

### FEATURES

- Efficiency up to 88%
- SIP Package with Industry Standard Pinout
- Semi-regulated Output Voltage
- High Isolation Voltage 3000VDC
- UL/IEC/EN 60950-1 Safety
- Operating Temperature Range -40°C to +85°C
- Lead free, RoHs Compliant
- >2 MHours MTBF
- CSA / NRTL60950-1 safety approval
- 3 Years Product Warranty



The PF01S series are miniature, SIP Package, isolated 1W DC/DC converters with 3,000VDC isolation. It offers short circuit protection and allows a wide operating temperature range of -40°C to +85°C. These products provide a typical load regulation of 3.5% to 5.5% depending on each model. The PF01S/D DC/DC converters are a compromise between a fully regulated converter and a non-regulated converter. These isolated DCDC 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.)	Reflected Ripple mA(typ.)	Max. capacitive Load uF	Efficiency (typ.)
			Max.	Min.	@Max. Load	@No Load				@Max. Load
			mA	mA	mA(typ.)	mA(typ.)				%
PF01S0505A	5 (4.5 ~ 5.5)	5	200	4	238	30	6.2	11	220	84
PF01S0509A		9	110	2	229		5.5			86.5
PF01S0512A		12	84	1.5	231		5.5			87
PF01S0515A		15	67	1	230		5			87.5
PF01S1205A	12 (10.8 ~ 13.2)	5	200	4	99	12	5	5	220	84
PF01S1209A		9	110	2	96		3.3			86
PF01S1212A		12	84	1.5	95		3.6			88
PF01S1215A		15	67	1	95		2.9			88
PF01S2405A	24 (21.6 ~ 26.4)	5	200	4	50	11	5	4.7	220	84
PF01S2409A		9	110	2	48		3.5			86.5
PF01S2412A		12	84	1.5	48		3.5			87.5
PF01S2415A		15	67	1	48		3			87.5



## Input Characteristics

Parameter	Model	Min.	Typ.	Max.	Unit
Input Surge Voltage (1 sec. max.)	5V Input Models	-0.7	---	9	VDC
	12V Input Models	-0.7	---	18	
	24V Input Models	-0.7	---	30	
Input Voltage Range	5V Input Models	4.5	5	5.5	VDC
	12V Input Models	10.8	12	13.2	
	24V Input Models	21.6	24	26.4	
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
Line Regulation	For Vin Change of 1%	---	±1.05	±1.2	%
Load Regulation	Io=20% to 100%	See Model Selection Guide			
Ripple & Noise (20MHz)		---	30	60	mV <sub>P-P</sub>
Temperature Coefficient		---	±0.01	±0.02	%/°C
Short Circuit Protection	0.5 Second Max.				

## General Characteristics

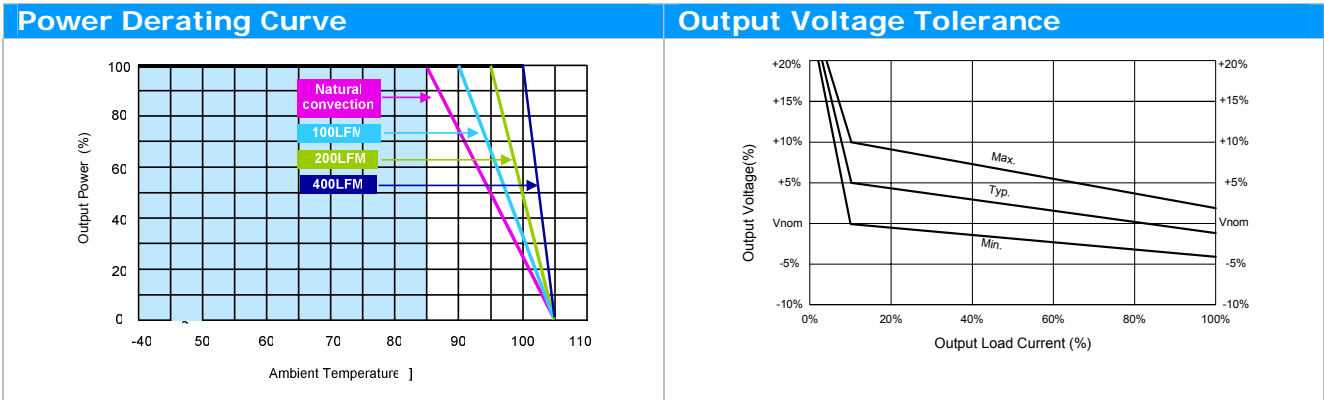
Parameter	Conditions	Min.	Typ.	Max.	Unit
I/O Isolation Voltage (rated)	60 Seconds	3000	---	---	VDC
I/O Isolation Test Voltage	Flash tested for 1 Second	3300	---	---	V <sub>PK</sub>
I/O Isolation Resistance	1000 VDC	10	---	---	GΩ
I/O Isolation Capacitance	100KHz, 1V	30	60	120	pF
Switching Frequency		50	100	120	KHz
MTBF (calculated)	MIL-HDBK-217F@25°C, Ground Benign	2,000,000	---	---	Hours
Safety Approvals	CSA 60950-1 recognition, IEC/EN 60950-1 (CB-scheme)				

## Recommended Outside Input Fuse

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

## Environmental Specifications

Parameter	Conditions	Min.	Max.	Unit
Operating Temperature Range (without Derating)	Ambient	-40	+85	°C
Case Temperature		---	+95	°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



- ### 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

**Top View Dimensions:**  
 Total width: 19.5 [0.77]  
 Pin 1 offset: 0.50 [0.02]  
 Pin 2 offset: 2.35 [0.09]  
 Pin 2 to Pin 5: 2.54 [0.10]  
 Pin 5 to Pin 7: 7.62 [0.30]  
 Pin 7 offset: 5.08 [0.20]  
 Pin height: 3.2 [0.13]  
 Case height: 10.2 [0.40]  
 Case thickness: 0.5 [0.02]

**Bottom View Dimensions:**  
 Total width: 18.5 [0.73]  
 Pin 1 offset: 0.50 [0.02]  
 Pin 1 to Pin 2: 0.25 [0.01]  
 Pin 2 to Pin 5: 1.3 [0.05]

#### Pin Connections

Pin	Function
1	+Vin
2	-Vin
5	-Vout
7	+Vout

5V & 12V Input Models:  
 $T=6.1[0.24]$

24V Input Models:  
 $T=7.1[0.28]$

- ▶ 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 (5&12V Input)	: 19.5x6.1x10.2mm (0.77x0.24x0.40 Inches)
Case Size (24V Input)	: 19.5x7.1x10.2mm (0.77x0.28x0.40 Inches)
Case Material	: Non-Conductive Black Plastic (flammability to UL 94V-0 rated)
Weight (5&12V Input)	: 2.2g
Weight (24V Input)	: 2.6g



Part Numbering System						
P	F	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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