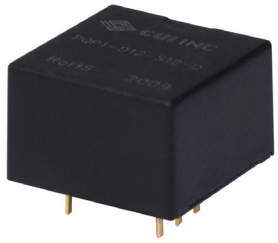
CUI INC
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SERIES: PQP1-D | DESCRIPTION: DC-DC CONVERTER

FEATURES

- wide 2:1 input range
- single and Dual output options
- 1500 Vdc isolation
- industry standard pin-out
- ultra compact DIP package
- short circuit protection (continuous)
- wide operating temp: -40°C to +85°C
- supports negative output (dual output model)
- designed to meet EN/BS EN 62368



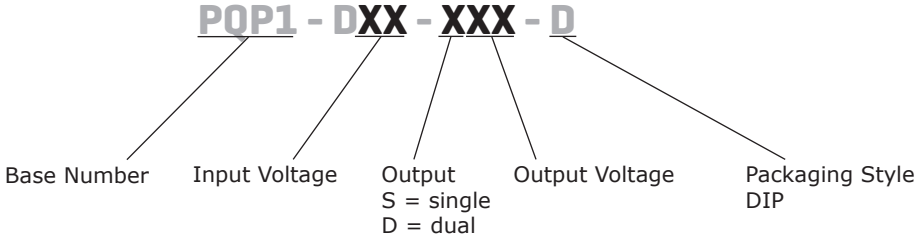
RoHS

MODEL

MODEL	input voltage typ (Vdc)	input voltage range (Vdc)	output voltage (Vdc)	output current min (mA)	output current max (mA)	output power max (W)	ripple and noise[1] max (mVp-p)	efficiency typ (%)
PQP1-D12-S3-D	12	9~18	3.3	15	303	1	150	75
PQP1-D12-S5-D	12	9~18	5	10	200	1	150	77
PQP1-D12-S12-D	12	9~18	12	4	83	1	150	79
PQP1-D12-S15-D	12	9~18	15	3	67	1	150	80
PQP1-D12-S24-D	12	9~18	24	2	42	1	150	76
PQP1-D24-S3-D	24	18~36	3.3	15	303	1	100	75
PQP1-D24-S5-D	24	18~36	5	10	200	1	100	77
PQP1-D24-S12-D	24	18~36	12	4	83	1	100	78
PQP1-D24-S15-D	24	18~36	15	3	67	1	100	78
PQP1-D24-S24-D	24	18~36	24	2	42	1	100	77
PQP1-D12-D5-D	12	9~18	±5	±5	±100	1	150	77
PQP1-D12-D9-D	12	9~18	±9	±2.8	±56	1	150	80
PQP1-D12-D12-D	12	9~18	±12	±2.1	±42	1	150	80
PQP1-D12-D15-D	12	9~18	±15	±1.7	±33	1	150	77
PQP1-D24-D5-D	24	18~36	±5	±5	±100	1	100	77
PQP1-D24-D9-D	24	18~36	±9	±2.8	±56	1	100	77
PQP1-D24-D12-D	24	18~36	±12	±2.1	±42	1	100	77
PQP1-D24-D15-D	24	18~36	±15	±1.7	±33	1	100	77

Notes: 1. Ripple & noise testing condition at nominal input voltage and 5%-100% load, the "tip and barrel" method is used for ripple and noise test, please refer to DC-DC Converter Application Notes for specific information.

PART NUMBER KEY



INPUT

parameter	conditions/description	min	typ	max	units
input voltage	12 Vdc input models 24 Vdc input models	9 18	12 24	18 36	Vdc Vdc
start-up voltage	12 Vdc input models 24 Vdc input models			9 18	Vdc Vdc
surge voltage	for maximum of 1 second 12 Vdc input models 24 Vdc input models	 -0.7 -0.7		 25 50	 Vdc Vdc
filter	capacitance filter				
current	full load/no load 12 Vdc input models 24 Vdc input models		 111/15 55/6	 114/30 57/10	 mA mA

OUTPUT

parameter	conditions/description	min	typ	max	units
line regulation	min to max Vin positive output negative output		 ±0.2 ±0.5	 ±0.5 ±1	 % %
load regulation	5% ~ 100% load positive output negative output		 ±0.5	 ±1 ±2	 % %
set-point accuracy	5% ~ 100% load positive outputs negative outputs		 ±1 ±3	 ±3 ±5	 % %
switching frequency	full load, nominal input		300		kHz
transient response	25% load step change		±3	±5	%
temperature coefficient	full load			±0.03	%/°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	1500			Vdc
isolation resistance	input-output insulation at 500 Vdc	1000			MΩ
isolation capacitance	input-output capacitance at 100 KHz / 0.1 V		100		pF
safety approvals	designed to meet 62368: EN/BS EN				
EMC	CISPR32/EN55032 Class B (see recommended circuit)				
ESD	IEC/EN61000-4-2, Contact ±6K, perf. Criteria B				
radiated immunity	IEC/EN61000-4-3, 10 v/m, perf. Criteria A				
EFT/burst	IEC/EN61000-4-4, ±2KV, perf. Criteria B (see recommended circuit)				
surge	IEC/EN61000-4-5, line to line ±2KV, perf. Criteria B (see recommended circuit)				
conducted immunity	IEC/EN61000-4-6 3 Vrms, perf. Criteria A				
RoHS	yes				
MTBF	MIL-HDBK-217F @ 25°C	1000			kHours

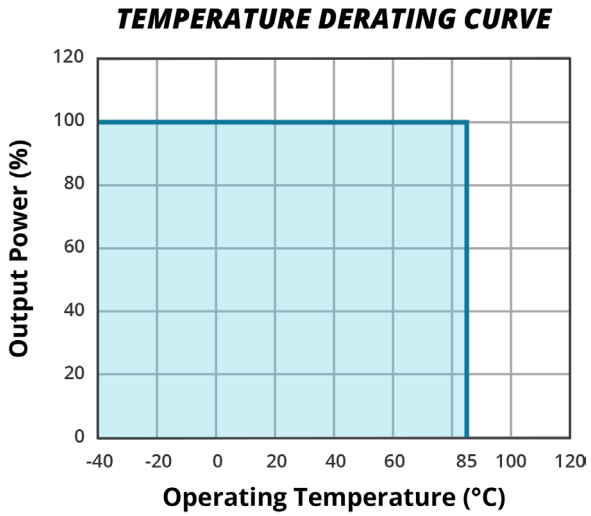
ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
operating temperature		-40		85	°C
storage temperature		-55		125	°C
humidity	non-condensing	5		95	%

SOLDERABILITY

parameter	conditions/description	min	typ	max	units
hand soldering	1.5 mm from case for 10 seconds			300	°C
reflow soldering	60 s max above 217°C			217	°C

DERATING CURVE



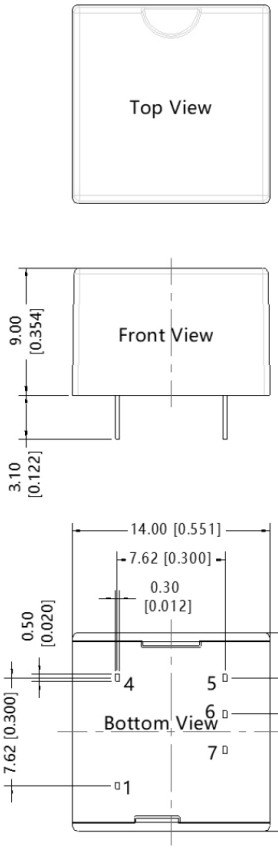
MECHANICAL

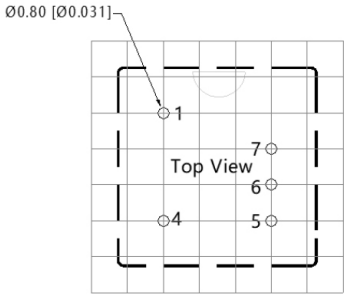
parameter	conditions/description	min	typ	max	units
dimensions	14 x 14 x 9				mm
case material	Black plastic; flame-retardant and heat-resistant				
weight			2.2		g

MECHANICAL DRAWING

units: mm [inches]
tolerance: ± 0.50 [±0.020]

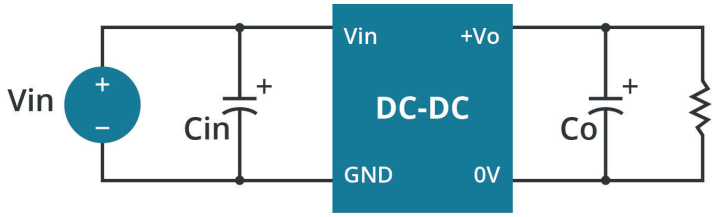
PIN CONNECTIONS		
PIN	Single	Dual
1	GND	GND
4	Vin	Vin
5	+Vo	+Vo
6	NC	0V
7	0V	-Vo





Note: Grid 2.54*2.54mm

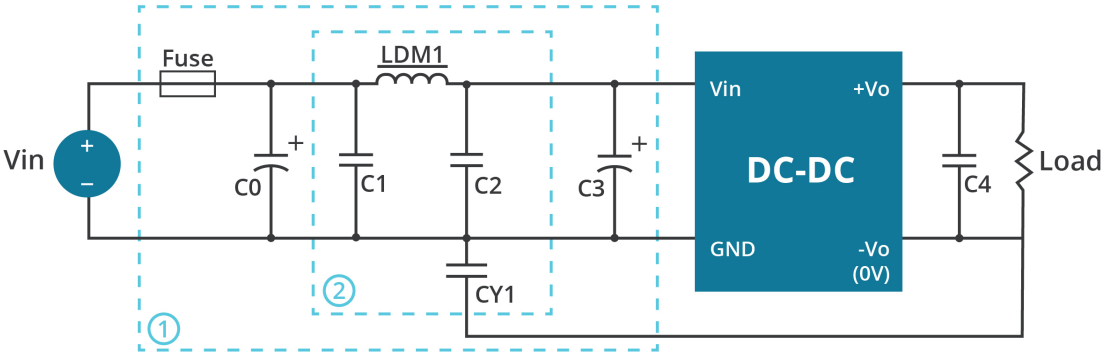
RECOMMENDED CIRCUITS



Parameter Description		
Vin (Vdc)	12	24
Cin	47uF/25V	47uF/50V

Vo (Vdc)	3.3, 5	12, 15, 24
Cout	100uF/6.3V	27uF/35V

EMC COMPLIANCE CIRCUITS



Parameter Description		
Part No.	Vin: 12 Vdc	Vin: 24 Vdc
FUSE	slow blow, choose according to actual input current	
C0	1000μF/25V	680μF/50V
C1	4.7μF/50V	
LDM1	15μH	
C2	4.7μF/50V	
C3	330μF/50V	
CY1	1nF/2KV	
C4	Refer to the Cout Fig.2	

REVISION HISTORY

rev.	description	date
1.0	initial release	03/28/2020
1.01	measurements updated	10/30/2020
1.02	derating curve and circuit figures updated	06/30/2021
1.03	CE certification removed	11/22/2022

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

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

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