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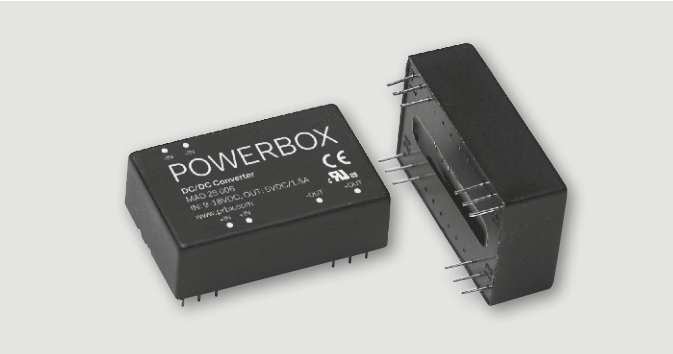
POWERBOX Industrial Line
MAD28 Series
7.5W 2:1 Single and Dual Output
DC/DC Converter



Features

- 7.5W isolated output
- 24-Pin DIP or SMD package
- Efficiency to 87%
- 2:1 Input range
- Regulated outputs
- Pi Input filter
- Continuous short circuit protection
- UL60950-1 approval

Input

Input voltage range	12V	9-18V
	24V	18-36V
	48V	36-72V
Input surge voltage	12V	20VDC max
(100ms 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	100mV p-p max.	
Short circuit protection	Continuous	
Line regulation	Single/Dual[1]	±0.2% max.
Load regulation	Single[2]	±0.5% max.
	Dual[3]	±1.0% max.

Environmental

Operating ambient temp.	–40 to +85°C
Derating above 71°C	Linearly to zero power at 100°C
Case temperature[5]	100°C max.
Cooling	Natural convection
Storage temperature	–40 to +100°C
Humidity	95% RH max non condensing

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. Suffix "S" to the model number with SMD packages.
5. Max case temperature under any operating conditions should not be exceeded 100°C.

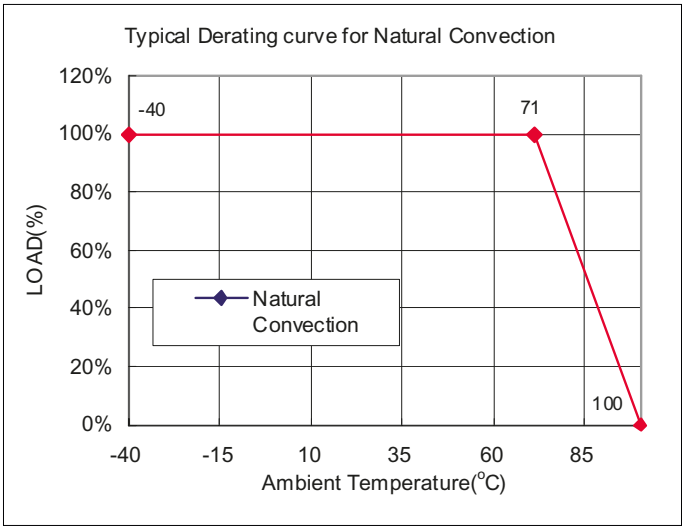
General

Efficiency	See table
Isolation resistance	10^9 ohm min.
Isolation capacitance	560pF typ.
Isolation voltage	1500VDC min.
Switching frequency	300KHz, typ.
MTBF	1800Khrs typ, MIL-STD-217F, GB 25°C, full load
Dimensions	DIP 31.8 x 20.3 x 10.2 mm SMD 31.8 x 20.3 x 11.4 mm
Weight	18.4g
Case material	Black coated copper with non-conductive base

Standards

Safety standards	UL60950-1 approval

Derating Curve



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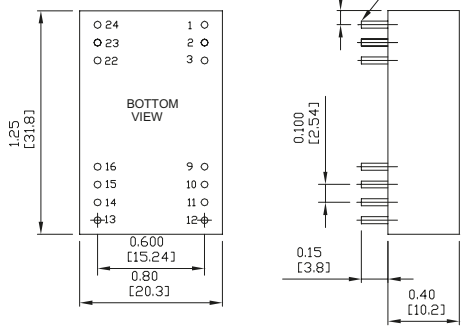
DC/DC Converter

Model Number	Input Voltage	Output Voltage	Output Current Min Load	Output Current Max Load	Input Current No Load	Input Current Full Load	Efficiency	Case
MAD 28 006	9-18VDC	5VDC	0 mA	1500 mA	25 mA	781 mA	80%	4700uF
MAD 28 009	9-18VDC	12VDC	0 mA	625 mA	25 mA	753 mA	83%	4700uF
MAD 28 012	9-18VDC	15VDC	0 mA	500 mA	25 mA	744 mA	84%	4700uF
MAD 28 015	9-18VDC	±5VDC	0 mA	±750 mA	30 mA	772 mA	81%	2200uF
MAD 28 018	9-18VDC	±12VDC	0 mA	±310 mA	30 mA	753 mA	83%	2200uF
MAD 28 021	9-18VDC	±15VDC	0 mA	±250 mA	30 mA	753 mA	83%	2200uF
MAD 28 003	9-18VDC	3.3VDC	0 mA	1500 mA	25 mA	529 mA	78%	4700uF
MAD 28 023	18-36VDC	5VDC	0 mA	1500 mA	20 mA	377 mA	83%	4700uF
MAD 28 026	18-36VDC	12VDC	0 mA	625 mA	20 mA	359 mA	87%	4700uF
MAD 28 029	18-36VDC	15VDC	0 mA	500 mA	20 mA	359 mA	87%	4700uF
MAD 28 032	18-36VDC	±5VDC	0 mA	±750 mA	25 mA	372 mA	84%	2200uF
MAD 28 035	18-36VDC	±12VDC	0 mA	±310 mA	25 mA	356 mA	87%	2200uF
MAD 28 038	18-36VDC	±15VDC	0 mA	±250 mA	25 mA	372 mA	84%	2200uF
MAD 28 041	18-36VDC	3.3VDC	0 mA	1500 mA	20 mA	264 mA	78%	4700uF
MAD 28 044	36-72VDC	5VDC	0 mA	1500 mA	10 mA	193 mA	81%	4700uF
MAD 28 047	36-72VDC	12VDC	0 mA	625 mA	10 mA	184 mA	85%	4700uF
MAD 28 050	36-72VDC	15VDC	0 mA	500 mA	10 mA	182 mA	86%	4700uF
MAD 28 053	36-72VDC	±5VDC	0 mA	±750 mA	15 mA	191 mA	82%	2200uF
MAD 28 056	36-72VDC	±12VDC	0 mA	±310 mA	15 mA	182 mA	85%	2200uF
MAD 28 059	36-72VDC	±15VDC	0 mA	±250 mA	15 mA	184 mA	85%	2200uF
MAD 28 062	36-72VDC	3.3VDC	0 mA	1500 mA	10 mA	136 mA	76%	4700uF

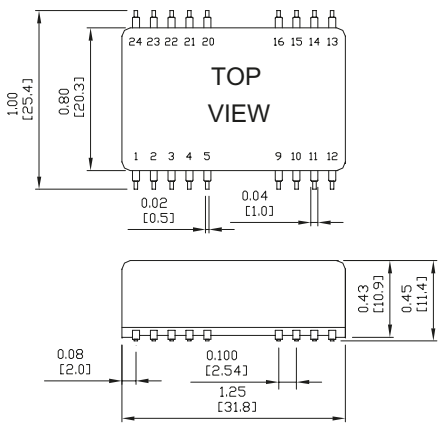
Note:
Nominal input voltages 12, 24 or 48 VDC.
SMD option, add "S" to part number

Mechanical

CASE A (DIP)



CASE A (SMD)



Note: Pin size is .02" inch (0.5mm) DIA
All dimensions in inches (mm)
Tolerance Inches: x.xx= ±0.02, x.xxx= ±0.010
Millmeters: x.x= ±0.5, x.xx= ±0.25

Pin Connection

Pin	Single Output DIP	Single Output SDM	Dual Output DIP	Dual Output SMD
1, 24	NP	NC	NP	NC
2, 3	–V Input	–V Input	–V Input	–V Input
4, 5	NP	NC	NP	NC
9	NC	NC	Common	Common
10, 15	NC	NC	NC	NC
11	NC	NC	–V Output	–V Output
12, 13	NP	NC	NP	NC
14	+V Output	+V Output	+V Output	+V Output
16	–V Output	–V Output	Common	Common
20, 21	NP	NC	NP	NC
22, 23	+V Input	+V Input	+V Input	+V Input

*NP-No
*NC-No Connection with pin