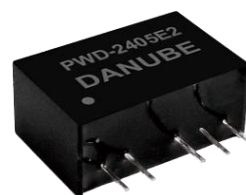




PW-E2 SERIES

2W 8:1 DC-DC Converter



FEATURES

- Industrial standard SIP-6 package
- 8:1 Wide input range
- High efficiency up to 82%
- No minimum load required
- No external components required internal filtering
- Overload protection & UVLO
- 1500Vdc I/O isolation
- Low cost

APPLICATIONS

- Automation equipment
- Power supplies
- Industrial PC
- Data communications
- Distributed power system

DESCRIPTION

PW-E2 series is a 2W DC-DC converter product with SIP-6 standard industrial package. It contains 8:1 extra wide input voltage range, and features high efficiency up to 82%, 1500Vdc isolation voltage between input and output, and wide working temperature range from -40°C up to $+90^{\circ}\text{C}$ with no additional heat-sink. The models meet radiated Class A of EN55032 without external components, and suit all kinds of systems like industrial control, automation field, and so on.

MODEL ENCODING

PW	S	-	24	05	E2
Series Name	Output Quantity		Input Voltage	Output Voltage	Input Range
SIP-6 SERIES	S : Single D : Dual		24 : 9~75V	05 : 5V ; $\pm 5\text{V}$ 09 : 9V 12 : 12V ; $\pm 12\text{V}$ 15 : 15V ; $\pm 15\text{V}$	E2: 8:1 Range 2Watt



■ 8:1 2W MODEL SELECTION TABLE

MODEL NUMBER	INPUT				OUTPUT		EFF. (%)	CAPACITOR LOAD (Max.)
	VOLTAGE (VDC)		CURRENT (mA)		VOLTAGE (VDC)	CURRENT (mA)		
	NOMINAL	RANGE	NO LOAD	FULL LOAD				
PWS-2405E2			4	106	5	0~400	79	330uF
PWS-2409E2			5	102	9	0~222	82	150uF
PWS-2412E2	24	9~75	5	103	12	0~167	81	100uF
PWS-2415E2			5	101	15	0~133	82	100uF
PWS-2424E2			7	105	24	0~83	80	100uF
PWD-2405E2			5	106	±5	±0~200	79	±100uF
PWD-2412E2	24	9~75	7	105	±12	±0~83	79	±100uF
PWD-2415E2			8	105	±15	±0~67	80	±100uF

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

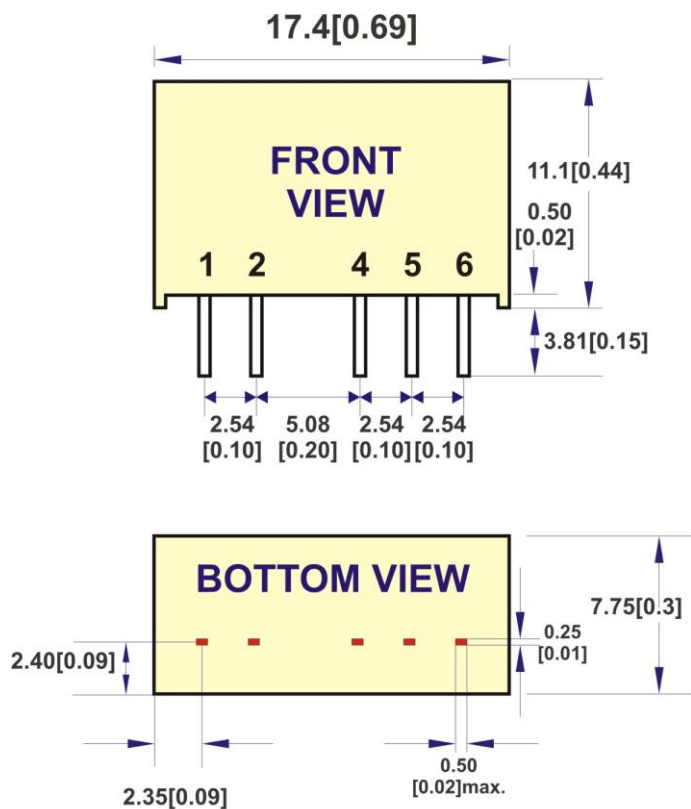
Other input to output voltages may be available. Please contact factory.



SPECIFICATION

INPUT	Voltage Range	9~75V		
	Surge Voltage(100ms)	9-75 Vin models : 100 Vdc		
	Under Voltage Lockout	Start-up voltage : 8.8 Vdc		
		Shutdown voltage : 8 Vdc		
	Filter	Capacitor Network		
	Protection	Fuse recommended (see page 6)		
OUTPUT	Voltage Accuracy	±2% max.		
	Rated Power	2W		
	Ripple & Noise ¹	3.3~9V : 100mV Vp-p max.	12~24V : 1% Output Vp-p max.	
	Line Regulation ²	±0.5%		
	Load Regulation ³	±0.5% for other output	±1% for 3.3Vdc output	
	Cross Regulation	±5%	Dual : asymmetrical load 25%/100% FL	
	Switching Frequency	330Khz typ.		
PROTECTION	Short Circuit	Protection type : continuous, recovery		
	Overload	110%~350%		
		Protection type : recovers automatically after fault condition is removed		
ENVIRONMENT	Cooling	Free-air convection		
	Working Temperature	-40~ +90°C (refer to “Derating Curve”)		
	Case Temperature	+110 °C max.		
	Working Humidity	5% ~ 95% RH non-condensing		
	Storage Temp.,	-55 ~ +125°C, 10 ~ 95% RH non-condensing		
	Temperature	±0.05% / °C		
	Soldering	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	Isolation Voltage	I/P-O/P : 1500Vdc for 3 seconds		
	Isolation Resistance	I/P-O/P : 1000M Ohms / 500VDC / 25°C / 70% RH		
	Isolation Capacitance	40pF typ.		
	EMC Emission	Parameter	Standard	Test Level / Note
		Conducted	EN55032(CISPR32)	N/A
		Radiated	EN55032(CISPR32)	Class A
	EMC Immunity	Parameter	Standard	Test Level / Note
		ESD	BS IEC 61000-4-2	Contact ±4KV
		Radiated	BS IEC 61000-4-3	3V/m
		EFT/Burst	BS IEC 61000-4-4	±0.5KV
		Surge	BS IEC 61000-4-5	Line-Line ±0.5KV
		Conducted	BS IEC 61000-4-6	3Vrms
		Magnetic field	BS IEC 61000-4-8	1A/m
OTHERS	MTBF ⁴	>1,200,000Hours		
	Weight	3.0g typ.		
	Dimension(L*W*H)	17.4mm*7.75mm*11.1mm		
	Case Material	Plastic case		
NOTE	¹ Ripple & noise are measured at 20MHz BW with 1uF ceramic capacitor connect to the output pins. ² High line to low line. ³ Load regulation is for output load current change from 0% to 100%. ⁴ 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
4	+Vout	+Vout
5	NP	Common
6	-Vout	-Vout

NOTE :

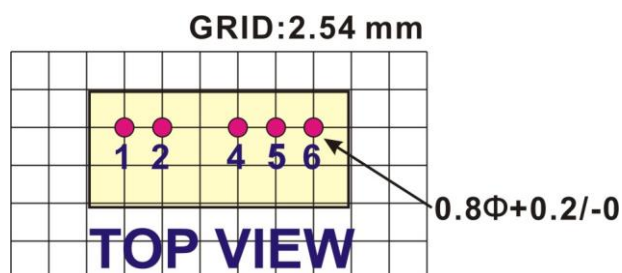
All dimensions are in mm [inches]

1. Pin Size is 0.50 x 0.30mm[0.02x0.01"]

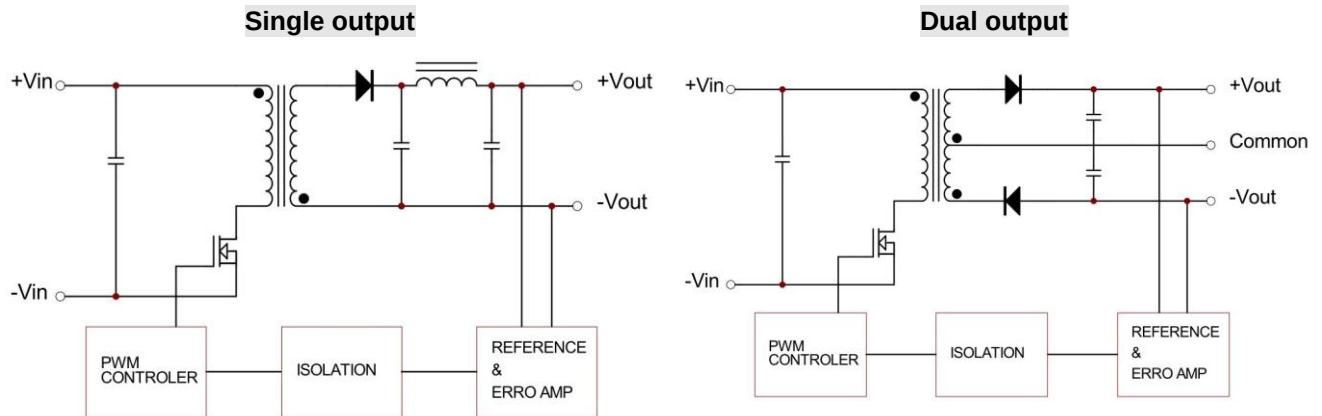
2. Pin is Tolerance .XX= $\pm 0.05\text{mm}$

3. Tolerance .X or .XX= $\pm 0.5\text{mm}$

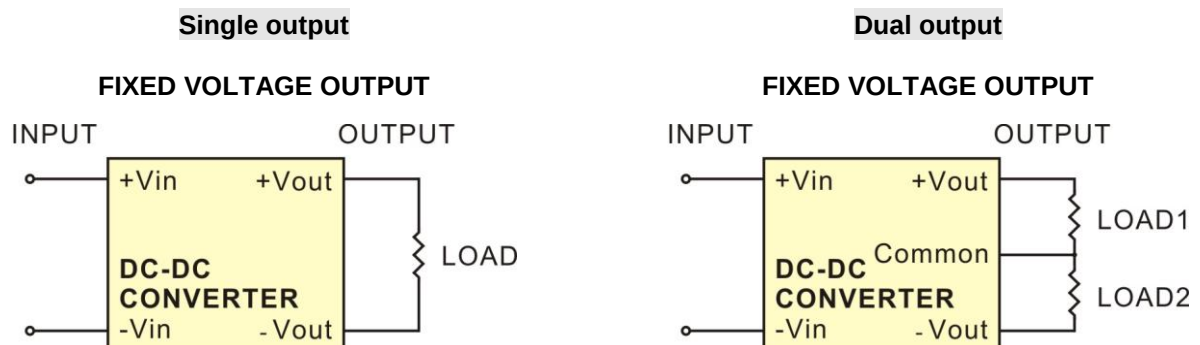
All dimensions are in mm[inches]



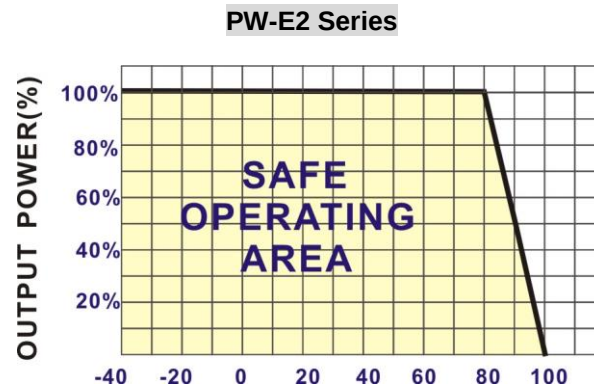
■ SIMPLIFIED SCHEMATIC



■ TYPICAL APPLICATIONS

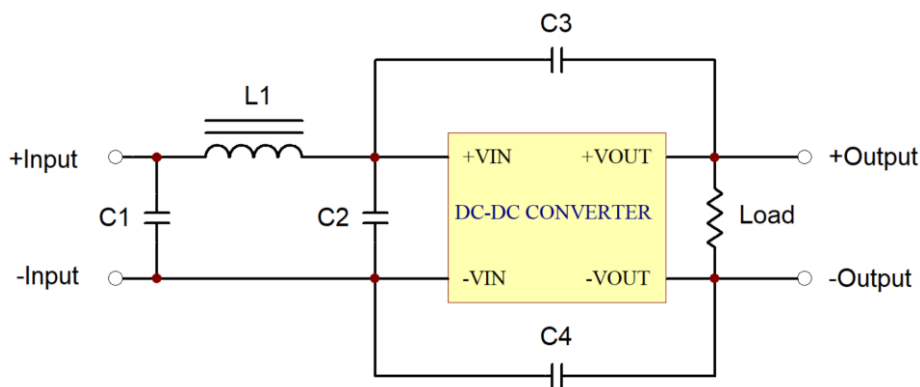


DERATING CURVE



RECOMMENDED FILTER FOR EN55032 CLASS B

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



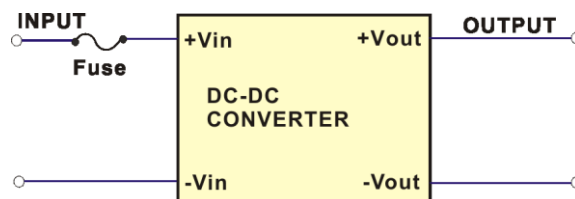
No	CLASS B
C1	2.2uF/100V
C2	2.2uF/100V
C3	152/5KV
C4	152/5KV
L1	10uH

Note: All of capacitors are ceramic capacitors.

INPUT FUSE SELECTION GUIDE

9-75V Input Voltage (Vdc)

800mA Slow-Blow Type(PW-E2)



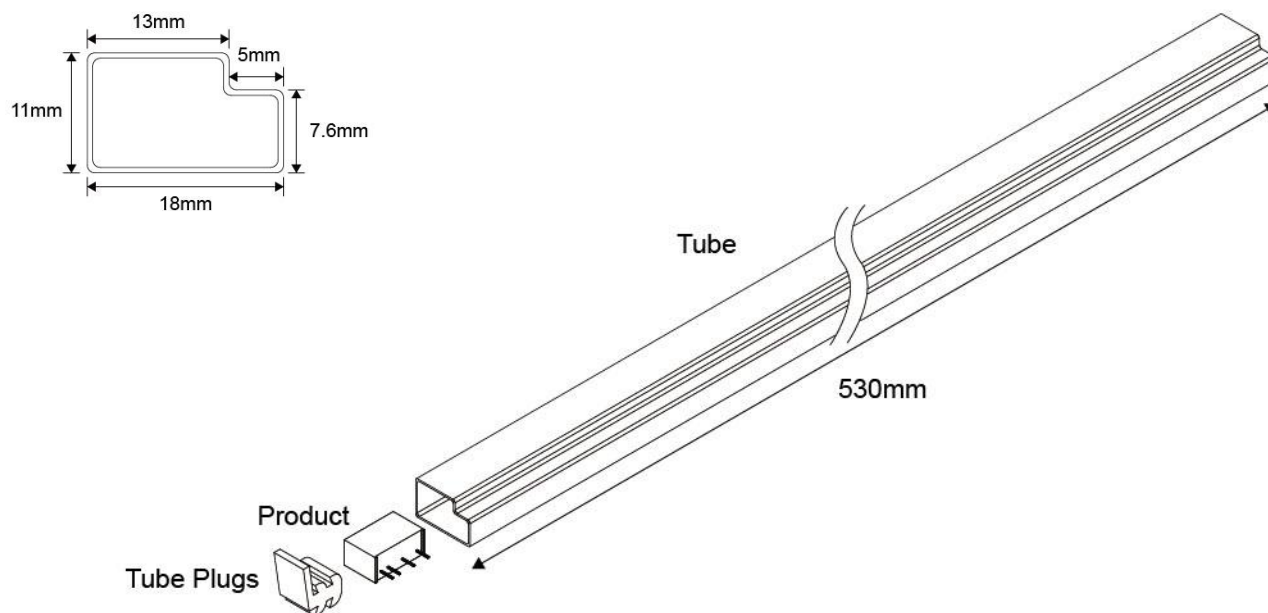
Note: Certain applications may require the installation of external fuse in front of the input.



PW-E2 SERIES

2W 8:1 DC-DC Converter

■ PACKAGING INFORMATION



Packaging Quantity: 28 pcs converter per tube



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