

FEATURES

- 1) Package Type: 1 * 1
- 2) Operating Temperature Range: -40°C - +85°C
- 3) Isolation Voltage: 1500VDC
- 4) Wide Input Voltage Range: 4: 1
- 5) High efficiency up to 88%
- 6) With the output overcurrent, output short circuit protection mechanism
- 7) Fields of application: electric power, industrial control, etc



3 years
Warranty

Selection Guide

Part No.	Input Voltage (VDC)		Output		Full Load Efficiency% (Min./Typ.)	Capacitive Load Max. (μF)
	Nominal (Range)	Maximum	Voltage (VDC)	Current Max.(mA)		
ZYB2403YMD-10WR3	24 (9-36)	40	3.3	2400/0	78	2200
ZYB2405YMD-10WR3			5	2000/0	83	2200
ZYB2409YMD-10WR3			9	1111/0	85	680
ZYB2412YMD-10WR3			12	833/0	86	470
ZYB2415YMD-10WR3			15	667/0	86	330
ZYB2424YMD-10WR3			24	416/0	88	100
ZYA2405YMD-10WR3			±5	±1000/0	83	#1000
ZYA2409YMD-10WR3			±9	±555/0	86	#680
ZYA2412YMD-10WR3			±12	±416/0	87	#470
ZYA2415YMD-10WR3			±15	±333/0	87	#330
ZYA2424YMD-10WR3			±24	±208/0	87	#100
ZYB4803YMD-10WR3	48 (18-75)	80	3.3	2400/0	79	2200
ZYB4805YMD-10WR3			5	2000/0	83	2200
ZYB4812YMD-10WR3			12	833/0	87	470
ZYB4815YMD-10WR3			15	667/0	87	330
ZYB4824YMD-10WR3			24	416/0	88	100
ZYA4805YMD-10WR3			±5	±1000/0	83	#1000
ZYA4812YMD-10WR3			±12	±416/0	87	#470
ZYA4815YMD-10WR3			±15	±333/0/	87	#330
ZYA4848YMD-10WR3			±24	±208/0	87	#100

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Current (full load/no load)	24VDC Input	3.3V output	--	423/5	434/12	mA
		Other	--	502/5	514/12	
	48VDC Input	3.3V output	--	190/4	215/8	
		Other	--	251/4	25811	
Reflected Ripple Current	24VDC Input		--	40	--	
	48VDC Input		--	30	--	
Impulse Voltage	24VDC Input		-0.7	--	50	VDC
	48VDC Input		-0.7	--	100	
Starting Voltage	24VDC Input		--	--	9	
	48VDC Input		--	--	18	
Undervoltage Protection	24VDC Input		5.5	6.5	--	
	48VDC Input		12	15.5	--	
Start time			--	10	--	ms
Ctrl	turn off module		connected GND or (0-1.2V)			
	turn on module		No connected or (2.7-9V)			
Input Filter			PI filter			
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	0% - 100% Load		--	±1	±3.0	%
Linear Regulation	Full load, Input voltage from low limit to high limit	Vo1	--	±0.2	±0.5	
		V02		±0.5	±1	
Load Regulation	5% - 100% Load	Vo1	--	±0.5	±1	
		V02		±0.5	±1.5	
Ripple & Noise	20MHZ Bandwidth		--	40	80	mVp-p
Cross Regulation	Dual output, main road with 50% load, secondary road with 10%-100% load		--	--	±5	%
Transient Recovery Time	25% load step change		--	300	500	μs
Transient Response Deviation			--	±3	±5	%
Temperature Coefficient	Full Load		--	--	±0.03	%/°C
Over Current Protection	input voltage range		110	--	160	%Io
Over Voltage Protection			110	140	190	%Vo
Short-circuit Protection			Continuous, Self-Recovery			

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Insulation Voltage	Input-output, test time 1 minute, leakage current less than 1mA	1500	--	--	VDC
Insulation Resistance	Input-output, insulated voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V	--	1000	--	pF
Operating Temperature	(See Figure 1)	-40	--	+85	°C
Storage Temperature		-55	--	+125	
Storage Humidity	Non-condensing	5	--	95	%RH
Pin welding can withstand the highest temperature	Soldering spot is 1.5mm away from case for 10 seconds	--	--	300	°C
Switching Frequency	PWM pattern	--	300	--	kHz
MTBF	MIL-HDBK-217F@25°C	1000Kh			

Mechanical Specifications

Case Material	Aluminum alloy, black anodized coating	
Package Dimensions	Horizontal package	25.40×25.40×12.00mm
	A4S rail package	76.00×31.50×25.80mm
Weight	Horizontal package/ A4S rail package	15.00g/59.00g
Cooling Method	Free air convection	

EMC Specifications

EMI	CE	CISPR32/EN55032 CLASS A(open board)/CLASS B (application circuit 3-②)	
	RE	CISPR32/EN55032 CLASS A(open board)/CLASS B (application circuit 3-②)	
	ESD	IEC/EN61000-4-2 Contact±4KV,Air ±4KV	perf. CriteriaB
EMS	RS	IEC/EN61000-4-3 10V/m	perf. CriteriaA
	EFT	IEC/EN61000-4-4 ±2KV(application circuit3-①)	Perf.Criteria B
	Surge	IEC/EN61000-4-5 line to line±2KV(application circuit3-①)	Perf.Criteria B
	CS	IEC/EN61000-4-6 3 Vr.m.s	Perf.Criteria A
	Voltage dips, drops and short interruption immunity	IEC/EN61000-4-6 3 Vr.m.s	Perf.Criteria B

Typical Characteristic Curves

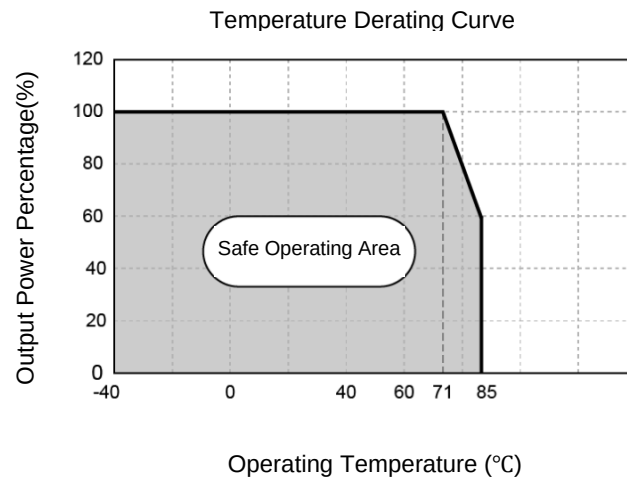
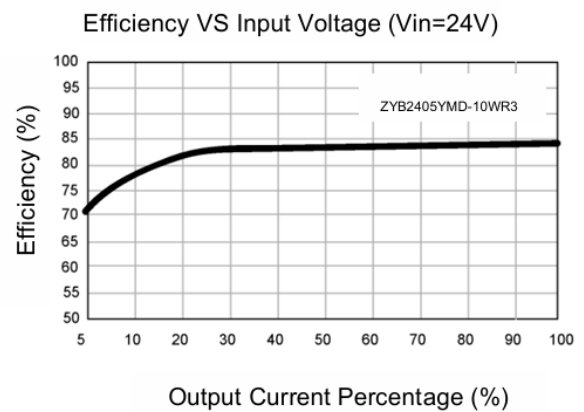
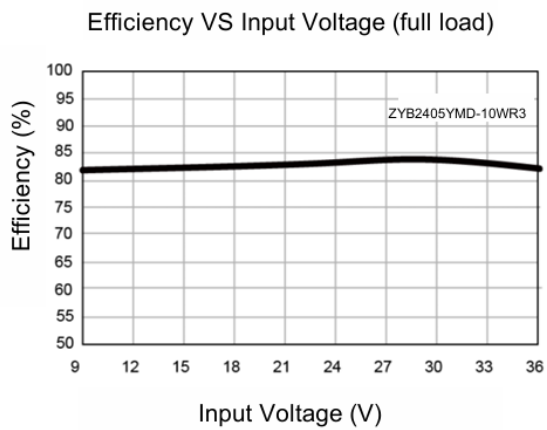
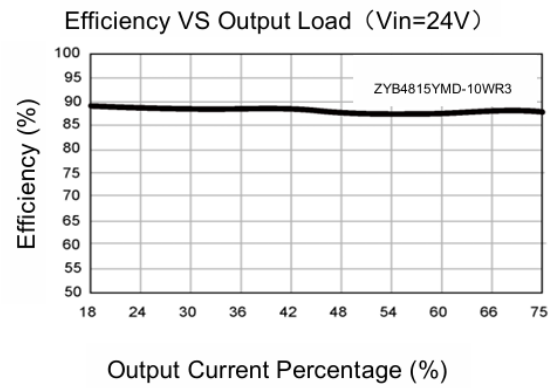
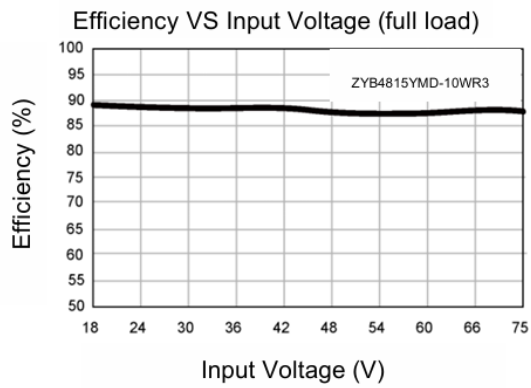
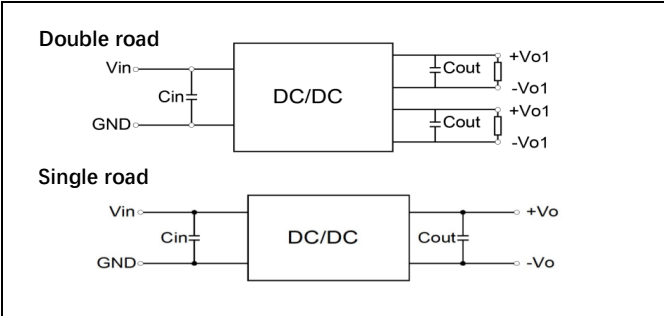


Figure 1



Circuit Design and Application



Recommended Capacitive Load Value Table		
Vin	24V	48V
Cin	100uF	10uF-47uF
Cout	10uF	

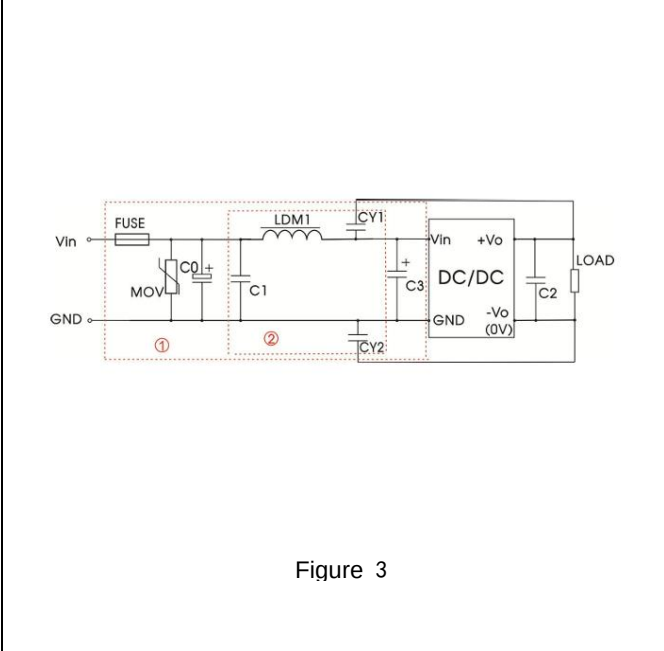


Figure 3

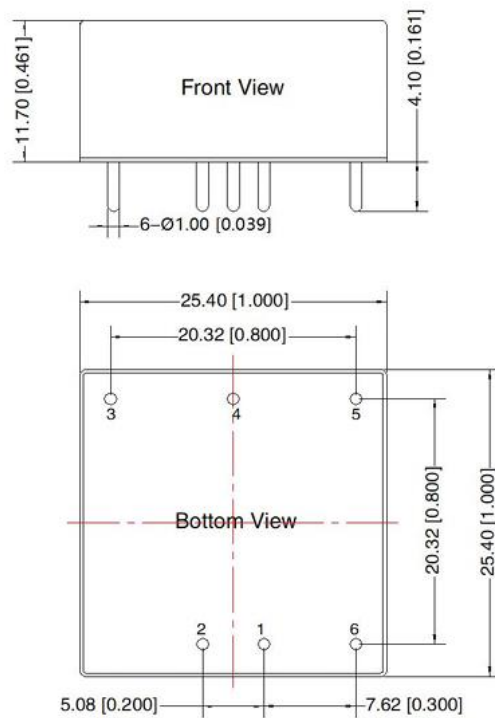
EMI Recommended Parameter Table		
Model	Vin: 24V	Vin: 48V
FUSE	Select according to the actual input current of the customer	
MOV	20D470K	14D101K
C0、C3	330uF/50V	330uF/100V
C1	1uF/50V	1uF/100V
C2	Refer to Figure 2 Cout parameter	
LDM1	4.7uH	
CY1、CY2	1nF/2KV	
Note: Part 1 in Figure 3 is for EMC testing; The second part is used for EMI filtering, which can be selected according to the demand.		

Note:

- 1.The input voltage cannot exceed the specified range value, otherwise permanent and irreparable damage may be caused ;
2. Unless otherwise specified,the parameters in this datasheet were measured at 25°C, humidity 40%~75%, input nominal voltage and output pure resistance mode under full load;
3. All index test methods are based on our company's enterprise standards.

Dimensions and Recommended Layout

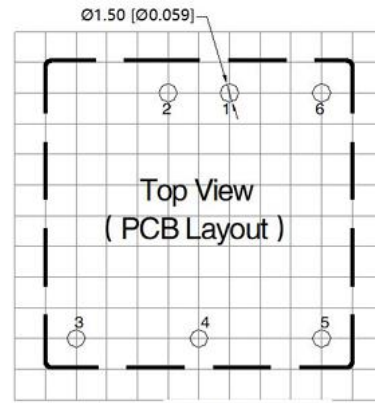
Dimensions



Note:
 Unit: mm[inch]
 PIN1/2/3/4/5/6: ϕ 1.0mm
 Pin diameter tolerances: ± 0.10 [± 0.004]
 General tolerances: ± 0.50 [± 0.020]

PCB Printing Layout & Pin Definition Table

THIRD ANGLE PROJECTION



Note: Grid 2.54*2.54mm

Pin-Out		
Pin	Single	Dual
1	GND	GND
2	Vin	Vin
3	+Vo	+Vo
4	No Pin	0V
5	0V	-Vo
6	Ctrl	Ctrl

Note:

1. If the product works under the minimum required load, it cannot guarantee that the performance of the product complies with all the performance indicators in this manual;
2. The maximum capacitive load is tested under the input voltage range and full load condition;
3. Unless otherwise stated, all indexes in this manual are measured at Ta=25°C, humidity <75%RH, nominal input voltage and rated output load;
4. All index testing methods in this manual are based on the enterprise standards of the company;
5. Our company can provide product customization, specific needs can directly contact our technical staff;

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