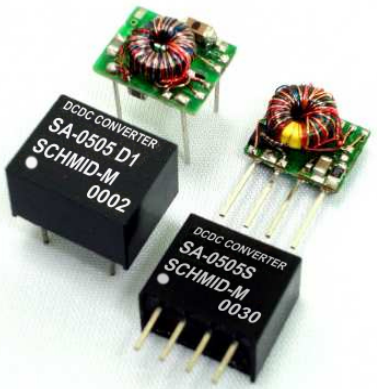
SA-0.5W Series

0.5W 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 0.5W 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

SA - 0.5W Unregulated Single output

PART NUMBER STRUCTURE

SA - 12 05 S H

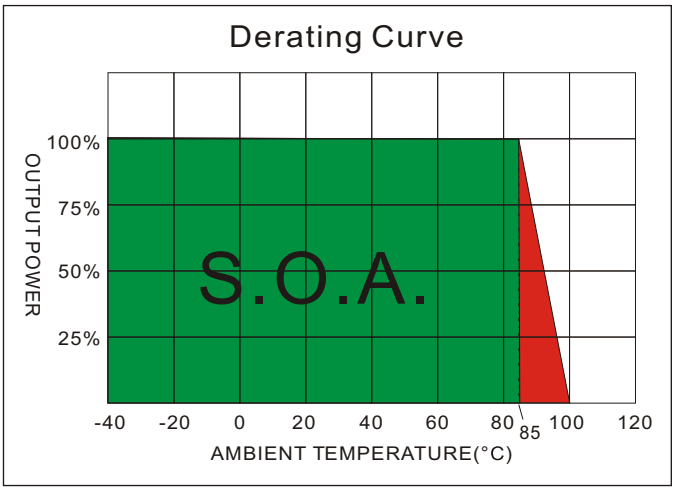
Series Name

Input Voltage
5 - 5V
12 - 12V
24 - 24V
48 - 48V(for SIP)

Output Voltage
3R3 - 3.3V
05 - 5V
7R2 - 7.2V
09 - 9V
12 - 12V
15 - 15V
18 - 18V
24 - 24V

Case Type
S - SIP Case
D - DIP Case

3KVDC Isolation
Optional, if no suffix "H" mean 1 KVDC Isolation



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-053R3S	5	30	134	3.3	151.5	75	100
SA-0505S	5	30	129	5	100	78	100
SA-057R2S	5	30	136	7.2	69.44	74	100
SA-0509S	5	30	134	9	55.55	75	100
SA-0512S	5	30	132	12	41.67	76	100
SA-0515S	5	30	132	15	33.33	76	100
SA-0518S	5	30	134	18	27.77	75	100
SA-0524S	5	30	139	24	20.83	72	100
SA-123R3S	12	20	60	3.3	151.5	70	100
SA-1205S	12	20	56	5	100	74	100
SA-127R2S	12	20	56	7.2	69.44	74	100
SA-1209S	12	20	56	9	55.55	75	100
SA-1212S	12	20	60	12	41.67	70	100
SA-1215S	12	20	60	15	33.33	70	100
SA-1218S	12	20	60	18	27.77	70	100
SA-1224S	12	20	60	24	20.83	70	100
SA-243R3S	24	10	31	3.3	151.5	67	100
SA-2405S	24	10	29	5	100	72	100
SA-247R2S	24	10	31	7.2	69.44	67	100
SA-2409S	24	10	31	9	55.55	67	100
SA-2412S	24	10	31	12	41.67	67	100
SA-2415S	24	10	29	15	33.33	72	100
SA-2418S	24	10	30	18	27.77	70	100
SA-2424S	24	10	30	24	20.83	70	100
SA-483R3S	48	6	17	3.3	151.5	62	100
SA-4805S	48	6	16	5	100	65	100
SA-487R2S	48	6	17	7.2	69.44	62	100
SA-4809S	48	6	17	9	55.55	62	100
SA-4812S	48	6	17	12	41.67	62	100
SA-4815S	48	6	17	15	33.33	62	100
SA-4818S	48	6	17	18	27.77	62	100
SA-4824S	48	6	17	24	20.83	62	100

Suffix "H" means 3 KVdc isolation

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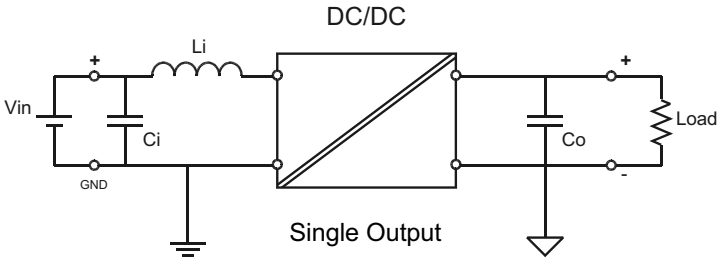
MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current No-Load (mA)	INPUT Current Full Load (mA)	OUTPUT Voltage (Vdc)	OUTPUT Current Full load (mA)	EFFICIENCY @FL(%)	Capacitor Load(uF)
SA-053R3D	5	30	134	3.3	151.5	75	100
SA-0505D	5	30	129	5	100	78	100
SA-057R2D	5	30	134	7.2	69.44	75	100
SA-0509D	5	30	134	9	55.55	75	100
SA-0512D	5	30	132	12	41.67	76	100
SA-0515D	5	30	132	15	33.33	76	100
SA-0518D	5	30	134	18	27.77	75	100
SA-0524D	5	30	139	24	20.83	72	100
SA-123R3D	12	20	60	3.3	151.5	70	100
SA-1205D	12	20	56	5	100	75	100
SA-127R2D	12	20	58	7.2	69.44	72	100
SA-1209D	12	20	56	9	55.55	75	100
SA-1212D	12	20	60	12	41.67	70	100
SA-1215D	12	20	60	15	33.33	70	100
SA-1218D	12	20	60	18	27.77	70	100
SA-1224D	12	20	60	24	20.83	70	100
SA-243R3D	24	10	31	3.3	151.5	67	100
SA-2405D	24	10	29	5	100	72	100
SA-247R2D	24	10	31	7.2	69.44	67	100
SA-2409D	24	10	31	9	55.55	67	100
SA-2412D	24	10	31	12	41.67	67	100
SA-2415D	24	10	31	15	33.33	67	100
SA-2418D	24	10	31	18	27.77	67	100
SA-2424D	24	10	31	24	20.83	67	100

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.



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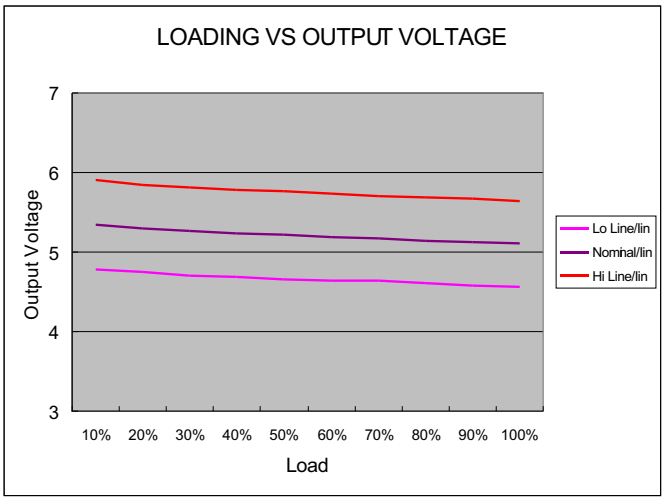
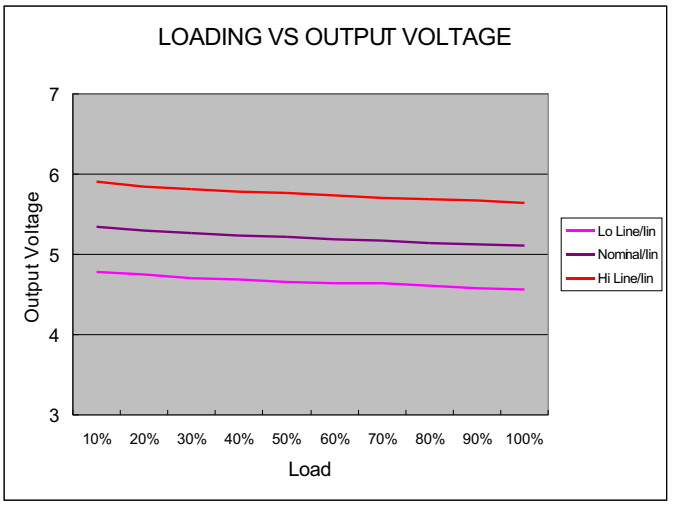
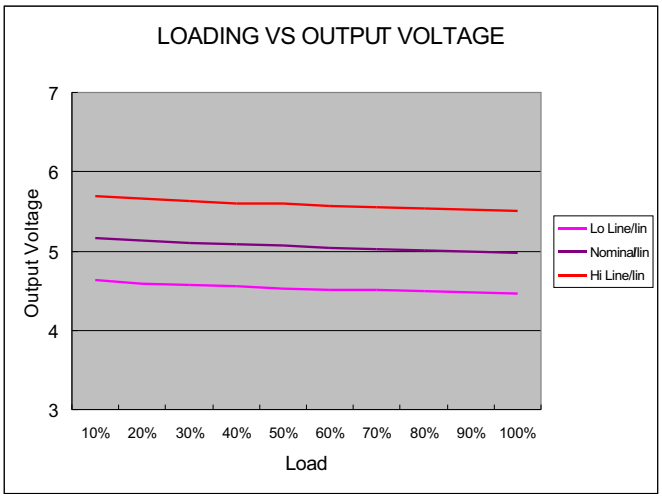


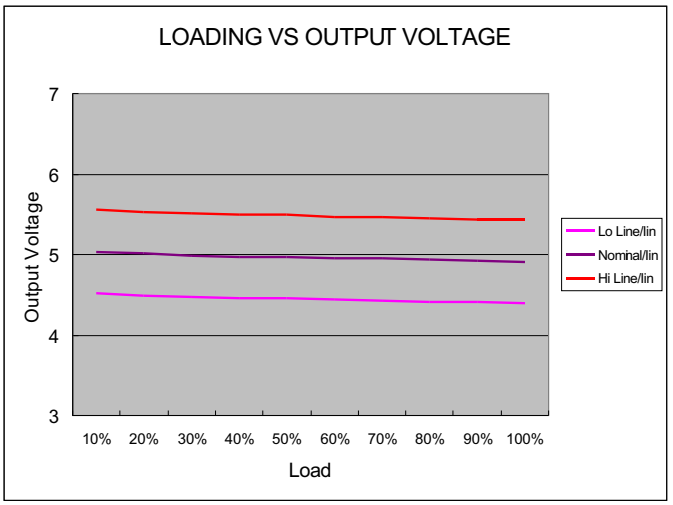
05 Models



12 Models



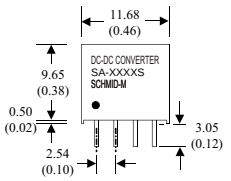
24 Models

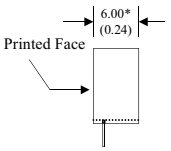


48 Models

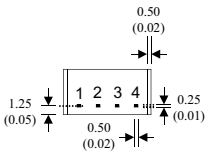
SA - 0.5W Unregulated Single output

MECHANICAL SPECIFICATIONS





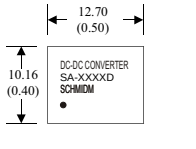
* The thickness of 48V input voltage model is 7.50(0.29)

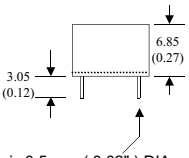


4 Pin SIL Package

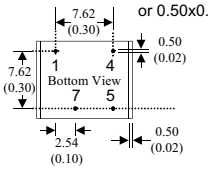
PIN CONNECTIONS	
PIN NUMBER	SINGLE
1	−V Input
2	+V Input
3	−V Output
4	+V Output

(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

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)

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.)