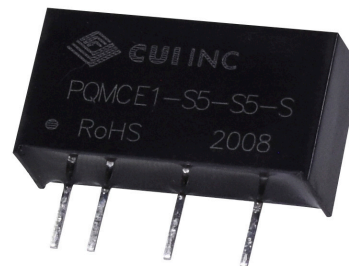


**SERIES:** PQMCE1-S | **DESCRIPTION:** DC-DC CONVERTER

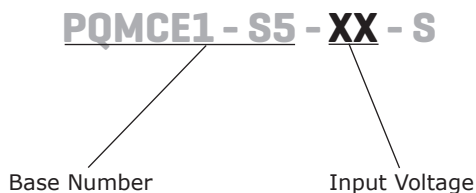
**FEATURES**

- 1W isolated output
- 1500 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, EN 62368, IEC 62368 Approval



MODEL	Certifications	input voltage typ (Vdc)	output voltage (Vdc)	output current max (mA)	output power max (W)	ripple and noise max (mVp-p)	efficiency typ (%)
PQMCE1-S5-S3-S	-	5	3.3	250	.83	75	67
PQMCE1-S5-S5-S	UL/CE/CB	5	5	200	1	75	70
PQMCE1-S5-S9-S	UL/CE/CB	5	9	110	1	75	71
PQMCE1-S5-S12-S	UL/CE/CB	5	12	84	1	75	72
PQMCE1-S5-S15-S	UL/CE/CB	5	15	67	1	75	73
PQMCE1-S5-S24-S	CE	5	24	41	1	100	73

**PART NUMBER KEY**



**INPUT**

parameter	conditions/description	min	typ	max	units
input voltage		4.75	5	5.25	Vdc
filter	capacitance filter				
current	(full load / no-load)				
	3.3 Vdc / 5 Vdc output		286/5	303/10	mA
	9 Vdc / 12 Vdc output		282/12	299/20	mA
	15 Vdc / 24 Vdc output		274/18	290/30	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	%
	others, 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 to output electric strength test for 1 minute with a leakage current of 1mA max	1500			Vdc
isolation resistance	input to output resistance at 500 Vdc	1000			MΩ
isolation capacitance	input to output capacitance at 100 KHz / 0.1 V		20		pF
safety approvals	UL62368/EN62368/IEC62368 approval (he 3.3V is not included; and 24V only EN62368)				
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 @ 25°C	3500			k Hours

## 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

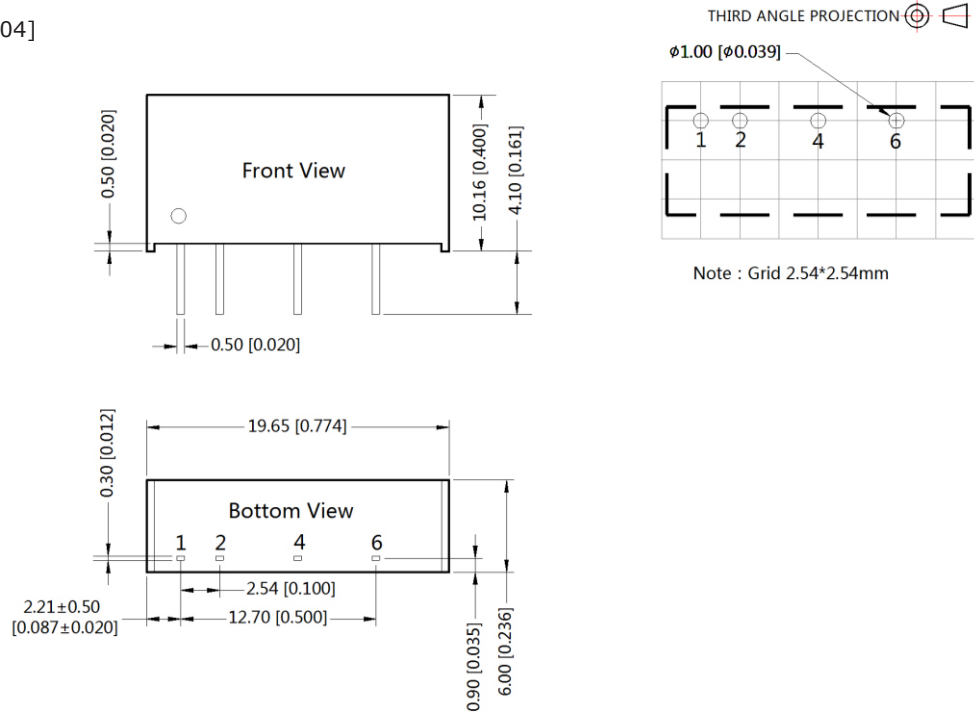
## MECHANICAL DRAWING

units: mm [inches]

tolerance:  $\pm 0.25$  [ $\pm 0.010$ ]

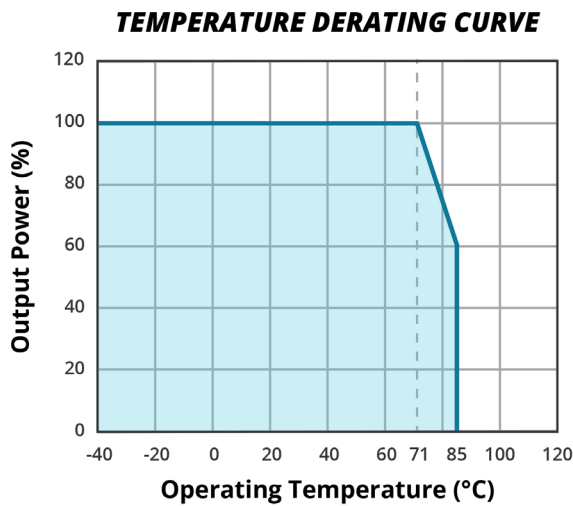
pin section tolerances:  $\pm 0.10$  [ $\pm 0.004$ ]

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

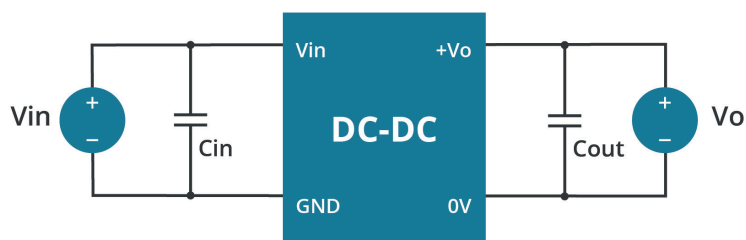


Table 1

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

## EMC RECOMMENDED CIRCUITS

Figure 3

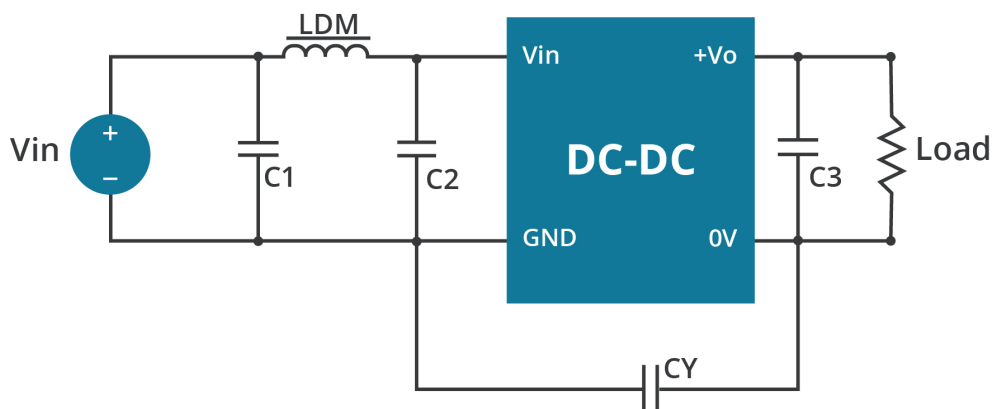


Table 2

Recommended EMC Filter Values					
Model	C1	C2	CY	C3	LDM
PQMCE1-S5-S3-S	4.7μF /25V	4.7μF /25V	--	see Cout in table 1	6.8μH
PQMCE1-S5-S5-S	4.7μF /25V	4.7μF /25V	--	see Cout in table 1	6.8μH
PQMCE1-S5-S9-S	4.7μF /25V	4.7μF /25V	--	see Cout in table 1	6.8μH
PQMCE1-S5-S12-S	4.7μF /25V	4.7μF /25V	1nF/4KVdc	see Cout in table 1	6.8μH
PQMCE1-S5-S15-S	4.7μF /25V	4.7μF /25V	1nF/4KVdc	see Cout in table 1	6.8μH
PQMCE1-S5-S24-S	4.7μF /25V	4.7μF /25V	1nF/4KVdc	see Cout in table 1	6.8μH

## REVISION HISTORY

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rev.	description	date
1.0	initial release	03/09/2020
1.01	datasheet update	12/14/2020
1.03	derating curve and circuit figures updated	06/30/2021

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



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