Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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PH02S/ D Sries

2W DC/DC CONVERTER, SIP-Package, 4:1 Ultra Wide Input Range

FEATURES

- Efficiency up to 80%
- SIP Package with Standard Pinout
- Fully Regulated Output
- Operating Temperature Range -40°C to +85°C
- Ultra-wide 4:1 Input Range
- Isolation Voltage 1500 VDC
- Short circuit protection
- Lead free, RoHs compliant
- 3 Years Product Warranty

Security Lab Medical Metro Data Center Telecom Industrial Network

The PH02S/D series are miniature, SIP Package, isolated 2W DC/DC converters with 1,500VDC isolation. The PH02S/D series features fully regulated output and wide 4:1 input voltage ranges. The most convenient advantage is the modules with a small footprint occupying only 2.4 cm2 (0.36 square in.) on the PCB. It offers 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)	Output Voltage	Output Current		Input Current		Reflected Ripple Current	Max. capacitive Load	Efficiency (typ.)
			Max.	Min.	@Max. Load	@No Load			@Max. Load
	VDC	VDC	mA	mA	mA(typ.)	mA(typ.)	mA(typ.)	uF	%
PH02S2403A	24 (9 ~ 36)	3.3	500	125	97	20	300	2200	71
PH02S2405A		5	400	100	110			1000	76
PH02S2412A		12	167	42	106			170	79
PH02S2415A		15	134	33	105			110	80
PH02D2405A		±5	±200	±50	114			470*	73
PH02D2412A		±12	±83	±21	108			100*	77
PH02D2415A		±15	±67	±17	106			47*	79
PH02S4803A	48 (18 ~ 75)	3.3	500	125	49	15	600	2200	70
PH02S4805A		5	400	100	58			1000	72
PH02S4812A		12	167	42	54			170	78
PH02S4815A		15	134	33	54			110	78
PH02D4805A		±5	±200	±50	60			470*	70
PH02D4812A		±12	±83	±21	55			100*	76
PH02D4815A		±15	±67	±17	55			47*	76

* For each output

E-mail: DCDC@delta.com.tw
http://www.delta.com.tw/dcdc

Input Characteristics

Parameter	Model	Min.	Typ.	Max.	Unit
Input Surge Voltage (1 sec. max.)	24V Input Models	-0.7	---	50	VDC
	48V Input Models	-0.7	---	100	
Start-Up Voltage	24V Input Models	4.5	6	8.5	
	48V Input Models	8.5	12	17	
Under Voltage Shutdown	24V Input Models	---	---	8	
	48V Input Models	---	---	16	
Reverse Polarity Input Current	All Models	---	---	0.5	A
Short Circuit Input Power		---	---	1500	mW
Input Filter		Capacitor type			
Internal Power Dissipation		---	---	2500	mW

Output Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		---	±1.0	±2.0	%
Output Voltage Balance	Dual Output, Balanced Loads	---	±1.0	±2.0	%
Line Regulation	Vin=Min. to Max.	---	±0.3	±0.5	%
Load Regulation	Io=25% to 100%	---	±0.5	±0.75	%
Ripple & Noise (20MHz)		---	30	50	mV P-P
Ripple & Noise (20MHz)	Over Line, Load & Temp.	---	---	75	mV P-P
Ripple & Noise (20MHz)		---	---	15	mV rms
Transient Recovery Time	25% Load Step Change	---	100	300	uS
Transient Response Deviation		---	±3	±5	%
Temperature Coefficient		---	±0.01	±0.02	%/℃
Output Short Circuit	Continuous				

General Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
I/O Isolation Voltage (rated)	60 Seconds	1500	---	---	VDC
I/O Isolation Resistance	500 VDC	1000	---	---	MΩ
I/O Isolation Capacitance	100KHz, 1V	---	250	500	pF
Switching Frequency		---	300	---	KHz
MTBF (Calculated)	MIL-HDBK-217F@25℃, Ground Benign	1,000,000	---	---	Hours

Recommended Input Fuse

24V Input Models	48V Input Models
350mA Slow-Blow Type	135mA Slow-Blow Type

Remote On/ Off Control

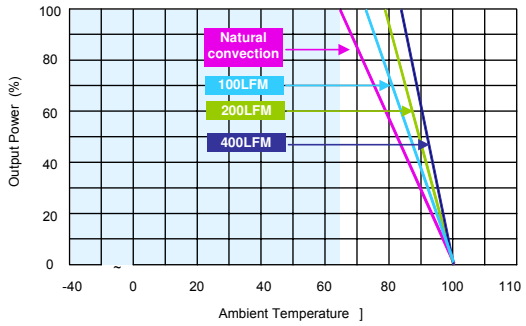
Parameter	Conditions	Min.	Typ.	Max.	Unit
Converter On	Under 0.6 VDC or Open Circuit, drops down to 0VDC by 2mV/℃				
Converter Off	2.9 to 15 VDC				
Standby Input Current		---	1	3	mA
Control Input Current (on)	Vin = 0V	---	---	-1	mA
Control Input Current (off)	Vin = 5.0V	---	---	1	mA
Control Common	Referenced to Negative Input				

Environmental Specifications

Parameter	Conditions	Min.	Max.	Unit
Operating Temperature Range (with Derating)	Ambient	-40	+85	℃
Case Temperature		---	+90	℃
Storage Temperature Range		-55	+105	℃
Humidity (non condensing)		---	95	% rel. H
Cooling	Free-Air convection			
Lead Temperature (1.5mm from case for		---	260	℃

E-mail: DCDC@delta.com.tw
http://www.delta.com.tw/dcdc

Power Derating Curve

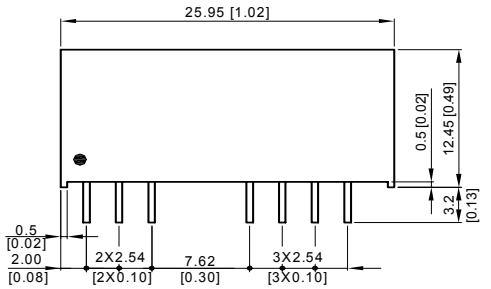


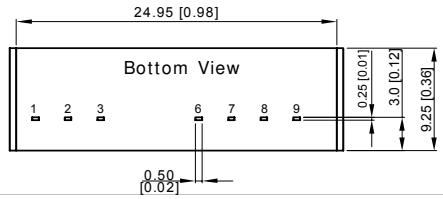
Notes

1 Specifications typical at Ta=+25℃, resistive load, nominal input voltage and rated output current unless otherwise noted.
2 Transient recovery time is measured to within 1% error band for a step change in output load of 75% to 100%.
3 Ripple & Noise measurement bandwidth is 0-20 MHz.
4 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.
5 All DC/DC converters should be externally fused at the front end for protection.
6 Specifications subject to change without notice.

Mechanical Drawing

Mechanical Dimensions





Pin Connections

Pin	Single Output	Dual Output
1	-Vin	-Vin
2	+Vin	+Vin
3	Remote	Remote
6	+Vout	+Vout
7	NC	Common
8	NC	NC
9	-Vout	-Vout

NC: No Connection

▶All dimensions in mm (inches)
▶Tolerance: X.X±0.5 (X.XX±0.02)
X.XX±0.25 (X.XXX±0.01)
▶Pins ±0.1(±0.004)

Physical Outline

Case Size	:	25.95x9.25x12.45 mm (1.02x0.36x0.49 inches)
Case Material	:	Non-Conductive Black Plastic (flammability to UL 94V-0 rated)
Weight	:	6.5g

Part Numbering System

P	H	02	S	24	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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