SERIES: P78A-1000 | **DESCRIPTION:** DC-DC CONVERTER

FEATURES

- up to 1 A current output
- pin compatible with LM78XX linear regulators
- non-isolated switching regulator
- wide input voltage range
- efficiency up to 91%
- low ripple and noise
- short circuit protection
- ultra-compact SIP3 package
- low profile
- -40°C to +85°C temperature range



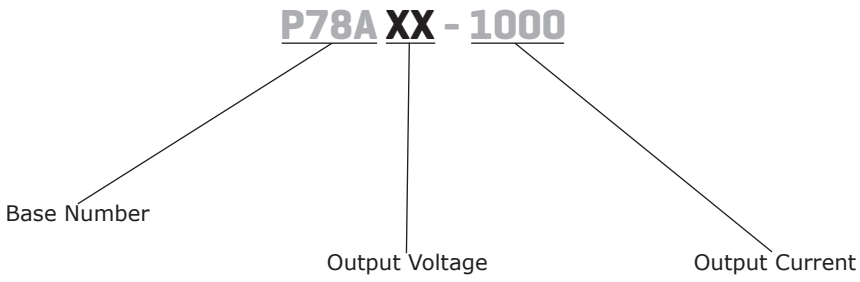
RoHS

MODEL

MODEL	input voltage typ (Vdc)	input voltage range (Vdc)	output voltage (Vdc)	output current max (mA)	output power max (W)	ripple & noise[1] max (mVp-p)	efficiency[2] typ (%)
P78A03-1000	24	7~28	3.3	1000	3.3	120	87
P78A05-1000	24	8~28	5	1000	5	120	91

Notes:
1. At full load, nominal input, 20 MHz bandwidth oscilloscope, output terminated with a 0.1 µF multilayer low ESR ceramic capacitor.
2. At min Vin.
3. All specifications measured at: Ta=25°C, nominal input voltage, rated output load, and after warm up unless otherwise specified.

PART NUMBER KEY



Please read our datasheet & drawing disclaimer here.

INPUT

parameter	conditions/description	min	typ	max	units
operating input voltage	3.3 Vdc model 5 Vdc model	7 8	24 24	28 28	Vdc Vdc
no load input current	Vin = 24 Vdc		1.5		mA

OUTPUT

parameter	conditions/description	min	typ	max	units
maximum capacitive load[1]				220	µF
line regulation	measured from low to high line, full load			±1	%
load regulation	measured from 10~100% load, typical Vin			±1.5	%
voltage accuracy			±3	±5	%
switching frequency	Vin = 12 Vdc		330		kHz

Note: 1. Maximum capacitive load is tested at nominal input voltage and full load.

PROTECTIONS

parameter	conditions/description	min	typ	max	units
over current protection	output shut down, auto recovery			200	%
short circuit protection	output shut down, auto recovery				

SAFETY AND COMPLIANCE

parameter	conditions/description	min	typ	max	units
MTBF	as per MIL-HDBK-217F, full load, 25 °C	3,875,000			hours
RoHS	yes				

ENVIRONMENTAL

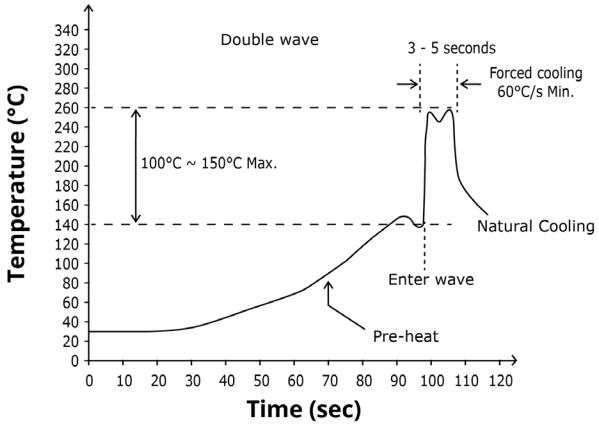
parameter	conditions/description	min	typ	max	units
operating temperature	see derating curve	-40		85	°C
storage temperature		-55		125	°C
operating humidity	non-condensing			95	%

SOLDERABILITY

parameter	conditions/description	min	typ	max	units
wave soldering	see wave solder profile			260	°C

Note: 2. The wave solder profile is measured on lead temperature.
3. Need to keep the solder parts internal temperature less than about 210°C.

WAVE SOLDERING PROFILE
(Lead-free)



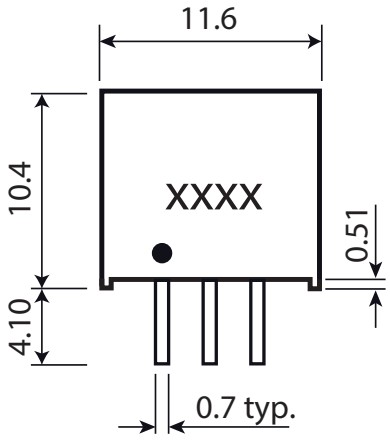
MECHANICAL

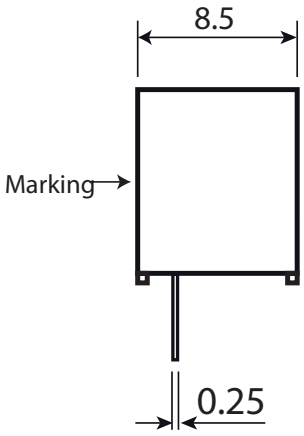
parameter	conditions/description	min	typ	max	units
dimensions	11.6 x 8.5 x 10.4				mm
case material	non-conductive black plastic (UL94V-0)				
potting material	epoxy (UL94V-0)				
weight			2		g

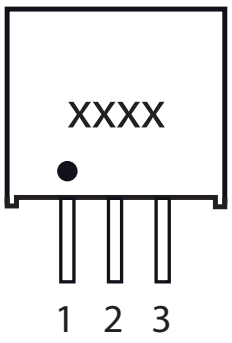
MECHANICAL DRAWING

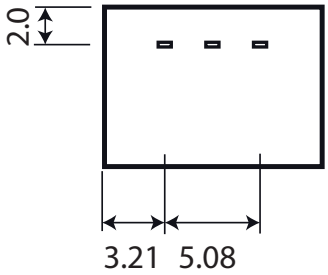
units: mm
tolerance: XX.X=±0.50 mm
XX.XX=±0.25 mm

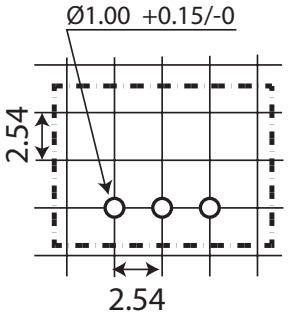
PIN CONNECTIONS	
PIN	Function
1	+Vin
2	GND
3	+Vout





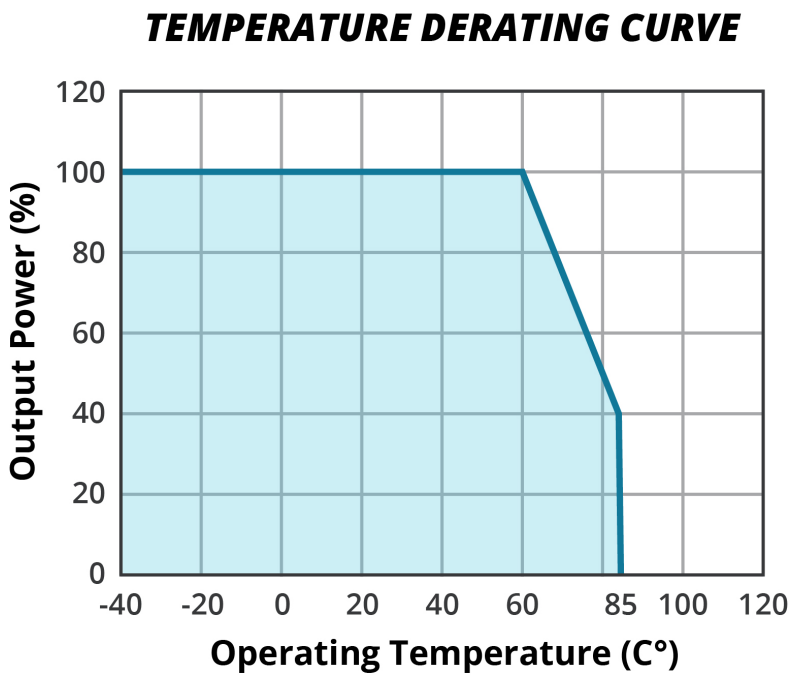




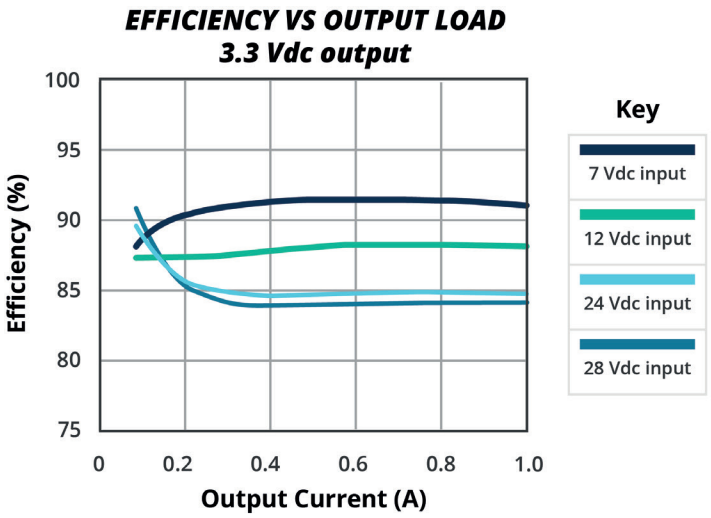


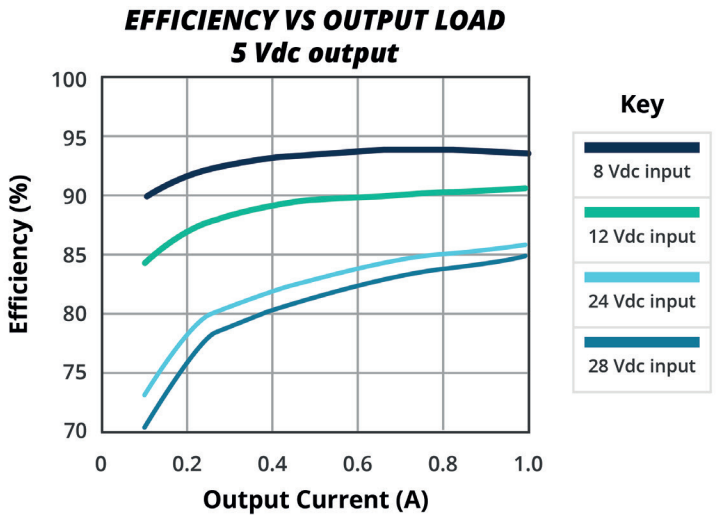
Recommended PCB Layout
Top View

DERATING CURVE



EFFICIENCY CURVES





APPLICATION CIRCUIT

Figure 1

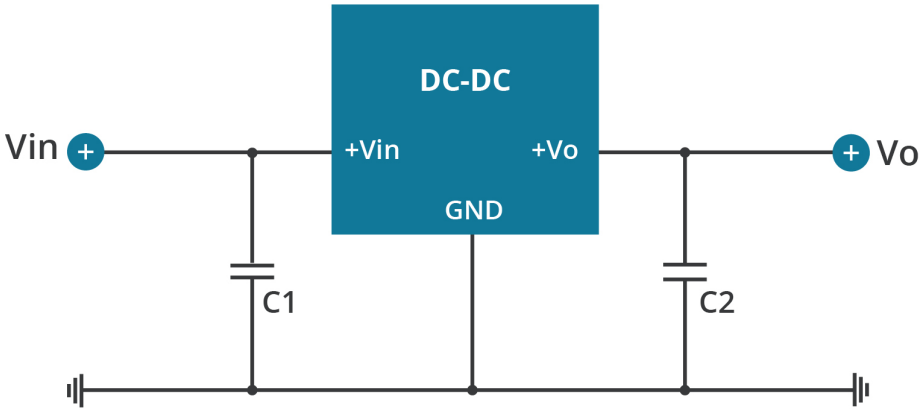


Table 1

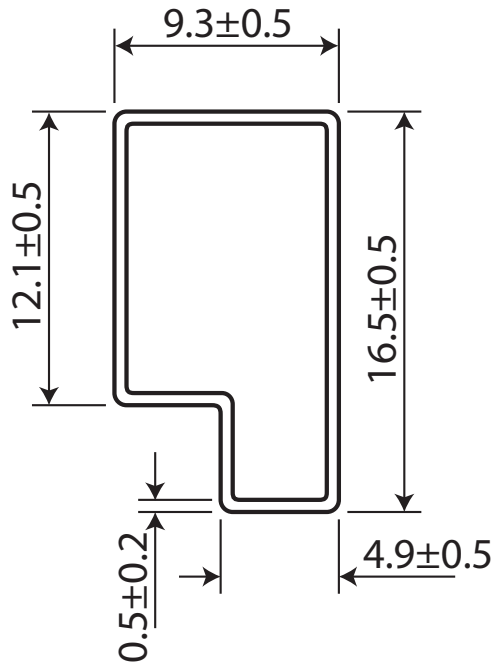
Optional External Components	
C1	10µF MLCC
C2	10µF MLCC

Notes: 1. To protect the converter during power-up, use soft start power supply.
2. The converter cannot be used as a positive to negative converter.

PACKAGING

units: mm

Tube Size: 520 x 16.5 x 9.3 mm
QTY: 42 pcs



REVISION HISTORY

rev.	description	date
1.0	initial release	05/16/2016
1.01	company logo updated	04/14/2021
1.02	derating curve, efficiency curves and application circuit updated	09/21/2021
1.03	datasheet updated	05/29/2025

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

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