SERIES: PQD10W-D | **DESCRIPTION:** DC-DC CONVERTER

FEATURES

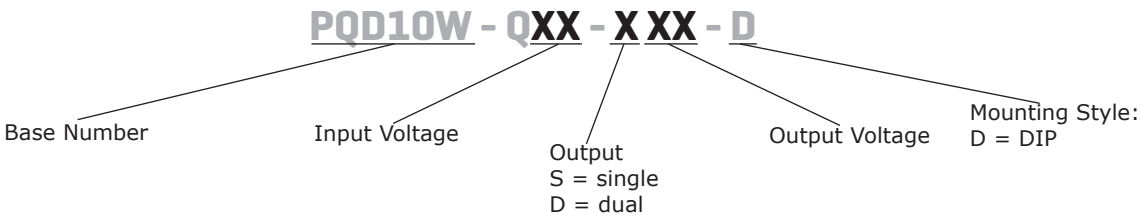
- ultrawide 4:1 input range
- dual positive output with asymmetrical options
- industry standard pinout
- 1500 Vdc isolation
- input under-voltage protection
- output short circuit, over current, and over-voltage protection
- wide operating temp: -40°C to +85°C
- EN 62368 approved

MODEL

	input voltage		output voltage Vo1/Vo2	output current Vo1/Vo2		output power	ripple & noise[1]	efficiency[2]	
	typ (Vdc)	range (Vdc)	(Vdc)	min (mA)	max (mA)	max (W)	max (mVp-p)	min (%)	typ (%)
PQD10W-Q48-D55-D	48	18~75	5/5	0/0	1000/1000	10	150	81	84
PQD10W-Q48-D512-D	48	18~75	5/12	0/0	1000/417	10	150	82	84
PQD10W-Q48-D524-D	48	18~75	5/24	0/0	1000/209	10	150	82	84

Notes: 1. From 5~100% load, nominal input, 20 MHz bandwidth oscilloscope, with 10 µF tantalum and 1 µF ceramic capacitors on the output. From 0~5% load, ripple and noise is <5% Vo.
2. Measured at nominal input voltage and rated output load.

PART NUMBER KEY



INPUT

parameter	conditions/description	min	typ	max	units
operating input voltage		18	48	75	Vdc
start-up voltage				18	Vdc
surge voltage	for maximum of 1 second	-0.7		100	Vdc
current	full load / no load, nominal input voltage		248/4	258/10	mA
filter	Pi filter				
CTRL[3]	module on (CTRL open or puled high 3.5~12 Vdc) module off (CTRL puled low or to gnd 0~1.2 Vdc)				

Note 3: CTRL is referenced to GND

OUTPUT

parameter	conditions/description	min	typ	max	units
maximum capacitive load	5 V output 12 V output 24 V output			1,000 470 100	µF µF µF
voltage accuracy	0% to full load, Vo1 input voltage, any balanced load, Vo2		±1 ±3	±3 ±6	% %
line regulation	from low line to high line, full load Vo1 Vo2		 ±0.3 ±2	 ±0.5 ±3	 % %
load regulation	from 10% to full load, dual output, balanced power Vo1 Vo2		 ±0.5 ±3	 ±1 ±6	 % %
switching frequency	PWM mode		300		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	±8	%
temperature coefficient	at full load			±0.03	%/°C

PROTECTIONS

parameter	conditions/description	min	typ	max	units
over voltage protection		110		160	%Vo
over current protection		110	150	200	%
short circuit protection	continuous, self recovery				
input under voltage protection		12	15.5		Vdc

SAFETY AND COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	input to output for 1 minute at 1 mA output to output for 1 minute at 1 mA	1,500 500			Vdc 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	EN/IEC 62368				
EMI/EMC	EN 55032: 2015 Class B, EN 55024: 2010+A1: 2015 (see recommended circuit)				
ESD	IEC/EN61000-4-2, Contact ±4KV / Air ±6KV, perf. Criteria B				
radiated immunity	IEC/EN61000-4-3, 10V/m, perf. Criteria A				
EFT/burst	IEC/EN61000-4-4, ±2KV (see recommended circuit), perf. Criteria B				
surge	IEC/EN61000-4-5, line to line ±2KV (see recommended circuit), perf. Criteria B				
conducted immunity	IEC/EN61000-4-6, 10 Vr.m.s, perf. Criteria A				
MTBF	as per MIL-HDBK-217F, 25°C	1000			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		5		G

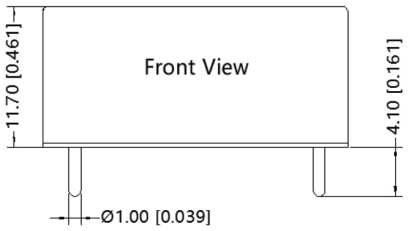
MECHANICAL

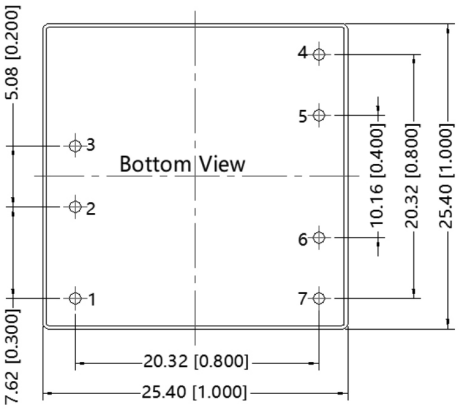
parameter	conditions/description	min	typ	max	units
dimensions	25.40 x 25.40 x 11.70 [1.000 x 1.000 x 0.461 inch]				mm
case material	aluminum alloy				
weight			13		g

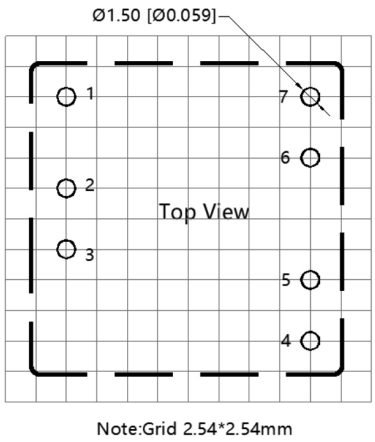
MECHANICAL DRAWING

units: mm [inch]
tolerance: ±0.50[±0.020]
pin diameter tolerance: ±0.10[±0.004]

PIN Out	
PIN	Function
1	Ctrl
2	GND
3	Vin
4	+Vo2
5	0V2
6	0V1
7	+Vo1

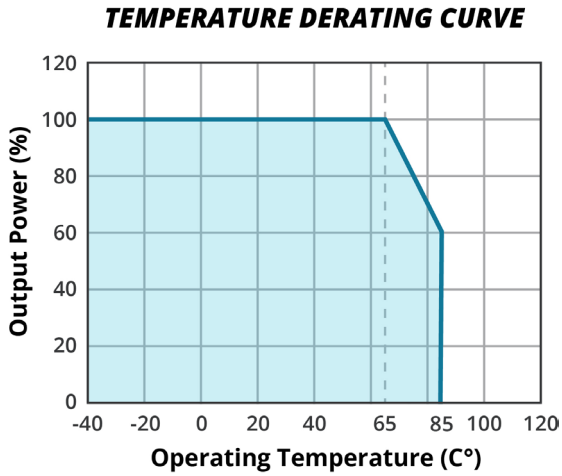






Note:Grid 2.54*2.54mm

DERATING CURVE



APPLICATION CIRCUIT

All the DC-DC converters of this series are tested before delivery using the recommended circuit shown in Fig. 2. 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 max. capacitive load value of the product.

Figure 2

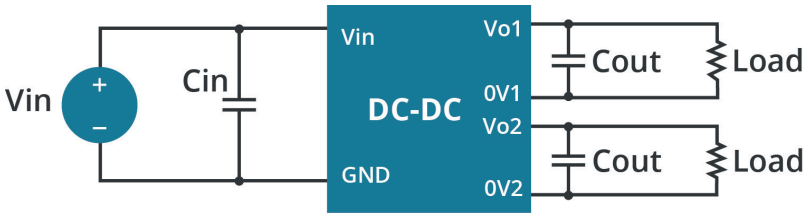


Table 1

Vout (Vdc)	Cin (μF)	Cout (μF)
5	100	100
12	100	22
24	100	22

EMC RECOMMENDED CIRCUIT

Figure 3

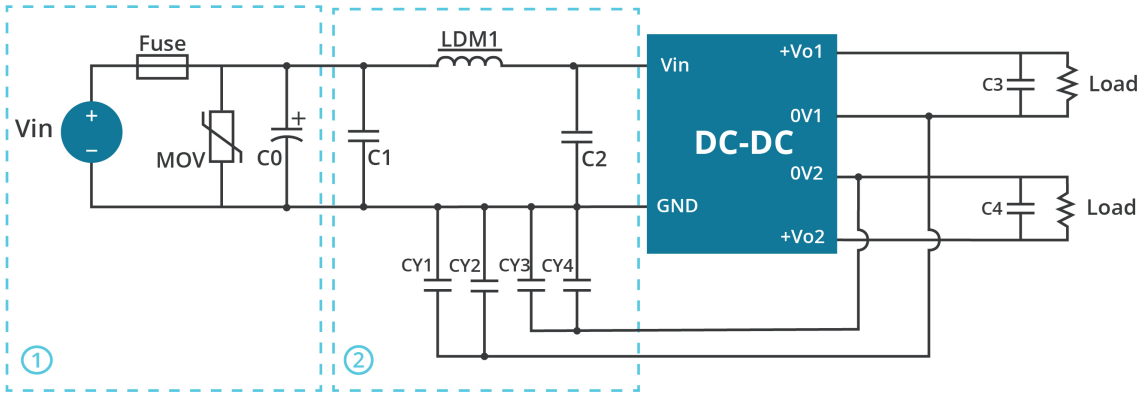


Table 2

Recommended External Circuit Components	
Model	Vin: 48V
FUSE	Choose according to actual input current
MOV	S14K60
C0	330μF/100V
C1/C2	4.7μF/100V
C3/C4	Refer to the Cout in Fig.2
LDM1	15uH
CY1, CY2, CY3, CY4	2.2nF/2000V

REVISION HISTORY

rev.	description	date
1.0	initial release	06/29/2020
1.01	derating curve and circuit figures updated	07/22/2021
1.02	max input voltage updated	03/13/2023

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

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