DS06S/D Series

6W DC/DC CONVERTER, DIP-Package, 4:1 Wide Input Range

FEATURES

- Efficiency up to 83%
- DIP Package with Industry Standard Pinout
- Short Circuit Protection
- Isolation Voltage1500VDC
- Operating Temperature Range –40°C to +85°C
- Wide 4:1 Input Range
- Complies with EN55022 Class A
- Lead free, RoHs Complian
- 3 Years Product Warranty

The DS06S/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 +85°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)	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	%
DS06S2403A	24 (9 ~ 36)	3.3	1200	120	220	20	20	470	75
DS06S2405A		5	1000	100	267				78
DS06S2412A		12	500	50	301			100	83
DS06S2415A		15	400	40	305				82
DS06D2405A		±5	±500	±50	267			100*	78
DS06D2412A		±12	±250	±25	301				83
DS06D2415A		±15	±200	±20	305				82
DS06S4803A	48 (18 ~ 75.)	3.3	1200	120	110	10	15	470	75
DS06S4805A		5	1000	100	134				78
DS06S4812A		12	500	50	151			100	83
DS06S4815A		15	400	40	152				82
DS06D4805A		±5	±500	±50	134			100*	78
DS06D4812A		±12	±250	±25	151				83
DS06D4815A		±15	±200	±20	152				82

* For each output

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	7	8	9	
	48V Input Models	14	16	18	
Under Voltage Shutdown	24V Input Models	---	---	8.5	
	48V Input Models	---	---	16	
Reverse Polarity Input Current	All Models	---	---	1	A
Short Circuit Input Power		---	---	3000	mW
Internal Power Dissipation		---	---	2500	mW
Conducted EMI		Compliance to EN 55022,class A and FCC part 15,class A			

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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.	---	±0.1	±0.5	%
Load Regulation	Io=10% to 100%	---	±0.5	±1.0	%
Cross Regulation (Dual)	Asymmetrical load 25% / 100% FL	---	---	±5.0	%
Ripple & Noise (20MHz)		---	50	80	mV P-P
Ripple & Noise (20MHz)	Over Line, Load & Temp.	---	---	100	mV P-P
Ripple & Noise (20MHz)		---	---	15	mV rms
Transient Recovery Time	25% Load Step Change	---	300	500	uS
Transient Response Deviation		---	±3	---	%
Temperature Coefficient		---	±0.01	±0.02	%/℃
Over Load Protection	Foldback	110	250	350	%
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	---	1000	1200	pF
Switching Frequency		---	450	---	KHz
MTBF (calculated)	MIL-HDBK-217F@25℃, Ground Benign	800,000	---	---	Hours
Safety Approvals	UL/cUL 60950-1 recognition(CSA certificate), IEC/EN 60950-1				

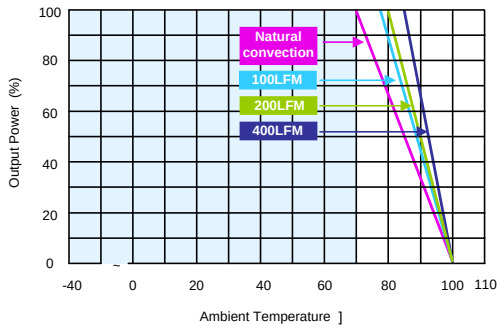
Recommended Input Fuse

24V Input Models	48V Input Models
1200mA Slow-Blow Type	750mA Slow-Blow Type

Environmental Characteristics

Parameter	Conditions	Min.	Max.	Unit
Operating Temperature Range (with Derating)	Ambient	-40	+85	℃
Case Temperature		---	+100	℃
Storage Temperature Range		-50	+125	℃
Humidity (non condensing)		---	95	% rel. H
Cooling	Free-Air convection			
Lead Temperature (1.5mm from case for 10Sec.)		---	260	℃

Power Derating Curve



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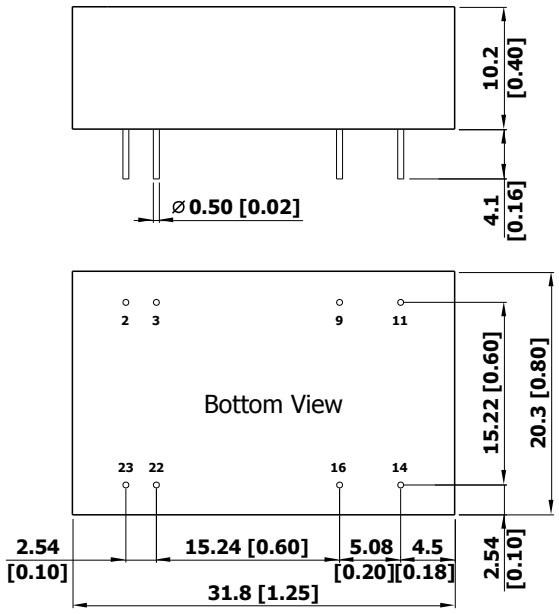
Notes

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 0-20MHz.
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±0.25 (X.XX±0.01)
X.XX±0.13 (X.XXX±0.005)
▶Pin diameter ⇔ 0.5 ±0.05 (0.02±0.002)

Physical Outline

ase Size	:	31.8x20.3x10.2mm (1.25x0.80x0.40 Inches)
Case Material	:	Aluminum Anodizing Treatment in Black
Weight	:	13.9g

Part Numbering System

D	S	06	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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