

P R B X

POWERBOX Industrial Line MAB06 Series 3W 2:1 Single and Dual Output DC/DC Converter

Features

3W isolated output
24-pin DIP package
Efficiency to 87%
2:1 input range
Regulated outputs
Pi input filter
Continuous short circuit protection
Meet EMI EN55022 class A ("-E" model)
Wide operating temperature range ("-E" model)

Input

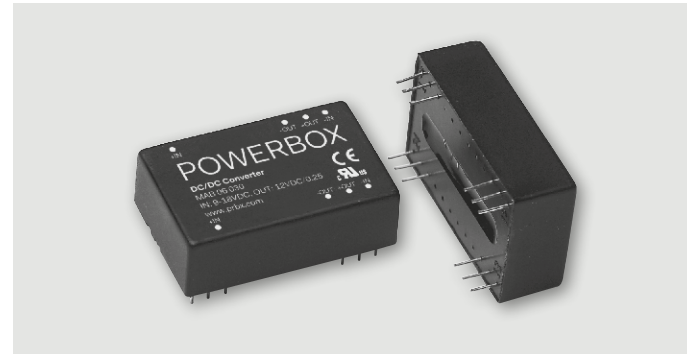
Input voltage range	5V	4.5-6V	4.5-9V (-E)
	12V	9-18V	
	24V	18-36V	
	48V	36-72V	
Input surge voltage (100ms max)	5V	10VDC max	
	12V	25VDC max	
	24V	50VDC max	
	48V	100VDC max	
Input filter	Pi type.		

Output

Voltage accuracy	±2.0% max.	
Voltage balance (dual)	±1.0% max.	
Temperature coefficient	±0.05%/°C.	
Ripple and noise ^{20MHz BW}	3.3V/5V	100mV p-p max.
	12V/15V	1% p-p max.
Short circuit protection	Continuous	
Line regulation ¹	Single/Dual	±0.5% max.
Load regulation	Single ²	±0.5% max.
	Dual ³	±1.0% max.

Environmental

Operating ambient temp.	-25 to +71°C. "-E" models -40 to +85°C.	
Power derating curve	See figure 1.	
Derating above 71°C	Linearly to zero power at 95°C (plastic case).	
	Linearly to zero power at 100°C (copper case).	
Case temperature ⁴	95°C/ 100°C max (plastic/copper case).	
Cooling	Natural convection.	
Storage temperature	-40 to +100°C.	
Humidity	95% RH max non-condensing.	



General

Efficiency	See table.	
Isolation voltage	Standard models: 500VDC min.	
	Suffix "H" models: 3kVDCmin (non-conductive black plastic only)	
	Suffix "HM" models: 1.5kVDC min.	
Isolation resistance	10 ⁹ ohms.	
Isolation capacitance	250pF typ.	
Switching frequency	100KHz, min.	
MTBF	MIL-STD-217F, 2000khrs typ.	
	"-E" models 2500khrs typ.	
Dimensions	DIP	31.8 x 20.3 x 10.2 mm.
	SMD	31.8 x 20.3 x 11.4 mm.
	S/HS models ⁶	31.8 x 20.3 x 10.4 mm.
Case material	Standard	Non-conductive black plastic.
	"M" models	Black coated copper with non-conductive base
	"S" models	SMD package
Weight	12.5g	
Case material	Standard models: Non-conductive black plastic.	
	Suffix "M" ⁵ models: Black coated copper with non-conductive base	

Standards

Safety standards	UL60950-1 approval for H/HM versions only
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Note:

1. Measured from high line to low line.
2. Measured from full load to 10% load.
3. Measured from full load to 1/4 load.
4. Maximum case temperature under any operating condition should not exceed 95°C (Plastic Case), 100 °C(Copper Case).
5. The output noise is measured with 0.1uF MLCC across for SMD package
6. S and HS models for "E" Version Only

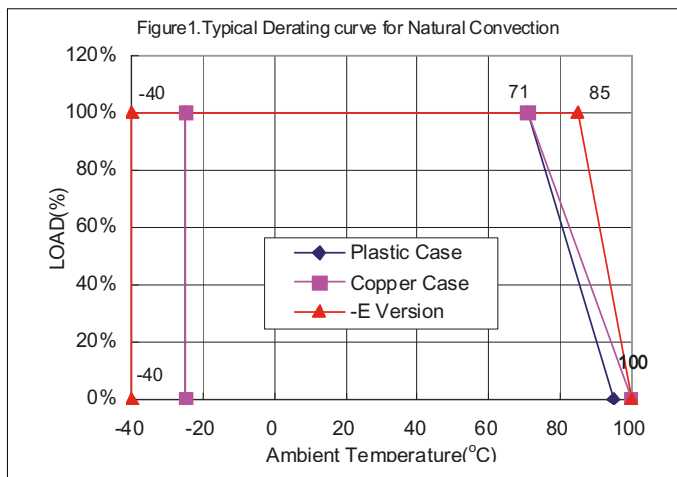
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Model ¹ Number	Input ² Voltage	Output Voltage	Output Current	Input Current		Full Load		Efficiency ³		Capacitor Load Max	
				No Load	"-E"	"-E"	"-E"	"-E"			
MAB06 003	4.5-6 VDC	4.5-9 VDC	3.3 VDC	600 mA	15 mA	15 mA	582 mA	550 mA	68%	72%	2200uF
MAB06 006	4.5-6 VDC	4.5-9 VDC	5 VDC	600 mA	15 mA	15 mA	800 mA	779 mA	75%	77%	2200uF
MAB06 009	4.5-6 VDC	4.5-9 VDC	12 VDC	250 mA	15 mA	15 mA	759 mA	750 mA	79%	80%	2200uF
MAB06 012	4.5-6 VDC	4.5-9 VDC	15 VDC	200 mA	15 mA	15 mA	779 mA	750 mA	77%	80%	2200uF
MAB06 015	4.5-6 VDC	4.5-9 VDC	±5 VDC	±300 mA	25 mA	25 mA	779 mA	779 mA	77%	77%	1000uF
MAB06 018	4.5-6 VDC	4.5-9 VDC	±12 VDC	±125 mA	25 mA	25 mA	789 mA	750 mA	76%	80%	1000uF
MAB06 021	4.5-6 VDC	4.5-9 VDC	±15 VDC	±100 mA	25 mA	25 mA	800 mA	750 mA	75%	80%	1000uF
MAB06 024	9-18 VDC		3.3 VDC	600 mA	7.5 mA	7.5 mA	229 mA	212 mA	72%	78%	2200uF
MAB06 027	9-18 VDC		5 VDC	600 mA	7.5 mA	7.5 mA	325 mA	309 mA	77%	81%	2200uF
MAB06 030	9-18 VDC		12 VDC	250 mA	7.5 mA	10 mA	313 mA	298 mA	80%	84%	2200uF
MAB06 033	9-18 VDC		15 VDC	200 mA	7.5 mA	10 mA	316 mA	294 mA	79%	85%	2200uF
MAB06 036	9-18 VDC		±5 VDC	±300 mA	12 mA	15 mA	325 mA	305 mA	77%	82%	1000uF
MAB06 039	9-18 VDC		±12 VDC	±125 mA	12 mA	12 mA	325 mA	298 mA	77%	84%	1000uF
MAB06 042	9-18 VDC		±15 VDC	±100 mA	12 mA	15 mA	316 mA	294 mA	79%	85%	1000uF
MAB06 045	18-36 VDC		3.3 VDC	600 mA	5 mA	5 mA	111 mA	106 mA	74%	78%	2200uF
MAB06 048	18-36 VDC		5 VDC	600 mA	5 mA	7.5 mA	158 mA	152 mA	79%	82%	2200uF
MAB06 051	18-36 VDC		12 VDC	250 mA	5 mA	7.5 mA	156 mA	145 mA	80%	86%	2200uF
MAB06 054	18-36 VDC		15 VDC	200 mA	5 mA	7.5 mA	152 mA	145 mA	82%	86%	2200uF
MAB06 057	18-36 VDC		±5 VDC	±300 mA	7.5 mA	7.5 mA	162 mA	152 mA	77%	82%	1000uF
MAB06 060	18-36 VDC		±12 VDC	±125 mA	7.5 mA	10 mA	158 mA	147 mA	79%	85%	1000uF
MAB06 063	18-36 VDC		±15 VDC	±100 mA	7.5 mA	10 mA	154 mA	145 mA	81%	86%	1000uF
MAB06 066	36-72 VDC		3.3 VDC	600 mA	3 mA	3 mA	57 mA	52 mA	72%	79%	2200uF
MAB06 069	36-72 VDC		5 VDC	600 mA	2 mA	3 mA	78 mA	74 mA	79%	84%	2200uF
MAB06 072	36-72 VDC		12 VDC	250 mA	2 mA	3 mA	78 mA	73 mA	80%	86%	2200uF
MAB06 075	36-72 VDC		15 VDC	200 mA	2 mA	5 mA	78 mA	73 mA	80%	86%	2200uF
MAB06 078	36-72 VDC		±5 VDC	±300 mA	3 mA	5 mA	80 mA	74 mA	78%	85%	1000uF
MAB06 081	36-72 VDC		±12 VDC	±125 mA	3 mA	5 mA	80 mA	72 mA	78%	87%	1000uF
MAB06 084	36-72 VDC		±15 VDC	±100 mA	3 mA	5 mA	80 mA	72 mA	78%	87%	1000uF

Note:

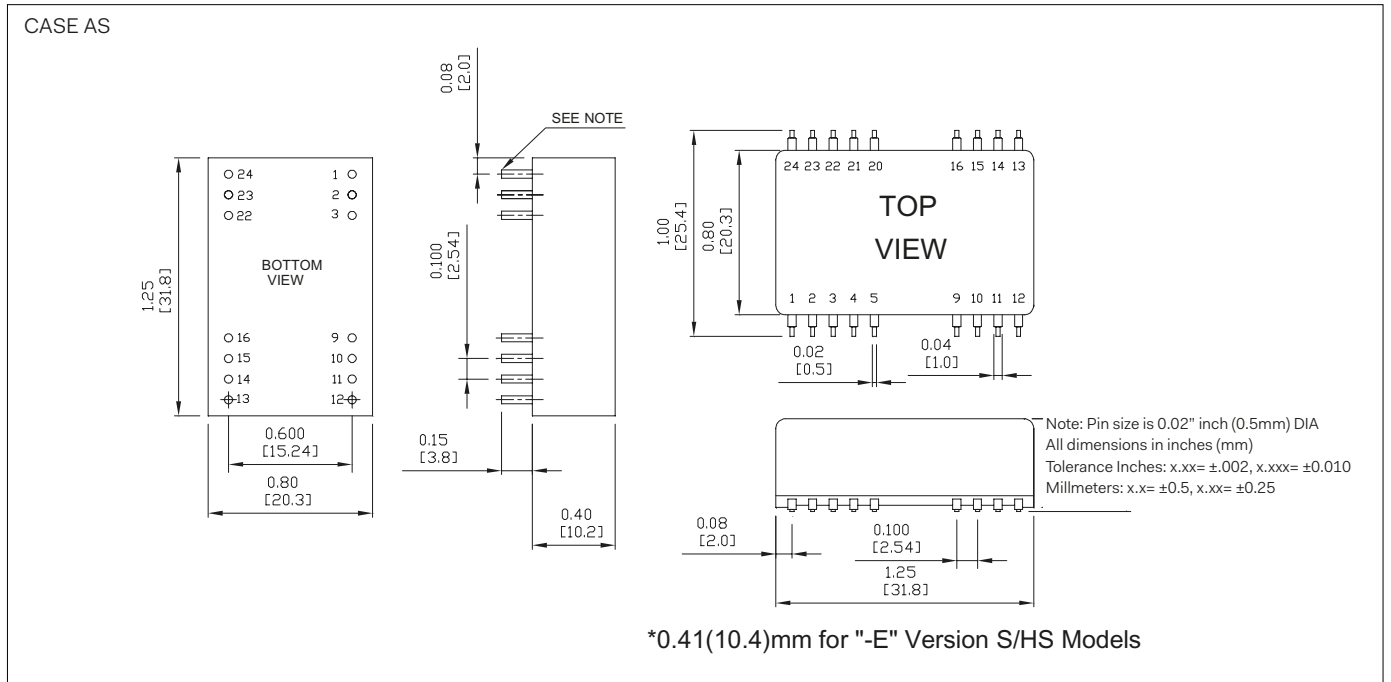
1. Suffix "-E" of the models are high efficiency and wide operating temperature version.
2. Nominal Input Voltage is 5, 12, 24 or 48VDC.
3. Typical value at nominal input voltage and full load.

Derating Curve



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Mechanical



Pin Connection	Standard version (500VDC)				"HM" (1.5kVDC) and "H" (3kVDC) models				
	Single Output		Dual Output		Single Output		Dual Output		
Pin	DIP	SDM	DIP	SMD	Pin	DIP	SDM	DIP	SMD
1,24	+V Input	+Vinput	+V Input	+V Input	1,24	NP	NC	NP	NC
2,23	NC	NC	-V Output	-V Output	2,3	-V Input	-V Input	-V Input	-V Input
3,22	NC	NC	Common	Common	4,5	NP	NC	NP	NC
4	NP	NC	NP	NC	9	NC	NC	Common	Common
5	NP	NC	NP	NC	10,15	NC	NC	NC	NC
9	NP	NC	NP	NC	11	NC	NC	-V Output	-V Output
10,15	-V Output	-V Output	Common	Common	12,13	NP	NC	NP	NC
11,14	+V Output	+V Output	+V Output	+V Output	14	+V Output	+V Output	+V Output	+V Output
12,13	-V Input	-V Input	-V Input	-V Input	16	-V Output	-V Output	Common	Common
16	NP	NC	NP	NC	20,21	NP	NC	NP	NC
20,21	NP	NC	NP	NC	22,23	+V Input	+V Input	+V Input	+V Input

*NP-No
*NC-No Connection with pin