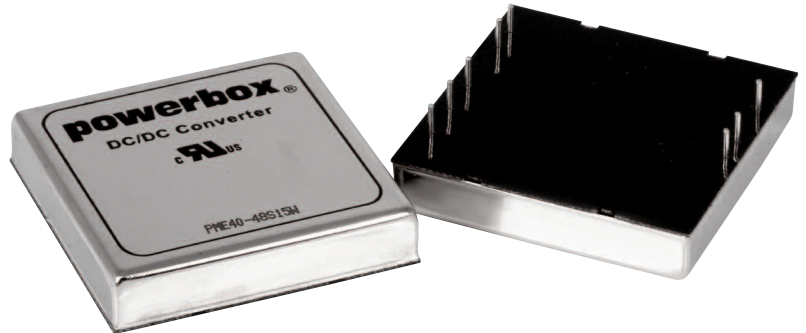


Industrial Line – T40W Series

40W 4:1 SINGLE & DUAL OUTPUT HIGH PERFORMANCE DC/DC CONVERTER

Features

- Output current up to 10A
- Standard 2" x 2" x 0.4" package
- High efficiency up to 88%
- 4:1 ultra wide input voltage range
- Six-sided continuous shield
- Fixed switching frequency
- International safety approvals
- RoHS directive compliant



Specifications

INPUT

Voltage range	24V nominal input	9-36VDC
	48V nominal input	18-75VDC
Input filter	Pi type.	
Voltage variation, dv/dt	5V/ms, max (complies with ETS300 132 part 4.4).	
Input surge voltage	24V input	50VDC
	48V input	100VDC
Reflected ripple current	20mA p-p, nominal Vin and full load.	
Start up time	Power up 20mS typ. Remote on/off 20mS typ. Nominal Vin and constant resistive load.	
Start-up voltage	24V input	9VDC
	48V input	16VDC
Shutdown voltage	24V input	8VDC
	48V input	16VDC

Remote ON/OFF ¹⁰	Positive logic (standard):	
	DC/DC ON: Open or 3V < Vr < 12V DC/DC OFF: Short or 0V < Vr < 1.2V	
	Negative logic (option):	
	DC/DC ON: Short or 0V < Vr < 1.2V DC/DC OFF: Open or 3V < Vr < 12V	
	Input current of remote control pin -0.5mA+0.5mA, nominal Vin.	
	Remote off state input current: 24 Vin: 10mA. 48 Vin: 5mA	

OUTPUT

Power	40W max.	
Voltage accuracy	Single/dual ±1%, FL and nominal Vin.	
Minimum load ⁶	See table.	
Voltage adjustability ⁷	±10%, single and dual output.	
Line regulation	Single/dual: ±0.2%, LL to HL at full load.	
Load regulation ⁸	Single:	±0.5%
	Dual:	±1%
Load cross regulation ⁹	Dual: ±5%.	
Temperature coefficient	±0.02%/°C max.	
Transient response	250µS, recovery time 25% load step change.	
Overvoltage protection (zener diode clamp)	3.3V output	3.9V
	5V output	6.2V
	12V output	15V
	15V output	18V
	±12V output	±15V
	±15V output	±18V

Overload protection	150% max, % of FL at nominal input.
Short circuit protection	Hiccup, automatic recovery.

ENVIRONMENTAL

Operating temperature	-40°C to +50°C (without derating).
	+50°C to +105°C (with derating).
Max case temperature	+105°C.
Storage temperature	-55°C to +125°C.
Overtemp. protection	110°C typ.
Thermal impedance ⁵⁾	Without heat-sink 9.2°C/Watt.
	With heat-sink 7.6°C/Watt.
Thermal shock	MIL-STD-810F.
Vibration	10-55Hz, 10G, 30 minutes along x, y and z.
Relative humidity	5-95% RH.

GENERAL

Efficiency	See table.
Isolation voltage	1600VDC min, input to output.
	1600VDC min, input (output) to case.
Case grounding	Connect case to -Vin with decoupling Y Cap.
Isolation resistance	10 ⁹ ohms, min.
Isolation capacitance	2500pF, max.
Switching frequency	300KHz typ.
Case material.	Nickel-coated copper.
Base material	FR4 PCB.
Potting material	Epoxy (UL94-V0).
Dimensions	50.8 x 50.8 x 10.2 mm.
Weight	60g.
MTBF ⁵⁾	Bellcore TR-NWT-000332: 1.105 x 10 ⁶ hrs.
	MIL-STD-217F: 1.511 x 10 ⁵ hrs.

STANDARDS

Safety standards (pending)	IEC60950-1, UL60950-1, EN60950-1.	
EMC		
EMI ¹²	EN55022 Class A.	
ESD	EN61000-4-2 Criteria A. Air 8kV, contact 6kV.	
Radiated immunity	EN61000-4-3 Criteria A. 10V/m.	
Fast transient ¹³	EN61000-4-4 Criteria B. 2kV.	
Surge ¹³	EN61000-4-5 Criteria A. 1kV.	
Conducted immunity	EN61000-4-6 Criteria A. 10 Vr.m.s.	

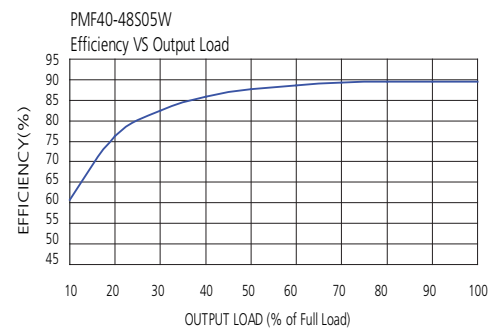
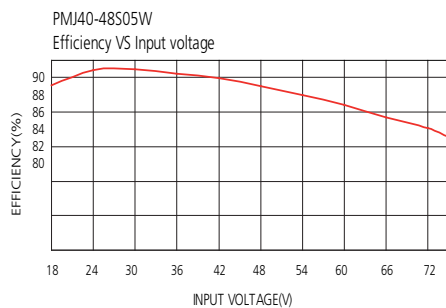
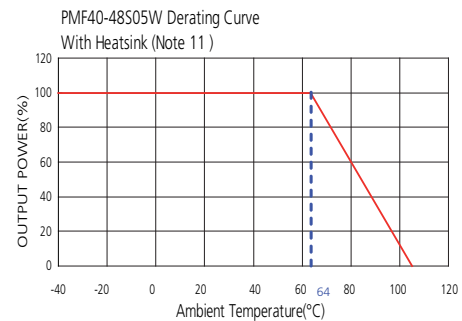
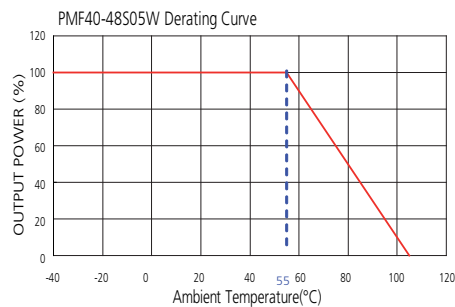
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MODEL NUMBER	INPUT RANGE	OUTPUT VOLTAGE	OUTPUT CURRENT		OUTPUT ⁴ RIPPLE&NOISE	INPUT CURRENT		EFFICIENCY ⁴	CAPACITOR ⁵ LOAD MAX
			MIN LOAD ³	FULL LOAD		NO LOAD ³	FULL LOAD ²		
PME40-24S3P3W	9 - 36 VDC	3.3 VDC	0mA	10000mA	50mVp-p	80mA	1677mA	86%	25750µF
PME40-24S05W	9 - 36 VDC	5 VDC	0mA	8000mA	50mVp-p	100mA	2008mA	87%	13600µF
PME40-24S12W	9 - 36 VDC	12 VDC	50mA	3333mA	75mVp-p	50mA	2008mA	87%	2360µF
PME40-24S15W	9 - 36 VDC	15 VDC	50mA	2666mA	75mVp-p	50mA	2008mA	87%	1510µF
PME40-24D12W	9 - 36 VDC	± 12 VDC	±65 mA	± 1667mA	120mVp-p	60mA	2032mA	86%	± 1200µF
PME40-24D15W	9 - 36 VDC	± 15 VDC	±50 mA	± 1333mA	150mVp-p	70mA	2032mA	86%	± 750µF
PME40-48S3P3W	18 - 75 VDC	3.3 VDC	0mA	10000mA	50mVp-p	60mA	838mA	86%	25750µF
PME40-48S05W	18 - 75 VDC	5 VDC	0mA	8000mA	50mVp-p	65mA	992mA	88%	13600µF
PME40-48S12W	18 - 75 VDC	12 VDC	50mA	3333mA	75mVp-p	30mA	1004mA	87%	2360µF
PME40-48S15W	18 - 75 VDC	15 VDC	50mA	2666mA	75mVp-p	30mA	1004mA	87%	1510µF
PME40-48D12W	18 - 75 VDC	± 12 VDC	±65 mA	± 1667mA	120mVp-p	30mA	1016mA	86%	± 1200µF
PME40-48D15W	18 - 75 VDC	± 15 VDC	±60 mA	± 1333mA	150mVp-p	30mA	1016mA	86%	± 750µF

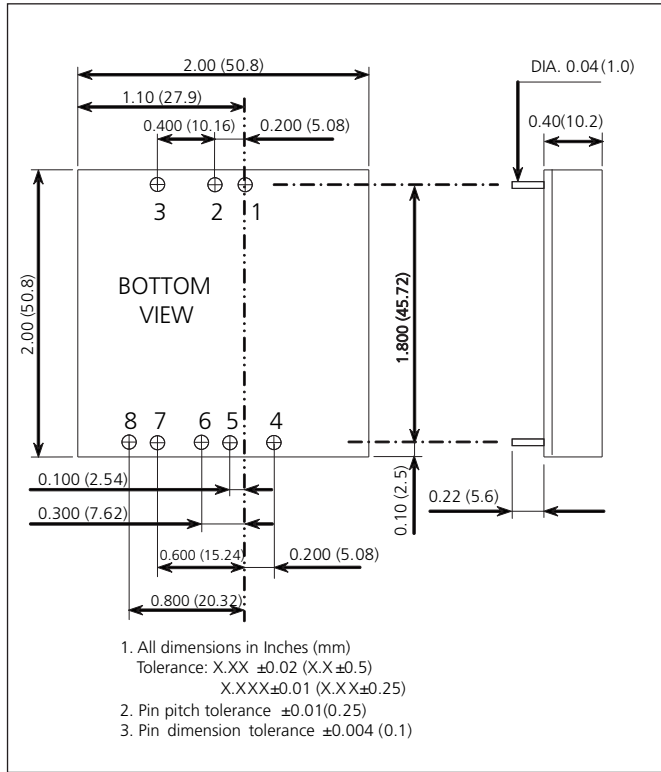
Notes:

- BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40°C. MIL-HDBK-217F Notice2 @Ta=25 °C, Full load(Ground, Benign, controlled environment).
- Maximum value at nominal input voltage and full load.
- Typical value at nominal input voltage and no load.
- Typical value at nominal input voltage and full load.
- Test by minimum Vin and constant resistive load.
- The output requires minimum loading on the output to maintain specified regulation. Operation under no-load condition will not damage these devices, however they may not meet all listed specification.
- For the single output: Maximum output deviation is 10% inclusive of remote sense and trim. If remote sense is not being used, the +sense should be connected to its corresponding +OUTPUT and likewise the -sense should be connected to its corresponding -OUTPUT.
- Load regulation for dual output : Min load to 100% load balanced on all outputs.
- Cross regulation for dual output : asymmetrical load 25% / 100% FL
- The ON/OFF pin voltage is referenced to -Vin. To order negative logic ON/OFF control add the suffix-N (Ex: PMF40-24S05W-N).
- Heat sink is optional and P/N:7G-0026A.
- The PMF40W series can meet EN55022 Class A with parallel an external capacitor to the input pins. Recommend : 24Vin : NIA 48Vin :2.2µF/100V*2 PCS 1812 MLCC.
- An external filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5.
The filter capacitor Powerbox suggest: Nippon chemi-con KY series, 220µF/100V, ESR 48mΩ.

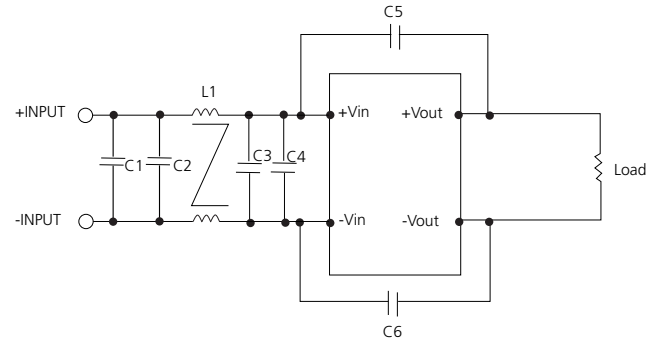
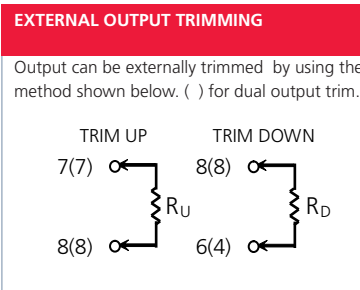


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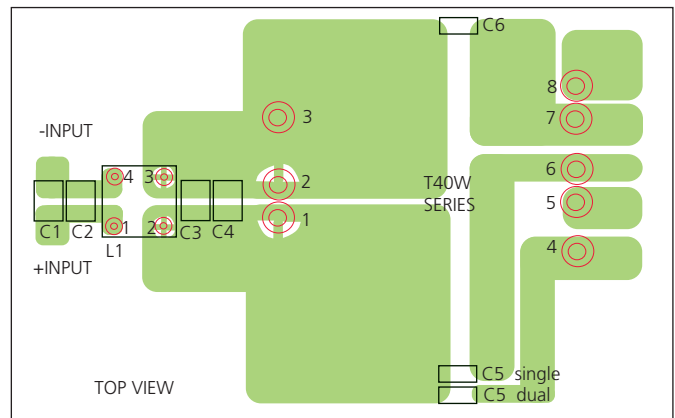
PIN CONNECTION		
PIN	SINGLE	DUAL
1	+INPUT	+INPUT
2	-INPUT	-INPUT
3	CTRL	CTRL
4	-SENSE	+OUTPUT
5	+SENSE	COM
6	+OUTPUT	COM
7	-OUTPUT	-OUTPUT
8	TRIM	TRIM



Recommended filter for EN55022 Class B compliance

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

	C1	C2	C3	C4	C5&C6	L1
PMJ40-24xxxW	4.7µF/50V 1812 MLCC	N/A	4.7µF/50V 1812 MLCC	N/A	1000pF/2KV MLCC	450µH Common Choke PMT-048
PMJ40-48xxxW	2.2µF/100V 1812 MLCC	2.2µF/100V 1812 MLCC	2.2µF/100V 1812 MLCC	2.2µF/100V 1812 MLCC	1000pF/2KV MLCC	830µH Common Choke PMT-053



Recommended EN55022 Class B Filter Circuit Layout

Specifications are subject to change without notice.