

### 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) 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								
			mA	mA	mA(typ.)	mA(typ.)								
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			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	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		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	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
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 <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	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)				

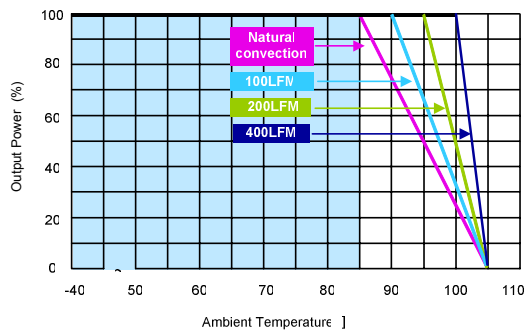
### Recommended Outside Input Fuse

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

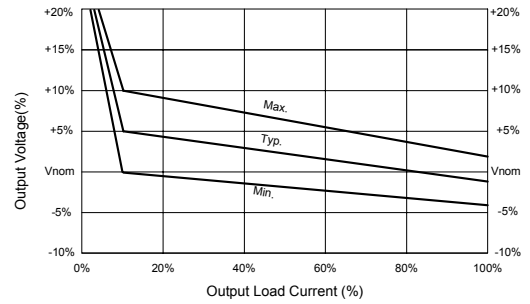
### Environmental Specifications

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



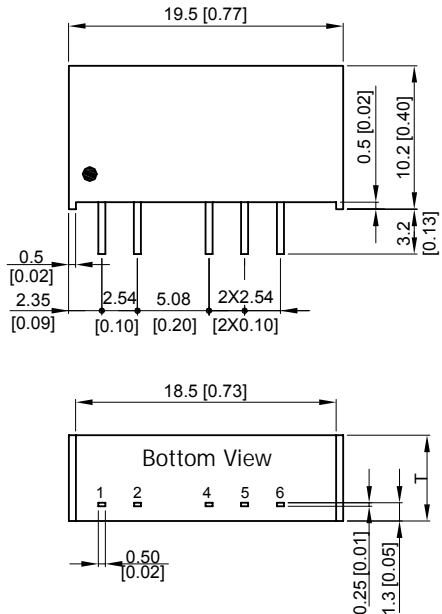
### Output Voltage Tolerance



### 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		Pin Connections		
 <p>The drawing shows two views of the component. The top view has a total width of 19.5 mm [0.77] and a total height of 10.2 mm [0.40]. The bottom view has a total width of 18.5 mm [0.73]. Dimensions for pin positions and widths are provided for both views.</p>		Pin	Single Output	Dual Output
		1	+Vin	+Vin
		2	-Vin	-Vin
		4	-Vout	-Vout
		5	No Pin	Common
		6	+Vout	+Vout
<p>5V &amp; 12V Input :</p> <p>T=6.1[0.24]</p> <p>24V Input :</p> <p>T=7.1[0.28] r</p> <ul style="list-style-type: none"> <li>▶ All dimensions in mm (inches)</li> <li>▶ Tolerance: X.X±0.25 (X.XX±0.01)</li> <li style="padding-left: 20px;">X.XX±0.13 ( X.XXX±0.005)</li> <li>▶ Pins ±0.05(±0.002)</li> </ul>				

## 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	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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