

**DESCRIPTION : 1A Wide Input Non-Isolated & Regulated Single Output regulator**

The TP78xx-1 series has high efficiency, short circuit protection, Thermal shutdown, no heat sink required, Industry standard pinout.ideal for redialing 78xx linear regulates and are pin compatible.

They are widely used in industrial control, instrumentation, and electric power applications.

FEATURES

ROHS Compliant	Wide input non-isolated, regulated single output	Efficiency up to 93%
Short circuit protection, Thermal shutdown	Temperature range: -40°C ~ +85°C	Low ripple noise
SIP package	No heat sink required	Industry standard pinout

SELECTION GUIDE

Part Number	Input Voltage (VDC)		Output		Efficiency (%) (Typ.)	
	Nominal	Range	Voltage (VDC)	Current (mA)	Vin(Min)	Vin(Max)
TP781.5-1	12	4.75~18	1.5	1000	78	72
TP781.8-1	12	4.75~18	1.8	1000	82	76
TP782.5-1	12	4.75~18	2.5	1000	87	82
TP783.3-1	12	4.75~20	3.3	1000	90	83
TP785.0-1	12	6.5~20	5.0	1000	93	85
TP783.3W-1	24	6.5~30	3.3	1000	90	80
TP785.0W-1	24	6.5~30	5.0	1000	93	84
TP7812W-1	24	15~30	12	1000	95	85
TP7815W-1	24	18~30	15	1000	95	85

OUTPUT CHARACTERISTICS

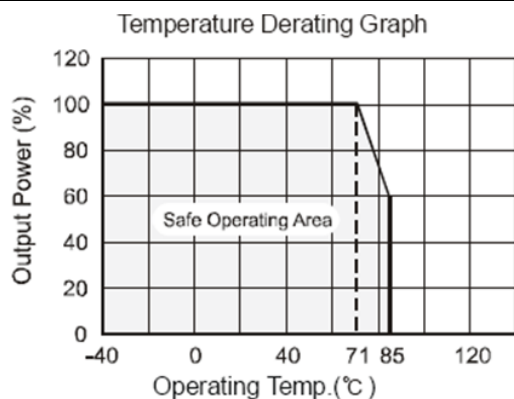
Parameter	Conditions	Min	Typ.	Max.	Units
Output voltage accuracy	100% full load, input voltage range		±2	±3	
Line regulation	Vin=min. to max, at full load		±0.5	±0.75	%
Load regulation	10% to 100% load		±0.5	±1.0	
Ripple & Noise	20MHz bandwidth		25	75	mvp-p
Short circuit protection		Continuous, auto-recovery			
Thermal shutdown	Internal IC		150		°C
Output current limit			3000		mA
Switching frequency	Full load, input voltage range		300		KHz
Dynamic load stability	100%<->10% load			±100	mA
Quiescent current	input voltage range		5	10	mA
Temperature coefficient	-40°C~+85°C			±0.03	%/°C
Max capacitance load				1000	µF

All specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

COMMON SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Units
Storage humidity range				95	℃
Operating temp. range	Power derating (above 71℃)	-40		85	
Storage temp. range		-55		125	
Case temp. rising while Operating			15	25	
Lead temperature	1.5mm from case for 10 seconds			300	
Cooling		Free air convection			
Case material		Plastic (UL94-V0)			
MTTF	25℃ (MIL-HDBK-217F)	100			10k hours
Weight			2.0		g

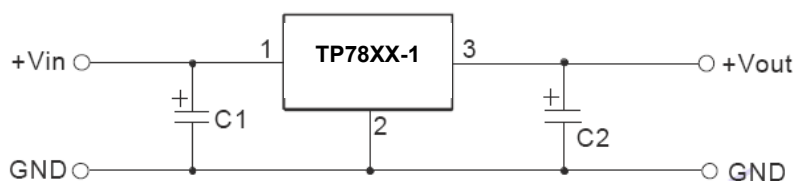
TEMPERATURE DERATING GRAPHS



EXTERNAL CAPACITOR TABLE

Part Number	C1 (Ceramic Capacitor)	C2 (Ceramic Capacitor)
TP781.5-1	10 μ F/25V	22 μ F/6.3V
TP781.8-1	10 μ F/25V	22 μ F/6.3V
TP782.5-1	10 μ F/25V	22 μ F/10V
TP783.3-1	10 μ F/25V	22 μ F/16V
TP785.0-1	10 μ F/25V	22 μ F/16V
TP7812W-1	22 μ F/50V	22 μ F/25V

STANDARD APPLICATION CIRCUIT

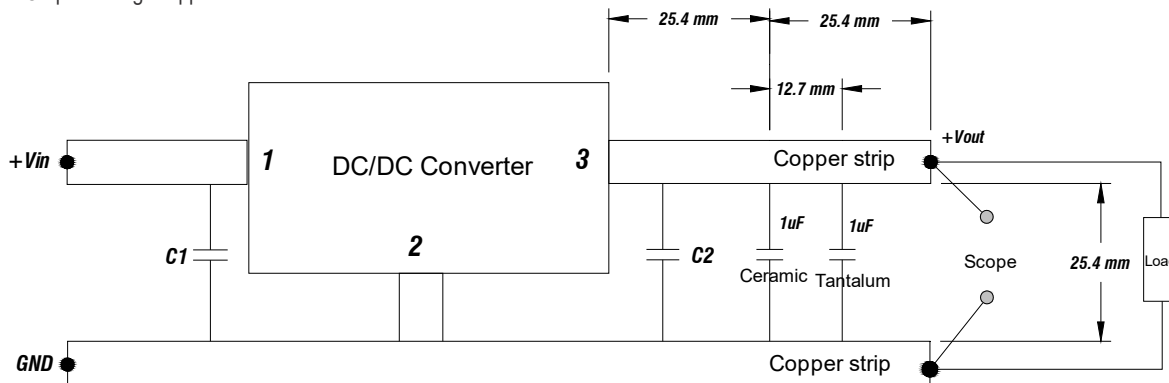


Note:

1. C1 and C2 are required and should be fitted close to the converter pins.
2. The capacitance of C1,C2 sees external capacitor table, it can be increased properly if required, and tantalum or low ESR electrolytic capacitors may also suffice.
3. No parallel connection or plug and play.

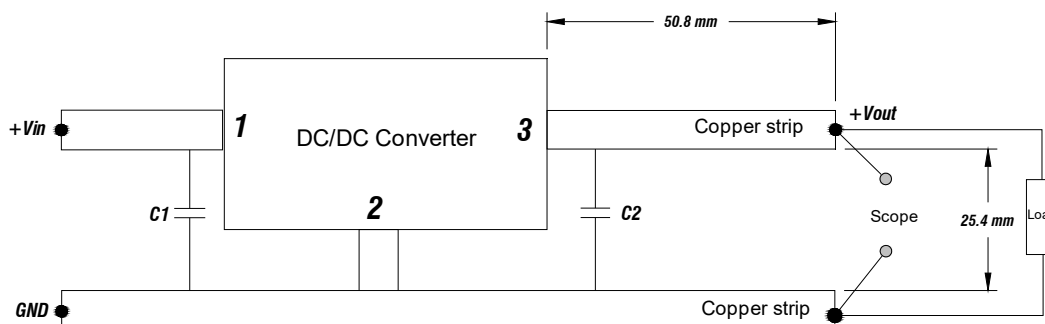
TEST CONFIGURATIONS (TA=25°C)

1. Efficiency and Output Voltage Ripple Test



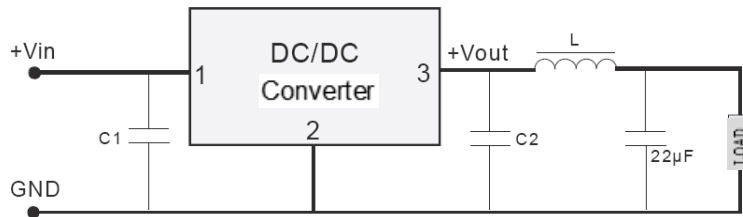
TEST CONFIGURATIONS (TA=25°C)

2. Start-up and Load Transient Response Test

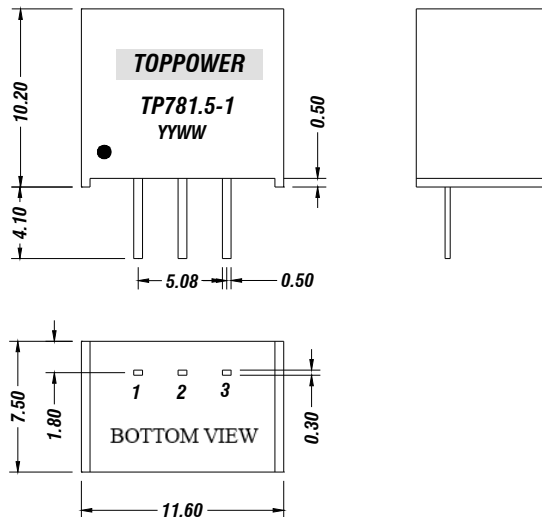


REDUCE OUTPUT VOLTAGE RIPPLE&NOISE CIRCUIT

To further reduce the output ripple, it is recommended to connect an "LC" filtering network at the output end, with a recommended value of L ranging from 10 μ H ~ 47 μ H



MECHANICAL DIMENSIONS



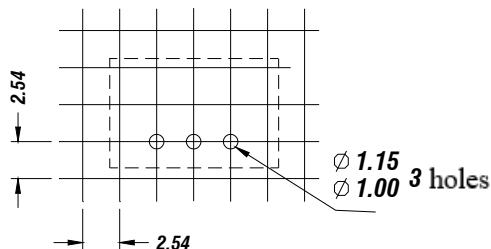
All dimensions in mm ± 0.25 . All pins on a 2.54mm pitch

PIN CONNECTIONS

PIN	FUNCTION
1	+Vin
2	GND
3	+Vout

RECOMMENDED FOOTPRINT DETAILS

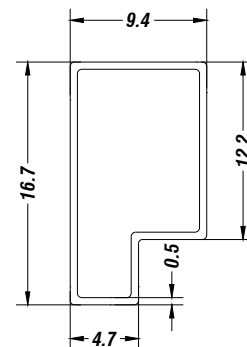
holes



Unless otherwise stated all dimensions in mm ± 0.5 mm.

All pins on a 2.54mm pitch.

TUBES OUTLINE DIMENSIONS



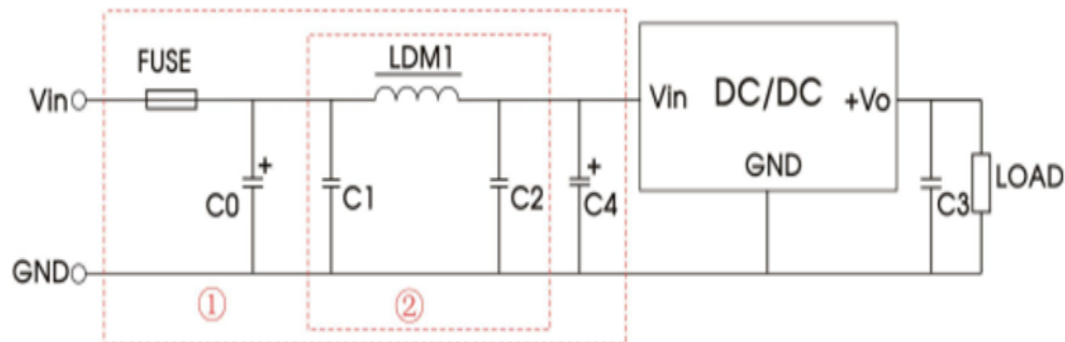
Unless otherwise stated all dimensions in mm ± 0.5 mm.

L=520mm ± 2 mm Packaging quantity:43PCS

EMC CHARACTERISTICS

EMI	CE	CISPR32/EN55032 CLASS B (see EMI recommended circuit)
	RE	CISPR32/EN55032 CLASS B (see EMI recommended circuit)
EMS	ESD	IEC/EN61000-4-2 CONTACT $\pm 4\text{KV}$ perf.Criteria B
	RS	IEC/EN61000-4-3 10V/M perf. Criteria A
	EFT	IEC/EN61000-4-4 $\pm 2\text{KV}$ (see EMC recommended circuit) perf. Criteria B
	Surge	IEC/EN61000-4-5 LINE TO LINE $\pm 2\text{KV}$ (see EMC recommended circuit) perf. Criteria B
	CS	IEC/EN61000-4-6 3VR.M.S perf. Criteria A
	Voltage sag, drop and short-time interrupt immunity	IEC/EN61000-4-29 $0\%, 70\%$ perf. Criteria B

EMC Recommended Circuit



Notes: The red frame① is for EMS test, the red frame② is for EMI test. Select as needed.

FUSE	C0	LDM1	C1/C2	C3	C4
see Notes	100uF/100V	22uF	10uF/50V	22uF/25V	680uF/50V

Notes: FUSE: selection is according to customer's actual input current