

Product Feature

- ◆ Package Type: 1" X 1"
- ◆ Wide 4: 1 input voltage range
- ◆ Operating ambient temperature range: -40°C - +85°C
- ◆ I/O isolation voltage: 1500VDC
- ◆ High efficiency: 88% (Typ.)
- ◆ Output short-circuit protection, over-current protection, and over-voltage protection mechanisms.
- ◆ Application areas: Industry, Power, Instrumentation, Communication, Rail transit.
- ◆ A4S Package Expansion Series with Input Reverse Protection.



Selection Guide

Part No.	Input Voltage (VDC)		Output		Full Load Efficiency% (Typ.)	Capacitive Load(μF) Max.
	Nominal (Range)	Max.	Voltage (VDC)	Current (mA)		
SURB 2403 YMD-10WR4	24 (9-36)	40	3.3	2400/0	78	2200
SURB 2405 YMD-10WR4	24 (9-36)	40	5	2000/0	83	2200
SURB 2409 YMD-10WR4	24 (9-36)	40	9	1111/0	85	680
SURB 2412 YMD-10WR4	24 (9-36)	40	12	833/0	86	470
SURB 2415 YMD-10WR4	24 (9-36)	40	15	667/0	86	330
SURB 2424 YMD-10WR4	24 (9-36)	40	24	416/0	88	100
SURA 2405 YMD-10WR4	24 (9-36)	40	±5	±1000/0	83	#1000
SURA 2409 YMD-10WR4	24 (9-36)	40	±9	±555/0	86	#680
SURA 2412 YMD-10WR4	24 (9-36)	40	±12	±416/0	87	#470
SURA 2415 YMD-10WR4	24 (9-36)	40	±15	±333/0	87	#330
SURA 2424 YMD-10WR4	24 (9-36)	40	±24	±208/0	87	#100
SURB 4803 YMD-10WR4	48 (18-75)	80	3.3	2400/0	79	2200
SURB 4805 YMD-10WR4	48 (18-75)	80	5	2000/0	83	2200
SURB 4812 YMD-10WR4	48 (18-75)	80	12	833/0	87	470
SURB 4815 YMD-10WR4	48 (18-75)	80	15	667/0	87	330
SURB 4824 YMD-10WR4	48 (18-75)	80	24	416/0	88	100
SURA 4805 YMD-10WR4	48 (18-75)	80	±5	±1000/0	83	#1000
SURA 4812 YMD-10WR4	48 (18-75)	80	±12	±416/0	87	#470

SURA 4815 YMD-10WR4	48 (18-75)	80	± 15	$\pm 333/0/$	87	#330
SURA 4824 YMD-10WR4	48 (18-75)	80	± 24	$\pm 208/0$	87	#100

#each output

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Current (full load/no-load)	24VDC nominal input series	3.3VDC	--	423/5	434/12	mA
		Others	--	502/5	514/12	
	48VDC nominal input series	3.3VDC	--	190/4	215/8	
		Others	--	251/4	25811	
Reflected Ripple Current	24VDC nominal input series		--	40	--	mA
	48VDC nominal input series		--	30	--	
Surge Voltage (1sec. max.)	24VDC nominal input series		-0.7	--	50	VDC
	48VDC nominal input series		-0.7	--	100	
Start-up Voltage	24VDC nominal input series		--	--	9	
	48VDC nominal input series		--	--	18	
Input under-voltage protection	24VDC nominal input series		5.5	6.5	--	
	48VDC nominal input series		12	15.5	--	
Start time	Nominal input and constant resistance load		--	10	--	ms
Ctrl	Turn off module		Connect to GND or low level (0-1.2VDC)			
	Turn on module		Suspended or connected TTL high (3.5-12VDC)			
	Input current when off		--	2	7	mA
Input Filter			PI filter			
Hot Plug			Unavailable			

Output Specification

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	0%-100% load		--	±1.0	±3.0	%
Linear Regulation	Vin=Min. to Max. @Full Load	Vo1	--	±0.2	±0.5	
		Vo2	--	±0.5	±1.0	
Load Regulation	5%-100% load	Vo1	--	±0.5	±1.0	
		Vo2	--	±0.5	±1.5	
Ripple & Noise	20MHz bandwidth,100% load		--	40	80	mVp-p
Transient Recovery Time	25% Load Step Change,nominal input voltage		--	300	500	us
Transient Response Deviation			--	±3.0	±5.0	%
Temperature Drift Coefficient			--	--	±0.03	%/°C
Over-Voltage Protection			110	--	160	%Vo
Over-Current Protection			110	140	--	%Io
Short-Circuit Protection			Continuous, Self-Recovery			

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation	Input-output Electric strength Test for 1 minute with a Leakage current of 1mA max.	1500	--	--	VDC
Insulation Resistance	Input-output, resistance at 500VDC	1000	--	--	MΩ
Isolation Capacitors	Input-Output, 100KHz/0.1V	--	1000	--	pF
Operating Temperature	See Fig 1	-40	--	+85	°C
Storage Temperature		-55	--	+125	°C
Storage Humidity	Non-condensing	5	--	95	%RH
Pin welding Resistance Temperature	Soldering spot is 1.5mm away from case for 10seconds	--	--	300	°C
Switching Frequency		--	300	--	kHz
MTBF	MIL-HDBK-217F@25°C	1000	--	--	K Hours

Mechanical Specifications

Case Material	Aluminum alloy	
Package Dimensions	Horizontal package	25.40×25.40×12.00mm
	A4S DIN-Rail Package	76.00×31.50×25.80mm
Weight	Horizontal package/A4S DIN-Rail Package	15.00g/59.00g(Typ.)
Cooling Method	Free air convection	

EMC Specifications

EMI	CE	CISPR32/EN55032 CLASS A(without external components)/CLASS B (see Fig. 3-② for recommended circuit)	
	RE	CISPR32/EN55032 CLASS A(without external components)/CLASS B (see Fig. 3-② for recommended circuit)	
EMS	ESD	IEC/EN61000-4-2 Contact ±4KV/Air ±4KV	perf. Criteria B
	RS	IEC/EN61000-4-3 10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4 ±2KV (see Fig. 3-① for recommended circuit)	perf. Criteria B
	Surge	IEC/EN61000-4-5 line to line±2KV (see Fig. 3-① for recommended circuit)	perf. Criteria B
	CS	IEC/EN61000-4-6 3 Vr.m.s	perf. Criteria A

Typical Characteristic Curves

Temperature Derating Curve (Fig.1)

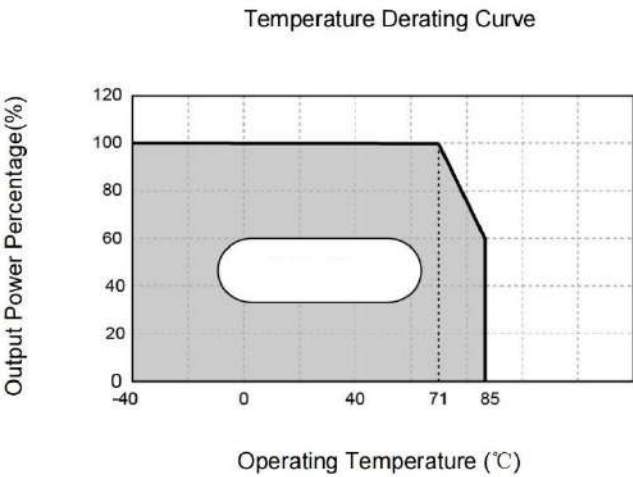
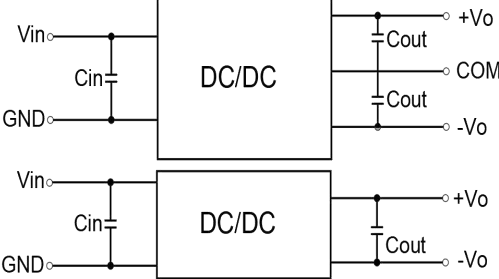
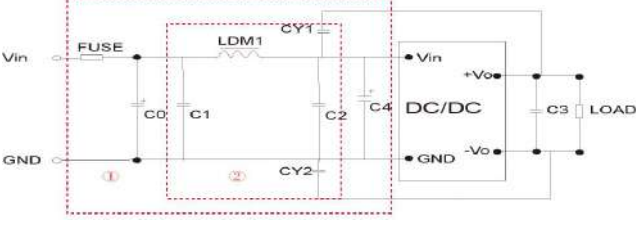


Fig. 1

Typical Circuit Design And Application

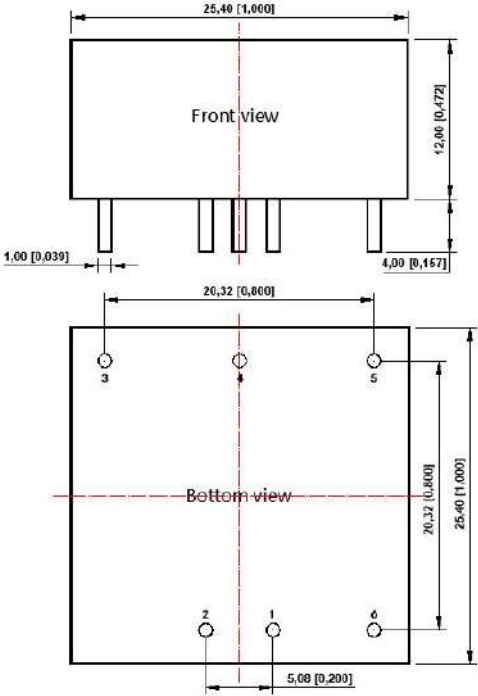
Fig.2	Recommended component parameters		
	Vin	24V	48V
	Cin	100uF	10uF-47uF
	Cout	10uF	
Fig. 3	EMI Recommended component parameters		
	Vin(VDC)	24VDC	48VDC
	FUSE	Choose according to actual input current	
	MOV	20D470K	14D101K
	C0、C3	330μF/50V	330μF/100V
	C1	1μF/50V	1μF/100V
	C2	Refer to the Cout in Fig.2	
	LDM1	4.7μH	
	CY1、CY2	1nF/2KV	

Note:

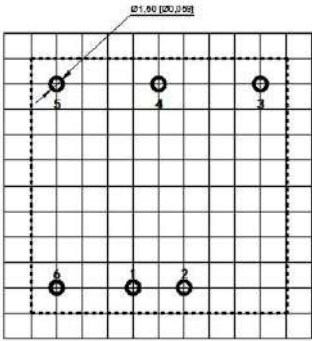
1. All DC-DC converters of this series are tested before delivery using the recommended circuit shown in Fig. 2.
2. Input and/or output ripple can be further reduced by appropriately increasing the input & output capacitor values Cin and Cout and/or by selecting capacitors with a low ESR (equivalent series resistance). Also make sure that the capacitance is not exceeding the specified max. capacitive load value of the product.
3. The products do not support parallel connection of their output.

Dimensions and Recommended Layout

DimensionsPCB Printing Layout



Note:
Unit: mm[inch]
Pin section tolerances: ± 0.10 [± 0.004]
General tolerances: ± 0.50 [± 0.020]



Note: The grid distance is 2.54mm*2.54mm

Pin Definition Table		
Pin	Single	Dual
1	GND	GND
2	Vin	Vin
3	+Vo	+Vo
4	No pin	Com
5	-Vo	-Vo
6	CTRL	CTRL

Note:

- ✧ The input voltage should not exceed the specified range value, otherwise it may cause permanent and irreparable damage;
- ✧ It is recommended to use at a load of over 5%. If the load is below 5%, the ripple index of the product may exceed the specifications, but it does not affect the reliability of the product;
- ✧ Suggested dual output module load imbalance: $\leq \pm 5\%$. If it exceeds $\pm 5\%$, it cannot be guaranteed that the product performance meets all performance indicators in this manual;
- ✧ The maximum capacitive load is tested within the input voltage range and under full load conditions;
- ✧ Unless otherwise specified, all indicators in this manual are measured at $T_a=25\text{ }^\circ\text{C}$, humidity $<75\%$ RH, nominal input voltage, and output rated load;
- ✧ All indicator testing methods in this manual are based on our company's corporate standards;
- ✧ Our company can provide product customization, and specific requirements can be directly contacted by our technical personnel;
- ✧ Product specifications are subject to change without prior notice.