SERIES: P78B-2000 | **DESCRIPTION:** DC-DC CONVERTER

FEATURES

- 2A current output
- pin compatible with LM78XX linear regulators
- -40 to +85°C operating temperature
- input voltage range up to 4.75~36 Vdc
- continuous short circuit protection
- compact SIP3 package
- low ripple and noise
- designed to meet EN/IEC 62368-1

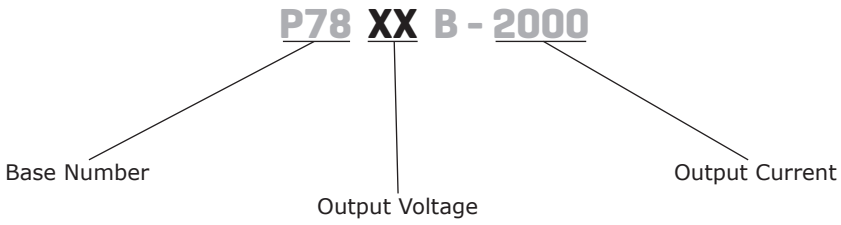
RoHS

MODEL

MODEL	input voltage		output voltage	output current[1]	output power	ripple & noise[2]	efficiency[3]
	typ (Vdc)	range (Vdc)	(Vdc)	max (mA)	max (W)	max (mVp-p)	typ (%)
P7801B-2000	24	4.75~36	1.8	2000	5.0	50	90.5
P7802B-2000	24	4.75~36	2.5	2000	5.0	50	91.0
P7803B-2000	24	4.75~36	3.3	2000	6.6	50	93.0
P7805B-2000	24	6.5~36	5.0	2000	10.0	75	94.0
P7809B-2000	24	11~36	9.0	2000	18.0	75	95.0
P7812B-2000	24	15~36	12.0	2000	24.0	75	96.0
P7815B-2000	24	18~36	15.0	2000	30.0	75	96.0

Notes:
1. The output current can use 2.5A, < 1 second.
2. Ripple and noise are measured with a 0.1µF MLCC across output (low ESR).
3. The efficiency is tested at min. input, full load, 25°C.
4. All specifications measured at: Ta=25°C, nominal input voltage, rated output load, and after warm up unless otherwise specified.

PART NUMBER KEY



INPUT

parameter	conditions/description	min	typ	max	units
operating input voltage			24		Vdc
no-load input current			2.0		mA
short circuit input current	nominal input 24 Vdc for output less than 5 Vdc nominal input 24 Vdc for output more than 5 Vdc		50 75		mA mA

OUTPUT

parameter	conditions/description	min	typ	max	units
maximum capacitive load[5]	1.8 Vdc output model 2.5 Vdc output model 3.3 Vdc output model 5 Vdc output model 9 Vdc output model 12 & 15 Vdc output models			3,300 2,300 1,800 820 620 470	µF µF µF µF µF µF
line regulation	measured from low to high line, full load		±0.5		%
load regulation	measured from 0~100% load		±1		%
voltage accuracy			±2		%
switching frequency	at full load, 24 Vdc input		460		kHz
power dissipation	at 2.5 Vdc output		0.5~1.06		W

Note: 5. The capacitive load is test by constant resistive load.

PROTECTIONS

parameter	conditions/description	min	typ	max	units
short circuit protection	continuous, auto recovery				

SAFETY AND COMPLIANCE

parameter	conditions/description	min	typ	max	units
safety approvals	designed to meet 62368-1: EN, IEC				
EMI/EMC	EN 55032 Class A/Class B (see recommended circuit Fig. 1)				
ESD	IEC 61000-4-2, Air ±8 kV; Contact ±6 kV, perf. Criteria A				
radiated immunity	IEC 61000-4-3, 10 V/m, perf. Criteria A				
fast transient	IEC 61000-4-4, ±2 kV, perf. Criteria A (see recommended circuit Fig. 1)				
surge	IEC 61000-4-5, ±2 kV, perf. Criteria A (see recommended circuit Fig. 1)				
conducted immunity	IEC 61000-4-6, 10 Vrms, perf. Criteria A				
magnetic field immunity	IEC 61000-4-8, 10 A/m, perf. Criteria A				
MTBF	as per MIL-HDBK-217F, full load, 25 °C	1,500,000			hours
RoHS	yes				

ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
operating temperature	see derating curve	-40		85	°C
storage temperature		-55		125	°C
operating humidity	non-condensing			95	%
maximum case temperature			105		°C
vibration	MIL-STD-202				

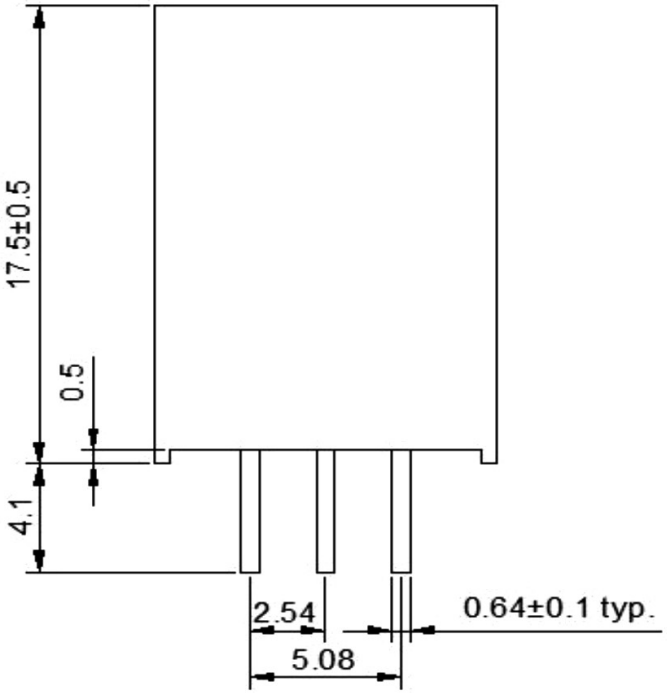
MECHANICAL

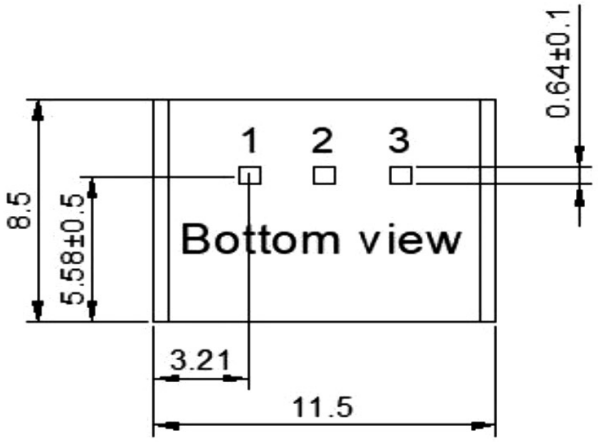
parameter	conditions/description	min	typ	max	units
dimensions	11.5 x 8.5 x 17.5				mm
case material	plastic (UL94 V-0)				
potting material	silicone (UL94 V-0)				
weight			4		g
cooling method	natural convection				

MECHANICAL DRAWING

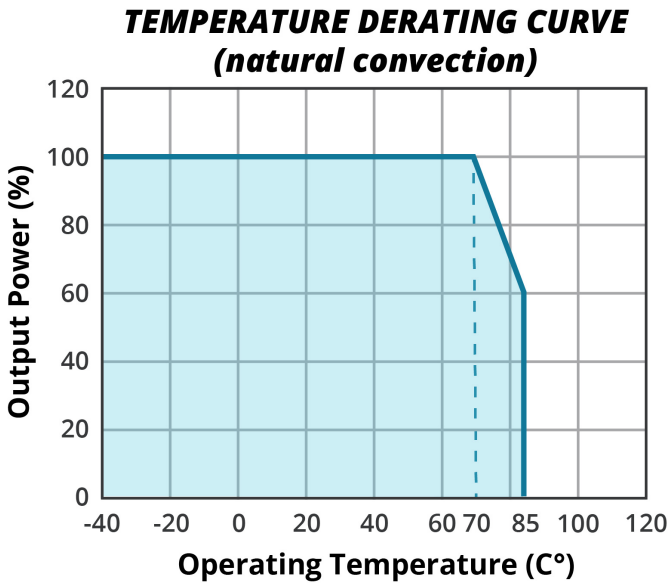
units: mm
tolerance: ±0.25 mm
xx.x±0.5mm
xx.xx±0.25mm

PIN CONNECTIONS	
PIN	Function
1	+Vin
2	GND
3	+Vout





DERATING CURVE



EMC RECOMMENDED CIRCUIT

Figure 1

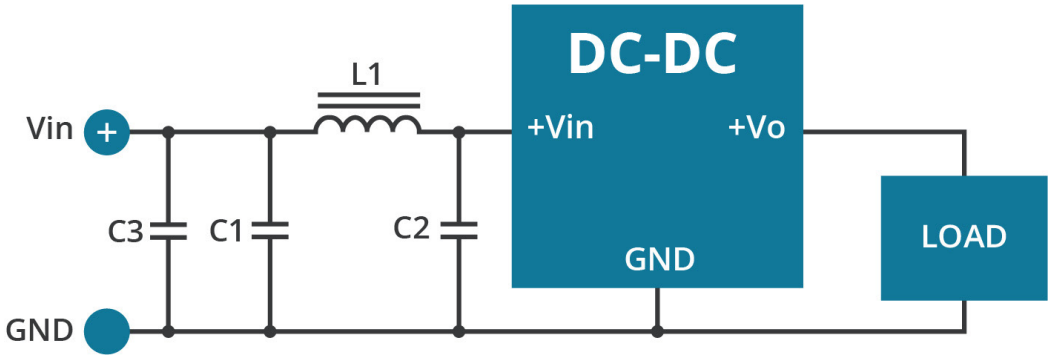


Table 1

COMPONENTS				
CLASS	C1	C2	C3	L1
Class A	4.7µF MLCC	1µF MLCC	-	3.3µH
Class B	4.7µF MLCC	1µF MLCC	-	10µH
Surge and EFT	-	-	1500µF / 100V e-cap	-

REVISION HISTORY

rev.	description	date
1.0	initial release	02/20/2025

The revision history provided is for informational purposes only and is believed to be accurate.

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