

date 03/28/2020

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SERIES: PQP3-M | **DESCRIPTION:** DC-DC CONVERTER

FEATURES

- wide 2:1 input range
- single & dual output options
- 1500 Vdc isolation
- industry standard pin-out
- ultra compact SMD package
- short circuit protection (continuous)
- wide operating temp: -40°C to +85°C
- supports negative output (dual output model)
- EN62368 approved





MODEL		put tage	output voltage		put rent	output power	ripple and noise¹	efficiency
	typ (Vdc)	range (Vdc)	(Vdc)	min (mA)	max (mA)	max (W)	max (mVp-p)	typ (%)
PQP3-D12-S3-M	12	9~18	3.3	38	758	2.5	100	75
PQP3-D12-S5-M	12	9~18	5	30	600	3	100	79
PQP3-D12-S12-M	12	9~18	12	13	250	3	100	82
PQP3-D12-S15-M	12	9~18	15	10	200	3	100	83
PQP3-D12-S24-M	12	9~18	24	6	125	3	100	81
PQP3-D24-S3-M	24	18~36	3.3	38	758	2.5	100	74
PQP3-D24-S5-M	24	18~36	5	30	600	3	100	81
PQP3-D24-S12-M	24	18~36	12	13	250	3	100	83
PQP3-D24-S15-M	24	18~36	15	10	200	3	100	83
PQP3-D24-S24-M	24	18~36	24	6	125	3	100	83
PQP3-D12-D5-M	12	9~18	±5	±15	±300	3	100	78
PQP3-D12-D9-M	12	9~18	±9	±9	±167	3	100	78
PQP3-D12-D12-M	12	9~18	±12	±7	±125	3	100	79
PQP3-D12-D15-M	12	9~18	±15	±5	±100	3	100	79
PQP3-D24-D5-M	24	18~36	±5	±15	±300	3	100	78
PQP3-D24-D9-M	24	18~36	±9	±9	±167	3	100	80
PQP3-D24-D12-M	24	18~36	±12	±7	±125	3	100	82
PQP3-D24-D15-M	24	18~36	±15	±5	±100	3	100	81

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

POP3 - DXX - XXX - M

Base Number Input Voltage Output S = single SMT

D = dual

Output Voltage SMT

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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	12 Vdc input models 24 Vdc input models		321/30 156/20	338/50 165/40	mA mA

OUTPUT

parameter	conditions/description	min	typ	max	units
line regulation	min to max Vin		±0.2	±0.5	%
load regulation	5% ~ 100% load		±0.5	±1	%
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		±2.5	±5	%
temperature coefficient	full load			±0.03	%/°C

PROTECTIONS

parameter	conditions/description	min	typ	max	units
short circuit protection	continuous, self-recovery				

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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	EN62368									
EMC	CISPR32/EN55032 Class B (see recommended circu	CISPR32/EN55032 Class B (see recommended circuit)								
ESD	IEC/EN61000-4-2, Contact ±6K, perf. Criteria B	IEC/EN61000-4-2, Contact ±6K, perf. Criteria B								
radiated immunity	CISPR32/EN55032									
EFT/burst	IEC/EN61000-4-4, ±2KV, perf. Criteria B (see recon	nmended circu	uit)							
surge	IEC/EN61000-4-5, line to line ±2KV, perf. Criteria B	(see recomm	ended circuit	t)						
conducted immunity	IEC/EN61000-4-6 3 Vrms									
RoHS	yes									
MTBF	MIL-HDBK-217F @ 25°C	1000			kHours					

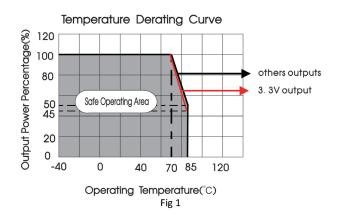
ENVIRONMENTAL

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			245	°C

DERATING CURVE



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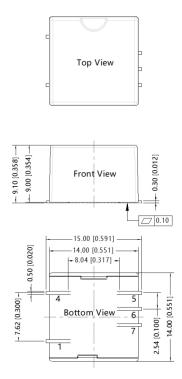
MECHANICAL

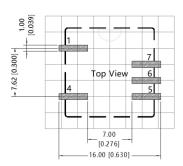
parameter	conditions/description	min	typ	max	units
dimensions	14 x 14 x 9				mm
case material	Black plastic; flame-retardant and heat-res	istant (UL94-V0)			
weight			2.2		g

MECHANICAL DRAWING

units: inches [mm] 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					

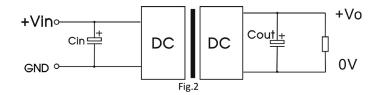




Note: Grid 2.54*2.54mm

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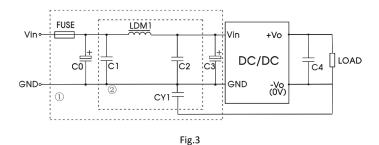
RECOMMENDED CIRCUITS



Parameter Description							
Vin (Vdc)	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.		Vi	n: 12	Vdc			Vi	n: 24 V	dc	
Vo (Vdc)	3.3	5	12	15	24	3.3	5	12	15	24
FUSE		slov	v blow	, choose	accord	ing to a	ctual ir	nput cur	rent	
C0		10	00µF/	25V		680μF/50V				
C1	10	μF/50\	/	4.7µF/50V		10μF/50V 4.7μF/50V			50V	
LDM1					15	μΗ				
C2					4.7µl	-/50V				
C3					330µ	F/50V				
CY1		1nF/2KV								
C4				Refe	r to the	Cout F	ig.2			

Note: For EMC tests we use Part ① in Fig. 3 for immunity and part ② for emissions test. Selecting based on needs.

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REVISION HISTORY

rev.	description	date
1.0	initial release	03/28/2020

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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CUI products are not authorized or warranted for use as critical components in equipment that requires an extremely high level of reliability. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.