PMU SERIES

1~2W Medical Grade DC-DC Converter

■ FEATURES

- Industrial standard SIP- 7 package
- Operating temperature range -40~ +85°C
- Safety meets IEC60601-1 for 1xMOPP/2xMOOP
- Low leakage current
- Short circuit protection(3 seconds max.)
- Isolation Voltage 6KVDC or 4.2KVAC
- 3 years warranty

■ APPLICATIONS

- Medical devices
- Medical oxygen monitor
- CT scanning
- Medical carts
- Oral care equipment

■ DESCRIPTION

The PMU series is a medical grade regulated 1~2 Watts DC/DC converter in SIP-7 plastic package, with ±10% input voltage range. It features reinforced isolation system of 4.2KVAC isolation and very low leakage current less than 5μA. Its medical safety meets IEC60601-1 for 1xMOPP/2xMOOP.

■ MODEL ENCODING

PMU	S	-	05	05	A
Series Name	Output Quantity		Input Voltage	Output Voltage	Output Power
	S : Single D : Dual		05 : 4.5~5.5V 12 : 10.8~13.2V 24 : 21.6~26.4V	05 : 5V；±5V 09 : 9V；±9V 12 : 12V；±12V 15 : 15V；±15V	A : 1W B : 2W

■ MODEL SELECTION TABLE(1W OUTPUT POWER)

MODEL NUMBER	INPUT				OUTPUT		EFF. (%)	CAPACITOR LOAD (Max.)
	VOLTAGE (VDC)		CURRENT (mA)		VOLTAGE (VDC)	CURRENT (mA)		
	NOMINAL	RANGE	NO LOAD	FULL LOAD				
PMUS-0505A	5	4.5~5.5	30	260	5	200	77	470uF
PMUS-0509A	5	4.5~5.5	38	256	9	111	78	330uF
PMUS-0512A	5	4.5~5.5	42	256	12	84	78	220uF
PMUS-0515A	5	4.5~5.5	45	256	15	67	78	220uF
PMUD-0505A	5	4.5~5.5	30	260	±5	±100	77	220uF
PMUD-0509A	5	4.5~5.5	38	256	±9	±56	78	100uF
PMUD-0512A	5	4.5~5.5	42	256	±12	±42	78	100uF
PMUD-0515A	5	4.5~5.5	45	256	±15	±34	78	100uF
PMUS-1205A	12	10.8-13.2	15	107	5	200	78	470uF
PMUS-1209A	12	10.8-13.2	15	105	9	111	79	330uF
PMUS-1212A	12	10.8-13.2	15	103	12	84	81	220uF
PMUS-1215A	12	10.8-13.2	15	102	15	67	82	220uF
PMUD-1205A	12	10.8-13.2	15	107	±5	±100	78	220uF
PMUD-1209A	12	10.8-13.2	15	105	±9	±56	79	100uF
PMUD-1212A	12	10.8-13.2	15	103	±12	±42	81	100uF
PMUD-1215A	12	10.8-13.2	15	102	±15	±34	82	100uF
PMUD-1515A	15	13.5-16.5	15	83	±15	±34	80	100uF
PMUS-2405A	24	21.6-26.4	8	54	5	200	77	470uF
PMUS-2409A	24	21.6-26.4	8	53	9	111	78	330uF
PMUS-2412A	24	21.6-26.4	9	53	12	84	78	220uF
PMUS-2415A	24	21.6-26.4	9	53	15	67	78	220uF
PMUD-2405A	24	21.6-26.4	8	54	±5	±100	77	220uF
PMUD-2409A	24	21.6-26.4	8	53	±9	±56	78	100uF
PMUD-2412A	24	21.6-26.4	9	53	±12	±42	78	100uF
PMUD-2415A	24	21.6-26.4	9	53	±15	±34	78	100uF

Note: Efficiency and input current are measured at nominal input voltage and full load.
Other input to output voltages may be available. Please contact factory.

■ MODEL SELECTION TABLE(2W OUTPUT POWER)

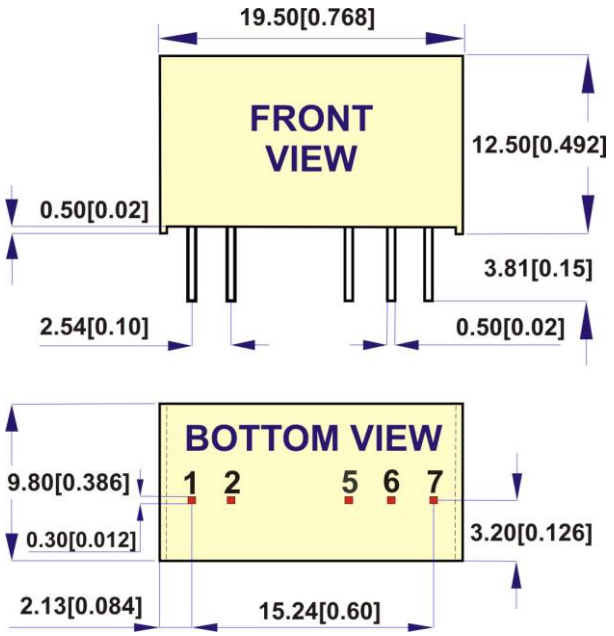
MODEL NUMBER	INPUT				OUTPUT		EFF. (%)	CAPACITOR LOAD (Max.)
	VOLTAGE (VDC)		CURRENT (mA)		VOLTAGE (VDC)	CURRENT (mA)		
	NOMINAL	RANGE	NO LOAD	FULL LOAD				
PMUS-0505B	5	4.5~5.5	45	506	5	400	79	470uF
PMUS-0509B	5	4.5~5.5	50	500	9	222	80	330uF
PMUS-0512B	5	4.5~5.5	55	494	12	167	81	220uF
PMUS-0515B	5	4.5~5.5	60	494	15	133	81	220uF
PMUD-0505B	5	4.5~5.5	45	506	±5	±200	79	220uF
PMUD-0509B	5	4.5~5.5	50	500	±9	±111	80	100uF
PMUD-0512B	5	4.5~5.5	55	494	±12	±84	81	100uF
PMUD-0515B	5	4.5~5.5	60	500	±15	±67	80	100uF
PMUS-1205B	12	10.8-13.2	23	211	5	400	79	470uF
PMUS-1209B	12	10.8-13.2	24	206	9	222	81	330uF
PMUS-1212B	12	10.8-13.2	25	201	12	167	83	220uF
PMUS-1215B	12	10.8-13.2	25	201	15	133	83	220uF
PMUD-1205B	12	10.8-13.2	23	211	±5	±200	79	220uF
PMUD-1209B	12	10.8-13.2	24	206	±9	±111	81	100uF
PMUD-1212B	12	10.8-13.2	25	201	±12	±84	83	100uF
PMUD-1215B	12	10.8-13.2	25	201	±15	±67	83	100uF
PMUS-2405B	24	21.6-26.4	15	104	5	400	80	470uF
PMUS-2409B	24	21.6-26.4	15	103	9	222	81	330uF
PMUS-2412B	24	21.6-26.4	15	102	12	167	82	220uF
PMUS-2415B	24	21.6-26.4	15	100	15	133	83	220uF
PMUD-2405B	24	21.6-26.4	15	105	±5	±200	79	220uF
PMUD-2409B	24	21.6-26.4	15	103	±9	±111	81	100uF
PMUD-2412B	24	21.6-26.4	15	102	±12	±84	82	100uF
PMUD-2415B	24	21.6-26.4	15	103	±15	±67	81	100uF

Note: Efficiency and input current are measured at nominal input voltage and full load.
Other input to output voltages may be available. Please contact factory.

■ SPECIFICATION

INPUT	Voltage Range	4.5-5.5V ; 10.8~13.2V ; 21.6~26.4V		
	Surge Voltage(100ms max.)	5Vin models : 9Vdc ; 12Vin models : 18Vdc ; 24Vin models : 30Vdc		
	Filter	Internal capacitor		
	Protection	Fuse recommended (see page 7)		
OUTPUT	Voltage Accuracy	±5% max.		
	Rated Power	1W ; 2W		
	Ripple & Noise[1]	150mVp-p max.		
	Line Regulation[2]	±1.2% (for 1% input variation)		
	Load Regulation[3]	±10%		
	Switching Frequency	50KHz typ.		
	Minimum Load	10% of full load		
PROTECTION	Short Circuit	3 second max.		
ENVIRONMENT	Cooling	Free-air convection		
	Working Temperature	-40~ +85°C (refer to “Derating Curve”)		
	Case Temperature	+110 °C max.		
	Working Humidity	5% ~ 95% RH non-condensing		
	Storage Temp., Humidity	-55 ~ +125°C, 10 ~ 95% RH non-condensing		
	Temperature Coefficient	0.05% / °C (0~85°C)		
	Soldering Temperature	1.5mm from case of 3~5 sec./265°C(max.)		
	Vibration	10~500Hz, 2G 10min./1cycle, period for 60 min. each along X, Y, Z axes		
SAFETY & EMC	Safety Standards	IEC60601-1(LVD)		
	Isolation Voltage[4]	I/P-O/P : 6KVDC or 4.2KVAC		
	Isolation Resistance	I/P-O/P : 100M Ohms / 500VDC / 25°C / 70% RH		
	Isolation Capacitance	10pF typ.		
	EMC Emission	**Parameter**	**Standard**	**Test Level / Note**
		Conducted	EN55011	N/A
		Radiated	EN55011	Class A
	EMC Immunity	**Parameter**	**Standard**	**Test Level / Note**
		ESD	BS EN/EN61000-4-2	Level 2, ±8KV contact
OTHERS	MTBF[5]	>2,000,000Hours		
	Weight	4.2g typ.		
	Dimension(L*W*H)	19.5mm*9.8mm*12.5mm		
	Case Material	Non-conductive plastic		
NOTE	**[1] Ripple & noise are measured at 20MHz with 1uF ceramic capacitor connect to the output pins.** **[2] High line to low line at rated load.** **[3] Load regulation is for output load current change from 10% to 100%.** **[4] For 60 seconds.** **[5] MIL-HDBK-217F @25 °C, Ground Benign.** ***All specifications are measured at Ta=25°C, humidity < 75%, nominal input voltage, and rated output load unless otherwise specified.**			

MECHANICAL SPECIFICATION



PIN CONNECTION		
PIN	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
5	-Vout	-Vout
6	NP	Common
7	+Vout	+Vout

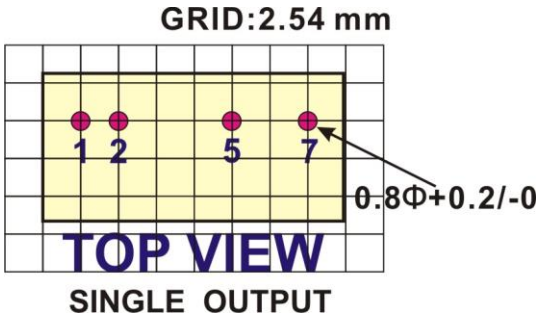
NP : No pin

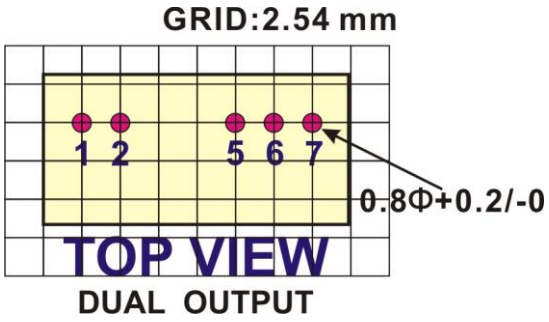
All dimensions are in mm(Inches)

Pin size is 0.50x0.30mm[0.02"x0.01"]

Pin tolerance .XX= ±0.05mm

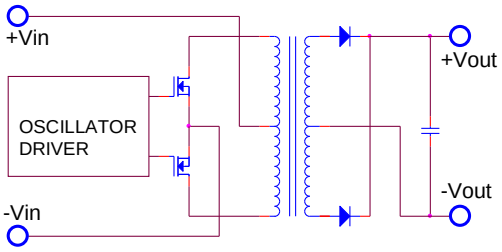
Tolerance .X or .XX= ±0.5mm



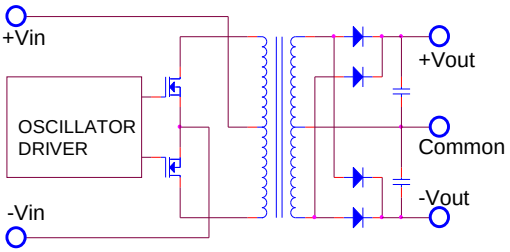


■ SIMPLIFIED SCHEMATIC

Single output

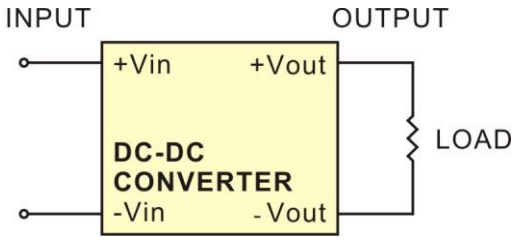


Dual output

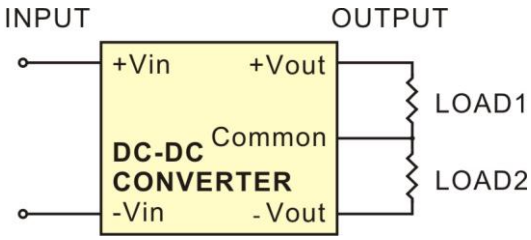


■ TYPICAL APPLICATIONS

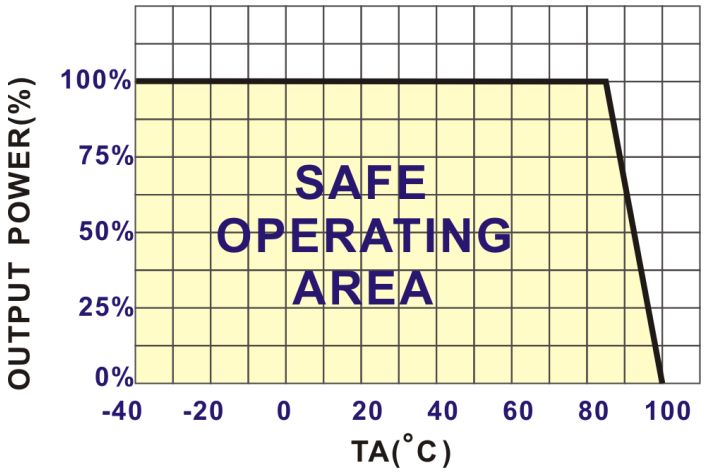
Single output



Dual output

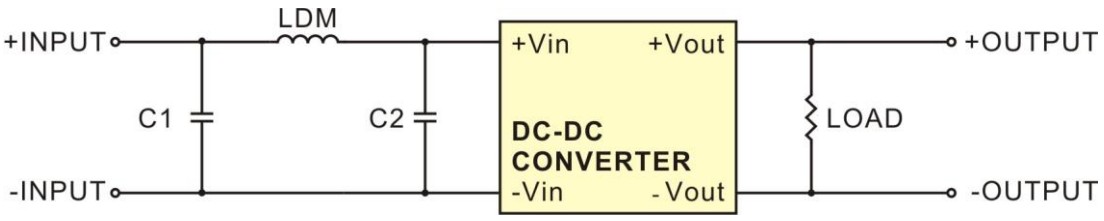


■ DERATING CURVE



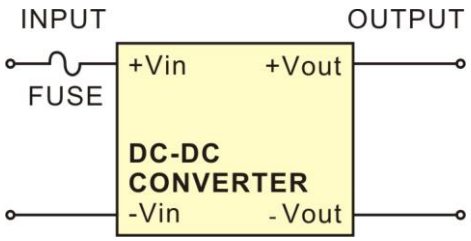
■ RECOMMENDED FILTER FOR EN55011 CLASS B

The components used in the under figure, together with the manufacture's part numbers for these components, are as follows：



MODEL NUMBER	C1	C2	LDM
PMUX-05XXA/B	4.7uF/50V MLCC	4.7uF/50V MLCC	10uH
PMUX-12XXA/B	4.7uF/50V MLCC	4.7uF/50V MLCC	10uH
PMUX-24XXA/B	4.7uF/50V MLCC	4.7uF/50V MLCC	10uH

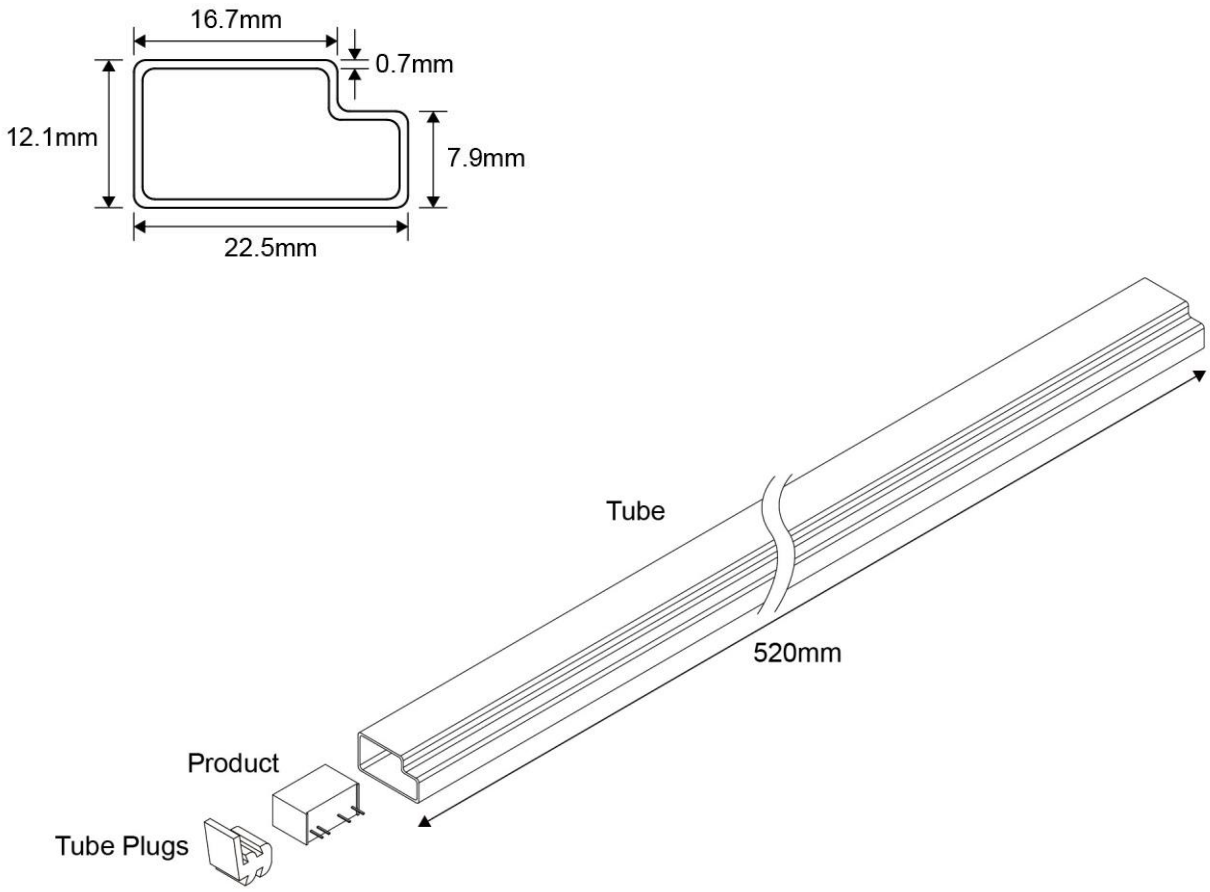
■ INPUT FUSE SELECTION GUIDE



MODEL NUMBER	INPUT VOLTAGE(VDC)	FUSE
PMUX-05XXA/B	4.5~5.5V	1000mA Slow-Blow Type
PMUX-12XXA/B	10.8~13.2V	500mA Slow-Blow Type
PMUX-24XXA/B	21.6~26.4V	200mA Slow-Blow Type

Note: Certain applications may require the installation of external fuse in front of the input.

■ PACKAGING INFORMATION



Packaging Quantity: **25pcs converter per tube**

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