

## URA\_LD-15W & URA\_LD-20W Series 15/20W, 4:1 ULTRA WIDE INPUT ISOLATED & REGULATED DUAL OUTPUT DC-DC CONVERTER



Patent Protection RoHS

### FEATURES

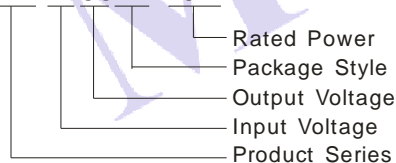
- Efficiency up to 88%
- Ultra wide input voltage range(4:1)
- Good low and high temperature features
- Output short circuit protection
- Isolation voltage:1500VDC
- Operating temperature:-40℃~+85℃
- Internal SMD construction
- Six-sided metal shield
- Industry standard pinout
- MTBF>1,000,000 hours
- Industrial level specifications
- EMC application

### APPLICATION

URA\_LD-15W & URA\_LD-20W series offer 15W & 20W of output, ultra wide input voltage: 9-36VDC,18-75VDC,Dual output, and features 1500VDC isolation, Under voltage lockout, over current, over voltage and short circuit protection. All models are particularly suited to tele-communications, industrial, test equipments power etc.

### MODEL SELECTION

URA2405LD-20W



Rated Power  
Package Style  
Output Voltage  
Input Voltage  
Product Series

### PRODUCT PROGRAM

Part Number	Input			Output		Capacitor Load Max (3) (μF)	Efficiency (% , Typ)
	Voltage (VDC)			Voltage (VDC)	Rated Current (2) (mA)		
	Nominal	Range	Max <sup>(1)</sup>				
URA2405LD-15W	24	9-36	40	±5	±1500	±4800	86
URA2412LD-15W				±12	±625	±800	87
URA2415LD-15W				±15	±500	±500	87
URA2405LD-20W	24	9-36	40	±5	±2000	±4800	84
URA2412LD-20W				±12	±833	±800	87
URA2415LD-20W				±15	±667	±500	87
URA4805LD-15W	48	18-75	80	±5	±1500	±4800	84
URA4812LD-15W				±12	±625	±800	87
URA4815LD-15W				±15	±500	±500	87
URA4805LD-20W	48	18-75	80	±5	±2000	±4800	85
URA4812LD-20W				±12	±833	±800	87
URA4815LD-20W				±15	±667	±500	88

Note: Add suffix "H" for heat sink mounted, for example URA2405LD-20WH.

### COMMON SPECIFICATIONS

Item	Test conditions	Min.	Typ.	Max.	Units
Storage Humidity		5	--	95	%
Operating Temperature		-40	--	85	℃
Storage Temperature		-55	--	125	
Maximum Case Temp.	On working temperature	--	--	105	
Lead Temperature	1.5mm from case for 10S	--	--	300	
Insulation Voltage	Test time:1min,Leakage current: < 1mA	1500	--	--	VDC
Isolation Resistance	Isolation voltage :500VDC	1000	--	--	MΩ
Isolation Capacitance	100kHz/0.1V	--	2000	--	pF
Switching Frequency	100% load, nominal input voltage	--	400	--	kHz
MTBF	MIL-HDBK-217F	1000	--	--	K.hours
Weight	Without heatsink	--	40	--	g
	With heatsink	--	55	--	
Cooling		Free air convection			
Case Material		Nickel- coated copper ( six-sided )			

### INPUT SPECIFICATIONS

Item	Test conditions	Min.	Typ.	Max.	Units	
Under Voltage Lockout	Nominal Input (24V)	Models ON	--	--	9.0	VDC
		Models OFF	7.8	--	--	
	Nominal Input (48V)	Models ON	--	--	17.8	
		Models OFF	16.0	--	--	
Input Filter		Pi				
Start-up Time	Nominal input& constant resistance load	--	10	--	ms	
Ctrl(4)	Models ON	3.5 -12VDC OR Open Circuit				
	Models OFF	0-1.2VDC				
	Input current (Models OFF)	--	--	1	mA	

### MORNSUN Science & Technology Co., Ltd.

Address: 2th floor 6th building, Huangzhou Industrial District, Guangzhou, China  
Tel: 86-20-38601850  
Fax: 86-20-38601272  
[Http://www.mornsun-power.com](http://www.mornsun-power.com)

## EMI SPECIFICATIONS

Item	Test conditions	Test Standard
Conduction	Refer to recommended circuit	EN55022/CLASS B
Radiation		

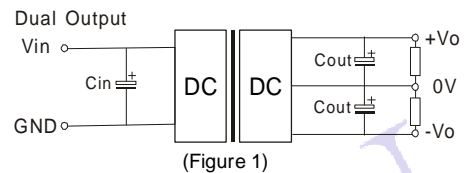
## OUTPUT SPECIFICATIONS

Item	Test conditions	Min.	Typ.	Max.	Unit
Output Power	See product program	2	--	20	W
Output Voltage Accuracy	Refer to recommended circuit	--	±1	±3	%
Load Regulation	From 10% to 100% load input	--	±0.5	±1	
Voltage Regulation	Input voltage from low to high 100% load	--	±0.2	±0.5	
Cross Regulation	Main output 55% Supplement output from 10% to 100% load	--	--	±5	
Ripple	20MHz bandwidth	--	40	50	mV
Noise		--	75	100	
Transient Recovery Time	25% rated load range	--	200	500	us
Transient Peak Deviation		--	±3	±5	%
Over Current Protection	Full input voltage	120	140	150	%
Short Circuit Protection	Full input voltage	Hiccup, continual, auto-recovery			
Over Voltage Protection	±5V output	--	±6.1	--	VDC
	±12V output	--	±15	--	
	±15V output	--	±18	--	
Temperature Drift	Refer to recommended circuit	--	±0.02	--	%/°C

## RECOMMENDED CIRCUIT

### 1) Recommended Circuit

All the URA\_LD-20W series have been tested according to the following recommended testing circuit before leaving factory. This series should be tested under load. Never be tested under no load (see Figure 1).

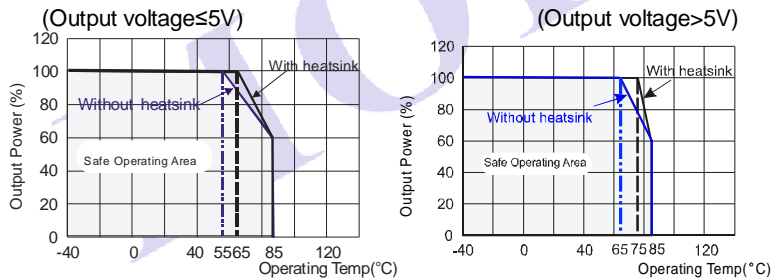


If you want to further decrease the output ripple, you can increase capacitance properly or choose capacitors with low ESR. However, the capacitance can't exceed the maximum capacitor load in the list.

### 2) Recommended capacitance

Capacitance	Cout (μF)	Cin (μF)
Output voltage		
±5(VDC)	±220	100
±12(VDC)	±100	
±15(VDC)	±100	

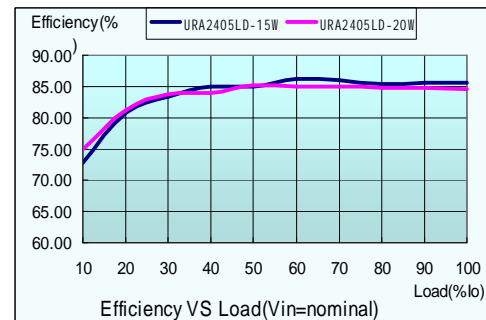
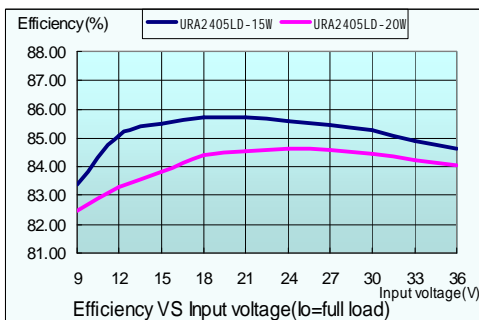
## TEMPERATURE DERATING CURVE



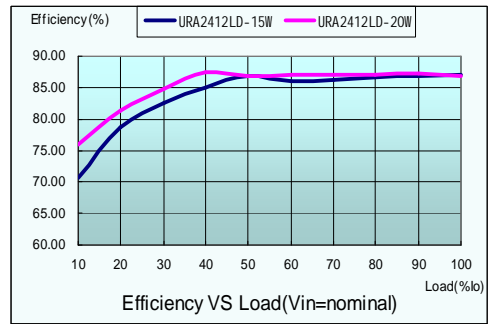
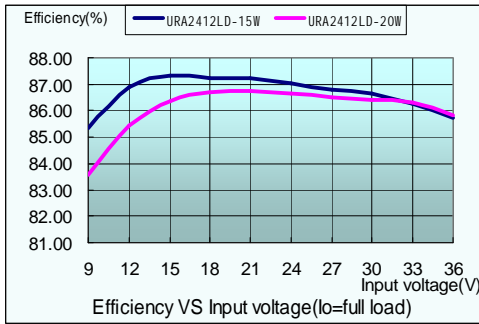
### 3) No parallel connection or plug and play

## EFFICIENCY CURVE

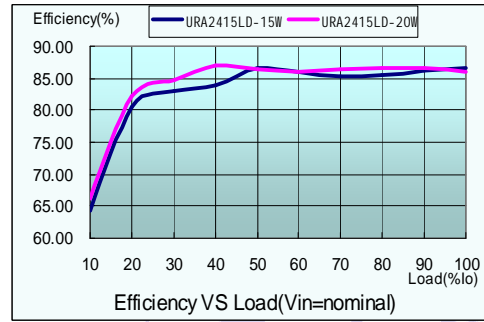
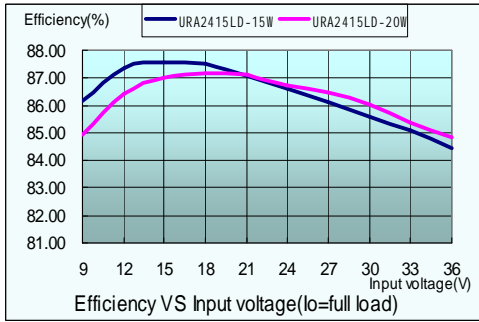
### URA2405LD-15W & URA2405LD-20W



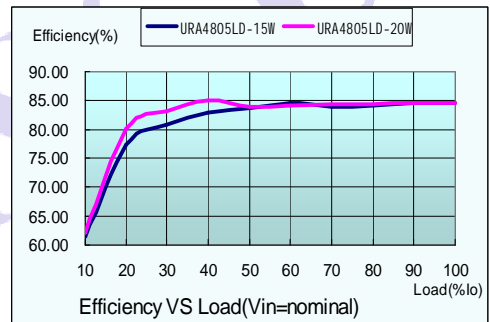
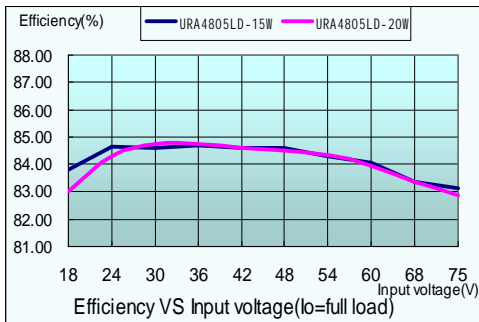
URA2412LD-15W & URA2412LD-20W



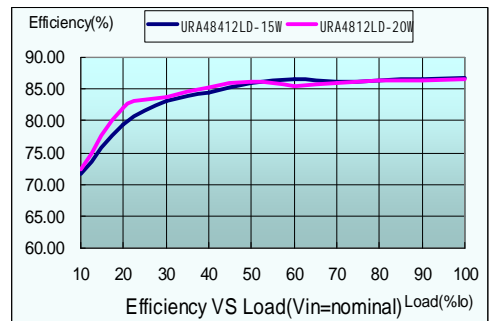
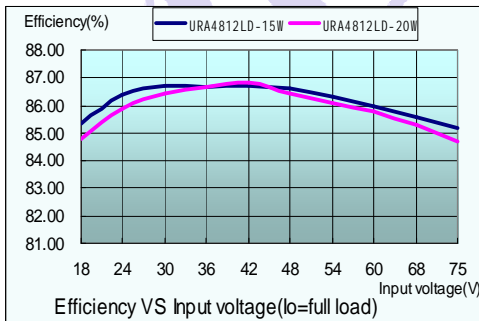
URA2415LD-15W & URA2415LD-20W



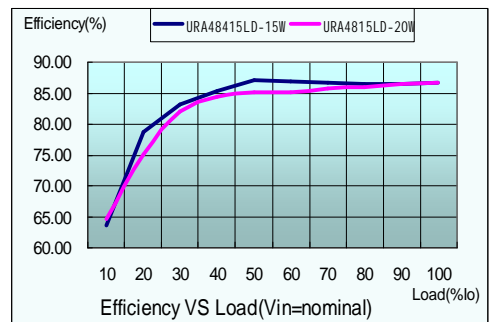
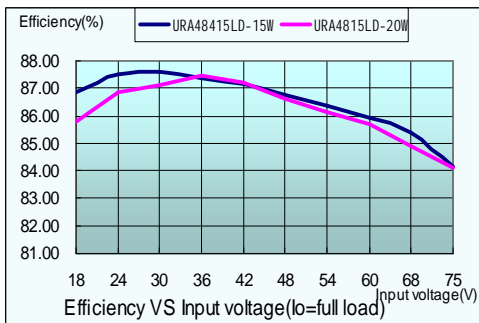
URA4805LD-15W & URA4805LD-20W



URA4812LD-15W & URA4812LD-20W

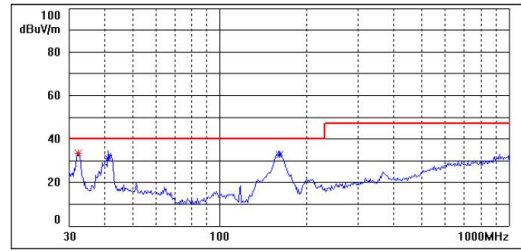
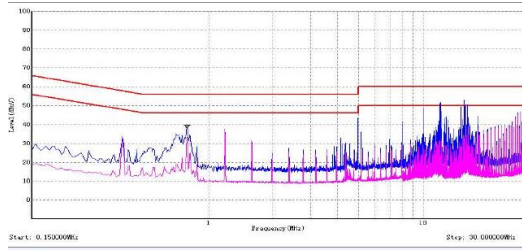


URA48LD-15W & URA4815LD-20W

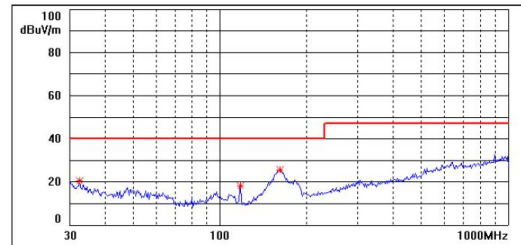
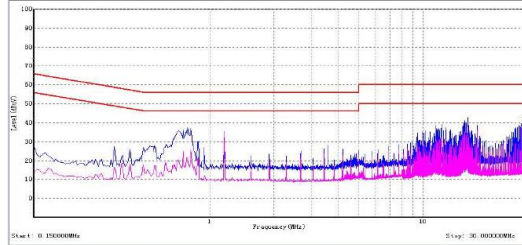


# EMI TEST CURVE (Nominal Vin, Full load)

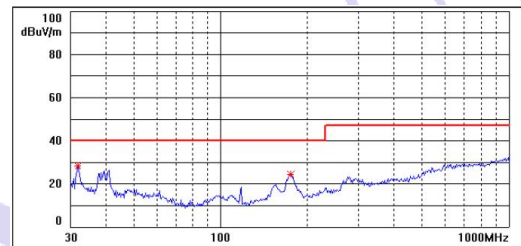
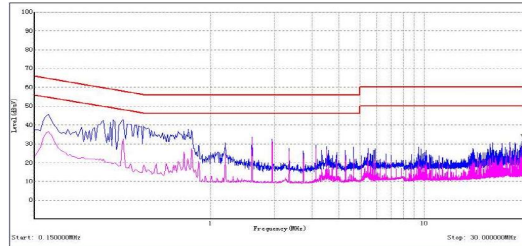
## URA2405LD-20W



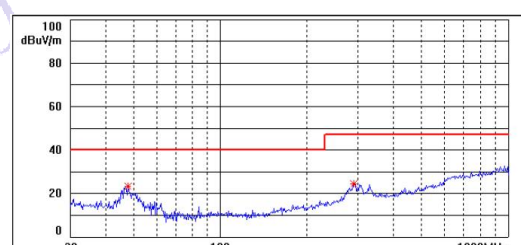
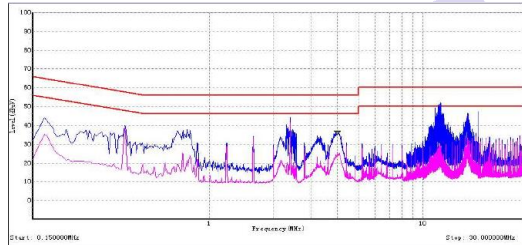
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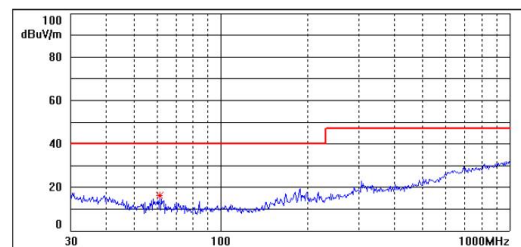
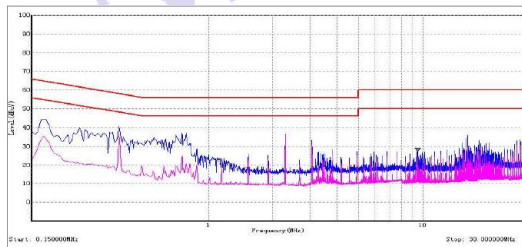
## URA2415LD-20W



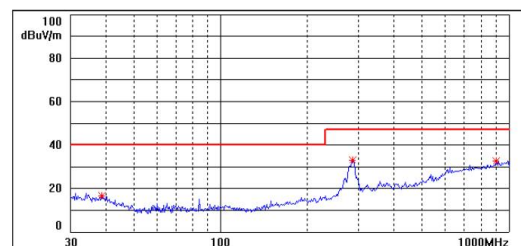
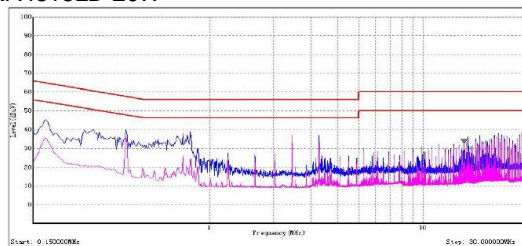
## URA4805LD-20W

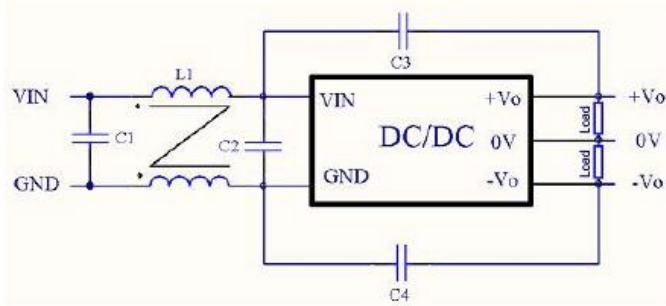


## URA4812LD-20W

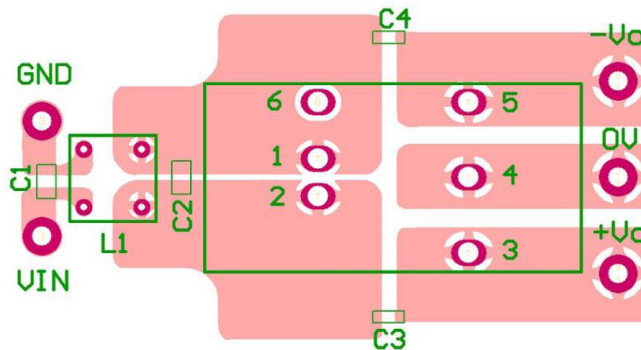


## URA4815LD-20W





Recommended circuit(EN55022 CLASS B conducted emission application)



Recommended PCB layout with filter

To meet conducted emissions(EN55022 CLASS B)following components are needed:

URA24XXLD-15W & URA24XXLD-20W:

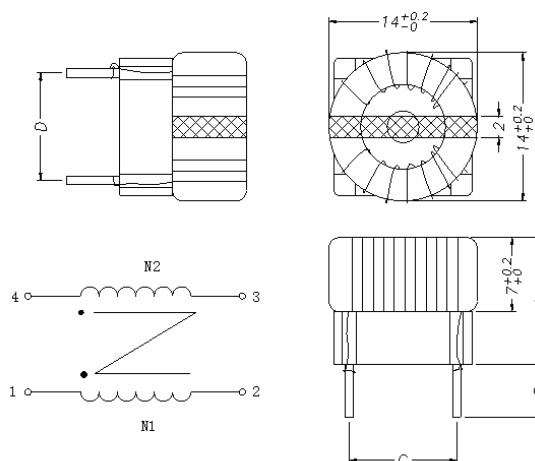
Component	Value	Voltage	Reference
C1,C2	4.7 $\mu$ F	50V	1210MLCC
C3,C4	1000pF	2KV	1206MLCC
L1(Common Choke)	1250 $\mu$ H	—	P/N:(Refer follow)

URA48XXLD-15W & URA48XXLD-20W:

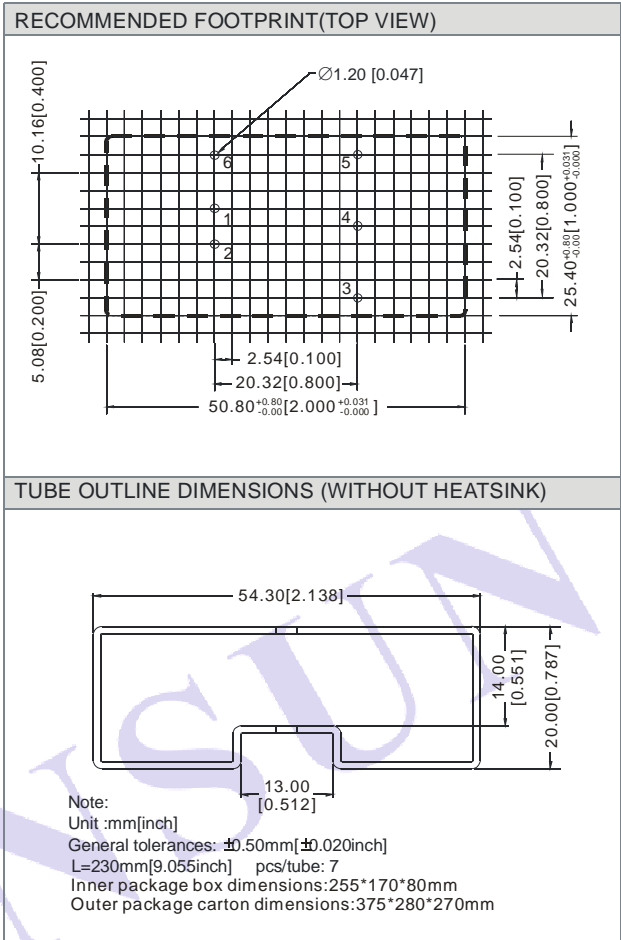
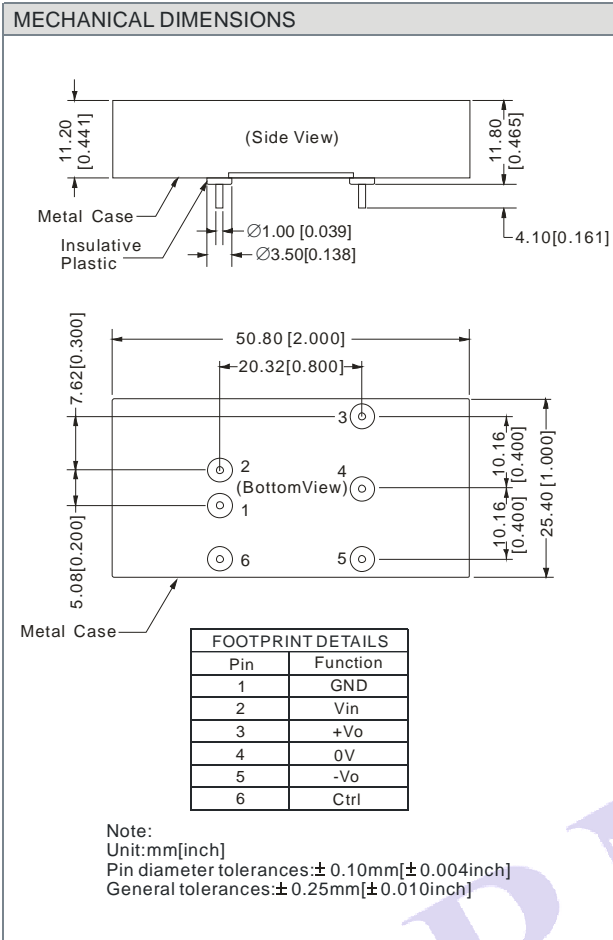
Component	Value	Voltage	Reference
C1,C2	1.0 $\mu$ F	100V	1210MLCC
C3,C4	1000pF	2KV	1206MLCC
L1(Common Choke)	1250 $\mu$ H	—	P/N: (Refer follow)

This common choke L1 has been defined as follow(Can be assembled by hand):

- Core:P5T14\*8\*7,Base (Optical)  
L:1250 $\mu$ H  $\pm$ 25%/DCR:250m $\Omega$ ,max
- Wire: diameter 0.4mm  
A Height: 11.2mm,max  
B Terminal Length: 4.0mm,max  
C Terminal Pitch: 7.5mm,max  
D Terminal Pitch: 7.5mm,max
- Test condition: 100KHz/100mV
- Recommended through hole:  $\varnothing$ 0.9mm
- All dimensions in millimeters

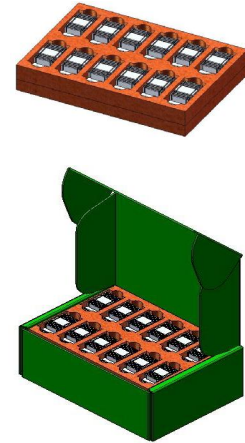
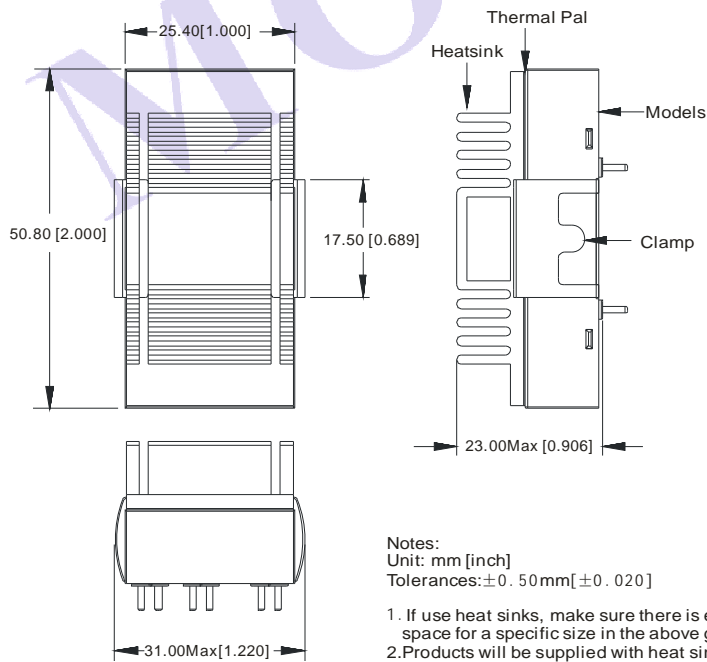


# OUTLINE DIMENSIONS & PIN CONNECTIONS



## HEATSINK ASSEMBLY

## PACKAGE DIAGRAM (WITH HEATSINK)



Inner package box dimensions:  
L\*W\*H=255\*170\*80mm  
Package quantity: 24pcs  
Outer package carton dimensions:  
L\*W\*H=375\*280\*270mm  
Package quantity: 144pcs

## NOTES

1. Input voltage can't exceed this value, or will cause the permanent damage.
2. Minimum operating current for 10% of rated current, if less than 10% rated current, output ripple may increase rapidly, the amplitude  $\leq 1V$ .
3. Capacitor MAX load tested at nominal input voltage and constant resistive load.
4. The CTRL control pin voltage is referenced to GND.
5. Only typical model listed. Non-standard models will be different from the above, please contact us for more details.
6. All specifications are measured at  $TA=25^{\circ}C$ , humidity $<75\%$ , nominal input voltage and rated output load unless otherwise specified.
7. In this datasheet, all the test methods of indications are based on corporate standards.

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