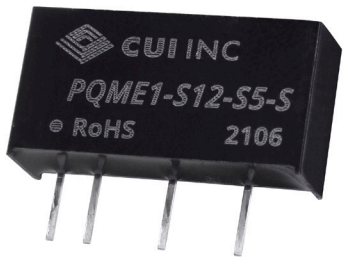
SERIES: PQME1-S | **DESCRIPTION:** DC-DC CONVERTER

FEATURES

- 1 W isolated output
- single regulated output
- 1.5k Vdc isolation
- short circuit protection
- wide operating temperature range -40~85°C
- efficiency up to 75%
- designed to meet EN/BS EN 62368-1



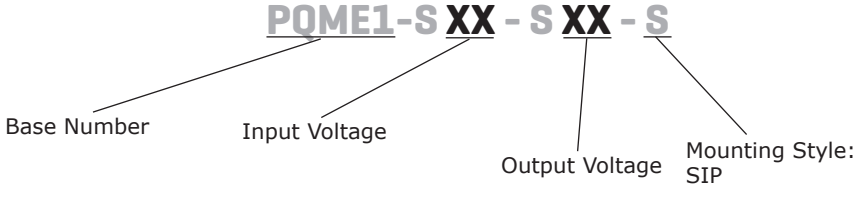
RoHS

MODEL

MODEL	input voltage		output voltage	output current		output power	ripple & noise[1]	efficiency[2]
	typ (Vdc)	range (Vdc)	(Vdc)	min (mA)	max (mA)	max (W)	max (mVp-p)	typ (%)
PQME1-S12-S5-S	12	11.4~12.6	5	20	200	1.0	100	73
PQME1-S12-S9-S	12	11.4~12.6	9	12	111	1.0	100	73
PQME1-S12-S12-S	12	11.4~12.6	12	9	83	1.0	100	73
PQME1-S12-S15-S	12	11.4~12.6	15	7	67	1.0	150	75
PQME1-S15-S5-S	15	14.25~15.75	5	20	200	1.0	100	73
PQME1-S15-S15-S	15	14.25~15.75	15	7	67	1.0	150	75
PQME1-S24-S3-S	24	22.8~25.2	3.3	25	250	0.83	100	71
PQME1-S24-S5-S	24	22.8~25.2	5	20	200	1.0	100	73
PQME1-S24-S9-S	24	22.8~25.2	9	12	111	1.0	100	73
PQME1-S24-S12-S	24	22.8~25.2	12	9	83	1.0	100	73
PQME1-S24-S15-S	24	22.8~25.2	15	7	67	1.0	100	73

Notes:
1. Measured at nominal input, 20 MHz bandwidth oscilloscope.
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



INPUT

parameter	conditions/description	min	typ	max	units
input voltage	12 Vdc input models	11.4	12	12.6	Vdc
	15 Vdc output models	14.25	15	15.75	Vdc
	24 Vdc output models	22.8	24	25.2	Vdc
current	12 Vdc input models:				
	5, 9, 12 Vdc output models			121	mA
	15 Vdc output models			118	mA
	15 Vdc input models:				
	5 Vdc output models			97	mA
	15 Vdc output models			94	mA
	24 Vdc input models:				
	3.3 Vdc output models			65	mA
	5, 9, 12, 15 Vdc ouput models			63	mA
filter	capacitance filter				

OUTPUT

parameter	conditions/description	min	typ	max	units
maximum capacitive load[4]	3.3, 5 Vdc output models			2,400	µF
	9 Vdc output models			1,000	µF
	12, 15 Vdc output models			560	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			±3	%
	all other models			±2	%
switching frequency	100% load, nominal input voltage		260		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, auto recovery				

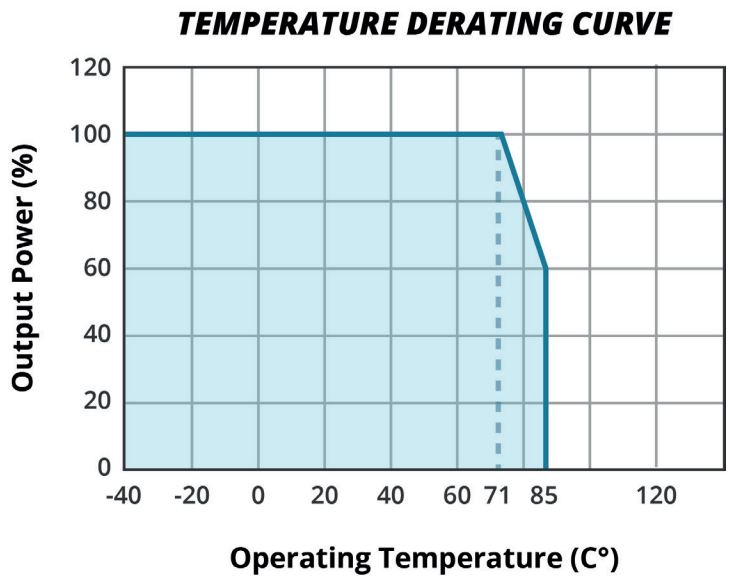
SAFETY AND COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	input to output for 1 min, < 1 mA	1,500			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 (see Fig. 2 for recommended circuit)				
radiated emissions	CISPR32/EN55032 CLASS B (see Fig. 2 for recommended circuit)				
ESD	IEC/EN61000-4-2 Contact ±6kV				
MTBF	as per MIL-HDBK-217F, 25°C	3,500,000			hours
RoHS	yes				

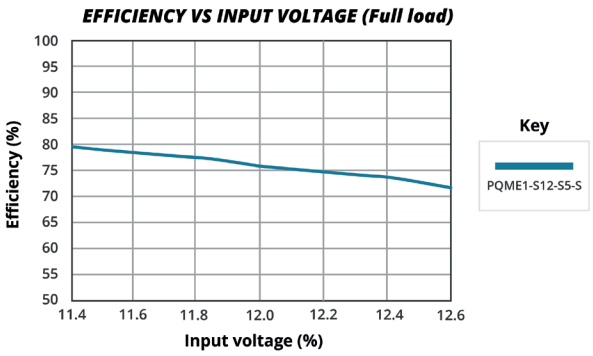
ENVIRONMENTAL

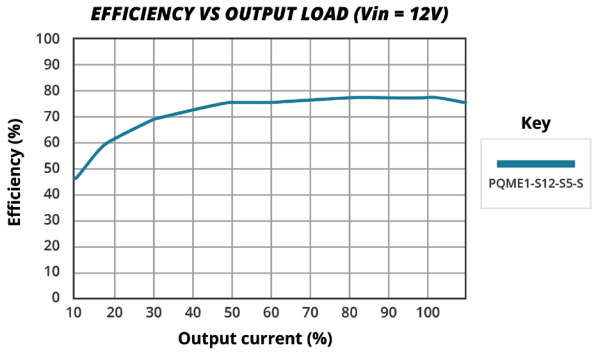
parameter	conditions/description	min	typ	max	units
operating temperature	see derating curves	-40		85	°C
storage temperature		-55		125	°C
storage humidity	non-condensing	5		95	%
case temperature rise	at 25°C		30		°C

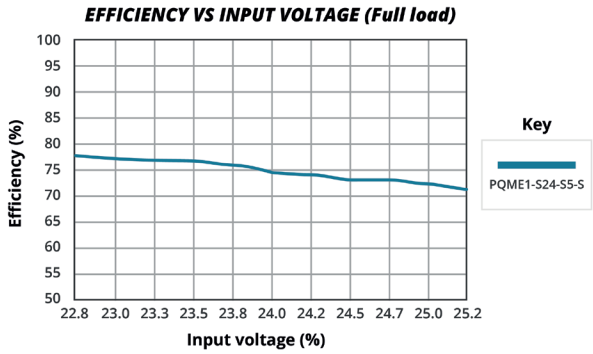
DERATING CURVE

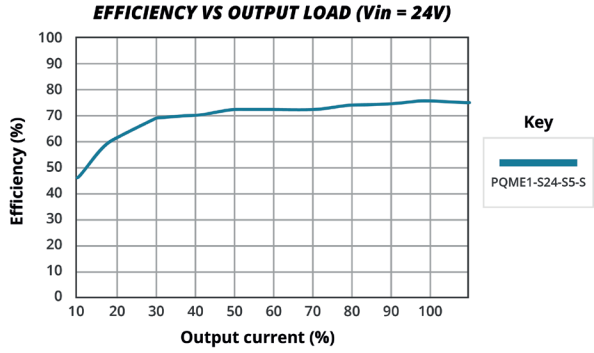


EFFICIENCY CURVES









SOLDERABILITY

parameter	conditions/description	min	typ	max	units
soldering resistance tempereature	soldering spot is 1.5mm away from case for 10 seconds			300	°C

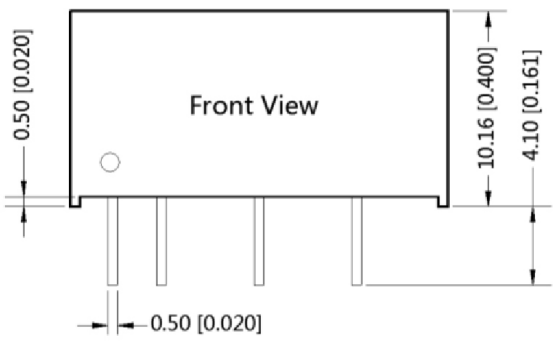
MECHANICAL

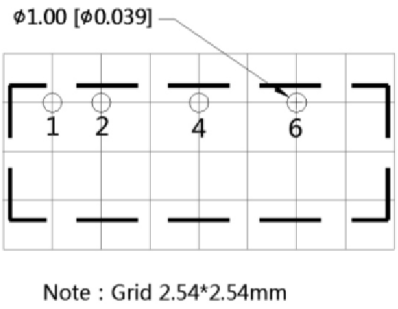
parameter	conditions/description	min	typ	max	units
dimensions	19.65 x 6.00 x 10.16 [0.773 x 0.236 x 0.400 inch]				mm
case material	black flame-retardant and heat-resistant plastic (UL94V-0)				
weight			2.1		g
cooling method	natural convection				

MECHANICAL DRAWING

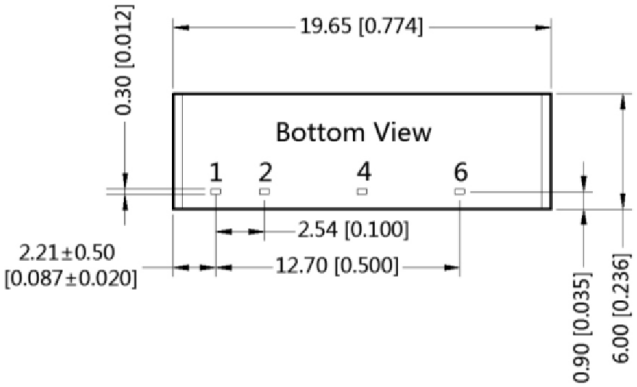
units: mm [inch]
tolerance: ±0.25[±0.010]
pin section tolerance: ±0.10[±0.004]

PIN CONNECTIONS	
PIN	Function
1	+Vin
2	GND
4	0V
6	+Vo





Note : Grid 2.54*2.54mm



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

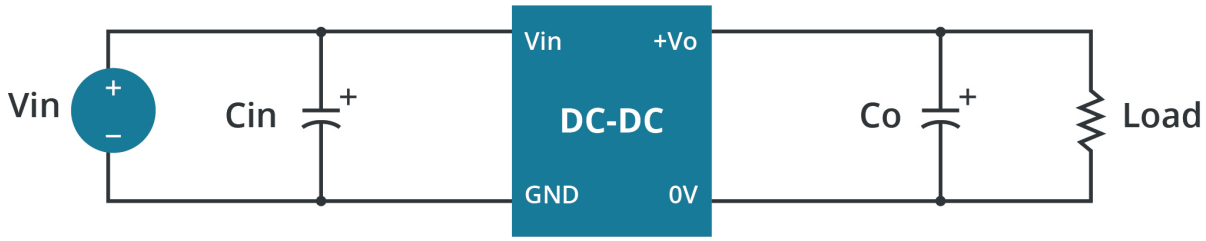


Table 1

Vin (Vdc)	Cin (µF/V)	Vo (Vdc)	Cout (µF/V)
12	2.2/25	3.3	10/16
15	2.2/25	5	10/16
24	1.0/50	9	2.2/16
--	--	12	2.2/25
--	--	15	1.0/25

EMC RECOMMENDED CIRCUIT

Figure 2

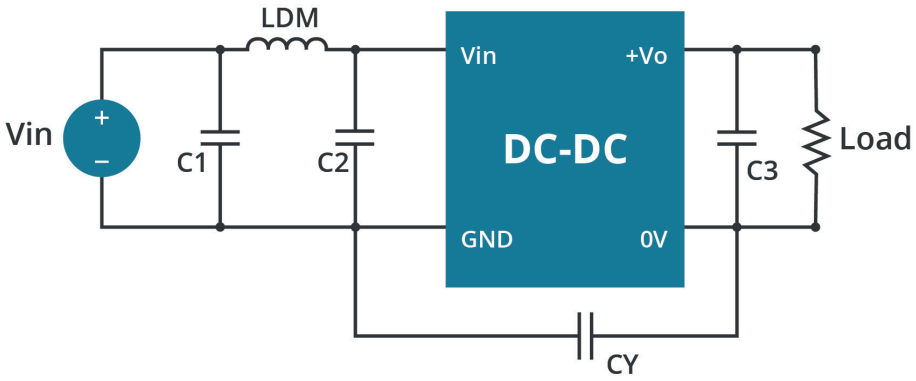


Table 2

	Recommended EMC filter values	
Emissions	C1	4.7µF/50V
	C2	4.7µF/50V
	CY	270pF/2kV
	C3	refer to the Cout in Table 1
	LDM	6.8µH

REVISION HISTORY

rev.	description	date
1.0	initial release	03/08/2021
1.01	pin connections table updated	04/06/2021
1.02	CE removed	11/16/2022

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

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