

DN03S/D Series

DC/DC CONVERTER 2-3W, DIP-Package



FEATURES

- DIP-24 Plastic Package
- Wide 2:1 Input Range
- Operating Temp.Range -40 to +85°C
- Overload Protection
- No Minimum Load Requirement
- Isolation voltage (optional)
 1500VDC for DN03S/DXXXXA
 3000VDC for DN03S/DXXXXH
- Input Filter meets EN55022,class A and FCC,level A
- Fully compatible with DE03S/D Series
- 3 Years Product Warranty

The DN03S/D series is a range of high performance dc-dc converter modules, designed as a cost optimized replacement for the highly popular DE03S/D series. The converter features wide 2:1 input ranges and tight output voltage regulation. Excellent efficiency allows an operating temperature up to +70°C at full load. The product comes in a DIP-24 plastic package with industry standard footprint. Typical applications for these economical priced dc-dc converters are industrial electronics, instrumentation or communication equipment.

Model Select	tion Gu	ide						
Model	Input	Output	Output	Input Current		Reflected	Max. capacitive	Efficiency
Number	Voltage	Voltage	Current				Load	(typ.)
	(Range)		Max.	@Max. Load	@No Load	Current		@Max. Load
	VDC	VDC	mA	mA(typ.)	mA(typ.)	mA(typ.)	μF	%
DN03S0503A		2.2	600	514			680	77
DN03S0503H		5.5	000	514			000	
DN03S0505A		5	500	641			470	78
DN03S0505H				470	10			
DN03S0512A		12	250	732		100	330	82
DN03S0512H								
DN03S0515A	_	15	200	732			220	82
DN03S0515H	5				65		-	
DN03S0524A	(4.5 ~ 9)	24	125	741			100	81
DN0350524H								
	-	±5	±250	649			220#	77
DN03D0512A		±12	±125	741			150#	81
DN03D0515A								
DN03D0515H		±15	±100	741			100#	81
DN03S1203A								
DN03S1203H		3.3	600	209			680	79
DN03S1205A		_	500	0.57			170	<u>.</u>
DN03S1205H		5	500	257			470	81
DN03S1212A		10	250	204			220	95
DN03S1212H		12	250	294			330	65
DN03S1215A		15	200	294			220	85
DN03S1215H	12	15	200	234	35	30	220	00
DN03S1224A	(9 ~ 18)	24	125	298	00	30	100	84
DN03S1224H		4 7	120	200			100	01
DN03D1205A	-	±5	±250	260			220#	80
DN03D1205H								
DN03D1212A		±12	±125	298			150#	84
DN03D1212H								
DN03D1215A		±15	±100	298			100#	84
DINU3D1215H								

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Model Select	ion Gu	ide						
Model	Input	Output	Output	Input Current		Reflected	Max. capacitive	Efficiency
Number	Voltage	Voltage	Current				Load	(typ.)
	(Range)		Max.	@Max. Load	@No Load	Current		@Max. Load
	VDC	VDC	mA	mA(typ.)	mA(typ.)	mA(typ.)	μF	%
DN03S2403A DN03S2403H		3.3	600	104			680	79
DN03S2405A DN03S2405H		5	500	129	20 15		470	81
DN03S2412A DN03S2412H		12	250	147			330	85
DN03S2415A DN03S2415H	24	15	200	147			220	85
DN03S2424A DN03S2424H	(18 ~ 36)	24	125	149		100	84	
DN03D2405A DN03D2405H		±5	±250	130			220#	80
DN03D2412A DN03D2412H		±12	±125	149			150#	84
DN03D2415A DN03D2415H		±15	±100	149			100#	84
DN03S4803A DN03S4803H		3.3	600	52		10	680	79
DN03S4805A DN03S4805H		5	500	64			470	81
DN03S4812A DN03S4812H		12	250	74			330	85
DN03S4815A DN03S4815H	48	15	200	74	45		220	85
DN03S4824A DN03S4824H	(36 ~75)	24	125	74	15		100	84
DN03D4805A DN03D4805H		±5	±250	65			220#	80
DN03D4812A DN03D4812H		±12	±125	74			150#	84
DN03D4815A DN03D4815H		±15	±100	74			100#	84

For each output



Input Specifications

Parameter	Model	Min	Typ	Max	Unit
	5V Input Models	-0.7		11	-
	12V Input Models	-0.7		25	
Input Surge Voltage (1 sec. max.)	24V Input Models	-0.7		50	
	48V Input Models	-0.7		100	
	5V Input Models			4.5	
Ctart I In Thread ald Maltana	12V Input Models			9	
Start-Op Threshold Voltage	24V Input Models			18	VDC
	48V Input Models			36	
	5V Input Models			4	
Linden Valte ne Obutdeum	12V Input Models			8.5	
Under Voltage Snutdown	24V Input Models			17.5	
	48V Input Models			35.5	
Internal Filter Type			Р	i Filter	
Short Circuit Input Power	All Models			2000	mW
Internal Power Dissipation				1200	mW

Output Specifications							
Parameter	Conditions	Min.	Тур.	Max.	Unit		
Output Voltage Setting Accuracy				±2.0	%Vnom.		
Output Voltage Balance	Dual Output, Balanced Loads		±0.5	±2.0	%		
Line Regulation	Vin=Min. to Max.		±0.3	±1.0	%		
Load Regulation	lo=0% to 100%		±0.3	±1.0	%		
Min.Load	No minimum Load Requirement						
Ripple & Noise	0-20 MHz Bandwidth			70	mV _{P-P}		
Transient Recovery Time	25% Load Stop Change		300	500	µsec		
Transient Response Deviation	It Response Deviation		±3	±5	%		
Temperature Coefficient			±0.01	±0.02	%/ °C		
Over Load Protection	Foldback	120	150		%		
Short Circuit Protection	Continuous						

General Specifications

Parameter	Cond	Conditions		Тур.	Max.	Unit
I/O Isolation Voltage (rated)	CO Casanda	Standard	1500			VDC
	60 Seconds	Suffix H (6)	3000			VDC
I/O Isolation Resistance	500	500 VDC				MΩ
I/O Isolation Capacitance	100Kł	100KHz, 1V			300	pF
Switching Frequency						KHz
MTBF (calculated)	MIL-HDBK-217F@2	MIL-HDBK-217F@25°C, Ground Benign		1,000,000		Hours
Safety Approvals (Pending)	U	ition(UL certific	cate), IEC/EN	60950-1		

Environmental Specifications								
Parameter	Conditions	Min.	Max.	Unit				
Operating Ambient Temperature Range (See Power Derating Curve)	Natural Convection	-40	+85	°C				
Case Temperature			+100	°C				
Storage Temperature Range		-50	+125	°C				
Humidity (non condensing)			95	% rel. H				
Cooling		Free-Air conve	ction					
Lead Temperature (1.5mm from case for 10Sec.)			260	°C				



EMC Specifications

Parameter	Standards & Level	Performance
Conducted EMI	Compliance to EN 55022 and FCC part 15	Class A
ESD	EN61000-4-2 air ± 8KV , Contact ± 6KV	Perf. Criteria A
Radiated immunity	EN61000-4-3 10V/m	Perf. Criteria A
Fast transient (5)	EN61000-4-4 ± 2KV	Perf. Criteria A
Surge (5)	EN61000-4-5 ±1KV	Perf. Criteria A
Conducted immunity	EN61000-4-6 10V/m	Perf. Criteria A

Power Derating Curve



Notes

- 1 Specifications typical at Ta=+25°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 75% to 100%
- 3 We recommend to protect the converter by a slow blow fuse in the input supply line.
- 4 Other input and output voltage may be available, please contact factory.
- 5 To meet EN61000-4-4 & EN61000-4-5 an external capacitor across the input pins is required. Suggested capacitor: CHEMI-CON KY 220µF/100V
- 6 That "natural convection" is about 20LFM but is not equal to still air (0 LFM).
- 7 Specifications are subject to change without notice.



Package Specifications





Part Numbering System

D	N	03	S	05	03	А			
Product typ	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 - PCB Mount			
P - SIP		02 - 2W	D - Dual	05 - 5V	05 - 5V	H - High Isolation			
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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 DN03S1215A
 DN03S2424A
 DN03S4815A
 DN03S4812A
 DN03S1203A
 DN03S2412A
 DN03S2415A

 DN03S4824A
 DN03S0512A
 DN03S1205A
 DN03S0505A
 DN03S2405A
 DN03S4803A
 DN03S0524A
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