



6DAW4_S3 Series

6W - Single Output - 4:1 Wide Input - Isolated & Regulated
DIP DC-DC Converter

DC-DC Converter

6 Watt

- ⊕ High Efficiency up to 88%
- ⊕ Operating Temperature: -40°C to +85°C
- ⊕ 3KVDC Input/Output Isolation
- ⊕ Short Circuit Protection SCP (Automatic recovery)
- ⊕ No-load power consumption as low as 0.12W
- ⊕ Over-voltage protection
- ⊕ Over-current protection
- ⊕ Input under-voltage protection
- ⊕ Meet CISPR22/EN55022 CLASS A
- ⊕ Industry standard pin-out
- ⊕ RoHS Compliance



The 6DAW4 series are specially designed for applications where a wide range input voltage power supplies are isolated from the input power supply in a distributed power supply system on a circuit board.

These products apply to:

- 1) Where the voltage of the input power supply is wide range (voltage range \leq 4:1);
- 2) Where isolation is necessary between input and output (isolation \leq 3000VDC);
- 3) Where the regulation of the output voltage and the output ripple noise are demanded.

Common specifications

Short circuit protection:	Continuous, automatic recovery
Cooling:	Free air convection
Operation temperature range:	-40°C~+85°C
Storage temperature range:	-55°C ~+125°C
Temperature rise at full load:	40°C TYP
Lead temperature range:	300°C MAX, 1.5mm from case for 10 sec
Vibration:	10-55Hz, 10G, 30 Min. along X, Y and Z
Storage humidity range:	< 95%
Case material:	Plastic(UL94-V0)
MTBF (MIL-HDBK-217F@25°C):	>1,000,000 hours
Weight:	13g

Input specifications

Item	Test condition	Min	Typ	Max	Units
Input filter	Pi				
Input current (full load / no load)	24VDC input:				
	• 3.3V output		261/5	268/8	mA
	• 5V output		301/5	309/8	mA
	• other output		284/5	291/8	mA
	48VDC input:				
	• 3.3V output		131/4	134/7	mA
	• 5V output		151/4	154/7	mA
	• other output		142/4	145/7	mA
Reflected ripple current	• 24VDC input		20		mA
	• 48VDC input		20		mA
Input impulse voltage (1sec. max.)	• 24VDC input	-0.7		50	VDC
	• 48VDC input	-0.7		100	VDC
Start-up voltage	• 24VDC input			9	VDC
	• 48VDC input			18	VDC
Under-voltage turn-off	• 24VDC input	5.5	6.5		VDC
	• 48VDC input	14	15.5		VDC
Starting time	Nominal input & constant resistance load		10		ms
Hot plug	Unavailable				

Isolation specifications

Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Tested for 1 minute and 1mA max	3000			VDC
Isolation resistance	Test at 500VDC	1000			MΩ
Isolation capacitance	Input-output, 100KHz/0.1V	1000			pF

Output specifications

Item	Test condition	Min	Typ	Max	Units
Output voltage accuracy	Refer to recommended circuit		±1	±3	%
Line regulation (at full load)	Input voltage from low to high		±0.2	±0.5	%
Load regulation	from 5% to 100% load		±0.5	±2.0	%
Transient Recovery Time	25% load step change		300	500	μs
Transient Response Deviation	25% load step change		±3	±5	%
Temperature drift (Vout)	Refer to recommended circuit			±0.03	%/°C
Ripple & Noise*	20MHz Bandwidth		85	120	mVp-p
Over-voltage protection	Input voltage range	110		160	%Vo
Over-current protection	Input voltage range	110	140	190	%Io
Switching frequency	PWM mode		300		KHz

* Test ripple and noise by "parallel cable" method. See detailed operation instructions at Testing of Power Converter section, application notes.

Model selection:

WCTV_xxyyN##

W= Watt; **C=** Case; **T=** Type; **V=** Voltage Variation (omitted \pm 10%);
xx= Vin; **yy=**Vout; **N=** Numbers of Output; **##=** Isolation (kVDC)

Example:

6DAW4_2405S3

6= 6Watt; **D=** DIP; **A=** series; **W4=** wide input (4:1) 9-36Vin; **5Vout**;
D= Dual Output; **3=** 3000VDC

Note:

1. The load shouldn't be less than 10%, otherwise ripple will increase dramatically.
2. Operation under 10% load will not damage the converter; However, they may not meet all specifications listed.
3. All specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
4. In this datasheet, all the test methods of indications are based on corporate standards.
5. Only typical models listed, other models may be different, please contact our technical person for more details.

6DAW4_S3 Series

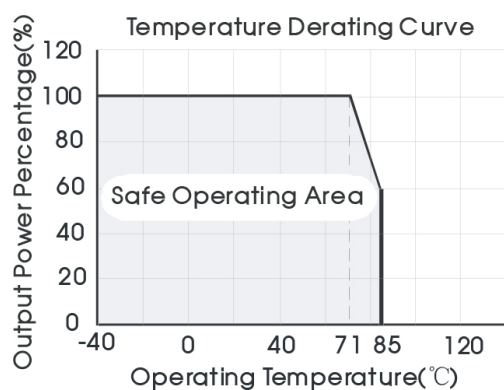
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EMC specifications				
EMI	CE	CISPR22/EN55022 CLASS A (bare component) CLASS B (External Circuit Refer to EMC recommended circuit, ②)		
EMI	RE	CISPR22/EN55022 CLASS A (bare component) CLASS B (External Circuit Refer to recommended circuit, ②)		
EMS	ESD	IEC/EN61000-4-2	Contact ± 4 KV	perf. Criteria B
EMS	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
EMS	EFT	IEC/EN61000-4-4	± 2 KV	perf. Criteria B (External Circuit Refer to recommended circuit, ①)
EMS	Surge	IEC/EN61000-4-5	± 2 KV	perf. Criteria B (External Circuit Refer to recommended circuit, ①)
EMS	CS	IEC/EN61000-4-6	3 Vr.m.s	perf. Criteria A
EMS	Voltage dips, short and interruptions immunity	IEC/EN61000-4-29	0%-70%	perf. Criteria B

Part Number	Input Voltage [VDC]			Output Voltage [VDC]	Current [mA]		Efficiency [%, Typ.]	Max. Capacitive Load [μ F]
	Nominal	Range	Max*		Max	Min		
6DAW4_2403S3	24	9-36	40	3.3	1500	75	79	2200
6DAW4_2405S3	24	9-36	40	5	1200	60	83	2200
6DAW4_2409S3	24	9-36	40	9	667	33	87	1000
6DAW4_2412S3	24	9-36	40	12	500	25	88	680
6DAW4_2415S3	24	9-36	40	15	400	20	88	470
6DAW4_2424S3	24	9-36	40	24	250	13	87	330
6DAW4_4803S3	48	18-72	80	3.3	1500	75	79	2200
6DAW4_4805S3	48	18-72	80	5	1200	60	83	2200
6DAW4_4812S3	48	18-72	80	12	500	25	88	680
6DAW4_4815S3	48	18-72	80	15	400	20	88	470
6DAW4_4824S3	48	18-72	80	24	250	13	87	330

* Input voltage can't exceed this value, or it will cause permanent damage.

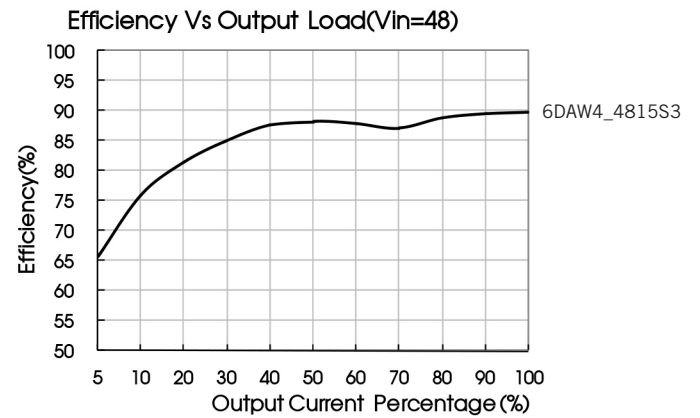
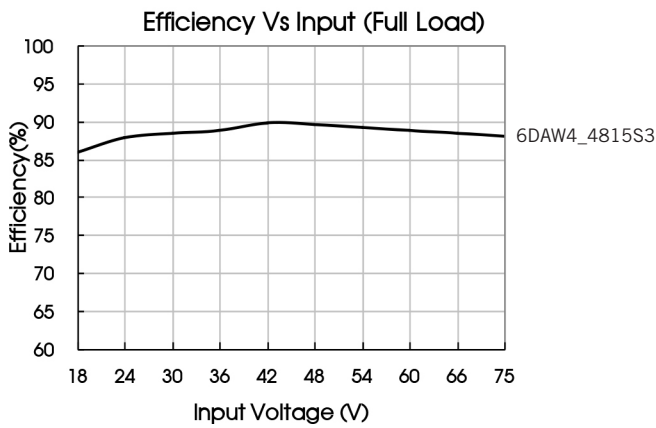
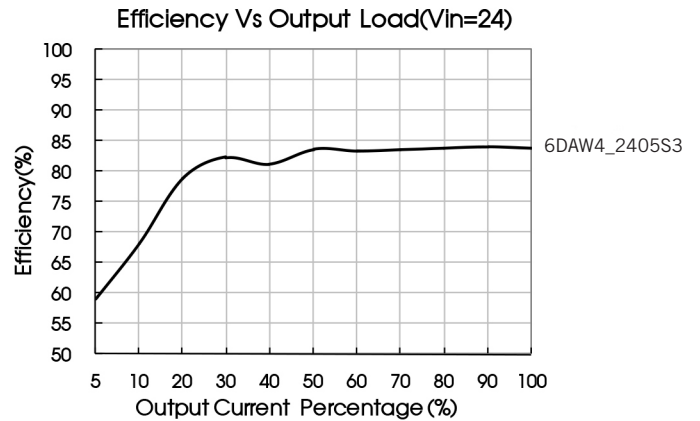
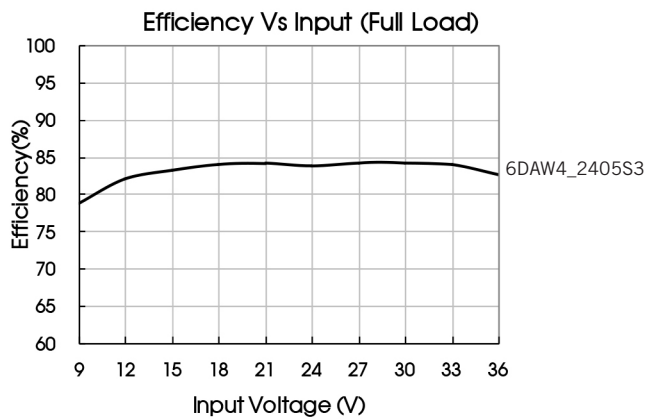
Typical characteristics



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Efficiency



Typical application

All the DC/DC converters of this series are tested according to the recommended circuit (see Fig. 1) before delivery.

If it is required to further reduce input and output ripple, properly increase the input & output of additional capacitors C_{in} and C_{out} or select capacitors of low equivalent impedance provided that the capacitance is no larger than the max. capacitive load of the product.



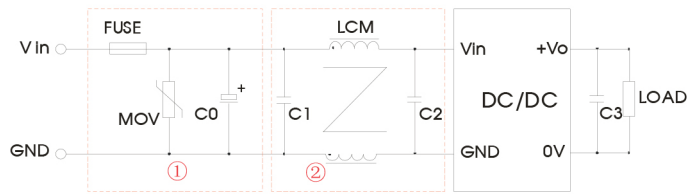
Figure 1

V_{in} (VDC)	C_{in} (μF)	C_{out} (μF)
24	100	10
48	10~47	10

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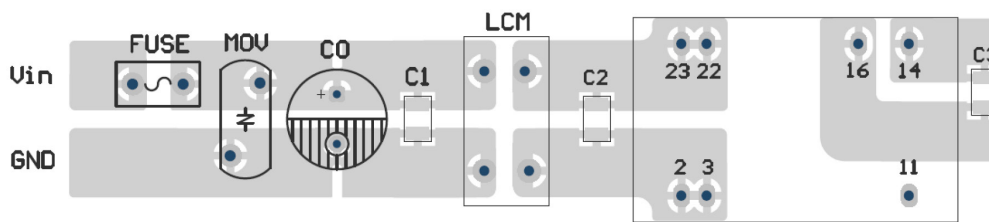
EMC solution-recommended circuit



Parameters	Vin: 24V	Vin: 48V
FUSE	Choose according to actual input current	
MOV	S14K35	S14K60
C0	330μF/50V	330μF/100V
C1, C2	2.2μF/50V	2.2μF/100V
LCM	2.2μH	
C3	Refer to the Cout in Typical application	

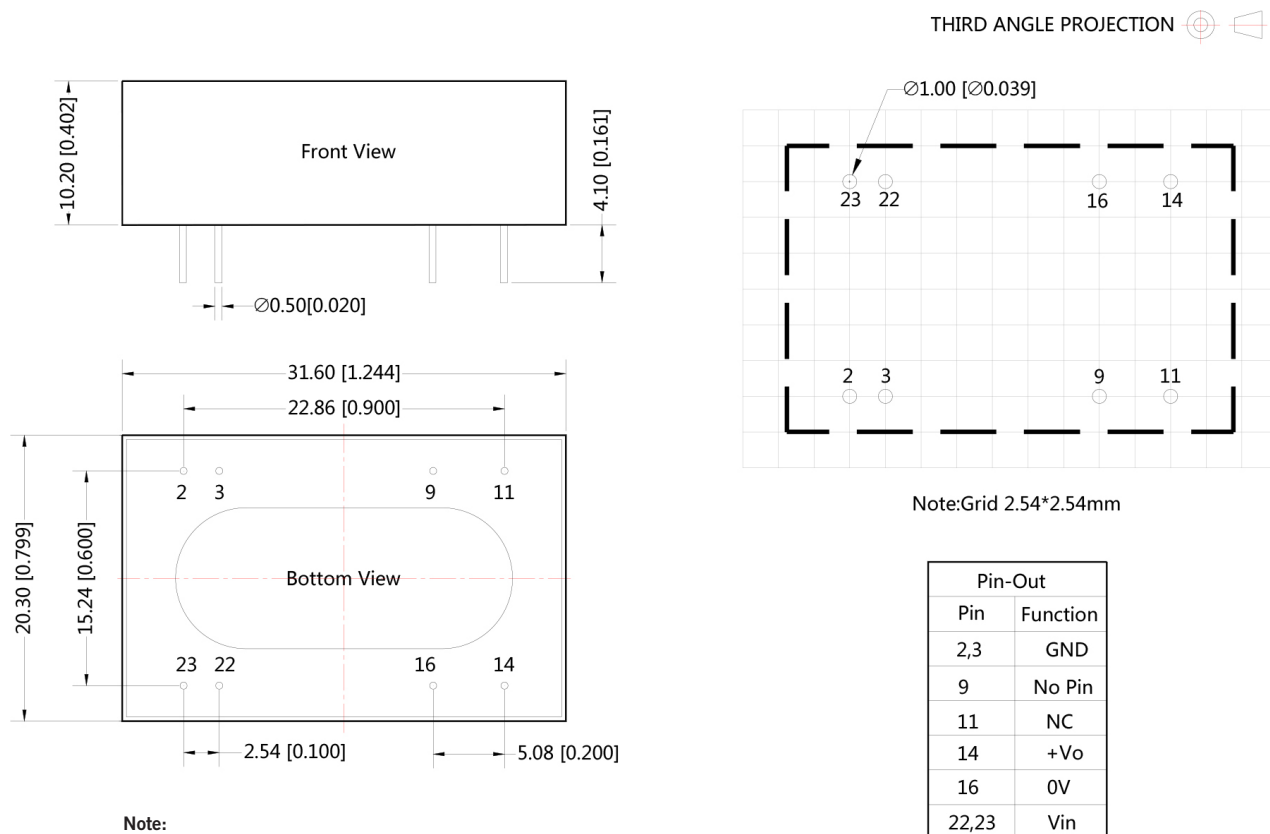
Notes: Part ① is used for EMS test and part ② for EMI filtering; selected based on needs.

EMC solution-recommended circuit PCB Layout



The product does not support output in parallel with power per liter.

Mechanical dimensions



Note:
Unit: mm[inch]
Pin diameter tolerances: ±0.10mm [±0.004inch]
General tolerances: ±0.25mm [±0.010inch]