CUI INC
a bel group

SERIES: PVQ100W-D | **DESCRIPTION:** DC-DC CONVERTER

FEATURES

- 100 W isolated output
- ultra-wide 14:1 input range, 12~160 Vdc
- -40 ~ 105 °C operating temperature with derating
- reinforced insulation
- input under-voltage; output over temperature, over current, & over voltage protection
- 4,200 Vdc isolation
- remote on/off
- industry standard 1/4 brick package
- UL/EN/IEC 62368 certified
- meets EN 55032/55035/50155/EN 45545-2 with external circuits

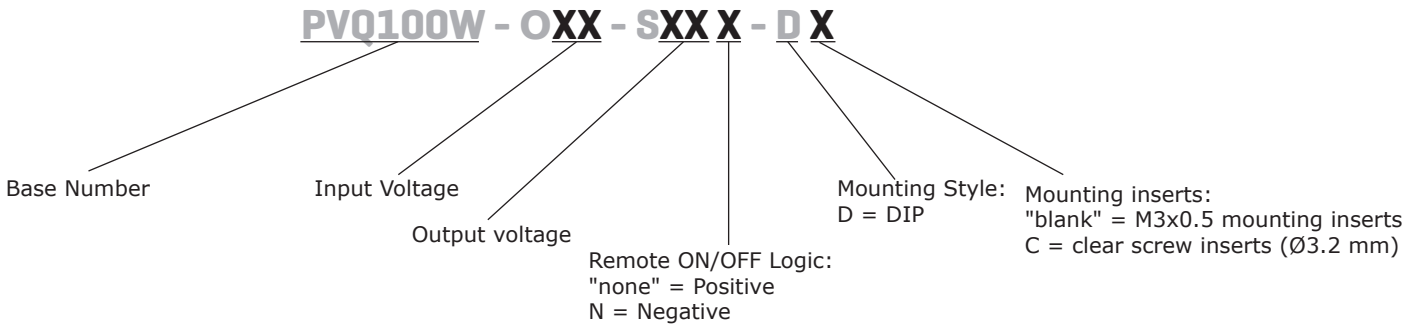


MODEL

MODEL	input voltage nom (Vdc)	input voltage range (Vdc)	output voltage (Vdc)	output current max (A)	output power max (W)	ripple & noise[1] max (mVp-p)	efficiency[2] typ (%)
PVQ100W-O72-S5-D	72	12~160	5	20	100	150	87.5
PVQ100W-O72-S12-D	72	12~160	12	8.3	100	150	88
PVQ100W-O72-S15-D	72	12~160	15	6.7	100	150	89
PVQ100W-O72-S24-D	72	12~160	24	4.2	100	240	89
PVQ100W-O72-S28-D	72	12~160	28	3.6	100	240	90
PVQ100W-O72-S54-D	72	12~160	54	1.85	100	480	90

Notes:
1. 20MHz bandwidth, peak to peak, 10µF polymer tantalum and 1µF ceramic capacitors.
2. Efficiency is measured at 72 Vdc input voltage.
3. An external input capacitor 220µF for all models is recommended to reduce input ripple voltage.

PART NUMBER KEY



INPUT

parameter	conditions/description		min	typ	max	units
operating input voltage			12	72	160	Vdc
under voltage lockout	turn-on voltage treshold	80% load	10.7	11	11.7	Vdc
	turn-off voltage treshold	80% load	9.7	10	10.7	Vdc
	lockout hysteresis voltage	80% load		1.0		Vdc
current	at 16 V input, full load at 12 V input, 80% load				8.0	A
inrush current (I^2t)	as per ETS300 132-2				0.1	A^2s
filter	Pi filter					
surge voltage	for maximum of 100ms				185	Vdc
CTRL	positive logic	models ON (3.5~160 Vdc or on/off pin open circuit)				
		models OFF (on/off pin 0~1.2 Vdc)				
	negative logic	models ON (on/off pin 0~1.2 Vdc)				
		models OFF (3.5~160 Vdc or on/off pin open circuit)				
on/off current[4]	I on/off at V on/off = 0V			0.4	1	mA
leakage current[4]	logic high, V on/off = 15V				30	µA

Notes: 4. For both remote on/off logic.

OUTPUT

parameter	conditions/description	min	typ	max	units
maximum capacitive load	5 Vdc output model			20,000	µF
	12 Vdc output model			8,300	µF
	15 Vdc output model			6,700	µF
	24 Vdc output model			4,200	µF
	28 Vdc output model			3,600	µF
	54 Vdc output model			1,000	µF
voltage accuracy	at 72 V input, full load, 25°C	-1.0		1.0	%
line regulation	from low line to high line, full load			±0.2	%
load regulation	full load to no load			±0.2	%
temperature coefficient	-40° ~ 105°C			±0.02	%/°C
switching frequency		180	200	220	kHz
transient recovery time	75 ~ 100% of step load change, d_i/d_t = 0.1A/µs (within 1% Vout nominal)			250	µs
transient response deviation	75 ~ 100% of step load change, d_i/d_t = 0.1A/µs (within 1% Vout nominal)			±5	%
start up time / input voltage	V on/off to 10% Vo_set, remote on		50		ms
start up time / on/off control	Vin_min to 10% Vo_set, power up		50		ms
rise time	10% Vo_set to 90% Vo_set		50		ms
adjustability	Po ≤ max rated power, Io ≤ Io_max				
	54 Vdc output model	-20		10	%
	all other models	-20		15	%
remote sense	Po ≤ max rated power, Io ≤ Io_max % of nominal Vo				
	54 Vdc output model			10	%
	all other models			15	%

PROTECTIONS

parameter	conditions/description	min	typ	max	units
over voltage protection	limited voltage, % of nominal output 54 Vdc output model all other models	 112 117	 117 125	 140 140	 % %
over current protection	auto recovery, hiccup	110	150	180	%
short circuit protection	continuous, auto recovery				
over temperature protection	temperature at the center part of case, non-latching shutdown recovery		 110 100		 °C °C

SAFETY AND COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	input to output, for 1 minute			3,000 4,200	Vac Vdc
	input to case (base plate), for 1 minute			2,100 3,000	Vac Vdc
	output to case (base plate), for 1 minute			1,500 2,100	Vac Vdc
isolation resistance	input to output	100			MΩ
isolation capacitance	input to output		1,000		pF
safety approvals	certified to 62368: UL/cUL, EN, IEC				
concucted emissions	EN55032 and EN50155 Compliant (with external filter)				
ESD	EN61000-4-2 Level 3: Air ±8kV, Contact ±6kv, perf. Criteria A				
radiated immunity	EN61000-4-3 Level 3: 80~ 1000 MHz, 20V/m, perf. Criteria A				
EFT/burst	EN61000-4-4 Level 3: on power input port, ±2kV, external input capacitor required (EN 50155), perf. Criteria A				
surge	EN61000-4-5 Level 4: Line to Earth, ±4kV, Line to Line ±2kV (EN50155), perf. Criteria A				
conducted immunity	EN61000-4-6 Level 3: 0.15~80MHz, 10V, perf. Criteria A				
voltage supply interruptions	EN50155 Class S3: 20ms interruptions				
MTBF	as per MIL-HDBK-217F, 25°C 5 Vdc output model 12 Vdc output model 15 Vdc output model 24 Vdc output model 28 Vdc output model 54 Vdc output model		 570 690 785 840 800 850		 K hours
RoHS	yes				

ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
operating case temperature	measured at the center of the case plate, see derating curve	-40		105	°C
storage temperature		-55		125	°C
operating humidity	non-condensing			95	%

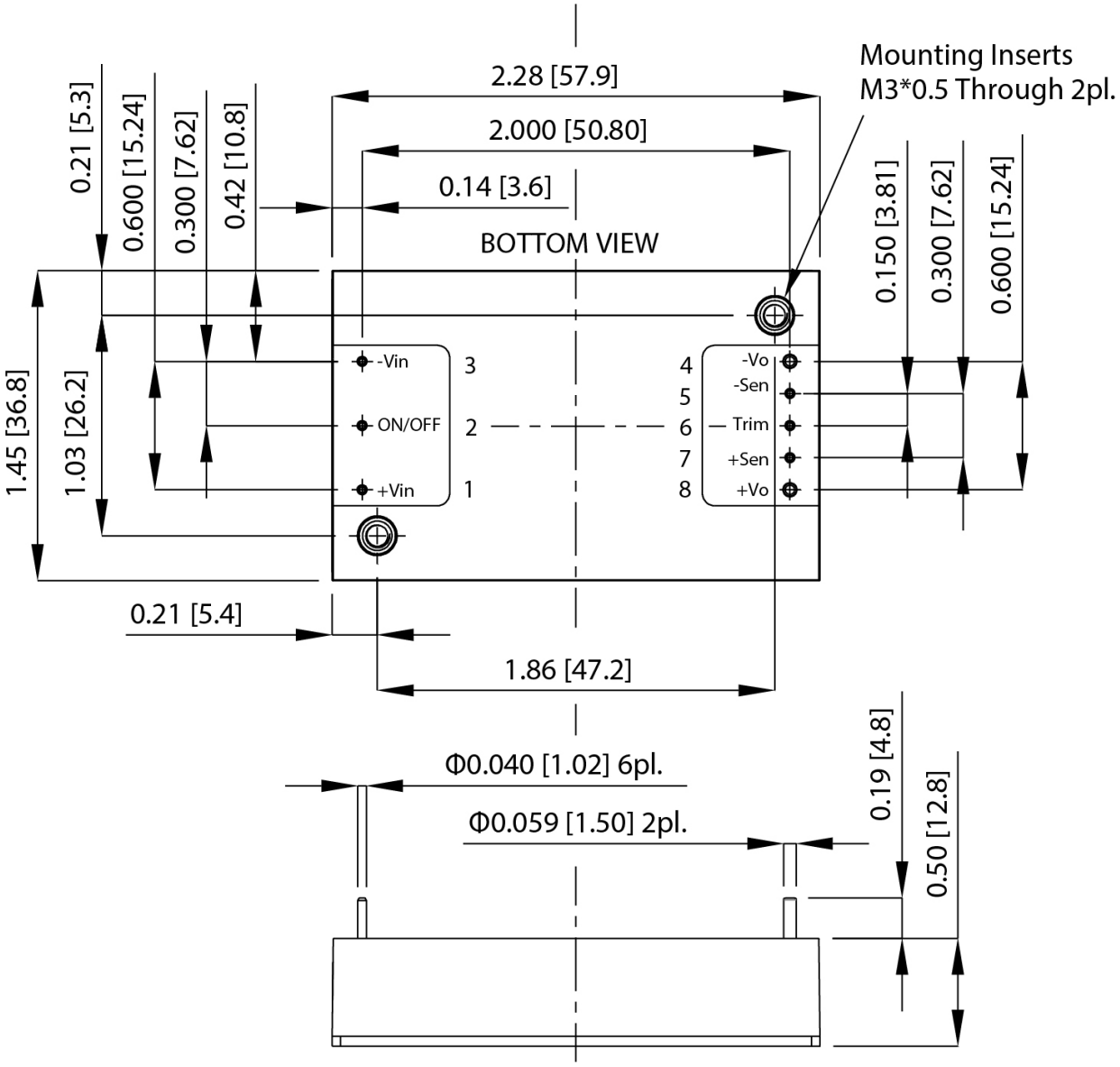
MECHANICAL

parameter	conditions/description	min	typ	max	units
dimensions	57.9 × 36.8 × 12.8 [2.28 x 1.45 x 0.50 inch]				mm
case material	plastic, DAP, UL 94V-0				
weight			66		g

MECHANICAL DRAWING

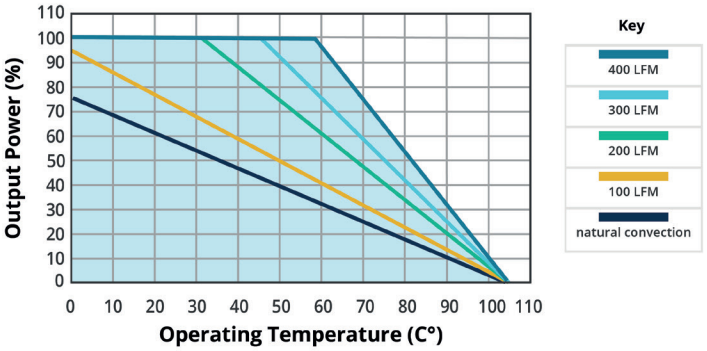
units: inch [mm]
tolerances: inches: x.xx = ±0.02, x.xxx = ±0.010
mm: x.x = ±0.5, x.xx = ±0.25

PIN Out	
PIN	Function
1	+Vin
2	on/off
3	-Vin
4	-Vo
5	Sense-
6	Trim
7	Sense+
8	+Vo

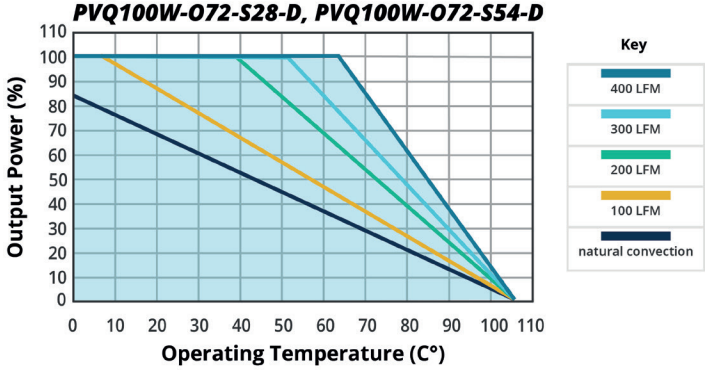


DERATING CURVES

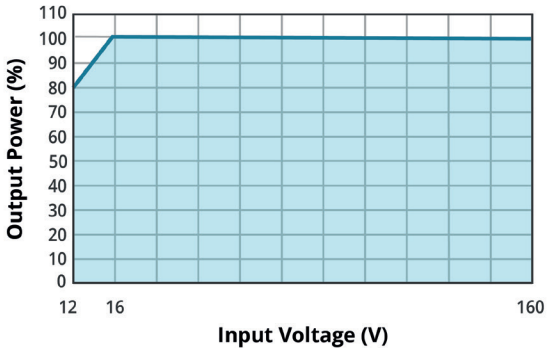
TEMPERATURE DERATING CURVE (Vin =72 V)
PVQ100W-O72-S5-D, PVQ100W-O72-S12-D



TEMPERATURE DERATING CURVE (Vin =72 V)
PVQ100W-O72-S15-D, PVQ100W-O72-S24-D,
PVQ100W-O72-S28-D, PVQ100W-O72-S54-D

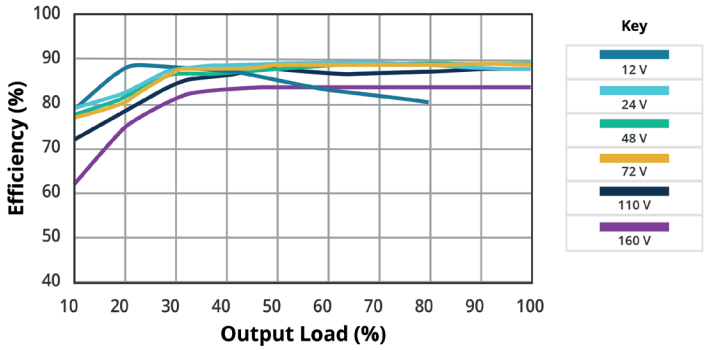


INPUT VOLTAGE DERATING CURVE

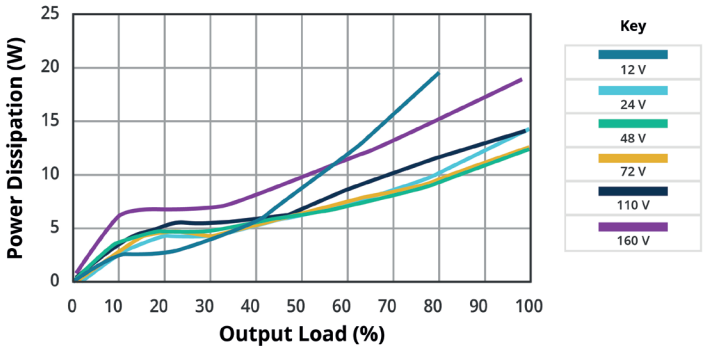


EFFICIENCY CURVES

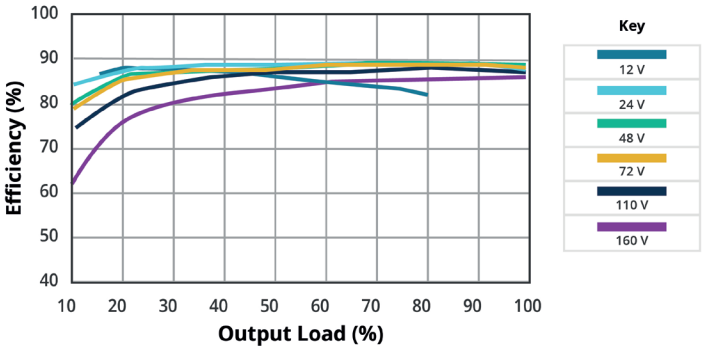
EFFICIENCY VS OUTPUT LOAD
25°C
PVQ100W-O72-S5-D



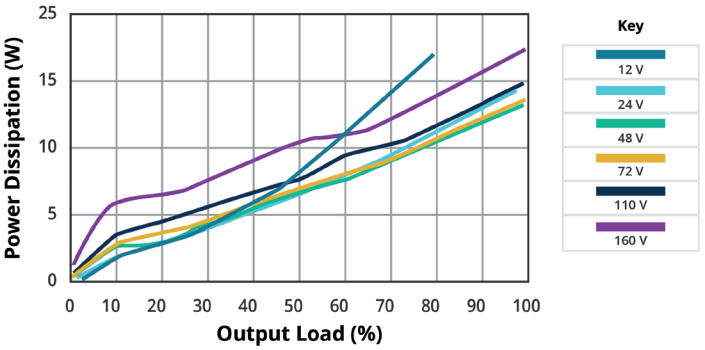
POWER DISSIPATION VS OUTPUT POWER
25°C
PVQ100W-O72-S5-D



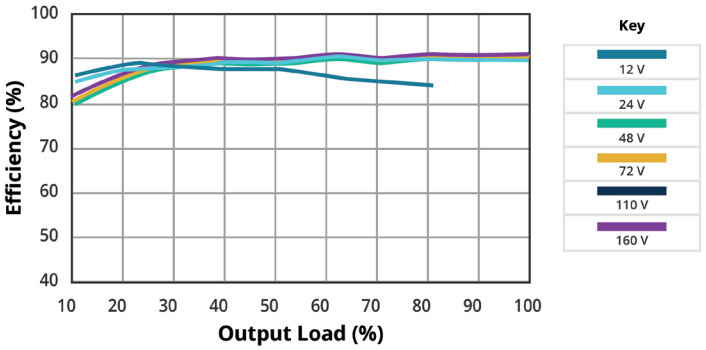
EFFICIENCY VS OUTPUT LOAD
25°C
PVQ100W-O72-S12-D



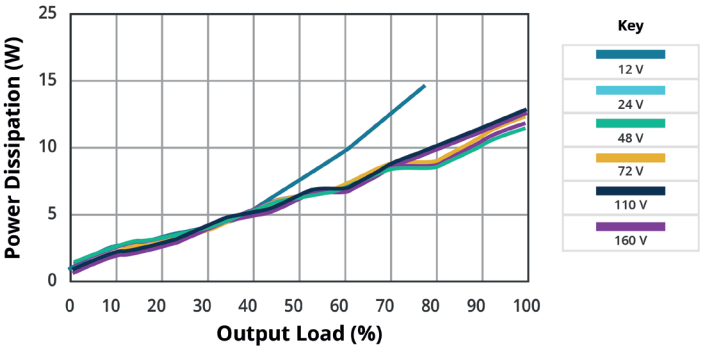
POWER DISSIPATION VS OUTPUT POWER
25°C
PVQ100W-O72-S12-D



EFFICIENCY VS OUTPUT LOAD
25°C
PVQ100W-O72-S15-D

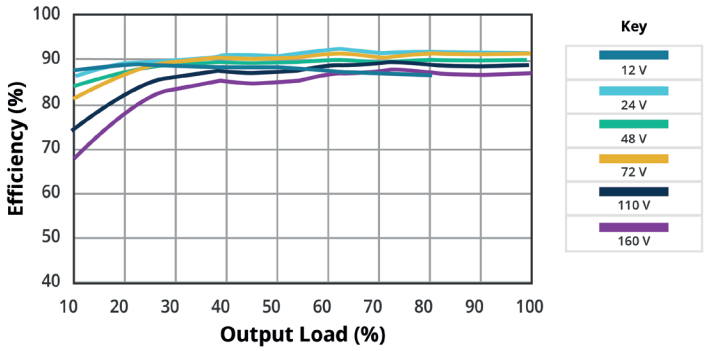


POWER DISSIPATION VS OUTPUT POWER
25°C
PVQ100W-O72-S15-D

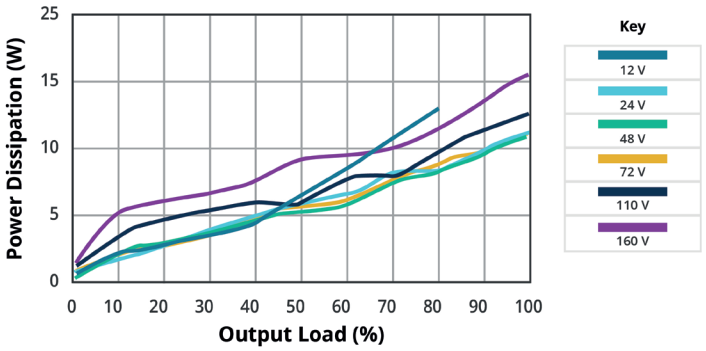


EFFICIENCY CURVES (CONTINUED)

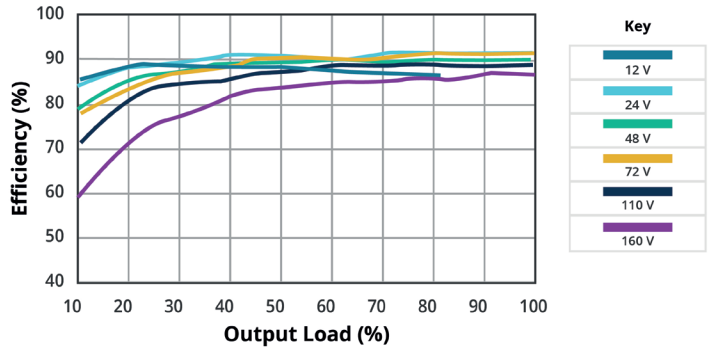
EFFICIENCY VS OUTPUT LOAD
25°C
PVQ100W-O72-S24-D



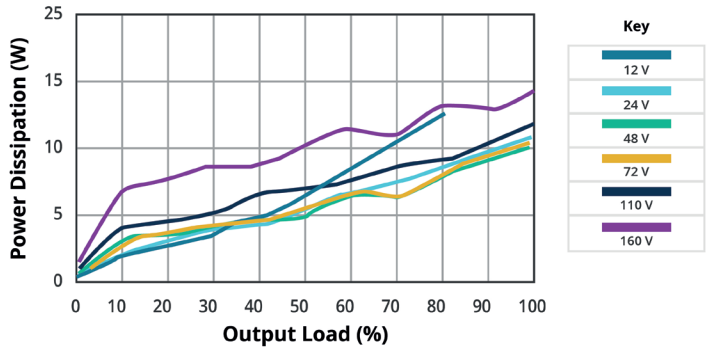
POWER DISSIPATION VS OUTPUT POWER
25°C
PVQ100W-O72-S24-D



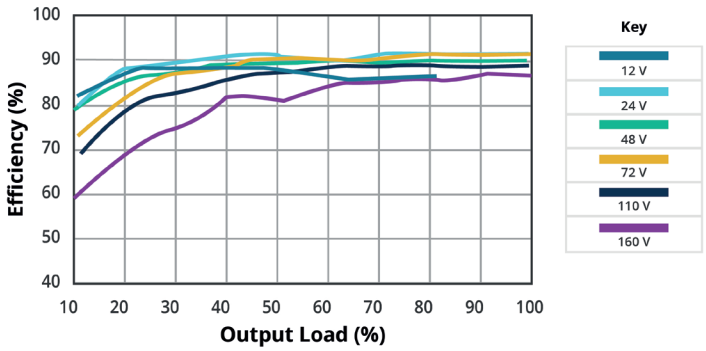
EFFICIENCY VS OUTPUT LOAD
25°C
PVQ100W-O72-S28-D



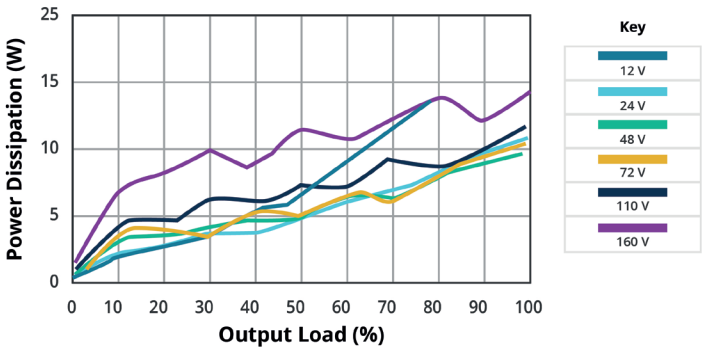
POWER DISSIPATION VS OUTPUT POWER
25°C
PVQ100W-O72-S28-D



EFFICIENCY VS OUTPUT LOAD
25°C
PVQ100W-O72-S54-D



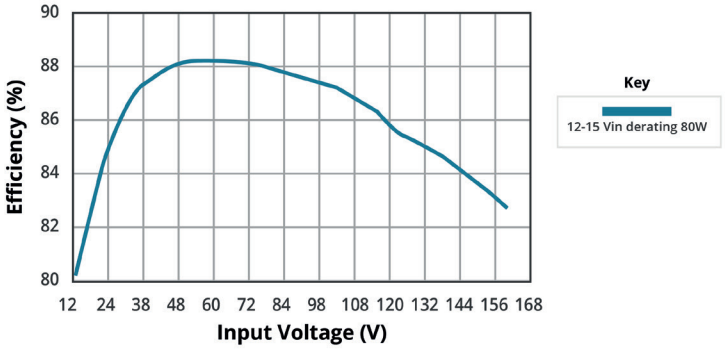
POWER DISSIPATION VS OUTPUT POWER
25°C
PVQ100W-O72-S54-D



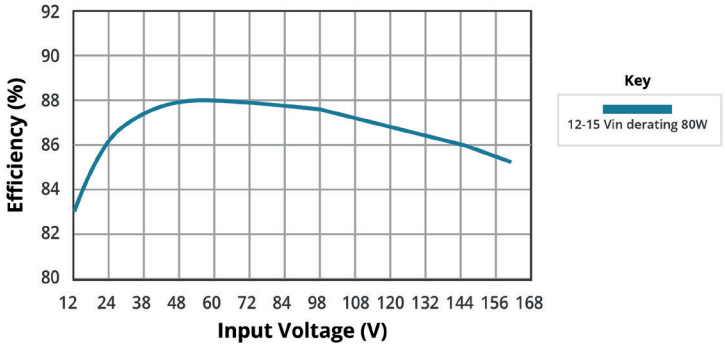
EFFICIENCY CURVES (CONTINUED)

Efficiency measured at 100% load. At 80% load when Vin is 12 ~ 16V.

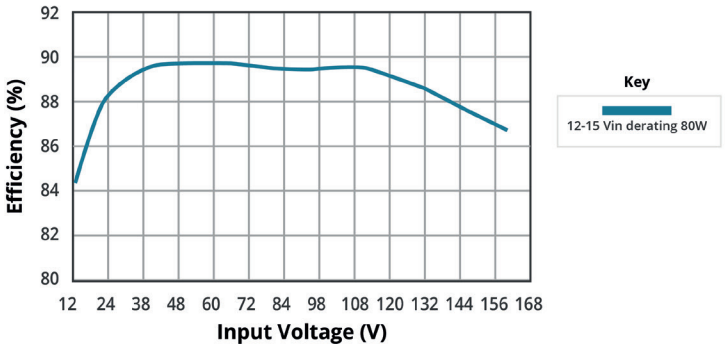
EFFICIENCY VS INPUT VOLTAGE (25°C, FULL LOAD) PVQ100W-O72-S5-D



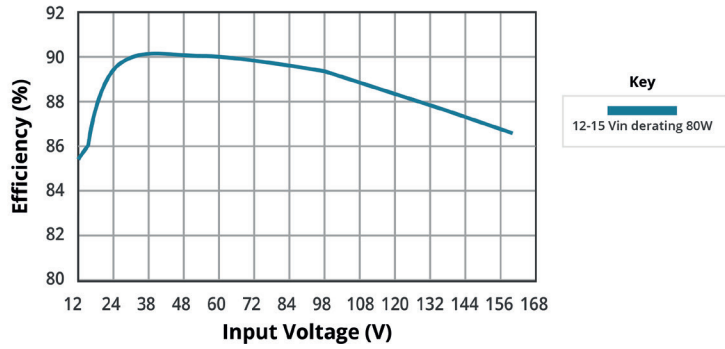
EFFICIENCY VS INPUT VOLTAGE (25°C, FULL LOAD) PVQ100W-O72-S12-D



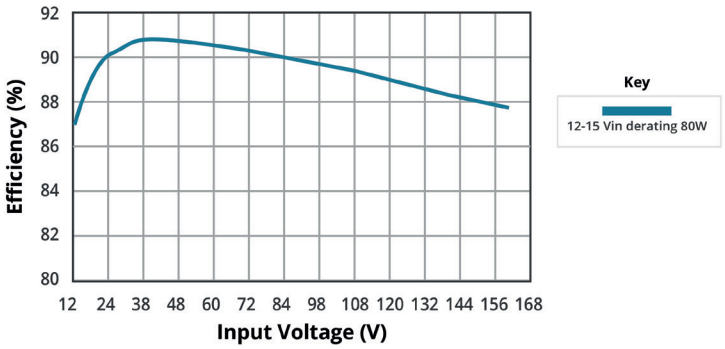
EFFICIENCY VS INPUT VOLTAGE (25°C, FULL LOAD) PVQ100W-O72-S15-D



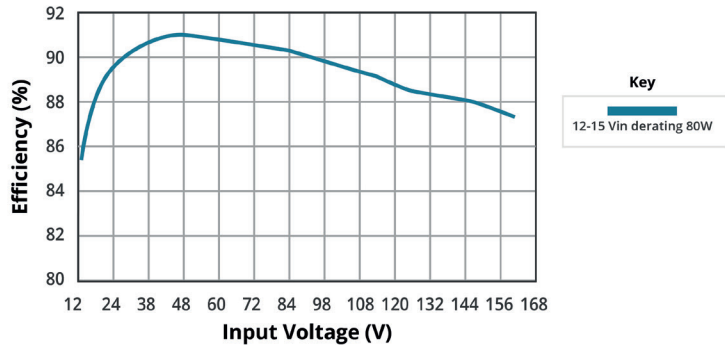
EFFICIENCY VS INPUT VOLTAGE (25°C, FULL LOAD) PVQ100W-O72-S24-D



EFFICIENCY VS INPUT VOLTAGE (25°C, FULL LOAD) PVQ100W-O72-S28D



EFFICIENCY VS INPUT VOLTAGE (25°C, FULL LOAD) PVQ100W-O72-S54-D



REVISION HISTORY

rev.	description	date
1.0	initial release	11/22/2022
1.01	clear mounting insert option added	12/12/2022
1.02	PN key updated	04/17/2023

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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