



### FEATURES

- Efficiency up to 86%
- DIP Package with Industry Standard Pinout
- 1500VDC Voltage Isolation
- 2:1 Wide Input Range
- Low ripple and noise
- Complies with EN55022 Class A
- Temperature Performance -40°C to +71°C
- Short Circuit Protection
- Internal SMD Construction
- Lead free, RoHs Compliant
- 3 Years Product Warranty



The DG06S/D series are miniature, DIP Package, isolated 6W DC/DC converters with 1,500VDC isolation. It offers short circuit protection and allows a wide operating temperature range of -40°C to +71°C. These isolated DC/DC converters are the latest offering from a world leader in power systems technology and manufacturing — Delta Electronics, Inc. With creative design technology and optimization of component placement, these converters possess outstanding electrical and thermal performance, as well as extremely high reliability under highly stressful operating conditions.

### Model List

Model Number	Input Voltage (Range) VDC	Output Voltage VDC	Output Current		Input Current		Reflected Ripple Current mA(typ.)	Max. capacitive Load uF	Efficiency (typ.) @Max. Load %
			Max. mA	Min. mA	@Max. Load mA(typ.)	@No Load mA(typ.)			
DG06S0503A	5 (4.5 ~ 7)	3.3	1200	60	1056	80	100	6800	75
DG06S0505A		5	1000	50	1265				79
DG06S0512A		12	500	25	1463				82
DG06S0515A		15	400	20	1463				82
DG06D0505A		±5	±500	±25	1265			1000*	79
DG06D0512A		±12	±250	±12.5	1463				82
DG06D0515A		±15	±200	±10	1463				82
DG06S1203A		3.3	1200	60	429				30
DG06S1205A	5	1000	50	514	81				
DG06S1212A	12	500	25	595	84				
DG06S1215A	15	400	20	595	84				
DG06D1205A	±5	±500	±25	514	1000*	81			
DG06D1212A	±12	±250	±12.5	595		84			
DG06D1215A	±15	±200	±10	595		84			
DG06S2403A	3.3	1200	60	209		15	15	6800	
DG06S2405A	5	1000	50	251	83				
DG06S2412A	12	500	25	291	86				
DG06S2415A	15	400	20	291	86				
DG06D2405A	±5	±500	±25	251	1000*			83	
DG06D2412A	±12	±250	±12.5	291				86	
DG06D2415A	±15	±200	±10	291				86	
DG06S4803A	3.3	1200	60	104				8	10
DG06S4805A	5	1000	50	126	83				
DG06S4812A	12	500	25	145	86				
DG06S4815A	15	400	20	145	86				
DG06D4805A	±5	±500	±25	126	1000*	83			
DG06D4812A	±12	±250	±12.5	145		86			
DG06D4815A	±15	±200	±10	145		86			

\*For each output

## Input Characteristics

Parameter	Model	Min.	Typ.	Max.	Unit
Input Surge Voltage (1 sec. max.)	5V Input Models	-0.7	---	10	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	3.5	4.4	
	12V Input Models	4.5	6	8	
	24V Input Models	8	12	16	
	48V Input Models	16	24	32	
Under Voltage Shutdown	5V Input Models	---	---	4	
	12V Input Models	---	---	8	
	24V Input Models	---	---	16	
	48V Input Models	---	---	32	
Reverse Polarity Input Current	All Models	---	---	1	A
Short Circuit Input Power		---	1000	3000	mW
Internal Power Dissipation		---	---	2500	mW
Conducted EMI		Compliance to EN 55022,class A and FCC part 15,class A			

## Output Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		---	±0.5	±1.0	%
Output Voltage Balance	Dual Output, Balanced Loads	---	±0.5	±2.0	%
Line Regulation	V <sub>in</sub> =Min. to Max.	---	±0.1	±0.3	%
Load Regulation	I <sub>o</sub> =20% to 100%	---	±0.3	±1.0	%
Ripple & Noise (20MHz)		---	50	75	mV <sub>P-P</sub>
Ripple & Noise (20MHz)	Over Line, Load & Temp.	---	---	100	mV <sub>P-P</sub>
Ripple & Noise (20MHz)		---	---	15	mV rms
Transient Recovery Time	25% Load Step Change	---	150	300	μS
Transient Response Deviation		---	±2	±6	%
Temperature Coefficient		---	±0.01	±0.02	%/°C
Over Load Protection	Foldback	120	TBD	---	%
Short Circuit Protection	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	---	380	500	pF
Switching Frequency		---	300	---	KHz
MTBF (calculated)	MIL-HDBK-217F@25°C, Ground Benign	1,000,000	---	---	Hours
Safety Approvals	UL/cUL 60950-1 recognition(CSA certificate), IEC/EN 60950-1				

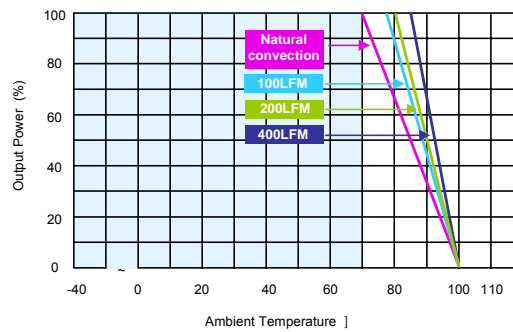
## Recommended Input Fuse

5V Input Models	12V Input Models	24V Input Models	48V Input Models
3000mA Slow-Blow Type	1500mA Slow-Blow Type	700mA Slow-Blow Type	350mA Slow-Blow Type

## Environmental Specifications

Parameter	Conditions	Min.	Max.	Unit
Operating Temperature Range (with Derating)	Ambient	-40	+85	°C
Case Temperature		---	+90	°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

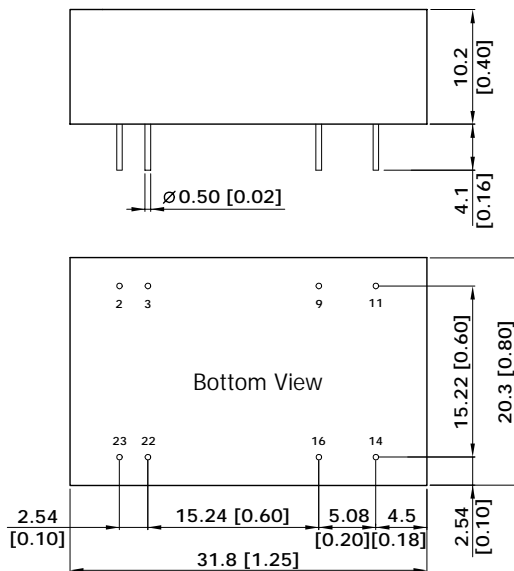


## Notes

- 1 Specifications typical at  $T_a=+25^{\circ}\text{C}$ , 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 50% to 100%
- 3 Ripple & Noise measurement bandwidth is 0-20MHz.
- 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
2	-Vin	-Vin
3	-Vin	-Vin
9	No Pin	Common
11	NC	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin	+Vin
23	+Vin	+Vin

NC: No Connection

- ▶ All dimensions in mm (inches)
- ▶ Tolerance:  $X.X \pm 0.25$  ( $X.XX \pm 0.01$ )  
 $X.XX \pm 0.13$  ( $X.XXX \pm 0.005$ )
- ▶ Pin diameter  $\varnothing 0.5 \pm 0.05$  ( $0.02 \pm 0.002$ )

## Physical Outline

Case Size	: 31.8x20.3x10.2mm (1.25x0.80x0.40 Inches)
Case Material	: Metal With Non-Conductive Baseplate
Weight	: 16.9g



## Part Numbering System

D	G	06	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.

Information furnished by Delta is believed to be accurate and reliable. However, no responsibility is assumed by Delta for its use, nor for any infringements of patents or other rights of third parties, which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Delta. Delta reserves the right to revise these specifications at any time, without notice.