

MORNSUN

URA_LD-20W Series 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°C ~ +85°C
- Internal SMD construction
- Six-sided metal shield
- Industry standard pinout
- MTBF > 1,000,000 hours
- Industrial level specifications
- EMC application

PRODUCT PROGRAM

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

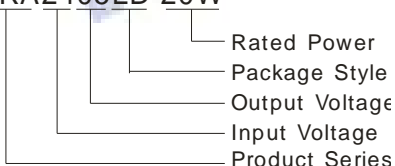
Note: Add suffix "H" for heat sink mounted, for example URA2405LD-20WH.

APPLICATION

URA_LD-20W series offer 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



MORNSUN America

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COMMON SPECIFICATIONS

Item	Test conditions	Min.	Typ.	Max.	Units
Storage Humidity		5	--	95	%
Operating Temperature		-40	--	85	°C
Storage Temperature		-55	--	125	
Case Temperature	On working temperature	--	--	105	
Lead Temperature	1.5mm from case for 10S	--	--	300	
Insulation Voltage	Test time:1min , Leakage current: < 1mA	1500	--	--	
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		--	40	--	g
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	8.0	--	--	
	Nominal Input (48V)	Models ON	--	--	17.8	
		Models OFF	16.0	--	--	
Input Filter		Pi				
Start-up time		--	10	--	ms	
Ctrl ⁽⁴⁾	Models ON	3.5 -12VDC OR Open Circuit				
	Models OFF	0-1.2VDC				
	Input current (Models OFF)	--	--	2	mA	

EMI SPECIFICATIONS

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

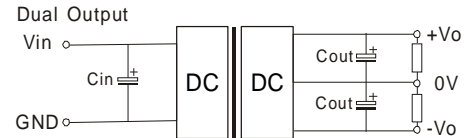
OUTPUT SPECIFICATIONS

Item	Test conditions	Min.	Typ.	Max.	Unit
Output max power		--	--	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	--	±0.2	±0.5	
Cross regulation	Supplement output from 10% to 100% load	--	--	±5	
Ripple	20MHz bandwidth	--	40	50	
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	--	±6.2	--	VDC
	±12V output	--	±15	--	
	±15V output	--	±18	--	
Temperature drift		--	±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).



(Figure 1)

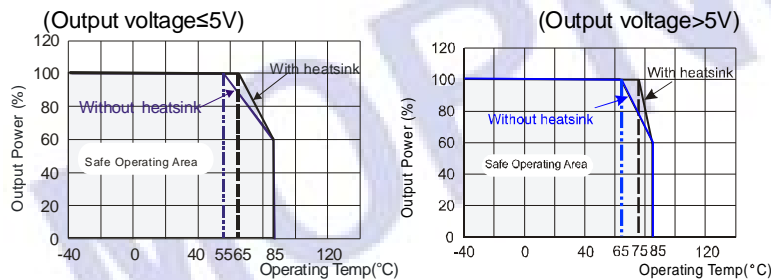
If you want to further decrease the output ripple, you can increase capacitance properly or choose capacitors with low ESR. However, the capacitance can't exceed the maximum capacitor load in the list.

2) Recommended capacitance

Capacitance Vo	Cout (μF)	Cin (μF)
±5(VDC)	±470	100
±12(VDC)	±100	
±15(VDC)	±100	

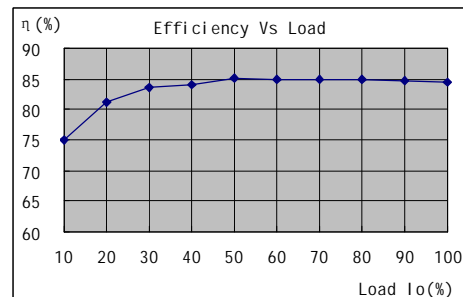
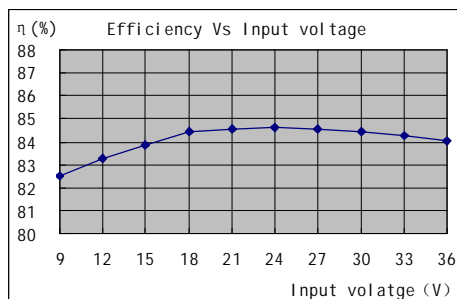
3) No parallel connection or plug and play

TEMPERATURE DERATING CURVE

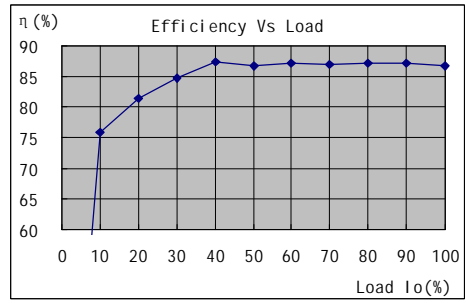
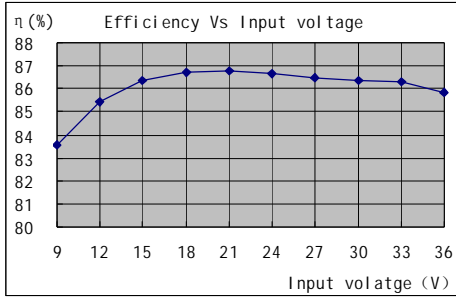


EFFICIENCY CURVE

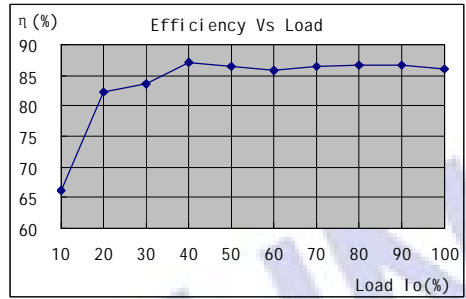
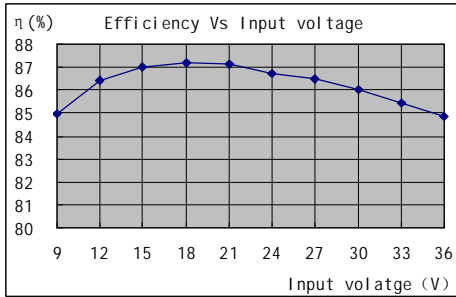
URA2405LD-20W



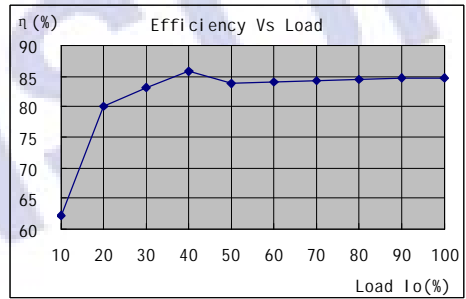
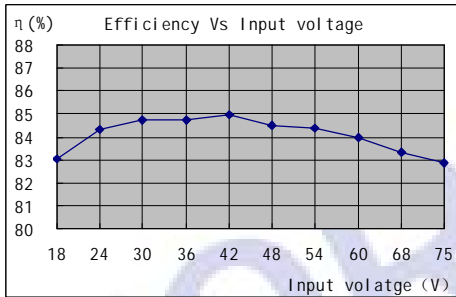
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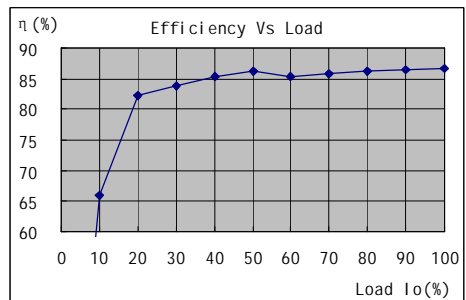
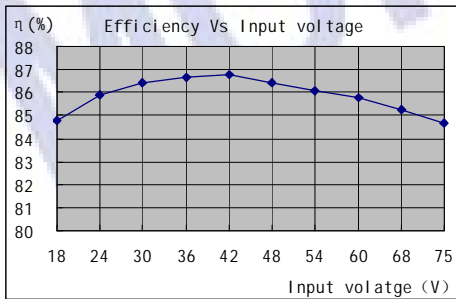
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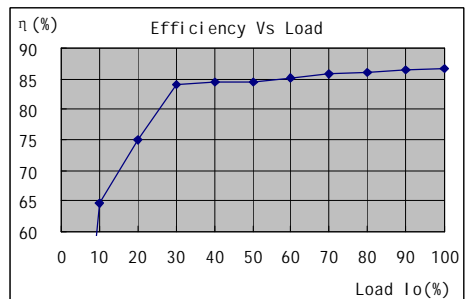
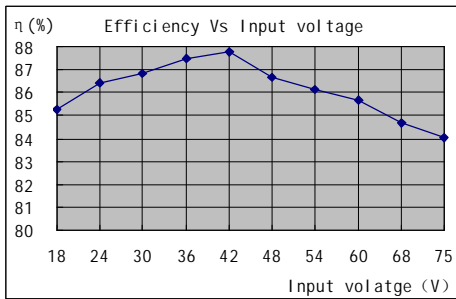
URA4805LD-20W



URA4812LD-20W

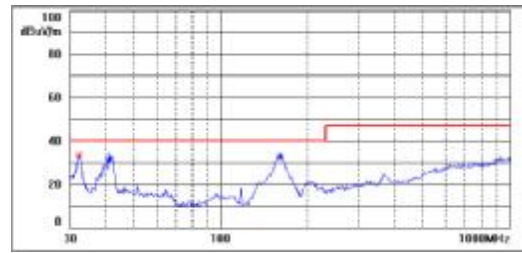
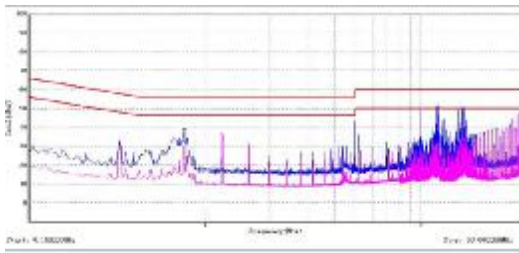


URA4815LD-20W

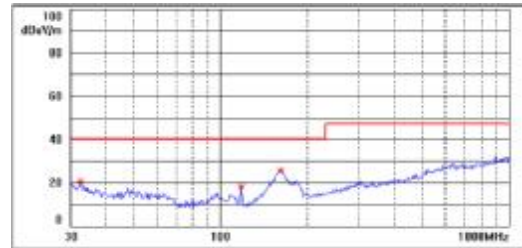
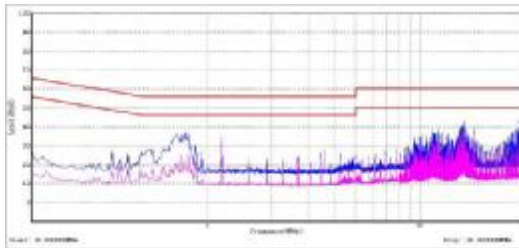


EMI TEST CURVE (Nonimal Vin, Full load)

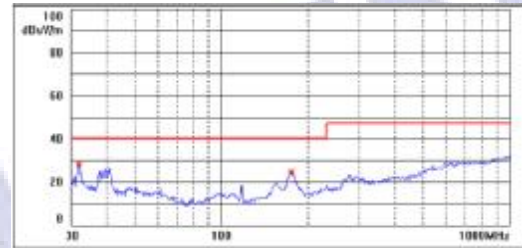
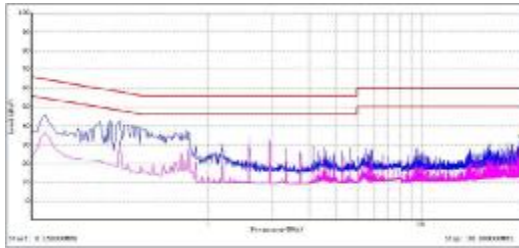
URA2405LD-20W



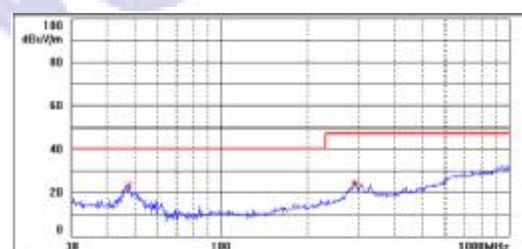
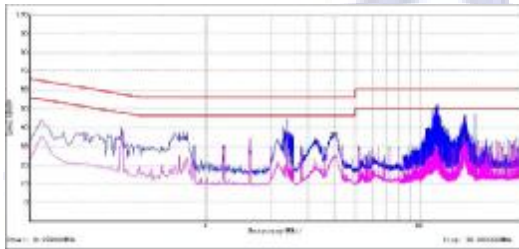
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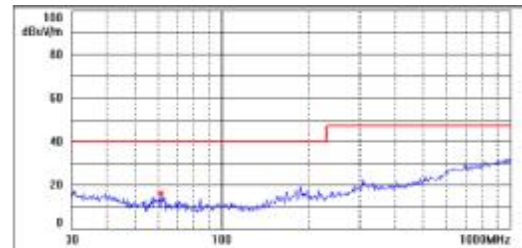
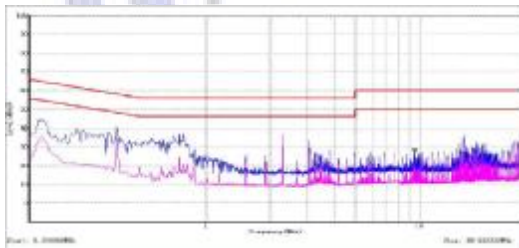
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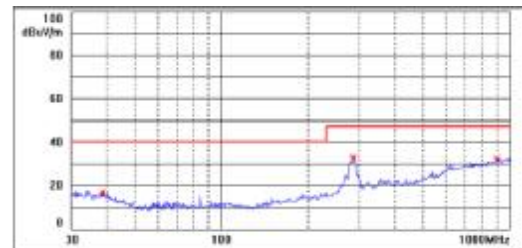
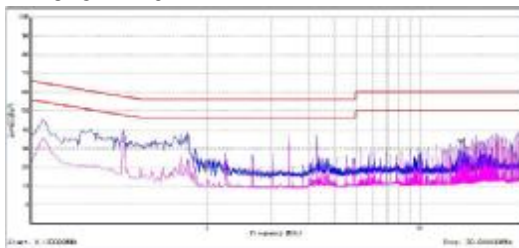
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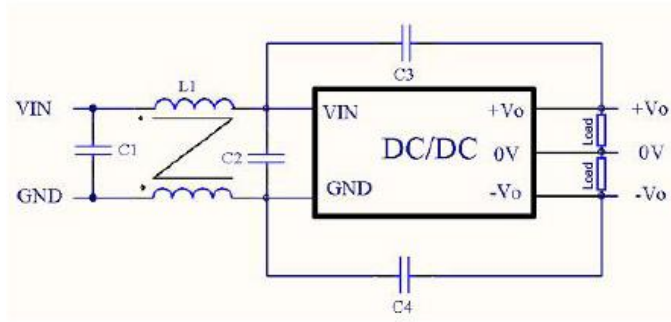


URA4812LD-20W

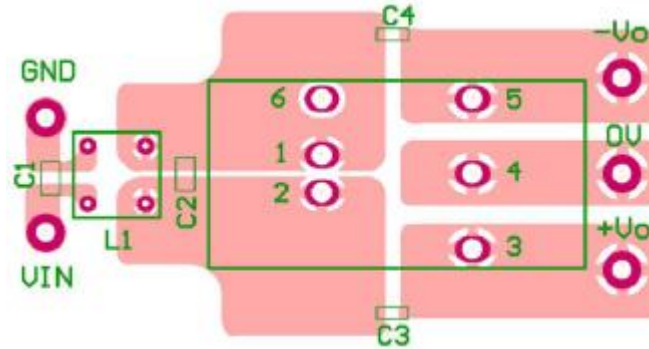


URA4815LD-20W





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-20W

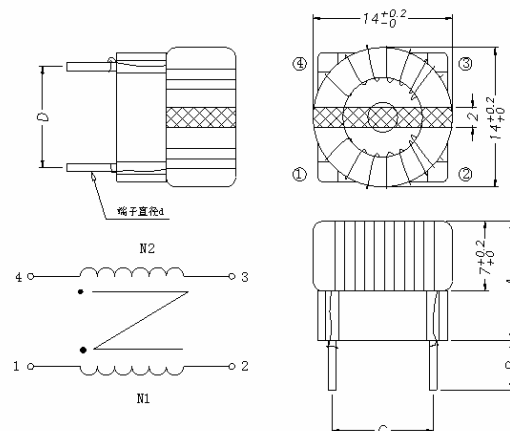
Component	Value	Voltage	Reference
C1,C2	4.7 μ F	50V	1210MLCC
C3,C4	1000pF	2KV	1206MLCC
L1(Common Choke)	4900 μ H	—	P/N:(Refer follow)

URA48XXLD-20W:

Component	Value	Voltage	Reference
C1,C2	1.0 μ F	100V	1210MLCC
C3,C4	1000pF	2KV	1206MLCC
L1(Common Choke)	4900 μ H	—	P/N: (Refer follow)

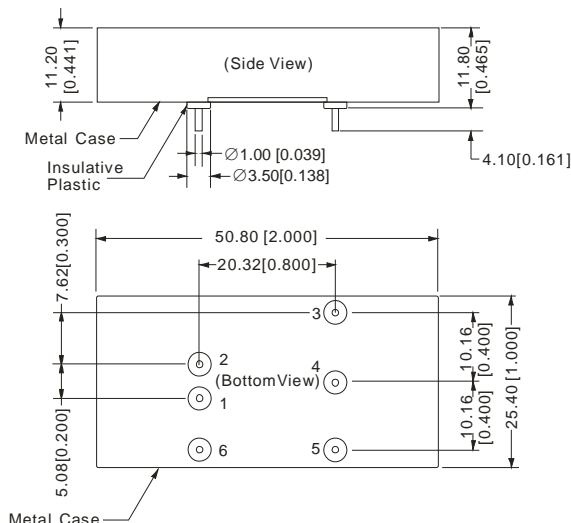
This common choke L1 has been defined as follow(Can be assembled by hand)::

- Core: P5T14*8*7,Base (Optical)
- L:4900 μ H \pm 30%/DCR:250m Ω ,max
- 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

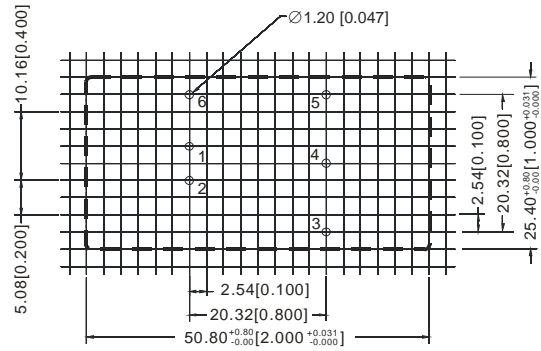
MECHANICAL DIMENSIONS



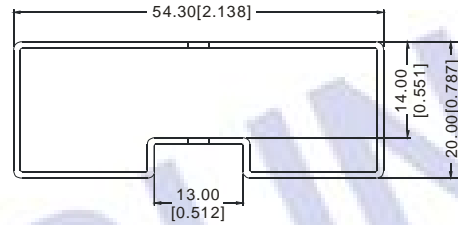
FOOTPRINT DETAILS	
Pin	Function
1	GND
2	Vin
3	+Vo
4	0V
5	-Vo
6	Ctrl

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

RECOMMENDED FOOTPRINT(TOP VIEW)

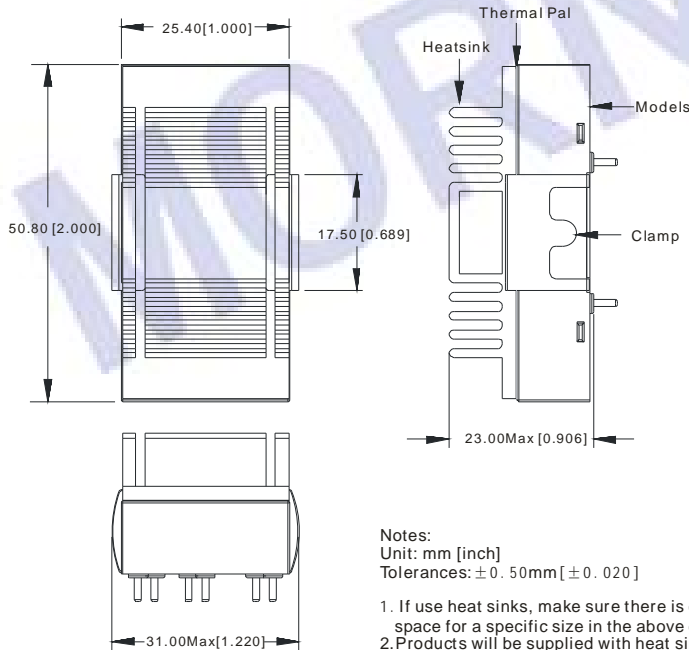


TUBE OUTLINE DIMENSIONS (WITHOUT HEATSINK)



Note:
 Unit :mm[inch]
 General tolerances:± 0.50mm[± 0.020inch]
 L=230mm[9.055inch] pcs/tube: 7

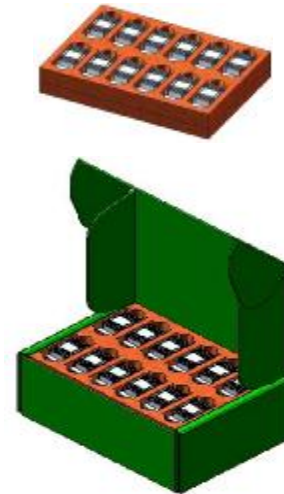
HEATSINK ASSEMBLY



Notes:
 Unit: mm [inch]
 Tolerances: ± 0.50mm [± 0.020]

1. If use heat sinks, make sure there is enough space for a specific size in the above graph;
2. Products will be supplied with heat sinks already mounted, separate heat sinks are not available

PACKAGE DIAGRAM (WITH HEATSINK)



Package box: 255*170*80mm
 Package quantity: 24pcs

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 ≤ 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°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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Specifications subject to change without notice.
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