SERIES: PQME1-M | DESCRIPTION: DC-DC CONVERTER

FEATURES

- 0.75 W isolated output
- regulated output
- compact SMT package
- single output models
- continuous short circuit protection
- -40~85 °C temperature range
- 1500 Vdc isolation
- no load input current as low as 5 mA
- industry standard pin-out
- efficiency up to 74%



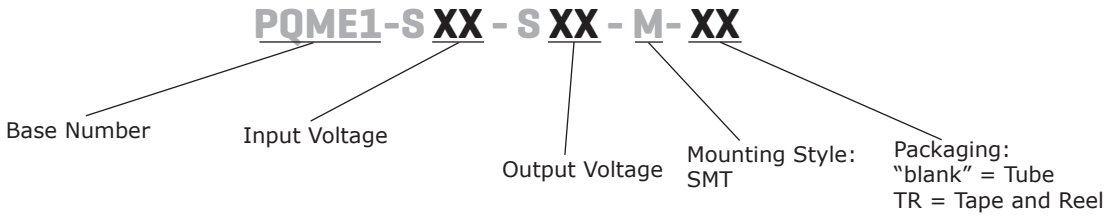
RoHS

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 & noise[1] max (mVp-p)	efficiency[2] typ (%)
PQME1-S5-S3-M	5	4.75~5.25	3.3	20	200	0.66	75	68
PQME1-S5-S5-M	5	4.75~5.25	5	15	150	0.75	75	72
PQME1-S5-S9-M	5	4.75~5.25	9	9	83	0.75	75	72
PQME1-S5-S12-M	5	4.75~5.25	12	7	62	0.75	75	73
PQME1-S5-S15-M	5	4.75~5.25	15	5	50	0.75	75	74
PQME1-S12-S5-M	12	11.4~12.6	5	15	150	0.75	75	72
PQME1-S12-S12-M	12	11.4~12.6	12	7	62	0.75	75	73
PQME1-S12-S15-M	12	11.4~12.6	15	5	50	0.75	75	74

Notes:
1. Measured at nominal input, 20 MHz bandwidth oscilloscope, with 10 µF tantalum and 1 µF ceramic capacitors on the output.
2. Measured at nominal input voltage, full load.
3. All specifications are measured at Ta=25°C, humidity < 75%, nominal input voltage, and rated output load unless otherwise specified.

PART NUMBER KEY



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INPUT

parameter	conditions/description		min	typ	max	units
operating input voltage	5 Vdc input model 12 Vdc input model		4.75 11.4	5 12	5.25 12.6	Vdc Vdc
current	5 Vdc input model	3.3, 5 Vdc output model 9, 12 Vdc output model 15 Vdc output models			234 221 215	mA mA mA
	12 Vdc input model	5 Vdc output model 12 Vdc output model 15 Vdc output model			92 91 90	mA mA mA
filter	filter capacitor					

OUTPUT

parameter	conditions/description	min	typ	max	units
maximum capacitive load[4]	3.3, 5 Vdc output models 9 Vdc output models 12, 15 Vdc output models			2,400 1,000 560	µF µF µF
voltage accuracy				±3	%
line regulation	for Vin change of 1%			±0.25	%
load regulation	from 10% to full load 3.3 Vdc output models all other models			 ±3 ±2	 % %
switching frequency	100% load, nominal input voltage		270		kHz
temperature coefficient	at full load		±0.02		%/°C

Note: 4. Tested at input voltage range and full load.

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 to output for 1 minute at 1 mA input to output for 1 second at 1 mA	1,500 3,000			Vdc Vdc
isolation resistance	input to output at 500 Vdc	1,000			MΩ
isolation capacitance	input to output, 100 kHz / 0.1 V		20		pF
safety approvals	designed to meet 62368-1: EN, BS EN				
conducted emissions	CISPR32/EN55032, class B (external circuit required, see Figure 2)				
radiated emissions	CISPR32/EN55032, class B (external circuit required, see Figure 2)				
ESD	IEC/EN61000-4-2, air ± 8 kV; contact ± 4 kV, class B				
MTBF	as per MIL-HDBK-217F, 25°C	3,500,000			hours
RoHS	yes				

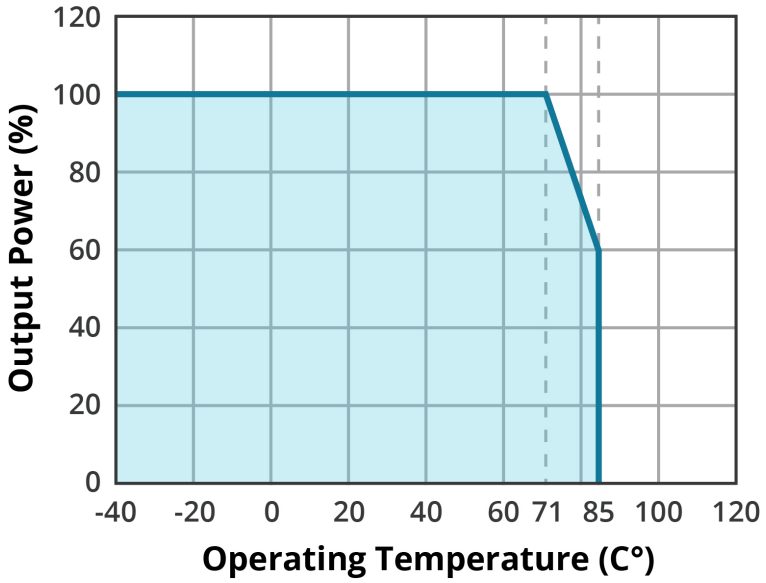
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ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
operating temperature	see derating curves	-40		85	°C
storage temperature		-55		125	°C
storage humidity	non-condensing			95	%
case temperature rise	3.3 Vdc output model at 25°C all other models at 25°C		30 25		°C °C

DERATING CURVE

TEMPERATURE DERATING CURVE

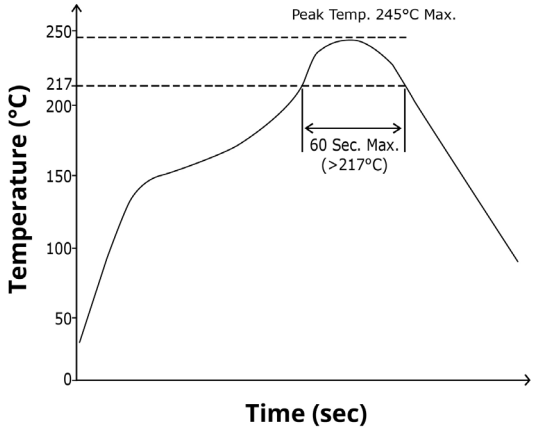


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SOLDERABILITY

parameter	conditions/description	min	typ	max	units
reflow soldering	see reflow soldering profile Maximum duration >217°C is 60 seconds. For actual application, refer to IPC/JEDEC J-STD-020D.1			245	°C

WAVE SOLDERING PROFILE



MECHANICAL

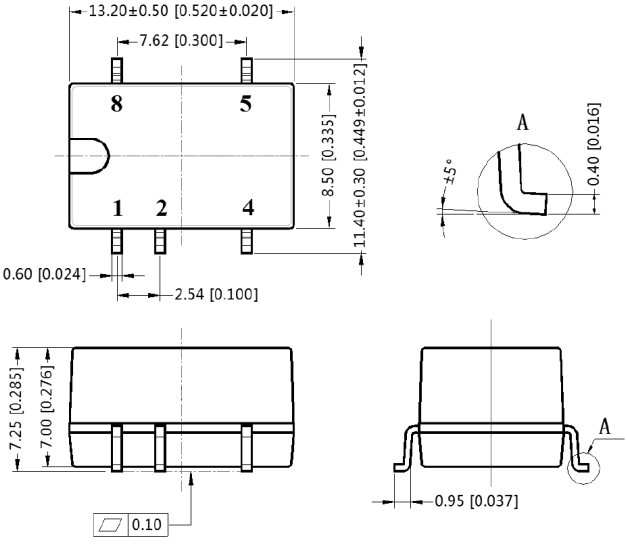
parameter	conditions/description	min	typ	max	units
dimensions	13.20 x 8.50 x 7.25[0.520 x 0.335 x 0.285 inch]				mm
case material	black flame-retardant and heat-resistant plastic (UL94V-0)				
weight			1.4		g

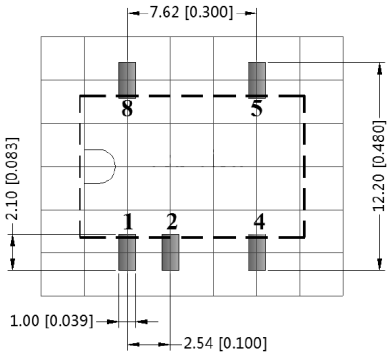
MECHANICAL DRAWING

units: mm [inch]
tolerance: ±0.25[±0.010]
pin section tolerance: ±0.10[±0.004]

PIN CONNECTIONS	
PIN	Function
1	GND
2	Vin
4	0V
5	+Vout
8	NC

NC = No connect





Note: Grid 2.54*2.54mm
Recommended PCB Layout
Top View

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APPLICATION CIRCUIT

If you want to further reduce the input and output ripple, a filter capacitor may be connected to the input and output terminals (Figure 1) provided that the capacitance is less than the maximum capacitive load of the model, otherwise start-up problems may be caused if the capacitance is too large.

Figure 1

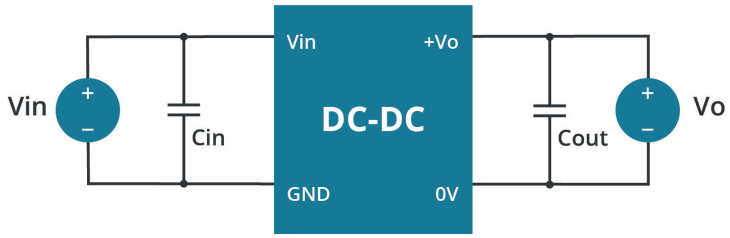


Table 1

Vin (Vdc)	Cin (μF)	Vo (Vdc)	Cout (μF)
5	4.7	3.3, 5	10
		9, 12	2.2
		15	1

EMC RECOMMENDED CIRCUIT

Figure 2

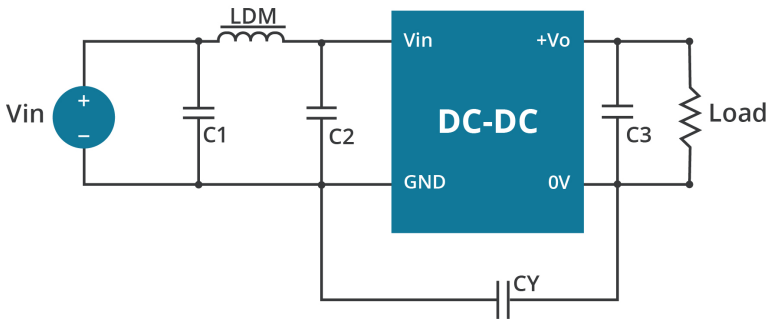


Table 2

Recommended External Circuit Components		
Vo (Vdc)	3.3, 5, 9	12, 15
CY	--	1 nF / 2 kVdc
C3	refer to the Cout in Table 1	
C1, C2	4.7 μF / 25 V	4.7 μF / 25 V
LDM	6.8 μH	6.8 μH

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REVISION HISTORY

rev.	description	date
1.0	initial release	05/10/2019
1.01	safeties updated in features and safety line, packaging removed	01/14/2021
1.02	model table updated	03/29/2021
1.03	product image updated	04/20/2021
1.04	derating curve and circuits updated	06/29/2021
1.05	CE removed	11/16/2022

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

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