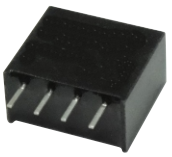
SA-1.5W Series

1.5W 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 88%
- -40 ~ 85°C Operation Temperature Range
- Non-Conductive Black Plastic Case

The SA series is a family of cost effective 1.5W 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

ABSOLUTE MAXIMUM RATINGS(4)

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

Input Surge Voltage(100mS)	7 Vdc ,max.
5 Models	15 Vdc ,max.
12 Models	28 Vdc ,max.
24 Models	54 Vdc ,max.
48 Models(for SIP)	260°C ,max.
Soldering Temperature (1.5mm from case 10sec. max.)	

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

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

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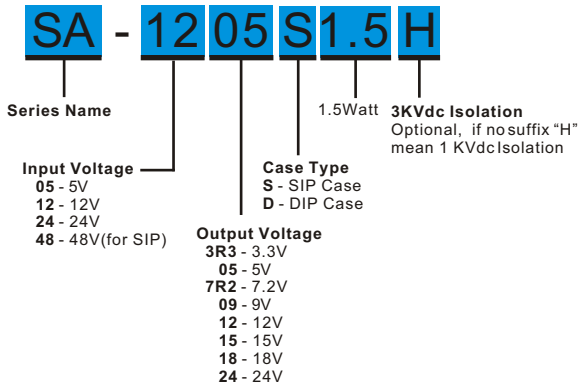
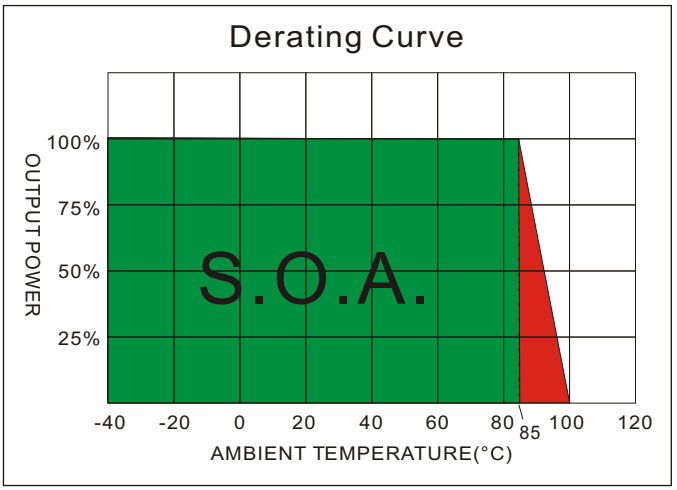
PART NUMBER STRUCTURE





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	5	30	370	3.3	400	81	220
SA-0505S1.5	5	30	380	5	300	79	220
SA-057R2S1.5	5	35	366	7.2	208	82	220
SA-0509S1.5	5	25	400	9	166	75	220
SA-0512S1.5	5	25	385	12	125	78	220
SA-0515S1.5	5	30	375	15	100	80	220
SA-0518S1.5	5	30	353	18	83	85	220
SA-0524S1.5	5	35	357	24	63	84	220
SA-123R3S1.5	12	15	167	3.3	400	75	220
SA-1205S1.5	12	25	156	5	300	80	220
SA-127R2S1.5	12	25	167	7.2	208	75	220
SA-1209S1.5	12	20	151	9	166	83	220
SA-1212S1.5	12	15	152	12	125	82	220
SA-1215S1.5	12	15	156	15	100	80	220
SA-1218S1.5	12	15	156	18	83	80	220
SA-1224S1.5	12	15	164	24	63	76	220
SA-243R3S1.5	24	15	83	3.3	400	75	220
SA-2405S1.5	24	15	76	5	300	82	220
SA-247R2S1.5	24	10	78	7.2	208	80	220
SA-2409S1.5	24	10	78	9	167	80	220
SA-2412S1.5	24	15	74	12	125	84	220
SA-2415S1.5	24	10	74	15	100	84	220
SA-2418S1.5	24	10	78	18	83	80	220
SA-2424S1.5	24	8	71	24	63	88	220
SA-483R3S1.5	48	10	42	3.3	400	75	220
SA-4805S1.5	48	10	42	5	300	75	220
SA-487R2S1.5	48	8	41	7.2	208	76	220
SA-4809S1.5	48	8	41	9	167	76	220
SA-4812S1.5	48	6	41	12	125	77	220
SA-4815S1.5	48	6	41	15	100	77	220
SA-4818S1.5	48	6	41	18	83	77	220
SA-4824S1.5	48	6	40	24	63	78	220

Suffix "H" means 3 KVdc isolation

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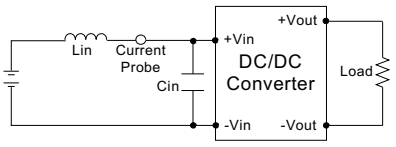
MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current No-Load (mA)	INPUT Current Full Load (mA)	OUTPUT Voltage (Vdc)	OUTPUT Current Full load (mA)	EFFICIENCY @FL(%)	Capacitor Load(uF)
SA-053R3D1.5	5	35	390	3.3	400	77	220
SA-0505D1.5	5	30	385	5	300	78	220
SA-057R2D1.5	5	30	400	7.2	208	75	220
SA-0509D1.5	5	25	400	9	167	75	220
SA-0512D1.5	5	25	370	12	125	81	220
SA-0515D1.5	5	25	366	15	100	82	220
SA-0518D1.5	5	25	375	18	83	80	220
SA-0524D1.5	5	30	361	24	63	83	220
SA-123R3D1.5	12	15	170	3.3	400	74	220
SA-1205D1.5	12	15	154	5	300	81	220
SA-127R2D1.5	12	25	164	7.2	208	76	220
SA-1209D1.5	12	15	149	9	167	84	220
SA-1212D1.5	12	15	156	12	125	80	220
SA-1215D1.5	12	15	156	15	100	80	220
SA-1218D1.5	12	15	156	18	83	80	220
SA-1224D1.5	12	15	164	24	63	76	220
SA-243R3D1.5	24	10	83	3.3	400	75	220
SA-2405D1.5	24	9	76	5	300	82	220
SA-247R2D1.5	24	10	75	7.2	208	83	220
SA-2409D1.5	24	10	74	9	167	85	220
SA-2412D1.5	24	10	78	12	125	80	220
SA-2415D1.5	24	8	76	15	100	82	220
SA-2418D1.5	24	8	78	18	83	80	220
SA-2424D1.5	24	9	76	24	63	82	220

Suffix "H" means 3 KVdc isolation

TEST CONFIGURATIONS

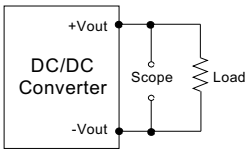
Input Reflected Ripple Current Test Step

Input reflected ripple current is measured through a source inductor Lin(12uH) and a source capacitor Cin(47uF, ESR<1.0Ω at 100KHz) at nominal input and full load.



Output Ripple & Noise Measurement Test

The Scope measurement bandwidth is 20MHz.



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.

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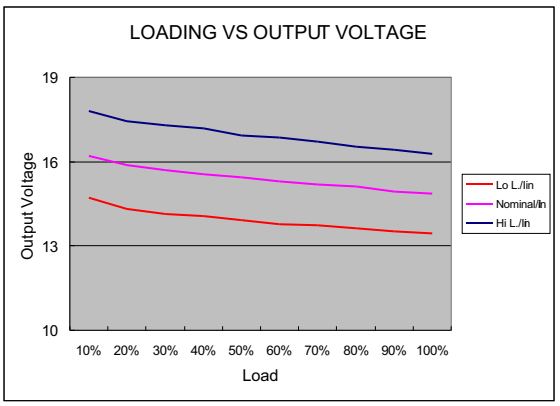
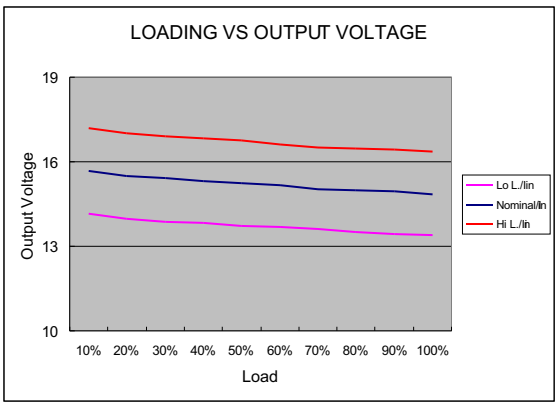
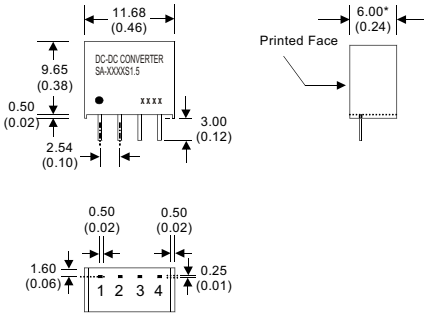


5 Models



12 Models

MECHANICAL SPECIFICATIONS



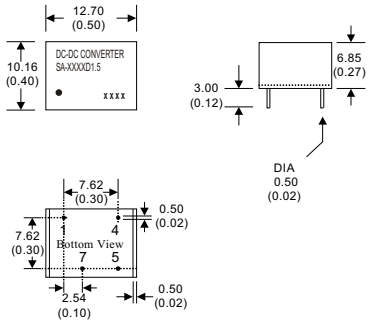
* The thickness of 48V input voltage model is 7.50(0.29)

4 Pin SIL Package

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

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.)



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 and length 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.)