



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 $\pm 10\%$ input voltage range. It features reinforced isolation system of 4.2KVAC isolation and very low leakage current less than $5\mu A$. 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		05 : 4.5~5.5V	05 : 5V ; $\pm 5V$	A : 1W
	D : Dual		12 : 10.8~13.2V	09 : 9V ; $\pm 9V$	B : 2W
			24 : 21.6~26.4V	12 : 12V ; $\pm 12V$	
				15 : 15V ; $\pm 15V$	

■ 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
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	79	220uF
PMUS-2415A	24	21.6~26.4	9	53	15	67	79	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	79	100uF
PMUD-2415A	24	21.6~26.4	9	53	±15	±34	79	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

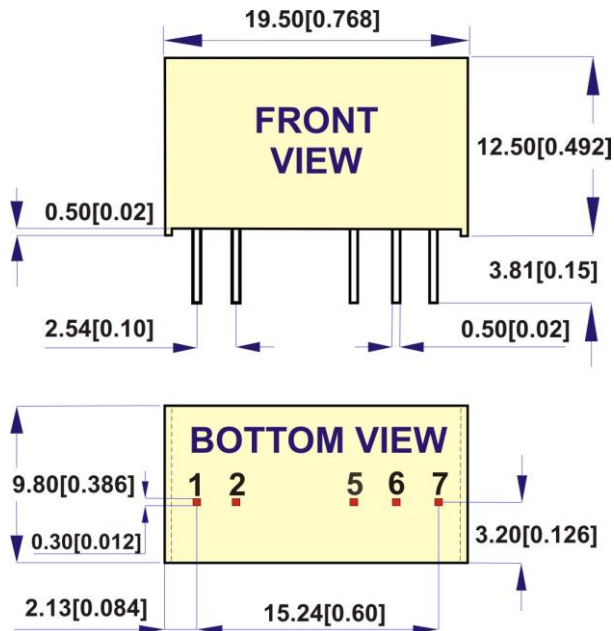
Note: Efficiency and input current are measured at nominal input voltage and full load.

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	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
	EMC Immunity	Parameter	Standard	Test Level / Note
		ESD	BS EN/EN61000-4-2	Level 2, ±8KV contact
OTHERS	MTBF ⁴	>2,000,000Hours		
	Weight	4.2g typ.		
	Dimension(L*W*H)	19.5mm*9.8mm*12.5mm		
	Case Material	Non-conductive plastic		
NOTE	<p>¹ Ripple & noise are measured at 20MHz with 1uF ceramic capacitor connect to the output pins.</p> <p>² High line to low line at rated load.</p> <p>³ Load regulation is for output load current change from 10% to 100%.</p> <p>⁴ MIL-HDBK-217F @25 °C, Ground Benign.</p> <p>*All specifications are measured at Ta=25°C, humidity < 75%, nominal input voltage, and rated output load unless otherwise specified.</p>			

MECHANICAL SPECIFICATION



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

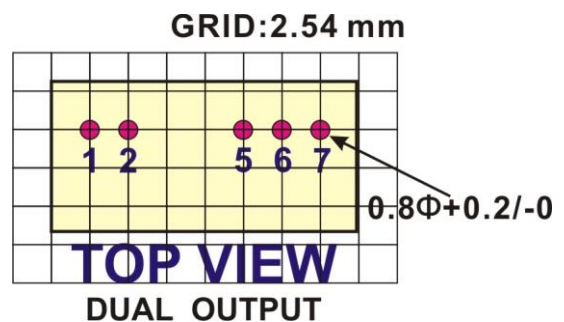
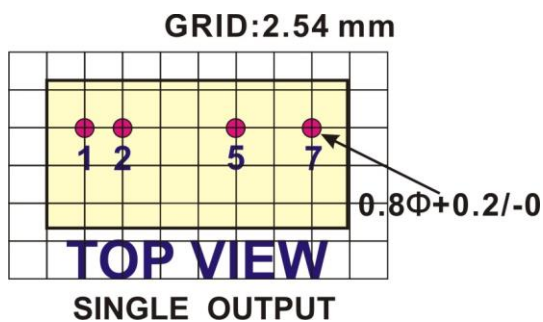
NP : No pin

All dimensions are in mm(Inches)

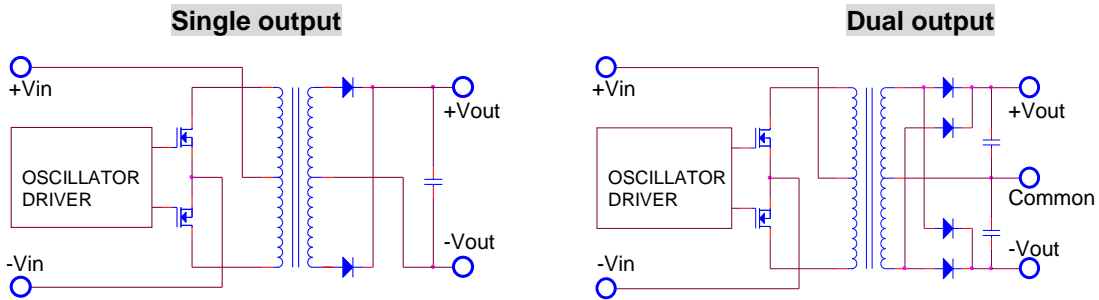
Pin size is 0.50x0.30mm[0.02"x0.01"]

Pin tolerance .XX= ±0.05mm

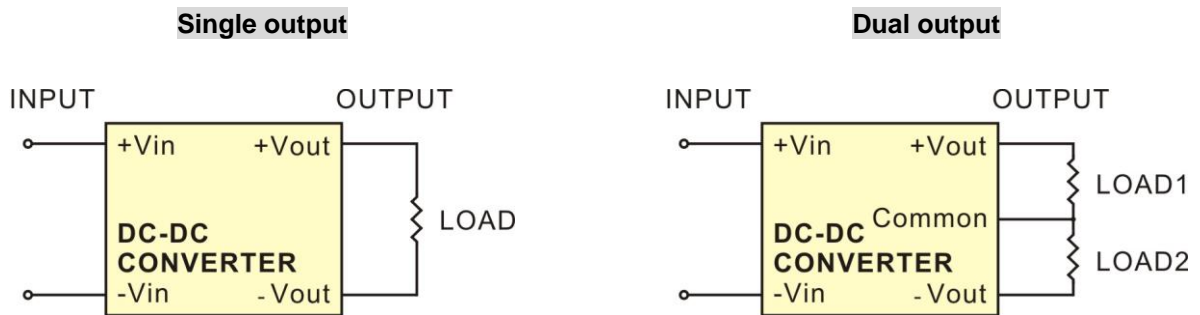
Tolerance .X or .XX= ±0.5mm



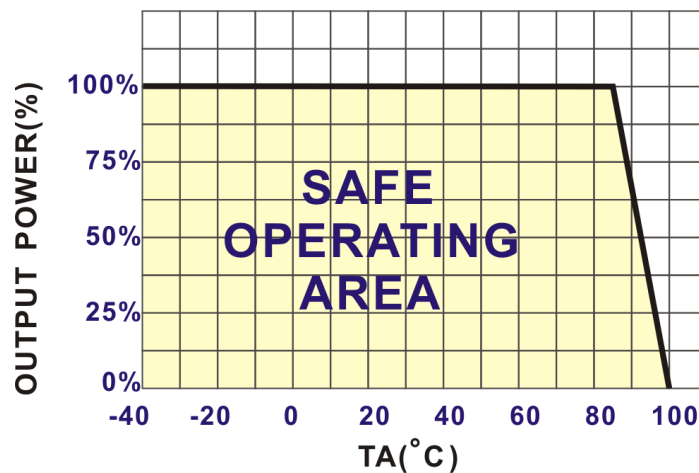
■ SIMPLIFIED SCHEMATIC



■ TYPICAL APPLICATIONS

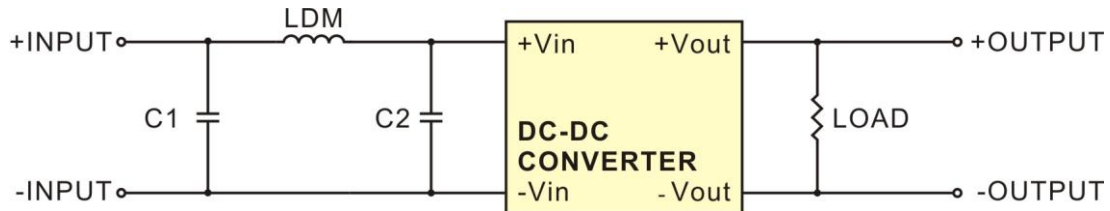


■ DERATING CURVE



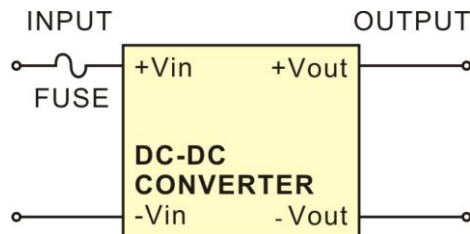
RECOMMENDED FILTER FOR EN55011 CLASS B

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	800mA Slow-Blow Type
PMUX-12XXA/B	10.8~13.2V	300mA Slow-Blow Type
PMUX-24XXA/B	21.6~26.4V	150mA Slow-Blow Type

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



PMU SERIES

1~2W Medical Grade DC-DC Converter

■ PACKAGING INFORMATION

Packaging Quantity:



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