



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

150W Open Frame type Single output power supply > CBM150S

Features

- Universal Input Range 90~264Vac
- High Efficiency up to 93%
- Class I
- No Load Input Power Consumption<0.5W
- 54V No Load Input Power Consumption<0.7W
- Approval IEC/EN/UL 62368-1
- Approval EN55032 and CISPR/FCC Class B
- Operating Altitude 5000m
- Continuous Short Circuit Protection
- Over Voltage Protection
- 19.7mm Ultra Low Profile Package
- Full Load with Baseplate Cooled and No Fan Required
- Built-in EMI Filters Bulk Capacitor and Output Capacitors
- High Power Density 17.4W/Inches³
- Wide Operating Temperature Range



| MODEL NUMBER | OUTPUT VOLTAGE | OUTPUT CURRENT | RIPPLE & NOISE NOTE1 | VOLTAGE ACCURACY NOTE2 | LINE REGULATION NOTE3 | LOAD REGULATION NOTE4 | TRIM | %EFF. (Typ) NOTE5 |
|--------------|----------------|----------------|----------------------|------------------------|-----------------------|-----------------------|------|-------------------|
| CBM150S120 | 12 V | 12.5 A | 1% | ±1% | ±0.5% | ±1% | ±5% | 91% |
| CBM150S240 | 24 V | 6.25 A | 1% | ±1% | ±0.5% | ±1% | ±5% | 92% |
| CBM150S280 | 28 V | 5.35 A | 1% | ±1% | ±0.5% | ±1% | ±5% | 93% |
| CBM150S360 | 36 V | 4.16 A | 1% | ±1% | ±0.5% | ±1% | ±5% | 93% |
| CBM150S480 | 48 V | 3.125 A | 1% | ±1% | ±0.5% | ±1% | ±5% | 93% |
| CBM150S540 | 54 V | 2.77 A | 1% | ±1% | ±0.5% | ±1% | ±5% | 92% |

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 |
|--------|-------------------|--|
| CBM150 | O | XXX |
| CBM150 | S: Single | 120: 12VDC 240: 24VDC 280: 28VDC 360: 36VDC 480: 48VDC 540: 54VDC |

Part Number Example:

CBM150S120: Brick Power, 150W, 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 | | All | 90 | | 264 | V _{ac} |
| | | | 120 | | 370 | V _{dc} |
| Operating Temperature | At the center of base plate (T _c = Case temperature) | All | -40 | | 90 | °C |
| Storage Temperature | | All | -40 | | 100 | °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 | | | 2 | A |
| Inrush Current | V _{in} =240V _{ac} , Cold start @25°C | All | | | 100 | A |
| Leakage Current (Earth) | | All | | | 0.75 | mA |
| Under Voltage Protection | | All | 65 | 70 | 75 | V _{ac} |
| Power Factor | 230V _{ac} /50Hz @ Full Load | All | 0.92 | | | |

OUTPUT CHARACTERISTICS

| PARAMETER | NOTES and CONDITIONS | Device | Min. | Typ. | Max. | Units |
|--------------------------------|--|------------|-------|------|-------|-----------------|
| Output Voltage Set Point | V _{in} =90V _{ac} ~264V _{ac} , I _o =Full load Ambient temperature=25°C | CBM150S120 | 11.88 | 12 | 12.12 | V _{dc} |
| | | CBM150S240 | 23.76 | 24 | 24.24 | |
| | | CBM150S280 | 27.72 | 28 | 28.28 | |
| | | CBM150S360 | 35.64 | 36 | 36.36 | |
| | | CBM150S480 | 47.52 | 48 | 48.48 | |
| | | CBM150S540 | 53.46 | 54 | 54.54 | |
| Output Voltage Trim Range | P _o ≤ max rated power, I _o ≤ I _{o_max} | All | | ±5 | | % |
| Operating Output Current Range | V _{in} =90V _{ac} ~264V _{ac} , See Derating Curve | CBM150S120 | | | 12.5 | A |
| | | CBM150S240 | | | 6.25 | |
| | | CBM150S280 | | | 5.71 | |
| | | CBM150S360 | | | 4.16 | |
| | | CBM150S480 | | | 3.125 | |
| | | CBM150S540 | | | 2.77 | |
| Holdup Time | V _{in} =115V _{ac} | All | 10 | | | ms |
| Load Regulation | 10% Load to Full Load | All | | | ±1.0 | % |
| Line Regulation | V _{in} =High line to low line | All | | | ±0.5 | % |
| Over Voltage Protection | 12V-48V Auto recovery 54V Latch Off | CBM150S120 | | | 13.8 | V _{dc} |
| | | CBM150S240 | | | 27 | |
| | | CBM150S280 | | | 32.3 | |
| | | CBM150S360 | | | 41.7 | |
| | | CBM150S480 | | | 53.3 | |
| | | CBM150S540 | | | 57.6 | |
| Over Current Protection | Auto recovery | All | 110 | 130 | 150 | % |
| Short Circuit Protection | Auto recovery | All | | | | |
| Over Temperature Protection | Auto recovery | All | | | | |



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150W Open Frame type Single output power supply > CBM150S

| PARAMETER | NOTES and CONDITIONS | Device | Min. | Typ. | Max. | Units |
|-------------------------|---|------------|------|------|-------|-------|
| 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 | CBM150S120 | | | 120 | mV |
| | | CBM150S240 | | | 240 | |
| | | CBM150S280 | | | 280 | |
| | | CBM150S360 | | | 360 | |
| | | CBM150S480 | | | 480 | |
| | | CBM150S540 | | | 540 | |
| Load Capacitance | 1. Input Voltage is 115V _{ac} and 230V _{ac} 2. Output is max. Full Load 3. Ambient Temperature=25°C | CBM150S120 | | | 13500 | uF |
| | | CBM150S240 | | | 6600 | |
| | | CBM150S280 | | | 5600 | |
| | | CBM150S360 | | | 4400 | |
| | | CBM150S480 | | | 3380 | |
| | | CBM150S540 | | | 2880 | |

EFFICIENCY

| PARAMETER | NOTES and CONDITIONS | Device | Min. | Typ. | Max. | Units |
|------------|---|------------|------|------|------|-------|
| Efficiency | 1. Input Voltage is 230V _{ac} 2. Output is 75% Full Load 3. Ambient Temperature=25°C | CBM150S120 | | 91 | | % |
| | | CBM150S240 | | 92 | | |
| | | CBM150S280 | | 93 | | |
| | | CBM150S360 | | 93 | | |
| | | CBM150S480 | | 93 | | |
| | | CBM150S540 | | 92 | | |

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 | | | 360 | V _{ac} |
| Isolation Resistance | Input to Output | All | 100 | | | MΩ |

FEATURE CHARACTERISTICS

| PARAMETER | NOTES and CONDITIONS | Device | Min. | Typ. | Max. | Units |
|---------------------|----------------------|--------|------|------|------|-------|
| Switching Frequency | | All | | 180 | | 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 | 350 | | | k hours |
| Life Time | @75% Load, 40°C | All | 72 | | | k hours |
| Humidity | Non-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 | | 285 | | grams |
| Dimensions | | All | 4.60x2.40x0.78 Inches (116.8x61.0x19.7 mm) | | | |
| Safety | Class I, IEC/EN/UL 62368-1 | | | | | Ed. 3.0 |
| EMC Emission | EN 55032: 2015+A11: 2020, EN 61000-6-3: 2007+A1: 2011+AC: 2012, EN 61000-6-4: 2019, EN 61204-3: 2018, EN 61000-3-2:2019, EN 61000-3-3: 2013+A1: 2019, 47 CFR FCC Part 15 Subpart B | | | | | Class B |
| Conducted Disturbance | EN 55032: 2015+A11: 2020, 47 CFR FCC Part 15 Subpart B | | | | | Class B |
| Radiated Disturbance | EN 55032: 2015+A11: 2020, 47 CFR FCC Part 15 Subpart B | | | | | Class B |
| Harmonic Current Emissions | EN 61000-3-2:2019 | | | | | Class A |
| Voltage Fluctuations & Flicker | EN 61000-3-3: 2013+A1: 2019 | | | | | Criterion A |



150W Open Frame type Single output power supply > CBM150S

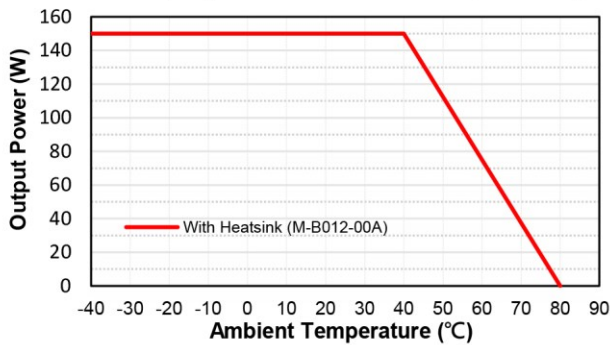
GENERAL SPECIFICATIONS

| | | |
|--|---|-------------|
| EMC Immunity | EN 55035: 2017+A1: 2020, EN 61000-6-1: 2019, EN 61000-6-2: 2019, EN 61204-3: 2018 | |
| Electrostatic Discharge (ESD) | IEC 61000-4-2:2008 Air Discharge: $\pm 8kV$, Contact Discharge: $\pm 4kV$ | Criterion A |
| Radio-Frequency, Continuous Radiated Disturbance | IEC 61000-4-3:2020 | Criterion A |
| Electrical Fast Transient (EFT) | IEC61000-4-4:2012, $\pm 2kV$ | Criterion A |
| Surge | IEC61000-4-5:2014+A1: 2017, L-N: $\pm 1kV$, L-E(Ground): $\pm 2kV$ | 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 |

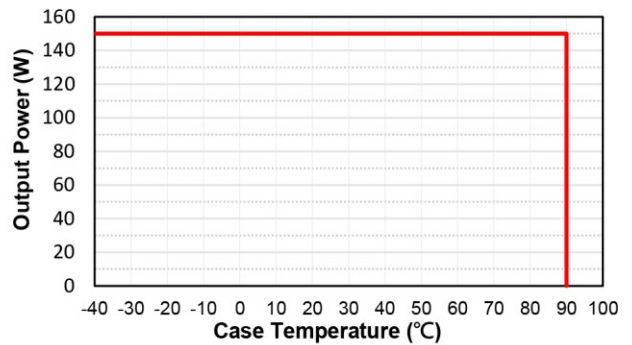
CHARACTERISTIC CURVE

Power Derating Curve

Output power vs Ambient Temperature (Ta)

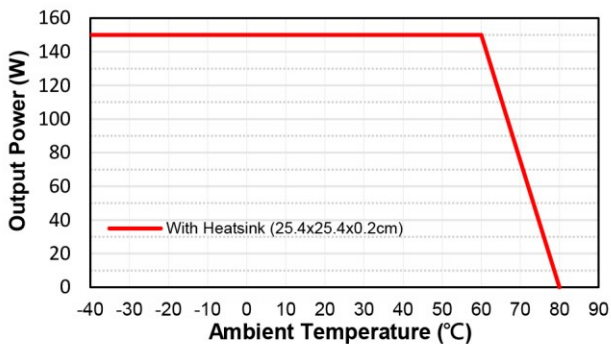


Output power vs Case Temperature (Tc)



Conduction Convection with External Baseplate (25.4x25.4x0.2cm)

Output power vs Ambient Temperature





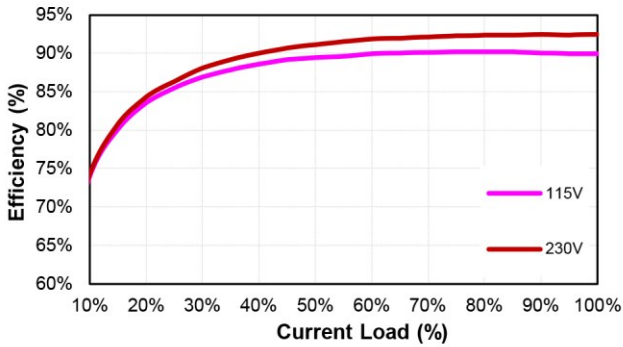
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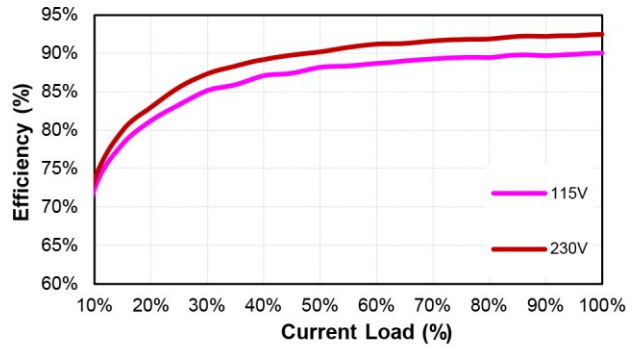
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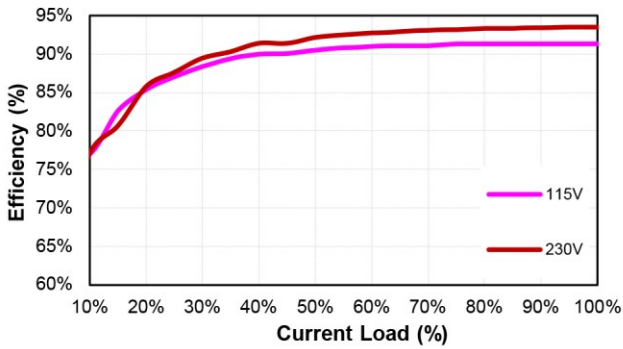
CBM150S120 (Eff Vs Io)



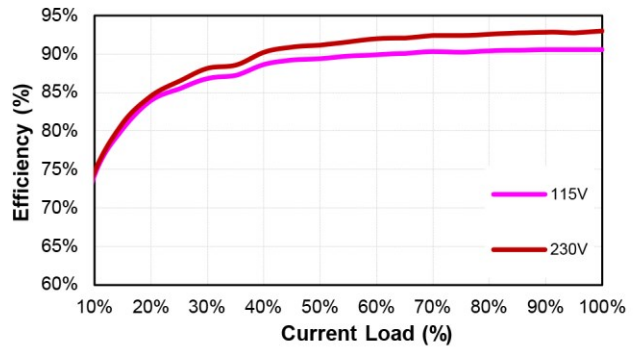
CBM150S240 (Eff Vs Io)



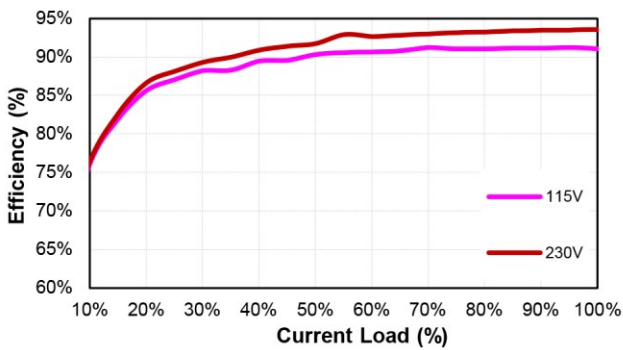
CBM150S280 (Eff Vs Io)



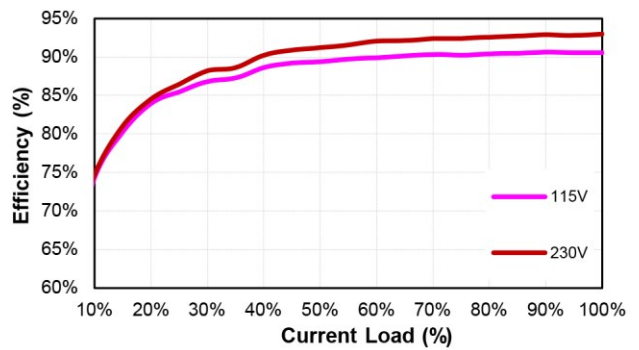
CBM150S360 (Eff Vs Io)



CBM150S480 (Eff Vs Io)



CBM150S540 (Eff Vs Io)





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MECHANICAL SPECIFICATION

