SA-1W Series

1W Unregulated Single output

Features

- 4 Pin SIL / 8 Pin DIL Package
- 1000 VDC Isolation
- Up to 3000 VDC Isolation
- Low Ripple and Noise
- Efficiency up to 78%
- -40 ~ 85°C Operation Temperature Range
- Non-Conductive Black Plastic Case
- EMI Complies With EN55022 Class B

The SA series is a family of cost effective 1W single output DC-DC converters. These converters achieve low cost and ultra-miniature SIP 4 pin or DIP 8 pin size. Devices are encapsulated using flame retardant resin. The models operate from input voltage of 5, 12, 24, 48 Vdc with output voltage of 3.3, 5,7.2, 9, 12,15, 18, 24 Vdc. High performance features include 1000Vdc~3000Vdc input/output isolation, high efficiency operation and output voltage accuracy of ±3% maximum. Standard features include an input range of ±10% tolerance and low output noise and ripple.

All specifications typical at Ta=25°C, nominal input voltage and full load unless otherwise specified

OUTPUT SPECIFICATIONS

Voltage accuracy	±3%
Line regulation	±1.2% / Per 1% Vin Change
Load regulation	(From 20% to 100% Load) ±10% (Output 3.3V Model) ±20%
Ripple & noise (20 MHz bandwidth)(1)	100mV pk-pk
Temperature coefficient	±0.02%/°C
Capacitor load(2)	See table

INPUT SPECIFICATIONS

Voltage Range	±10%
Max. Input Current	See table
No-Load Input Current	See table
Input Filter	Capacitors
Input Reflected Ripple Current(3)	20mA pk-pk

GENERAL SPECIFICATIONS

Efficiency	See table
I/O Isolation Voltage(3 sec)	
Input/Output	1000~3000Vdc
I/O Isolation Capacitance	60 pF Typ.
I/O Isolation Resistance	1000M Ohm
Switching Frequency	Variable 80kHz
Humidity	95% rel H
Reliability Calculated MTBF(MIL-HDBK-217 F)	>1.121Mhrs
Safety Standard : (designed to meet)	IEC 60950-1

EMC SPECIFICATIONS

Radiated Emissions	EN55022	CLASS B
	FCC 47 CFR Part 15 Subpart B	CLASS B
ESD	IEC 61000-4-2	Perf. Criteria B
RS	IEC 61000-4-3	Perf. Criteria A

PHYSICAL SPECIFICATIONS

Case Material	Non-conductive Black Plastic(UL94V-0 rated)
Pin Material	
SIP Case	0.5mm Alloy42 Solder-coated
DIP Case	Ø0.5mm Brass Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	(SIP/1.5g) (DIP/1.8g)
Dimensions	SIP Case 0.46"x0.24"x0.40" DIP Case 0.50"x0.40"x0.27"

ENVIRONMENT SPECIFICATIONS

Operating Temperature	-40°C~85°C (See Derating Curve)
Maximum Case Temperature	100°C
Storage Temperature	-40°C~125°C
Cooling	Nature Convection

ABSOLUTE MAXIMUM RATINGS(4)

These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.

Input Voltage(100mS)	
5 Modes	0~7 Vdc
12 Modes	0~15 Vdc
24 Modes	0~28 Vdc
48 Modes(for SIP)	0~54 Vdc
Lead Soldering Temperature (1.5mm from case 10sec.)	260°C

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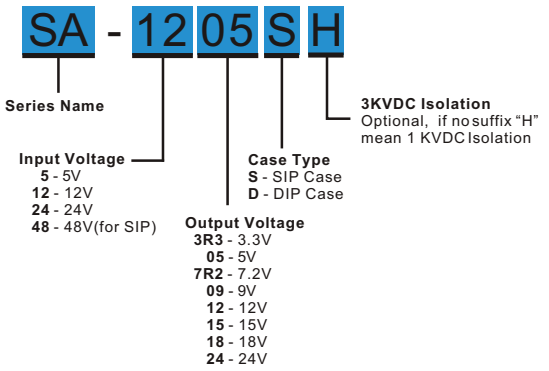
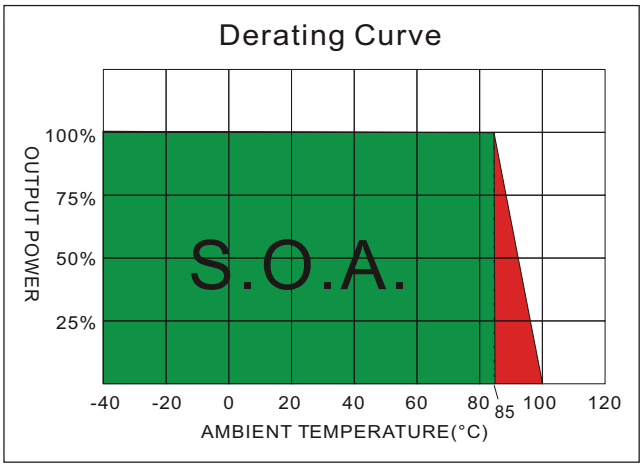
PART NUMBER STRUCTURE





MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current No-Load (mA)	INPUT Current Full Load (mA)	OUTPUT Voltage (Vdc)	OUTPUT Current Full load (mA)	EFFICIENCY @FL(%)	Capacitor Load(uF)
SA-053R3S1	5	25	278	3.3	303	72	220
SA-0505S1	5	25	267	5	200	75	220
SA-057R2S1	5	25	264	7.2	138.8	76	220
SA-0509S1	5	25	260	9	111.1	77	220
SA-0512S1	5	25	257	12	83.3	78	220
SA-0515S1	5	25	257	15	66.67	78	220
SA-0518S1	5	25	257	18	55.5	78	220
SA-0524S1	5	25	257	24	41.67	78	220
SA-123R3S1	12	16	116	3.3	303	72	220
SA-1205S1	12	16	112	5	200	75	220
SA-127R2S1	12	16	110	7.2	138.8	76	220
SA-1209S1	12	16	109	9	111.1	77	220
SA-1212S1	12	16	107	12	83.3	78	220
SA-1215S1	12	16	107	15	66.67	78	220
SA-1218S1	12	16	107	18	55.5	78	220
SA-1224S1	12	16	107	24	41.67	78	220
SA-243R3S1	24	10	58	3.3	303	72	220
SA-2405S1	24	10	56	5	200	75	220
SA-247R2S1	24	10	55	7.2	138.8	76	220
SA-2409S1	24	10	55	9	111.1	77	220
SA-2412S1	24	10	54	12	83.3	78	220
SA-2415S1	24	10	54	15	66.67	78	220
SA-2418S1	24	10	54	18	55.5	78	220
SA-2424S1	24	10	54	24	41.67	78	220
SA-483R3S1	48	7	29	3.3	303	72	220
SA-4805S1	48	7	28	5	200	75	220
SA-487R2S1	48	7	27	7.2	138.8	76	220
SA-4809S1	48	7	27	9	111.1	76	220
SA-4812S1	48	7	27	12	83.3	76	220
SA-4815S1	48	7	27	15	66.67	76	220
SA-4818S1	48	7	27	18	55.5	76	220
SA-4824S1	48	7	27	24	41.67	76	220

Suffix "H" means 3 KVdc isolation

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SA-247R2D1	24	10	55	7.2	138.8	76	220
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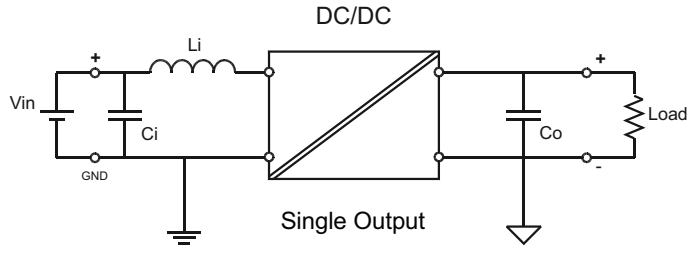
SA-2412D1	24	10	54	12	83.3	78	220
SA-2415D1	24	10	54	15	66.67	78	220
SA-2418D1	24	10	54	18	55.5	78	220
SA-2424D1	24	10	54	24	41.67	78	220

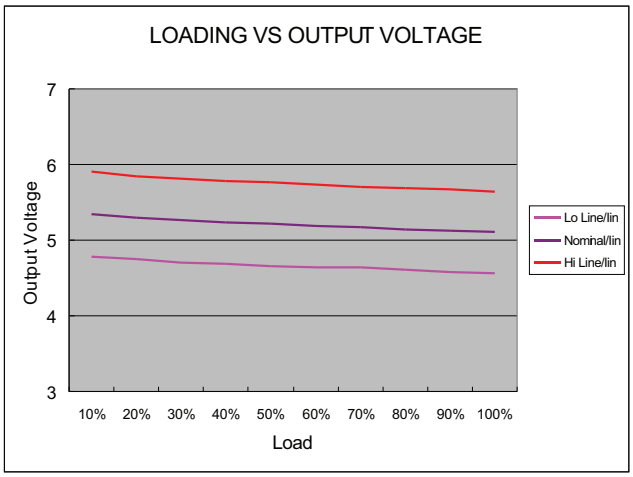
Suffix "H" means 3 KVdc isolation

NOTE

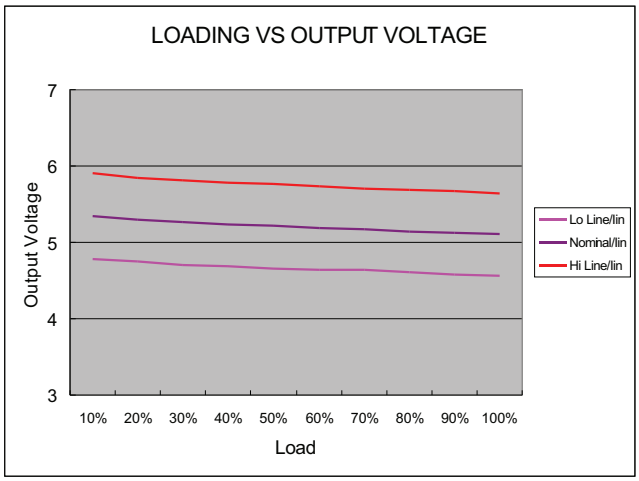
1. Ripple/Noise measured with 20MHz bandwidth.
2. Tested by minimal Vin and constant resistive load.
3. Measured Input reflected ripple current with a simulated source inductance of 12uH.
4. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.
5. Operation under no-load conditions will not damage these devices, however they may not meet all listed specifications.
6. For reduce converter's ripple & noise, it is recommended to add a 4.7μF~100μF capacitor in output end. For EMI performance improvement, it is recommended to add a 12μH inductor and a 10μF~220μF capacitor in input end.



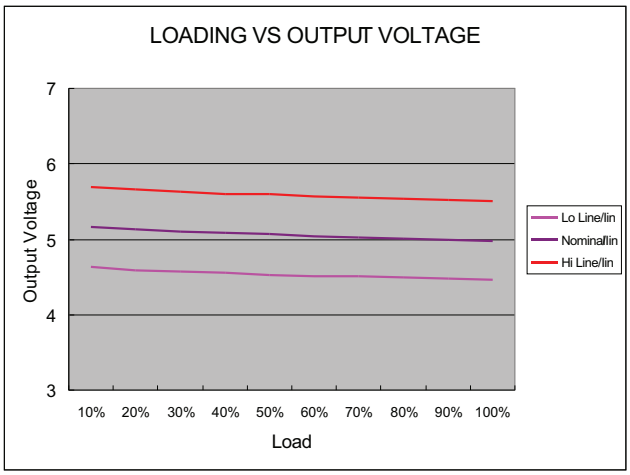
SA - 1W Unregulated Single output



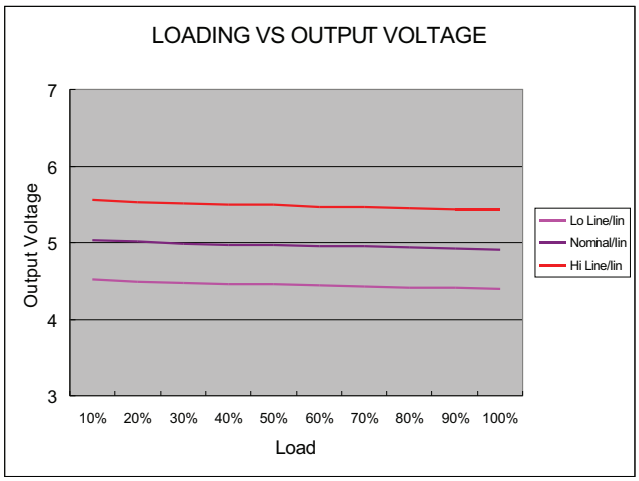
05 Models



12 Models



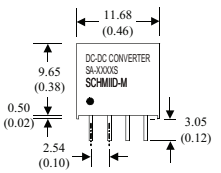
24 Models

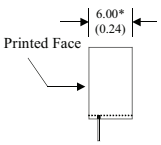


48 Models

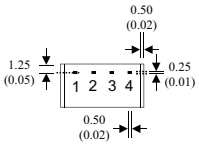
SA - 1W Unregulated Single output

MECHANICAL SPECIFICATIONS





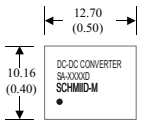
* The thickness of 48V input voltage model is 7.50(0.29)

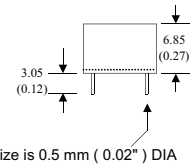


4 Pin SIL Package

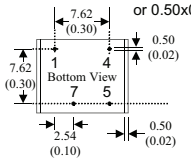
PIN CONNECTIONS	
PIN NUMBER	SINGLE
1	−V Input
2	+V Input
3	−V Output
4	+V Output

(The Pin Connection of high isolation one is the same with normal one.)





Pin Size is 0.5 mm (0.02") DIA
or 0.50x0.30 mm (0.02x0.01")



8 Pin DIL Package

PIN CONNECTIONS	
PIN NUMBER	SINGLE
1	−V Input
4	+V Input
5	+V Output
7	−V Output

(The Pin Connection of high isolation one is the same with normal one.)

Notes : All dimensions are typical in millimeters (inches).
1. Pin diameter: 0.5±0.05 (0.02±0.002)
2. Pin pitch tolerance: ±0.35 (±0.014)
3. Case Tolerance: ±0.5 (±0.02)