



FEATURES

- Efficiency up to 88.5%
- SIP Package with Industry Standard Pinout
- Semi-regulated Output Voltage
- Isolation Voltage 1000VDC
- Operating Temperature Range -40°C to +85°C
- UL/IEC/EN 60950-1 Safety
- Single and Dual Outputs
- Lead free, RoHs Compliant
- >2 MHours MTBF
- CSA / NRTL60950-1 safety approval
- 3 Years Product Warranty



The PE01S/D series are miniature, SIP Package, isolated 1W DC/DC converters with 1,000VDC isolation and very high efficiency. 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 2.5% to 5.0% depending on each model. The PE01S/D DC/DC converters are a compromise between a fully regulated converter and a non-regulated converter. 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)	Output Voltage	Output Current		Input Current		Load Regulation	Reflected Ripple	Max. capacitive Load	Efficiency (typ.)
			Max.	Min.	@Max.Load	@No Load				
	VDC	VDC	mA	mA	mA(typ.)	mA(typ.)	% (max.)	mA(typ.)	uF	%
PE01S0505A	5 (4.5 ~ 5.5)	5	200	4	238	30	6.5	7	220	84
PE01S0509A		9	110	2	228		5			87
PE01S0512A		12	84	1.5	232		5.2			87
PE01S0515A		15	67	1	230		5			87.5
PE01D0505A		±5	±100	±2	237		5.2		100*	84.5
PE01D0509A		±9	±56	±1	234		4.2			86
PE01D0512A		±12	±42	±0.8	233		4.6			86.5
PE01D0515A		±15	±34	±0.7	236		4.5			86.5
PE01S1205A	12 (10.8 ~ 13.2)	5	200	4	99	12	5	4	220	84
PE01S1209A		9	110	2	95		3.4			86.5
PE01S1212A		12	84	1.5	95		3.4			88.5
PE01S1215A		15	67	1	95		2.7			88
PE01D1205A		±5	±100	±2	99		3.9		100*	84.5
PE01D1209A		±9	±56	±1	98		2.8			86
PE01D1212A		±12	±42	±0.8	95		2.9			88.5
PE01D1215A		±15	±34	±0.7	94		2.6			87.5
PE01S2405A	24 (21.6 ~ 26.4)	5	200	4	50	11	3.7	8	220	84
PE01S2409A		9	110	2	48		2.5			86.5
PE01S2412A		12	84	1.5	48		2.4			87.5
PE01S2415A		15	67	1	48		2.3			87.5
PE01D2405A		±5	±100	±2	50		3.7		100*	83.5
PE01D2409A		±9	±56	±1	49		2.5			86
PE01D2412A		±12	±42	±0.8	48		2.4			87
PE01D2415A		±15	±34	±0.7	49		2.3			87

* For each output

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	
	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
Output Voltage Balance	Dual Output, Balanced Loads	---	±0.1	±1.0	%
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 _{P-P}
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	40	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)				

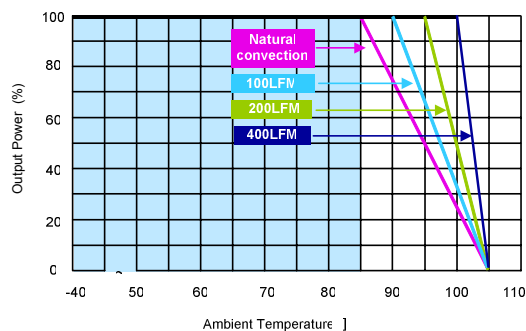
Recommended Outside Input Fuse

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

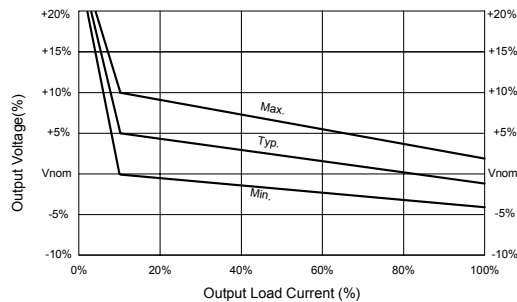
Environmental Specifications

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

Power Derating Curve



Output Voltage Tolerance



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:

- Overall Width: 19.5 [0.77]
- Overall Height: 10.2 [0.40]
- Pin 1 to Pin 2: 2.35 [0.09]
- Pin 2 to Pin 4: 2.54 [0.10]
- Pin 4 to Pin 5: 5.08 [0.20]
- Pin 5 to Pin 6: 2X2.54 [2X0.10]
- Pin 1 to Pin 6: 10.2 [0.40]
- Pin 1 to Pin 2: 0.5 [0.02]

Bottom View Dimensions:

- Overall Width: 18.5 [0.73]
- Overall Height: 0.25 [0.01]
- Pin 1 to Pin 2: 0.50 [0.02]
- Pin 2 to Pin 4: 0.25 [0.01]
- Pin 4 to Pin 5: 0.25 [0.01]
- Pin 5 to Pin 6: 1.3 [0.05]

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=6.1[0.24]

24V Input :

T=7.1[0.28] r

► All dimensions in mm (inches)

► Tolerance: X.X±0.25 (X.XX±0.01)

X.XX±0.13 (X.XXX±0.005)

► Pins ±0.05(±0.002)

Physical Outline

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

<u>PE01D1212A</u>	<u>PE01D2409A</u>	<u>PE01S1205A</u>	<u>PE01S1215A</u>	<u>PE01D1215A</u>	<u>PE01D0515A</u>	<u>PE01D2412A</u>	<u>PE01S2415A</u>
<u>PE01S1209A</u>	<u>PE01S2405A</u>	<u>PE01D0505A</u>	<u>PE01S0509A</u>	<u>PE01D1205A</u>	<u>PE01S0505A</u>	<u>PE01D2415A</u>	<u>PE01S2412A</u>
<u>PE01D0509A</u>	<u>PE01S0512A</u>	<u>PE01S0515A</u>	<u>PE01S1212A</u>	<u>PE01D2405A</u>	<u>PE01D0512A</u>	<u>PE01D1209A</u>	<u>PE01S2409A</u>