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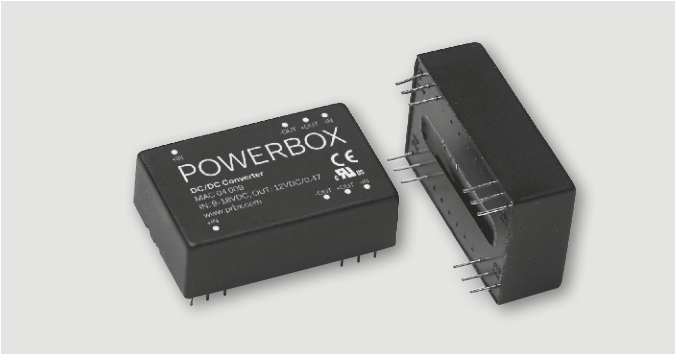
POWERBOX Industrial Line
MAC04 Series
5-6W 2:1 Single and Dual Output
DC/DC Converter



Features

5-6W isolated output
DIP-24 / SMD package
Regulated outputs
Efficiency to 84%
Meets EN55022 Class B, conducted
Pi input filter
Continuous short circuit protection
Remote On/Off control (option)

Input

Input voltage range	12V	9-18V
	24V	18-36V
	48V	36-72V
Positive logic remote ON/OFF	See note 6	
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[1]	±0.5% max.
Load regulation	Single[2]	±0.5% max.
	Dual[3]	±1.0% max.

Environmental

Operating ambient temp.	–25 to +71°C
Derating above 71°C	Linearly to zero power at 95°C (plastic case)
	Linearly to zero power at 100°C (copper case)
Case temperature[8]	95°C max (plastic case)
	100°C max (copper case)
Cooling	Natural convection
Storage temperature	–40 to +100°C

General

Efficiency	See table	
Isolation resistance	10^9 ohms	
Isolation voltage	500VDC min	Standard models
	3KVDC min[4]	Suffix “H” models
	1.5KVDC min	Suffix “HM” models
Switching frequency	100KHz, min.	
Dimensions	DIP: 31.8 x 20.3 x 12.7 mm	
	SMD: 31.8 x 20.3 x 14.0 mm	
Weight	15g	
Case material	Standard models:	
	Non-conductive black plastic	
	Suffix “M” models:	
	Black coated copper with non-conductive base	

Standards

Safety standards	UL60950-1 approval for H/HM versions only
EMI/RFI	Conducted EMI meet EN55022 Class B

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. Non-conductive black plastic only.
5. SSuffix “T” to the Model Number with Remote On/Off for “H”/”HM” versions only.
6. Logic compatibility CMOS or open collector TTL ref to -Vin.
Module ON >5.5VDC or open circuit. Module OFF <1.8VDC.
Shutdown idle 10mA. Control common Referenced to input minus.
7. Suffix “S” to the model number with SMD packages.
8. Max case temperature under any operating conditions should not be exceeded 95°C (plastic case), 100°C (copper case).

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MAC04 Series
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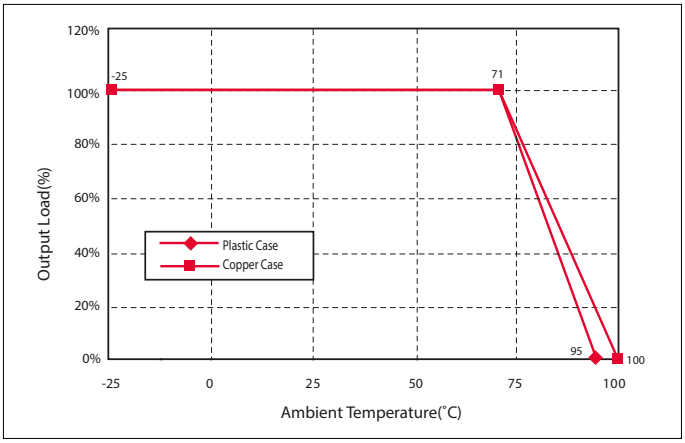
DC/DC Converter

Model Number	Input Voltage	Output Voltage	Output Current	Input Current No Load	Input Current Full Load	Efficiency	Case
MAC 04 003	9-18 VDC	3.3 VDC	1000 mA	7.5 mA	382 mA	72%	DIP-24
MAC 04 006	9-18 VDC	5 VDC	1000 mA	7.5 mA	548 mA	76%	DIP-24
MAC 04 009	9-18 VDC	12 VDC	470 mA	7.5 mA	588 mA	80%	DIP-24
MAC 04 012	9-18 VDC	15 VDC	400 mA	7.5 mA	617 mA	81%	DIP-24
MAC 04 015	9-18 VDC	±5 VDC	±500 mA	12 mA	548 mA	76%	DIP-24
MAC 04 018	9-18 VDC	±12 VDC	±230 mA	12 mA	568 mA	81%	DIP-24
MAC 04 021	9-18 VDC	±15 VDC	±190 mA	12 mA	586 mA	81%	DIP-24
MAC 04 024	18-36 VDC	3.3 VDC	1000 mA	5 mA	188 mA	73%	DIP-24
MAC 04 027	18-36 VDC	5 VDC	1000 mA	5 mA	264 mA	79%	DIP-24
MAC 04 030	18-36 VDC	12 VDC	470 mA	5 mA	283 mA	83%	DIP-24
MAC 04 033	18-36 VDC	15 VDC	400 mA	5 mA	298 mA	84%	DIP-24
MAC 04 036	18-36 VDC	±5 VDC	±500 mA	7.5 mA	264 mA	79%	DIP-24
MAC 04 039	18-36 VDC	±12 VDC	±230 mA	7.5 mA	284 mA	82%	DIP-24
MAC 04 042	18-36 VDC	±15 VDC	±190 mA	7.5 mA	290 mA	79%	DIP-24
MAC 04 045	36-72 VDC	3.3 VDC	1000 mA	3 mA	94 mA	73%	DIP-24
MAC 04 048	36-72 VDC	5 VDC	1000 mA	2 mA	132 mA	79%	DIP-24
MAC 04 051	36-72 VDC	12 VDC	470 mA	2 mA	143 mA	82%	DIP-24
MAC 04 054	36-72 VDC	15 VDC	400 mA	2 mA	154 mA	81%	DIP-24
MAC 04 057	36-72 VDC	±5 VDC	±500 mA	3 mA	132 mA	79%	DIP-24
MAC 04 060	36-72 VDC	±12 VDC	±230 mA	3 mA	142 mA	81%	DIP-24
MAC 04 063	36-72 VDC	±15 VDC	±190 mA	3 mA	148 mA	80%	DIP-24

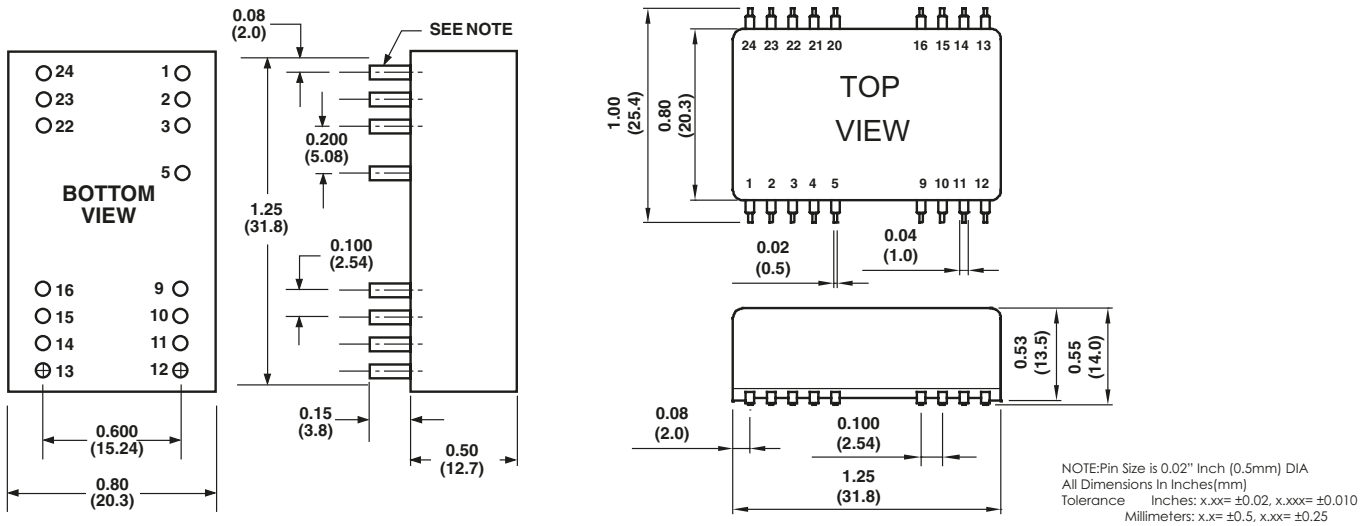
Note:
1. Nominal input voltages 12, 24 or 48 VDC.

Derating Curve



Mechanical

CASE A



Pin Connection

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

*NP-No
*NC-No Connection with pin
*Remote On/Off (Option)