



### FEATURES

- Efficiency up to 84%
- DIP Package with Industry Standard Pinout
- > 1MHours MTBF
- 2:1 Wide Input Range
- UL60950-1 Safety Approval
- Isolation Voltage 1500VDC
- Temperature Performance -25°C to +71°C
- Internal SMD Construction
- 3 Years Product Warranty



The DE03S/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 +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) VDC	Output Voltage VDC	Output Current		Input Current		Reflected Ripple Current mA(typ.)	Max. capacitive Load uF	Efficiency (typ.)
			Max. mA	Min. mA	@Max. Load mA(typ.)	@No Load mA(typ.)			@Max. Load %
DE03S0503A	5 (4.5 ~ 9)	3.3	600	60	566	40	100	4000	70
DE03S0505A		5	500	50	685				73
DE03S0512A		12	250	25	779				77
DE03S0515A		15	200	20	779			77	
DE03D0505A		±5	±250	±25	694			1000*	72
DE03D0512A		±12	±125	±12.5	800				75
DE03D0515A		±15	±100	±10	800				75
DE03S1203A	12 (9 ~ 18)	3.3	600	60	223	20	30	4000	74
DE03S1205A		5	500	50	267				78
DE03S1212A		12	250	25	305				82
DE03S1215A		15	200	20	305			82	
DE03D1205A		±5	±250	±25	271			1000*	77
DE03D1212A		±12	±125	±12.5	313				80
DE03D1215A		±15	±100	±10	313				80
DE03S2403A	24 (18 ~ 36)	3.3	600	60	109	5	15	4000	76
DE03S2405A		5	500	50	132				79
DE03S2412A		12	250	25	149				84
DE03S2415A		15	200	20	149			84	
DE03D2405A		±5	±250	±25	132			1000*	79
DE03D2412A		±12	±125	±12.5	152				82
DE03D2415A		±15	±100	±10	152				82
DE03S4803A	48 (36 ~ 75)	3.3	600	60	55	3	10	4000	76
DE03S4805A		5	500	50	66				79
DE03S4812A		12	250	25	75				84
DE03S4815A		15	200	20	75			84	
DE03D4805A		±5	±250	±25	65			1000*	80
DE03D4812A		±12	±125	±12.5	75				84
DE03D4815A		±15	±100	±10	75				84

\* For each output



## Input Characteristics

Parameter	Model	Min.	Typ.	Max.	Unit
Input Surge Voltage (1 sec. max.)	5V Input Models	-0.7	---	11	VDC
	12V Input Models	-0.7	---	25	
	24V Input Models	-0.7	---	50	
	48V Input Models	-0.7	---	100	
Start-Up Voltage	5V Input Models	3.5	4	4.5	
	12V Input Models	4.5	7	9	
	24V Input Models	8	12	18	
	48V Input Models	16	24	36	
Under Voltage Shutdown	5V Input Models	---	3.5	4	
	12V Input Models	---	6.5	8.5	
	24V Input Models	---	11	17	
	48V Input Models	---	22	34	
Reverse Polarity Input Current		---	---	1	A
Input Filter	All Models	Pi Filter			
Short Circuit Input Power		---	1000	2000	mW
Internal Power Dissipation		---	---	2500	mW

## 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)		---	45	60	mV <sub>P-P</sub>
Ripple & Noise (20MHz)	Over Line, Load & Temp.	---	---	100	mV <sub>P-P</sub>
Ripple & Noise (20MHz)		---	---	15	mV rms
Transient Recovery Time	50% Load Step Change	---	300	500	µS
Transient Response Deviation		---	±3	±5	%
Temperature Coefficient		---	±0.01	±0.02	%/°C
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	---	65	100	pF
Switching Frequency		---	300	---	KHz
MTBF (calculated)	MIL-HDBK-217F@25°C, Ground Benign	1,000,000	---	---	Hours
Safety Approvals	UL/cUL 60950-1 recognition(UL certificate), IEC/EN 60950-1				

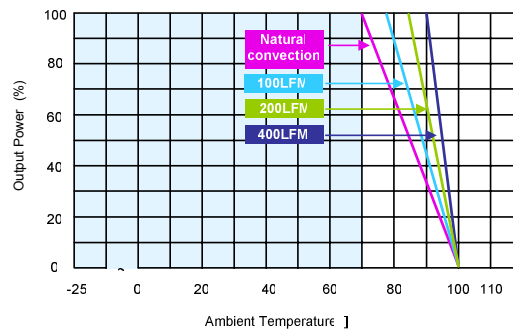
## Recommended Input Fuse

5V Input Models	12V Input Models	24V Input Models	48V Input Models
1500mA Slow-Blow Type	700mA Slow-Blow Type	350mA Slow-Blow Type	135mA Slow-Blow Type

## Environmental Specifications

Parameter	Conditions	Min.	Max.	Unit
Operating Temperature Range (with Derating)	Ambient	-25	+85	°C
Case Temperature		---	+90	°C
Storage Temperature Range		-50	+125	°C
Humidity (non condensing)		---	95	% rel. H
Cooling	Free-Air convection			
Lead Temperature (1.5mm from case for 10Sec.)		---	260	°C

## Power Derating Curve

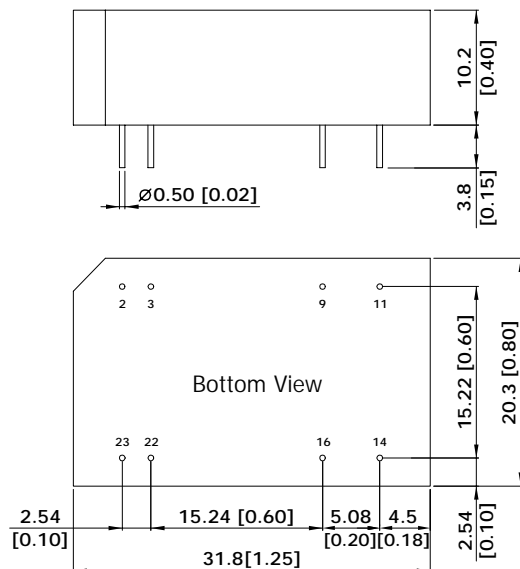


## Notes

- 1 Specifications typical at  $T_a=+25^{\circ}\text{C}$ , 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 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  $\Rightarrow 0.5 \pm 0.05$  (0.02±0.002)

## Physical Outline

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

Case Material : Non-Conductive Black Plastic

Weight : 12.4g



## Part Numbering System

D	E	03	S	05	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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