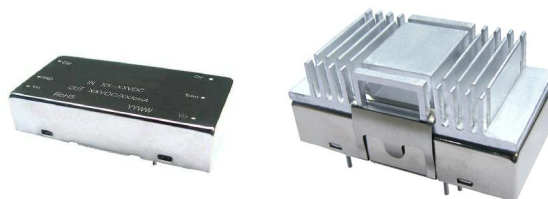


PURB_LD 20W SERIES

20W, WIDE INPUT, ISOLATED & REGULATED SINGLE OUTPUT DC-DC CONVERTER



RoHS

FEATURES

- 4:1 Wide Input Voltage Range
- 1.5KVDC Input/Output Isolation
- Short Circuit Protection (Automatic Recovery)
- Operating Temperature: -40°C ~ +85°C
- Internal SMD Construction
- Metal Shielding Package
- Industry Standard Pinout
- MTBF>1,000,000 hours
- RoHS Compliance

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⁾				
PURB2403LD	24	9-36	40	3.3	6000	18700	83
PURB2405LD				5	4000	9600	86
PURB2412LD				12	1667	1600	87
PURB2415LD				15	1333	1000	88
PURB4803LD	48	18-75	80	3.3	6000	18700	84
PURB4805LD				5	4000	9600	87
PURB4812LD				12	1667	1600	88
PURB4815LD				15	1333	1000	88

Add suffix "H" for heat sink mounted, for example PURB2405LD-H.

APPLICATION

The PURB_LD series offer 20W output, with 4:1 wide input voltage of 9-36VDC, 18-75VDC, and features 1500VDC isolation, short-circuit and over current protection, as well as six sided metal shielding. All models are particularly suited to tele-communications, industrial, test equipments power.

MODEL SELECTION

COMMON SPECIFICATIONS

Item	Test conditions	Min.	Typ.	Max.	Units
Storage humidity		5	--	95	%
Operating temperature		-40	--	85	°C
Storage temperature		-55	--	125	
Maximum case temp.		--	--	105	
Lead temperature	1.5mm from case for 10 seconds	--	--	300	
Isolation voltage	Test for 1 minute and 1 mA max	1500	--	--	VDC
Isolation resistance	Test at 500VDC	1000	--	--	MΩ
Isolation capacitance	100kHz/0.1V	--	1000	--	pF
Switching frequency	Nominal input, 100% load	--	400	--	kHz
MTBF		1000	--	--	k hours
Weight		--	40	--	g
Cooling		Free Air Convection			
Case material		Nickel-coated copper(six-sided)			

INPUT SPECIFICATIONS

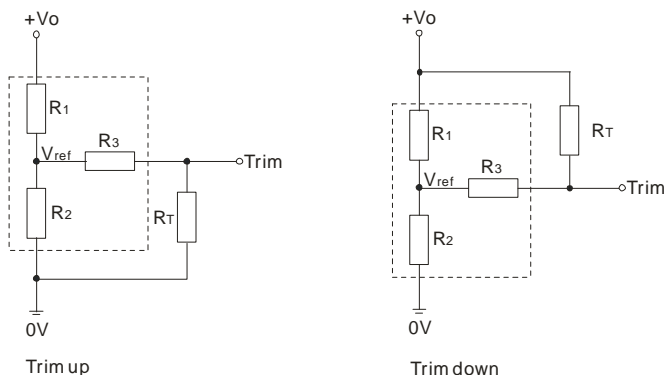
Item	Test conditions	Min.	Typ.	Max.	Units	
Under voltage lockout	Nominal input (24V)	Models ON	--	--	9.0	VDC
		Models OFF	8.0	--	--	
	Nominal input (48V)	Models ON	--	--	17.8	
		Models OFF	16.0	--	--	
Input filter		PI				
Start-up time		--	10	--	ms	
Ctrl ⁽⁴⁾	Models ON	3.5 -12VDC or open circuit				
	Models OFF	0-1.2VDC				

OUTPUT SPECIFICATIONS

Item	Test conditions	Min.	Typ.	Max.	Units
Output voltage accuracy	Refer to recommended circuit	--	±1	±3	%
Load regulation	From 10% to 100% load	--	±0.5	±1	
Line regulation	Input voltage from low to high 100% load	--	±0.2	±0.5	
Ripple and noise	20MHz bandwidth	55	75	150	
Transient recovery time	25% load step change	--	200	500	us
Transient peak deviation		--	±3	±5	%
Over current protection	Input voltage range	120	130	150	%
Short circuit protection	Input voltage range	Hiccup, automatic recovery			
Over voltage protection	3.3V output	--	3.9	--	VDC
	5V output	--	6.2	--	
	12V output	--	15	--	
	15V output	--	18	--	
Temperature drift (Vout)		--	±0.02	--	%/°C
Trim		±10%Vo			VDC

TRIM APPLICATION & TRIM RESISTANCE

Application circuit for TRIM (Part in broken line is the interior of models)



Formula for resistance of Trim

$$\begin{aligned} \text{up: } R_T &= \frac{aR_2}{R_2-a} - R_3 & a &= \frac{V_{ref}}{V_o - V_{ref}} \cdot R_1 \\ \text{down: } R_T &= \frac{aR_1}{R_1-a} - R_3 & a &= \frac{V_o - V_{ref}}{V_{ref}} \cdot R_2 \end{aligned}$$

Note: Value for R1, R2, R3, and Vref refer to the following table.

R_T: Resistance of Trim

a: User-defined parameter, no actual meanings.

Vo	3.3 (VDC)	5 (VDC)	12 (VDC)	15 (VDC)
Resistance				
R1(KΩ)	4.801	2.883	10.971	14.497
R2(KΩ)	2.863	2.864	2.864	2.864
R3(KΩ)	15	10	17.8	17.8
Vref(V)	1.24	2.5	2.5	2.5

RECOMMENDED CIRCUIT

1) Recommended circuit

All the PURB_LD 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)

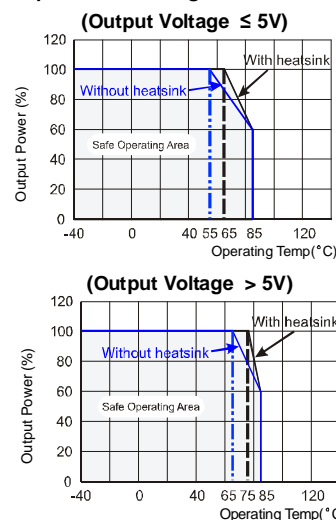
If you want to further decrease the output ripple, you can increase capacitance properly or choose capacitors with low ESR. However, the capacitance can't exceed the maximum capacitor load in the list.

2) Recommended capacitance

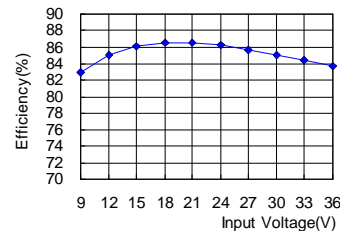
Output voltage	Cout (μF)	Cin (μF)
3.3(VDC)	470/220	100
5(VDC)	470/220	
12(VDC)	220/100	
15(VDC)	220/100	

3) No parallel connection or plug and play DERATING & EFFICIENCY CURVE

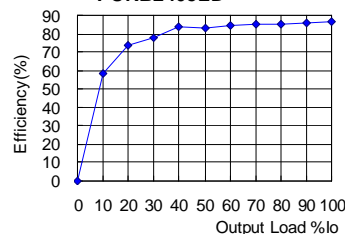
1) Temperature derating curve



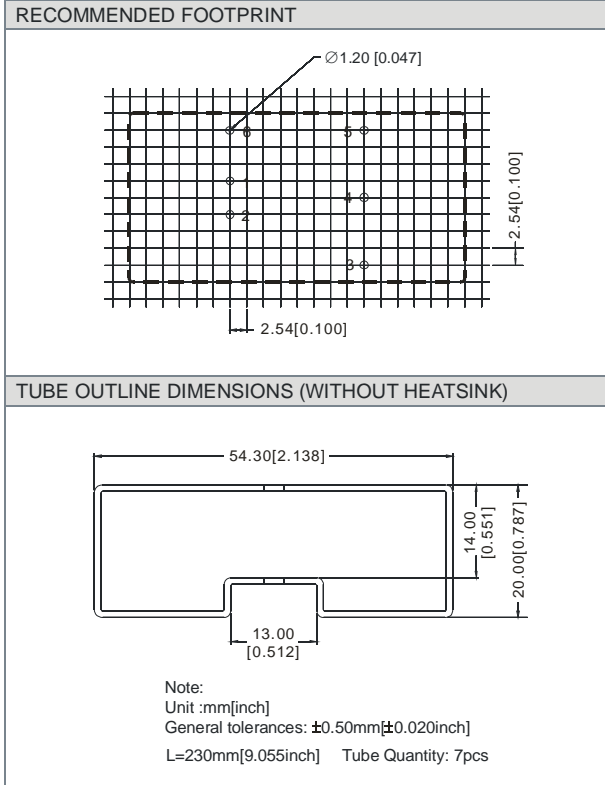
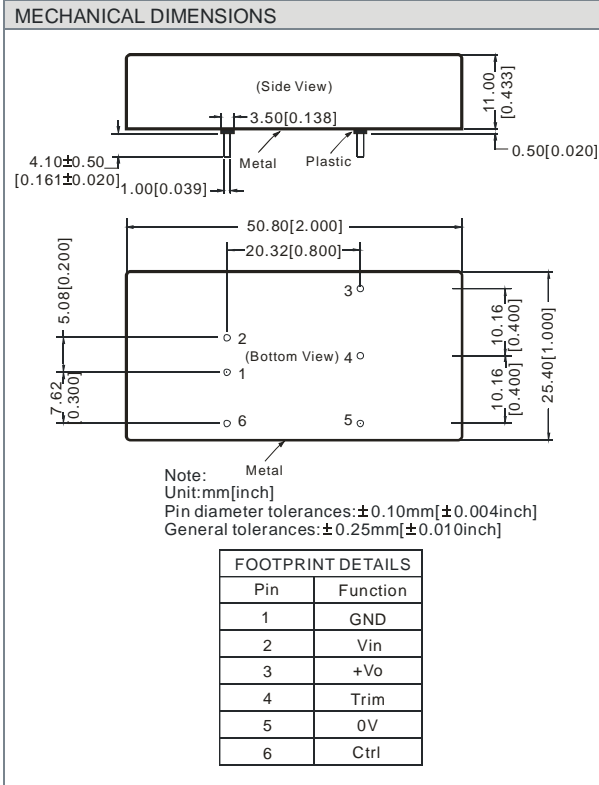
2) Efficiency VS Input Voltage PURB2405LD



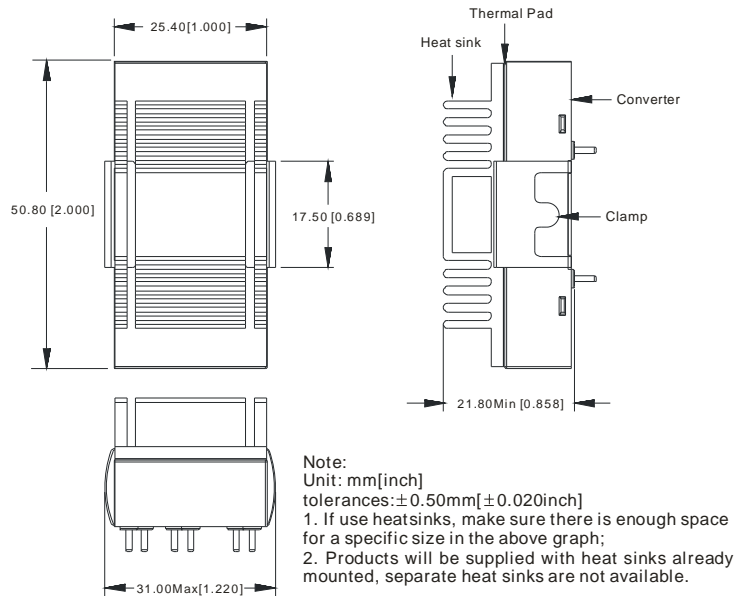
3) Efficiency VS Output Load PURB2405LD



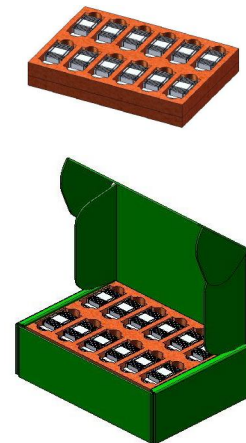
OUTLINE DIMENSIONS & FOOTPRINT DETAILS



HEATSINK ASSEMBLY



PACKAGE DIAGRAM(WITH HEATSINK)



Package box:
L*W*H=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.