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℃
- 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 EN45545-2 Compliant
- 2000m Operating Altitude
- Safety Meets UL/IEC/EN 62368-1

E176177

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD	(1)	
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 (Option)
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

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_{dc}
Input Surge Voltage	100ms max.	All			475	V_{dc}
Operating Case Temperature	At the center part of base plate	All	-40		100	℃
Storage Temperature		All	-55		105	℃

INPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Operating Input Voltage		All	180	300	425	V_{dc}
Input Under Voltage Lockout						
Turn-On Voltage Threshold		All	160	170	180	V_{dc}
Turn-Off Voltage Threshold		All	150	160	170	V_{dc}
Lockout Hysteresis Voltage		All		10		V_{dc}
Input Over Voltage Protection						
Module-On Voltage				480		V_{dc}
Module -Off Voltage				500		V_{dc}
Maximum Input Current	V_{in}=180V, Full load	All		3.8		A
No-Load Input Current	V_{in}=300V, Io=0A	See Model Number Table				mA
Input Filter	Capacitance filter	All				
Inrush Current (I^2t)	As per ETS300 132-2	All			1.0	A^2s
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_{in}=300V, Full load, T_c=25℃	All	-1.0		+1.0	%
Output Voltage Regulation						
Load Regulation	Full load to no load	All			±0.5	%
Line Regulation	V_{in}=High line to low line, full load	All			±0.2	%
Temperature Coefficient	T_c=-40℃ to 100℃	All			±0.03	%/℃
Output Voltage Ripple and Noise (5Hz to 20MHz bandwidth)						
Peak-to-Peak	Full load, 470uF aluminum and 1.0uF ceramic capacitors	Vo=12V Vo=24V Vo=48V			150 400 480	mV
RMS.		Vo=12V Vo=24V Vo=48V			75 120 200	
Output Current Range	V_{in}= 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	$P_o \leqq$ max. rated power, $I_o \leqq I_{o\_max.}$	All	-40		+10	%
Output Voltage Remote Sense Range	$P_o \leqq$ max. rated power, $I_o \leqq I_{o\_max.}$ % of nominal V_o	All			+10	%
Over Voltage Protection	Limited voltage, % of nominal V_o	All	115	125	140	%
Auxiliary Output Voltage		All	7	10	13	V
Auxiliary Output Current		All			20	mA
Power Good Signal (IOG)	V_{out} Ready: low level, sink current	All			20	mA
	V_{out} not Ready: open drain output, applied voltage	All			50	V

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Load Share Accuracy (50%-100% load)		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			±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 4200	V_{ac} V_{dc}
	1 Minute; input to case (base plate)				2500 3500	V_{ac} V_{dc}
	1 Minute; output to case (base plate)				500 700	V_{ac} V_{dc}
Isolation Resistance	Input to output	All	10			MΩ
Isolation Capacitance	Input to output Input to case (base plate) Output to case (base plate)	All		NC NC 10000		pF

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		℃
Over Temperature Recovery		All		90		℃

GENERAL SPECIFICATIONS

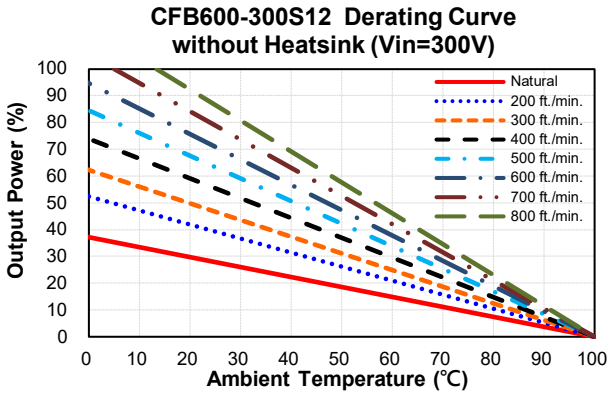
PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
MTBF	I_o=100% of $I_{o\_max.}$; MIL-HDBK - 217F_Notice 1, GB, 25℃	All		420		K hours
Weight		All		230		grams
Case Material	Plastic, DAP, UL 94V-0					
Base Plate Material	Aluminum					
Potting Material	UL 94V-0					
Pin Material	Base: Copper Plating: 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					

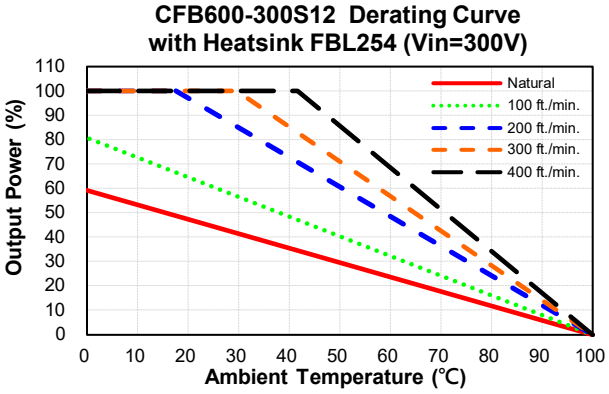
EMC SPECIFICATIONS (External components required, please refer to application note.)

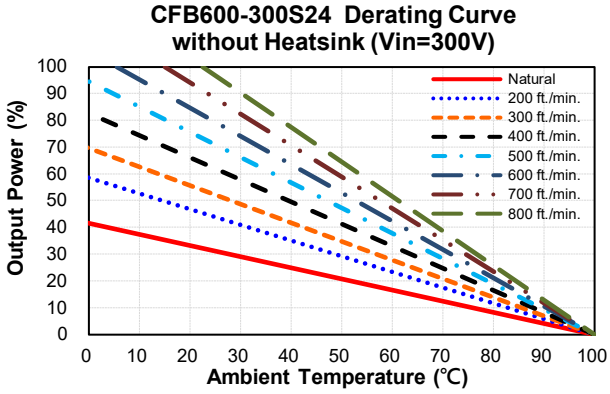
EMI	Meets EN 55032 (with external filter)		Class A
ESD	Meets IEC/EN 61000-4-2	Air ± 8kV, Contact ± 4kV	Perf. Criteria A
Radiated Immunity	Meets IEC/EN 61000-4-3	3 V/m	Perf. Criteria A
Fast Transient	Meets IEC/EN 61000-4-4	± 1kV, external components required	Perf. Criteria A
Surge	Meets IEC/EN 61000-4-5 EN 55024: Line to Earth ± 2kV, Line to Line ± 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			CFB600-300S Series App Notes
Packaging Information Link			Packaging Information

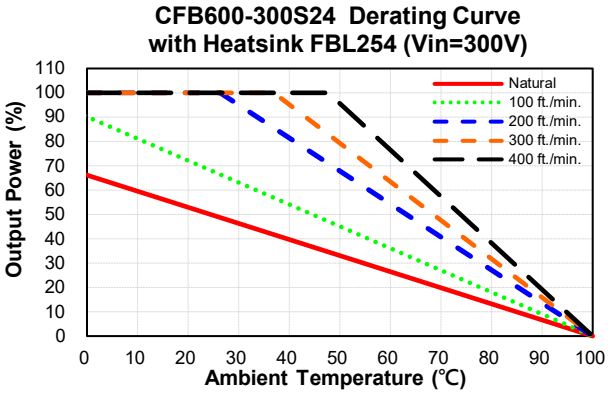
CHARACTERISTIC CURVE

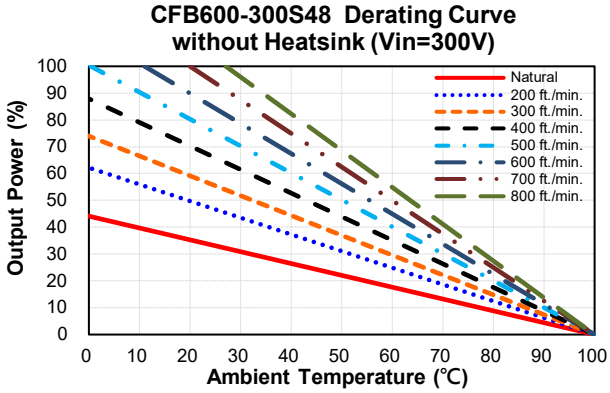
Power Derating Curve

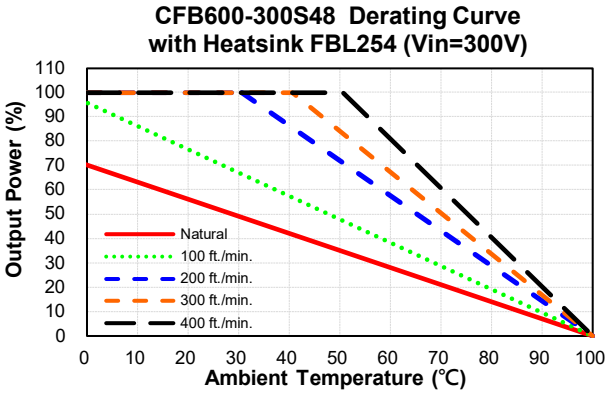






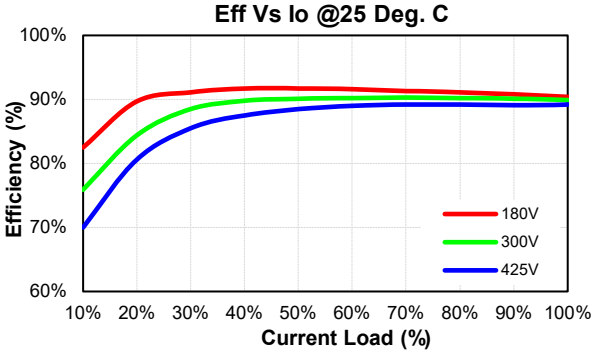




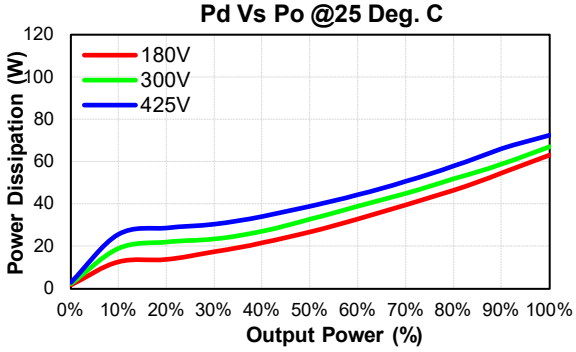


Performance Data

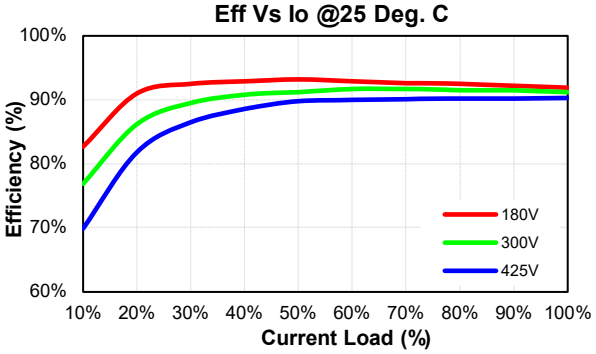
CFB600-300S12
Eff Vs Io @25 Deg. C



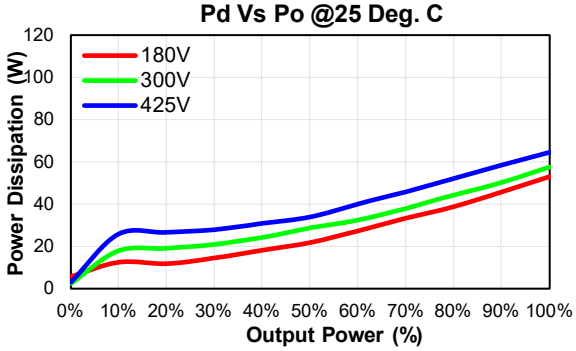
CFB600-300S12
Pd Vs Po @25 Deg. C



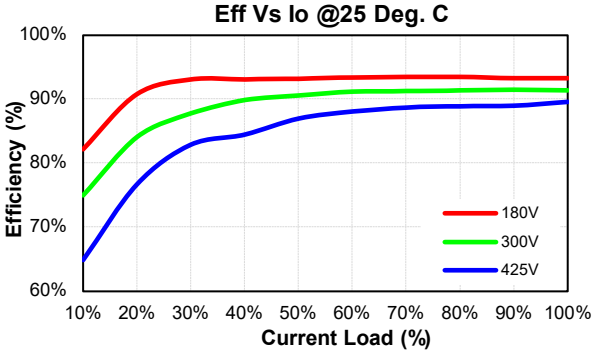
CFB600-300S24
Eff Vs Io @25 Deg. C



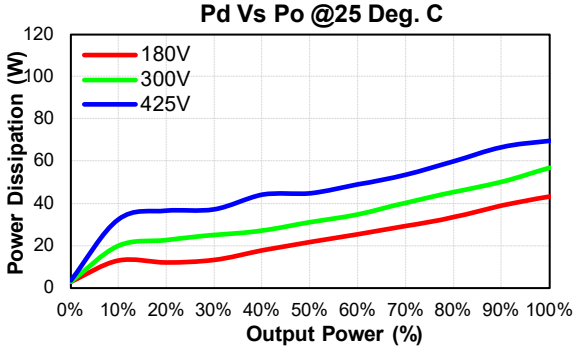
CFB600-300S24
Pd Vs Po @25 Deg. C



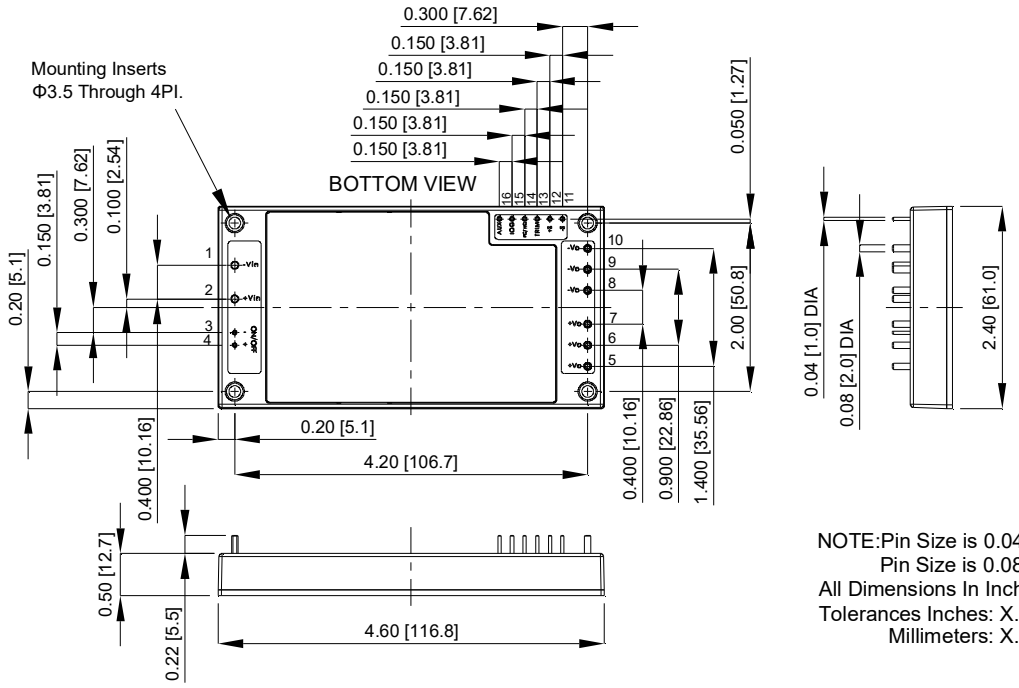
CFB600-300S48
Eff Vs Io @25 Deg. C



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



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

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