

SERIES: PRC300 | **DESCRIPTION:** DC-DC CONVERTER

FEATURES

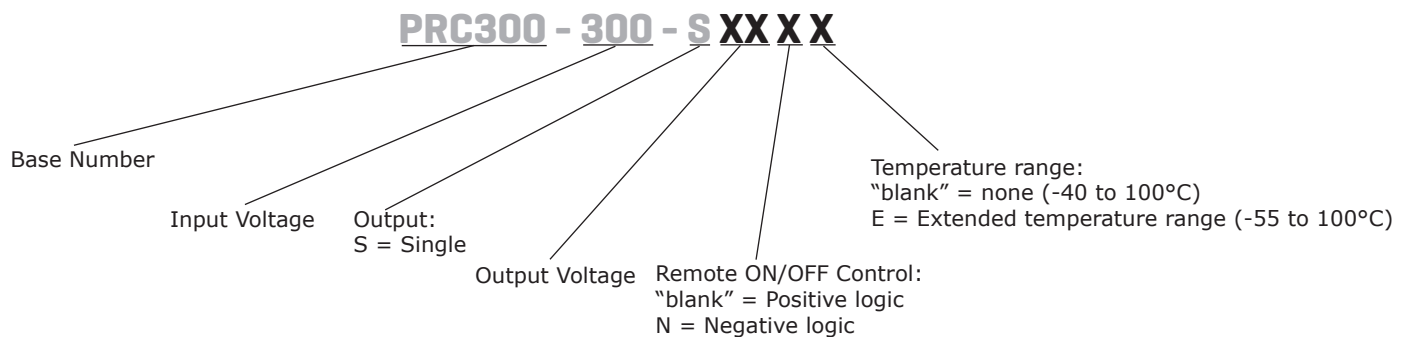
- 300 W isolated output
- industry standard half brick package
- 180~400 Vdc input range
- reinforced insulation
- -40~100 °C operating temperature range
- 4,200 Vdc isolation
- over current, over temperature, over voltage, short circuit, and input under voltage protections
- baseplate cooling
- remote ON/OFF control, output voltage trim
- EN/IEC 62368-1 certified, meets EN 45545-2 and EN 61373



MODEL	input voltage		output voltage	output current	output power	ripple & noise ¹	efficiency ²
	typ (Vdc)	range (Vdc)	(Vdc)	max (A)	max (W)	max (mVp-p)	typ (%)
PRC300-300-S5	300	180 ~ 400	5	60	300	120	89
PRC300-300-S12	300	180 ~ 400	12	25	300	150	88
PRC300-300-S24	300	180 ~ 400	24	12.5	300	240	90
PRC300-300-S28	300	180 ~ 400	28	10.7	300	280	90
PRC300-300-S48	300	180 ~ 400	48	6.25	300	480	90

Notes: 1. Peak to peak, through 12 μH inductor, 5 Hz ~ 20 MHz bandwidth.
 5V: 47μF T521 KO CAP. <55mR and 1μF ceramic capacitor; 48V: 10μF aluminum capacitor and 1μF ceramic capacitor
 2. At nominal input voltage.
 3. All specifications are typical at nominal input, full load at 25°C, unless otherwise noted.

PART NUMBER KEY



INPUT

parameter	conditions/description	min	typ	max	units
operating input voltage		180	300	400	Vdc
surge voltage				500	Vdc
input undervoltage lockout	at full load		10		Vdc
start-up voltage	at full load	165 155	170 160	175 165	Vdc Vdc
input current	at full load, 180 Vdc input		1.91		A
no load input current	at 300 Vdc input		0.1		A
off converter input current	shutdown input idle current		3	5	mA
inrush current	as per ETS300 132-2			0.1	A ² s
input filter	Pi filter				
remote ON/OFF	positive logic	module off: CTRL pin pulled low to GND (0~1.2 Vdc) module on: CTRL pin open or pulled high (3.5~75 Vdc)			
	negative logic	module off: CTRL pin open or pulled high (3.5~75 Vdc) module on: CTRL pin pulled low to GND (0~1.2 Vdc)			
ON/OFF current ⁴	I on/off at V on/off=0V		0.3	1	mA

Notes: 4. Applies to positive and negative logic.

OUTPUT

parameter	conditions/description	min	typ	max	units
maximum capacitive load	5 & 12 Vdc output			10,000	μF
	24 & 28 Vdc output			6,000	μF
	48 Vdc output			3,000	μF
voltage accuracy	at 300 Vdc input, nominal input		±1		%
line regulation	low line to high line at full load			±0.2	%
load regulation	0% ~ 100% load			±0.2	%
start-up time	from on/off control	Von/off to 10% Vo_set, remote on		50	ms
	from input	Vin_min to 10% Vo_set, power up		300	ms
rise time	10% ~ 90% Vo_set		10		ms
trim range	Po ≤ max. rated power, Io ≤ Io_max	-20		10	%
remote sense	Po ≤ max. rated power, Io ≤ Io_max; % of nominal Vo			10	%
operating frequency	pulse width modulation (PWM) fixed	270	300	330	kHz
transient recovery time	75% ~ 100% load step change			250	μs
temperature coefficient	40°C ~ 100°C load step change			±0.02	%/°C

PROTECTIONS

parameter	conditions/description	min	typ	max	units
over voltage protection		115	125	140	%
over current protection	auto recovery, hiccup	105	125	140	%
short circuit protection	continuous, auto recovery				
over temperature protection	at the center part of base plate, non-latching		105		°C
over temperature recovery	at the center part of base plate, non-latching		95		°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, for 1 minute			2,500 3,500	Vac Vdc
	output to case, for 1 minute			500 700	Vac Vdc
isolation capacitance	input to output		-		
	input to case		-		
	output to case		20,000		pF
leakage current ⁵	positive logic, Von/off = 15 V			30	µA
safety approvals	certified to 62368-1: EN, IEC certified to 60950-1: UL designed to meet 45545-2: EN				
EMI	meets EN 55032				
ESD	EN 61000-4-2 Level 3: Air ±8 kV, Contact ±6 kV, perf. Criteria A				
radiated immunity	EN 61000-4-3 Level 3: 80~1000 MHz, 20 V/m, perf. Criteria A				
fast transient ⁶	EN 61000-4-4 Level 3: on power input port, ±2 kV, perf. Criteria A				
surge	EN 61000-4-5 Level 4: line to earth, ±2 kV, Line to line, ±2 kV, perf. Criteria A				
conducted immunity	EN 61000-4-6 Level 3: 0.15~80 MHz, 10 V, perf. Criteria A				
magnetic field immunity	EN 61000-4-8 50/60 Hz, 3 A/m (r.m.s.), perf. Criteria A				
shock / vibration	MIL-STD-810F/EN 61373				
thermal shock	MIL-STD-810F				
fire and smoke	complies with EN 45545-2				
MTBF	MIL-HDBK-217F Notice 1, GB, at 25°C				
	5 Vdc output voltage model		470,000		hours
	12 Vdc output voltage model		590,000		hours
	all other output models		760,000		hours
RoHS	yes				

Notes: 5. Applies to positive and negative logic.
6. External capacitor required.

ENVIRONMENTAL

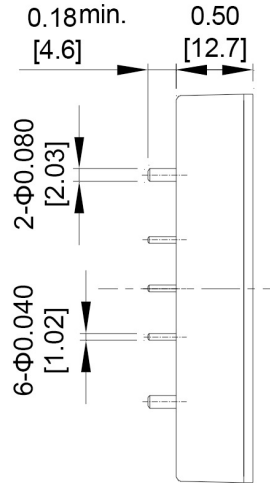
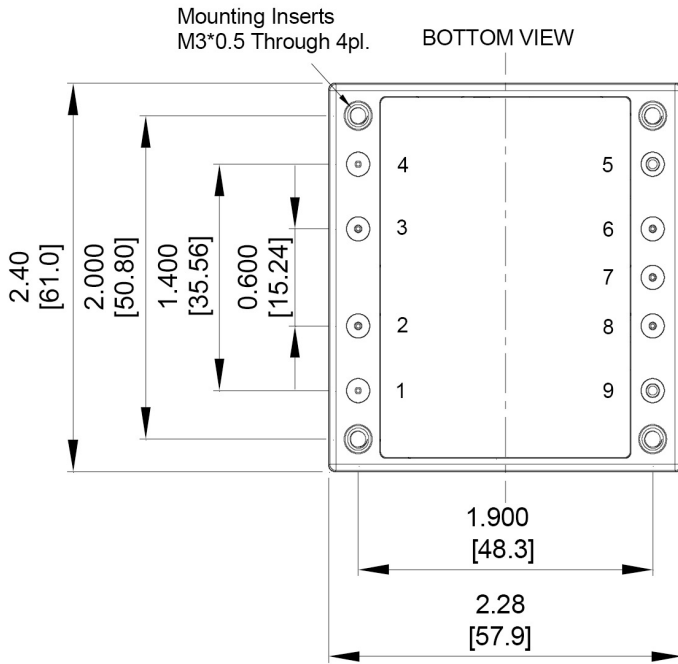
parameter	conditions/description	min	typ	max	units
operating case temperature	at center of the case (see derating curve)	-40		100	°C
storage temperature		-55		125	°C
humidity	non-condensing	0		95	%
altitude	operating		2,000		m
	transport		12,000		m

MECHANICAL

parameter	conditions/description	min	typ	max	units
dimensions	61 x 57.9 x 12.7				mm
weight			90		g
case material	plastic, DAP, UL 94V-0				
base plate material	aluminum				
potting material	UL94V-0				
pin material	base: copper plating: nickel with matte tin				
cooling method	natural convection				

MECHANICAL DRAWING

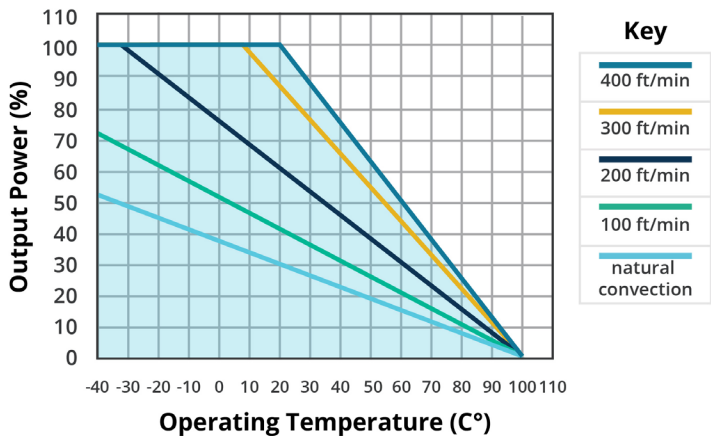
units: inch [mm]
 general tolerance: inches: x.xx = ±0.02mm, x.xxx = ±0.010
 mm: x.x = ±0.5, x.xx = ±0.25



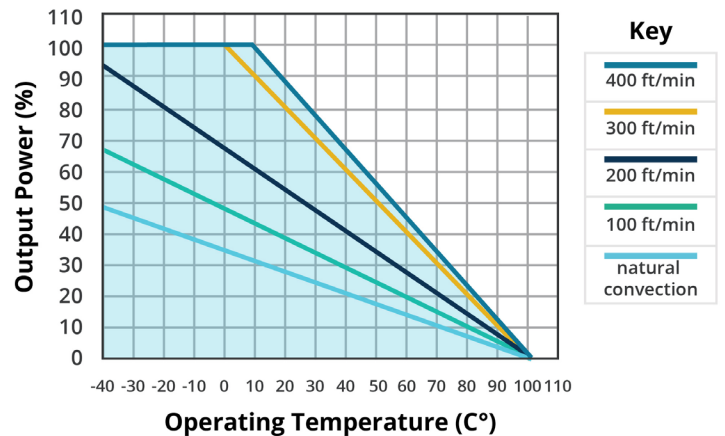
Pin Out	
PIN	Function
1	+Vin
2	CTRL
3	NP
4	-Vin
5	-Vout
6	-Sense
7	Trim
8	+Sense
9	+Vout

DERATING CURVES

TEMPERATURE DERATING CURVE
PRC300-300-S5
 (without heatsink / Vin = 300V)

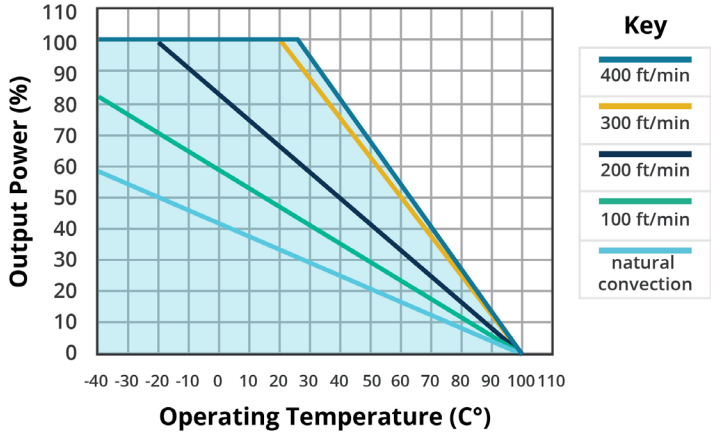


TEMPERATURE DERATING CURVE
PRC300-300-S12
 (without heatsink / Vin = 300V)

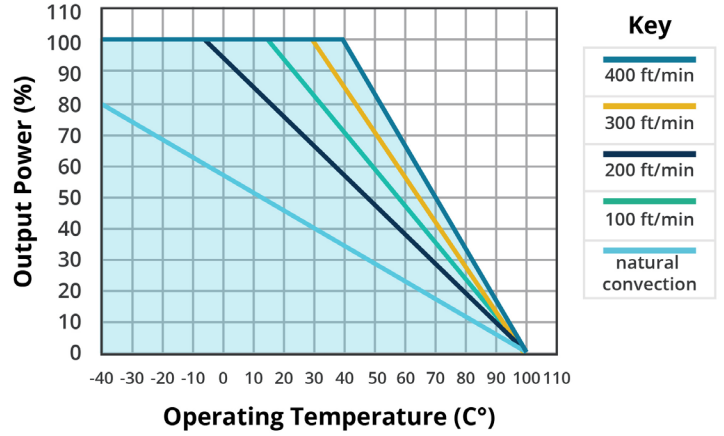


DERATING CURVES (CONTINUED)

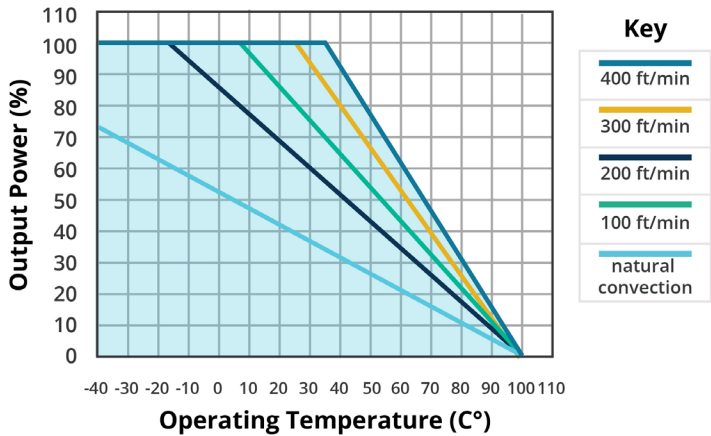
TEMPERATURE DERATING CURVE
PRC300-300-S24/28/48
 (without heatsink / Vin = 300V)



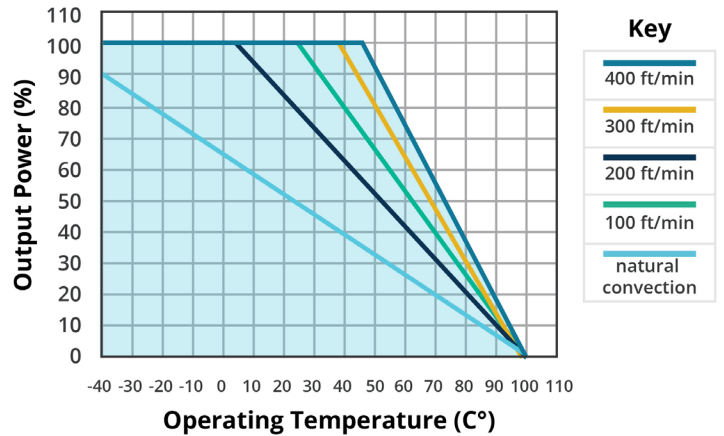
TEMPERATURE DERATING CURVE
PRC300-300-S5
 (with heatsink / Vin = 300V)



TEMPERATURE DERATING CURVE
PRC300-300-S12
 (with heatsink / Vin = 300V)

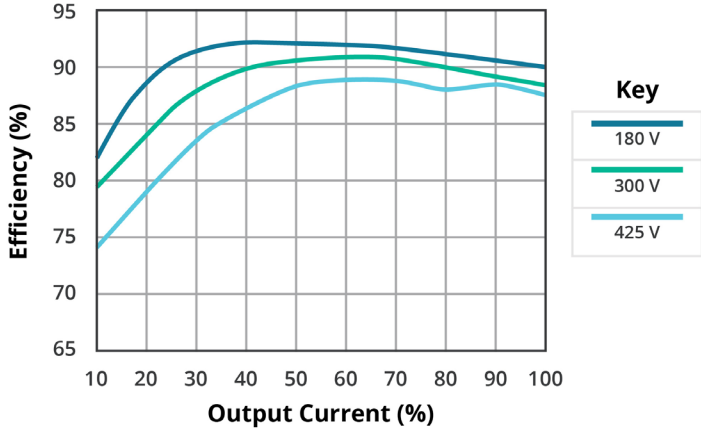


TEMPERATURE DERATING CURVE
PRC300-300-S24/28/48
 (with heatsink / Vin = 300V)

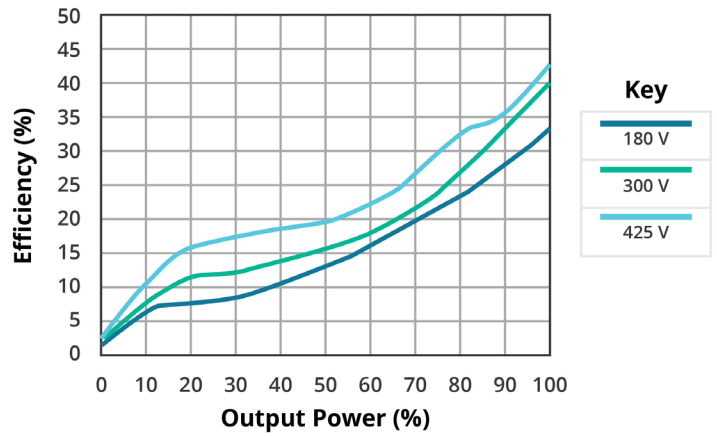


EFFICIENCY CURVES

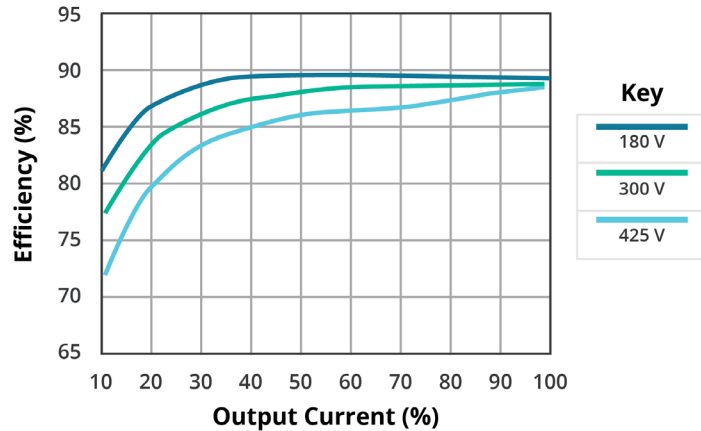
EFFICIENCY VS OUTPUT LOAD
PRC300-300-S5
(at 25°C)



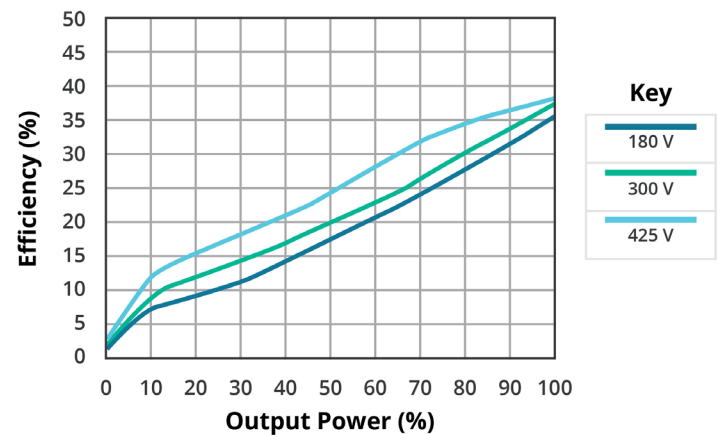
POWER DISSIPATION VS OUTPUT POWER
PRC300-300-S5
(at 25°C)



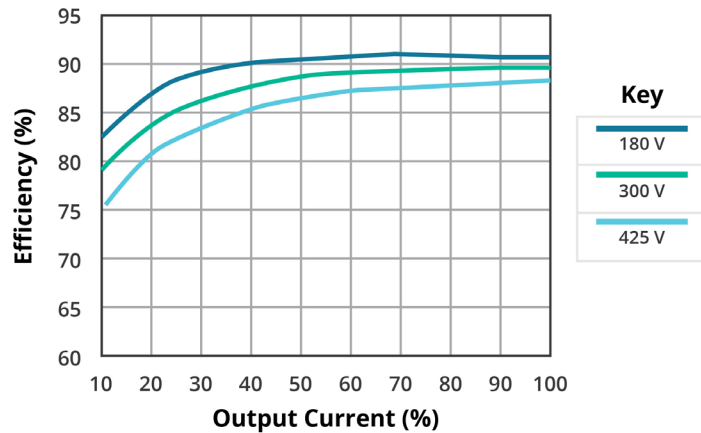
EFFICIENCY VS OUTPUT LOAD
PRC300-300-S12
(at 25°C)



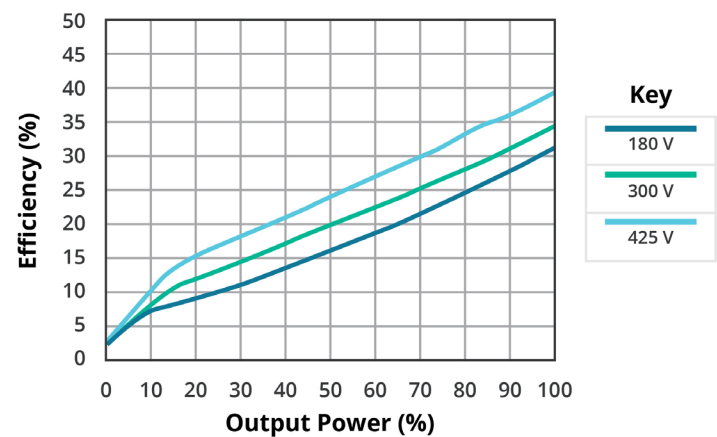
POWER DISSIPATION VS OUTPUT POWER
PRC300-300-S12
(at 25°C)



EFFICIENCY VS OUTPUT LOAD
PRC300-300-S24
(at 25°C)

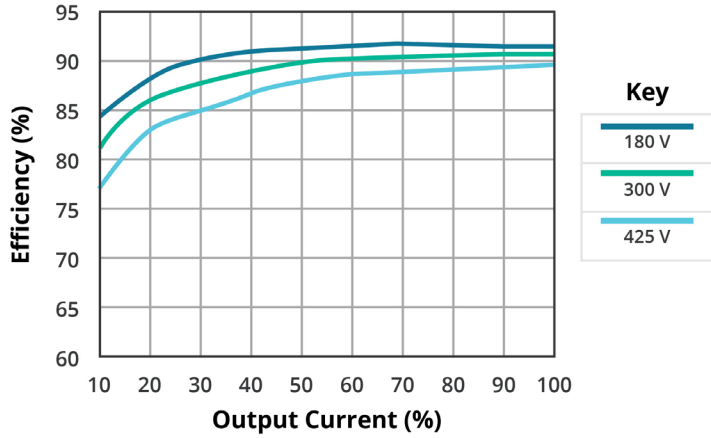


POWER DISSIPATION VS OUTPUT POWER
PRC300-300-S24
(at 25°C)

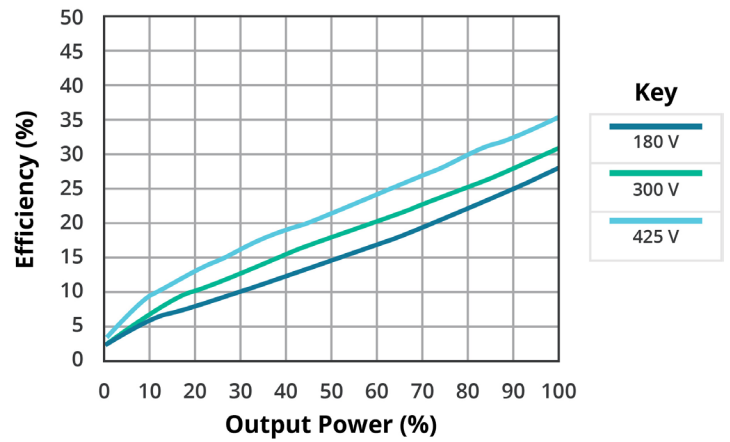


EFFICIENCY CURVES (CONTINUED)

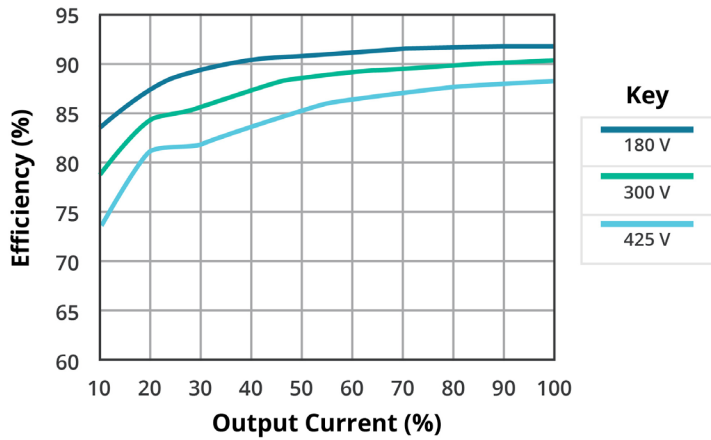
EFFICIENCY VS OUTPUT LOAD
PRC300-300-S28
(at 25°C)



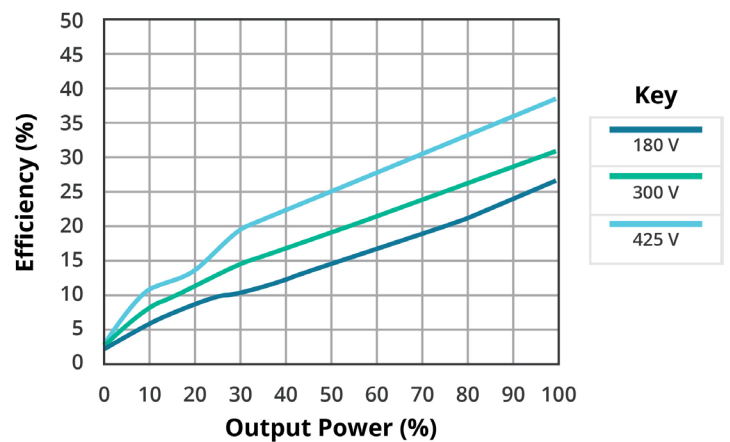
POWER DISSIPATION VS OUTPUT POWER
PRC300-300-S28
(at 25°C)



EFFICIENCY VS OUTPUT LOAD
PRC300-300-S48
(at 25°C)



POWER DISSIPATION VS OUTPUT POWER
PRC300-300-S48
(at 25°C)



REVISION HISTORY

rev.	description	date
1.0	initial release	08/07/2024

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



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