84	1.5	54	7	5	100*	78
PB01S2415A		15	67	1	53		5		79
PB01D2405A		±5	±100	±2	58		8		72
PB01D2409A		±9	±56	±1	55		5		76
PB01D2412A		±12	±42	±0.8	53		5		79
PB01D2415A		±15	±34	±0.7	53		5		80

\* For each output



## Input Characteristics

Parameter	Model	Min.	Typ.	Max.	Unit
Input Voltage Range	5V Input Models	4.5	5	5.5	VDC
	12V Input Models	10.8	12	13.2	
	15V Input Models	13.5	15	16.5	
	24V Input Models	21.6	24	26.4	
Input Surge Voltage (1 sec. max.)	5V Input Models	-0.7	---	9	VDC
	12V Input Models	-0.7	---	18	
	15V Input Models	-0.7	---	18	
	24V Input Models	-0.7	---	30	
Reverse Polarity Input Current	All Models	---	---	0.3	A
Input Filter		Internal Capacitor			
Internal Power Dissipation		---	---	450	mW

## Output Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		---	±1.0	±3.0	%
Output Voltage Balance	Dual Output, Balanced Loads	---	±0.1	±1.0	%
Line Regulation	For Vin Change of 1%	---	±1.2	±1.5	%
Load Regulation	Io=20% to 100%	See Model Selection Guide			
Ripple & Noise (20MHz)		---	50	75	mV <sub>P-P</sub>
Ripple & Noise (20MHz)	Over Line, Load & Temp.	---	---	150	mV <sub>P-P</sub>
Ripple & Noise (20MHz)		---	---	15	mV rms
Temperature Coefficient		---	±0.01	±0.02	%/°C
Short Circuit Protection	0.5 Second Max.				

## General Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
I/O Isolation Voltage (rated)	60 Seconds	1000	---	---	VDC
I/O Isolation Resistance	500 VDC	1000	---	---	MΩ
I/O Isolation Capacitance	100KHz, 1V	---	60	100	pF
Switching Frequency		70	100	120	KHz
MTBF (calculated)	MIL-HDBK-217F@25°C, Ground Benign	2,000,000	---	---	Hours

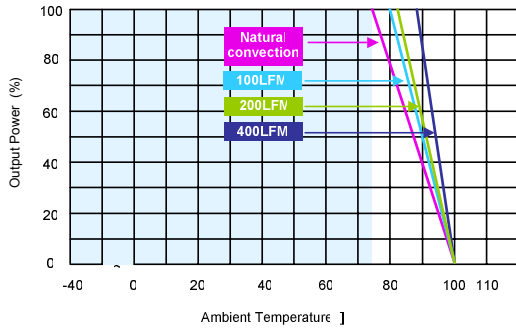
## Recommended Input Fuse

5V Input Models	12V Input Models	15V Input Models	24V Input Models
500mA Slow-Blow Type	200mA Slow-Blow Type	150mA Slow-Blow Type	100mA Slow-Blow Type

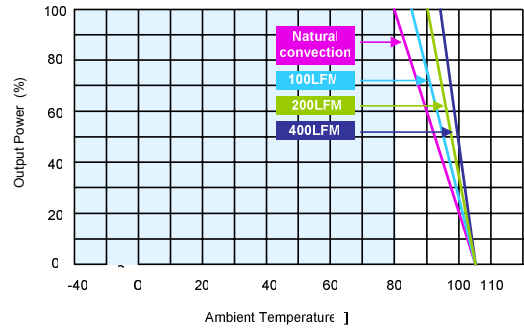
## Environmental Specifications

Parameter	Conditions	Min.	Max.	Unit
Operating Temperature Range (with Derating)	Ambient	-40	+85	°C
Case Temperature		---	+90	°C
Storage Temperature Range		-50	+125	°C
Humidity (non condensing)		---	95	% rel. H
Cooling	Free-Air convection			
Lead Temperature (1.5mm from case for 10Sec.)		---	260	°C

## Power Derating Curve



(3.3V, 5V & ±5V)



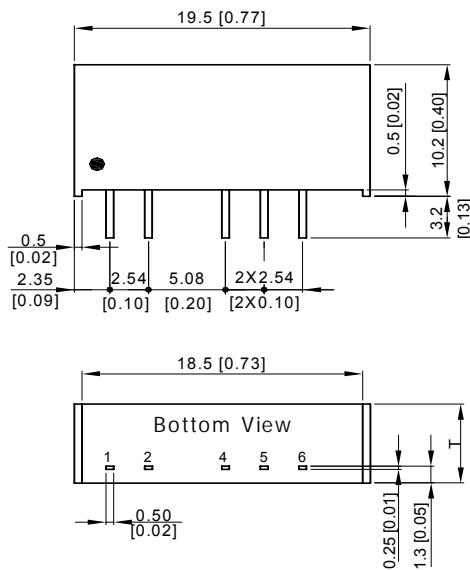
(all other output)

## Notes

- 1 Specifications typical at  $T_a=+25^{\circ}\text{C}$ , resistive load, nominal input voltage and rated output current unless otherwise noted.
- 2 Ripple & Noise measurement bandwidth is 0-20MHz.
- 3 These power converters require a minimum output loading to maintain specified regulation, operation under no-load conditions will not damage these modules; however they may not meet all specifications listed.
- 4 All DC/DC converters should be externally fused at the front end for protection.
- 5 Specifications subject to change without notice.

## Mechanical Drawing

### Mechanical Dimensions



### Pin Connections

Pin	Single Output	Dual Output
1	+Vin	+Vin
2	-Vin	-Vin
4	-Vout	-Vout
5	No Pin	Common
6	+Vout	+Vout

5V&12V Input:

T: 6.1mm(0.24 inch)

15V&24V Input:

T: 7.1mm(0.28 inch) for Models

▶ All dimensions in mm (inches)

▶ Tolerance:  $X.X \pm 0.25$  ( $X.XX \pm 0.01$ )

$X.XX \pm 0.13$  ( $X.XXX \pm 0.005$ )

▶ Pins  $\pm 0.05$  ( $\pm 0.002$ )

## Physical Outline

Case Size (5V&12V Input) : 19.5x6.1x10.2mm (0.77x0.24x0.40 Inches)

Case Size (15V&24V Input) : 19.5x7.1x10.2mm (0.77x0.28x0.40 Inches)

Case Material : Non-Conductive Black Plastic (flammability to UL 94V-0 rated)

Weight (5V&12V Input) : 2.2g

Weight (15V&24V Input) : 2.6g



## Part Numbering System

P	B	01	S	05	05	A
Form factor	Family series	Watt	Number of Outputs	Input Voltage	Output Voltage	Option Code
D-DIP	A~Z	01:1W	S - Single	03:3.3V	03:3.3V	A - Std. Functions
P-SIP		02:2W	D- Dual	05: 5V	05: 5V	
S-SMD		03:3W		12:12V	12:12V	
		04:4W		24: 24V	15: 15V	
		06:6W		48:48V	24: 24V	

### WARRANTY

Delta offers a three(3) years limited warranty. Complete warranty information is listed on our web site or is available upon request from Delta.

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