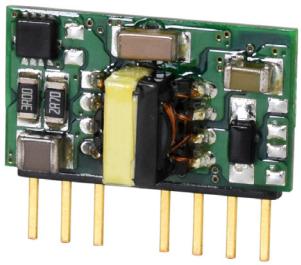
SERIES: PQQC3-OS | **DESCRIPTION:** DC-DC CONVERTER

FEATURES

- 3W isolated output
- single regulated output
- compact, open-frame design
- 1,500 Vdc isolation
- input under-voltage, output over-current and short circuit protection
- remote on/off control
- EN/BS EN 62368 certified

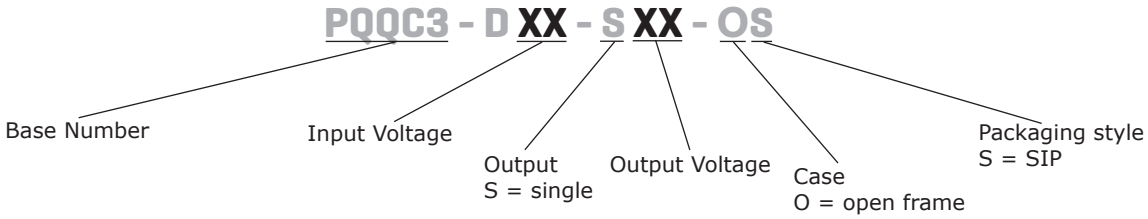


MODEL

	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 (%)
PQQC3-D48-S5-OS	48	36 ~ 75	5	0	600	3	200	80
PQQC3-D48-S12-OS	48	36 ~ 75	12	0	250	3	200	81
PQQC3-D48-S15-OS	48	36 ~ 75	15	0	200	3	200	82
PQQC3-D48-S24-OS	48	36 ~ 75	24	0	125	3	200	82

Notes: 1. Ripple and noise are measured at 20 MHz BW, 5%~100% load.
2. At full load.

PART NUMBER KEY



INPUT

parameter	conditions/description	min	typ	max	units
operating input voltage		36	48	75	Vdc
start-up voltage				36	Vdc
surge voltage	for maximum of 1 second	-0.7		80	Vdc
current	full load / no load		78/4	80/12	mA
start-up current				500	mA
under voltage protection		25	28		Vdc
input filter	capacitance filter				
CTRL	module on: CTRL pin open or pulled high (3.5~12 Vdc) module off: CTRL pin pulled low to GND (0~1.2 Vdc) CTRL pin current when pulled low		3	10	mA

OUTPUT

parameter	conditions/description	min	typ	max	units
maximum capacitive load	5 Vdc output 12 Vdc output 15 Vdc output 24 Vdc output			1,000 470 330 100	µF µF µF µF
voltage accuracy	5%~100% load		±1	±3	%
line regulation	input voltage from low to high, full load		±0.5	±1	%
load regulation[3]	5%~100% load		±0.5	±1.5	%
switching frequency[4]	PWM mode		460		kHz
transient recovery time	25% load step change, nominal input voltage		300	500	µs
transient response deviation	25% load step change, nominal input voltage 5 Vdc output all other outputs		 ±5 ±2.5	 ±8 ±5	 % %
temperature coefficient	at full load			±0.03	%/°C

Notes: 3. Load regulation for 0%~5% load is ±3%.
4. Measured at full load. The module reduces the switching frequency for light load (below 50%) efficiency improvement.

PROTECTIONS

parameter	conditions/description	min	typ	max	units
over current protection		110	160	250	%
short circuit protection	continuous, auto recovery				

SAFETY AND COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	input to output, for 1 minute, 1 mA max	1,500			Vdc
isolation resistance	input to output at 500 Vdc	1,000			MΩ
isolation capacitance	input to output, 100 kHz / 0.1 V		2,200		pF
safety approvals	certified to 62368-1: EN, BS EN				
conducted emissions	CISPR32/EN55032 CLASS B (see Fig. 2-2 for recommended circuit)				
radiated emissions	CISPR32/EN55032 CLASS B (see Fig. 2-2 for recommended circuit)				
ESD	IEC/EN61000-4-2 Contact ±4kV, perf. Criteria B				
radiated immunity	IEC/EN61000-4-3 10V/m, perf. Criteria A				
EFT/burst	IEC/EN61000-4-4 ±2kV (see Fig. 2-1 for recommended circuit), perf. Criteria B				
surge	IEC/EN61000-4-5 ±2kV (see Fig. 2-1 for recommended circuit), perf. Criteria B				
conducted immunity	IEC/EN61000-4-6 3 Vr.m.s, perf. Criteria A				
MTBF	as per MIL-HDBK-217F, 25°C	1,000			K hours
RoHS	yes				

ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
operating temperature	see derating curve	-40		85	°C
storage temperature		-55		125	°C
storage humidity	non-condensing	5		95	%
vibration	10-150Hz, 5G, 0.75mm. along X, Y and Z				

SOLDERABILITY

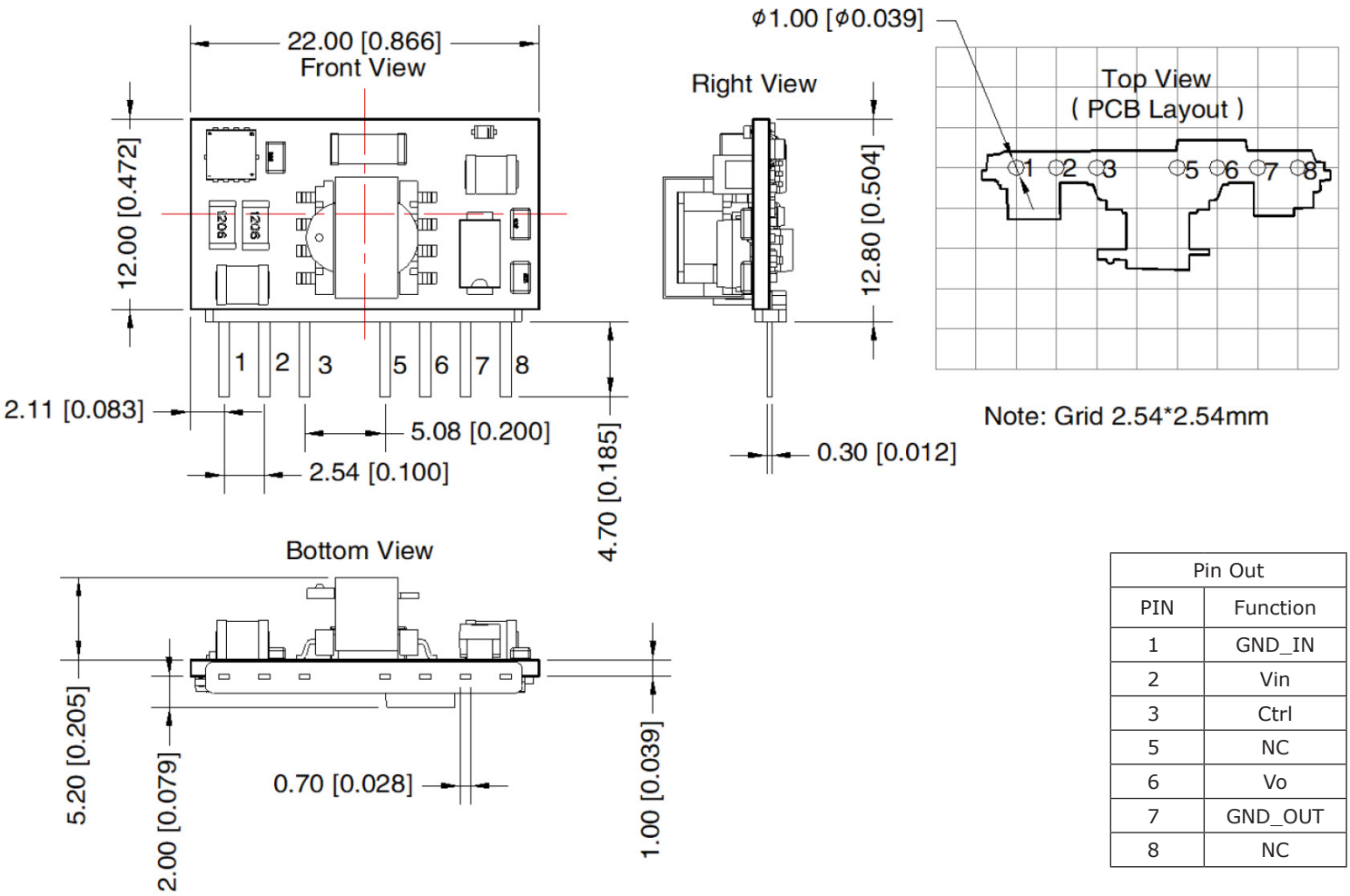
parameter	conditions/description	min	typ	max	units
pin soldering resistance temperature	1.5 mm away from case for 10 seconds			260	°C

MECHANICAL

parameter	conditions/description	min	typ	max	units
dimensions	22.00 × 8.20× 12.80 [0.866 x 0.323 x 0.504 inch]				mm
weight			2.2		g
cooling method	natural convection				

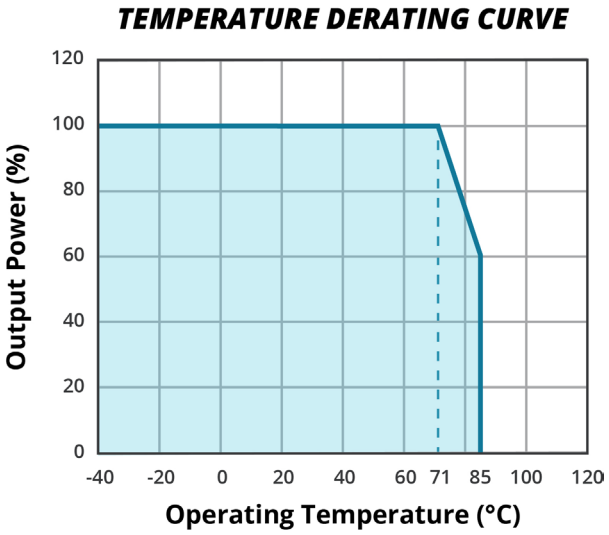
MECHANICAL DRAWING

units: mm [inch]
general tolerance: ±0.50[±0.020]



Pin Out	
PIN	Function
1	GND_IN
2	Vin
3	Ctrl
5	NC
6	Vo
7	GND_OUT
8	NC

DERATING CURVE



APPLICATION CIRCUIT

All the DC/DC converters of this series are tested before delivery using the recommended circuit shown in Fig. 1. Input and/or output ripple can be further reduced by appropriately increasing the input & output capacitor values Cin and Cout and/or by selecting capacitors with a low ESR (equivalent series resistance). Also make sure that the capacitance is not exceeding the specified max. capacitive load value of the product.

Figure 1

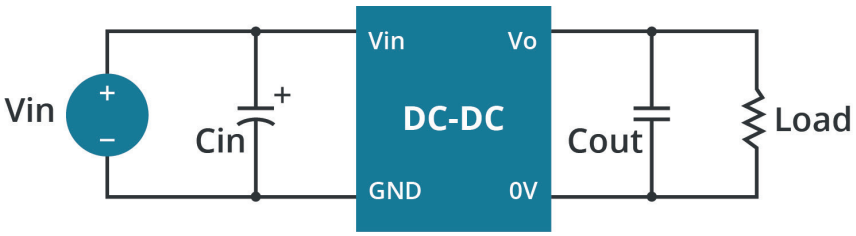
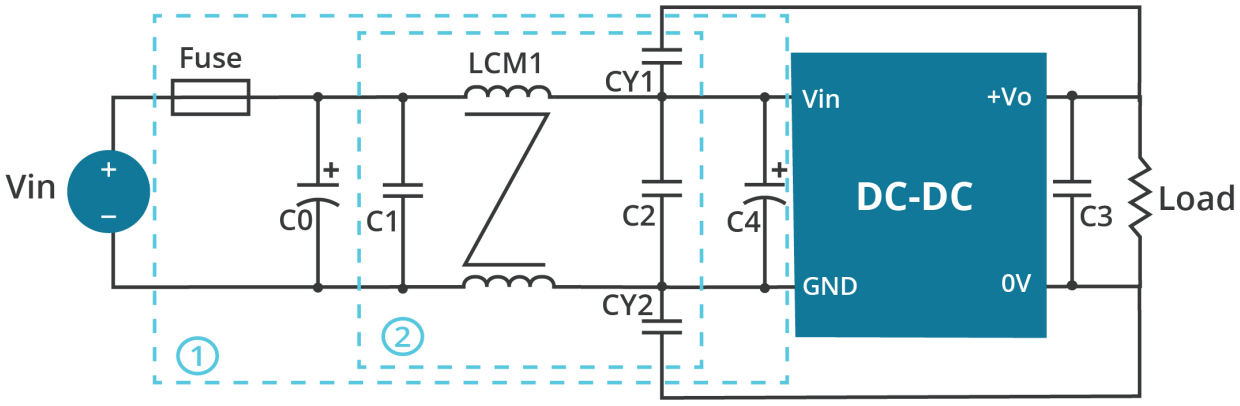


Table 1

Cin (µF/V)	Co (µF/V)
100 µF / 100 V	22 µF / 50 V

EMC RECOMMENDED CIRCUIT

Figure 2



Note: For EMC tests part ① was used for imunity and part ② for emissions test. Selecting based on needs.

Table 2

Model	Vin:48V
FUSE	Choose according to actual input current
C0, C4	470µF/100V
C1, C2	10µF/100V
C3	22µF/100V
LCM1	4.22mH
CY1, CY2	1nF/400Vac

REVISION HISTORY

rev.	description	date
1.0	initial release	11/10/2022

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

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