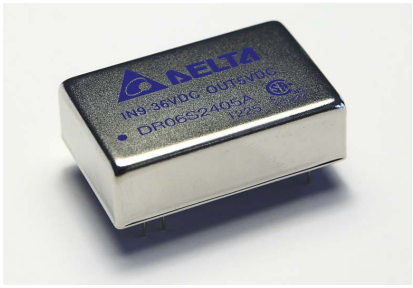
DR06S/D Series

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



FEATURES

- Efficiency up to 86%
- DIP Package with Industry Standard Pinout
- MTBF > 1M Hours
- Isolation Voltage 1500VDC
- 4:1 Wide Input Range
- Complies with EN55022 Class A
- Temperature Performance -25℃ to +71℃
- CSA60950-1 Safety Approval
- Internal SMD Construction
- 3 Years Product Warranty

The DR06S/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 –25°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)	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	%
DR06S2403A	24 (9 ~ 36)	3.3	1200	120	212	20	10	3000	78
DR06S2405A		5	1000	100	257				81
DR06S2412A		12	500	50	291				86
DR06S2415A		15	400	40	294				85
DR06D2405A		±5	±500	±50	257			680*	81
DR06D2412A		±12	±250	±25	291				86
DR06D2415A		±15	±200	±20	294				85
DR06S4803A	48 (18 ~ 75)	3.3	1200	120	106	10	10	3000	78
DR06S4805A		5	1000	100	129				81
DR06S4812A		12	500	50	145				86
DR06S4815A		15	400	40	147				85
DR06D4805A		±5	±500	±50	123			680*	81
DR06D4812A		±12	±250	±25	145				86
DR06D4815A		±15	±200	±20	147				85

* 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	---	---	0.5	A
Short Circuit Input Power		---	---	2500	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		---	±0.5	±1.0	%
Output Voltage Balance	Dual Output, Balanced Loads	---	±0.5	±2.0	%
Line Regulation	Vin=Min. to Max.	---	±0.2	±0.5	%
Load Regulation	Io=10% to 100%	---	±0.3	±1.0	%
Ripple & Noise (20MHz)		---	50	75	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	---	250	500	uS
Transient Response Deviation		---	±3	---	%
Temperature Coefficient		---	±0.01	±0.02	%/℃
Over Load Protection	Foldback	120	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	---	350	550	pF
Switching Frequency		---	340	---	KHz
MTBF (calculated)	MIL-HDBK-217F@25℃, Ground Benign	1,000,000	---	---	Hours
Safety Approvals	UL/cUL 60950-1 recognition(CSA certificate), IEC/EN 60950-1				

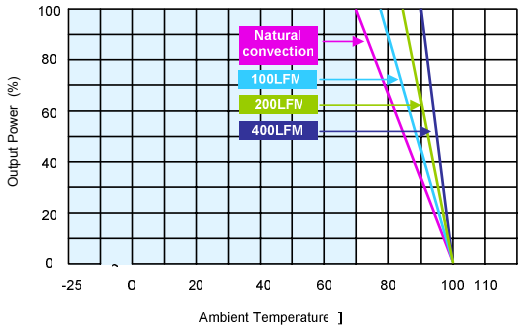
Recommended Input Fuse

24V Input Models	48V Input Models
1500mA Slow-Blow Type	750mA Slow-Blow Type

Environmental Characteristics

Parameter	Conditions	Min.	Max.	Unit
Operating Temperature Range (with Derating)	Ambient	-25	+85	℃
Case Temperature		---	+90	℃
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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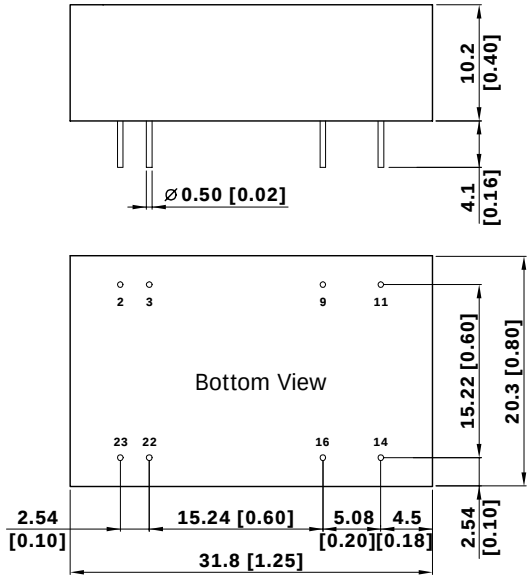
Notes

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 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±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

Case Size : 31.8x20.3x10.2mm (1.25x0.80x0.40 Inches)

Case Material : Metal With Non-Conductive Baseplate

Weight : 17.3g

Part Numbering System

D	R	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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