



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

70W Open Frame type Single output power supply > CBM70S

Features

- Universal Input Range 90~264V_{ac}
- Efficiency up to 89.5%
- Full Load with Baseplate Cooled and No Fan Required
- Wide Operating Temperature Range
- 17mm Ultra Low Profile Half Brick Package
- Built-in EN55032 Class B Filter
- All in One without External Components
- No Load Input Power Consumption < 150mW
- Over Temperature Protection
- Over Voltage Protection
- Continuous Short Circuit Protection
- Safety IEC/EN/UL 62368-1 Approval
- Meets Class I
- Operating Altitude 5000m



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

Note:

1. Voltage accuracy is set at 60% load.
2. Add a 0.1uF ceramic capacitor and a 10uF E.L. capacitor to output for ripple & noise measuring @20MHz BW.
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): Pd = Pi - Po = Po(1-η)/η.

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



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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		All	90		264	V _{ac}
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 max, T _c =25°C.	CBM70S120	11.88	12	12.12	V _{dc}
		CBM70S240	23.76	24	24.24	
		CBM70S360	35.64	36	36.36	
		CBM70S480	47.52	48	48.48	
Operating Output Current Range	I _o	CBM70S120			5.83	A
		CBM70S240			2.92	
		CBM70S360			1.94	
		CBM70S480			1.46	
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 ≤ max rated power, I _o ≤ I _o max	All	-10		+10	%
Over Current Protection	Hiccup mode, auto recovery	All	110		150	%
Short Circuit Protection	Auto recovery	All				
Over Voltage Protection	Auto recovery	CBM70S120		14	16	V _{dc}
		CBM70S240		28	35	
		CBM70S360		42	50	
		CBM70S480		56	63	
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			120	mV
		CBM70S240			240	
		CBM70S360			360	
		CBM70S480			480	



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

EFFICIENCY

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Efficiency	1. Output is rated load 2. Ambient temperature=25°C 3. Input voltage is 230V _{ac}	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	All	550			k hours
Humidity	Nom-condensing	All			93	% RH
Shock	Meets MIL-STD-810F Table 516.5, TABLE 516.5-1 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/UL62368-1					
EMC Emission	EN55032:2015+AC:2016, EN61204-3:2000, EN61000-6-3:2007+A1:2011+AC:2012, EN61000-6-4:2007+A1:2011, 47 CFR FCC Part 15 Subpart B EN61000-3-2:2014, EN61000-3-3:2013					Class B
Conducted Disturbance	EN55032:2015+AC:2016, EN61204-3:2000, EN61000-6-3:2007+A1:2011+AC:2012, EN61000-6-4:2007+A1:2011, 47 CFR FCC Part 15 Subpart B					Class B
Radiated Disturbance	EN55032:2015+AC:2016, EN61204-3:2000, EN61000-6-3:2007+A1:2011+AC:2012, EN61000-6-4:2007+A1:2011, 47 CFR FCC Part 15 Subpart B					Class B
Harmonic Current Emissions	EN61000-3-2:2014					
Voltage Fluctuations & Flicker	EN61000-3-3:2013					
EMC Immunity	EN55035:2017, EN61204-3:2000, EN61000-6-1:2019, EN61000-6-2:2019					
Electrostatic Discharge (ESD)	IEC 61000-4-2:2008, Air Discharge: ±8KV, Contact Discharge: ±4KV					Criterion A



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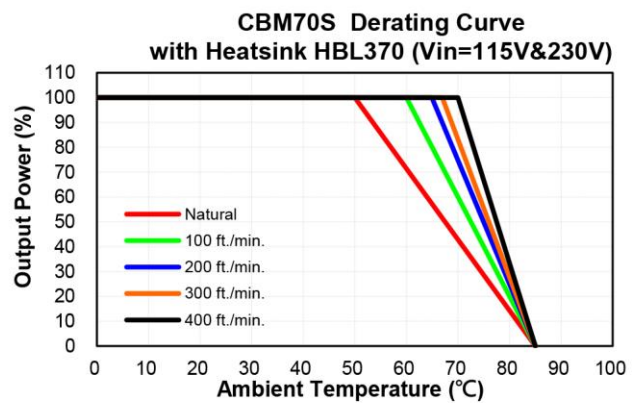
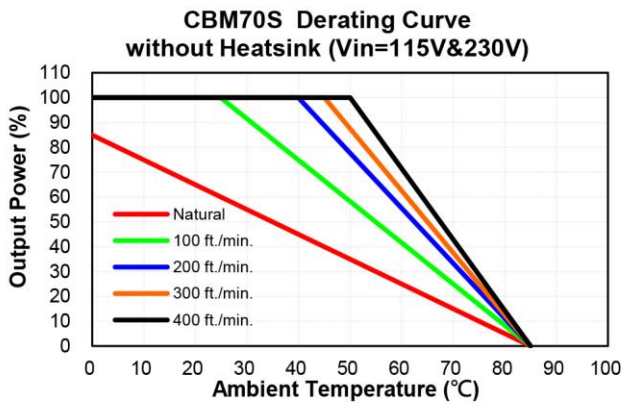
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GENERAL SPECIFICATIONS

Radio-Frequency Electromagnetic Field	IEC 61000-4-3:2006+A1:2007+A2:2010	Criterion A
Electrical Fast Transient (EFT)	IEC 61000-4-4:2012, $\pm 1\text{kv}$, $\pm 2\text{kv}$	Criterion A
Surge	IEC 61000-4-5:2014+A1:2017 L-N: $\pm 0.5\text{kv}$, $\pm 1\text{kv}$, L/N-E(Earth): $\pm 0.5\text{kv}$, $\pm 1\text{kv}$, $\pm 2\text{kv}$	Criterion A
Radio-Frequency Continuous Conducted	IEC 61000-4-6:2013	Criterion A
Power Frequency Magnetic Field	IEC 61000-4-8:2009	Criterion A
Voltage Dips	IEC 61000-4-11:2004+A1:2017, Dip: 30% Reduction, Dip >95% Reduction	Criterion A
Voltage Interruptions	IEC 61000-4-11:2004+A1:2017, >95% Reduction	Criterion B

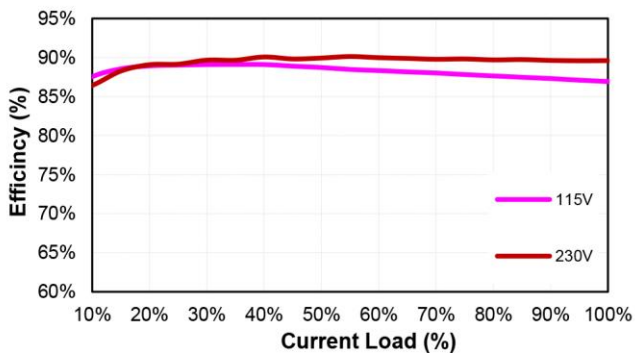
CHARACTERISTIC CURVE

Power Derating Curve

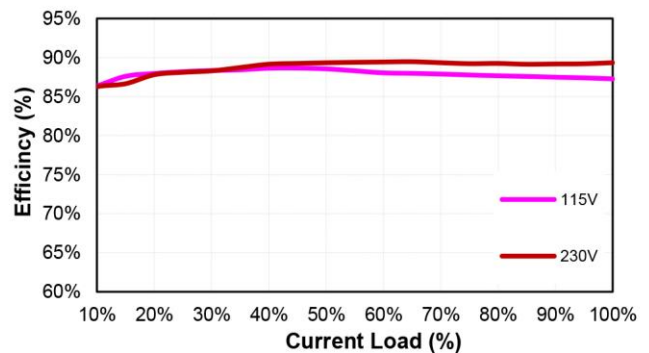


Performance Data

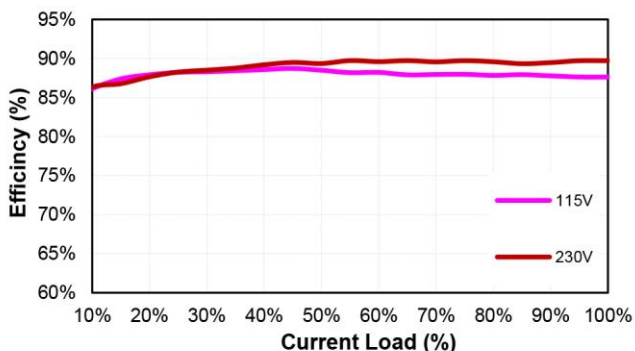
CBM70S120 (Eff Vs Io)



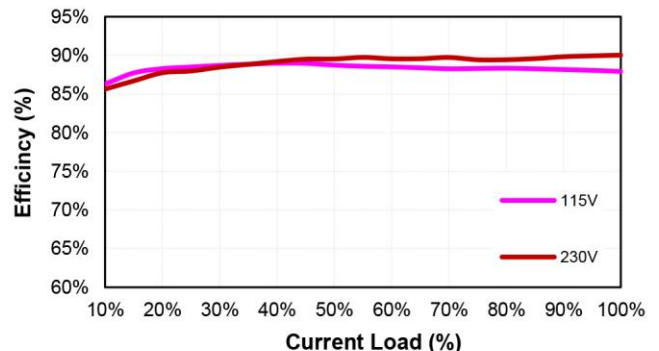
CBM70S240 (Eff Vs Io)



CBM70S360 (Eff Vs Io)



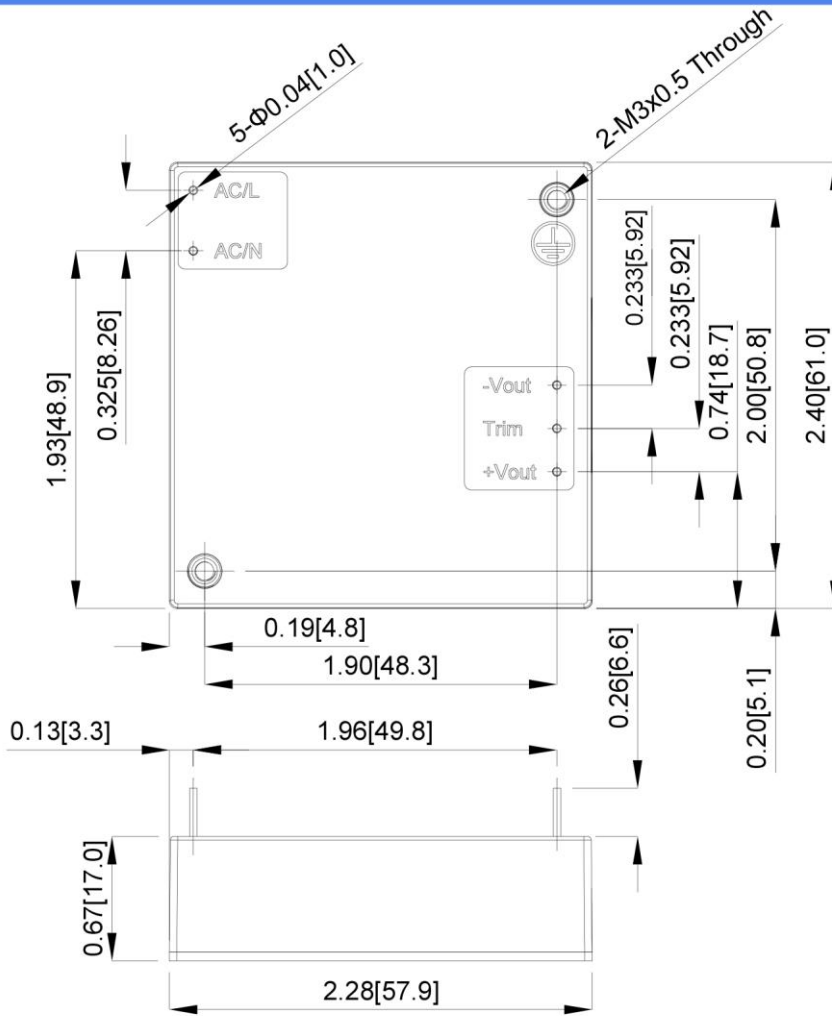
CBM70S480 (Eff Vs Io)





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MECHANICAL SPECIFICATION



All Dimensions In Inches[mm]
Tolerance Inches:x.xx = ± 0.02 , x.xxx = ± 0.010
Millimeters:x.x = ± 0.5 , x.xx = ± 0.25

