DU06S/D Series

6W DC/DC CONVERTER, DIP-Package, High Isolation

FEATURES

- Efficiency up to 80%
- Reinforced Insulation rated for 300VAC Working Voltage
- Isolation Voltage 4,000VACrms
- UL/EN60601-1&EN60950-1 Safety Approval
- Overload Protection
- Fully regulated Output Voltage
- Low Leakage Current
- Operating Temperature Range –40°C to +75 °C
- Complies with EN55022, class A
- 3 Years Product Warranty

Security Lab Medical Metro Data Center Telecom Industrial Network

The.DU06S/D series are miniature, DIP Package, isolated 6W DC/DC converters with 4,000VACrms isolation. It offers short circuit protection and allows a wide operating temperature range of –40°C to +75°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	%
DU06S1205A	12 (9 ~ 18)	5	1000	200	570	30	60	1000	75
DU06S1212A		12	500	100	641			470	78
DU06D1212A		±12	±250	±50	641			220*	78
DU06D1215A		±15	±200	±40	641			220*	78
DU06S2405A	24 (18 ~ 36)	5	1000	200	278	20	30	1000	77
DU06S2412A		12	500	100	313			470	80
DU06D2412A		±12	±250	±50	313			220*	80
DU06D2415A		±15	±200	±40	313			220*	80
DU06S4805A	48 (36 ~ 75)	5	1000	200	139	10	15	1000	77
DU06S4812A		12	500	100	156			470	80
DU06D4812A		±12	±250	±50	156			220*	80
DU06D4815A		±15	±200	±40	156			220*	80

* For each output

Input Characteristics

Parameter	Model	Min.	Typ.	Max.	Unit
Input Surge Voltage (1 sec. max.)	12V Input Models	-0.7	---	25	VDC
	24V Input Models	-0.7	---	50	
	48V Input Models	-0.7	---	100	
Start-Up Voltage	12V Input Models	7	8	9	
	24V Input Models	13	15	18	
	48V Input Models	30	33	36	
Under Voltage Shutdown	12V Input Models	---	---	8.5	
	24V Input Models	---	---	16	
	48V Input Models	---	---	34	
Short Circuit Input Power	All Models	---	---	3000	mW
Internal Power Dissipation		---	---	2500	mW
Conducted EMI		Compliance to EN55022,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.	---	±0.3	±0.5	%
Load Regulation	Io=25% to 100%	---	±0.5	±1.0	%
Ripple & Noise (20MHz)	5V Output Models	---	75	100	mV_{P-P}
	Other Output Models	---	100	150	mV_{P-P}
Ripple & Noise (20MHz)	Over Line, Load & Temp.	---	---	180	mV_{P-P}
Ripple & Noise (20MHz)		---	---	25	mV rms
Transient Recovery Time	25% Load Step Change	---	300	500	uS
Transient Response Deviation		---	±3	±6	%
Temperature Coefficient		---	±0.02	±0.05	%/℃
Over Load Protection	Foldback	120	150	---	%
Short Circuit Protection	Continuous				

Isolation, Safety Standards

Parameter	Conditions	Min.	Typ.	Max.	Unit
I/O Isolation Voltage (rated)	60 Seconds	4000	---	---	VACrms
I/O Isolation Test Voltage	Flash tested for 1 Second	6000	---	---	V_{PK}
Leakage Current	240VAC, 60Hz	---	---	2	uA
I/O Isolation Resistance	500 VDC	10	---	---	GΩ
I/O Isolation Capacitance	100KHz, 1V	---	7	13	pF
Safety Standards	cUL/UL60950-1, CSA C22.2 No. 60950-1-03				
	UL60601-1,CSA C22.2 No.601-1,				
	IEC/EN 60950-1, IEC/EN 60601-1				
Safety Approvals	IEC60950-1 CB report, cUL/UL 60950-1 certificate				
	UL60601-1 UL certificate				

General Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
Switching Frequency		---	150	---	KHz
MTBF(calculated)	MIL-HDBK-217F@25℃, Ground Benign	700,000	---	---	Hours

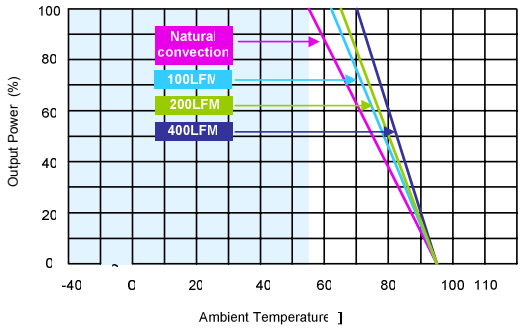
Recommended Input Fuse

12V Input Models	24V Input Models	48V Input Models
1200mA Slow-Blow Type	600mA Slow-Blow Type	300mA Slow-Blow Type

Environmental Characteristics

Parameter	Conditions	Min.	Max.	Unit
Operating Temperature Range (with Derating)	Ambient	-40	+75	℃
Case Temperature		---	+95	℃
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

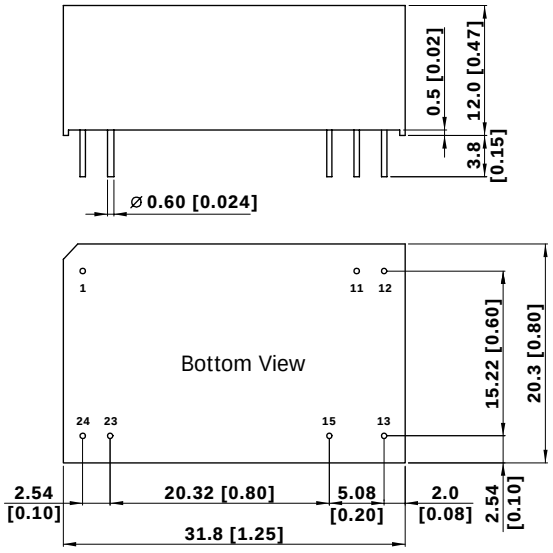


Notes

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
11	No Pin	Common
12	-Vout	No Pin
13	+Vout	-Vout
15	No Pin	+Vout
23	-Vin	-Vin
24	-Vin	-Vin

- ▶All dimensions in mm (inches)
- ▶Tolerance: X.X±0.25 (X.XX±0.01)
  X.XX±0.13 (X.XXX±0.005)
- ▶Pin diameter ⇔ 0.6 ±0.05 (0.024±0.002)

Physical Outline

Case Size	:	31.8x20.3x12.0mm (1.25x0.8x0.47 Inches)
Case Material	:	Non-Conductive Black Plastic (flammability to UL 94V-0 rated)
Weight	:	18g

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Part Numbering System

D	U	06	S	12	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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Delta:

DU06D1212A DU06S2412A DU06D2415A DU06S4805A DU06S1205A DU06D4815A DU06D2412A DU06D1215A DU06S2405A DU06S4812A DU06S1212A DU06D4812A