CUI INC
a bel group

SERIES: PST50W | DESCRIPTION: DC-DC CONVERTER

FEATURES

- 50 W isolated output
- certified to IEC/EN 62368, reinforced insulation
- meets EN 50155 and EN 45545-2
- 8:1 input range, 9.5 ~ 75 Vdc
- built-in EMI filter and baseplate
- wide operating temperature range (-40 ~ 105 °C)
- remote on/off
- short circuit, over current, over voltage, over temperature, & UVLO protections



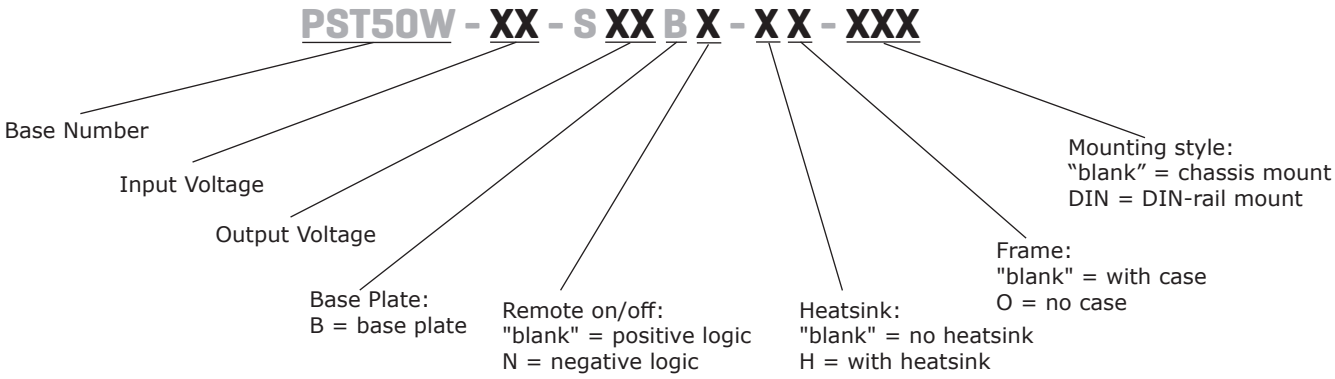
RoHS CE UKCA

MODEL

MODEL	input voltage range (Vdc)	output voltage (Vdc)	output current max (A)	output power max (W)	ripple and noise[1] max (mVp-p)	efficiency typ (%)
PST50W-36-S12B	9.5~75	12	4.17	50	150	90
PST50W-36-S15B	9.5~75	15	3.33	50	150	90
PST50W-36-S24B	9.5~75	24	2.08	50	240	90
PST50W-36-S28B	9.5~75	28	1.79	50	240	90
PST50W-36-S48B	9.5~75	48	1.05	50	480	90

Note: 1. Ripple and noise are measured peak to peak at full load, 5 ~20 MHz BW with 1μF ceramic capacitor, full load.
2. All specifications are measured at Ta=25°C, nominal input voltage and full output load unless otherwise specified.

PART NUMBER KEY



INPUT

parameter	conditions/description	min	typ	max	units
operating input voltage		9.5	36	75	Vdc
under voltage shutdown	turn-on voltage threshold, at full load turn-off voltage threshold, at full load	8.4 7.5	8.8 7.9	9.3 8.4	Vdc Vdc
hysteresis voltage shutdown	at full load		0.9		Vdc
maximum input current	at full load, 9.5 Vdc input voltage		7.5		A
input current (no load/full load)	Vin=36V, Io=0A 12 Vdc output models 15 Vdc output models 24 Vdc output models 28 Vdc output models 48 Vdc output models		 10/1,544 10/1,542 12/1,541 12/1,547 12/1,556		 mA mA mA mA mA
remote on/off	positive logic: models ON: V_{remote} at I_{remote} = 0.0uA, Pin open = on	4.0		75	Vdc
	positive logic: models OFF: V_{remote} at I_{remote} = 1.0mA	0		1.0	Vdc
	negative logic: models ON: V_{remote} at I_{remote} = 1.0mA	0		1.0	Vdc
	negative logic: models OFF: V_{remote} at I_{remote} = 0.0uA, Pin open = off	4.0		75	Vdc
remote on/off current[3]	I_{remote} at V_{remote} = 0V		0.3	1	mA
leakage current[3]	logic high, V_{remote} = 15V			30	μA
off converter current			5	10	mA

Note: 3. For positive and negative logic.

OUTPUT

parameter	conditions/description	min	typ	max	units
maximum capacitive load	12 Vdc output models 15 Vdc output models 24, 28 Vdc output models 48 Vdc output models			8,000 6,800 2,350 700	μF μF μF μF
line regulation	measured from high line to low line			±0.2	%
load regulation	measured from full load to zero load			±0.2	%
voltage accuracy	at full load, 36 Vdc input voltage, 25°C		±1		%
switching frequency		180	200	220	kHz
transient response	75 ~ 100% step load change			250	μs
temperature coefficient	40 ~ 105°C			±0.02	%/°C
remote on/off start-up time[4]	V_{remote} to 10% Vo_{set}, remote on		20		ms
input start-up time[4]	Vin_{min} to 10% Vo_{set}, power up		20		ms
rise time	10% Vo_{set} to 90% Vo_{set}		10		ms
voltage trim range	Po ≤ max rated power, Io ≤ Io_{max}	-20		15	%
remote sense range	Po ≤ max rated power, Io ≤ Io_{max} % of nominal Vo			15	%

Note: 4. At full constant resistive load.

PROTECTIONS

parameter	conditions/description	min	typ	max	units
over current protection	auto recovery, hiccup	110	150	210	%
over voltage protection	limited voltage, % of nominal Vo	117	125	140	%
short circuit protection	auto recovery, continuous				
over temperature protection[5]	shutdown restart threshold		110 100		°C °C

Note: 5. Temperature at the center part of base plate, non-latching.

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 input to case (base plate) output to case (base plate)		15,000 16,000 23,000		pF pF pF
safety approvals	certified to 62368-1: IEC, EN designed to meet 62368-1: UL				
conducted emissions	EN 55032 and EN 50155 compliant, class A				
radiated emissions	EN 55032 and EN 50155 compliant, class A				
ESD	EN 61000-4-2 Level 3: Air ±8kV, Contact ±6kV, perf. criteria A				
radiated immunity	EN 61000-4-3 Level 3: 80~1000MHz, 20V/m, perf. criteria A				
surge	EN 61000-4-5 Level 4: Line to earth, ±4kV, Line to line, ±2kV, perf. criteria A				
conducted immunity	EN 61000-4-6 Level 3: 0.15~80MHz, 10V, perf. criteria A				
MTBF	as per MIL-HDBK-217F, 25°C 12 Vdc output models 15, 24 Vdc output models 28 Vdc output models 48 Vdc output models		 561,000 612,000 603,000 610,000		 hours hours hours hours
RoHS	yes				

ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
operating temperature	see derating curve	-40		105	°C
storage temperature		-40		105	°C
humidity	non condensing	-		95	%
operating altitude			5,000		m

MECHANICAL

parameter	conditions/description	min	typ	max	units
base plate material	aluminum				
potting material	UL 94V-0 (DC Module)				
dimensions	without case: 4.60 x 2.40 x 1.46 [116.8 x 61.0 x 37.0 mm]				inch
	with case: 4.60 x 2.49 x 1.46 [116.8 x 63.4 x 37.0 mm]				inch
	with case & heatsink: 4.60 x 2.49 x 2.40 [116.8 x 63.4 x 61.0 mm]				inch
	with case, heatsink & DIN rail: 4.60 x 2.49 x 3.02 [116.8 x 63.4 x 76.7 mm]				inch
weight	without case		215		g
	with case		250		g
	with case & heatsink		470		g
	with case, heatsink, & DIN rail		490		g

MECHANICAL DRAWING

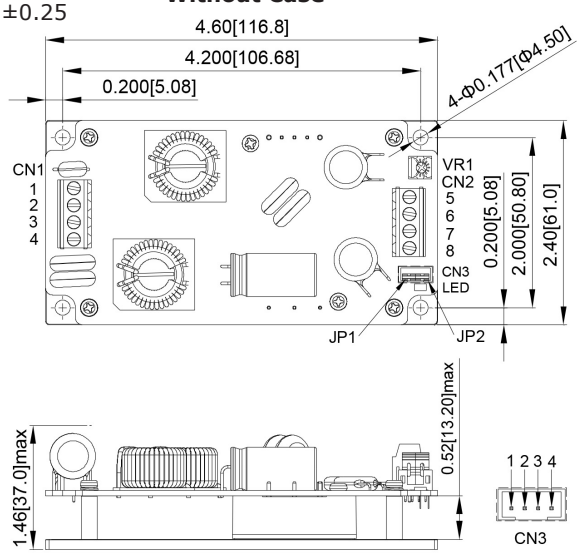
units: inch[mm]
general tolerance: inches: x.xx = ±0.02, x.xxx = ±0.010
milimeters: x.x = ±0.5, x.xx = ±0.25

PIN CONNECTIONS CN1 & CN2	
PIN	FUNCTION
1	+Vin
2	-Vin
3	remote
4	case
5	+Vout
6	+Vout
7	-Vout
8	-Vout

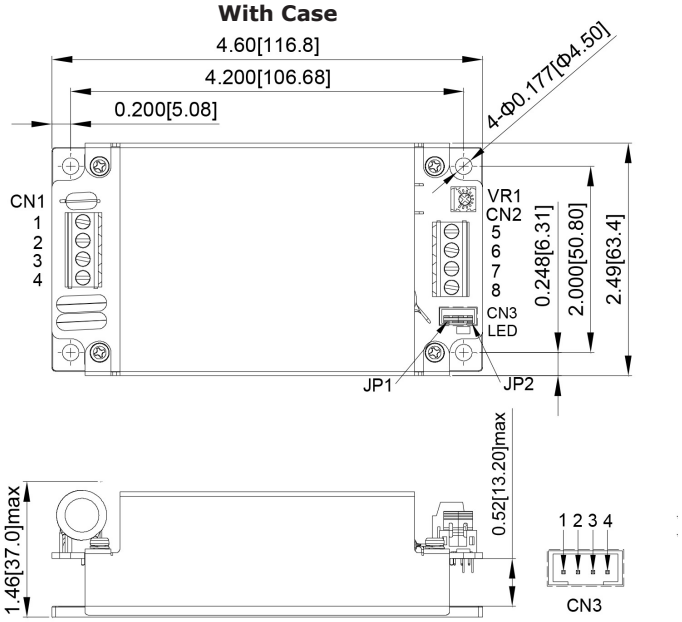
PIN CONNECTIONS CN3	
PIN	FUNCTION
1	-Vout
2	-sense
3	+sense
4	+Vout

* JP1: Short PIN1 & PIN2
* JP2: Short PIN3 & PIN4

Without Case



With Case



MECHANICAL DRAWING

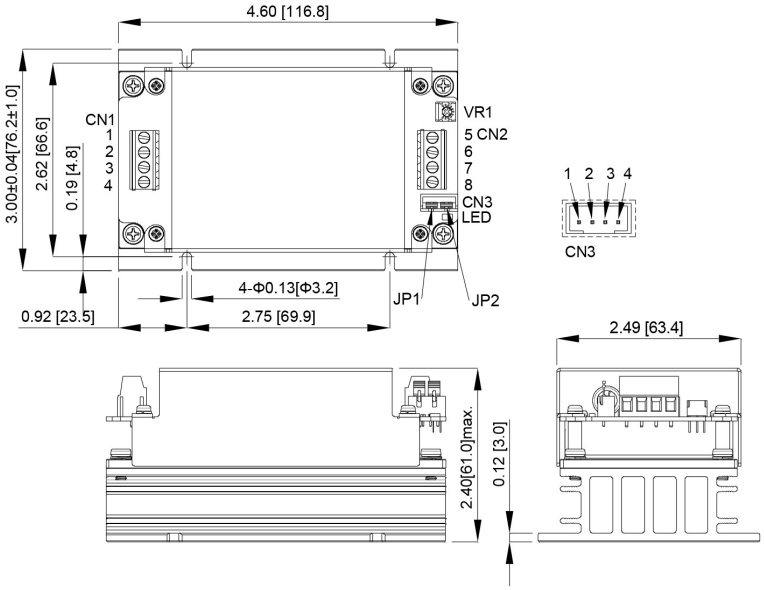
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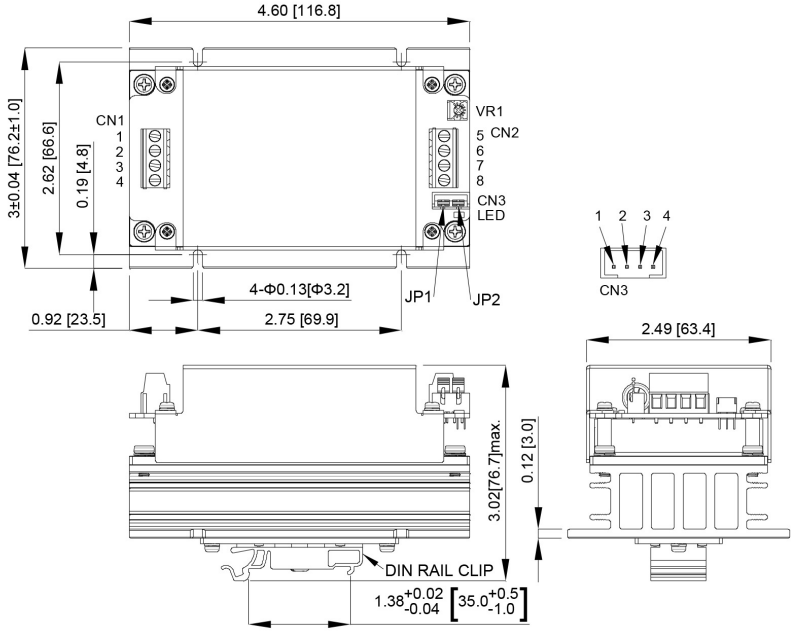
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With Case and Heatsink

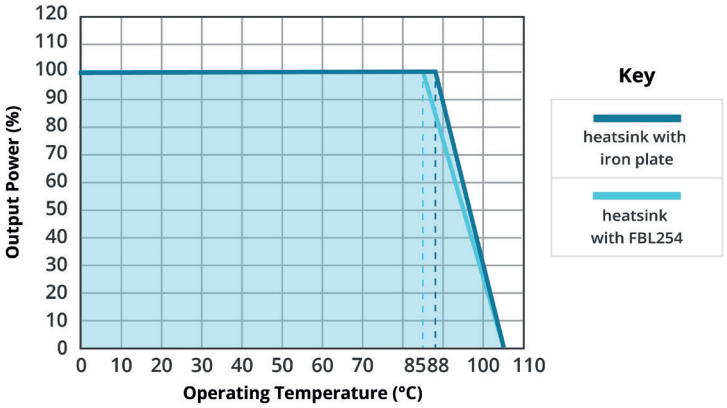


With Case, Heatsink, and DIN rail

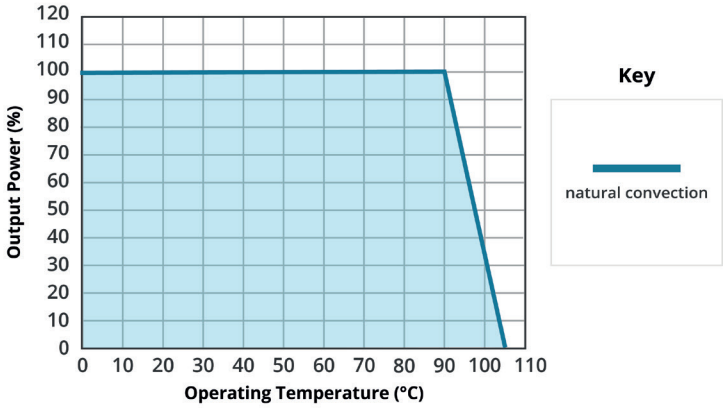


DERATING CURVES

TEMPERATURE DERATING CURVE with heatsink (Vin = 36V)

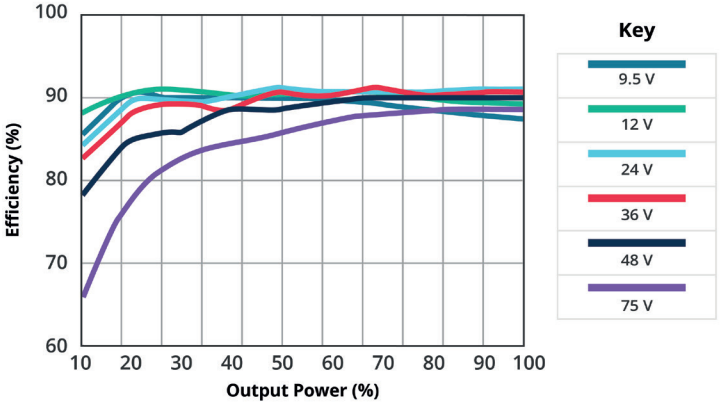


TEMPERATURE DERATING CURVE with heatsink (Vin = 36V)

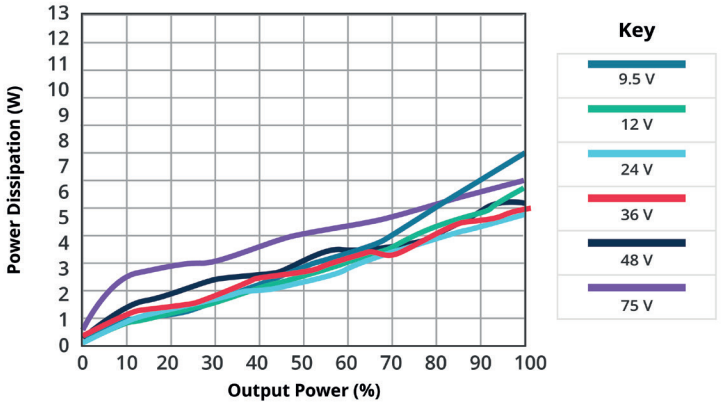


EFFICIENCY CURVES

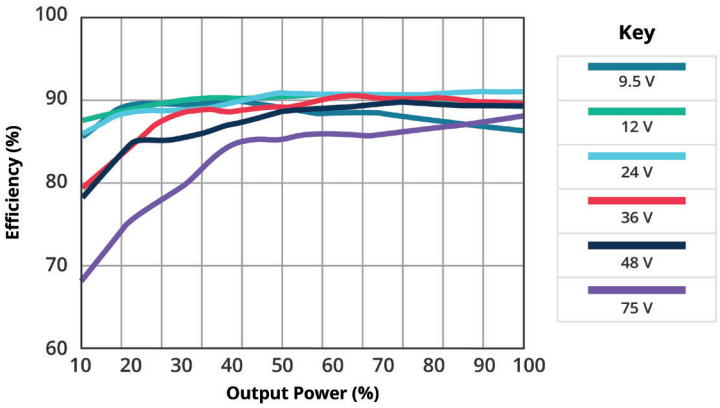
EFFICIENCY VS OUTPUT POWER PST50W-36-S12B (at 25°C)



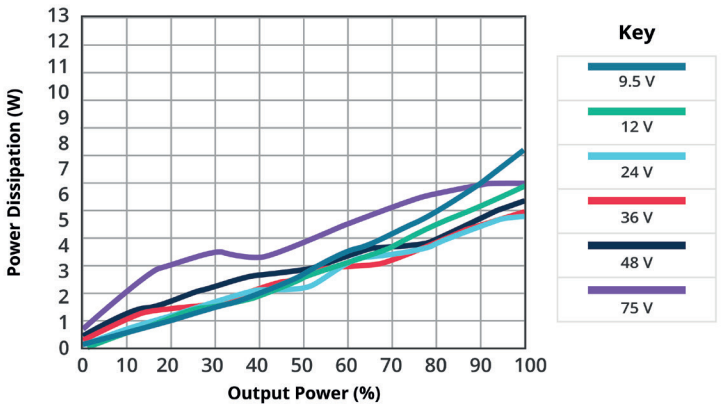
POWER DISSIPATION VS OUTPUT POWER PST50W-36-S12B (at 25°C)



EFFICIENCY VS OUTPUT POWER PST50W-36-S15B (at 25°C)

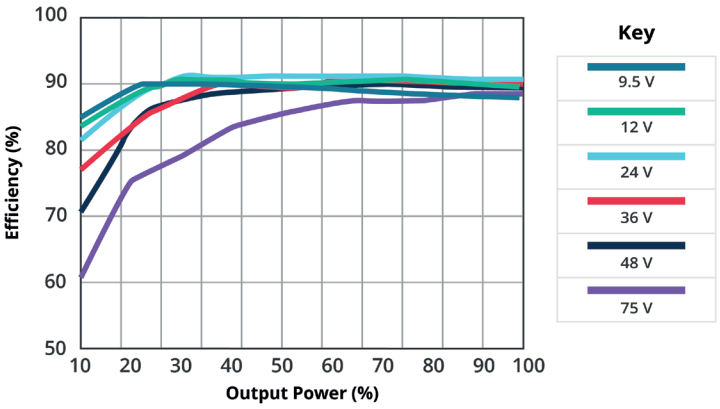


POWER DISSIPATION VS OUTPUT POWER PST50W-36-S15B (at 25°C)

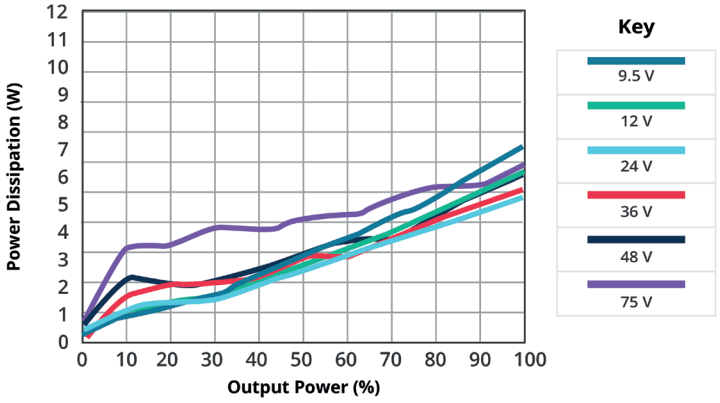


EFFICIENCY CURVES (CONTINUED)

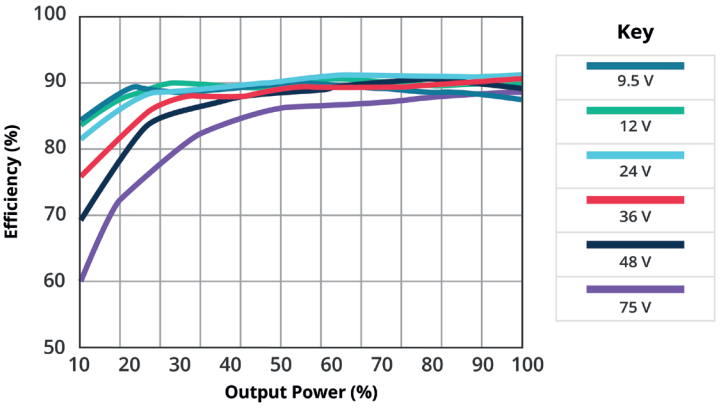
EFFICIENCY VS OUTPUT POWER
PST50W-36-S24B (at 25°C)



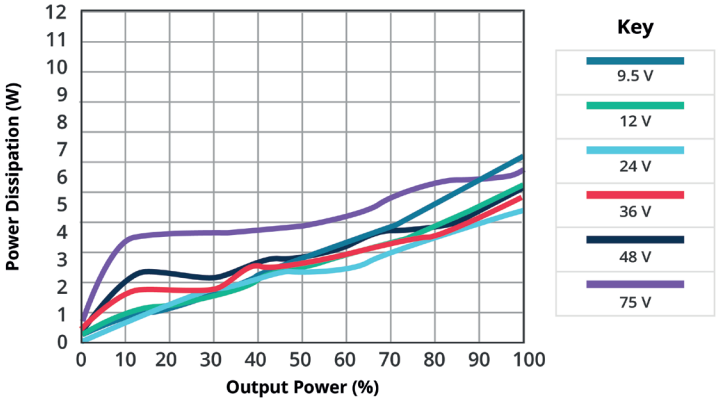
POWER DISSIPATION VS OUTPUT POWER
PST50W-36-S24B (at 25°C)



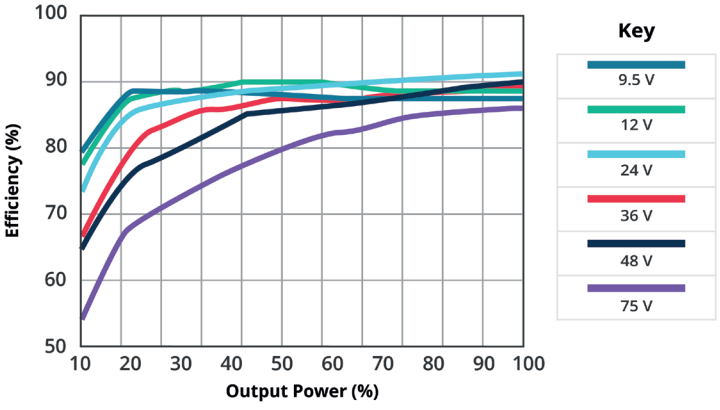
EFFICIENCY VS OUTPUT POWER
PST50W-36-S28B (at 25°C)



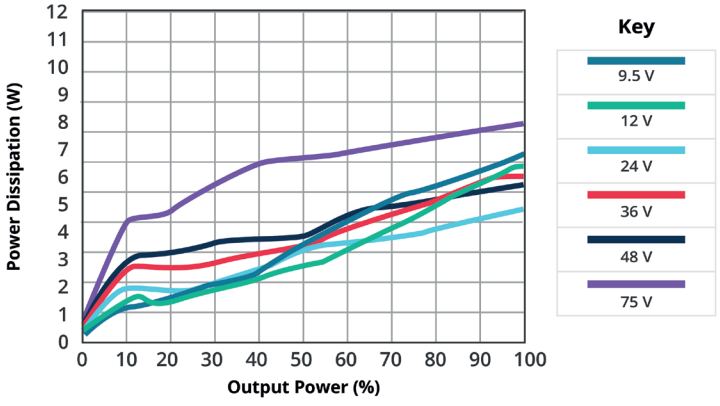
POWER DISSIPATION VS OUTPUT POWER
PST50W-36-S28B (at 25°C)



EFFICIENCY VS OUTPUT POWER
PST50W-36-S48B (at 25°C)



POWER DISSIPATION VS OUTPUT POWER
PST50W-36-S48B (at 25°C)



REVISION HISTORY

rev.	description	date
1.0	initial release	02/10/2024
1.01	company address updated	11/13/2024

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.

CUI reserves the right to make changes to the product at any time without notice. Information provided by CUI is believed to be accurate and reliable. However, no responsibility is assumed by CUI for its use, nor for any infringements of patents or other rights of third parties which may result from its use.

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.