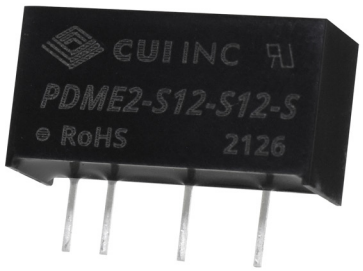
CUI INC
a bel group

SERIES: PDME2-S | DESCRIPTION: DC-DC CONVERTER

FEATURES

- 2 W isolated output
- single/dual unregulated output
- 1500 Vdc isolation
- continuous short circuit protection
- extended temperature range (-40~105°C)
- no-load input current as low as 8mA
- efficiency up to 86%
- EN 62368-1
- UL 62368-1



MODEL

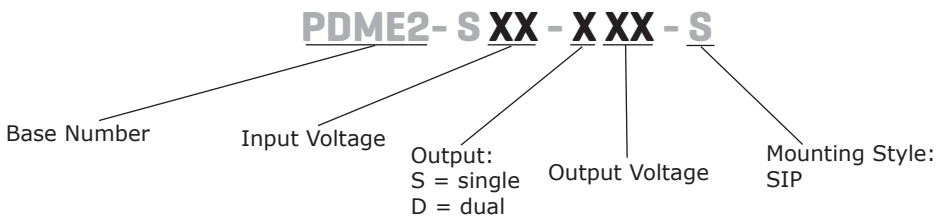
MODEL	input voltage		output voltage	output current		output power	ripple & noise[1]	efficiency[2]
	typ (Vdc)	range (Vdc)	(Vdc)	min (mA)	max (mA)	max (W)	max (mVp-p)	typ (%)
PDME2-S12-D3-S	12	10.8~13.2	±3.3	±30	±303	2	180	75
PDME2-S12-D5-S	12	10.8~13.2	±5	±20	±200	2	180	80
PDME2-S12-D9-S[4]	12	10.8~13.2	±9	±11	±111	2	180	82
PDME2-S12-D12-S	12	10.8~13.2	±12	±8	±83	2	180	83
PDME2-S12-D15-S	12	10.8~13.2	±15	±7	±67	2	180	83
PDME2-S12-D24-S[4]	12	10.8~13.2	±24	±4	±42	2	180	83
PDME2-S12-S5-S	12	10.8~13.2	5	40	400	2	180	82
PDME2-S12-S9-S[4]	12	10.8~13.2	9	22	222	2	180	82
PDME2-S12-S12-S	12	10.8~13.2	12	17	167	2	180	84
PDME2-S12-S15-S	12	10.8~13.2	15	13	133	2	180	85
PDME2-S12-S24-S	12	10.8~13.2	24	8	83	2	180	86
PDME2-S15-D5-S[4]	15	13.5~16.5	±5	±20	±200	2	180	80
PDME2-S15-D15-S[4]	15	13.5~16.5	±15	±7	±67	2	180	82
PDME2-S15-S5-S[4]	15	13.5~16.5	5	40	400	2	180	80
PDME2-S15-S15-S[4]	15	13.5~16.5	15	13	133	2	180	81
PDME2-S15-S24-S[4]	15	13.5~16.5	24	8	83	2	180	81
PDME2-S24-D3-S[4]	24	21.6~26.4	±3.3	±30	±300	2	180	76
PDME2-S24-D5-S	24	21.6~26.4	±5	±20	±200	2	180	80
PDME2-S24-D9-S[4]	24	21.6~26.4	±9	±11	±111	2	180	81
PDME2-S24-D12-S	24	21.6~26.4	±12	±8	±83	2	180	83
PDME2-S24-D15-S	24	21.6~26.4	±15	±7	±67	2	180	83
PDME2-S24-D24-S[4]	24	21.6~26.4	±24	±4	±42	2	180	83
PDME2-S24-S3-S[4]	24	21.6~26.4	3.3	40	400	1.32	180	76
PDME2-S24-S5-S	24	21.6~26.4	5	40	400	2	180	80
PDME2-S24-S9-S[4]	24	21.6~26.4	9	22	222	2	180	81

MODEL (CONTINUED)

	input voltage		output voltage	output current		output power	ripple & noise[1]	efficiency[2]
	typ (Vdc)	range (Vdc)	(Vdc)	min (mA)	max (mA)	max (W)	max (mVp-p)	typ (%)
PDME2-S24-S12-S	24	21.6~26.4	12	17	167	2	180	84
PDME2-S24-S15-S	24	21.6~26.4	15	13	133	2	180	86
PDME2-S24-S24-S	24	21.6~26.4	24	8	83	2	180	86

Notes:
1. Measured at nominal input, 20 MHz bandwidth oscilloscope, with 10 µF tantalum and 1 µF ceramic capacitors on the output.
2. Measured at nominal input voltage, full load.
3. All specifications are measured at Ta=25°C, humidity < 75%, nominal input voltage, and rated output load unless otherwise specified.
4. Model is not CE or UL certified.

PART NUMBER KEY



INPUT

parameter	conditions/description	min	typ	max	units
operating input voltage	12 Vdc input models	10.8	12	13.2	Vdc
	15 Vdc input models	13.5	15	16.5	Vdc
	24 Vdc input models	21.6	24	26.4	Vdc
surge voltage	for maximum of 1 second				
	12 Vdc input models	-0.7		18	Vdc
	15 Vdc input models	-0.7		21	Vdc
	24 Vdc input models	-0.7		30	Vdc
current	12 Vdc input models			208	mA
	15 Vdc input models			167	mA
	24 Vdc input models			104	mA
filter	filter capacitor				

OUTPUT

parameter	conditions/description	min	typ	max	units
maximum capacitive load[5]	3.3, 5 Vdc output models			2,400	µF
	±3.3, ±5 Vdc output models			1,200	µF
	9 Vdc output models			1,000	µF
	12, 15 Vdc output models			560	µF
	24, ±12, ±15 Vdc output models			220	µF
	±9 Vdc output models			470	µF
	±24 Vdc output models			100	µF
voltage accuracy	see output regulation curves				
line regulation	for Vin change of 1%				
	3.3 Vdc output models			±1.5	%
	all other output models			±1.2	%
load regulation	from 10% to full load				
	3.3 Vdc output models		15		%
	5 Vdc output models		7		%
	9, 12 Vdc output models		5		%
	15 Vdc output models		4		%
	24 Vdc output models		3		%
switching frequency	100% load, nominal input voltage		260		kHz
temperature coefficient	at full load		±0.02		%/°C

Note: 5. Tested at input voltage range and full load.

PROTECTIONS

parameter	conditions/description	min	typ	max	units
short circuit protection	continuous, auto recovery				

SAFETY AND COMPLIANCE

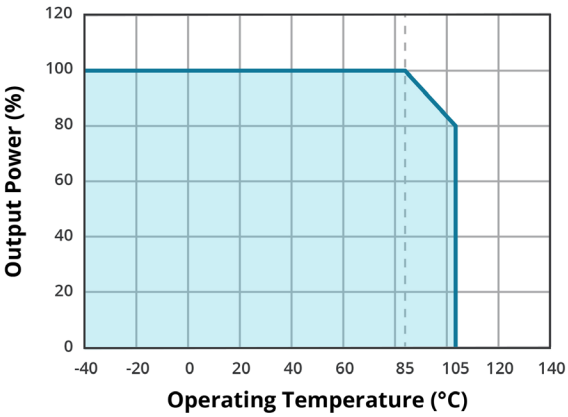
parameter	conditions/description	min	typ	max	units
isolation voltage	input to output for 1 minute at 1 mA	1,500			Vdc
isolation resistance	input to output at 500 Vdc	1,000			MΩ
isolation capacitance	input to output, 100 kHz / 0.1 V		20		pF
safety approvals	certified to 62368: EN, IEC, UL				
conducted emissions	CISPR 32/EN 55032 Class B				
radiated emissions	CISPR 32/EN 55032 Class B				
ESD	IEC/EN 61000-4-2 Air ±8kV, Contact ±6kV				
MTBF	as per MIL-HDBK-217F, 25°C	3,500,000			hours
RoHS	yes				

ENVIRONMENTAL

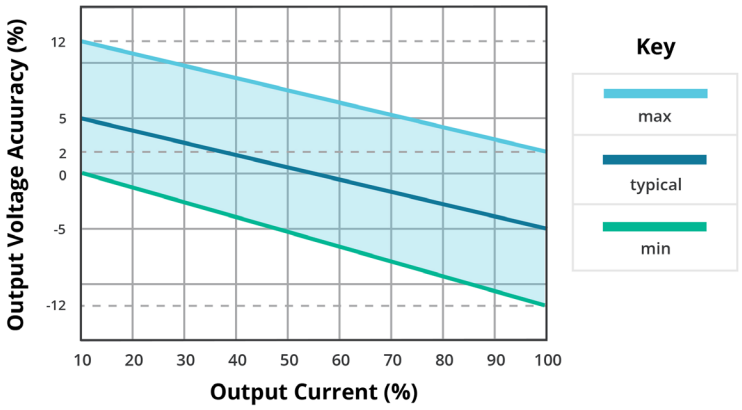
parameter	conditions/description	min	typ	max	units
operating temperature	see derating curves	-40		105	°C
storage temperature		-55		125	°C
storage humidity	non-condensing	5		95	%
case temperature rise	at 25°C		15		°C

DERATING CURVES

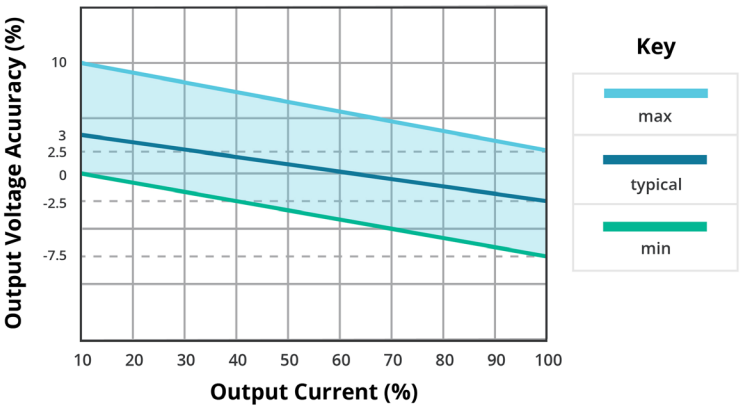
TEMPERATURE DERATING CURVE



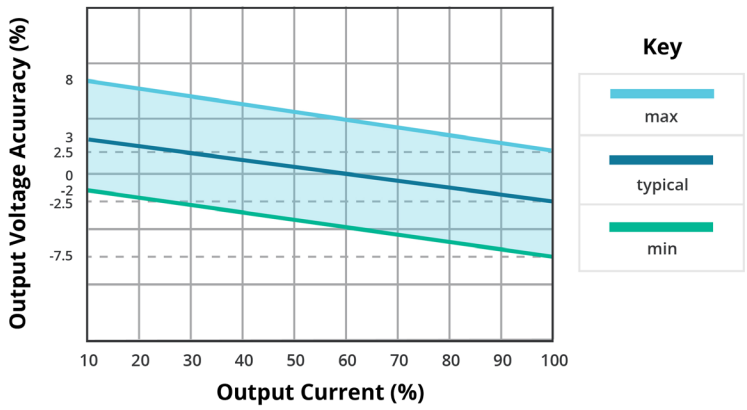
OUTPUT REGULATION CURVE
3.3 Vdc output models
(nominal input)



OUTPUT REGULATION CURVE
5 Vdc output models
(nominal input)



OUTPUT REGULATION CURVE
all other output models
(nominal input)



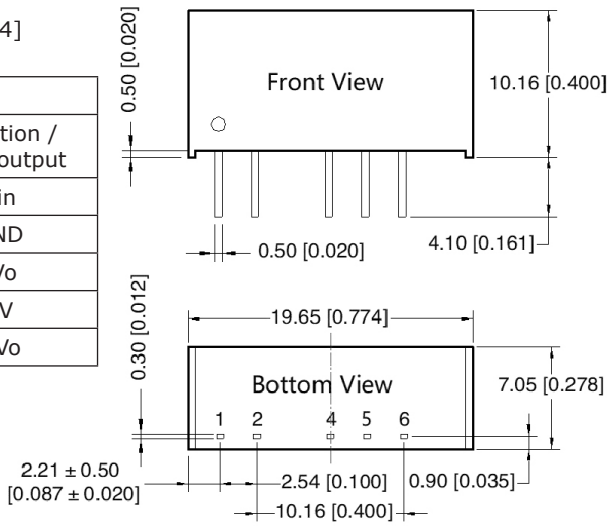
MECHANICAL

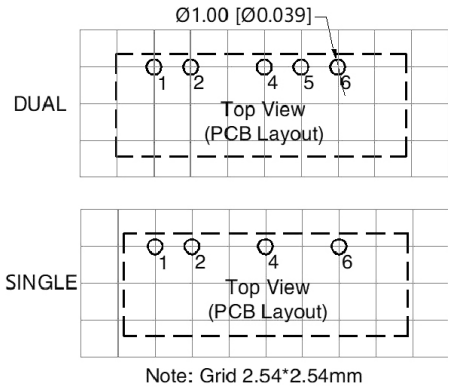
parameter	conditions/description	min	typ	max	units
dimensions	19.65 x 7.05 x 10.16 [0.773 x 0.277 x 0.400 inch]				mm
case material	black flame-retardant and heat-resistant plastic (UL94V-0)				
weight			2.4		g

MECHANICAL DRAWING

units: mm [inch]
tolerance: ±0.25[±0.010]
pin section tolerance: ±0.10[±0.004]

PIN CONNECTIONS		
PIN	Function / Single output	Function / Dual output
1	Vin	Vin
2	GND	GND
4	0V	-Vo
5	No pin	0V
6	+Vo	+Vo





APPLICATION CIRCUIT

If you want to further reduce the input and output ripple, a filter capacitor may be connected to the input and output terminals (Figures 1 & 2) provided that the capacitance is less than the maximum capacitive load of the model, otherwise start-up problems may be caused if the capacitance is too large.

Figure 1
Single Output Models

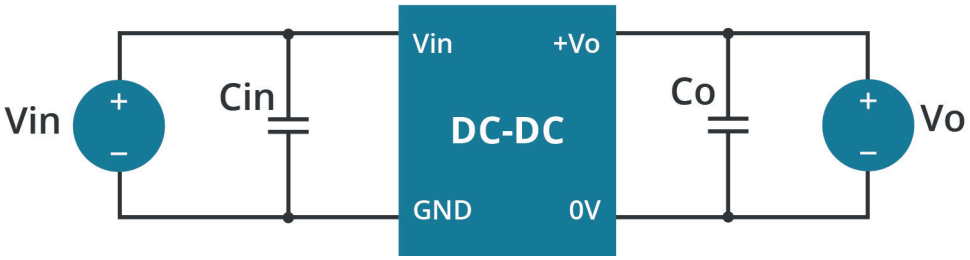


Table 1

Vin (Vdc)	Cin (µF / V)	Vo (Vdc)	Co (µF / V)
12	2.2 / 25	3.3	10 / 16
15	2.2 / 25	5	10 / 16
24	1 / 50	9	2.2 / 25
--	--	12	2.2 / 25
--	--	15	1 / 25
--	--	24	1 / 50

Figure 2
Dual Output Models

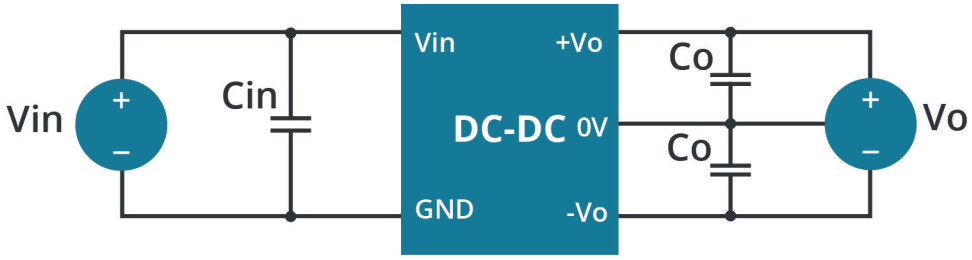


Table 2

Vin (Vdc)	Cin (µF / V)	Vo (Vdc)	Co[6] (µF / V)
12	2.2 / 25	±3.3	4.7 / 16
15	2.2 / 25	±5	4.7 / 16
24	1 / 50	±9	2.2 / 25
--	--	±12	1 / 25
--	--	±15	1 /25
--	--	±24	0.47 / 50

Note: 6. The capacitor value of the positive and the negative output is identical.

EMC RECOMMENDED CIRCUIT

Figure 3
Single Output Models

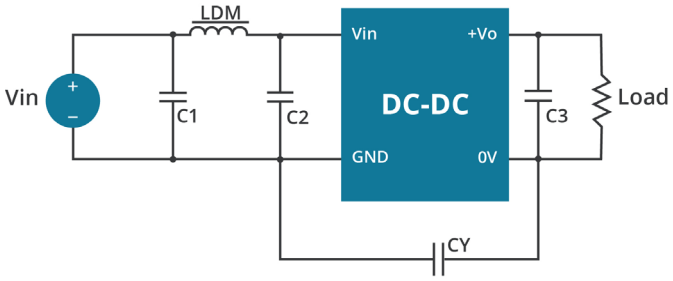


Figure 4
Dual Output Models

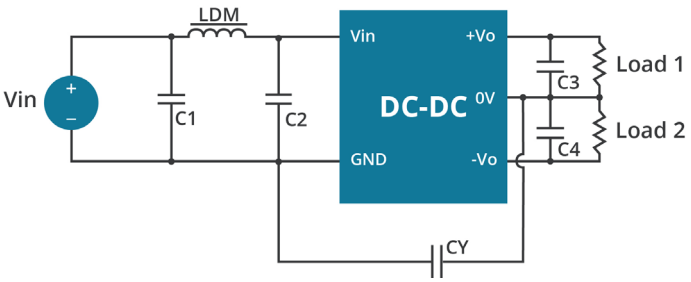


Table 3

Recommended External Circuit Components		
Vo (Vdc)	12, 15, 24	12, 15, 24
C1 / C2	4.7 µF / 50 V	4.7 µF / 50 V
CY	270 pF / 2 kV	270 pF / 2 kV
C3 / C4	refer to the Co in Tables 1, 2	
LDM	6.8 µH	6.8 µH

REVISION HISTORY

rev.	description	date
1.0	initial release	07/26/2021

The revision history provided is for informational purposes only and is believed to be accurate.

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