DA-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 83%
- -40 ~ 85°C Operation Temperature Range
- Non-Conductive Black Plastic Case
- EMI Complies With EN55022 Class B

The DA 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 3.3, 5, 12, 15, 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 V oltage (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

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

PHYSICAL SPECIFICATIONS

Case Material	Non-conductive Black Plastic(UL94V-0 rated)
Pin Material	
SIP Case	0.5mm Alloy42 Solder-coated
DIP Case	0.5mm 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"

ABSOLUTE MAXIMUM RATINGS(4)

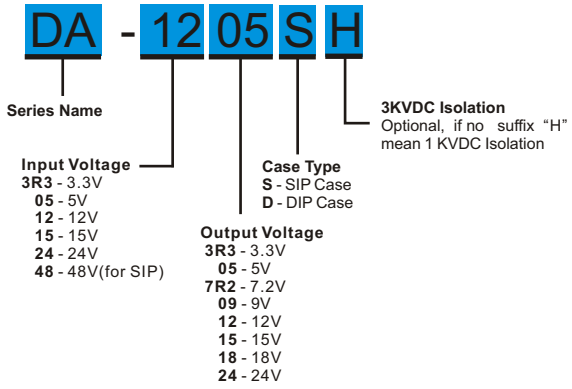
These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.

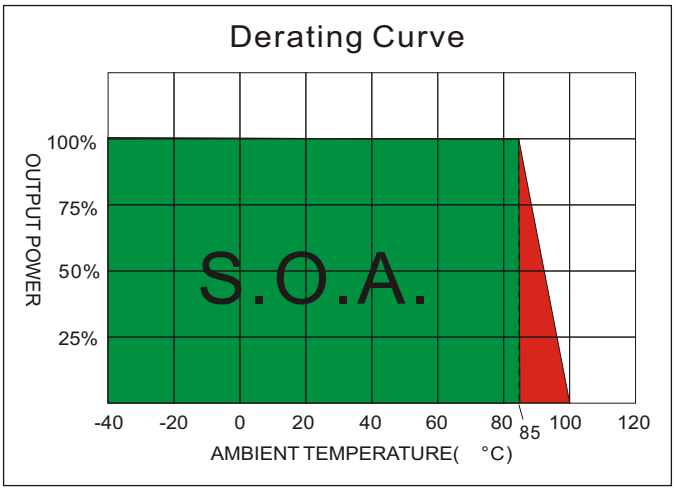
Input Surge Voltage(100mS)	
3.3 Models	6 Vdc ,max.
5 Models	7 Vdc ,max.
12 Models	15 Vdc ,max.
15 Models	18 Vdc ,max.
24 Models	28 Vdc ,max.
48 Models(for SIP)	54 Vdc ,max.
Soldering Temperature (1.5mm from case 10 sec. max.)	260 °C ,max.

EMC SPECIFICATIONS

Radiated Emissions	EN55022	CLASS B
Conducted Emissions (6)	EN55022	CLASS B
ESD	IEC 61000-4-2	Perf. Criteria A
RS	IEC 61000-4-3	Perf. Criteria A
EFT (7)	IEC 61000-4-4	Perf. Criteria A
Surge (7)	IEC 61000-4-5	Perf. Criteria A
CS	IEC 61000-4-6	Perf. Criteria A
PFMF	IEC 61000-4-8	Perf. Criteria A

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)
DA-3R33R3S	3.3	20	205	3.3	152	76	100
DA-3R305S	3.3	25	216	5	100	70	100
DA-3R37R2S	3.3	25	216	7.2	69	70	100
DA-3R309S	3.3	25	216	9	56	70	100
DA-3R312S	3.3	25	201	12	42	72	100
DA-3R315S	3.3	25	208	15	33	73	100
DA-3R318S	3.3	25	208	18	28	73	100
DA-3R324S	3.3	25	208	24	21	73	100
DA-053R3S	5	20	132	3.3	152	76	100
DA-0505S	5	13	121	5	100	83	100
DA-057R2S	5	15	134	7.2	69	75	100
DA-0509S	5	15	128	9	56	78	100
DA-0512S	5	18	127	12	42	79	100
DA-0515S	5	22	130	15	33	77	100
DA-0518S	5	20	127	18	28	79	100
DA-0524S	5	25	134	24	21	75	100
DA-123R3S	12	15	58	3.3	152	72	100
DA-1205S	12	10	54	9	100	78	100
DA-127R2S	12	15	57	7.2	69	73	100
DA-1209S	12	15	57	9	56	73	100
DA-1212S	12	20	58	12	42	72	100
DA-1215S	12	20	61	15	33	69	100
DA-1218S	12	15	61	18	28	68	100
DA-1224S	12	15	59	24	21	71	100
DA-153R3S	15	10	44	3.3	152	75	100
DA-1505S	15	8	43	5	100	78	100
DA-157R2S	15	12	44	7.2	69	75	100
DA-1509S	15	12	44	9	56	75	100
DA-1512S	15	10	44	12	42	77	100
DA-1515S	15	15	48	15	33	70	100
DA-1518S	15	12	51	18	28	66	100
DA-1524S	15	10	51	24	21	66	100

Suffix "H" means 3 KVdc isolation

The models listed above is just for standard type. If you need the special specification product, please contact our service member by telephone presented in shortform cover or e-mail to : info@zimtec-electronics.de

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)
DA-243R3S	24	8	31	3.3	152	69	100
DA-2405S	24	8	29	5	100	73	100
DA-247R2S	24	10	30	7.2	69	70	100
DA-2409S	24	10	30	9	56	71	100
DA-2412S	24	8	30	12	42	71	100
DA-2415S	24	10	29	15	33	73	100
DA-2418S	24	10	29	18	28	73	100
DA-2424S	24	10	29	24	21	72	100
DA-483R3S	48	6	17	3.3	152	60	100
DA-4805S	48	6	16	5	100	66	100
DA-487R2S	48	6	17	7.2	69	60	100
DA-4809S	48	6	17	9	56	62	100
DA-4812S	48	6	17	12	42	64	100
DA-4815S	48	6	17	15	33	62	100
DA-4818S	48	6	17	18	28	62	100
DA-4824S	48	10	18	24	21	61	100
DA-3R33R3D	3.3	20	205	3.3	152	76	100
DA-3R305D	3.3	25	216	5	100	70	100
DA-3R37R2D	3.3	25	216	7.2	69	70	100
DA-3R309D	3.3	25	216	9	56	70	100
DA-3R312D	3.3	25	201	12	42	72	100
DA-3R315D	3.3	25	208	15	33	73	100
DA-3R318D	3.3	25	208	18	28	73	100
DA-3R324D	3.3	25	208	24	21	73	100
DA-053R3D	5	16	132	3.3	152	76	100
DA-0505D	5	15	124	5	100	81	100
DA-057R2D	5	15	134	7.2	69	75	100
DA-0509D	5	15	128	9	56	78	100
DA-0512D	5	18	127	12	42	79	100
DA-0515D	5	22	130	15	33	77	100
DA-0518D	5	20	127	18	28	79	100
DA-0524D	5	25	134	24	21	75	100
DA-123R3D	12	15	58	3.3	152	73	100
DA-1205D	12	12	54	5	100	78	100
DA-127R2D	12	15	57	7.2	69	73	100
DA-1209D	12	15	58	9	56	73	100
DA-1212D	12	20	58	12	42	72	100
DA-1215D	12	20	61	15	33	69	100
DA-1218D	12	15	61	18	28	68	100
DA-1224D	12	15	59	24	21	71	100
DA-153R3D	15	10	44	3.3	152	75	100
DA-1505D	15	8	43	5	100	78	100
DA-157R2D	15	12	44	7.2	69	75	100
DA-1509D	15	12	44	9	56	75	100
DA-1512D	15	10	44	12	42	77	100
DA-1515D	15	15	48	15	33	70	100
DA-1518D	15	12	51	18	28	66	100
DA-1524D	15	10	51	24	21	66	100

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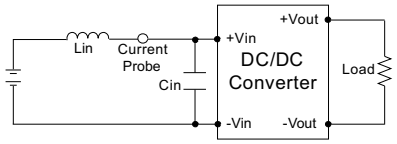
MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current No-Load (mA)	INPUT Current Full Load (mA)	OUTPUT Voltage (Vdc)	OUTPUT Current Full load (mA)	EFFICIENCY @FL(%)	Capacitor Load(uF)
DA-243R3D	24	8	31	3.3	152	69	100
DA-2405D	24	10	29	5	100	74	100
DA-247R2D	24	10	31	7.2	69	69	100
DA-2409D	24	10	30	9	56	71	100
DA-2412D	24	10	31	12	42	69	100
DA-2415D	24	9	31	15	33	69	100
DA-2418D	24	10	29	18	28	73	100
DA-2424D	24	10	29	24	21	72	100

Suffix “H” means 3 KVdc isolation

TEST CONFIGURATIONS

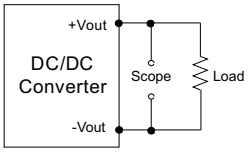
Input Reflected Ripple Current Test Step

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.



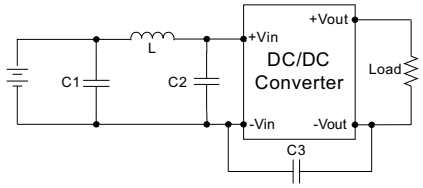
Output Ripple & Noise Measurement Test

The Scope measurement bandwidth is 20MHz .



EMI Filter

Input filter components (C1 , L , C2 , C3) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.



	C1	L	C2	C3
DA-3R3XXXXX	1210, 2.2uF/100V	18uH		
DA-05XXXXX	1210, 2.2uF/100V	18uH		
DA-12XXXXX	1210, 2.2uF/100V	18uH		
DA-15XXXXX	1210, 2.2uF/100V	18uH		
DA-24XXXXX	1210, 2.2uF/100V	18uH	1210, 2.2uF/100V	1206, 470pF/2KV
DA-48XXXXX	Electrolytic capacitor, 10uF/100V	18uH	1210, 2.2uF/100V	1206, 470pF/2KV

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. Input filter components are be required to help meet conducted emission class B, which application refer to the EMI Filter of design & feature configuration.
7. An external filter capacitor is required if the module has to meet IEC61000-4-4 and IEC61000-4-5. The filter capacitor ZimTec Electronics suggest: Nippon - chemi - con KY series, 470uF/100V.

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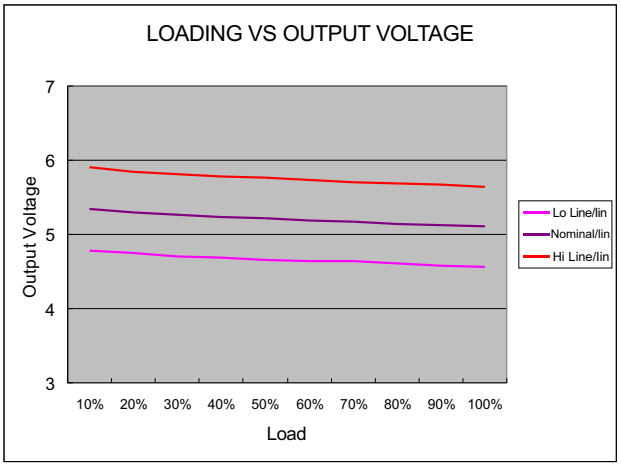
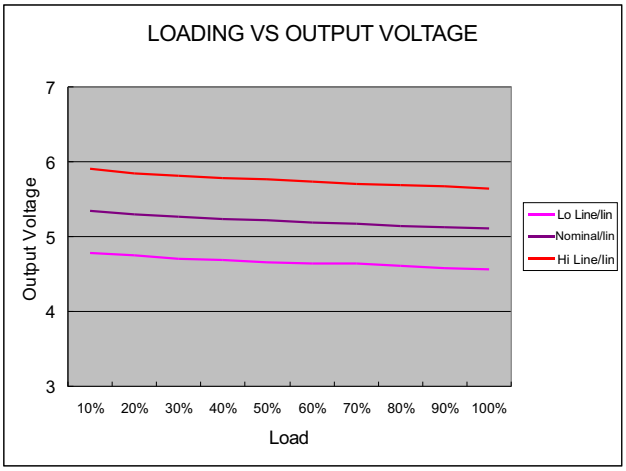
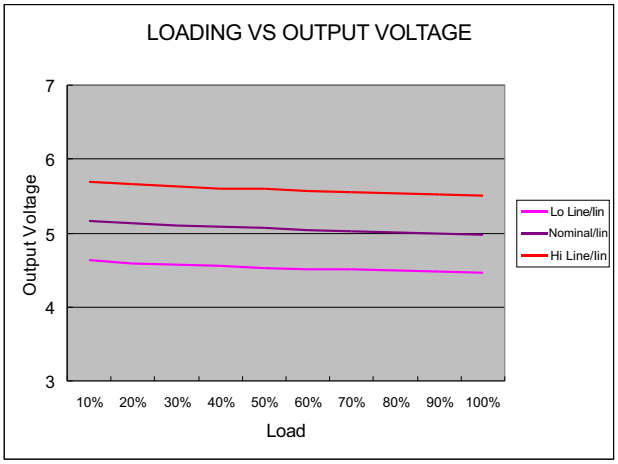


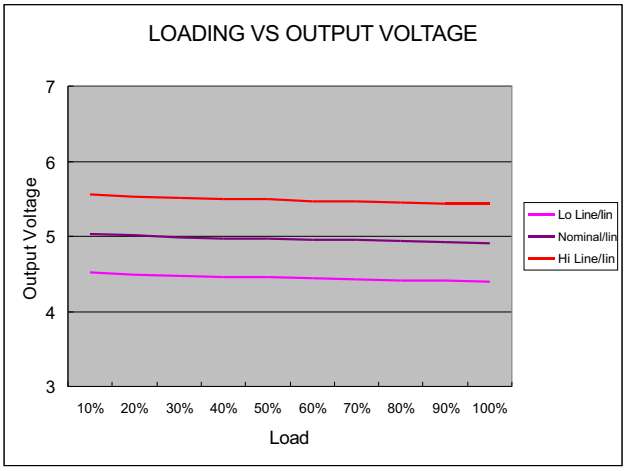
05 Models



12 Models

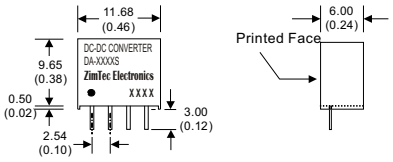


24 Models



48 Models

MECHANICAL SPECIFICATIONS



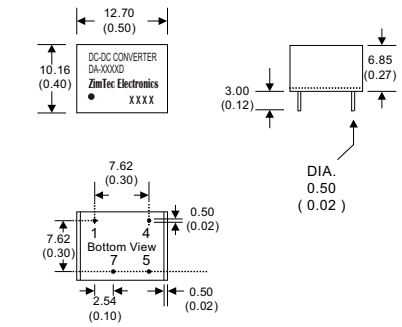
* The thickness of 48V input voltage model is 7.50(0.29)

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.)

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