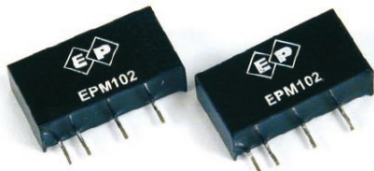


## EPM 100-200 Series – 1W unregulated DC-DC Converter

### Features

SINGLE IN LINE PACKAGE  
1W UNREGULATED OUTPUT POWER  
100% BURN IN  
HIGH EFFICIENCY  
INTERNAL SMD TECHNOLOGY  
NO HEATSINK REQUIRED  
UL 94V-0 PACKAGE MATERIAL  
CUSTOM SOLUTIONS AVAILABLE  
RoHS COMPLIANT



### Specification

#### Output Specification

Voltage Set-point Accuracy	+/-2% max.
Temperature Coefficient	+/-0.05%/°C
Ripple & Noise(20MHz BW)	100mVp-p max.
Line Regulation <sup>1</sup>	+/-1.2% max.
Load Regulation <sup>2</sup>	+/-8% max.
Minimum Load	20% of Full Load
Short Circuit Protection	Momentary

#### Input Specification

Input Voltage Range	+/-10% max.
Input Filter	Capacitor Type
Input Reflected Ripple Current	50mA <sub>p-p</sub> max.
Protection	Fuse Recommended

#### Environmental Specifications

Operating Temperature	-40 °C to +71 °C
Storage Temperature	-55 °C to +125 °C
Humidity	95% max.
Cooling	Free-Air Convection

#### General Specifications

Efficiency	70%-83%
Isolation Voltage <sup>3</sup>	Single/Dual Twin
	In to Out
	Out to Out
	1500-3000 VDC min. 1000 VDC min. 500 VDC min.
Isolation Resistance	109 ohms min.
Isolation Capacitance	80pF max.
Switching Frequency	100KHz min.
MTBF <sup>4</sup>	>2,000,000 Hours
Weight	2.1g typ.
Case Material	Non-Conductive Plastic
Case Size	19.6mm*6.1mm*10.2mm 19.6mm*7.1mm*10.2mm
Conducted Emissions	EN55022 Class A
Radiated Emissions	EN55022 Class B

ALL SPECIFICATIONS TYPICAL AT NOMINAL LINE, FULL LOAD, AND 25 °C UNLESS OTHERWISE NOTED

<sup>1</sup> Line Regulation is for a 1.0% change in input Voltage

<sup>2</sup> Load Regulation is for output load current change from 20% to 100%.

<sup>3</sup> 1500VDC for 10 seconds,3000VDC for 3 seconds.

<sup>4</sup> MIL-HDBK-217F @25 °C , Ground Benign

## Selection Guide 1W 1500 VDC Isolation

MODEL NUMBER	INPUT	OUTPUT	OUTPUT	INPUT <sup>5</sup>		EFF (%) <sup>6</sup>	ISOLATION (VDC)	PACKAGE
	VOLTAGE (VDC)	VOLTAGE (VDC)	CURRENT (mA)	FULL LOAD	NO LOAD			
EPM101	5	3.3	300	274	35	73	1500	A/B/AY
EPM102	5	5	200	283	35	71	1500	A/B/E/AY
EPM103	5	9	111	257	34	78	1500	A/B/E/AY
EPM104	5	12	84	253	33	79	1500	A/B/E/AY
EPM105	5	15	67	253	34	79	1500	A/B/E/AY
EPM106	5	+/-5	+/-100	278	35	72	1500	A/B/AY
EPM107	5	+/-9	+/-56	260	34	77	1500	A/B/AY
EPM108	5	+/-12	+/-42	253	33	79	1500	A/B/AY
EPM109	5	+/-15	+/-34	260	34	77	1500	A/B/AY
EPM110	9	9	111	148	24	75	1500	A/B/AY
EPM111	12	3.3	300	112	14	74	1500	A/B/AY
EPM112	12	5	200	112	15	74	1500	A/B/E/AY
EPM113	12	9	111	107	14	78	1500	A/B/E/AY
EPM114	12	12	84	102	14	82	1500	A/B/E/AY
EPM115	12	15	67	102	14	82	1500	A/B/E/AY
EPM116	12	+/-5	+/-100	112	15	74	1500	A/B/AY
EPM118	12	+/-12	+/-42	105	14	79	1500	A/B/AY
EPM119	12	+/-15	+/-34	101	15	83	1500	A/B/AY
EPM121	24	3.3	300	57	9	73	1500	C/CY
EPM122	24	5	200	57	9	73	1500	C/CY
EPM123	24	9	111	56	9	75	1500	C/CY
EPM124	24	12	84	54	9	77	1500	C/CY
EPM125	24	15	67	52	10	80	1500	C/CY
EPM130	24	24	42	54	9	77	1500	C/CY
EPM126	24	+/-5	+/-100	57	10	73	1500	C/CY
EPM128	24	+/-12	+/-42	54	10	77	1500	C/CY
EPM129	24	+/-15	+/-34	52	9	80	1500	C/CY

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

<sup>5</sup> NOMINAL INPUT VOLTAGE.

<sup>6</sup> NOMINAL INPUT VOLTAGE, FULL LOAD.

## Selection Guide 1W Dual Separate Output

MODEL NUMBER	INPUT VOLTAGE (VDC)	OUTPUT VOLTAGE (VDC)		OUTPUT CURRENT (mA)		INPUT <sup>7</sup> CURRENT(mA)		EFF (%) <sup>8</sup>	ISOLATION (VDC)	PACKAGE
		OUT1	OUT2	OUT1	OUT2	FULL LOAD	NO LOAD			
EPMS-12	5	+5	+3.3	+100	+152	286	34	70	1500	F
EPMS-13	5	+5	+5	+100	+100	255	34	78	1500	F
EPMS-14	5	+5	+9	+100	+56	251	33	80	1500	F
EPMS-15	5	+5	+12	+100	+42	250	35	80	1500	F
EPMS-16	5	+5	+15	+100	+34	250	35	80	1500	F
EPMS-17	12	+5	+5	+100	+100	119	15	70	1500	F
EPMS-18	12	+5	+9	+100	+56	104	14	80	1500	F
EPMS-19	12	+5	+12	+100	+42	102	14	82	1500	F
EPMS-20	12	+5	+15	+100	+34	104	14	80	1500	F
EPMS-21	24	+3.3	+3.3	+152	+152	60	11	70	1500	F
EPMS-22	24	+5	+5	+100	+100	60	11	70	1500	F
EPMS-23	24	+12	+12	+41	+41	52	10	80	1500	F

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

<sup>7</sup> NOMINAL INPUT VOLTAGE.

<sup>8</sup> NOMINAL INPUT VOLTAGE, FULL LOAD.

## Selection Guide 1W 3000 VDC Isolation

MODEL NUMBER	INPUT	OUTPUT	OUTPUT	INPUT <sup>9</sup> CURRENT(mA)		EFF (%) <sup>10</sup>	ISOLATION (VDC)	PACKAGE
	VOLTAGE (VDC)	VOLTAGE (VDC)	CURRENT (mA)	FULL LOAD	NO LOAD			
EPM200	3.3	5	200	378	35	80	3000	D
EPM201	5	3.3	300	274	35	73	3000	B
EPM202	5	5	200	283	34	71	3000	B
EPM203	5	9	111	257	34	78	3000	B
EPM204	5	12	84	255	34	78	3000	B
EPM205	5	15	67	253	35	79	3000	B
EPM207	5	+/-3.3	+/-150	274	35	73	3000	B
EPM206	5	+/-5	+/-100	274	35	73	3000	B
EPM208	5	+/-12	+/-42	253	35	79	3000	B
EPM209	5	+/-15	+/-34	253	34	79	3000	B
EPM210	12	3.3	300	112	14	74	3000	B
EPM211	12	5	200	112	14	74	3000	B
EPM212	12	9	111	107	15	78	3000	B
EPM213	12	12	84	102	13	82	3000	B
EPM214	12	15	67	103	14	81	3000	B
EPM215	12	+/-5	+/-100	112	14	74	3000	B
EPM217	12	+/-12	+/-42	101	15	83	3000	B
EPM218	12	+/-15	+/-34	101	14	83	3000	B
EPM219	24	3.3	300	57	10	73	3000	D
EPM220	24	5	200	57	10	73	3000	D
EPM221	24	9	111	56	10	75	3000	D
EPM222	24	12	84	54	10	77	3000	D
EPM223	24	15	67	52	9	80	3000	D
EPM224	24	+/-5	+/-100	57	10	73	3000	D
EPM226	24	+/-12	+/-42	54	9	77	3000	D
EPM227	24	+/-15	+/-34	52	10	80	3000	D

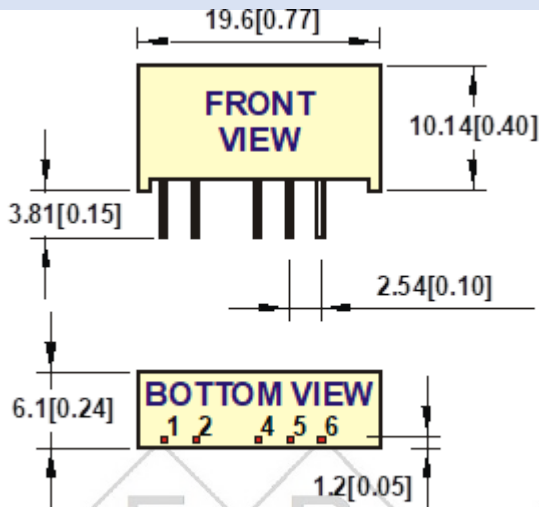
Note: Other input to output voltages may be available. Please contact factory.

<sup>9</sup> NOMINAL INPUT VOLTAGE.

<sup>10</sup> NOMINAL INPUT VOLTAGE, FULL LOAD.

## Mechanical Dimensions & Recommended Footprint Details

### PACKAGE "A"

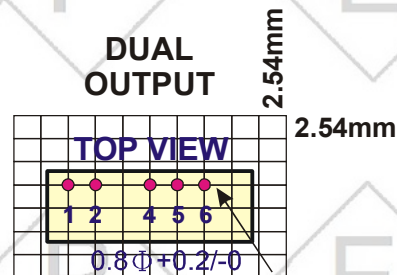
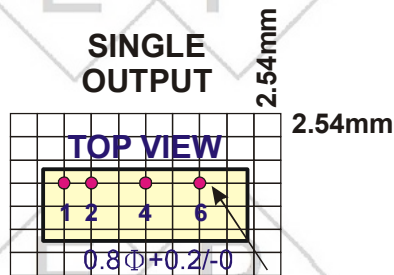


PIN	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
4	-Vout	-Vout
5	NP	COMMON
6	+Vout	+Vout

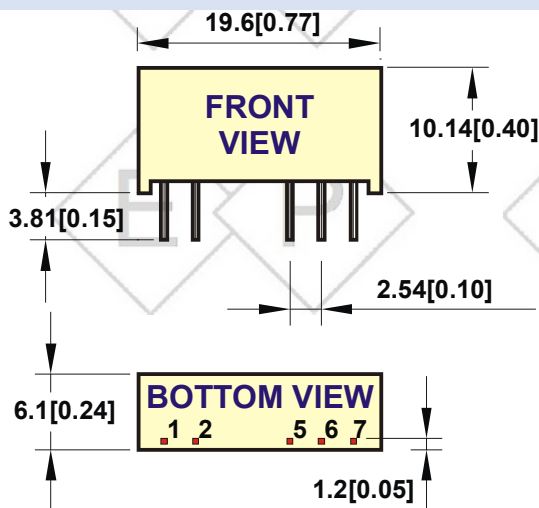
NOTE : All dimensions are in mm(Inches)

1. Pin Size is 0.50x0.30mm[0.02x0.01"]
2. Pin is Tolerance .XX= ±0.05mm
3. Tolerance .X or .XX= ±0.5mm

All dimensions are in mm [inches]



### PACKAGE "B"

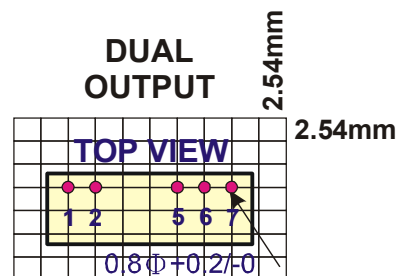
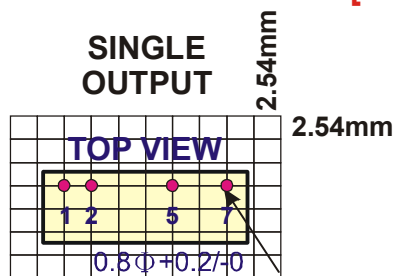


PIN	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
5	-Vout	-Vout
6	NP	COMMON
7	+Vout	+Vout

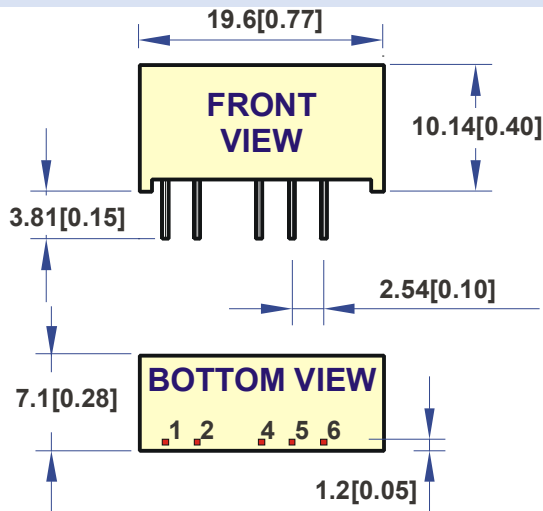
NOTE : All dimensions are in mm(Inches)

1. Pin Size is 0.50x0.30mm[0.02x0.01"]
2. Pin is Tolerance .XX= ±0.05mm
3. Tolerance .X or .XX= ±0.5mm

All dimensions are in mm [inches]



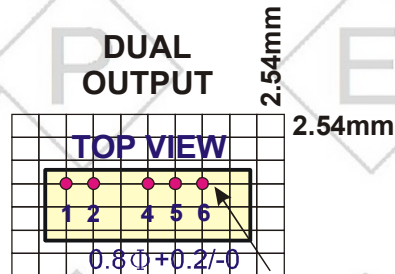
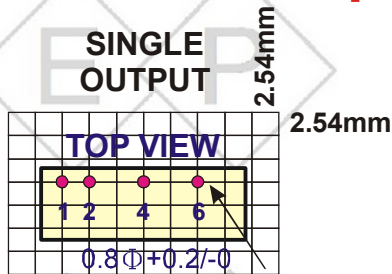
PACKAGE "C"



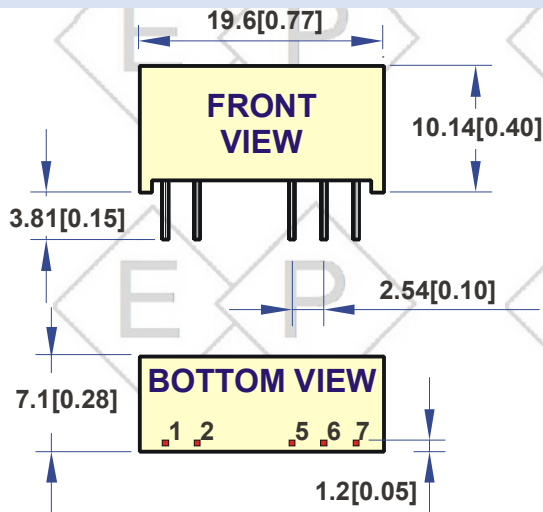
PIN	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
4	-Vout	-Vout
5	NP	COMMON
6	+Vout	+Vout

NOTE : All dimensions are in mm(Inches)  
 1. Pin Size is 0.50x0.30mm[0.02x0.01"]  
 2. Pin is Tolerance .XX= ±0.05mm  
 3. Tolerance .X or .XX= ±0.5mm

All dimensions are in mm[inches]



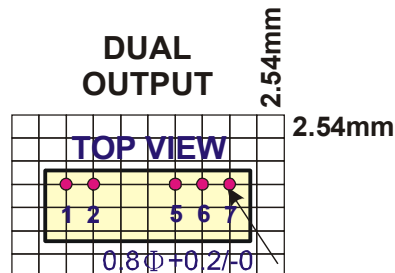
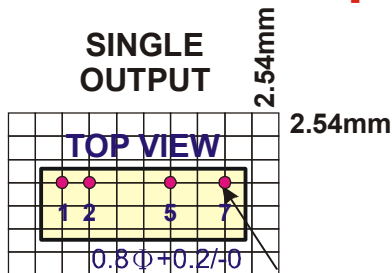
PACKAGE "D"



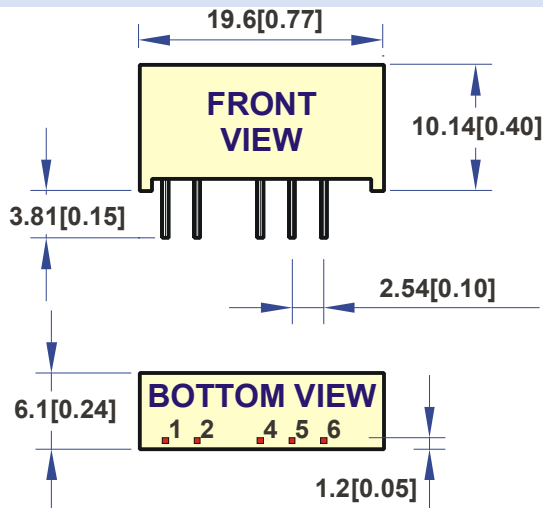
PIN	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
5	-Vout	-Vout
6	NP	COMMON
7	+Vout	+Vout

NOTE : All dimensions are in mm(Inches)  
 1. Pin Size is 0.50x0.30mm[0.02x0.01"]  
 2. Pin is Tolerance .XX= ±0.05mm  
 3. Tolerance .X or .XX= ±0.5mm

All dimensions are in mm[inches]



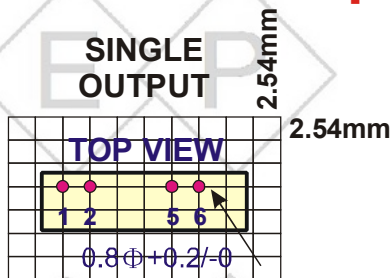
PACKAGE "E"



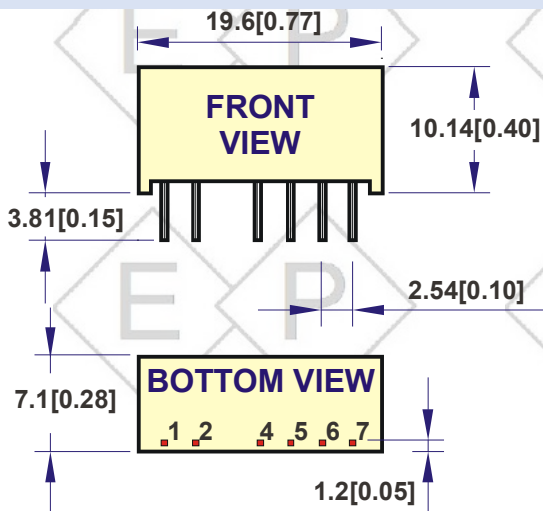
PIN	SINGLE
1	+Vin
2	-Vin
4	NP
5	-Vout
6	+Vout

- NOTE : All dimensions are in mm(Inches)
1. Pin Size is 0.50x0.30mm[0.02x0.01"]
  2. Pin is Tolerance .XX= ±0.05mm
  3. Tolerance .X or .XX= ±0.5mm

All dimensions are in mm[inches]



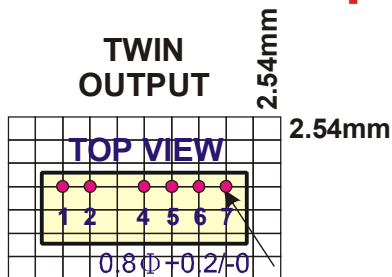
PACKAGE "F"



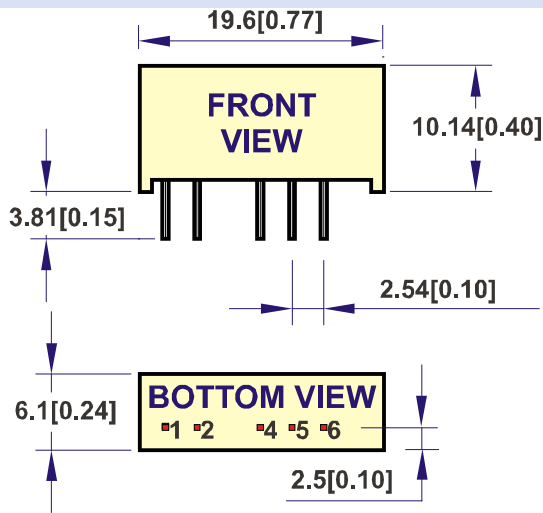
PIN	TWIN
1	+Vin
2	-Vin
4	+5V / Vout 1
5	-5 / Vout 1
6	+Vout 2
7	-Vout 2

- NOTE : All dimensions are in mm(Inches)
1. Pin Size is 0.50x0.30mm[0.02x0.01"]
  2. Pin is Tolerance .XX= ±0.05mm
  3. Tolerance .X or .XX= ±0.5mm

All dimensions are in mm[inches]



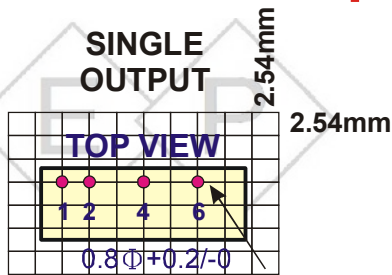
### PACKAGE "AY"



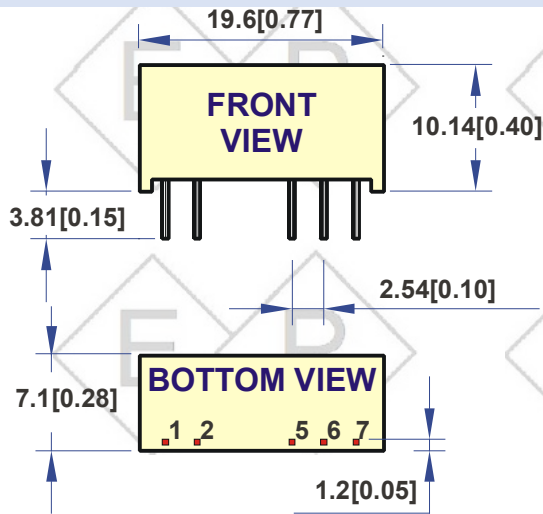
PIN	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
4	-Vout	-Vout
5	NP	COMMON
6	+Vout	+Vout

NOTE : All dimensions are in mm(Inches)  
 1. Pin Size is 0.50x0.30mm[0.02x0.01"]  
 2. Pin is Tolerance .XX= ±0.05mm  
 3. Tolerance .X or .XX= ±0.5mm

**All dimensions are in mm[inches]**



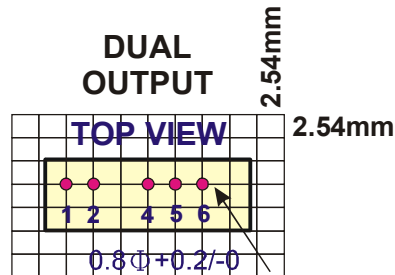
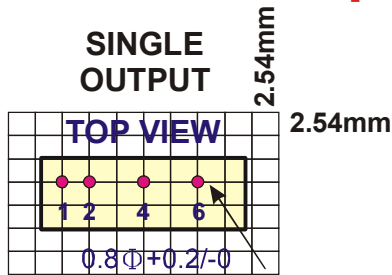
### PACKAGE "CY"



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 0.50x0.30mm[0.02x0.01"]  
 2. Pin is Tolerance .XX= ±0.05mm  
 3. Tolerance .X or .XX= ±0.5mm

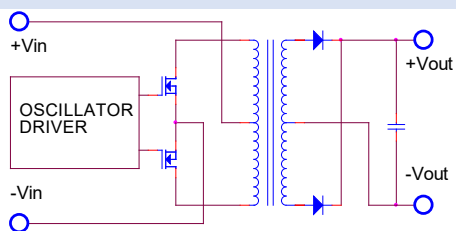
**All dimensions are in mm[inches]**



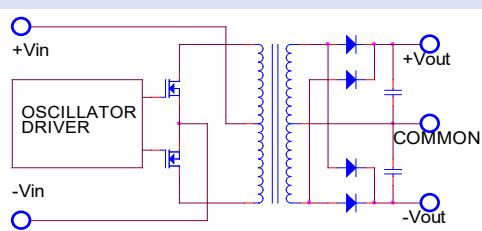


## Simplified Schematic

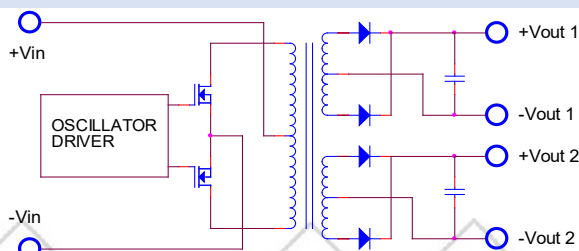
SINGLE OUTPUT



DUAL OUTPUT

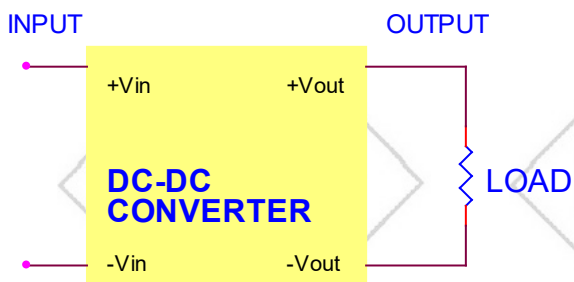


TWIN OUTPUT

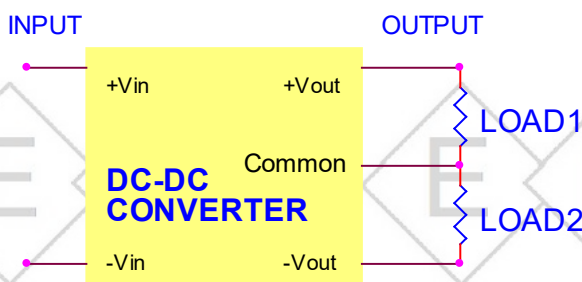


## Typical Applications

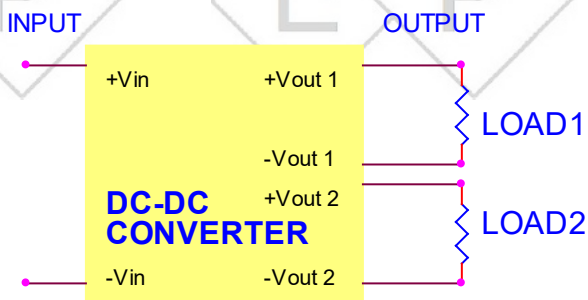
SINGLE OUTPUT



DUAL OUTPUT



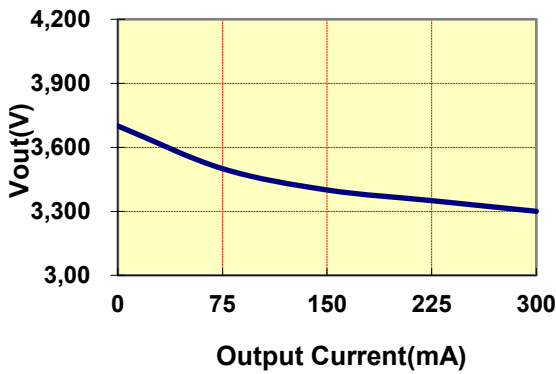
TWIN OUTPUT



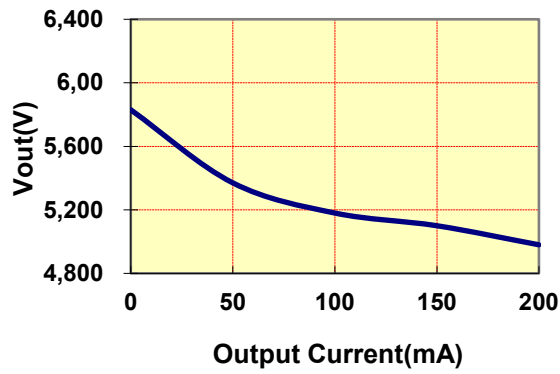
# Typical Performance Curves

Specifications typical at TA=25 °C, nominal input voltage, rated output current unless otherwise specified.

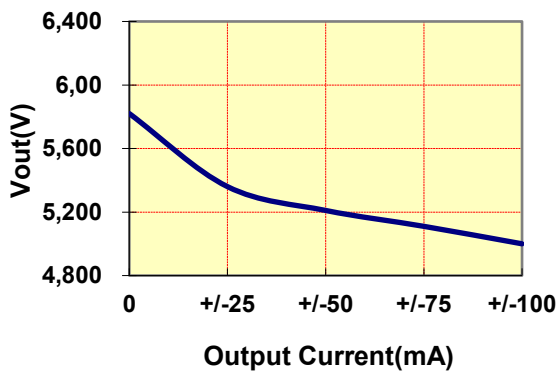
VOUT VS LOAD(3.3Vout Models)



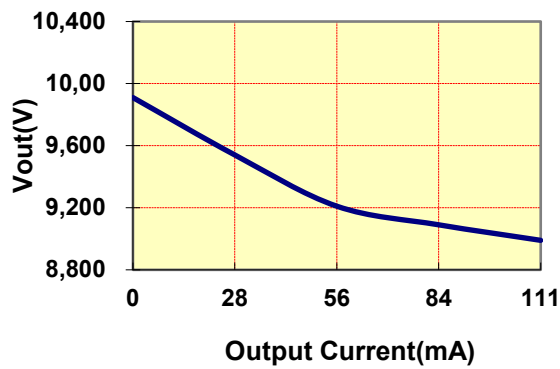
VOUT VS LOAD(5Vout Models)



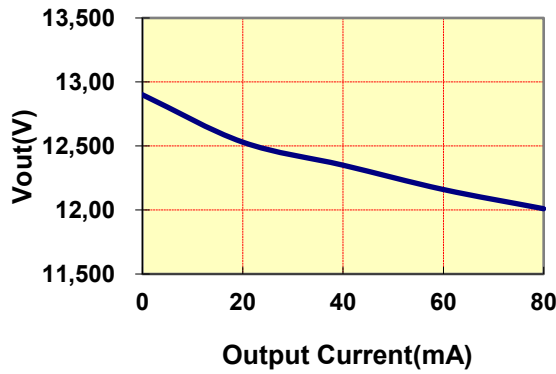
VOUT VS LOAD(+/-5Vout Models)



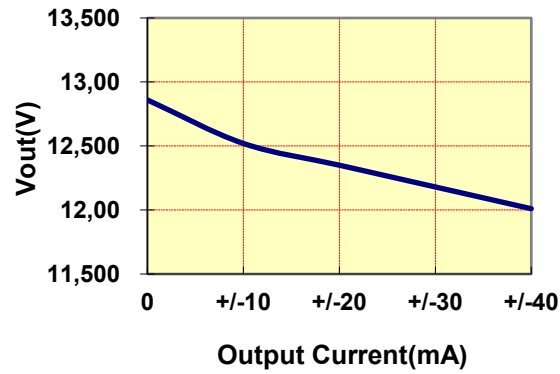
VOUT VS LOAD(9Vout Models)



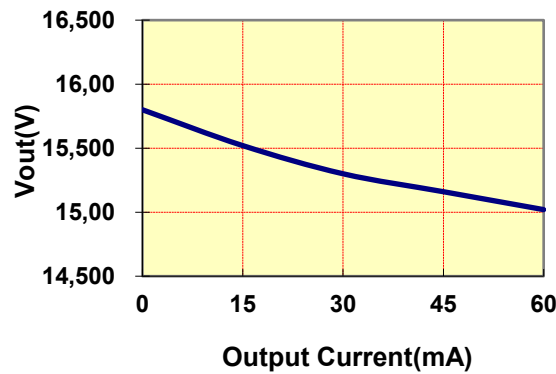
VOUT VS LOAD(12Vout Models)



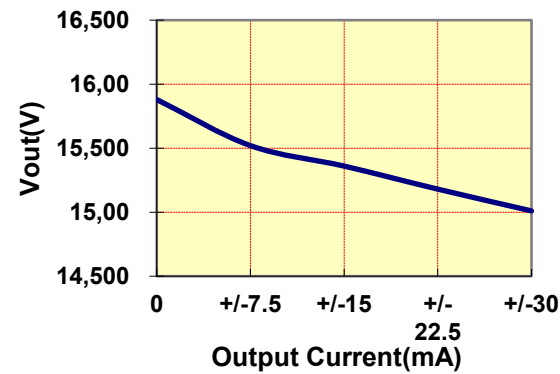
VOUT VS LOAD(+/- 12Vout Models)



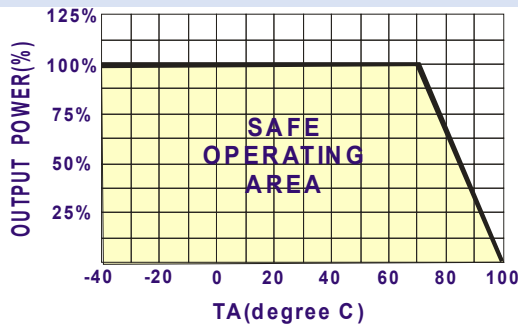
VOUT VS LOAD(15Vout Models)



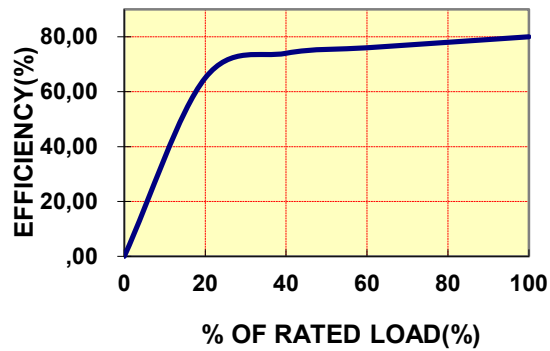
VOUT VS LOAD(+/- 15Vout Models)



DERATING CURVE



EFFICIENCY VS LOAD



## Input Fuse Selection Guide

4.5-5.5V

10.8-13.2V

21.6-26.4V

INPUT VOLTAGE(VDC)

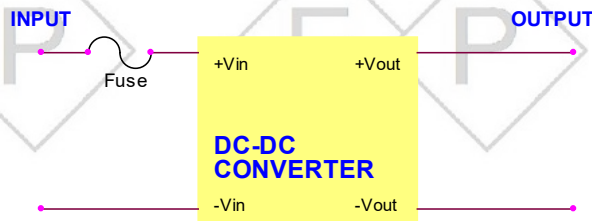
INPUT VOLTAGE(VDC)

INPUT VOLTAGE(VDC)

800mA Slow-Blow Type

300mA Slow-Blow Type

150mA Slow-Blow Type



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

## EPM100-200 Series Application Notes:

### EXTERNAL CAPACITANCE REQUIREMENTS:

Output filtering is required for operation. A minimum of 10uF is needed. Output capacitance may be increased for additional filtering, not to exceed 220uF.

To meet the reflected ripple requirements of the converter, an input impedance of less than 0.5ohm from DC to 250KHz is required.

We Can Offer EMC-Filter According To EN55011/22 Class B.

### Negative Outputs:

A negative output voltage may be obtained by connecting the +OUT to circuit ground and connecting -OUT as the negative output.

Spezifikationen können sich ohne Vorankündigung ändern.

Für etwaige fehlerhafte Angaben oder unvollständige Bezeichnungen kann keine Haftung übernommen werden.