DA-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 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 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 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

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 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

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 V oltage (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

DA - 12 05 S 1 H

Series Name

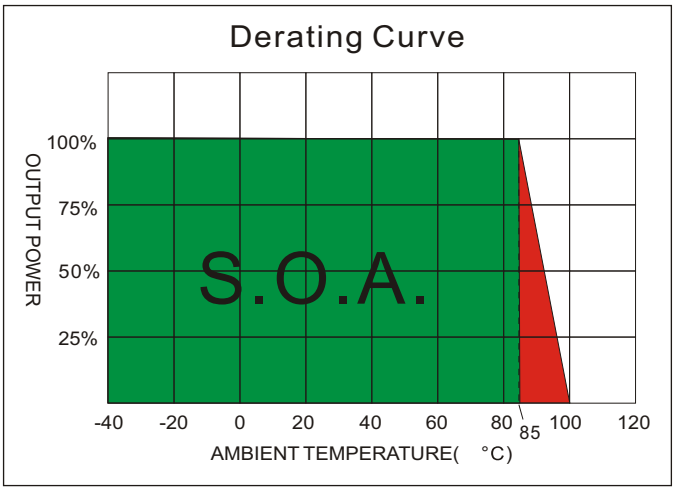
Input Voltage
3R3 - 3.3V
05 - 5V
12 - 12V
15 - 15V
24 - 24V
48 - 48V(for SIP)

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

1W

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)
DA-3R33R3S1	3.3	25	421	3.3	303	72	220
DA-3R305S1	3.3	25	394	5	200	77	220
DA-3R37R2S1	3.3	25	384	7.2	139	79	220
DA-3R309S1	3.3	30	404	9	111	75	220
DA-3R312S1	3.3	45	473	12	100	77	220
DA-3R315S1	3.3	35	384	15	67	79	220
DA-3R318S1	3.3	35	399	18	56	76	220
DA-3R324S1	3.3	53	461	24	50	79	220
DA-053R3S1	5	20	257	3.3	303	78	220
DA-0505S1	5	25	247	5	200	81	220
DA-057R2S1	5	16	241	7.2	139	83	220
DA-0509S1	5	26	250	9	111	80	220
DA-0512S1	5	25	300	12	100	80	220
DA-0515S1	5	35	244	15	67	82	220
DA-0518S1	5	25	247	18	56	81	220
DA-0524S1	5	35	289	24	50	83	220
DA-123R3S1	12	15	107	3.3	303	78	220
DA-1205S1	12	16	105	5	200	79	220
DA-127R2S1	12	16	100	7.2	139	83	220
DA-1209S1	12	15	107	9	111	78	220
DA-1212S1	12	15	125	12	100	80	220
DA-1215S1	12	15	105	15	67	79	220
DA-1218S1	12	20	104	18	56	80	220
DA-1224S1	12	25	123	24	50	81	220
DA-153R3S1	15	15	89	3.3	303	75	220
DA-1505S1	15	9	82	5	200	81	220
DA-157R2S1	15	12	88	7.2	139	76	220
DA-1509S1	15	10	90	9	111	74	220
DA-1512S1	15	13	100	12	100	80	220
DA-1515S1	15	15	84	15	67	79	220
DA-1518S1	15	12	85	18	56	78	220
DA-1524S1	15	10	99	24	50	81	220

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-243R3S1	24	8	54	3.3	303	77	220
DA-2405S1	24	8	52	5	200	80	220
DA-247R2S1	24	10	54	7.2	139	77	220
DA-2409S1	24	7	54	9	111	77	220
DA-2412S1	24	8	62	12	100	80	220
DA-2415S1	24	8	51	15	67	81	220
DA-2418S1	24	8	52	18	56	80	220
DA-2424S1	24	9	60	24	50	83	220
DA-483R3S1	48	6	29	3.3	303	73	220
DA-4805S1	48	6	28	5	200	74	220
DA-487R2S1	48	7	27	7.2	139	77	220
DA-4809S1	48	5	27	9	111	78	220
DA-4812S1	48	5	32	12	100	77	220
DA-4815S1	48	5	27	15	67	76	220
DA-4818S1	48	8	28	18	56	75	220
DA-4824S1	48	8	31	24	50	80	220
DA-3R33R3D1	3.3	25	410	3.3	303	74	220
DA-3R305D1	3.3	25	394	5	200	77	220
DA-3R37R2D1	3.3	30	404	7.2	139	75	220
DA-3R309D1	3.3	30	399	9	111	76	220
DA-3R312D1	3.3	45	485	12	100	75	220
DA-3R315D1	3.3	25	384	15	67	79	220
DA-3R318S1	3.3	35	399	18	56	76	220
DA-3R324D1	3.3	90	485	24	50	75	220
DA-053R3D1	5	16	256	3.3	303	78	220
DA-0505D1	5	15	253	5	200	79	220
DA-057R2D1	5	16	241	7.2	139	83	220
DA-0509D1	5	25	253	9	111	79	220
DA-0512D1	5	25	296	12	100	81	220
DA-0515D1	5	25	244	15	67	82	220
DA-0518D1	5	25	241	18	56	83	220
DA-0524D1	5	28	293	24	50	82	220
DA-123R3D1	12	15	108	3.3	303	77	220
DA-1205D1	12	16	105	5	200	79	220
DA-127R2D1	12	16	100	7.2	139	83	220
DA-1209D1	12	15	105	9	111	79	220
DA-1212D1	12	8	125	12	100	80	220
DA-1215D1	12	17	105	15	67	79	220
DA-1218D1	12	15	103	18	56	81	220
DA-1224D1	12	25	127	24	50	79	220
DA-153R3D1	15	15	89	3.3	303	75	220
DA-1505D1	15	10	83	5	200	80	220
DA-157R2D1	15	12	88	7.2	139	76	220
DA-1509D1	15	10	85	9	111	78	220
DA-1512D1	15	13	98	12	100	82	220
DA-1515D1	15	15	83	15	67	80	220
DA-1518D1	15	12	85	18	56	78	220
DA-1524D1	15	10	99	24	50	81	220

Suffix “H” means 3 KVdc isolation

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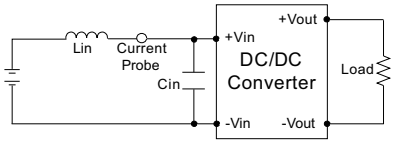
MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current No-Load (mA)	INPUT Current Full Load (mA)	OUTPUT Voltage (Vdc)	OUTPUT Current Full load (mA)	EFFICIENCY @FL(%)	Capacitor Load(uF)
DA-243R3D1	24	8	53	3.3	303	79	220
DA-2405D1	24	8	53	5	200	79	220
DA-247R2D1	24	10	56	7.2	139	74	220
DA-2409D1	24	7	53	9	111	79	220
DA-2412D1	24	8	63	12	100	80	220
DA-2415D1	24	8	52	15	67	80	220
DA-2418D1	24	8	51	18	56	82	220
DA-2424D1	24	9	61	24	50	82	220

Suffix “H” means 3 KVdc isolation

TEST CONFIGURATIONS

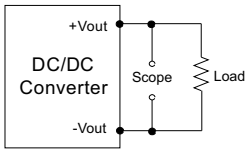
Input Reflected Ripple Current Test Step

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.



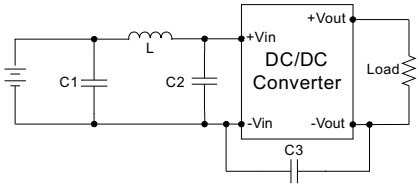
Output Ripple & Noise Measurement Test

The Scope measurement bandwidthis 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 V in 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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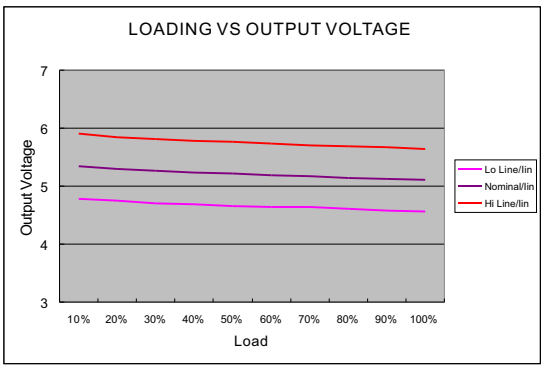
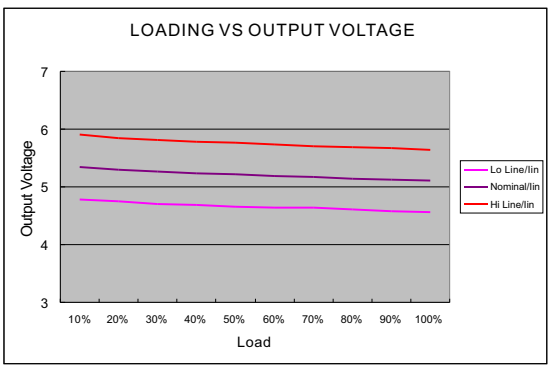
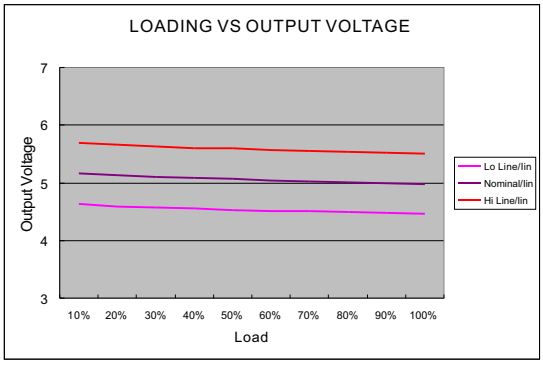


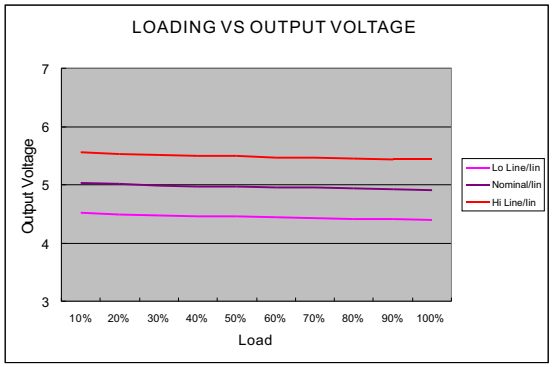
05 Models



12 Models

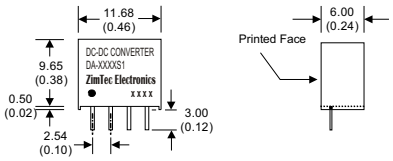


24 Models



48 Models

MECHANICAL SPECIFICATIONS



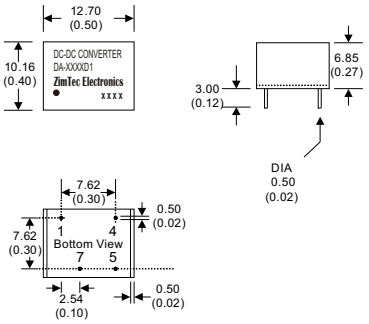
* The thickness of 48V input voltage model is 7.50(0.29)

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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