



E-Star Power Development Co., Ltd. (E-STAR)  
 6F., No. 114, Sec. 3, Minquan E. Rd., Songshan Dist., Taipei City 10543,  
 Taiwan (R.O.C.)  
 Phone : 886-2-2957 5580 Fax : 886-2-2957 7473

## 100W Open Frame type Single output power supply > CBM101S

### Features

- Universal Input Range 90~264V<sub>ac</sub>
- High Efficiency up to 94.5%
- Class I
- No Load Input Power Consumption<0.5W
- Peak Power Operation up to 120Watt for 5s
- Approval IEC/EN/UL 62368-1
- Approval EN55032 and CISPR/FCC Class B
- Operating Altitude 5000m
- Continuous Short Circuit Protection
- Over Voltage Protection
- Over Temperature Protection
- Low Inrush Current < 8.5A
- 17mm Ultra Low Profile Package
- Full Load without Heat Sink
- No Fan Required
- Built-in EMI Filters Bulk Capacitor and Output Capacitors
- 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
CBM101S120	12 V	8.4 A	120 mV	±1%	±0.5%	±0.5%	93.5%
CBM101S240	24 V	4.2 A	150 mV	±1%	±0.5%	±0.5%	94.5%
CBM101S280	28 V	3.6 A	240 mV	±1%	±0.5%	±0.5%	94.5%
CBM101S360	36 V	2.8 A	280 mV	±1%	±0.5%	±0.5%	94.5%
CBM101S480	48 V	2.1 A	300 mV	±1%	±0.5%	±0.5%	94.5%

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 full load.
3. Line regulation is measured from 100Vac to 240Vac with full load.
4. Load regulation is measured from 10% to 100% full load.
5. Typical efficiency at 230 VAC 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
CBM101	O	XXX
CBM101	S : Single	120 : 12VDC 240 : 24VDC 280 : 28VDC 360 : 36VDC 480 : 48VDC

Part Number Example:

**CBM101S120:** Brick Power, 100W, Single 12Vdc 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	Safety approvals only to the AC input	All	90 120		264 370	V <sub>ac</sub> V <sub>dc</sub>
Operating Temperature	See Derating Curve	All	-40		85	°C
Operating Case Temperature	At the Center of Base Plate (T <sub>c</sub> = Case temperature)	All	-40		90	°C
Storage Temperature		All	-40		100	°C
Input/Output Isolation Voltage	1 minute	All			4000	V <sub>ac</sub>
Operating Altitude		All			5000	m

**INPUT CHARACTERISTICS**

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Operating Voltage Range		All	100		240	V <sub>ac</sub>
Input Frequency Range		All	47		63	Hz
Maximum Input Current	100% Load, V <sub>in</sub> =100V <sub>ac</sub>	All			1.5	A
Inrush Current	V <sub>in</sub> =240V <sub>ac</sub> , Cold start at 25°C	All		8.5		A
Leakage Current (Earth)		All			250	uA
Leakage Current (Touch)		All			100	uA
Under Voltage Protection		All	55	65	75	V <sub>ac</sub>
Power Factor	230V <sub>ac</sub> /50Hz at full load	All	0.91			

**OUTPUT CHARACTERISTICS**

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Output Voltage Set Point	V <sub>in</sub> =90V <sub>ac</sub> ~264V <sub>ac</sub> , full load Ambient temperature=25°C	CBM101S120 CBM101S240 CBM101S280 CBM101S360 CBM101S480	11.88 23.76 27.72 35.64 47.52	12 24 28 36 48	12.12 24.24 28.28 36.36 48.48	V <sub>dc</sub>
Operating Output Current Range	V <sub>in</sub> =90V <sub>ac</sub> ~264V <sub>ac</sub> , See Derating Curve	CBM101S120 CBM101S240 CBM101S280 CBM101S360 CBM101S480			8.4 4.2 3.6 2.8 2.1	A
Holdup Time	V <sub>in</sub> =115V <sub>ac</sub> at 25°C, full load	CBM101S120 CBM101S240 CBM101S280 CBM101S360 CBM101S480	30 30 20 30 30	40 40 30 40 40		ms
Startup Delay Time	V <sub>in</sub> =90V <sub>ac</sub> ~264V <sub>ac</sub>	All		1		S
Temperature Coefficient	T <sub>c</sub> =-40°C to 50°C	All			±0.02	%/°C
Load Regulation	10% Load to full load	All			±0.5	%
Line Regulation	V <sub>in</sub> =High line to low line	All			±0.5	%
Over Voltage Protection	Latch off (AC recycle to restart)	CBM101S120 CBM101S240 CBM101S280 CBM101S360 CBM101S480			16 35 35 50 63	V <sub>dc</sub>



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PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Over Current Protection	Hiccup mode, auto recovery	All	120	135	150	%
Short Circuit Protection	Auto recovery	All				
Peak Power	1. Vin=115Vac and 230Vac 2. Ambient temperature=25°C 3. Peak power should be less than 5seconds, with a maximum 10% duty cycle, peak power function by 120% load 5S and 75% load 45S	All		120		%
Over Temperature Protection	Auto recovery	All				
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	CBM101S120 CBM101S240 CBM101S280 CBM101S360 CBM101S480			120 150 240 280 300	mV
Load Capacitance	1. Input voltage is 115V <sub>ac</sub> and 230V <sub>ac</sub> 2. Output is full load 3. Ambient Temperature=25°C	CBM101S120 CBM101S240 CBM101S280 CBM101S360 CBM101S480			8400 4200 3600 2800 2100	uF

**EFFICIENCY**

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Efficiency	1. Input Voltage is 230V <sub>ac</sub> 2. Output is full load 3. Ambient Temperature=25°C	CBM101S120 CBM101S240 CBM101S280 CBM101S360 CBM101S480		93.5 94.5 94.5 94.5 94.5		%

**ISOLATION CHARACTERISTICS**

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input to Output	1 Minute (without dielectric breakdown)	All			4000	V <sub>ac</sub>
Input to Earth (Ground)	1 Minute (without dielectric breakdown)	All			1800	V <sub>ac</sub>
Output to Earth (Ground)	1 Minute (without dielectric breakdown)	All			1800	V <sub>ac</sub>
Isolation Resistance	Input to output	All	100			MΩ

**FEATURE CHARACTERISTICS**

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Switching Frequency	Output is full load	All		110		kHz

**GENERAL SPECIFICATIONS**

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
MTBF	I <sub>o</sub> =100%; T <sub>a</sub> =25°C per MIL-HDBK-217F	All		600		k hours
Life Time	Without heat sink@75% load, T <sub>a</sub> =50°C	All		85		k hours
Humidity	Non-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		240		grams
Dimensions		All	4.60x2.40x0.67 Inches (116.8x61.0x17.0 mm)			



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### GENERAL SPECIFICATIONS

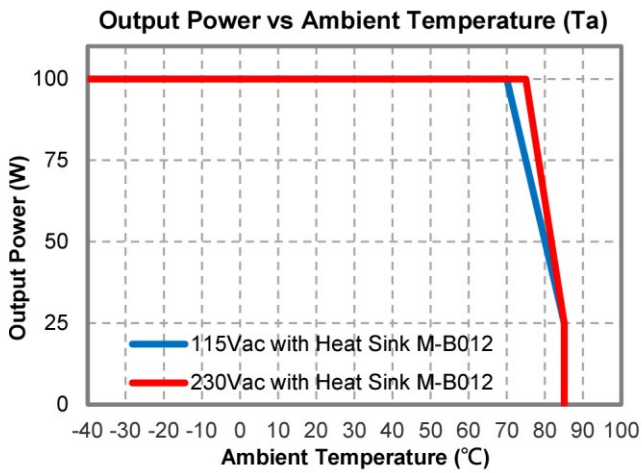
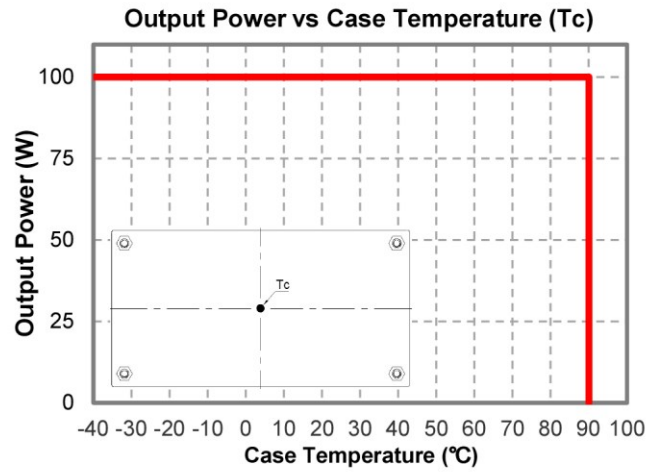
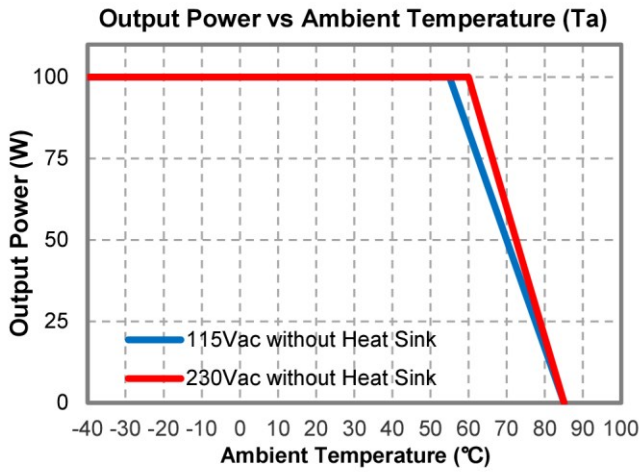
<b>Safety</b>	Class I, IEC/EN/UL 62368-1	Ed. 3.0
<b>EMC Emission</b>	EN 55032: 2015+A11: 2020, EN 61000-6-3 2007+A1: 2011+AC: 2012, Class B EN 61000-6-4:2019, 47 CFR FCC Part 15 Subpart B, EN 61204-3:2018, EN 61000-3-2: 2019, EN 61000-3-3: 2013+A1: 2019	Class B
Conducted Disturbance	EN 55032: 2015+A11: 2020, EN 61000-6-3 2007+A1: 2011+AC: 2012, Class B EN 61000-6-4:2019, 47 CFR FCC Part 15 Subpart B, EN 61204-3:2018	Class B
Radiated Disturbance	EN 55032: 2015+A11: 2020, EN 61000-6-3 2007+A1: 2011+AC: 2012, Class B EN 61000-6-4:2019, 47 CFR FCC Part 15 Subpart B, EN 61204-3:2018	Class B
Harmonic Current Emissions	EN 61000-3-2:2019	Class A
Voltage Fluctuations & Flicker	EN 61000-3-3:2013+A1:2019	Criterion A
<b>EMC Immunity</b>	EN 55035: 2017+A11: 2020, EN 61204-3: 2018, EN 61000-6-1: 2019, EN 61000-6-2: 2019 EN 61000-6-4-2, 3, 4, 5, 6, 8, 11	
Electrostatic Discharge (ESD)	IEC 61000-4-2:2008, Air Discharge: $\pm 8\text{KV}$ , Contact Discharge: $\pm 4\text{KV}$	Criterion A
Radio-Frequency, Continuous Radiated Disturbance	IEC 61000-4-3:2020	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-E(ground): $\pm 0.5\text{kV}$ , $\pm 1\text{kV}$ , $\pm 2\text{kV}$	Criterion A
Conducted Disturbances, Induced by RF Fields	IEC 61000-4-6:2013+COR1:2015	Criterion A
Power Frequency Magnetic Field	IEC 61000-4-8:2009	Criterion A
Voltage Dips	IEC 61000-4-11:2020, Dip: 30% Reduction, Dip >95% Reduction	Criterion A
Voltage Interruptions	IEC 61000-4-11:2020, >95% Reduction	Criterion B



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**CHARACTERISTIC CURVE**

**Power Derating Curve**

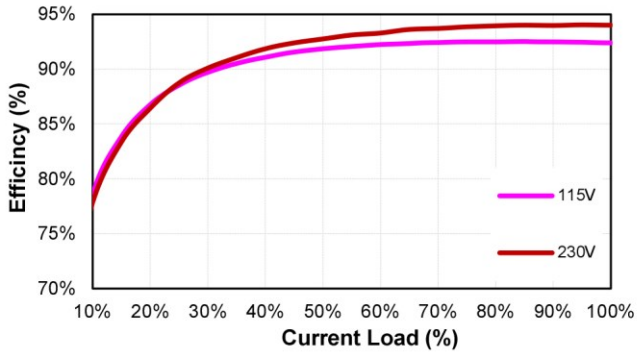




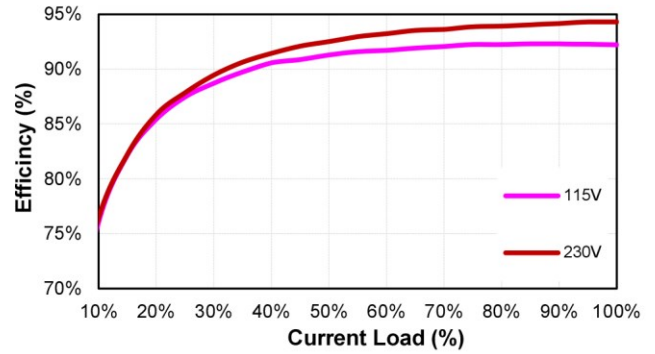
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**Performance Data**

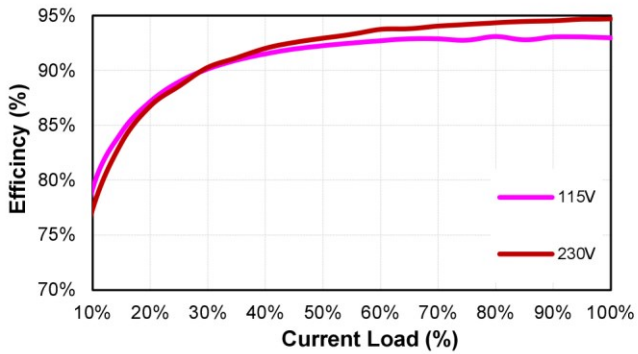
**CBM101S120 (Eff Vs Io)**



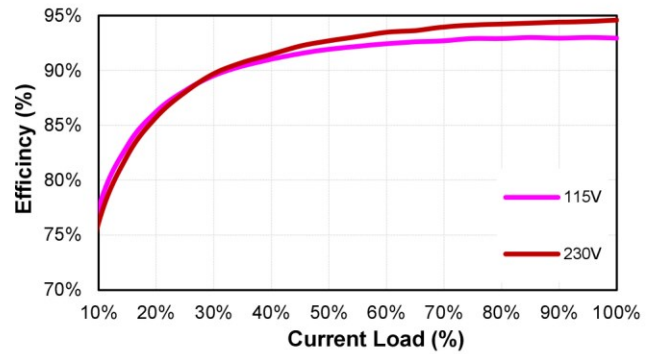
**CBM101S240 (Eff Vs Io)**



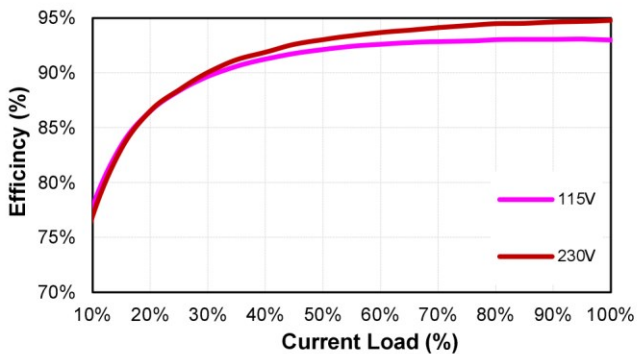
**CBM101S280 (Eff Vs Io)**



**CBM101S360 (Eff Vs Io)**



**CBM101S480 (Eff Vs Io)**





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**MECHANICAL SPECIFICATION**

All Dimensions in Inches[mm]  
Tolerance Inches: x.xx=±0.03, x.xxx=±0.020  
Millimeters: x.x=±0.7, x.xx=±0.50

