



FEATURES

- Efficiency up to 83%
- SMD Package with Industry Standard Pinout
- Isolation Voltage 1000VDC
- 2:1 Wide Input Range
- Low ripple and noise
- Short Circuit Protection
- Temperature Performance -40°C to +71°C
- CSA60950-1 Safety Approval
- > 1MHours MTBF
- Lead free, RoHs Compliant
- 3 Years Product Warranty



Security



Lab



Medical



Metro



Data Center



Telecom



Industrial



Network

The SE03S/D series are miniature, SMD Package, isolated 3W DC/DC converters with 1,500VDC isolation. The SE03S/D series features fully regulated output and ultra wide 2:1 input voltage ranges. It offers short circuit protection and allows a wide operating temperature range of -40°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.

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	%
SE03S1203A	12 (9 ~ 18)	3.3	700	70	257	20	25	4700		75
SE03S1205A		5	600	60	316					79
SE03S1212A		12	250	25	305					82
SE03S1215A		15	200	20	305					82
SE03D1205A		±5	±300	±30	321			180*		78
SE03D1212A		±12	±125	±12.5	309					81
SE03D1215A		±15	±100	±10	309					81
SE03S2403A	24 (18 ~ 36)	3.3	700	70	127	5	15	4700		76
SE03S2405A		5	600	60	156					80
SE03S2412A		12	250	25	151					83
SE03S2415A		15	200	20	151					83
SE03D2405A		±5	±300	±30	158			180*		79
SE03D2412A		±12	±125	±12.5	152					82
SE03D2415A		±15	±100	±10	152					82
SE03S4803A	48 (36 ~ 75)	3.3	700	70	63	3	10	4700		76
SE03S4805A		5	600	60	78					80
SE03S4812A		12	250	25	75					83
SE03S4815A		15	200	20	75					83
SE03D4805A		±5	±300	±30	79			180*		79
SE03D4812A		±12	±125	±12.5	76					82
SE03D4815A		±15	±100	±10	76					82

* 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	4.5	6	8	
	24V Input Models	8	12	18	
	48V Input Models	16	24	36	
Under Voltage Shutdown	12V Input Models	---	---	8	
	24V Input Models	---	---	16	
	48V Input Models	---	---	32	
Reverse Polarity Input Current	All Models	---	---	0.5	A
Short Circuit Input Power		---	---	1500	mW
Input Filter		Pi Filter			
Internal Power Dissipation		---	---	2500	mW

Output Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Dual Output, Balanced Loads	---	±0.5	±1.0	%
Output Voltage Balance		---	±0.5	±2.0	%
Line Regulation		---	±0.1	±0.3	%
Load Regulation	Io=10% to 100%	---	±0.3	±1.0	%
Ripple & Noise (20MHz)	Over Line, Load & Temp.	---	50	75	mV _{P-P}
Ripple & Noise (20MHz)		---	---	100	mV _{P-P}
Ripple & Noise (20MHz)		---	---	10	mV _{rms}
Transient Recovery Time	25% Load Step Change	---	200	500	μs
Transient Response Deviation		---	±2	±6	%
Temperature Coefficient		---	±0.01	±0.02	%/°C
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
Moisture Sensitivity Level (MSL)	IPC/JEDEC J-STD-020D	Level 2			

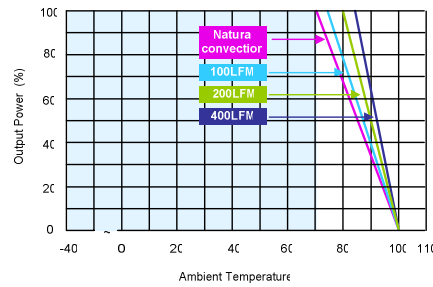
Recommended Input Fuse

12V Input Models	24V Input Models	48V Input Models
750mA Slow-Blow Type	350mA Slow-Blow Type	200mA Slow-Blow Type

Environmental Specifications

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

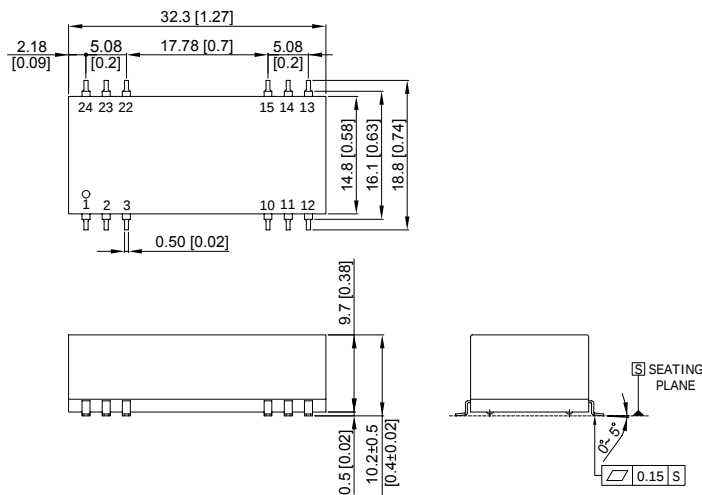


Notes

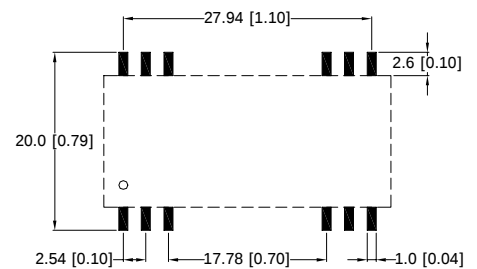
- 1 Specifications typical at $T_a = +25^\circ\text{C}$, resistive load, nominal input voltage and rated output current unless otherwise noted.
- 2 Transient recovery time is measured to within 1% error band for a step change in output load of 75% to 100%.
- 3 Ripple & Noise measurement bandwidth is 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.
- 7 It is not recommended to use water-washing process on SMT units.

Mechanical Drawing

Mechanical Dimensions



Connecting Pin Patterns



- ▶ All dimensions in mm (inches)
- ▶ Tolerance: $X.X \pm 0.25$ ($X.XX \pm 0.01$)
 $X.XX \pm 0.13$ ($X.XXX \pm 0.005$)
- ▶ Pins ± 0.05 (± 0.002)

Pin Connections

Pin	Single Output	Dual Output
1,2	-Vin	-Vin
3,11,14,22	NC	NC
10	NC	Common
12	NC	-Vout
13	+Vout	+Vout
15	-Vout	Common
23,24	+Vin	+Vin

NC : No Connection

Physical Characteristics

Case Size	: 32.3x14.8x10.2mm (1.27x0.58x0.4 Inches)
Case Material	: Non-Conductive Black Plastic
	: (flammability to UL 94V-0 rated)
Weight	: 8.8g



Part Numbering System						
S	E	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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Mouser Electronics

Authorized Distributor

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Delta Electronics:

<u>SE03D1215A</u>	<u>SE03D1212A</u>	<u>SE03S1212A</u>	<u>SE03D2412A</u>	<u>SE03D4812A</u>	<u>SE03S2405A</u>	<u>SE03S4803A</u>	<u>SE03S2412A</u>
<u>SE03D4815A</u>	<u>SE03D2415A</u>	<u>SE03S4805A</u>	<u>SE03D4805A</u>	<u>SE03D1205A</u>	<u>SE03S1203A</u>	<u>SE03S2403A</u>	<u>SE03S4815A</u>
<u>SE03S2415A</u>	<u>SE03S4812A</u>	<u>SE03S1215A</u>	<u>SE03S1205A</u>	<u>SE03D2405A</u>			