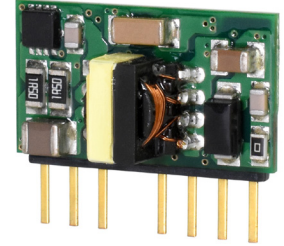


SERIES: PQQC6-OS | **DESCRIPTION:** DC-DC CONVERTER

FEATURES

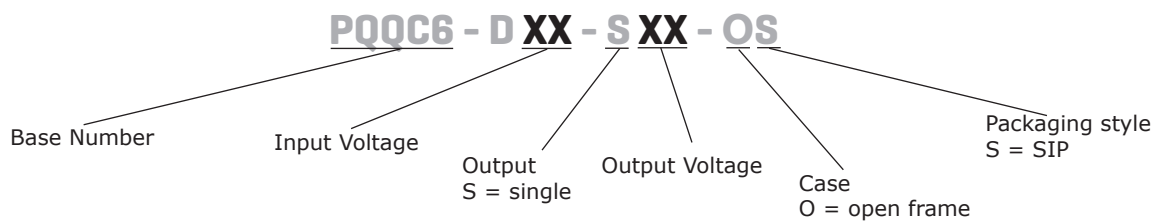
- 6W isolated output
- single regulated output
- compact, open-frame design
- 1,500 Vdc isolation
- input under-voltage, output over-current and short circuit protection
- remote on/off control
- EN/BS EN 62368 certified



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 (%)
PQQC6-D48-S5-OS	48	36 ~ 75	5	0	1200	6	200	81
PQQC6-D48-S12-OS	48	36 ~ 75	12	0	500	6	200	83
PQQC6-D48-S15-OS	48	36 ~ 75	15	0	400	6	200	84
PQQC6-D48-S24-OS	48	36 ~ 75	24	0	250	6	200	85

Notes: 1. Ripple & Noise at <5% load is 350mV max. The "parallel cable" method is used for Ripple and Noise test, please refer to the Application notes for specific information.
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		155/3	159/12	mA
reflective ripple current			50		mA
under voltage protection		25	28		Vdc
input filter	capacitance filter				
CTRL ³	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

Notes: 3. The voltage of CTRL pin is relative to input pin GND.

OUTPUT

parameter	conditions/description	min	typ	max	units
maximum capacitive load	5 Vdc output			1,000	μF
	12 Vdc output			470	μF
	15 Vdc output			330	μF
	24 Vdc output			100	μF
voltage accuracy ⁴	5%~100% load		±1	±3	%
line regulation	input voltage from low to high, full load		±0.5	±1	%
load regulation	0%~100% load		±0.5	±1.5	%
switching frequency ⁵	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		±5	±8	%
	all other outputs		±2.5	±5	%
temperature coefficient	at full load			±0.03	%/°C

Notes: 4. Output voltage accuracy at <5% load is ±4% max.

5. 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		1,000		pF
safety approvals	certified to 62368-1: EN, BS EN				
conducted emissions	CISPR32/EN55032 CLASS B (see Fig. 3-2 for recommended circuit)				
radiated emissions	CISPR32/EN55032 CLASS B (see Fig. 3-2 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. 3-1 for recommended circuit), perf. Criteria B				
surge	IEC/EN61000-4-5 ±2kV (see Fig. 3-1 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

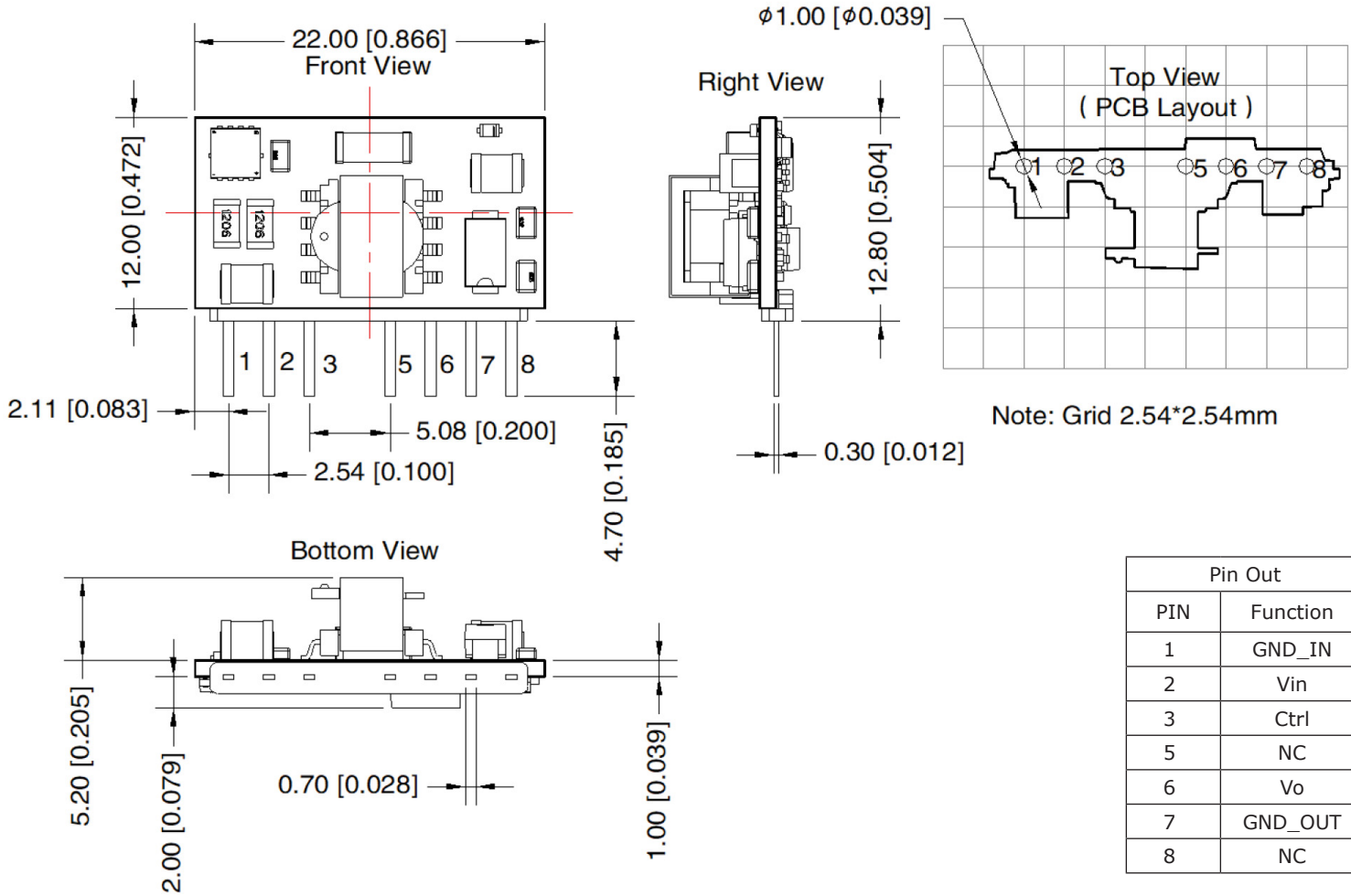
parameter	conditions/description	min	typ	max	units
pin soldering resistance temperature	1.5 mm away from case for 10 seconds			260	°C

MECHANICAL

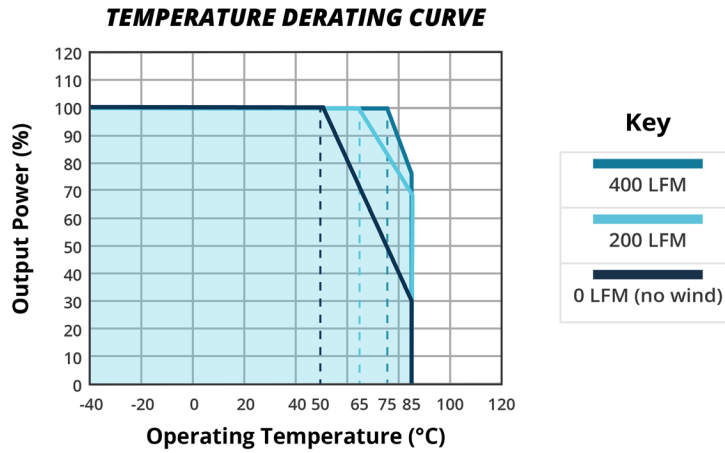
parameter	conditions/description	min	typ	max	units
dimensions	22.00 × 8.20 × 12.80 [0.866 × 0.323 × 0.504 inch]				mm
weight			2.2		g
cooling method	natural convection				

MECHANICAL DRAWING

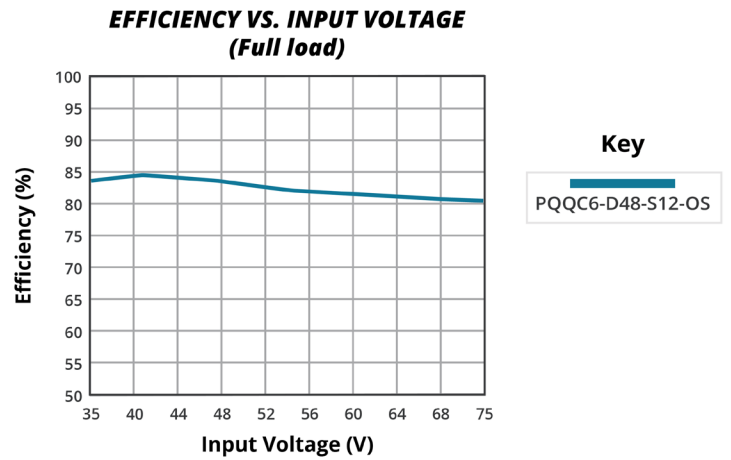
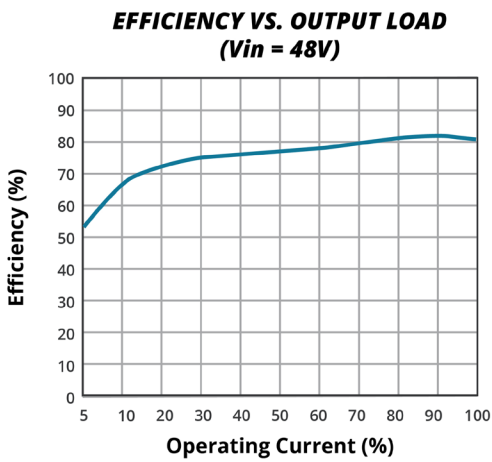
units: mm [inch]
 general tolerance: ±0.50[±0.020]



DERATING CURVE



EFFICIENCY CURVES



APPLICATION CIRCUIT

All 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 C_{in} and C_{out} 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.

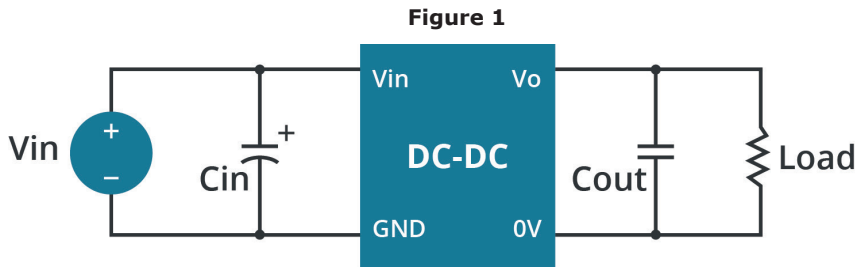


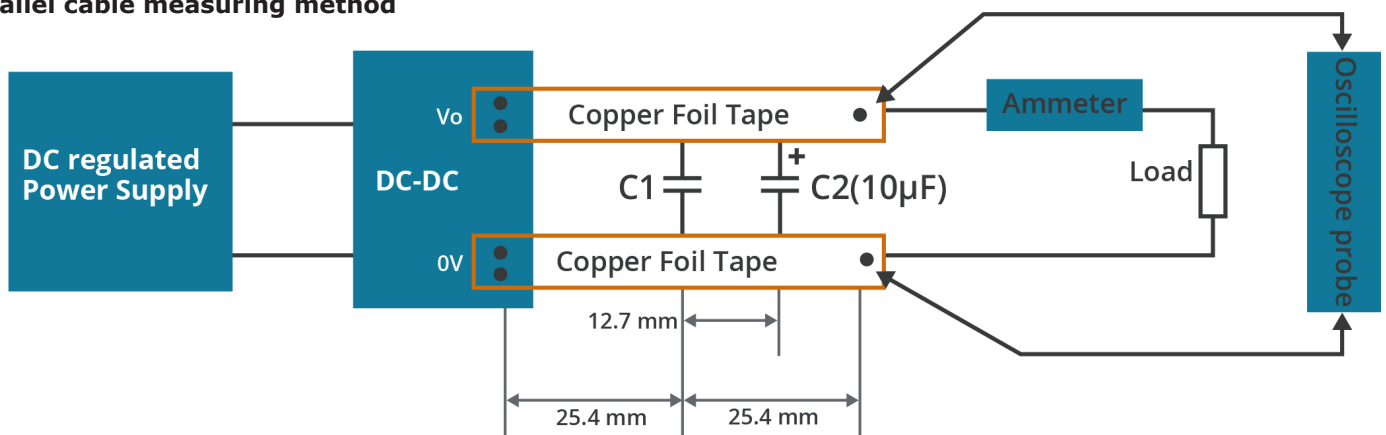
Table 1

C_{in} ($\mu\text{F}/\text{V}$)	C_o ($\mu\text{F}/\text{V}$)
10-47 μF / 100 V	10 μF / 50 V

MEASURING RIPPLE AND NOISE

Figure 2

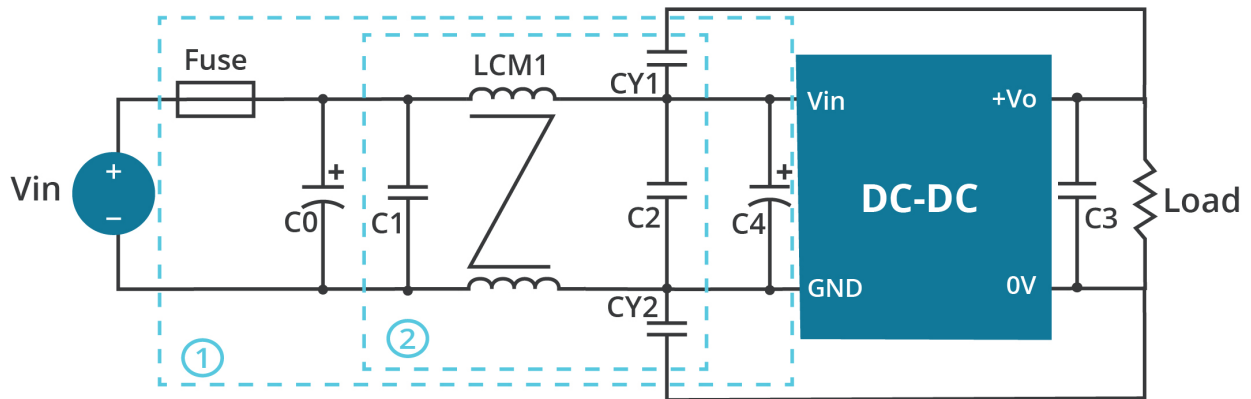
Parallel cable measuring method



- Notes:
- C1: Ceramic capacitor with $1\mu\text{F}$ capacitance.
 - C2: Capacitor suitable for fixed input products. Please refer to datasheet. Normally $10\mu\text{F}$ is recommended.
 - Distance between two paralleled copper foils is 2.5mm of which the sum of voltage drops should be less than 2% of nominal voltage.

EMC RECOMMENDED CIRCUIT

Figure 3



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

Table 2

Model	Vin:48V
FUSE	Choose according to actual input current
C0, C4	470 μ F/100V
C1, C2	4.7 μ F/100V
C3	10 μ F/100V
LCM1	4.7mH
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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