

**SERIES:** PRMCE1-S | **DESCRIPTION:** DC-DC CONVERTER

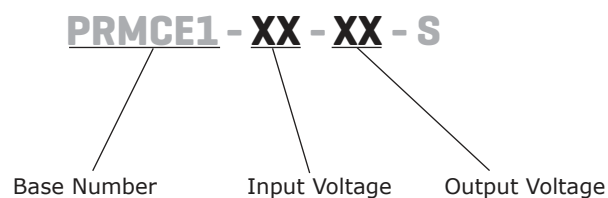
**FEATURES**

- 1W isolated output
- 3000 Vdc isolation
- compact SIP package
- continuous short circuit protection
- no-load input current as low as 5mA
- wide temperature range: -40°C to +85°C
- high efficiency up to 73%
- UL 62368 certified
- designed to meet EN/BS EN 62368



MODEL	input voltage		output voltage (Vdc)	output current max (mA)	output power max (W)	ripple and noise max (mVp-p)	efficiency typ (%)
	typ (Vdc)	range (Vdc)					
PRMCE1-S5-S3-S	5	4.75~5.25	3.3	250	1	75	67
PRMCE1-S5-S5-S <sup>1</sup>	5	4.75~5.25	5	200	1	75	70
PRMCE1-S5-S9-S <sup>1</sup>	5	4.75~5.25	9	110	1	75	71
PRMCE1-S5-S12-S <sup>1</sup>	5	4.75~5.25	12	84	1	75	72
PRMCE1-S5-S15-S <sup>1</sup>	5	4.75~5.25	15	67	1	75	73
PRMCE1-S5-S24-S	5	11.4~12.6	24	41	1	100	73
PRMCE1-S12-S5-S	12	11.4~12.6	5	200	1	100	73
PRMCE1-S12-S9-S	12	11.4~12.6	9	111	1	100	73
PRMCE1-S12-S12-S	12	11.4~12.6	12	83	1	100	73
PRMCE1-S12-S15-S	12	11.4~12.6	15	67	1	150	75
PRMCE1-S15-S5-S	15	14.25~15.75	5	200	1	100	73
PRMCE1-S15-S15-S	15	14.25~15.75	15	67	1	150	75
PRMCE1-S24-S3-S	24	22.8~25.2	3.3	250	1	100	71
PRMCE1-S24-S5-S	24	22.8~25.2	5	200	1	100	73
PRMCE1-S24-S9-S	24	22.8~25.2	9	111	1	100	73
PRMCE1-S24-S12-S	24	22.8~25.2	12	83	1	100	73
PRMCE1-S24-S15-S	24	22.8~25.2	15	67	1	150	73

Note: 1. Model is UL and CB certified.

**PART NUMBER KEY**


**INPUT**

parameter	conditions/description	min	typ	max	units	
input voltage		4.75	5	5.25	Vdc	
		11.4	12	12.6	Vdc	
		14.25	15	15.75	Vdc	
		22.8	24	25.2	Vdc	
filter	capacitance filter					
current	5 Vdc input model	3.3,5 Vdc output model		286/5	303/10	mA
		9,12 Vdc output model		282/12	299/20	mA
		15,24 Vdc output model		274/18	290/30	mA
	12 Vdc input model	5,9,12 Vdc output model		115/8	121/-	mA
		15 Vdc output model		112/8	118/-	mA
	15 Vdc input model	5 Vdc output model		92/8	97/-	mA
15 Vdc output model		89/8	94/-	mA		
24 Vdc input model	3.3 Vdc output model		59/8	65/-	mA	
	5,9,12,15 Vdc output model		58/8	63/-	mA	

**OUTPUT**

parameter	conditions/description	min	typ	max	units
output capacitance	3.3 Vdc output models			2400	μF
	5 Vdc output models			2400	μF
	9 Vdc output models			1000	μF
	12 Vdc output models			560	μF
	15 Vdc output models			560	μF
	24 Vdc output models			100	μF
line regulation	input voltage change: ±1%			±0.25	%
load regulation	3.3 Vdc output, 10%-100% load			±3	%
	all other output models, 10%-100% load			±2	%
switching frequency	100% load, nominal input voltage		270		kHz
temperature coefficient	100% load		±0.02		%/°C

**PROTECTIONS**

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

## SAFETY AND COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	input-output electric strength test for 1 minute with a leakage current of 1mA max	3,000			Vdc
isolation resistance	input-output resistance at 500 Vdc	1,000			MΩ
isolation capacitance	input-output capacitance at 100 KHz / 0.1 V		20		pF
safety approvals <sup>1</sup>	certified to 62368: UL designed to meet 62368: EN/BS EN				
EMI /EMC	CISPR32/EN55032 Class B (see recommended circuit)				
ESD	IEC/EN61000-4-2 Air ±8kV, Contact ±4kV perf. Criteria B				
RoHS	yes				
MTBF	as per MIL-HDBK-217F at 25°C	3,500			kHours

Note: 1. Refer to the model table.

## ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
operating temperature	derating when operating temperature up to 71°C	-40		85	°C
storage temperature		-55		125	°C
humidity	non-condensing			95	%
shock/vibration	10-150Hz, 5G, 30 Min. along X, Y and Z				

## MECHANICAL

parameter	conditions/description	min	typ	max	units
dimensions	19.65 x 6.00 x 10.16				mm
case material	black plastic; flame-retardant and heat-resistant (UL94 V-0)				
weight			2.1		g

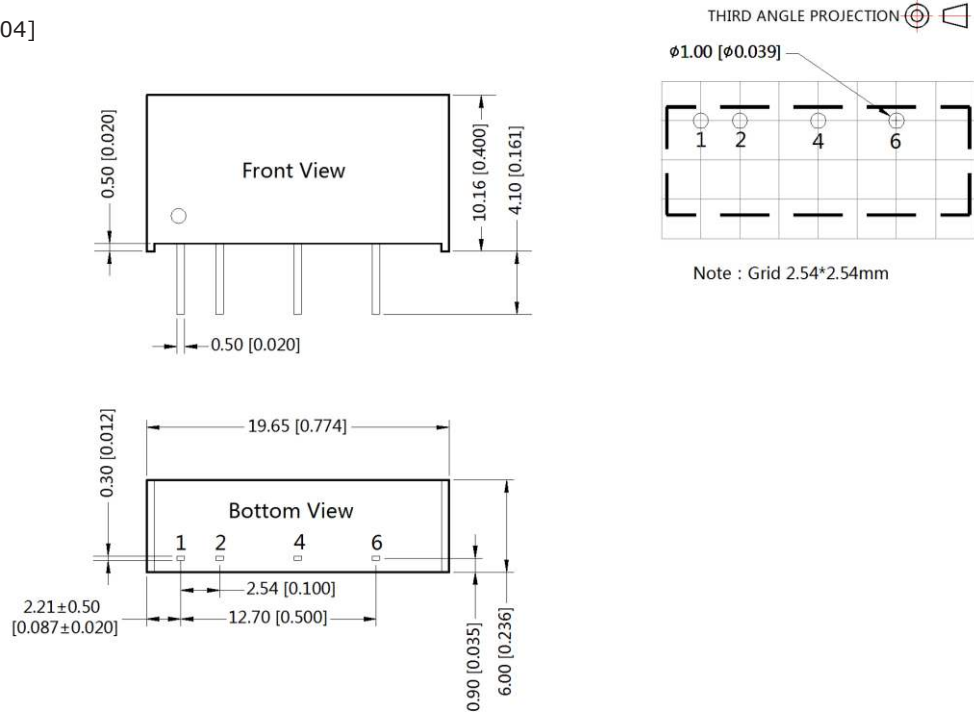
## MECHANICAL DRAWING

units: mm [inches]

tolerance: ± 0.25 [±0.010]

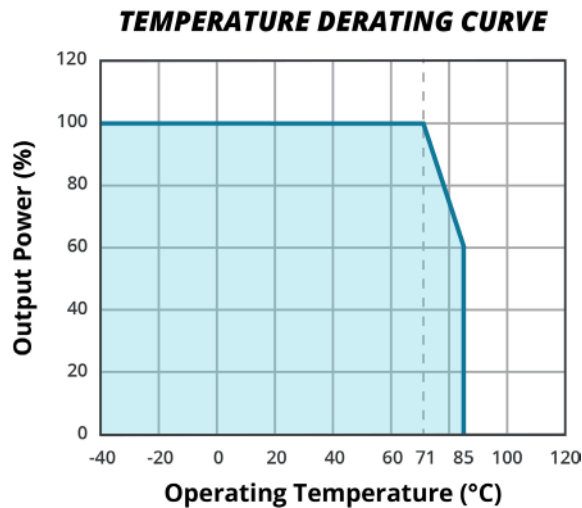
pin section tolerances: ± 0.10 [±0.004]

PIN-OUT	
PIN	FUNCTION
1	Vin
2	GND
4	0V
6	+Vo



## DERATING CURVE

Figure 1



## APPLICATION CIRCUIT

Input and/or output ripple can be further reduced, by connecting a filter capacitor from the input and/or output terminals to ground as shown in Fig.2.

Choosing suitable filter capacitor values is very important for a smooth operation of the modules, particularly to avoid start-up problems caused by capacitor values that are too high. For recommended input and output capacitor values refer to Table 1.

Figure 2

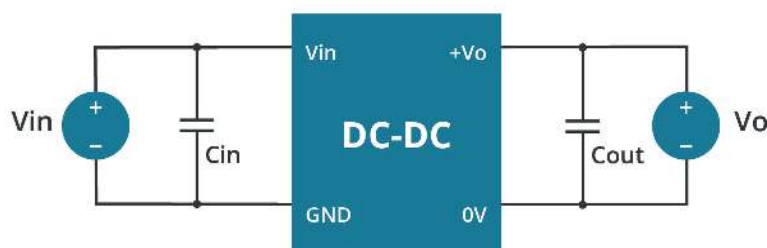


Table 1

Recommended Input & Output Capacitor Values			
Vin (Vdc)	Cin (μF / V)	Vo (Vdc)	Cout (μF / V)
5	4.7 / -	3.3/5	10
--	--	9/12	2.2
--	--	15	1
12	2.2 / 25	3.3	10 / 16
15	2.2 / 25	5	10 / 16
24	1 / 50	9	2.2 / 16
--	--	12	2.2 / 16
--	--	15	1 / 25

## EMC RECOMMENDED CIRCUITS

Figure 3

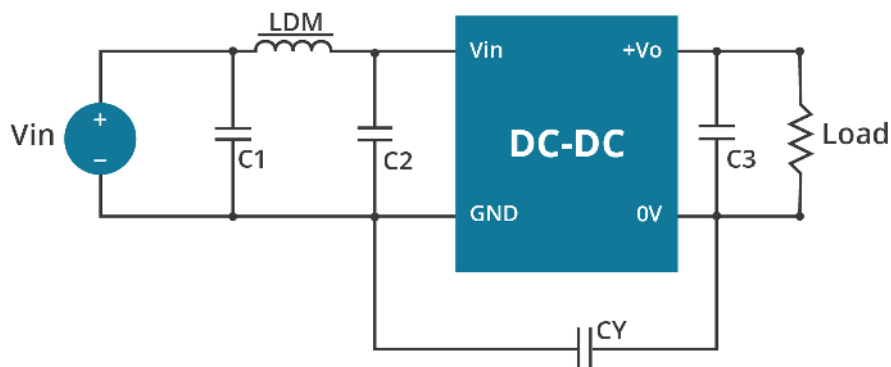


Table 1

Recommended EMC Filter Values					
Model	C1	C2	CY	C3	LDM
PRMCE1-S5-S3-S	4.7μF /25V	4.7μF /25V	--	see Cout in table 1	6.8μH
PRMCE1-S5-S5-S	4.7μF /25V	4.7μF /25V	--	see Cout in table 1	6.8μH
PRMCE1-S5-S9-S	4.7μF /25V	4.7μF /25V	--	see Cout in table 1	6.8μH
PRMCE1-S5-S12-S	4.7μF /25V	4.7μF /25V	1nF/4KVDC	see Cout in table 1	6.8μH
PRMCE1-S5-S15-S	4.7μF /25V	4.7μF /25V	1nF/4KVDC	see Cout in table 1	6.8μH
PRMCE1-S5-S24-S	4.7μF /25V	4.7μF /25V	1nF/4KVDC	see Cout in table 1	6.8μH
all other models	4.7μF /50V	4.7μF /50V	270pF/3KVDC	see Cout in table 1	6.8μH

## REVISION HISTORY

rev.	description	date
1.0	initial release	03/09/2020
1.01	derating curve and circuit figures updated	07/06/2021
1.02	datasheet updated	09/16/2021
1.03	datasheet updated	10/06/2021
1.04	CE certification updated	11/29/2022

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



**Headquarters**  
20050 SW 112th Ave.  
Tualatin, OR 97062  
**800.275.4899**

Fax 503.612.2383  
**cui.com**  
techsupport@cui.com

CUI offers a two (2) year limited warranty. Complete warranty information is listed on our website.

CUI reserves the right to make changes to the product at any time without notice. Information provided by CUI is believed to be accurate and reliable. However, no responsibility is assumed by CUI for its use, nor for any infringements of patents or other rights of third parties which may result from its use.

CUI products are not authorized or warranted for use as critical components in equipment that requires an extremely high level of reliability. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.