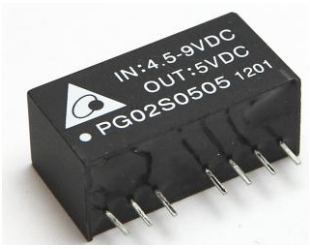
THE DATASHEET OF

PG02S2403A

PG02S Series

2W DC/DC CONVERTER, SIP-Package



FEATURES

- Efficiency up to 81%
- SIP Package with Industry Pinout
- Small Footprint: 21.8 x 9.3 mm (0.86”x 0.37”inch)
- Wide 2:1 Input Range
- Operating Temperature Range -40°C to +85°C
- Isolation Voltage 1000VDC
- Fully Regulated Output
- Short circuit protection
- Lead free, RoHs Compliant
- 3 Years Product Warranty



The PG02S series are miniature, SIP Package, isolated 2W DC/DC converters with 1,000VDC isolation. The PG02S series features fully regulated output and wide 2:1 input voltage ranges. The most convenient advantage is the modules with a small footprint occupying only 2.0 cm^2 (0.3 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 Selection Guide

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	%
PG02S0503A	5 (4.5 ~ 9)	3.3	500	125	471	40	400	2200	70
PG02S0505A		5	400	100	548			1000	73
PG02S0512A		12	167	42	534			170	75
PG02S1203A	12 (9 ~ 18)	3.3	500	125	184	20	300	2200	73
PG02S1205A		5	400	100	217			1000	77
PG02S1212A		12	167	42	209			170	80
PG02S2403A	24 (18 ~ 36)	3.3	500	125	96	10	200	2200	72
PG02S2405A		5	400	100	109			1000	77
PG02S2412A		12	167	42	103			170	81
PG02S4803A	48 (36 ~ 75)	3.3	500	125	49	8	500	2200	71
PG02S4805A		5	400	100	57			1000	73
PG02S4812A		12	167	42	53			170	79

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Input Characteristics

Parameter	Model	Min.	Typ.	Max.	Unit
Input Surge Voltage (1 sec. max.)	5V Input Models	-0.7	---	15	VDC
	12V Input Models	-0.7	---	25	
	24V Input Models	-0.7	---	50	
	48V Input Models	-0.7	---	100	
Start-Up Voltage	5V Input Models	3.5	4	4.5	
	12V Input Models	4.5	7	9	
	24V Input Models	8	12	18	
	48V Input Models	16	24	36	
Under Voltage Shutdown	5V Input Models	---	3.5	4	
	12V Input Models	---	6.5	8.5	
	24V Input Models	---	11	17	
	48V Input Models	---	22	34	
Reverse Polarity Input Current	All Models	---	---	1	A
Short Circuit Input Power		---	---	1500	mW
Input Filter		Capacitor type			
Internal Power Dissipation		---	---	3500	mW

Output Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		---	±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	%/℃
Short Circuit Protection	Continuous				

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	---	65	120	pF
Switching Frequency		100	300	650	KHz
MTBF (calculated)	MIL-HDBK-217F@25℃, Ground	1,000,000	---	---	Hours

Recommended Outside input Fuse

5V Input Models	12V Input Models	24V Input Models	48V Input Models
1500mA Slow-Blow Type	700mA Slow-Blow Type	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	2.7 to 15 VDC				
Standby Input Current		---	0.1	0.2	mA
Control Input Current (on)	Vin = 0V	---	---	-0.4	mA
Control Input Current (off)	Vin = 5.0V	---	---	1	mA
Control Common	Referenced to Negative Input				

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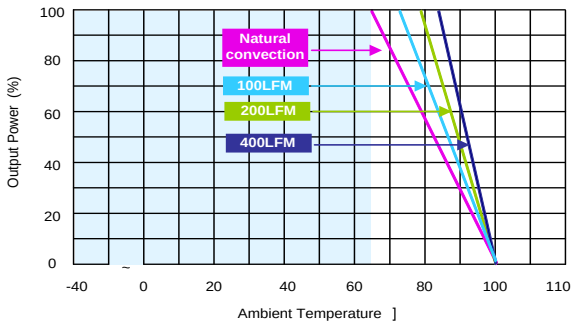
Environmental Specifications

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 10Sec.)		---	260	℃

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.

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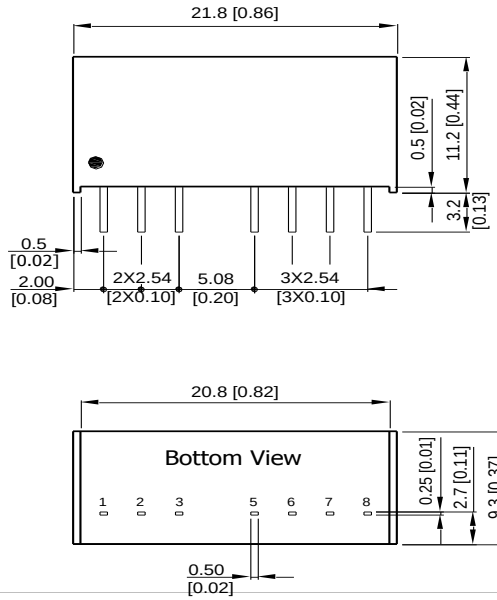
Mechancial Drawing

Mechanical Dimensions



Pin Connections

Pin	Function
1	-Vin
2	+Vin
3	Remote On/Off
5	NC
6	+Vout
7	-Vout
8	NC

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

Case Size	:	21.8x9.3x11.2 mm (0.86x0.37x0.44
Case Material	:	Non-Conductive Black Plastic (flammability to UL 94V-0 rated)
Weight	:	4.8g

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Part Numbering System

P	G	02	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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