



E-Star Power Development Co., Ltd. (E-STAR)
 1F., No.40, Juren Ln., Sec. 2, Sanmin Rd., Banciao Dist., New Taipei City
 22069, Taiwan (R.O.C.)
 Phone : 886-2-2957 5580 Fax : 886-2-2957 7473

750W Open Frame type DC to Dc power supply > CFB750-300S-CMFD

Features

- Efficiency Up to 90%
- Fixed Switching Frequency
- Regulated Outputs
- Remote On/Off
- Low No Load Power Consumption
- Fully protected (OTP/OCP/OVP/UVLO)
- 3000Vac I/O Isolation
- Operating Case Temperature -40 to +80°C
- EN55032/22 for EMC Characteristic
- Shock & Vibration MIL-STD-810F Compliant
- Fire & Smoke EN45545-2 Compliant
- Safety Meets IEC/EN/UL 62368-1 Reinforced Insulation
- Build-In EMI Filter
- Chassis Mount, Baseplate Cooled (9.45"x4.33"x1.65")



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD		
CFB750-300S12□-CMFD	200-425 VDC	12 VDC	0 mA	62.5 A	10 mA	2.84 A	88	10000uF
CFB750-300S15□-CMFD	200-425 VDC	15 VDC	0 mA	50 A	10 mA	2.84 A	88	10000uF
CFB750-300S24□-CMFD	200-425 VDC	24 VDC	0 mA	31.2 A	10 mA	2.78 A	89	10000uF
CFB750-300S28□-CMFD	200-425 VDC	28 VDC	0 mA	26.7 A	10 mA	2.78 A	89	10000μF
CFB750-300S36□-CMFD	200-425 VDC	36 VDC	0 mA	20.8 A	10 mA	2.78 A	90	8000μF
CFB750-300S48□-CMFD	200-425 VDC	48 VDC	0 mA	15.6 A	10 mA	2.78 A	90	8000μF

NOTE:

1. Nominal Input Voltage 300 VDC
2. □ = N or none
3. VR is Used for Output Voltage Adjustment.
4. Refer to Application Note for Thermal Resistance and Derating Information.
5. TVS is Included for Input Surge Voltage Protection.
6. Recommend an External Fuse for Input Reverse Polarity Protection (shunt diode is included inside).
7. Input Connectors PIN1-PIN4: DINKLE 166-04P5 series or equivalent, suitable electric wire: 18~12AWG (IEC 0.5~4mm²).
8. Input Connectors CN1 wafer with TAIWAN KING PIN TERMINAL 8822-02 series or equivalent.
9. Output Connectors PIN5-PIN10: DINKLE DT-49-B01W-06 series or equivalent, suitable electric wire: 22~12AWG (IEC 0.5~4mm²).
10. Output Connector CN2 wafer with CHYAO SHIUNN TERMINAL JS-1001-04(K) series or equivalent.
11. Output Connector CN3 wafer with CHIA-SOON TERMINAL B3B-PH-K-S series or equivalent

PART NUMBER

Series	Nominal Input Voltage	Number of Outputs	Nominal Output Voltage	Remote On/Off Logic	Chassis Mount Type	
CFB750-	II	O	XX	L	-YYY	Z
CFB750	300: 300 VDC	S: Single	12: 12VDC 15: 15VDC 24: 24VDC 28: 28VDC 36: 36VDC 48: 48VDC	N: Negative (Remote Pin Open Module On) None: Positive (Remote Pin Open Module Off)	CMF: Chassis Mount Built in Filter	D: With Cover

Part Number Example:

CFB750-300S12N-CMFD: Chassis Mount, 750W, 2:1 200-425Vdc Input, Single 12Vdc Output, Negative Logic, With Cover



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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			450	V _{dc}
Operating Case Temperature	At the Center Part of Base Plate	All	-40		80	°C
Storage Temperature		All	-55		105	°C

INPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units	
Operating Input Voltage		All	200	300	425	V _{dc}	
Input Under Voltage Lockout							
Turn-On Voltage Threshold	Full Load	All	185	190	195	V _{dc}	
Turn-Off Voltage Threshold	Full Load	All	175	180	185	V _{dc}	
Lockout Hysteresis Voltage	Full Load	All		10		V _{dc}	
Input Over Voltage Protection							
Module-On Voltage		All		480		V _{dc}	
Module -Off Voltage		All		500		V _{dc}	
Maximum Input Current	V _{in} =200V, Full Load	300S12 300S15 Others		2.84 2.78		A	
No-Load Input Current	V _{in} =300V, I _o =0A	See Model Number Table					mA

OUTPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Voltage Set Point Accuracy	V _{in} =300V, Full Load, T _c =25°C	All	-1.0		+1.0	%
Output Voltage Regulation						
Load Regulation	Full Load to No Load	All			±1.0	%
Line Regulation	V _{in} =High Line to Low Line, Full Load	All			±0.2	%
Temperature Coefficient	T _c =-40°C to 80°C	All			±0.03	%/°C
Output Voltage Ripple and Noise (5Hz to 20MHz bandwidth)						
Peak-to-Peak	Full load, 1uF ceramic capacitors	12Vo			300	mV
		15Vo			300	
		24Vo			600	
		28Vo			600	
		36Vo			650	
		48Vo			750	
RMS.	Full load, 1uF ceramic capacitors	12Vo			150	mV
		15Vo			150	
		24Vo			300	
		28Vo			300	
		36Vo			300	
		48Vo			350	
Output Current Range	V _{in} = 200 to 425V	See Model Number Table				A
Over Current Protection	Continuous Current. Auto Recovery	All	105		125	%
Short Circuit Protection		All	Continuous, Auto Recovery			
External Load Capacitance	Full load (resistive)	See Model Number Table				uF



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PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Output Voltage Trim Range	$P_o \leq \text{max rated power}, I_o \leq I_{o_max}$	300S12	-40		+10	%
		300S15	-40		+10	
		300S24	-30		+10	
		300S28	-30		+10	
		300S36	-20		+10	
		300S48	-15		+10	
Output Voltage Remote Sense Range	$P_o \leq \text{max rated power}, I_o \leq I_{o_max}$ % of nominal V_o	All			+10	%
Over Voltage Protection	Limited Voltage, % of Nominal V_o	All	115	125	140	%

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 $dI/dt=0.1A/us$	All			± 5	%
Recovery Time	(within 1% V_{out} nominal)	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		600		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),	All			2500 3500	V_{ac} V_{dc}
	1 minute; Output to Case (Base Plate)	All			500 700	V_{ac} V_{dc}
Isolation Resistance	Input to Output	All	10			M Ω
Isolation Capacitance	Input to Output	All	No Bridge Capacitor			pF
	Input to Case (Base Plate)	All	9740			
	Output to Case (Base Plate)	All	64000			

FEATURE CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Switching Frequency	Pulse wide modulation (PWM), Fixed	All	180	200	220	KHz
On/Off Control, Positive Remote On/Off logic, Refer to $-V_{in}$ pin.						
Logic Low (Module Off)	$V_{on/off}$ at $I_{on/off}=0.0uA$, Pin open=Off	All	0		1.2	V
Logic High (Module On)	$V_{on/off}$ at $I_{on/off}=1.0mA$	All	3.5		12	V
On/Off Control, Negative Remote On/Off logic, Refer to $-V_{in}$ pin						
Logic High (Module Off)	$V_{on/off}$ at $I_{on/off}=1.0mA$	All	3.5		12	V
Logic Low (Module On)	$V_{on/off}$ at $I_{on/off}=0.0uA$, Pin open=On	All	0		1.2	V
On/Off Current (for both remote on/off logic)	$I_{on/off}$ at $V_{on/off}=3.5-12V$	All	0.5		2.5	mA
Off Converter Input Current	Shutdown input idle current	All			15	mA
Auxiliary Output Voltage		All	7	10	13	V
Auxiliary Output Current		All			20	mA
Over Temperature Shutdown	Temperature at the Center Part of Base Plate, Non-Latching	All		90		$^{\circ}C$
Over Temperature Recovery		All		75		$^{\circ}C$



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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	300S12		296		K hours
		300S15		292		
		300S24		329		
		300S28		393		
		300S36		291		
		300S48		298		
Weight		All		760		grams
Base plate Material	Aluminum					
Potting Material	UL 94V-0 (DC Module)					
Shock/Vibration	MIL-STD-810F Compliant					
Humidity	95% RH max. Non Condensing					
Altitude	3000m Operating Altitude, 12000m Transport Altitude					
Thermal Shock	MIL-STD-810F					
Fire & Smoke	EN45545-2 Compliant					
EMI	EN55032 & EN55022 Compliant					Class A
ESD	EN61000-4-2	Level 3: Air $\pm 8kV$, Contact $\pm 6kV$				Perf. Criteria A
Radiated immunity	EN61000-4-3	Level 3: 80~1000MHz, 20V/m				Perf. Criteria A
Fast Transient	EN61000-4-4	Level 3: On power input port, $\pm 2kV$				Perf. Criteria A
Surge	EN61000-4-5	Level 4: Line to earth, $\pm 2kV$, Line to line, $\pm 2kV$				Perf. Criteria A
Conducted immunity	EN61000-4-6	Level 3: 0.15~80MHz, 10V				Perf. Criteria A
Power Frequency Magnetic Field immunity	EN61000-4-8	50/60Hz, 3A/m (r.m.s.)				Perf. Criteria A

Immunity to Environmental Conditions.

Phenomenon	Reference Clause(s)	Reference Standard	Test Conditions	Result
Vibration Test	MIL-STD-810F Table 514.5C-VIII Figure 514.5C-6	MIL-STD-810F	Unit are non-operating Vibration Waveform : Random Vibration Frequency : 15 ~ 2000 Hz Total Grms : 4.01997 grms Vibration axis : X \ Y \ Z axis Duration : 1hr / axis	Vibration Test
Shock Test	MIL-STD-810F 516.5 Table 516.5-I	MIL-STD-810F	Wave form : Sawtooth wave Test Category : Crash Hazard Test for Ground Equipment Duration : 10 ms Peak Acceleration : 75 G Cross-over Frequency : 80 Hz No. of Shock : Each axis 3 times Shock Direction : $\pm X$, $\pm Y$, $\pm Z$ axis	Shock Test
Thermal Shock Cycling Test	MIL-STD-810F 503.4 Figure 503.4-1	MIL-STD-810F	Temperature : -55°C to 105°C Humidity : 95%RH Duration : 8hrs/ 3 times cycling & 4hrs dwell time	Thermal Shock Cycling Test
Thermal Humidity Cycling Test	MIL-STD-810F Notice 3 Method 507.4	MIL-STD-810F	Temperature : 60°C to 30°C Humidity : 95%RH Duration : 240 hrs	Thermal Humidity Cycling Test



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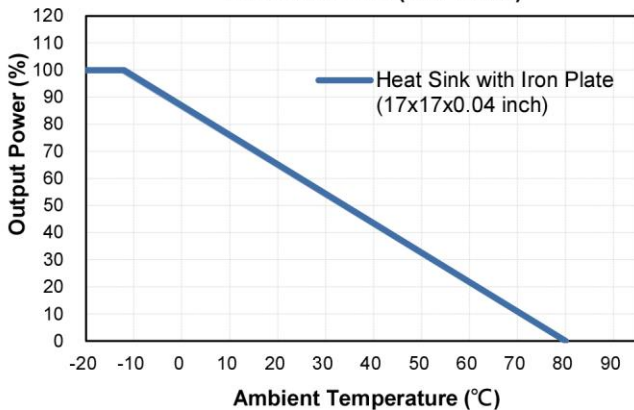
EN45545-2 Fire & Smoke Test Conditions.

Item		Standard	Hazard Level
R22	Oxygen Index Test	EN 45545-2: 2013 EN ISO 4589-2: 2006	HL1, HL2, HL3
	Smoke Density Test	EN 45545-2: 2013 EN ISO 5659-2: 2013	HL1, HL2
	Smoke Toxicity Test	EN 45545-2: 2013 NF X70-100: 2006	HL1, HL2, HL3
R23	Oxygen Index Test	EN 45545-2: 2013 EN ISO 4589-2: 2006	HL1, HL2, HL3
	Smoke Density Test	EN 45545-2: 2013 EN ISO 5659-2: 2013	HL1, HL2, HL3
	Smoke Toxicity Test	EN 45545-2: 2013 NF X70-100: 2006	HL1, HL2, HL3
R24	Oxygen Index Test	EN45545-2: 2013 EN ISO 4589-2	HL1, HL2, HL3
R25	Glow - Wire Test	EN 45545-2:2013 EN 60695-2-11:2001	HL1, HL2, HL3
R26	Vertical Flame Test	EN 45545-2: 2013 EN 60695-11-10: 2013	HL1, HL2, HL3

CHARACTERISTIC CURVE

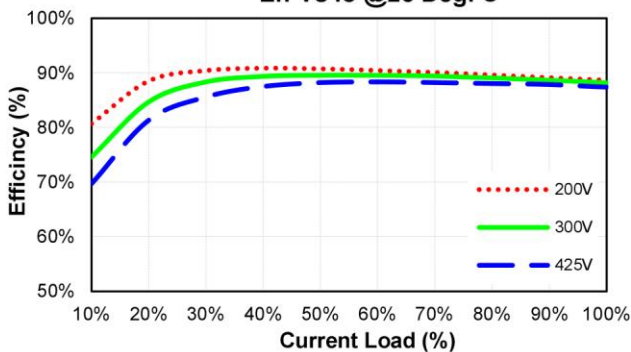
Power Derating Curve

CFB750-300SXX-CMFC(D) Derating Curve with Heat Sink (Vin=300V)

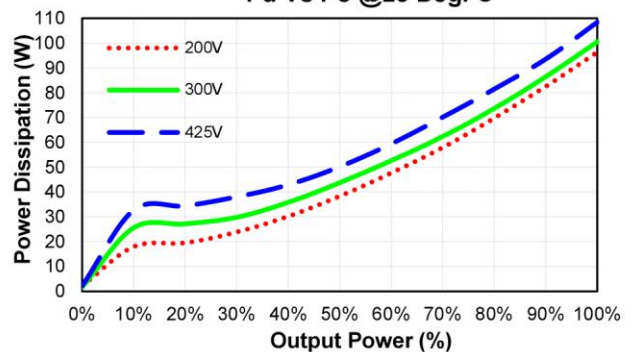


Performance Data

CFB750-300S12(N)-CMFD Eff Vs Io @25 Deg. C



CFB750-300S12(N)-CMFD Pd Vs Po @25 Deg. C





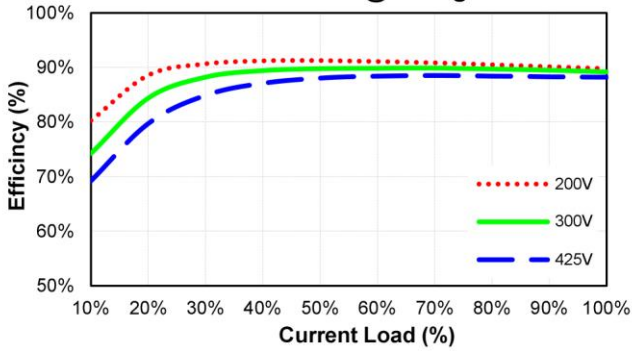
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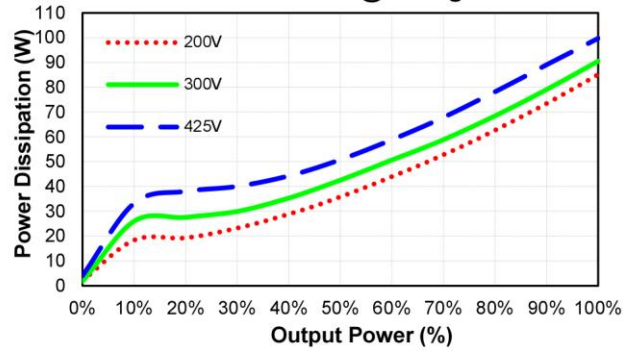
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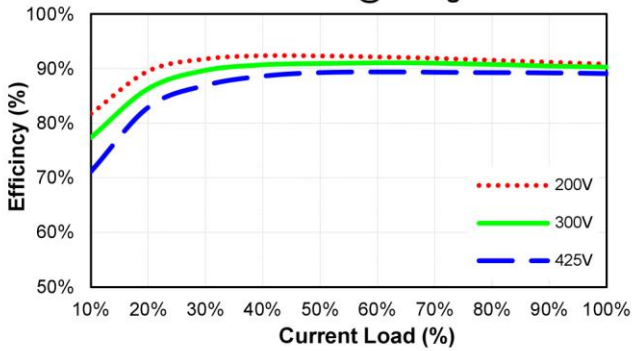
CFB750-300S15(N)-CMFD
Eff Vs Io @25 Deg. C



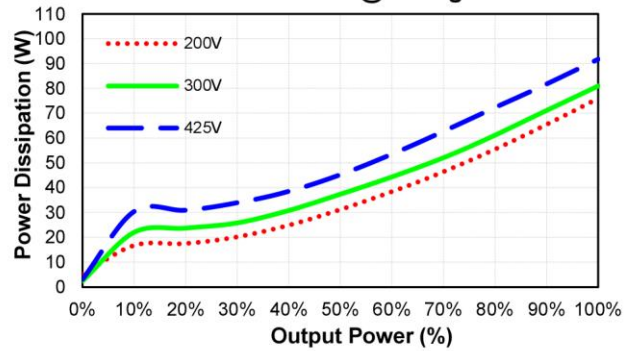
CFB750-300S15(N)-CMFD
Pd Vs Po @25 Deg. C



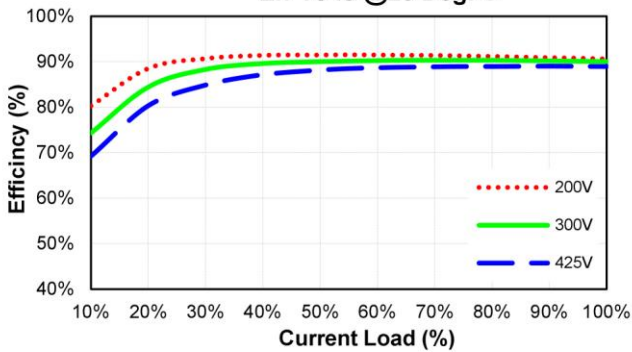
CFB750-300S24(N)-CMFD
Eff Vs Io @25 Deg. C



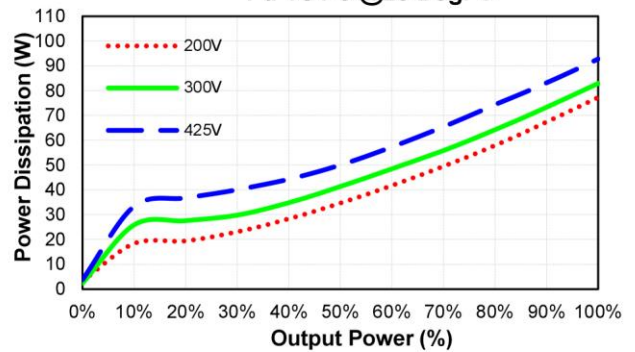
CFB750-300S24(N)-CMFD
Pd Vs Po @25 Deg. C



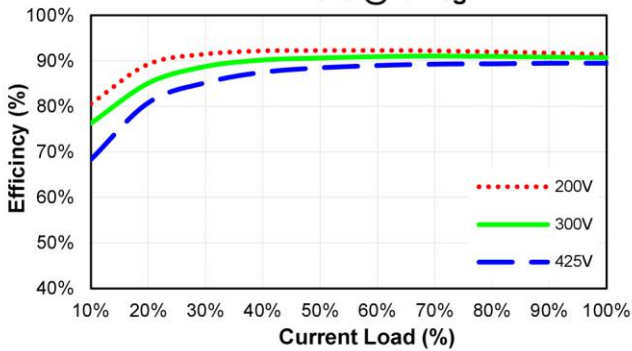
CFB750-300S28(N)-CMFD
Eff Vs Io @25 Deg. C



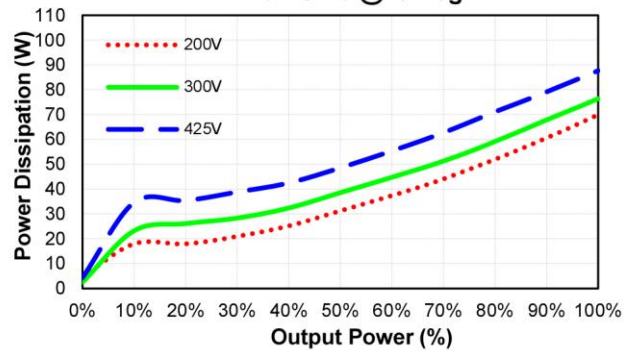
CFB750-300S28(N)-CMFD
Pd Vs Po @25 Deg. C



CFB750-300S36(N)-CMFD
Eff Vs Io @25 Deg. C



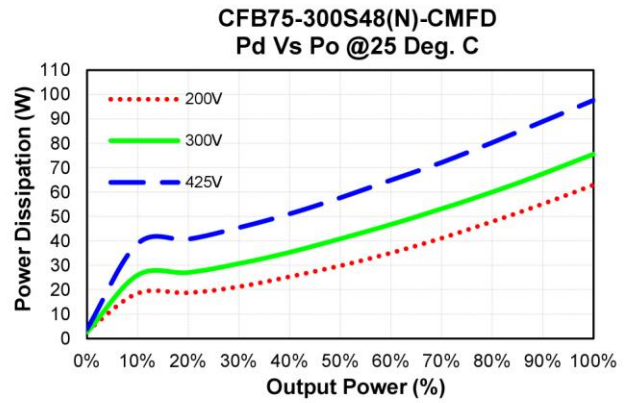
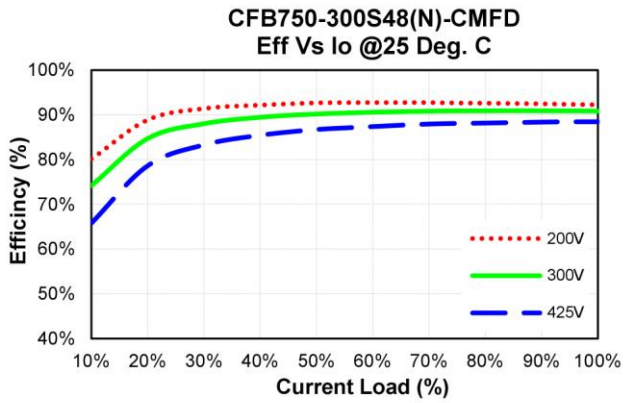
CFB750-300S36(N)-CMFD
Pd Vs Po @25 Deg. C





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MECHANICAL SPECIFICATION

