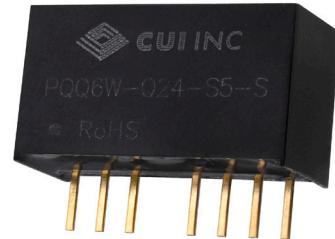


**SERIES:** PQQ6W-S | **DESCRIPTION:** DC-DC CONVERTER

**FEATURES**

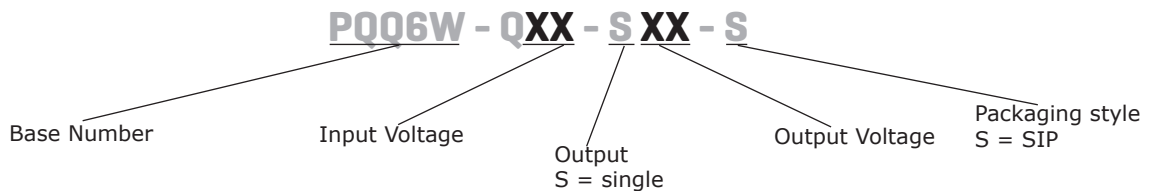
- 6W isolated output
- ultra wide 4:1 input range
- single regulated output
- high efficiency up to 87%
- short circuit and over-current protection
- 1,600 Vdc isolation
- operating temperature -40°C ~ 105°C
- EN 62368 approved
- control pin



MODEL	input voltage		output voltage	output current		output power	ripple & noise <sup>1</sup>	efficiency <sup>2</sup>
	typ (Vdc)	range (Vdc)	(Vdc)	min (mA)	max (mA)	max (W)	max (mVp-p)	typ (%)
PQQ6W-Q24-S3-S	24	9~36	3.3	0	1,350	4	100	78
PQQ6W-Q24-S5-S	24	9~36	5.0	0	1,200	6	100	82
PQQ6W-Q24-S9-S	24	9~36	9.0	0	667	6	100	84
PQQ6W-Q24-S12-S	24	9~36	12.0	0	500	6	100	86
PQQ6W-Q24-S15-S	24	9~36	15.0	0	400	6	100	87
PQQ6W-Q24-S24-S	24	9~36	24.0	0	250	6	100	85

Notes: 1. Ripple and noise are measured at 20 MHz BW by "parallel cable" method. See Figure 3.  
2. At nominal input voltage.

**PART NUMBER KEY**



**INPUT**

parameter	conditions/description	min	typ	max	units
operating input voltage		9	24	40	Vdc
start-up voltage				9	Vdc
surge voltage	for maximum of 1 second	-0.7		50	Vdc
current	full load / no load				
	3.3 Vdc output		283/5	245/12	mA
	5 Vdc output		305/5	313/12	mA
	other outputs		305/10	313/16	mA
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)				

**OUTPUT**

parameter	conditions/description	min	typ	max	units
maximum capacitive load	3.3 Vdc output			1,800	μF
	5 Vdc output			1,000	μF
	9 & 12 Vdc output			470	μF
	15 Vdc output			220	μF
	24 Vdc output			100	μF
voltage accuracy				±2	%
line regulation				±1	%
load regulation	5%~100% load			±1.5	%
switching frequency	PWM mode		500		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 current protection		110		230	%
short circuit protection	continuous, auto recovery				

## SAFETY AND COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	input to output, for 1 minute with 1 mA max	1,600			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				
EMI/EMC	CISPR32/EN 55032 Class B (see recommended circuit)				
ESD	IEC/EN 61000-4-2 Contact ±4kV, perf. Criteria B				
radiated immunity	IEC/EN61000-4-3 10V/m, perf. Criteria A				
EFT/burst	IEC/EN61000-4-4 ±2KV (see 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 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		105	°C
storage temperature		-55		125	°C
storage humidity	non-condensing	5		95	%
vibration	10-150Hz, 5G, 0.75mm. along X, Y and Z				

## MECHANICAL

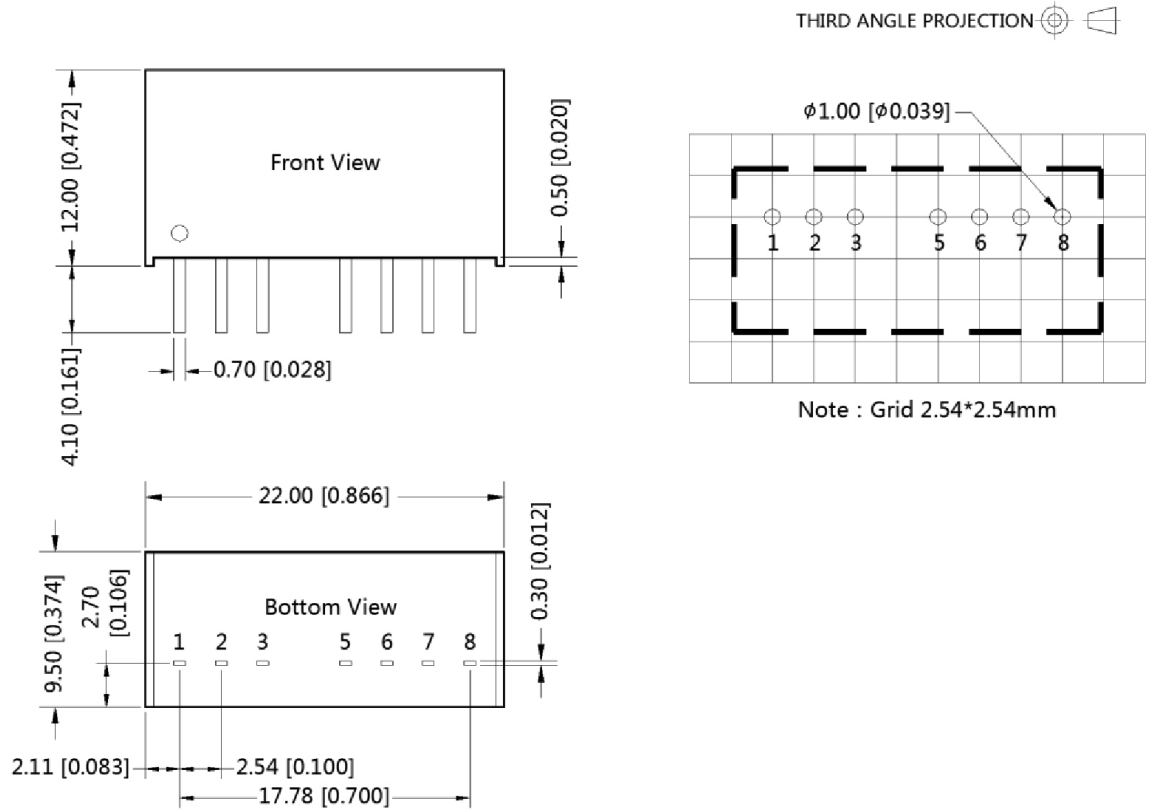
parameter	conditions/description	min	typ	max	units
dimensions	22.00 × 9.50 × 12.00 [0.866 × 0.374 × 0.472 inch]				mm
case material	black plastic				
weight			4.9		g

## MECHANICAL DRAWING

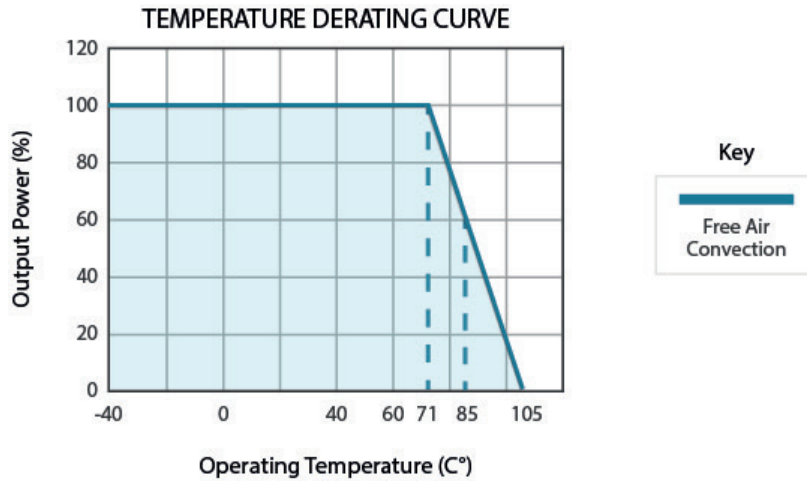
units: mm [inch]  
 pin section tolerance: ±0.10[±0.004]  
 general tolerance: ±0.50[±0.020]

PIN Out	
PIN	Function
1	GND
2	Vin
3	Ctrl
5	NC
6	+Vo
7	0V
8	NC

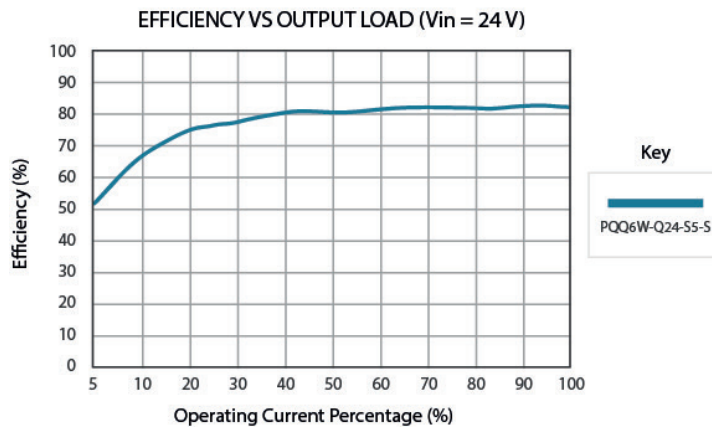
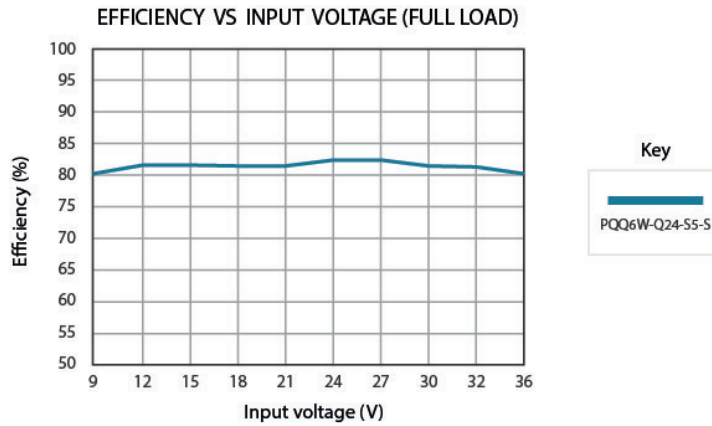
NC: Pin to be isolated from circuitry.



## DERATING CURVE



## EFFICIENCY CURVES



## APPLICATION CIRCUIT

Figure 1

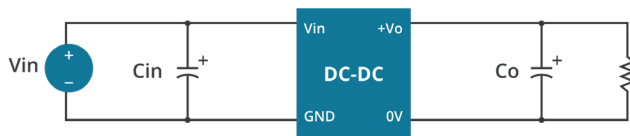
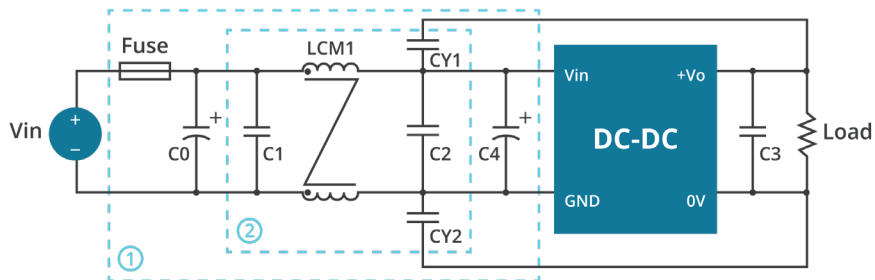


Table 1

Cin (μF)	Co (μF)
100	22

## EMC RECOMMENDED CIRCUIT

Figure 2



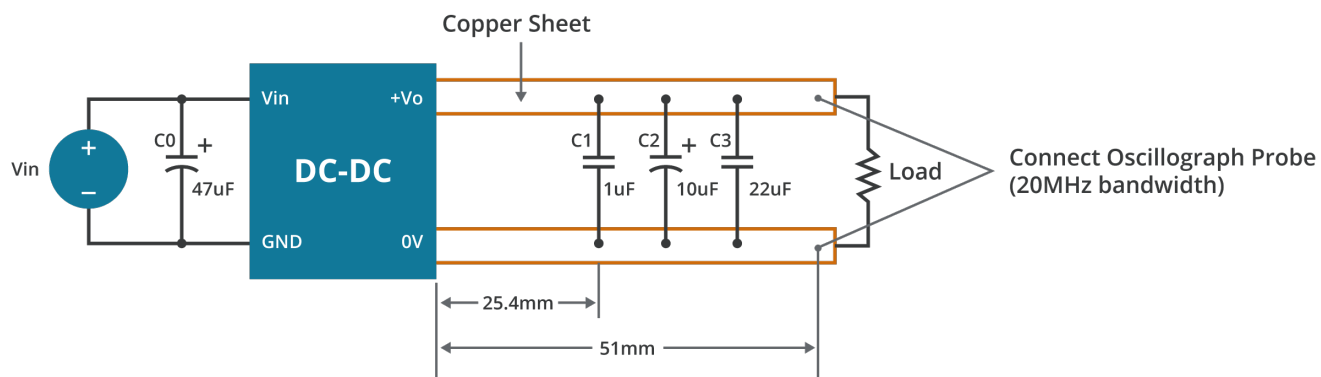
Note: For EMC tests part ① was used for immunity and part ② for emissions test. Selecting based on needs.

Table 2

Model	Vin:24V
FUSE	Choose according to actual input current
C0, C4	330μF/50V
C1, C2	10μF/50V
C3	22μF/50V
LCM1	1.4-1.7mH (TN150-RH12.7*12.7*7.9)
CY1, CY2	1nF/400Vac

## RIPPLE AND NOISE

Figure 3



## REVISION HISTORY

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rev.	description	date
1.0	initial release	09/22/2020
1.01	datasheet update	01/21/2021

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



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[PQC60-24-S15-H](#) [PQC60-24-S12-H](#) [PQQ6W-Q24-D12-S](#) [PVQ100W-O72-S12-D](#) [PVQ100W-O72-S24-D](#) [PH1200A280-28/T](#) [PH1200A280-48/T](#) [PH1200A280-28](#) [PH1200A280-36](#) [PH1200A280-24/T](#) [PYD20-72WS12](#) [PYD20-72WS15](#) [PYD20-72WS05](#) [PYD20-72WD12](#) [PYD20-72WD24](#) [PYD20-72WD15](#) [PYH200-72WS48](#) [TEL 15-2411WIN](#) [TEL 15-4812WIN](#) [TEP 150-7211UIR](#) [THL 30-2410WI](#) [THL 30-2415WI](#)  
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[IAB0124D12](#) [IAB0105D24](#) [IAB0115D15](#) [IAB0105D05](#) [IAB0112D3V3](#) [IAB0124D05](#) [IAB0105D09](#) [IAB0115D12](#) [IAB0115D05](#)  
[IAB0124D15](#) [IEB0112S12](#) [IEB0124S12](#)