



CBM70S SERIES 70 WATT AC-DC BRICK POWER SUPPLY

Features

- Universal Input Range 90~264V_{ac}
- Efficiency up to 89.5%
- Meets Class I
- No Load Input Power Consumption<150mW
- Safety IEC/EN/UL 62368-1 Approval Ed 3.0
- Operating Altitude 5000m
- Continuous Short Circuit Protection
- Over Temperature Protection
- Over Voltage Protection
- 17mm Ultra Low Profile Half Brick Package
- Full Load with Baseplate Cooled and No Fan Required
- Built-in EN 55032 Class B Filter
- All in One Without External Components
- Wide Operating Temperature Range



MODEL NUMBER	OUTPUT VOLTAGE	OUTPUT CURRENT	RIPPLE & NOISE NOTE1	VOLTAGE ACCURACY NOTE2	LINE REGULATION NOTE3	LOAD REGULATION NOTE4	%EFF. (Typ.) NOTE5
CBM70S120	12 V	5.83 A	120 mV	±1.0%	±0.5%	±1%	88.0%
CBM70S240	24 V	2.92 A	240 mV	±1.0%	±0.5%	±1%	88.5%
CBM70S360	36 V	1.94 A	360 mV	±1.0%	±0.5%	±1%	89.0%
CBM70S480	48 V	1.46 A	480 mV	±1.0%	±0.5%	±1%	89.5%

Note:

1. Add a 0.1uF ceramic capacitor and a 10uF E.L. capacitor to output for ripple & noise measuring @20MHz BW.
2. Voltage accuracy is set at 60% load.
3. Line regulation is measured from 90V_{ac} to 264V_{ac} with full load.
4. Load regulation is measured from 60%±40% rated load.
5. Typical efficiency at 230V_{ac} and full load at 25°C.
6. Power dissipation (Pd): $P_d = P_i - P_o = P_o(1-\eta)/\eta$.

PART NUMBER

Series	Number of Outputs	Nominal Output Voltage
CBM70	X	XXX
CBM70	S : Single	120 : 12V 240 : 24V 360 : 36V 480 : 48V

Part Number Example:

CBM70S120:70W, Single 12V_{dc} Output



CBM70S 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	Safety approvals only to the AC input	All	90 127		264 370	V_{ac} V_{dc}
Operating Case Temperature	At the center of base plate	All	-40		85	°C
Storage Temperature		All	-40		85	°C
Input/Output Isolation Voltage	1 minute	All	3000			V_{ac}
Operating Altitude		All			5000	m

INPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Operating Voltage Range		All	100		240	V_{ac}
Input Frequency Range		All	47		63	Hz
Maximum Input Current	100% Load, $V_{in}=100V_{ac}$	All			1.5	A
Leakage Current		All			3.5	mA
Inrush Current	$V_{in}=240V_{ac}$, Cold start at 25°C	All			100	A
Under Voltage Protection		All	63	70	77	V_{ac}

OUTPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Output Voltage Set Point	V_{in} =Nominal V_{in} , $I_o=60\% I_o \text{ max.}$, $T_c=25^\circ\text{C}$	CBM70S120 CBM70S240 CBM70S360 CBM70S480	11.88 23.76 35.64 47.52	12 24 36 48	12.12 24.24 36.36 48.48	V_{dc}
Operating Output Current Range	$V_{in}=90V_{ac}\sim 264V_{ac}$, See Derating Curve	CBM70S120 CBM70S240 CBM70S360 CBM70S480			5.83 2.92 1.94 1.46	A
Holdup Time	$V_{in}=115V_{ac}$	All		6		ms
Output Voltage Regulation						
Load Regulation	60% Load to 100% load & 60% load to 20% load	All			± 1.0	%
Line Regulation	V_{in} =High line to low line	All			± 0.5	%
Output Voltage Trim Range	$P_o \leq \text{max. rated power}$, $I_o \leq I_o \text{ max.}$	All	-10		+10	%
Over Current Protection	Hiccup mode, auto recovery	All	110		150	%
Short Circuit Protection	Auto recovery	All				
Over Temperature Protection (Auto Recovery)	shutdown case temperature (without heatsink test) Recovery case temperature (without heatsink test)	All		100 95		°C
Over Voltage Protection	Auto recovery	CBM70S120 CBM70S240 CBM70S360 CBM70S480		14 28 42 56	16 35 50 63	V_{dc}
Output Ripple and Noise	1. Add a 0.1uF ceramic capacitor and a 10uF aluminum electrolytic capacitor to output 2. Oscilloscope is 20MHz band width 3. Ambient temperature=25°C	CBM70S120 CBM70S240 CBM70S360 CBM70S480			120 240 360 480	mV



CBM70S Series

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Load Capacitance	1. Input voltage is 115V _{ac} and 230V _{ac} 2. Output is max. Load 3. Ambient temperature=25°C	CBM70S120			5830	uF
		CBM70S240			2920	
		CBM70S360			1940	
		CBM70S480			1460	

EFFICIENCY

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Efficiency	1. Input voltage is 230V _{ac} 2. Output is rated load 3. Ambient temperature=25°C	CBM70S120		88.0		%
		CBM70S240		88.5		
		CBM70S360		89.0		
		CBM70S480		89.5		

ISOLATION CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input to Output	1 Minute (without dielectric breakdown)	All			3000	V _{ac}
Input to Earth (Ground)	1 Minute (without dielectric breakdown)	All			1800	V _{ac}
Output to Earth (Ground)	1 Minute (without dielectric breakdown)	All			500	V _{ac}
Isolation Resistance	Input to output	All	100			MΩ

FEATURE CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Switching Frequency		All		65		kHz

GENERAL SPECIFICATIONS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
MTBF	I _o =100%; T _a =25°C per MIL-HDBK-217F I _o =100%; T _a =25°C per Telcordia SR332	All	550 3000			k hours
Humidity	Nom-condensing	All			93	% RH
Shock	Meets MIL-STD-810F Table 516.5, TABLE 516.5-I 10ms, each axis 3 times (±X ∙ ±Y ∙ ±Z axis)	All		75		g
Vibration	Meets MIL-STD-810F Table 514.5C-VIII, 15~2000Hz, X ∙ Y ∙ Z axis, 1 hr(each axis), total 3 hrs.	All		4		g
Weight		All		135		grams
Dimensions		All	2.40x2.28x0.67 Inches (61.0x57.9x17.0mm)			
Case Material	Plastic DAP UL 94V-0					
Base Plate Material	Aluminum					
Potting Material	UL 94V-0					
Safety	Class I, IEC/EN/UL 62368-1					Ed 3.0
EMC Emission	EN 55032, EN 61204-3, EN 61000-6-3, EN 61000-6-4, 47 CFR FCC Part 15 Subpart B, EN 61000-3-2, EN 61000-3-3					Class B
Conducted Disturbance	EN 55032, EN 61204-3, EN 61000-6-3, EN 61000-6-4, 47 CFR FCC Part 15 Subpart B					Class B
Radiated Disturbance	EN 55032, EN 61204-3, EN 61000-6-3, EN 61000-6-4, 47 CFR FCC Part 15 Subpart B					Class B
Harmonic Current Emissions	EN 61000-3-2					
Voltage Fluctuations & Flicker	EN 61000-3-3					
EMC Immunity	EN 55035, EN 61204-3, EN 61000-6-1, EN 61000-6-2					
Electrostatic Discharge (ESD)	IEC 61000-4-2, Level 3: Air Discharge: ±8kV, Contact Discharge: ±4kV					Criterion A
Radio-Frequency Electromagnetic Field	IEC 61000-4-3, Level 3: 80~1000MHz, 10V/m					Criterion A
Electrical Fast Transient (EFT)	IEC 61000-4-4, Level 3: ±2kV					Criterion A
Surge	IEC 61000-4-5, Level 3: L-N: ±1kV, L-E (Ground): ±2kV					Criterion A



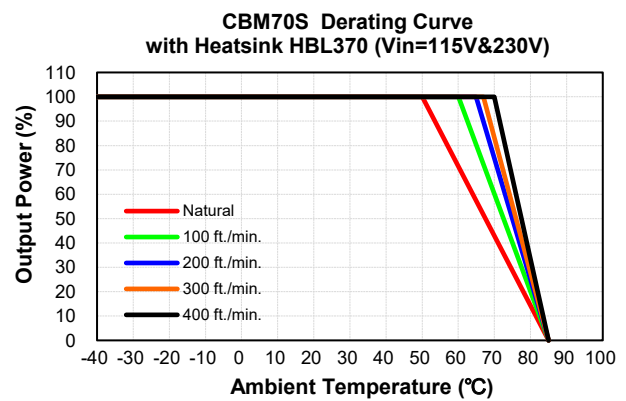
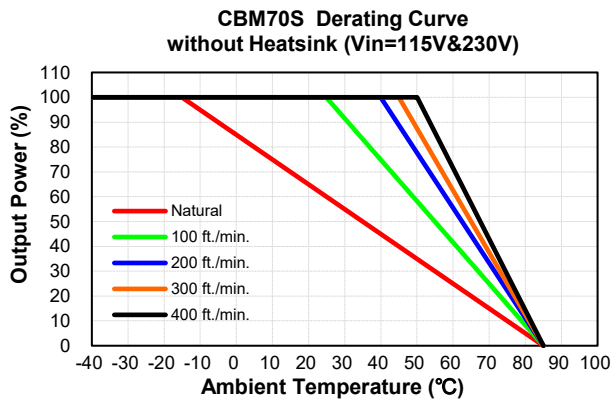
CBM70S Series

GENERAL SPECIFICATIONS

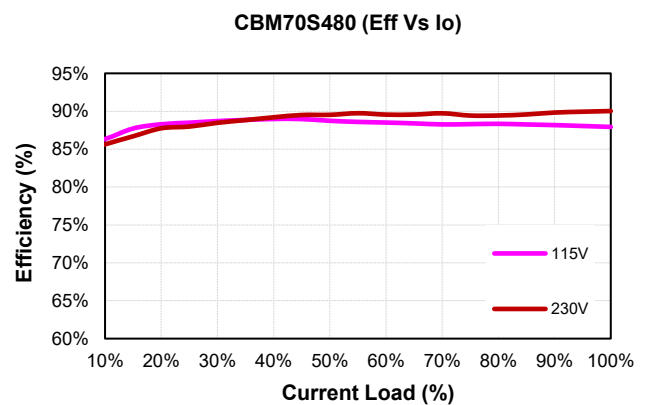
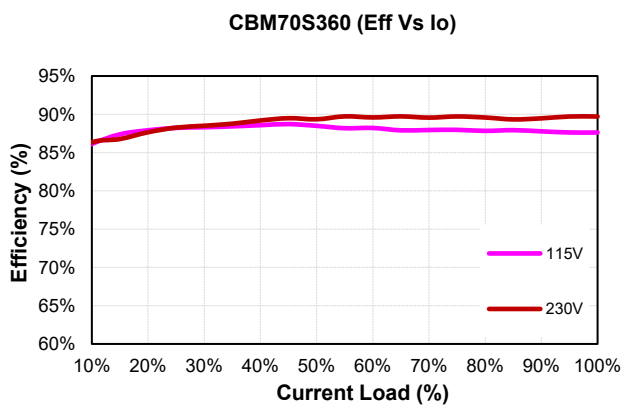
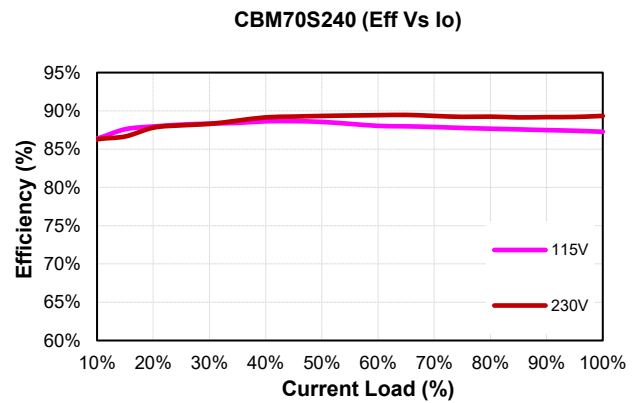
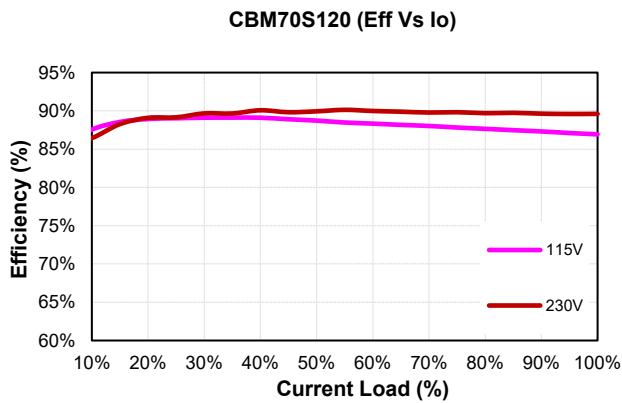
Radio-Frequency Continuous Conducted	IEC 61000-4-6, Level 3: 0.15-80MHz, 10V	Criterion A
Power Frequency Magnetic Field	IEC 61000-4-8, Level 4: 50-60Hz, 30A/m	Criterion A
Voltage Dips	IEC 61000-4-11, Dip: 30% Reduction IEC 61000-4-11, Dip >95% Reduction	Criterion A
Voltage Interruptions	IEC 61000-4-11, >95% Reduction	Criterion B
Application Note Link		CBM70S Series App Notes

CHARACTERISTIC CURVE

Power Derating Curve



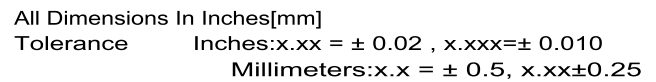
Performance Data





Bottom view of the PCB showing dimensions and component locations. The dimensions are in inches [mm].

- Overall width: 2.28 [57.9]
- Overall height: 2.40 [61.0]
- Distance from left edge to ACIL pin: 0.19 [4.8]
- Distance from left edge to ACIN pin: 1.93 [48.9]
- Distance from left edge to -Vout pin: 1.90 [48.3]
- Distance from left edge to Trim pin: 1.90 [48.3]
- Distance from left edge to +Vout pin: 1.90 [48.3]
- Distance from top edge to ACIL pin: 0.325 [8.26]
- Distance from top edge to ACIN pin: 1.96 [49.8]
- Distance from top edge to -Vout pin: 0.233 [5.92]
- Distance from top edge to Trim pin: 0.233 [5.92]
- Distance from top edge to +Vout pin: 0.233 [5.92]
- Distance from bottom edge to -Vout pin: 0.74 [18.7]
- Distance from bottom edge to Trim pin: 0.20 [5.1]
- Distance from bottom edge to +Vout pin: 0.20 [5.1]
- Mounting Inserts M3x0.5 Through 2pl.



Pin	Function
1	ACN
2	ACL
3	-V Output
4	Trim
5	+V Output

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