

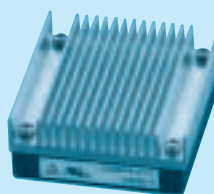
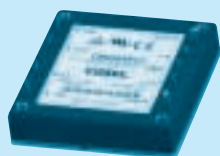
# CBS50

CB S 50 48 12 -

① ② ③ ④ ⑤ ⑥



RoHS



- ① Series name
- ② Single output
- ③ Output wattage
- ④ Input voltage  
24 :DC18 - 36V  
48 :DC36 - 76V
- ⑤ Output voltage
- ⑥ Optional  
R :with Remote ON/OFF  
Positive logic control  
T :with Mounting hole  
φ 3.4 thru  
□ :with Addition of a  
Heat sink

| MODEL                 | CBS50241R8 | CBS50242R5 | CBS502403  | CBS502405 | CBS502412 | CBS502415 | CBS502424 | CBS502428 |
|-----------------------|------------|------------|------------|-----------|-----------|-----------|-----------|-----------|
| MAX OUTPUT WATTAGE[W] | 21.06      | 29.25      | 38.6       | 50.0      | 50.4      | 51.0      | 50.4      | 50.4      |
| DC OUTPUT             | 1.8V 11.7A | 2.5V 11.7A | 3.3V 11.7A | 5V 10A    | 12V 4.2A  | 15V 3.4A  | 24V 2.1A  | 28V 1.8A  |

## SPECIFICATIONS

|                               | MODEL                              | CBS50241R8                                            | CBS50242R5  | CBS502403   | CBS502405   | CBS502412     | CBS502415     | CBS502424     | CBS502428     |
|-------------------------------|------------------------------------|-------------------------------------------------------|-------------|-------------|-------------|---------------|---------------|---------------|---------------|
| INPUT                         | VOLTAGE[V]                         | DC18 - 36                                             |             |             |             |               |               |               |               |
|                               | CURRENT[A]                         | *1 1.24typ                                            | 1.58typ     | 2.04typ     | 2.48typ     | 2.39typ       | 2.44typ       | 2.41typ       | 2.41typ       |
|                               | EFFICIENCY[%]                      | *1 71typ                                              | 77typ       | 79typ       | 84typ       | 88typ         | 87typ         | 87typ         | 87typ         |
| OUTPUT                        | VOLTAGE[V]                         | 1.8                                                   | 2.5         | 3.3         | 5           | 12            | 15            | 24            | 28            |
|                               | CURRENT[A]                         | 11.7                                                  | 11.7        | 11.7        | 10          | 4.2           | 3.4           | 2.1           | 1.8           |
|                               | LINE REGULATION[mV]                | 10max                                                 | 10max       | 10max       | 10max       | 24max         | 30max         | 48max         | 56max         |
|                               | LOAD REGULATION[mV]                | 10max                                                 | 10max       | 10max       | 10max       | 24max         | 30max         | 48max         | 56max         |
|                               | RIPPLE[mVp-p]                      | -20 to +100℃ *2                                       | 80max       | 80max       | 80max       | 80max         | 120max        | 120max        | 120max        |
|                               |                                    | -40 to -20℃ *2                                        | 120max      | 120max      | 120max      | 120max        | 150max        | 150max        | 150max        |
|                               | RIPPLE NOISE[mVp-p]                | -20 to +100℃ *2                                       | 120max      | 120max      | 120max      | 120max        | 150max        | 150max        | 150max        |
|                               |                                    | -40 to -20℃ *2                                        | 200max      | 200max      | 200max      | 200max        | 200max        | 250max        | 250max        |
|                               | TEMPERATURE REGULATION[mV]         | 0 to +65℃                                             | 35max       | 35max       | 35max       | 50max         | 120max        | 150max        | 240max        |
|                               |                                    | -40 to +100℃                                          | 66max       | 66max       | 66max       | 100max        | 240max        | 300max        | 480max        |
| PROTECTION CIRCUIT AND OTHERS | DRIFT[mV]                          | *3 16max                                              | 16max       | 16max       | 20max       | 40max         | 60max         | 90max         | 90max         |
|                               | START-UP TIME[ms]                  | 200max (DCIN 24V, Io=100%)                            |             |             |             |               |               |               |               |
|                               | OUTPUT VOLTAGE ADJUSTMENT RANGE[V] | Fixed (TRM pin open), adjustable by external resistor |             |             |             |               |               |               |               |
|                               |                                    | 1.70 - 1.98                                           | 1.98 - 2.75 | 1.98 - 3.63 | 3.0 - 5.5   | 7.2 - 13.2    | 9.0 - 16.5    | 14.4 - 26.4   | 16.8 - 30.8   |
|                               | OUTPUT VOLTAGE SETTING[V]          | 1.77 - 1.88                                           | 2.46 - 2.61 | 3.25 - 3.45 | 4.90 - 5.20 | 11.74 - 12.46 | 14.55 - 15.45 | 23.28 - 24.72 | 27.16 - 28.84 |
|                               | OVERCURRENT PROTECTION             | Works over 105% of rating and recovers automatically  |             |             |             |               |               |               |               |
|                               | OVERVOLTAGE PROTECTION[V]          | 2.16 - 2.88                                           | 3.00 - 4.00 | 4.00 - 5.50 | 5.75 - 7.00 | 13.80 - 16.80 | 17.25 - 21.00 | 27.60 - 33.60 | 32.20 - 39.20 |
| PROTECTION CIRCUIT AND OTHERS | REMOTE SENSING                     | Provided                                              |             |             |             |               |               |               |               |
|                               | REMOTE ON/OFF                      | Provided (Negative logic L : ON, H : OFF)             |             |             |             |               |               |               |               |

| MODEL                 | CBS50481R8 | CBS50482R5 | CBS504803  | CBS504805 | CBS504812 | CBS504815 | CBS504824 | CBS504828 |
|-----------------------|------------|------------|------------|-----------|-----------|-----------|-----------|-----------|
| MAX OUTPUT WATTAGE[W] | 21.06      | 29.25      | 38.6       | 50.0      | 50.4      | 51.0      | 50.4      | 50.4      |
| DC OUTPUT             | 1.8V 11.7A | 2.5V 11.7A | 3.3V 11.7A | 5V 10A    | 12V 4.2A  | 15V 3.4A  | 24V 2.1A  | 28V 1.8A  |

## SPECIFICATIONS

|                               | MODEL                              | CBS50481R8                                            | CBS50482R5  | CBS504803   | CBS504805   | CBS504812     | CBS504815     | CBS504824     | CBS504828     |
|-------------------------------|------------------------------------|-------------------------------------------------------|-------------|-------------|-------------|---------------|---------------|---------------|---------------|
| INPUT                         | VOLTAGE[V]                         | DC36 - 76                                             |             |             |             |               |               |               |               |
|                               | CURRENT[A]                         | *1 0.62typ                                            | 0.79typ     | 1.01typ     | 1.23typ     | 1.18typ       | 1.21typ       | 1.19typ       | 1.19typ       |
|                               | EFFICIENCY[%]                      | *1 71typ                                              | 77typ       | 80typ       | 85typ       | 89typ         | 88typ         | 88typ         | 88typ         |
| OUTPUT                        | VOLTAGE[V]                         | 1.8                                                   | 2.5         | 3.3         | 5           | 12            | 15            | 24            | 28            |
|                               | CURRENT[A]                         | 11.7                                                  | 11.7        | 11.7        | 10          | 4.2           | 3.4           | 2.1           | 1.8           |
|                               | LINE REGULATION[mV]                | 10max                                                 | 10max       | 10max       | 10max       | 24max         | 30max         | 48max         | 56max         |
|                               | LOAD REGULATION[mV]                | 10max                                                 | 10max       | 10max       | 10max       | 24max         | 30max         | 48max         | 56max         |
|                               | RIPPLE[mVp-p]                      | -20 to +100℃ *2                                       | 80max       | 80max       | 80max       | 80max         | 120max        | 120max        | 120max        |
|                               |                                    | -40 to -20℃ *2                                        | 120max      | 120max      | 120max      | 120max        | 150max        | 150max        | 150max        |
|                               | RIPPLE NOISE[mVp-p]                | -20 to +100℃ *2                                       | 120max      | 120max      | 120max      | 120max        | 150max        | 150max        | 150max        |
|                               |                                    | -40 to -20℃ *2                                        | 200max      | 200max      | 200max      | 200max        | 200max        | 250max        | 250max        |
|                               | TEMPERATURE REGULATION[mV]         | 0 to +65℃                                             | 35max       | 35max       | 35max       | 50max         | 120max        | 150max        | 240max        |
|                               |                                    | -40 to +100℃                                          | 66max       | 66max       | 66max       | 100max        | 240max        | 300max        | 480max        |
| PROTECTION CIRCUIT AND OTHERS | DRIFT[mV]                          | *3 16max                                              | 16max       | 16max       | 20max       | 40max         | 60max         | 90max         | 90max         |
|                               | START-UP TIME[ms]                  | 200max (DCIN 48V, Io=100%)                            |             |             |             |               |               |               |               |
|                               | OUTPUT VOLTAGE ADJUSTMENT RANGE[V] | Fixed (TRM pin open), adjustable by external resistor |             |             |             |               |               |               |               |
|                               |                                    | 1.70 - 1.98                                           | 1.98 - 2.75 | 1.98 - 3.63 | 3.0 - 5.5   | 7.2 - 13.2    | 9.0 - 16.5    | 14.4 - 26.4   | 16.8 - 30.8   |
|                               | OUTPUT VOLTAGE SETTING[V]          | 1.77 - 1.88                                           | 2.46 - 2.61 | 3.25 - 3.45 | 4.90 - 5.20 | 11.74 - 12.46 | 14.55 - 15.45 | 23.28 - 24.72 | 27.16 - 28.84 |
|                               | OVERCURRENT PROTECTION             | Works over 105% of rating and recovers automatically  |             |             |             |               |               |               |               |
|                               | OVERVOLTAGE PROTECTION[V]          | 2.16 - 2.88                                           | 3.00 - 4.00 | 4.00 - 5.50 | 5.75 - 7.00 | 13.80 - 16.80 | 17.25 - 21.00 | 27.60 - 33.60 | 32.20 - 39.20 |
| PROTECTION CIRCUIT AND OTHERS | REMOTE SENSING                     | Provided                                              |             |             |             |               |               |               |               |
|                               | REMOTE ON/OFF                      | Provided (Negative logic L : ON, H : OFF)             |             |             |             |               |               |               |               |

## GENERAL SPECIFICATIONS

|             |                                      |                                                                                                                                   |
|-------------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| ISOLATION   | INPUT-OUTPUT                         | DC1,500V or AC1,000V 1minute, Cutoff current = 10mA, DC500V 50M $\Omega$ min(20 $\pm$ 15 $^{\circ}$ C)                            |
|             | INPUT-CASE PIN, BASE PLATE           | DC1,500V or AC1,000V 1minute, Cutoff current = 10mA, DC500V 50M $\Omega$ min(20 $\pm$ 15 $^{\circ}$ C)                            |
|             | OUTPUT-CASE PIN, BASE PLATE          | AC500V 1minute, Cutoff current = 100mA, DC500V 50M $\Omega$ min (20 $\pm$ 15 $^{\circ}$ C)                                        |
| ENVIRONMENT | OPERATING TEMP., HUMID. AND ALTITUDE | -40 to +100 $^{\circ}$ C (On aluminum base plate), 20 - 95%RH (Non condensing) (Refer to DERATING CURVE), 3,000m (10,000feet) max |
|             | STORAGE TEMP., HUMID. AND ALTITUDE   | -40 to +100 $^{\circ}$ C, 20 - 95%RH (Non condensing), 9,000m (30,000feet) max                                                    |
|             | VIBRATION                            | 10 - 55Hz, 49.0m/s $^2$ (5G), 3minutes period, 60minutes each along X, Y and Z axis                                               |
| SAFETY      | IMPACT                               | 196.1m/s $^2$ (20G), 11ms, once each along X, Y and Z axis                                                                        |
|             | AGENCY APPROVALS                     | UL60950-1, C-UL, EN60950-1                                                                                                        |
| OTHERS      | CASE SIZE/WEIGHT                     | 57.9 $\times$ 12.7 $\times$ 61.0mm [2.28 $\times$ 0.5 $\times$ 2.4 inches](W $\times$ H $\times$ D) / 83g max                     |
|             | COOLING METHOD                       | Conduction cooling (e.g. heat radiation from the aluminum base plate to the attached heat sink)                                   |

\*1 At rated input(DC24V,DC48V) and rated load.

\*2 Ripple and ripple noise is measured by using measuring board with recommended capacitor Co & the film capacitor 0.1 $\mu$ F.

Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN:RM101).

\*3 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25 $^{\circ}$ C, with the input voltage held constant at the rated input/output.

\*4 When the input voltage is in the range of DC18 - 20V, DC36 - 40V, output voltage adjustment range is 60 - 105% (except for 1R8/2R5).

## External view



## Performance data

## INPUT CURRENT CHARACTERISTICS (CBS502428)



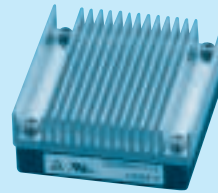
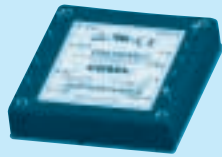
## INPUT CURRENT CHARACTERISTICS (CBS504828)



## CBS100

CB S 100 48 12 -

① ② ③ ④ ⑤ ⑥



- ① Series name  
 ② Single output  
 ③ Output wattage  
 ④ Input voltage  
 24:DC18 - 36V  
 48:DC36 - 76V  
 ⑤ Output voltage  
 ⑥ Optional  
 R :with Remote ON/OFF  
   Positive logic control  
 T :with Mounting hole  
   φ 3.4 thru  
 □ :with Addition of a  
   Heat sink

| MODEL                 | CBS100241R8 | CBS100242R5 | CBS1002403 | CBS1002405 | CBS1002412 | CBS1002415 | CBS1002424 | CBS1002428 |
|-----------------------|-------------|-------------|------------|------------|------------|------------|------------|------------|
| MAX OUTPUT WATTAGE[W] | 42.12       | 58.50       | 77.2       | 100.0      | 100.8      | 100.5      | 100.8      | 100.8      |
| DC OUTPUT             | 1.8V 23.4A  | 2.5V 23.4A  | 3.3V 23.4A | 5V 20A     | 12V 8.4A   | 15V 6.7A   | 24V 4.2A   | 28V 3.6A   |

## SPECIFICATIONS

|                               | MODEL                              | CBS100241R8                                           | CBS100242R5 | CBS1002403  | CBS1002405  | CBS1002412    | CBS1002415    | CBS1002424    | CBS1002428    |
|-------------------------------|------------------------------------|-------------------------------------------------------|-------------|-------------|-------------|---------------|---------------|---------------|---------------|
| INPUT                         | VOLTAGE[V]                         | DC18 - 36                                             |             |             |             |               |               |               |               |
|                               | CURRENT[A]                         | *1 2.47typ                                            | 3.17typ     | 4.07typ     | 5.02typ     | 4.77typ       | 4.81typ       | 4.83typ       | 4.83typ       |
|                               | EFFICIENCY[%]                      | *1 71typ                                              | 77typ       | 79typ       | 83typ       | 88typ         | 87typ         | 87typ         | 87typ         |
| OUTPUT                        | VOLTAGE[V]                         | 1.8                                                   | 2.5         | 3.3         | 5           | 12            | 15            | 24            | 28            |
|                               | CURRENT[A]                         | 23.4                                                  | 23.4        | 23.4        | 20          | 8.4           | 6.7           | 4.2           | 3.6           |
|                               | LINE REGULATION[mV]                | 10max                                                 | 10max       | 10max       | 10max       | 24max         | 30max         | 48max         | 56max         |
|                               | LOAD REGULATION[mV]                | 10max                                                 | 10max       | 10max       | 10max       | 24max         | 30max         | 48max         | 56max         |
|                               | RIPPLE[mVp-p]                      | -20 to +100°C                                         | 80max       | 80max       | 80max       | 80max         | 120max        | 120max        | 120max        |
|                               |                                    | -40 to -20°C                                          | 120max      | 120max      | 120max      | 120max        | 150max        | 150max        | 150max        |
|                               | RIPPLE NOISE[mVp-p]                | -20 to +100°C                                         | 120max      | 120max      | 120max      | 120max        | 150max        | 150max        | 150max        |
|                               |                                    | -40 to -20°C                                          | 200max      | 200max      | 200max      | 200max        | 200max        | 250max        | 250max        |
|                               | TEMPERATURE REGULATION[mV]         | 0 to +65°C                                            | 35max       | 35max       | 35max       | 50max         | 120max        | 150max        | 240max        |
|                               |                                    | -40 to +100°C                                         | 66max       | 66max       | 66max       | 100max        | 240max        | 300max        | 480max        |
|                               | DRIFT[mV]                          | *3 16max                                              | 16max       | 16max       | 20max       | 40max         | 60max         | 90max         | 90max         |
| PROTECTION CIRCUIT AND OTHERS | START-UP TIME[ms]                  | 200max (DCIN 24V, Io=100%)                            |             |             |             |               |               |               |               |
|                               | OUTPUT VOLTAGE ADJUSTMENT RANGE[V] | Fixed (TRM pin open), adjustable by external resistor |             |             |             |               |               |               |               |
|                               | OUTPUT VOLTAGE SETTING[V]          | 1.77 - 1.88                                           | 2.46 - 2.61 | 3.25 - 3.45 | 4.90 - 5.20 | 11.74 - 12.46 | 14.55 - 15.45 | 23.28 - 24.72 | 27.16 - 28.84 |
|                               | OVERCURRENT PROTECTION             | Works over 105% of rating and recovers automatically  |             |             |             |               |               |               |               |
|                               | OVERVOLTAGE PROTECTION[V]          | 2.16 - 2.88                                           | 3.00 - 4.00 | 4.00 - 5.50 | 5.75 - 7.00 | 13.80 - 16.80 | 17.25 - 21.00 | 27.60 - 33.60 | 32.20 - 39.20 |
|                               | REMOTE SENSING                     | Provided                                              |             |             |             |               |               |               |               |
|                               | REMOTE ON/OFF                      | Provided (Negative logic L : ON, H : OFF)             |             |             |             |               |               |               |               |

| MODEL                 | CBS100481R8 | CBS100482R5 | CBS1004803 | CBS1004805 | CBS1004812 | CBS1004815 | CBS1004824 | CBS1004828 |
|-----------------------|-------------|-------------|------------|------------|------------|------------|------------|------------|
| MAX OUTPUT WATTAGE[W] | 42.12       | 58.50       | 77.2       | 100.0      | 100.8      | 100.5      | 100.8      | 100.8      |
| DC OUTPUT             | 1.8V 23.4A  | 2.5V 23.4A  | 3.3V 23.4A | 5V 20A     | 12V 8.4A   | 15V 6.7A   | 24V 4.2A   | 28V 3.6A   |

## SPECIFICATIONS

|                               | MODEL                              | CBS100481R8                                           | CBS100482R5 | CBS1004803  | CBS1004805  | CBS1004812    | CBS1004815    | CBS1004824    | CBS1004828    |
|-------------------------------|------------------------------------|-------------------------------------------------------|-------------|-------------|-------------|---------------|---------------|---------------|---------------|
| INPUT                         | VOLTAGE[V]                         | DC36 - 76                                             |             |             |             |               |               |               |               |
|                               | CURRENT[A]                         | *1 1.24typ                                            | 1.58typ     | 2.01typ     | 2.48typ     | 2.36typ       | 2.38typ       | 2.39typ       | 2.39typ       |
|                               | EFFICIENCY[%]                      | *1 71typ                                              | 77typ       | 80typ       | 84typ       | 89typ         | 88typ         | 88typ         | 88typ         |
| OUTPUT                        | VOLTAGE[V]                         | 1.8                                                   | 2.5         | 3.3         | 5           | 12            | 15            | 24            | 28            |
|                               | CURRENT[A]                         | 23.4                                                  | 23.4        | 23.4        | 20          | 8.4           | 6.7           | 4.2           | 3.6           |
|                               | LINE REGULATION[mV]                | 10max                                                 | 10max       | 10max       | 10max       | 24max         | 30max         | 48max         | 56max         |
|                               | LOAD REGULATION[mV]                | 10max                                                 | 10max       | 10max       | 10max       | 24max         | 30max         | 48max         | 56max         |
|                               | RIPPLE[mVp-p]                      | -20 to +100°C                                         | 80max       | 80max       | 80max       | 80max         | 120max        | 120max        | 120max        |
|                               |                                    | -40 to -20°C                                          | 120max      | 120max      | 120max      | 120max        | 150max        | 150max        | 150max        |
|                               | RIPPLE NOISE[mVp-p]                | -20 to +100°C                                         | 120max      | 120max      | 120max      | 120max        | 150max        | 150max        | 150max        |
|                               |                                    | -40 to -20°C                                          | 200max      | 200max      | 200max      | 200max        | 200max        | 250max        | 250max        |
|                               | TEMPERATURE REGULATION[mV]         | 0 to +65°C                                            | 35max       | 35max       | 35max       | 50max         | 120max        | 150max        | 240max        |
|                               |                                    | -40 to +100°C                                         | 66max       | 66max       | 66max       | 100max        | 240max        | 300max        | 480max        |
|                               | DRIFT[mV]                          | *3 16max                                              | 16max       | 16max       | 20max       | 40max         | 60max         | 90max         | 90max         |
| PROTECTION CIRCUIT AND OTHERS | START-UP TIME[ms]                  | 200max (DCIN 48V, Io=100%)                            |             |             |             |               |               |               |               |
|                               | OUTPUT VOLTAGE ADJUSTMENT RANGE[V] | Fixed (TRM pin open), adjustable by external resistor |             |             |             |               |               |               |               |
|                               | OUTPUT VOLTAGE SETTING[V]          | 1.77 - 1.88                                           | 2.46 - 2.61 | 3.25 - 3.45 | 4.90 - 5.20 | 11.74 - 12.46 | 14.55 - 15.45 | 23.28 - 24.72 | 27.16 - 28.84 |
|                               | OVERCURRENT PROTECTION             | Works over 105% of rating and recovers automatically  |             |             |             |               |               |               |               |
|                               | OVERVOLTAGE PROTECTION[V]          | 2.16 - 2.88                                           | 3.00 - 4.00 | 4.00 - 5.50 | 5.75 - 7.00 | 13.80 - 16.80 | 17.25 - 21.00 | 27.60 - 33.60 | 32.20 - 39.20 |
|                               | REMOTE SENSING                     | Provided                                              |             |             |             |               |               |               |               |
|                               | REMOTE ON/OFF                      | Provided (Negative logic L : ON, H : OFF)             |             |             |             |               |               |               |               |

## GENERAL SPECIFICATIONS

|             |                                      |                                                                                                                                   |
|-------------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| ISOLATION   | INPUT-OUTPUT                         | DC1,500V or AC1,000V 1minute, Cutoff current = 10mA, DC500V 50M $\Omega$ min(20 $\pm$ 15 $^{\circ}$ C)                            |
|             | INPUT-CASE PIN, BASE PLATE           | DC1,500V or AC1,000V 1minute, Cutoff current = 10mA, DC500V 50M $\Omega$ min(20 $\pm$ 15 $^{\circ}$ C)                            |
|             | OUTPUT-CASE PIN, BASE PLATE          | AC500V 1minute, Cutoff current = 100mA, DC500V 50M $\Omega$ min (20 $\pm$ 15 $^{\circ}$ C)                                        |
| ENVIRONMENT | OPERATING TEMP., HUMID. AND ALTITUDE | -40 to +100 $^{\circ}$ C (On aluminum base plate), 20 - 95%RH (Non condensing) (Refer to DERATING CURVE), 3,000m (10,000feet) max |
|             | STORAGE TEMP., HUMID. AND ALTITUDE   | -40 to +100 $^{\circ}$ C, 20 - 95%RH (Non condensing), 9,000m (30,000feet) max                                                    |
|             | VIBRATION                            | 10 - 55Hz, 49.0m/s $^2$ (5G), 3minutes period, 60minutes each along X, Y and Z axis                                               |
| SAFETY      | IMPACT                               | 196.1m/s $^2$ (20G), 11ms, once each along X, Y and Z axis                                                                        |
|             | AGENCY APPROVALS                     | UL60950-1, C-UL, EN60950-1                                                                                                        |
| OTHERS      | CASE SIZE/WEIGHT                     | 57.9 $\times$ 12.7 $\times$ 61.0mm [2.28 $\times$ 0.5 $\times$ 2.4 inches] (W $\times$ H $\times$ D) / 83g max                    |
|             | COOLING METHOD                       | Conduction cooling (e.g. heat radiation from the aluminum base plate to the attached heat sink)                                   |

\*1 At rated input(DC24V,DC48V) and rated load.

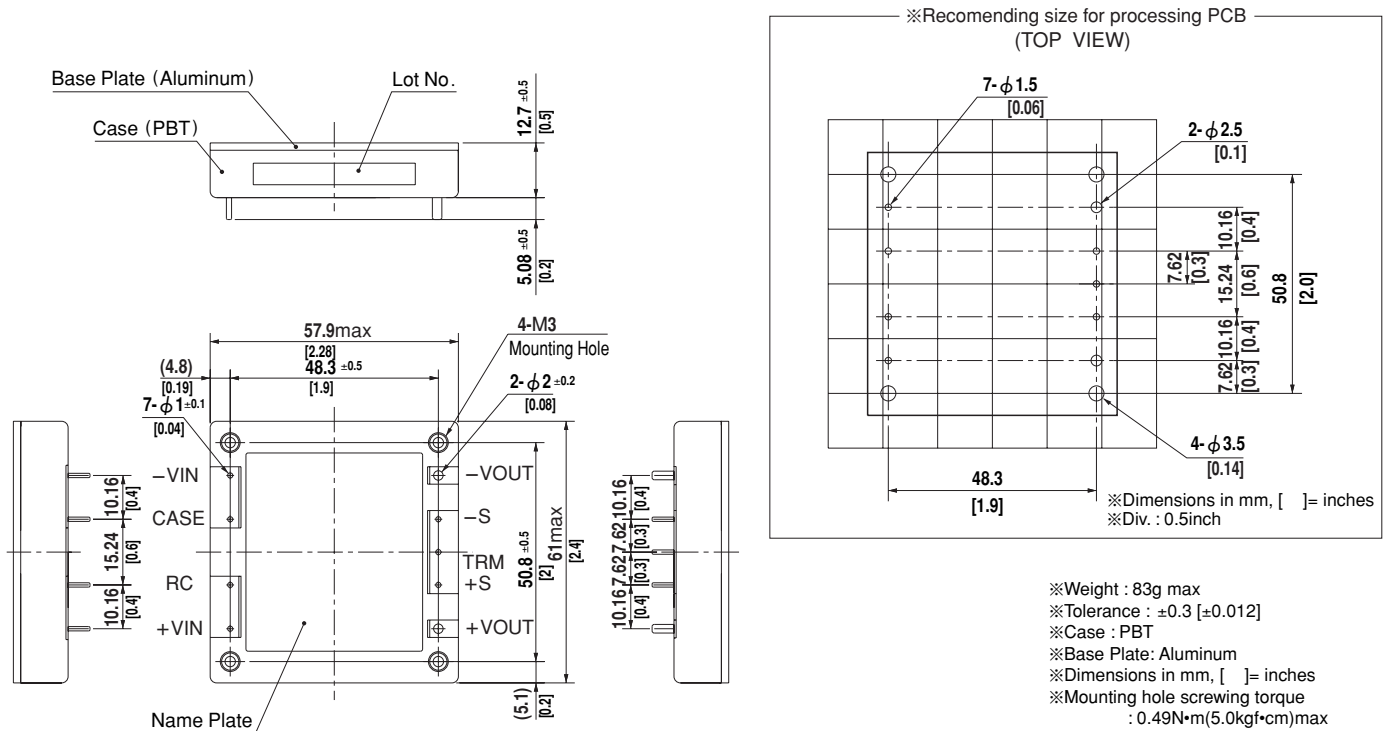
\*2 Ripple and ripple noise is measured by using measuring board with recommended capacitor Co & the film capacitor 0.1  $\mu$ F.

Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN:RM101).

\*3 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25 $^{\circ}$ C, with the input voltage held constant at the rated input/output.

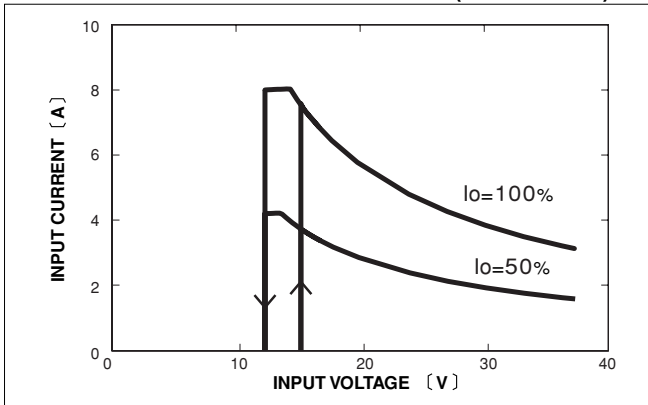
\*4 When the input voltage is in the range of DC18 - 20V, DC36 - 40V output voltage adjustment range is 60 - 105% (except for 1R8/2R5).

## External view

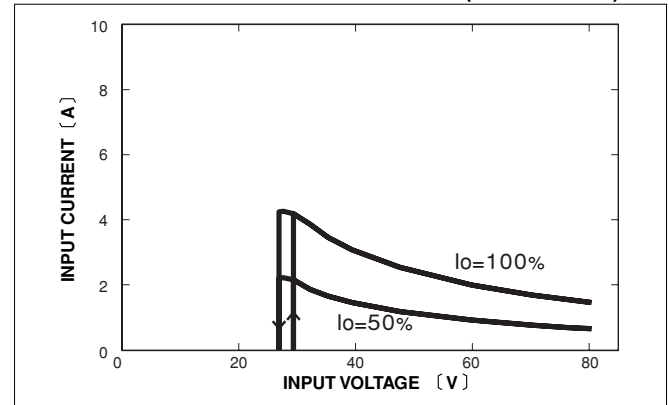


## Performance data

## INPUT CURRENT CHARACTERISTICS (CBS1002428)



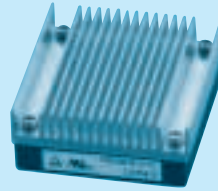
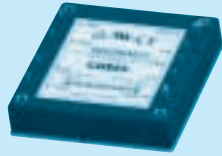
## INPUT CURRENT CHARACTERISTICS (CBS1004828)



# CBS200

CB S 200 48 12 -

① ② ③ ④ ⑤ ⑥



- ① Series name
- ② Single output
- ③ Output wattage
- ④ Input voltage  
24:DC18 - 36V  
48:DC36 - 76V
- ⑤ Output voltage
- ⑥ Optional  
R :with Remote ON/OFF  
Positive logic control  
T :with Mounting hole  
φ3.4 thru  
F□:with Addition of a  
Heat sink

| MODEL                 | CBS200241R8 | CBS200242R5 | CBS2002403 | CBS2002405 | CBS2002412 | CBS2002415 | CBS2002424 | CBS2002428 |
|-----------------------|-------------|-------------|------------|------------|------------|------------|------------|------------|
| MAX OUTPUT WATTAGE[W] | 63.00       | 87.50       | 115.5      | 150.0      | 200.4      | 201.0      | 201.6      | 201.6      |
| DC OUTPUT             | 1.8V 35A    | 2.5V 35A    | 3.3V 35A   | 5V 30A     | 12V 16.7A  | 15V 13.4A  | 24V 8.4A   | 28V 7.2A   |

## SPECIFICATIONS

|                               | MODEL                              | CBS200241R8                                           | CBS200242R5 | CBS2002403  | CBS2002405  | CBS2002412    | CBS2002415    | CBS2002424    | CBS2002428    |
|-------------------------------|------------------------------------|-------------------------------------------------------|-------------|-------------|-------------|---------------|---------------|---------------|---------------|
| INPUT                         | VOLTAGE[V]                         | DC18 - 36                                             |             |             |             |               |               |               |               |
|                               | CURRENT[A]                         | *1 3.75typ                                            | 4.80typ     | 6.09typ     | 7.62typ     | 9.60typ       | 9.63typ       | 9.66typ       | 9.66typ       |
|                               | EFFICIENCY[%]                      | *1 70typ                                              | 76typ       | 79typ       | 82typ       | 87typ         | 87typ         | 87typ         | 87typ         |
| OUTPUT                        | VOLTAGE[V]                         | 1.8                                                   | 2.5         | 3.3         | 5           | 12            | 15            | 24            | 28            |
|                               | CURRENT[A]                         | 35                                                    | 35          | 35          | 30          | 16.7          | 13.4          | 8.4           | 7.2           |
|                               | LINE REGULATION[mV]                | 10max                                                 | 10max       | 10max       | 10max       | 24max         | 30max         | 48max         | 56max         |
|                               | LOAD REGULATION[mV]                | 10max                                                 | 10max       | 10max       | 10max       | 24max         | 30max         | 48max         | 56max         |
|                               | RIPPLE[mVp-p]                      | -20 to +100°C *2 80max                                | 80max       | 80max       | 80max       | 120max        | 120max        | 120max        | 120max        |
|                               | RIPPLE NOISE[mVp-p]                | -40 to -20°C *2 120max                                | 120max      | 120max      | 120max      | 150max        | 150max        | 150max        | 150max        |
|                               |                                    | -20 to +100°C *2 120max                               | 120max      | 120max      | 120max      | 150max        | 150max        | 150max        | 150max        |
|                               | TEMPERATURE REGULATION[mV]         | -40 to -20°C *2 200max                                | 200max      | 200max      | 200max      | 200max        | 200max        | 250max        | 250max        |
|                               |                                    | 0 to +65°C 35max                                      | 35max       | 35max       | 50max       | 120max        | 150max        | 240max        | 280max        |
|                               | DRIFT[mV]                          | *3 16max                                              | 16max       | 16max       | 20max       | 40max         | 60max         | 90max         | 90max         |
| PROTECTION CIRCUIT AND OTHERS | START-UP TIME[ms]                  | 200max (DCIN 24V, I <sub>o</sub> =100%)               |             |             |             |               |               |               |               |
|                               | OUTPUT VOLTAGE ADJUSTMENT RANGE[V] | Fixed (TRM pin open), adjustable by external resistor |             |             |             |               |               |               |               |
|                               | OUTPUT VOLTAGE SETTING[V]          | 1.70 - 1.98                                           | 1.98 - 2.75 | 1.98 - 3.63 | 3.0 - 5.5   | 7.2 - 13.2    | 9.0 - 16.5    | 14.4 - 26.4   | 16.8 - 30.8   |
|                               | OVERCURRENT PROTECTION             | Works over 105% of rating and recovers automatically  |             |             |             |               |               |               |               |
|                               | OVERVOLTAGE PROTECTION[V]          | 2.16 - 2.88                                           | 3.00 - 4.00 | 4.00 - 5.50 | 5.75 - 7.00 | 13.80 - 16.80 | 17.25 - 21.00 | 27.60 - 33.60 | 32.20 - 39.20 |
|                               | REMOTE SENSING                     | Provided                                              |             |             |             |               |               |               |               |
|                               | REMOTE ON/OFF                      | Provided (Negative logic L : ON, H : OFF)             |             |             |             |               |               |               |               |

| MODEL                 | CBS200481R8 | CBS200482R5 | CBS2004803 | CBS2004805 | CBS2004812 | CBS2004815 | CBS2004824 | CBS2004828 | CBS2004848 |
|-----------------------|-------------|-------------|------------|------------|------------|------------|------------|------------|------------|
| MAX OUTPUT WATTAGE[W] | 63.00       | 87.50       | 115.5      | 150.0      | 200.4      | 201.0      | 201.6      | 201.6      | 201.6      |
| DC OUTPUT             | 1.8V 35A    | 2.5V 35A    | 3.3V 35A   | 5V 30A     | 12V 16.7A  | 15V 13.4A  | 24V 8.4A   | 28V 7.2A   | 48V 4.2A   |

## SPECIFICATIONS

|                               | MODEL                              | CBS200481R8                                           | CBS200482R5 | CBS2004803  | CBS2004805  | CBS2004812    | CBS2004815    | CBS2004824    | CBS2004828    | CBS2004848    |
|-------------------------------|------------------------------------|-------------------------------------------------------|-------------|-------------|-------------|---------------|---------------|---------------|---------------|---------------|
| INPUT                         | VOLTAGE[V]                         | DC36 - 76                                             |             |             |             |               |               |               |               |               |
|                               | CURRENT[A]                         | *1 1.88typ                                            | 2.40typ     | 3.01typ     | 3.77typ     | 4.74typ       | 4.76typ       | 4.77typ       | 4.77typ       | 4.77typ       |
|                               | EFFICIENCY[%]                      | *1 70typ                                              | 76typ       | 80typ       | 83typ       | 88typ         | 88typ         | 88typ         | 88typ         | 88typ         |
| OUTPUT                        | VOLTAGE[V]                         | 1.8                                                   | 2.5         | 3.3         | 5           | 12            | 15            | 24            | 28            | 48            |
|                               | CURRENT[A]                         | 35                                                    | 35          | 35          | 30          | 16.7          | 13.4          | 8.4           | 7.2           | 4.2           |
|                               | LINE REGULATION[mV]                | 10max                                                 | 10max       | 10max       | 10max       | 24max         | 30max         | 48max         | 56max         | 96max         |
|                               | LOAD REGULATION[mV]                | 10max                                                 | 10max       | 10max       | 10max       | 24max         | 30max         | 48max         | 56max         | 96max         |
|                               | RIPPLE[mVp-p]                      | -20 to +100°C *2 80max                                | 80max       | 80max       | 80max       | 120max        | 120max        | 120max        | 120max        | 200max        |
|                               | RIPPLE NOISE[mVp-p]                | -40 to -20°C *2 120max                                | 120max      | 120max      | 120max      | 150max        | 150max        | 150max        | 150max        | 250max        |
|                               |                                    | -20 to +100°C *2 120max                               | 120max      | 120max      | 120max      | 150max        | 150max        | 150max        | 150max        | 250max        |
|                               | TEMPERATURE REGULATION[mV]         | -40 to -20°C *2 200max                                | 200max      | 200max      | 200max      | 200max        | 200max        | 250max        | 250max        | 400max        |
|                               |                                    | 0 to +65°C 35max                                      | 35max       | 35max       | 50max       | 120max        | 150max        | 240max        | 280max        | 480max        |
|                               | DRIFT[mV]                          | *3 16max                                              | 16max       | 16max       | 20max       | 40max         | 60max         | 90max         | 90max         | 180max        |
| PROTECTION CIRCUIT AND OTHERS | START-UP TIME[ms]                  | 200max (DCIN 48V, I <sub>o</sub> =100%)               |             |             |             |               |               |               |               |               |
|                               | OUTPUT VOLTAGE ADJUSTMENT RANGE[V] | Fixed (TRM pin open), adjustable by external resistor |             |             |             |               |               |               |               |               |
|                               | OUTPUT VOLTAGE SETTING[V]          | 1.70 - 1.98                                           | 1.98 - 2.75 | 1.98 - 3.63 | 3.0 - 5.5   | 7.2 - 13.2    | 9.0 - 16.5    | 14.4 - 26.4   | 16.8 - 30.8   | 43.2 - 52.8   |
|                               | OVERCURRENT PROTECTION             | Works over 105% of rating and recovers automatically  |             |             |             |               |               |               |               |               |
|                               | OVERVOLTAGE PROTECTION[V]          | 2.16 - 2.88                                           | 3.00 - 4.00 | 4.00 - 5.50 | 5.75 - 7.00 | 13.80 - 16.80 | 17.25 - 21.00 | 27.60 - 33.60 | 32.20 - 39.20 | 55.20 - 67.20 |
|                               | REMOTE SENSING                     | Provided                                              |             |             |             |               |               |               |               |               |
|                               | REMOTE ON/OFF                      | Provided (Negative logic L : ON, H : OFF)             |             |             |             |               |               |               |               |               |

## GENERAL SPECIFICATIONS

|             |                                      |                                                                                                                                   |
|-------------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| ISOLATION   | INPUT-OUTPUT                         | DC1,500V or AC1,000V 1minute, Cutoff current = 10mA, DC500V 50M $\Omega$ min(20 $\pm$ 15 $^{\circ}$ C)                            |
|             | INPUT-CASE PIN, BASE PLATE           | DC1,500V or AC1,000V 1minute, Cutoff current = 10mA, DC500V 50M $\Omega$ min(20 $\pm$ 15 $^{\circ}$ C)                            |
|             | OUTPUT-CASE PIN, BASE PLATE          | AC500V 1minute, Cutoff current = 100mA, DC500V 50M $\Omega$ min (20 $\pm$ 15 $^{\circ}$ C)                                        |
| ENVIRONMENT | OPERATING TEMP., HUMID. AND ALTITUDE | -40 to +100 $^{\circ}$ C (On aluminum base plate), 20 - 95%RH (Non condensing) (Refer to DERATING CURVE), 3,000m (10,000feet) max |
|             | STORAGE TEMP., HUMID. AND ALTITUDE   | -40 to +100 $^{\circ}$ C, 20 - 95%RH (Non condensing), 9,000m (30,000feet) max                                                    |
|             | VIBRATION                            | 10 - 55Hz, 49.0m/s $^2$ (5G), 3minutes period, 60minutes each along X, Y and Z axis                                               |
| SAFETY      | IMPACT                               | 196.1m/s $^2$ (20G), 11ms, once each along X, Y and Z axis                                                                        |
|             | AGENCY APPROVALS                     | UL60950-1, C-UL, EN60950-1                                                                                                        |
| OTHERS      | CASE SIZE/WEIGHT                     | 57.9 $\times$ 12.7 $\times$ 61.0mm [2.28 $\times$ 0.5 $\times$ 2.4 inches] (W $\times$ H $\times$ D) / 83g max                    |
|             | COOLING METHOD                       | Conduction cooling (e.g. heat radiation from the aluminum base plate to the attached heat sink)                                   |

\*1 At rated input(DC24V,DC48V) and rated load.

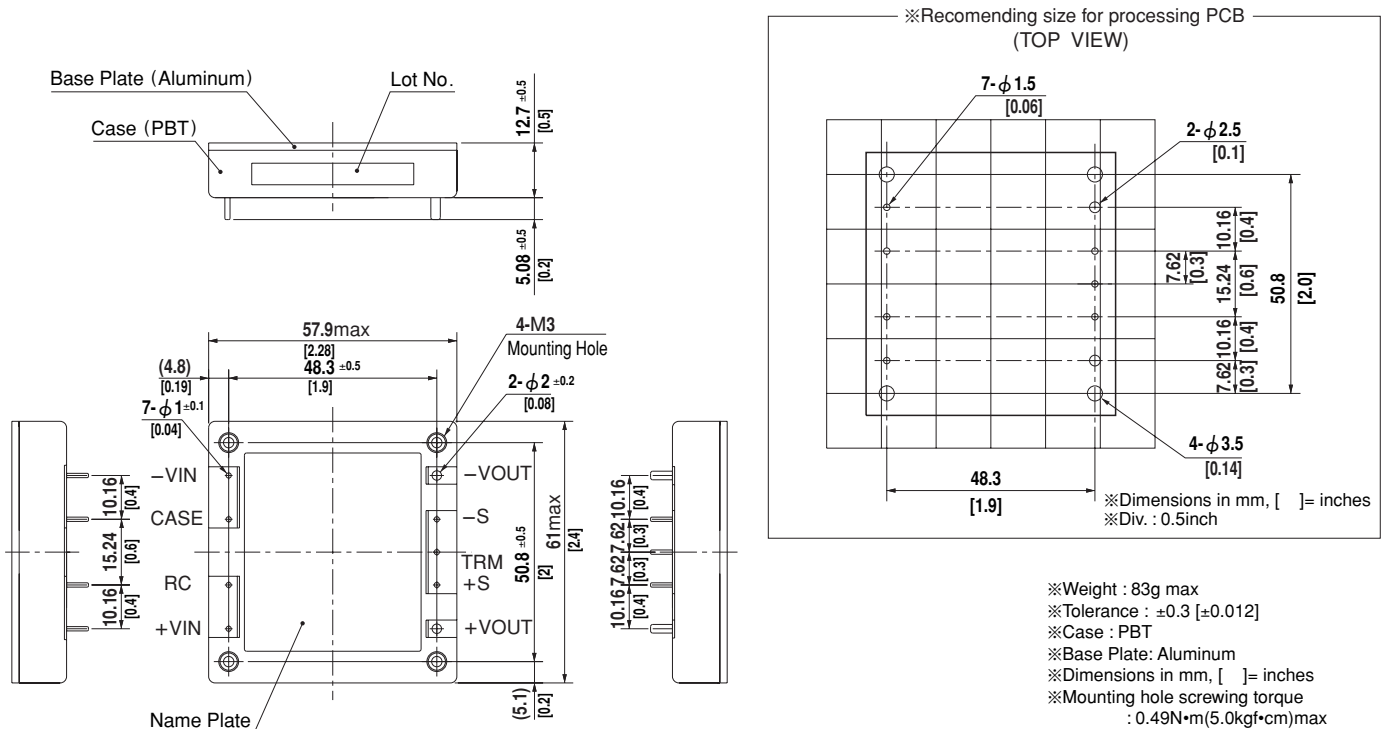
\*2 Ripple and ripple noise is measured by using measuring board with recommended capacitor Co & the film capacitor 0.1  $\mu$ F.

Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN:RM101).

\*3 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25 $^{\circ}$ C, with the input voltage held constant at the rated input/output.

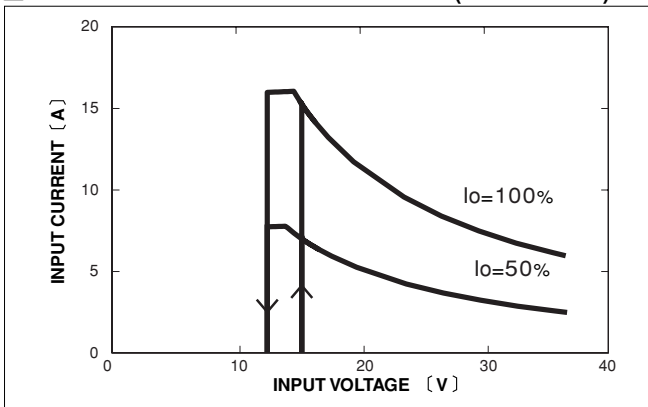
\*4 When the input voltage is in the range of DC18 - 20V, DC36 - 40V, output voltage adjustment range is 60 - 105% (except for 1R8/2R5/48).

## External view

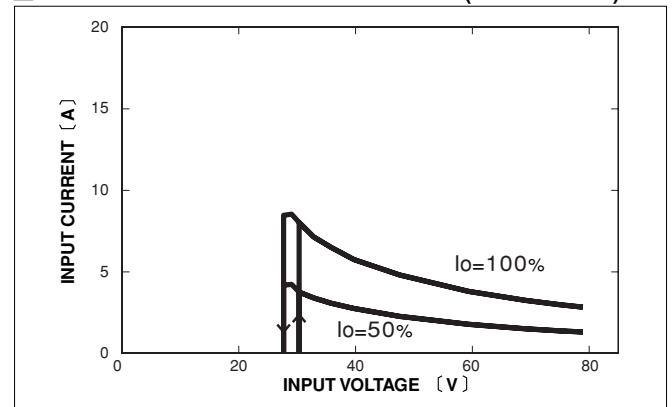


## Performance data

## INPUT CURRENT CHARACTERISTICS (CBS2002428)



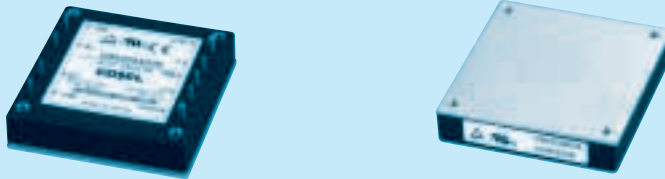
## INPUT CURRENT CHARACTERISTICS (CBS2004828)



## CBS350

CB S 350 48 12 -□

① ② ③ ④ ⑤ ⑥



- ① Series name  
 ② Single output  
 ③ Output wattage  
 ④ Input voltage  
 ⑤ Output voltage  
 ⑥ Optional  
 R :with Remote ON/OFF  
   Positive logic control  
 T :with Mounting hole  
   φ 3.4 thru

| MODEL                 | CBS3502412 | CBS3502424 | CBS3502428 | CBS3502432 | CBS3502448 | CBS3504812 | CBS3504824 | CBS3504828 | CBS3504832 | CBS3504848 |
|-----------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| MAX OUTPUT WATTAGE[W] | 300        | 348        | 350        | 352        | 302        | 348        | 348        | 350        | 352        | 350        |
| DC OUTPUT             | 12V 25A    | 24V 14.5A  | 28V 12.5A  | 32V 11A    | 48V 6.3A   | 12V 29A    | 24V 14.5A  | 28V 12.5A  | 32V 11A    | 48V 7.3A   |

## SPECIFICATIONS

|                               | MODEL                                | CBS3502412                                                                                                            | CBS3502424    | CBS3502428    | CBS3502432    | CBS3502448    | CBS3504812                 | CBS3504824    | CBS3504828    | CBS3504832    | CBS3504848    |           |
|-------------------------------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------|---------------|---------------|---------------|----------------------------|---------------|---------------|---------------|---------------|-----------|
| INPUT                         | VOLTAGE[V]                           | DC20 - 36                                                                                                             |               |               |               |               | DC36 - 76                  |               |               |               |               | DC36 - 60 |
|                               | CURRENT[A]                           | *1 14.5typ                                                                                                            | 16.7typ       | 16.4typ       | 16.5typ       | 14.0typ       | 8.33typ                    | 8.15typ       | 8.10typ       | 8.15typ       | 8.15typ       |           |
|                               | EFFICIENCY[%]                        | *1 86typ                                                                                                              | 87typ         | 89typ         | 89typ         | 90typ         | 87typ                      | 89typ         | 90typ         | 90typ         | 91typ         |           |
| OUTPUT                        | VOLTAGE[V]                           | 12                                                                                                                    | 24            | 28            | 32            | 48            | 12                         | 24            | 28            | 32            | 48            |           |
|                               | CURRENT[A]                           | 25                                                                                                                    | 14.5          | 12.5          | 11            | 6.3           | 29                         | 14.5          | 12.5          | 11            | 7.3           |           |
|                               | LINE REGULATION[mV]                  | 24max                                                                                                                 | 48max         | 56max         | 64max         | 96max         | 24max                      | 48max         | 56max         | 64max         | 96max         |           |
|                               | LOAD REGULATION[mV]                  | 24max                                                                                                                 | 48max         | 56max         | 64max         | 96max         | 24max                      | 48max         | 56max         | 64max         | 96max         |           |
|                               | RIPPLE[mVp-p]                        | -20 to +100℃ *2                                                                                                       | 120max        | 150max        | 180max        | 180max        | 300max                     | 120max        | 150max        | 180max        | 180max        | 300max    |
|                               |                                      | -40 to -20℃ *2                                                                                                        | 150max        | 180max        | 220max        | 220max        | 360max                     | 150max        | 180max        | 220max        | 220max        | 360max    |
|                               |                                      | 0 to 15%Load *2                                                                                                       | 240max        | 300max        | 360max        | 360max        | 600max                     | 240max        | 300max        | 360max        | 360max        | 600max    |
|                               | RIPPLE NOISE[mVp-p]                  | -20 to +100℃ *2                                                                                                       | 150max        | 180max        | 220max        | 220max        | 360max                     | 150max        | 180max        | 220max        | 220max        | 360max    |
|                               |                                      | -40 to -20℃ *2                                                                                                        | 200max        | 250max        | 280max        | 280max        | 500max                     | 200max        | 250max        | 280max        | 280max        | 500max    |
|                               |                                      | 0 to 15%Load *2                                                                                                       | 300max        | 360max        | 440max        | 440max        | 720max                     | 300max        | 360max        | 440max        | 440max        | 720max    |
|                               | TEMPERATURE REGULATION[mV]           | 0 to +65℃                                                                                                             | 120max        | 240max        | 280max        | 320max        | 480max                     | 120max        | 240max        | 280max        | 320max        | 480max    |
|                               |                                      | -40 to +100℃                                                                                                          | 240max        | 480max        | 560max        | 640max        | 960max                     | 240max        | 480max        | 560max        | 640max        | 960max    |
|                               | DRIFT[mV]                            | *3 40max                                                                                                              | 90max         | 90max         | 120max        | 180max        | 40max                      | 90max         | 90max         | 120max        | 180max        |           |
| START-UP TIME[ms]             | 200max (DCIN 24V, Io=100%)           |                                                                                                                       |               |               |               |               | 200max (DCIN 48V, Io=100%) |               |               |               |               |           |
| PROTECTION CIRCUIT AND OTHERS | OUTPUT VOLTAGE ADJUSTMENT RANGE[V]   | Fixed (TRM pin open), adjustable by external resistor                                                                 |               |               |               |               |                            |               |               |               |               |           |
|                               |                                      | 7.2 - 13.2                                                                                                            | 14.4 - 26.4   | 16.8 - 30.8   | 25.6 - 35.2   | 38.4 - 52.8   | 7.2 - 13.2                 | 14.4 - 26.4   | 16.8 - 30.8   | 25.6 - 35.2   | 38.4 - 55.2   |           |
|                               | OUTPUT VOLTAGE SETTING[V]            | *1 11.88 - 12.12                                                                                                      | 23.76 - 24.24 | 27.72 - 28.28 | 31.68 - 32.32 | 47.52 - 48.48 | 11.88 - 12.12              | 23.76 - 24.24 | 27.72 - 28.28 | 31.68 - 32.32 | 47.52 - 48.48 |           |
|                               | OVERCURRENT PROTECTION               | Works over 105% of rating and recovers automatically                                                                  |               |               |               |               |                            |               |               |               |               |           |
|                               | OVERVOLTAGE PROTECTION[V]            | 13.80 - 16.80                                                                                                         | 27.60 - 33.60 | 32.20 - 39.20 | 36.80 - 44.80 | 57.50 - 63.00 | 13.80 - 16.80              | 27.60 - 33.60 | 32.20 - 39.20 | 36.80 - 44.80 | 57.50 - 63.00 |           |
|                               | REMOTE SENSING                       | Provided                                                                                                              |               |               |               |               |                            |               |               |               |               |           |
| ISOLATION                     | REMOTE ON/OFF                        | Provided (Negative logic L : ON, H : OFF)                                                                             |               |               |               |               |                            |               |               |               |               |           |
|                               | INPUT-OUTPUT                         | DC1,500V or AC1,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min(20±15℃)                                          |               |               |               |               |                            |               |               |               |               |           |
|                               | INPUT-BASE PLATE                     | DC1,500V or AC1,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min(20±15℃)                                          |               |               |               |               |                            |               |               |               |               |           |
|                               | OUTPUT-BASE PLATE                    | AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (20±15℃)                                                      |               |               |               |               |                            |               |               |               |               |           |
| ENVIRONMENT                   | OPERATING TEMP., HUMID. AND ALTITUDE | -40 to +100℃ (On aluminum base plate), 20 - 95%RH (Non condensing) (Refer to DERATING CURVE), 3,000m (10,000feet) max |               |               |               |               |                            |               |               |               |               |           |
|                               | STORAGE TEMP., HUMID. AND ALTITUDE   | -40 to +100℃, 20 - 95%RH (Non condensing), 9,000m (30,000feet) max                                                    |               |               |               |               |                            |               |               |               |               |           |
|                               | VIBRATION                            | 10 - 55Hz, 49.0m/s <sup>2</sup> (5G), 3minutes period, 60minutes each along X, Y and Z axis                           |               |               |               |               |                            |               |               |               |               |           |
| SAFETY                        | IMPACT                               | 196.1m/s <sup>2</sup> (20G), 11ms, once each along X, Y and Z axis                                                    |               |               |               |               |                            |               |               |               |               |           |
|                               | AGENCY APPROVALS                     | UL60950-1, C-UL, EN60950-1                                                                                            |               |               |               |               |                            |               |               |               |               |           |
| OTHERS                        | CASE SIZE/WEIGHT                     | 57.9×12.7×61.0mm [2.28×0.5×2.4 inches] (W×H×D) / 83g max                                                              |               |               |               |               |                            |               |               |               |               |           |
|                               | COOLING METHOD                       | Conduction cooling (e.g. heat radiation from the aluminum base plate to the attached heat sink)                       |               |               |               |               |                            |               |               |               |               |           |

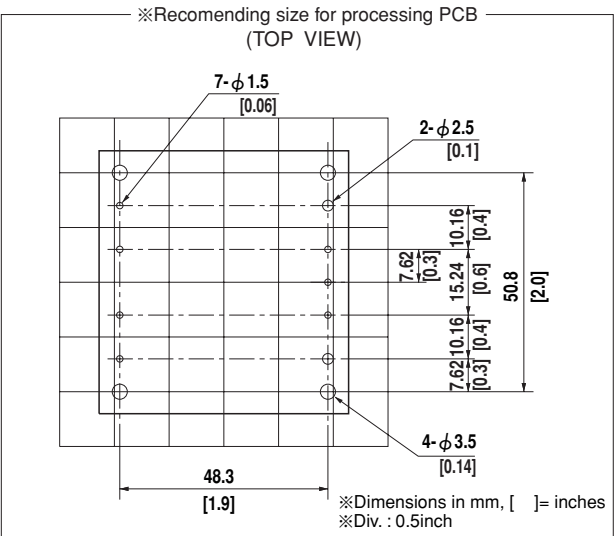
\*1 At rated input(DC24V,DC48V), rated load, and aluminum base plate temperature 25°C.

\*2 Ripple and ripple noise is measured by using measuring board with recommended capacitor Co & the film capacitor 0.1 μF. Refer to the manual.

\*3 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.

\*4 When the input voltage is in the range of DC20 - 22V, DC36 - 40V, output voltage is limited. Refer to the manual.

## External view

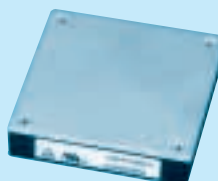
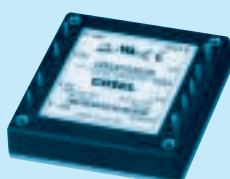


※Weight : 83g max  
 ※Tolerance :  $\pm 0.3$  [ $\pm 0.012$ ]  
 ※Case : PBT  
 ※Base Plate: Aluminum  
 ※Dimensions in mm, [ ] = inches  
 ※Mounting hole screwing torque  
                   :  $0.49\text{N}\cdot\text{m}$  ( $5.0\text{kgf}\cdot\text{cm}$ ) max

# CBS450

CB S 450 48 28 - □

① ② ③ ④ ⑤ ⑥



- ① Series name
- ② Single output
- ③ Output wattage
- ④ Input voltage
- ⑤ Output voltage
- ⑥ Optional
- R :with Remote ON/OFF  
Positive logic control
- T :with Mounting hole  
φ 3.4 thru

| MODEL                 | CBS4504824 | CBS4504828 | CBS4504832 |
|-----------------------|------------|------------|------------|
| MAX OUTPUT WATTAGE[W] | 456        | 448        | 400        |
| DC OUTPUT             | 24V 19A    | 28V 16A    | 32V 12.5A  |

## SPECIFICATIONS

|                                     | MODEL                                | CBS4504824                                                                                                            | CBS4504828    | CBS4504832    |
|-------------------------------------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------|---------------|
| INPUT                               | VOLTAGE[V]                           | DC38 - 60                                                                                                             | DC36 - 76     | DC36 - 76     |
|                                     | CURRENT[A]                           | *1 10.6typ                                                                                                            | 10.5typ       | 9.3typ        |
|                                     | EFFICIENCY[%]                        | *1 90typ                                                                                                              | 91typ         | 91typ         |
| OUTPUT                              | VOLTAGE[V]                           | 24                                                                                                                    | 28            | 32            |
|                                     | CURRENT[A]                           | 19                                                                                                                    | 16            | 12.5          |
|                                     | LINE REGULATION[mV]                  | 48max                                                                                                                 | 56max         | 64max         |
|                                     | LOAD REGULATION[mV]                  | 48max                                                                                                                 | 56max         | 64max         |
|                                     | RIPPLE[mVp-p]                        | -20 to +100℃ *2 180max                                                                                                | 210max        | 210max        |
|                                     |                                      | -40 to -20℃ *2 220max                                                                                                 | 260max        | 260max        |
|                                     |                                      | 0 to 15%Load *2 360max                                                                                                | 430max        | 430max        |
|                                     | RIPPLE NOISE[mVp-p]                  | -20 to +100℃ *2 220max                                                                                                | 260max        | 260max        |
|                                     |                                      | -40 to -20℃ *2 280max                                                                                                 | 330max        | 330max        |
|                                     |                                      | 0 to 15%Load *2 440max                                                                                                | 520max        | 520max        |
|                                     | TEMPERATURE REGULATION[mV]           | 0 to +65℃ 240max                                                                                                      | 280max        | 280max        |
|                                     |                                      | -40 to +100℃ 480max                                                                                                   | 560max        | 560max        |
|                                     | DRIFT[mV]                            | *3 90max                                                                                                              | 90max         | 120max        |
| PROTECTION<br>CIRCUIT AND<br>OTHERS | START-UP TIME[ms]                    | 200max (DCIN 48V, Io=100%)                                                                                            |               |               |
|                                     | OUTPUT VOLTAGE ADJUSTMENT RANGE[V]   | Fixed (TRM pin open), adjustable by external resistor                                                                 |               |               |
|                                     |                                      | 19.2 - 26.0                                                                                                           | 16.8 - 32.2   | 25.6 - 35.2   |
|                                     | OUTPUT VOLTAGE SETTING[V]            | *4 23.52 - 24.48                                                                                                      | 27.44 - 28.56 | 31.36 - 32.64 |
|                                     | OVERCURRENT PROTECTION               | Works over 105% of rating and recovers automatically                                                                  |               |               |
| ISOLATION                           | OVERVOLTAGE PROTECTION[V]            | 27.60 - 33.60                                                                                                         | 32.20 - 39.20 | 36.80 - 44.80 |
|                                     | REMOTE SENSING                       | Provided                                                                                                              |               |               |
|                                     | REMOTE ON/OFF                        | Provided (Negative logic L : ON, H : OFF)                                                                             |               |               |
| ENVIRONMENT                         | INPUT-OUTPUT                         | DC1,500V or AC1,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min(20±15℃)                                          |               |               |
|                                     | INPUT-BASE PLATE                     | DC1,500V or AC1,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min(20±15℃)                                          |               |               |
|                                     | OUTPUT-BASE PLATE                    | AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (20±15℃)                                                      |               |               |
| SAFETY                              | OPERATING TEMP., HUMID. AND ALTITUDE | -40 to +100℃ (On aluminum base plate), 20 - 95%RH (Non condensing) (Refer to DERATING CURVE), 3,000m (10,000feet) max |               |               |
|                                     | STORAGE TEMP., HUMID. AND ALTITUDE   | -40 to +100℃, 20 - 95%RH (Non condensing), 9,000m (30,000feet) max                                                    |               |               |
|                                     | VIBRATION                            | 10 - 55Hz, 49.0m/s <sup>2</sup> (5G), 3minutes period, 60minutes each along X, Y and Z axis                           |               |               |
| OTHERS                              | IMPACT                               | 196.1m/s <sup>2</sup> (20G), 11ms, once each along X, Y and Z axis                                                    |               |               |
|                                     | AGENCY APPROVALS                     | UL60950-1, C-UL, EN60950-1                                                                                            |               |               |
| OTHERS                              | CASE SIZE/WEIGHT                     | 57.9×12.7×61.0mm [2.28×0.5×2.4 inches] (W×H×D) / 83g max                                                              |               |               |
|                                     | COOLING METHOD                       | Conduction cooling (e.g. heat radiation from the aluminum base plate to the attached heat sink)                       |               |               |

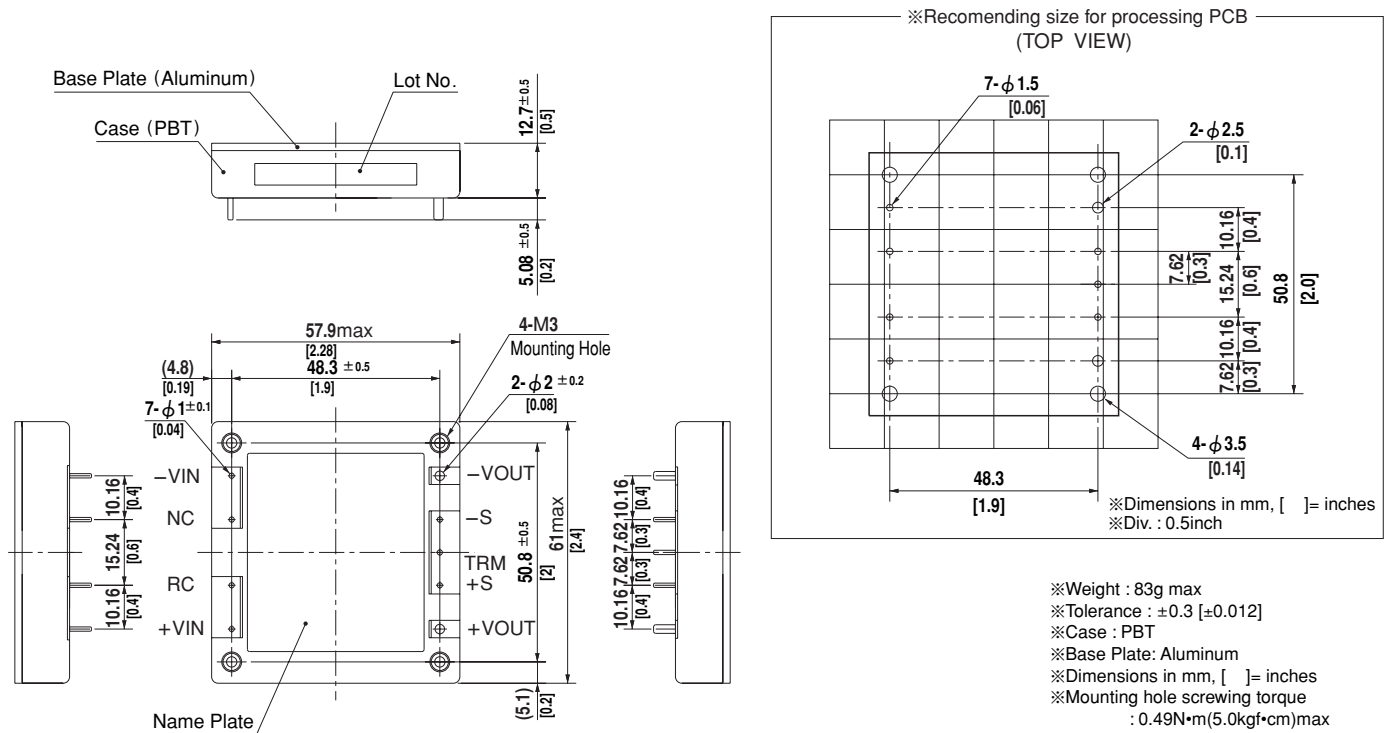
\*1 At rated input(DC48V), rated load, and aluminum base plate temperature 25℃.

\*2 Ripple and ripple noise is measured by using measuring board with recommended capacitor Co & the film capacitor 0.1 μF. Refer to the manual.

\*3 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25℃, with the input voltage held constant at the rated input/output.

\*4 Refer to the manual for the input range.

## External view



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