THE DATASHEET OF

SH01S1203A

SH01S/D Series

1W DC/DC CONVERTER, SMD-Package

FEATURES

- Efficiecny up to 80%
- SMD Package with Industry Standard Pinout
- Operating Temperature Range –40°C to +85°C
- Moisture sensitivity level (MSL) 2
- Isolation Voltage 1500 VDC
- High Accuracy of Pin Planarity
- Lead free, RoHs Compliant
- 3 Years Product Warranty
- UL/cUL 62368-1, UL/cUL 60950-1 approval

Security Lab Medical Metro Data Center Telecom Industrial Network

The SH01S/D series is miniature, SMD Package, isolated 1W DC/DC converters with 1,500VDC isolation. It allows a wide operating temperature range of –40°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, In

Model List

Model Number	Input Voltage (Range)	Output Voltage	Output Current		Input Current		Load Regulation	Max. capacitive Load	Efficiency (typ.)
			Max.	Min.	@Max. Load	@No Load			@Max. Load
	VDC	VDC	mA	mA	mA(typ.)	mA(typ.)	% (max.)	uF	%
SH01S0503A	5 (4.5 ~ 5.5)	3.3	300	6	271	30	10	33	73
SH01S0505A		5	200	4	256		10		78
SH01S0509A		9	110	2	254		10		78
SH01S0512A		12	84	1.5	259		8		78
SH01S0515A		15	67	1	254		7		79
SH01D0505A		±5	±100	±2	270		10	33*	74
SH01D0512A		±12	±42	±0.8	259		8		78
SH01D0515A		±15	±33	±0.7	254		7		78
SH01S1203A	12 (10.8 ~ 13.2)	3.3	300	6	112	15	8	33	74
SH01S1205A		5	200	4	109		8		76
SH01S1209A		9	110	2	106		8		78
SH01S1212A		12	84	1.5	106		5		79
SH01S1215A		15	67	1	105		5		80
SH01D1205A		±5	±100	±2	113		8	33*	74
SH01D1212A		±12	±42	±0.8	108		5		78
SH01D1215A		±15	±33	±0.7	104		5		79
SH01S1512A	15 (13.5 ~ 16.5)	12	84	1.5	86	14	5	33	78
SH01S1515A		15	67	1	86		5		78
SH01S2403A	24 (21.6 ~ 26.4)	3.3	300	6	58	8	8	33	72
SH01S2405A		5	200	4	54		8		78
SH01S2409A		9	110	2	54		8		77
SH01S2412A		12	84	1.5	55		5		77
SH01S2415A		15	67	1	53		5		79
SH01D2405A		±5	±100	±2	57	9	8	33*	73
SH01D2412A		±12	±42	±0.8	54		5		78
SH01D2415A		±15	±33	±0.7	53		5		78

* For each output

E-mail: dcdc@deltaww.com
http://www.deltaww.com/dcdc

Input Characteristics

Parameter	Model	Min.	Typ.	Max.	Unit
Input Voltage Range	5V Input Models	4.5	5	5.5	VDC
	12V Input Models	10.8	12	13.2	
	15V Input Models	13.5	15	16.5	
	24V Input Models	21.6	24	26.4	
Input Surge Voltage (1 sec. max.)	5V Input Models	-0.7	---	9	
	12V Input Models	-0.7	---	18	
	15V Input Models	-0.7	---	20	
	24V Input Models	-0.7	---	30	
Reverse Polarity Input Current	All Models	---	---	0.3	A
Input Filter		Internal Capacitor			
Internal Power Dissipation		---	---	450	mW

Output Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
Output Voltage Balance	Dual Output, Balanced Loads	---	±0.1	±1.0	%
Line Regulation	For Vin Change of 1%	---	±1.2	±1.5	%
Load Regulation	Io=20% to 100%	See Model Selection Guide			
Ripple & Noise (20MHz)		---	60	120	mV_{P-P}
Ripple & Noise (20MHz)	Over Line, Load & Temp.	---	---	150	mV_{P-P}
Ripple & Noise (20MHz)		---	---	15	mV rms
Temperature Coefficient		---	±0.01	±0.02	%/℃
Short Circuit Protection		0.5 Second Max.			

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	---	40	100	pF
Switching Frequency		50	100	140	KHz
MTBF (calculated)	MIL-HDBK-217F@25℃, Ground Benign	2,000,000	---	---	Hours
Safety Approvals	UL/cUL 62368-1, UL/cUL 60950-1 recognition(CSA certificate)				
Moisture Sensitivity Level (MSL)	IPC/JEDEC J-STD-020D	Level 2			

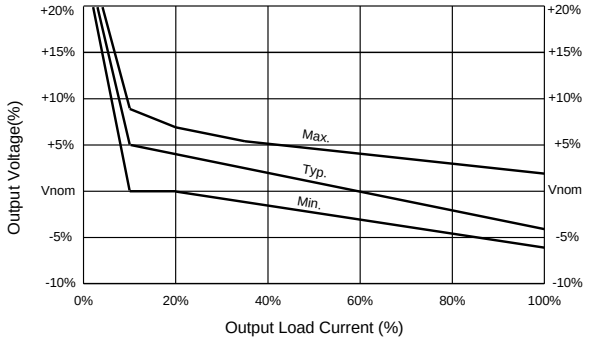
Recommended Input Fuse

5V Input Models	12V Input Models	15V Input Models	24V Input Models
500mA Slow-Blow Type	200mA Slow-Blow Type	150mA Slow-Blow Type	100mA Slow-Blow Type

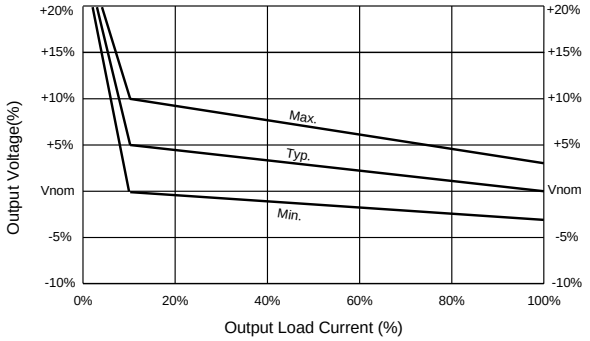
Environmental Specifications

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

Output Voltage Tolerance

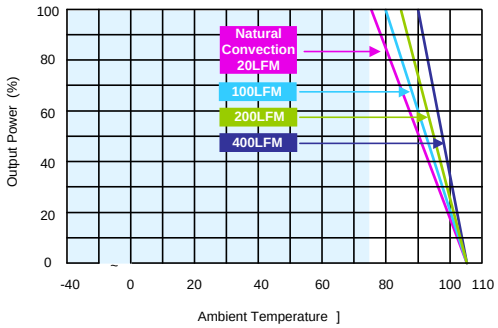


(3.3V & 5V Output)



(All other Output)

Power Derating Curve

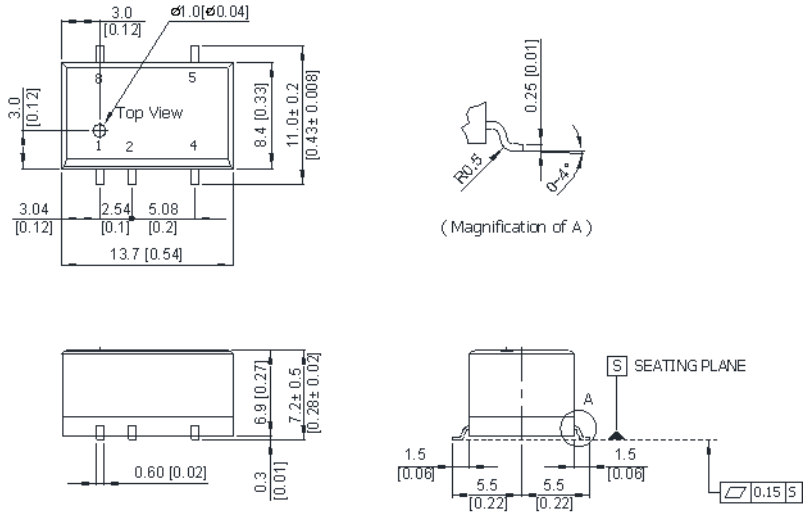


Notes

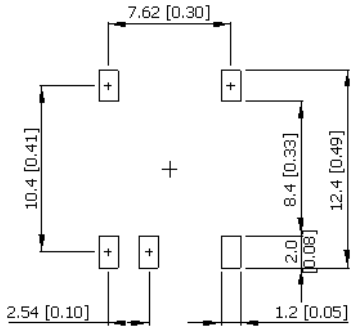
1 Specifications typical at Ta=+25℃, resistive load, nominal input voltage and rated output current unless otherwise noted.
2 Ripple & Noise measurement bandwidth is 0-20MHz.
3 These power converters require a minimum output loading to maintain specified regulation, operation under no-load conditions will not damage these modules; however they may not meet all specifications listed.
4 All DC/DC converters should be externally fused at the front end for protection.
5 That “natural convection” is about 20LFM but is not equal to still air (0 LFM).
6 Specifications subject to change without notice.
7 It is not recommended to use water-washing process on SMT units.

Mechancial Drawing

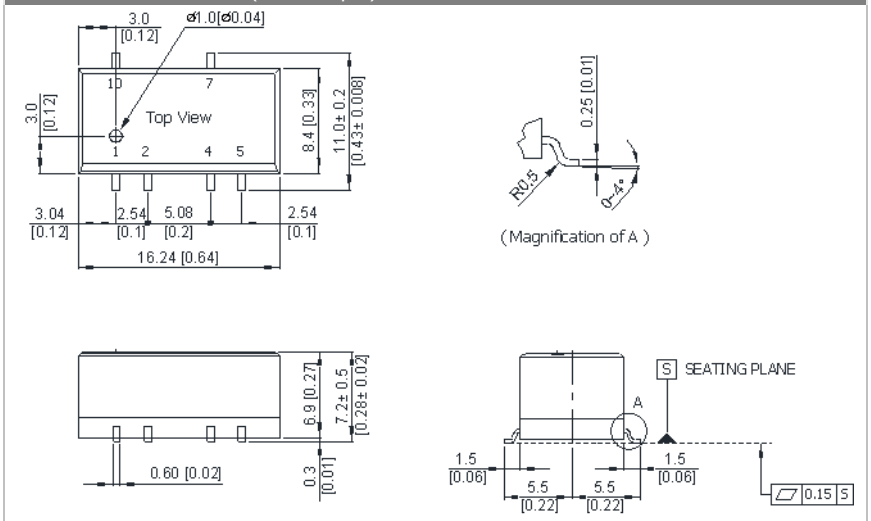
Mechanical Dimensions (Single Output)



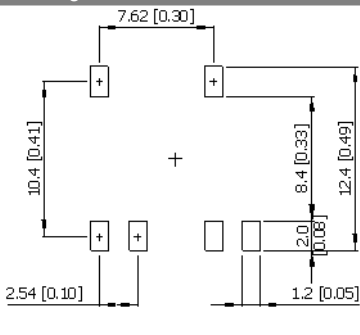
Connecting Pin Patterns



Mechanical Dimensions (Dual Output)



Connecting Pin Patterns



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

Pin Connections

Pin	Single Output	Dual Output
1	-Vin	-Vin
2	+Vin	+Vin
3	No Pin	No Pin
4	-Vout	Common
5	+Vout	-Vout
6	No Pin	No Pin
7	No Pin	+Vout
8	NA	No Pin
9	---	No Pin
10	---	NA

NA : Not Available for Electrical Connection

Physical Outline

Case Size (Single Output)	:	13.7x8.0x6.7mm (0.54x0.31x0.26 Inches)
Case Size (Dual Output)	:	16.24x8.0x6.7mm (0.64x0.31x0.26 Inches)
Case Material	:	Non-Conductive Black Plastic (flammability to UL 94V-0 rated)
Weight (Single Output)	:	1.7g
Weight (Dual Output)	:	2.0g

Part Numbering System

S	H	01	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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