



# CFB600-300S SERIES 600 WATT 2:1 INPUT ISOLATED DC-DC CONVERTER

## Features

- Efficiency to 91%
- Fixed Switching Frequency
- Remote On/Off
- Fully Protected (OTP/OCP/OVP/UVLO)
- 3000Vac I/O Isolation
- Operating Case Temperature -40 to +100°C
- Full-Brick Size Meet Industrial Standard  
4.60"x2.40"x0.5"
- UL 60950-1 Approval
- Shock & Vibration MIL-STD-810F(EN 61373) Compliant
- Fire & Smoke EN 45545-2 Compliant
- 2000m Operating Altitude
- Safety Meets UL/IEC/EN 62368-1



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF. (1)	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD		
CFB600-300S12	180-425 VDC	12 VDC	0 mA	50 A	10 mA	2.24 A	89.5	10000uF
CFB600-300S24	180-425 VDC	24 VDC	0 mA	25 A	10 mA	2.21 A	90.5	10000uF
CFB600-300S48	180-425 VDC	48 VDC	0 mA	12.5 A	10 mA	2.20 A	91	8000uF

**NOTE:**

1. Nominal Input Voltage 300 VDC.
2. The output terminal required a minimum capacitor 470uF to maintain specified regulation.
3. An external input capacitor 330uF for all models are recommended to reduce input ripple voltage.
4. Measure at Nominal Input Voltage.

## PART NUMBER

Series	Nominal Input Voltage	Number of Outputs	Nominal Output Voltage	Remote On/Off Logic	Mounting Inserts
CFB600-	II	O	XX	L	-Y
CFB600	300 : 300 VDC	S : Single	12 : 12VDC 24 : 24VDC 48 : 48VDC	None : Positive N : Negative	None : Clear Mounting Insert (3.5mm DIA.)

**Part Number Example:**

**CFB600-300S24N:** Full Brick, 600W, 2:1 180-425Vdc Input, Single 24Vdc Output, Negative Logic, Clear Mounting Insert



# CFB600-300S Series

## TECHNICAL SPECIFICATIONS

(All specifications are typical at nominal input, full load at 25°C unless otherwise noted.)

### ABSOLUTE MAXIMUM RATINGS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input Voltage	Continuous	All	-0.3		425	V <sub>dc</sub>
Input Surge Voltage	100ms max.	All			475	V <sub>dc</sub>
Operating Case Temperature	At the center part of base plate	All	-40		100	°C
Storage Temperature		All	-55		105	°C

### INPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Operating Input Voltage		All	180	300	425	V <sub>dc</sub>
Input Under Voltage Lockout						
Turn-On Voltage Threshold		All	160	170	180	V <sub>dc</sub>
Turn-Off Voltage Threshold		All	150	160	170	V <sub>dc</sub>
Lockout Hysteresis Voltage		All		10		V <sub>dc</sub>
Input Over Voltage Protection						
Module-On Voltage				480		V <sub>dc</sub>
Module -Off Voltage				500		V <sub>dc</sub>
Maximum Input Current	V <sub>in</sub> =180V, Full load	All		3.8		A
No-Load Input Current	V <sub>in</sub> =300V, I <sub>o</sub> =0A	See Model Number Table				mA
Input Filter	Capacitance filter	All				
Inrush Current (I <sup>2</sup> t)	As per ETS300 132-2	All		0.1		A <sup>2</sup> s
Input Reflected Ripple Current	P-P Thru 12uH Inductor, 5Hz to 20MHz	All		60		mA

### OUTPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Voltage Set Point Accuracy	V <sub>in</sub> =300V, Full load, T <sub>c</sub> =25°C	All	-1.0		+1.0	%
Output Voltage Regulation						
Load Regulation	Full load to no load	All			±0.5	%
Line Regulation	V <sub>in</sub> =High line to low line, full load	All			±0.2	%
Temperature Coefficient	T <sub>c</sub> =-40°C to 100°C	All			±0.03	%/°C
Output Voltage Ripple and Noise (5Hz to 20MHz bandwidth)						
Peak-to-Peak	Full load, 470uF aluminum and 1.0uF ceramic capacitors	V <sub>o</sub> =12V			150	mV
		V <sub>o</sub> =24V			400	
		V <sub>o</sub> =48V			480	
RMS.		V <sub>o</sub> =12V			75	
		V <sub>o</sub> =24V			120	
		V <sub>o</sub> =48V			200	
Output Current Range	V <sub>in</sub> = 180 to 425V	See Model Number Table				A
Over Current Protection	Continuous current. Auto recovery	All	105	115	125	%
Short Circuit Protection		All	Continuous, Auto Recovery			
External Load Capacitance	Full load (resistive)	See Model Number Table				uF
Output Voltage Trim Range	P <sub>o</sub> ≤ max. rated power, I <sub>o</sub> ≤ I <sub>o_max</sub> .	All	-40		+10	%
Output Voltage Remote Sense Range	P <sub>o</sub> ≤ max. rated power, I <sub>o</sub> ≤ I <sub>o_max</sub> . % of nominal V <sub>o</sub>	All			+10	%
Over Voltage Protection	Limited voltage, % of nominal V <sub>o</sub>	All	115	125	140	%
Auxiliary Output Voltage		All	7	10	13	V
Auxiliary Output Current		All			20	mA
Power Good Signal (IOG)	V <sub>out</sub> Ready: low level, sink current	All			20	mA
	V <sub>out</sub> not Ready: open drain output, applied voltage	All			50	V



# CFB600-300S Series

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Load Share Accuracy (50%-100% load)	The condition is to use two modules. If you use more modules, please contact cincon	All	-10		+10	%

## EFFICIENCY

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
100% Load	$V_{in}=300V$	See Model Number Table				%

## DYNAMIC CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Output Voltage Current Transient						
Error Band	75% to 100% of $I_{o\_max}$ . step load change $dI/dt=0.1A/us$ (within 1% $V_{out}$ nominal)	All			$\pm 5$	%
Recovery Time		All			500	us
Turn-On Delay and Rise Time						
Full load (constant resistive load)						
Turn-On Delay Time, From On/Off Control	$V_{on/off}$ to 10% $V_{o\_set}$ , Remote on	All		100		ms
Turn-On Delay Time, From Input	$V_{in\_min.}$ to 10% $V_{o\_set}$ , Power up	All		700		ms
Output Voltage Rise Time	10% $V_{o\_set}$ to 90% $V_{o\_set}$	All		40		ms

## ISOLATION CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Isolation Voltage (100% Factory Hi-Pot tested @2sec.)	1 Minute; input to output	All			3000	$V_{ac}$
					4200	$V_{dc}$
	1 Minute; input to case (base plate)				2500	$V_{ac}$
					3500	$V_{dc}$
	1 Minute; output to case (base plate)				500	$V_{ac}$
					700	$V_{dc}$
Isolation Resistance	Input to output	All	10			M $\Omega$
Isolation Capacitance	Input to output	All		NC		pF
	Input to case (base plate)			NC		
	Output to case (base plate)			9400		

## FEATURE CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Switching Frequency	Pulse width modulation (PWM), fixed	All	170	200	230	KHz
On/Off Control, Positive Remote On/Off Logic, Refer to -Vin Pin						
Logic Low (Module Off)	$V_{on/off}$ at $I_{on/off}=1.0mA$	All	0		1.2	V
Logic High (Module On)	$V_{on/off}$ at $I_{on/off}=0.0uA$ ,	All	3.5 or Open Circuit		75	V
On/Off Control, Negative Remote On/Off Logic, Refer to -Vin Pin						
Logic High (Module Off)	$V_{on/off}$ at $I_{on/off}=0.0uA$ ,	All	3.5 or Open Circuit		75	V
Logic Low (Module On)	$V_{on/off}$ at $I_{on/off}=1.0mA$	All	0		1.2	V
On/Off Current (for Both Remote On/Off Logic)	$I_{on/off}$ at $V_{on/off}=0.0V$			0.3	1	mA
Leakage Current (for Both Remote On/Off Logic)	Logic high, $V_{on/off}=15V$				30	uA
Off Converter Input Current	Shutdown input idle current	All		5	10	mA
Over Temperature Shutdown	Temperature at the center part of base plate, non-latching	All		105		$^{\circ}C$
Over Temperature Recovery		All		90		$^{\circ}C$



# CFB600-300S Series

## GENERAL SPECIFICATIONS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
MTBF	$I_o=100\%$ of $I_{o\_max}$ ; MIL-HDBK - 217F_Notice 1, GB, 25°C	All		420		K hours
Weight		All		230		grams
Case Material	Plastic, DAP, UL 94V-0					
Base Plate Material	Aluminum					
Potting Material	UL 94V-0					
Pin Material	Base: Copper Plating: Nickel with Matte Tin					
Shock/Vibration	MIL-STD-810F/EN 61373 Compliant					
Humidity	95% RH max. Non condensing					
Altitude	2000m Operating altitude, 12000m Transport altitude					
Thermal Shock	MIL-STD-810F					

## EMC SPECIFICATIONS (External components required, please refer to application note.)

EMI	Meets EN 55032 (with external filter)			Class A		
ESD	Meets IEC/EN 61000-4-2	Air $\pm 8kV$ , Contact $\pm 4kV$		Perf. Criteria A		
Radiated Immunity	Meets IEC/EN 61000-4-3	3 V/m		Perf. Criteria A		
Fast Transient	Meets IEC/EN 61000-4-4	$\pm 1kV$ , external components required		Perf. Criteria A		
Surge	Meets IEC/EN 61000-4-5 EN 55024: Line to earth $\pm 2kV$ , Line to line $\pm 2kV$ , external components required			Perf. Criteria A		
Conducted Immunity	Meets IEC/EN 61000-4-6	3Vrms		Perf. Criteria A		
Power Frequency Magnetic Field Immunity	Meets IEC/EN 61000-4-8	50/60Hz, 3A/m (r.m.s.)		Perf. Criteria A		
Application Note Link	<a href="#">CFB600-300S Series App Notes</a>					
Packaging Information Link	<a href="#">Packaging Information</a>					

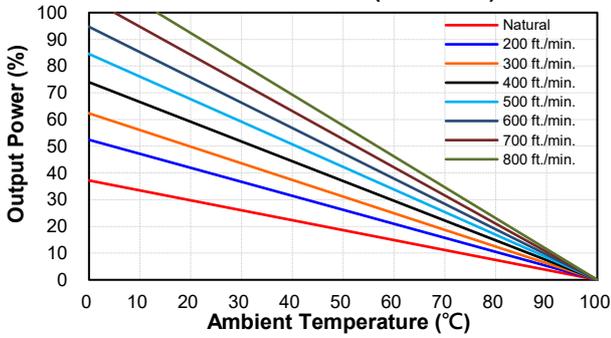


# CFB600-300S Series

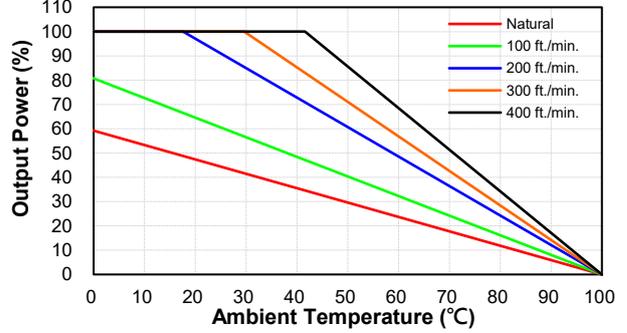
## CHARACTERISTIC CURVE

### Power Derating Curve

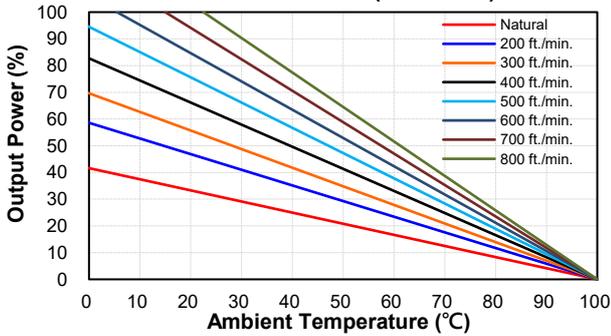
**CFB600-300S12 Derating Curve without Heatsink (Vin=300V)**



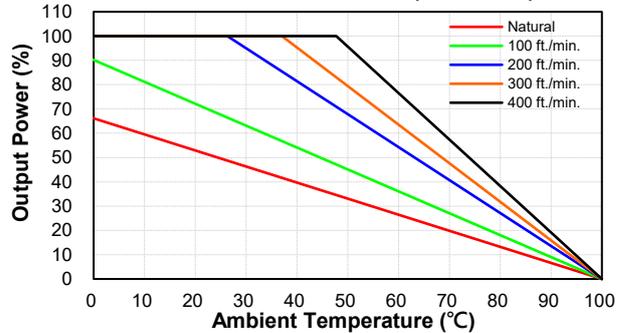
**CFB600-300S12 Derating Curve with Heatsink FBL254 (Vin=300V)**



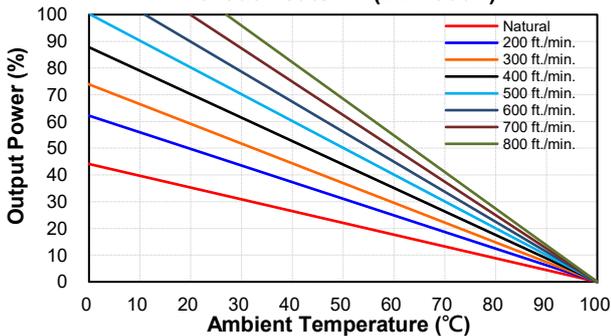
**CFB600-300S24 Derating Curve without Heatsink (Vin=300V)**



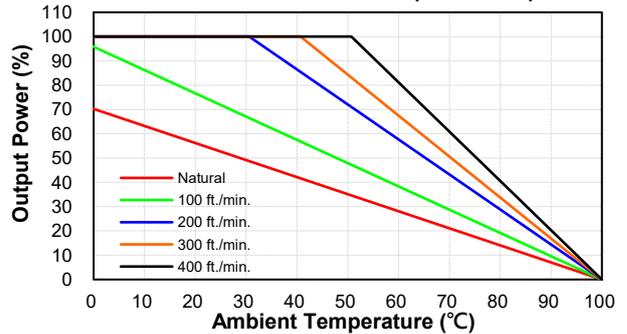
**CFB600-300S24 Derating Curve with Heatsink FBL254 (Vin=300V)**



**CFB600-300S48 Derating Curve without Heatsink (Vin=300V)**



**CFB600-300S48 Derating Curve with Heatsink FBL254 (Vin=300V)**

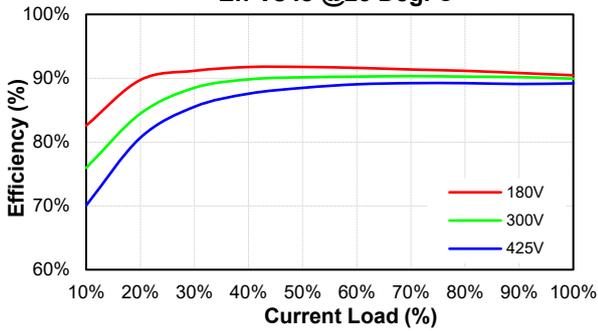




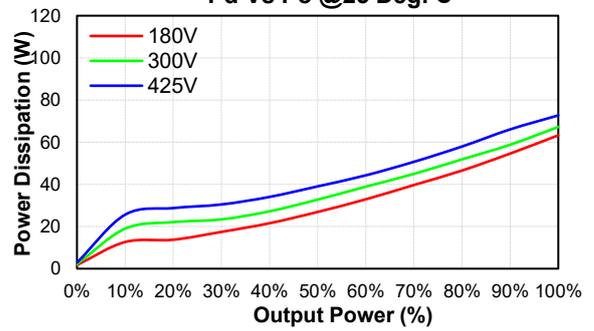
# CFB600-300S Series

## Performance Data

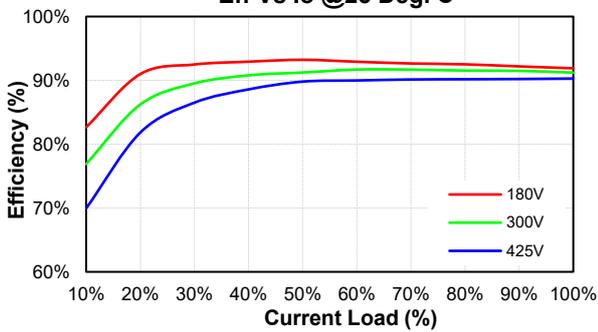
**CFB600-300S12**  
Eff Vs Io @25 Deg. C



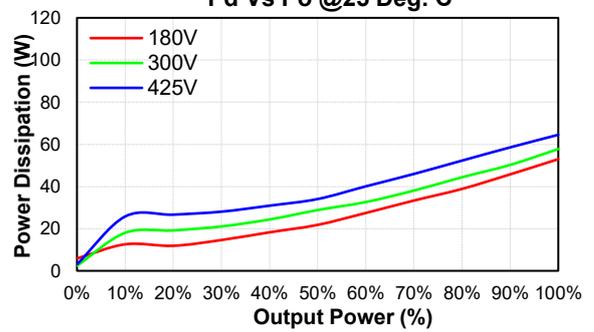
**CFB600-300S12**  
Pd Vs Po @25 Deg. C



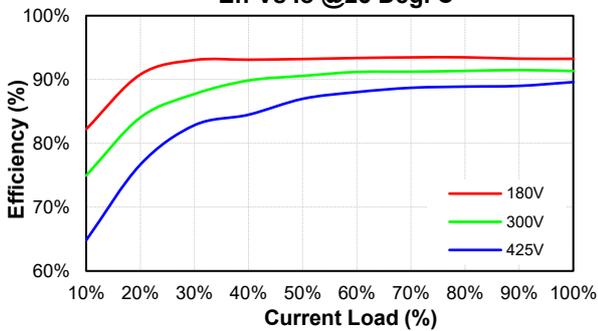
**CFB600-300S24**  
Eff Vs Io @25 Deg. C



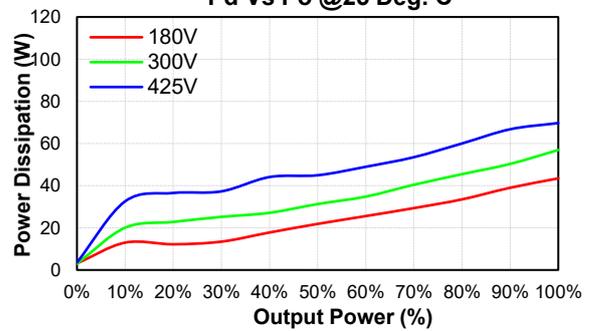
**CFB600-300S24**  
Pd Vs Po @25 Deg. C



**CFB600-300S48**  
Eff Vs Io @25 Deg. C



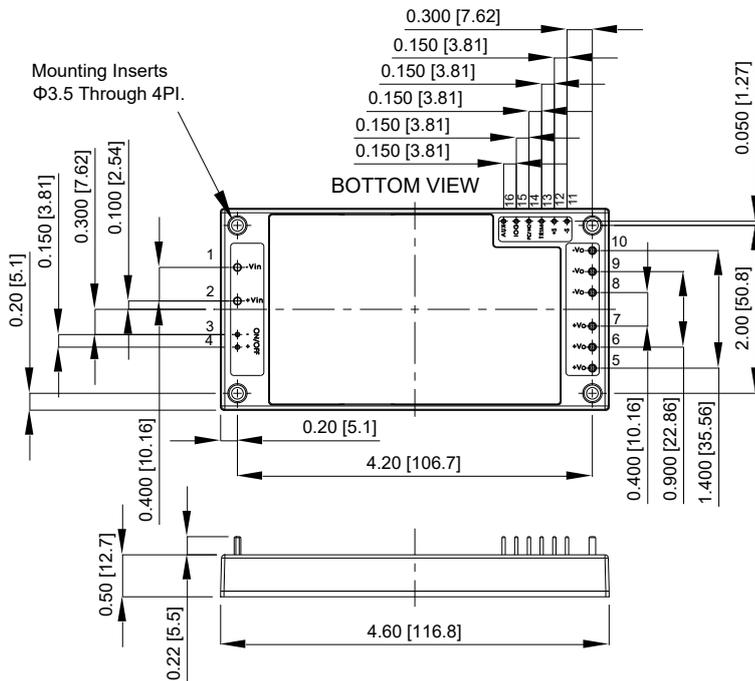
**CFB600-300S48**  
Pd Vs Po @25 Deg. C





# CFB600-300S Series

## MECHANICAL SPECIFICATION



PIN CONNECTION	
PIN	Function
1	-V Input
2	+V Input
3	-On/Off
4	+On/Off
5-7	+V Output
8-10	-V Output
11	-Sense
12	+Sense
13	Trim
14	PC
15	IOG
16	AUX

NOTE: Pin Size is 0.04±0.004 Inch [1.0±0.1 mm]DIA  
 Pin Size is 0.08±0.004 Inch [2.0±0.1 mm]DIA  
 All Dimensions In Inches [mm]  
 Tolerances Inches: X.XX= ±0.02 , X.XXX= ±0.010  
 Millimeters: X.X= ±0.5 , X.XX=±0.25

CINCON Electronics Co. Ltd.  
 Add: 14F, No. 306, Sec.4, Hsin Yi Rd., Taipei, Taiwan  
 Tel: 886-2-27086210  
 Fax: 886-2-27029852  
 E-mail: [sales@cincon.com](mailto:sales@cincon.com)  
 Web: [www.cincon.com](http://www.cincon.com)