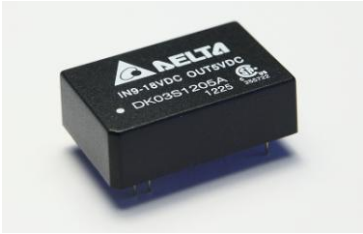
DK03S/D Series

3W DC/DC CONVERTER, DIP-Package,Wide 2:1 Input Range



FEATURES

- Efficiency up to 86%
- DIP Package with Industry Standard Pinout
- MTBF > 1M Hours
- Isolation Volage 1500VDC
- Short Circuit Protection
- Complies with EN55022 Class A
- Operating Temperature Range -25℃ to +85℃
- Low Ripple&Noise
- CSA60950-1 Safety Approval
- Lead free, RoHs Compliant
- 3 Years Product Warranty

The DK03S/D series are miniature, DIP Package, isolated 3W DC/DC converters with 1,500VDC isolation. It offers short circuit protection and allows a wide operating temperature range of –25°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	%
DK03S1203A	12 (9 ~ 18)	3.3	600	60	220	30	15	4000	75
DK03S1205A		5	500	50	267				78
DK03S1212A		12	250	25	305				82
DK03S1215A		15	200	20	309				81
DK03D1205A		±5	±250	±25	274			1000*	76
DK03D1212A		±12	±125	±12.5	313				80
DK03D1215A		±15	±100	±10	321				78
DK03S2403A	24 (18 ~ 36)	3.3	600	60	109	8	15	4000	76
DK03S2405A		5	500	50	130				80
DK03S2412A		12	250	25	150				83
DK03S2415A		15	200	20	149				84
DK03D2405A		±5	±250	±25	134			1000*	78
DK03D2412A		±12	±125	±12.5	152				82
DK03D2415A		±15	±100	±10	152				82
DK03S4803A	48 (36 ~75)	3.3	600	60	53	4	15	4000	78
DK03S4805A		5	500	50	64				82
DK03S4812A		12	250	25	74				85
DK03S4815A		15	200	20	73				86
DK03D4805A		±5	±250	±25	65			1000*	80
DK03D4812A		±12	±125	±12.5	74				84
DK03D4815A		±15	±100	±10	75				83

* For each output

E-mail: DCDC@delta.com.tw
http://www.delta.com.tw/dcdc

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	4.5	7	9	
	24V Input Models	8	12	18	
	48V Input Models	16	24	36	
Under Voltage Shutdown	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		---	1000	2000	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	Vin=Min. to Max.	---	±0.2	±0.5	%
Load Regulation	Io=10% to 100%	---	±0.2	±0.5	%
Ripple & Noise (20MHz)		---	25	50	mV_{P-P}
Ripple & Noise (20MHz)	Over Line, Load & Temp.	---	---	75	mV_{P-P}
Ripple & Noise (20MHz)		---	---	15	mV rms
Transient Recovery Time	50% Load Step Change	---	300	500	uS
Transient Response Deviation		---	±3	±6	%
Temperature Coefficient		---	±0.01	±0.02	%/℃
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	---	350	500	pF
Switching Frequency		200	300	450	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				

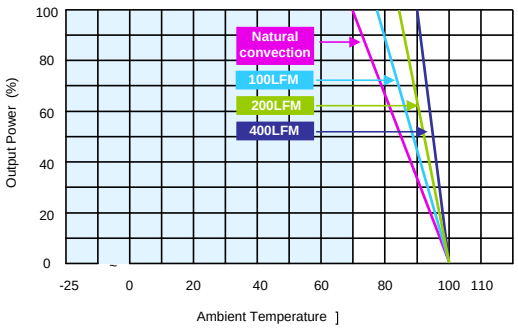
Recommended Input Fuse

12V Input Models	24V Input Models	48V Input Models
700mA Slow-Blow Type	350mA Slow-Blow Type	135mA 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

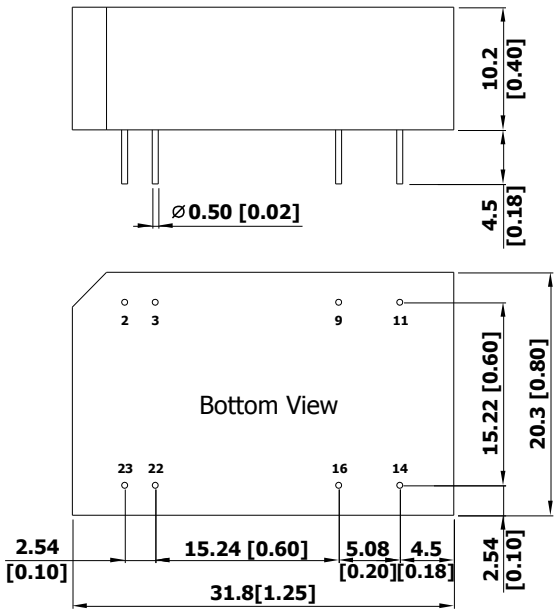


Notes

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.

Mechancial 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 : Non-Conductive Black Plastic

Weight : 12.2g

Part Numbering System

D	K	03	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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