

COSEL

Power module type

CBS50

Ordering information

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] | 1.24typ | 1.58typ | 2.04typ | 2.48typ | 2.39typ | 2.44typ | 2.41typ | 2.41typ | |
| | EFFICIENCY[%] | 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°C | 80max | 80max | 80max | 80max | 120max | 120max | 120max | 120max |
| | | -40 to -20°C | 120max | 120max | 120max | 120max | 150max | 150max | 150max | 150max |
| | RIPPLE NOISE[mVp-p] | -20 to +100°C | 120max | 120max | 120max | 120max | 150max | 150max | 150max | 150max |
| | | -40 to -20°C | 200max | 200max | 200max | 200max | 200max | 200max | 250max | 250max |
| | TEMPERATURE REGULATION[mV] | 0 to +65°C | 35max | 35max | 35max | 50max | 120max | 150max | 240max | 280max |
| | | -40 to +100°C | 66max | 66max | 66max | 100max | 240max | 300max | 480max | 560max |
| DRIFT[mV] | 16max | 16max | 16max | 20max | 40max | 60max | 90max | 90max | | |
| START-UP TIME[ms] | 200max (DCIN 24V, I _o =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 | 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

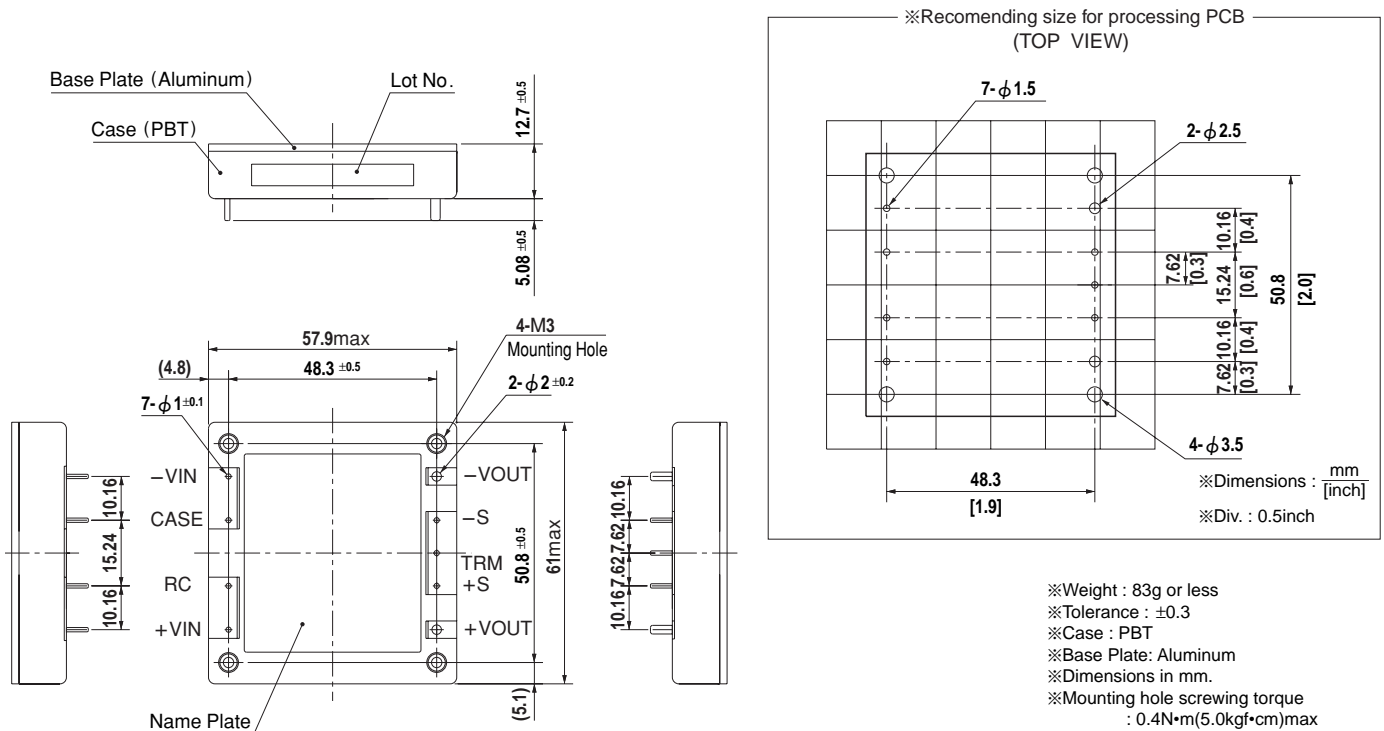
| | MODEL | CBS50481R8 | CBS50482R5 | CBS504803 | CBS504805 | CBS504812 | CBS504815 | CBS504824 | CBS504828 | |
|------------------------------------|---|---------------|-------------|-------------|---------------|---------------|---------------|---------------|-----------|--------|
| INPUT | VOLTAGE[V] | DC36 - 76 | | | | | | | | |
| | CURRENT[A] | 0.62typ | 0.79typ | 1.01typ | 1.23typ | 1.18typ | 1.21typ | 1.19typ | 1.19typ | |
| | EFFICIENCY[%] | 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°C | 80max | 80max | 80max | 80max | 120max | 120max | 120max | 120max |
| | | -40 to -20°C | 120max | 120max | 120max | 120max | 150max | 150max | 150max | 150max |
| | RIPPLE NOISE[mVp-p] | -20 to +100°C | 120max | 120max | 120max | 120max | 150max | 150max | 150max | 150max |
| | | -40 to -20°C | 200max | 200max | 200max | 200max | 200max | 200max | 250max | 250max |
| | TEMPERATURE REGULATION[mV] | 0 to +65°C | 35max | 35max | 35max | 50max | 120max | 150max | 240max | 280max |
| | | -40 to +100°C | 66max | 66max | 66max | 100max | 240max | 300max | 480max | 560max |
| DRIFT[mV] | 16max | 16max | 16max | 20max | 40max | 60max | 90max | 90max | | |
| START-UP TIME[ms] | 200max (DCIN 48V, I _o =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) | | | | | | | | | |

GENERAL SPECIFICATIONS

| | | |
|-------------|--------------------------------------|---|
| ISOLATION | INPUT-OUTPUT | DC1,500V or AC1,000V 1minute. Cutoff current = 10mA, DC500V 50M Ω min(20 \pm 15 $^{\circ}$ C) |
| | INPUT-CASE PIN, BASE PLATE | DC1,500V or AC1,000V 1minute. Cutoff current = 10mA, DC500V 50M Ω min(20 \pm 15 $^{\circ}$ C) |
| | OUTPUT-CASE PIN, BASE PLATE | AC500V 1minute. Cutoff current = 100mA, DC500V 50M Ω 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 (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) |

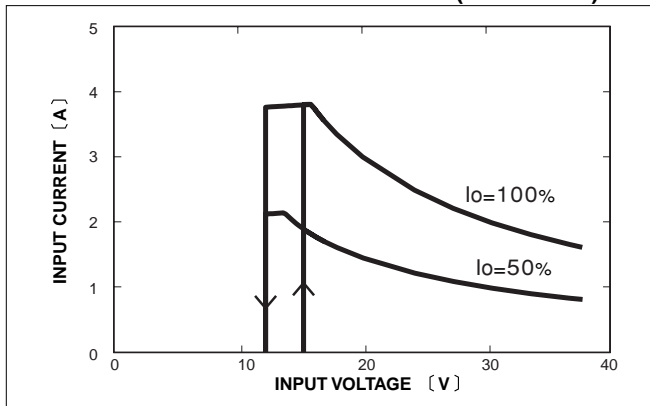
- *1 At rated input(DC24V, DC48V) and rated load.
- *2 Ripple and ripple noise is measured by using measuring board with recommended capacitor Co & the film capacitor 0.1 μ F. Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN:RM101).
- *3 Drift is the change in DC output 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

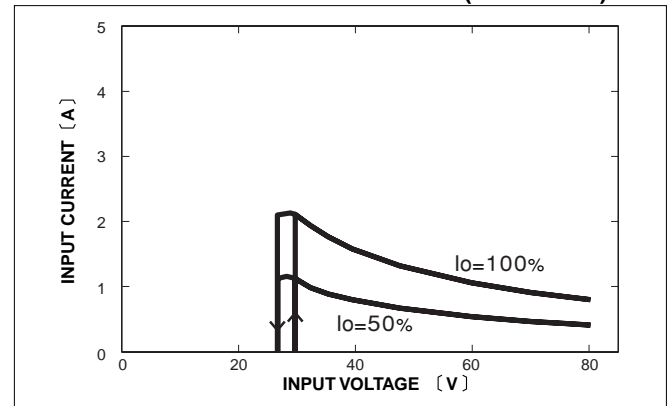


Performance data

INPUT CURRENT CHARACTERISTICS (CBS502428)



INPUT CURRENT CHARACTERISTICS (CBS504828)



CBS100

CB S 100 48 12 - □

① ② ③ ④ ⑤ ⑥



 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 | 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] | 2.47typ | 3.17typ | 4.07typ | 5.02typ | 4.77typ | 4.81typ | 4.83typ | 4.83typ | |
| | EFFICIENCY[%] | 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 | 120max |
| | | -40 to -20°C | 120max | 120max | 120max | 120max | 150max | 150max | 150max | 150max |
| | RIPPLE NOISE[mVp-p] | -20 to +100°C | 120max | 120max | 120max | 120max | 150max | 150max | 150max | 150max |
| | | -40 to -20°C | 200max | 200max | 200max | 200max | 200max | 200max | 250max | 250max |
| | TEMPERATURE REGULATION[mV] | 0 to +65°C | 35max | 35max | 35max | 50max | 120max | 150max | 240max | 280max |
| | | -40 to +100°C | 66max | 66max | 66max | 100max | 240max | 300max | 480max | 560max |
| DRIFT[mV] | 16max | 16max | 16max | 20max | 40max | 60max | 90max | 90max | | |
| START-UP TIME[ms] | 200max (DCIN 24V, I _o =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 | 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

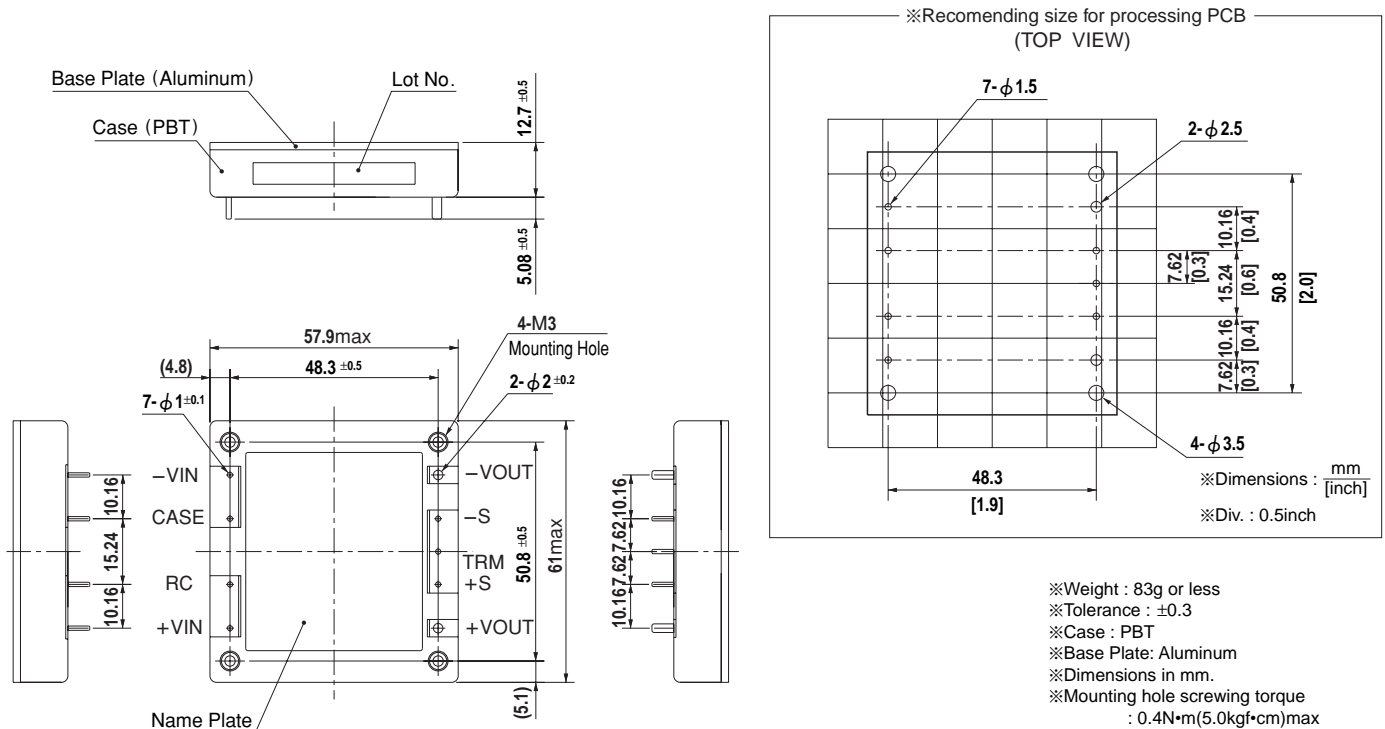
| | MODEL | CBS100481R8 | CBS100482R5 | CBS1004803 | CBS1004805 | CBS1004812 | CBS1004815 | CBS1004824 | CBS1004828 | |
|------------------------------------|---|---------------|-------------|-------------|---------------|---------------|---------------|---------------|------------|--------|
| INPUT | VOLTAGE[V] | DC36 - 76 | | | | | | | | |
| | CURRENT[A] | 1.24typ | 1.58typ | 2.01typ | 2.48typ | 2.36typ | 2.38typ | 2.39typ | 2.39typ | |
| | EFFICIENCY[%] | 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 | 120max |
| | | -40 to -20°C | 120max | 120max | 120max | 120max | 150max | 150max | 150max | 150max |
| | RIPPLE NOISE[mVp-p] | -20 to +100°C | 120max | 120max | 120max | 120max | 150max | 150max | 150max | 150max |
| | | -40 to -20°C | 200max | 200max | 200max | 200max | 200max | 200max | 250max | 250max |
| | TEMPERATURE REGULATION[mV] | 0 to +65°C | 35max | 35max | 35max | 50max | 120max | 150max | 240max | 280max |
| | | -40 to +100°C | 66max | 66max | 66max | 100max | 240max | 300max | 480max | 560max |
| DRIFT[mV] | 16max | 16max | 16max | 20max | 40max | 60max | 90max | 90max | | |
| START-UP TIME[ms] | 200max (DCIN 48V, I _o =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) | | | | | | | | | |

GENERAL SPECIFICATIONS

| | | |
|--------------------|---|---|
| ISOLATION | INPUT-OUTPUT | DC1,500V or AC1,000V 1minute. Cutoff current = 10mA, DC500V 50M Ω min(20 \pm 15 $^{\circ}$ C) |
| | INPUT-CASE PIN, BASE PLATE | DC1,500V or AC1,000V 1minute. Cutoff current = 10mA, DC500V 50M Ω min(20 \pm 15 $^{\circ}$ C) |
| | OUTPUT-CASE PIN, BASE PLATE | AC500V 1minute. Cutoff current = 100mA, DC500V 50M Ω 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 (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) |

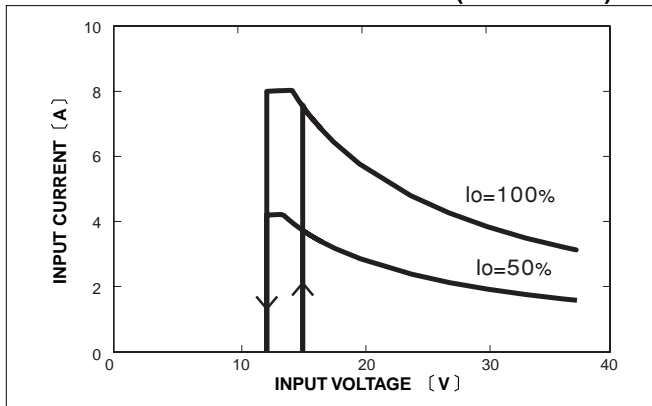
- *1 At rated input(DC24V,DC48V) and rated load.
- *2 Ripple and ripple noise is measured by using measuring board with recommended capacitor Co & the film capacitor 0.1 μ F. Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN:RM101).
- *3 Drift is the change in DC output 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

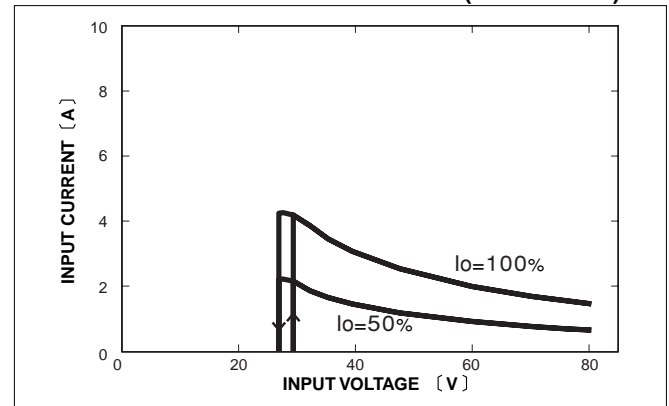


Performance data

INPUT CURRENT CHARACTERISTICS (CBS1002428)



INPUT CURRENT CHARACTERISTICS (CBS1004828)



COSEL

Power module type

Ordering information

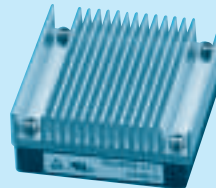
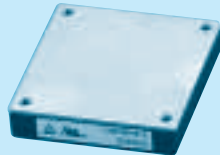
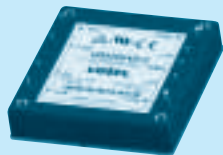
CBS200

CB S 200 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
φ3.4 thru
□: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 |
| | | -40 to -20°C | *2 120max | 120max | 120max | 120max | 150max | 150max | 150max | 150max |
| | RIPPLE NOISE[mVp-p] | -20 to +100°C | *2 120max | 120max | 120max | 120max | 150max | 150max | 150max | 150max |
| | | -40 to -20°C | *2 200max | 200max | 200max | 200max | 200max | 200max | 250max | 250max |
| | TEMPERATURE REGULATION[mV] | 0 to +65°C | 35max | 35max | 35max | 50max | 120max | 150max | 240max | 280max |
| | | -40 to +100°C | 66max | 66max | 66max | 100max | 240max | 300max | 480max | 560max |
| DRIFT[mV] | *3 16max | 16max | 16max | 20max | 40max | 60max | 90max | 90max | | |
| START-UP TIME[ms] | 200max (DCIN 24V, I _o =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 | |
| 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

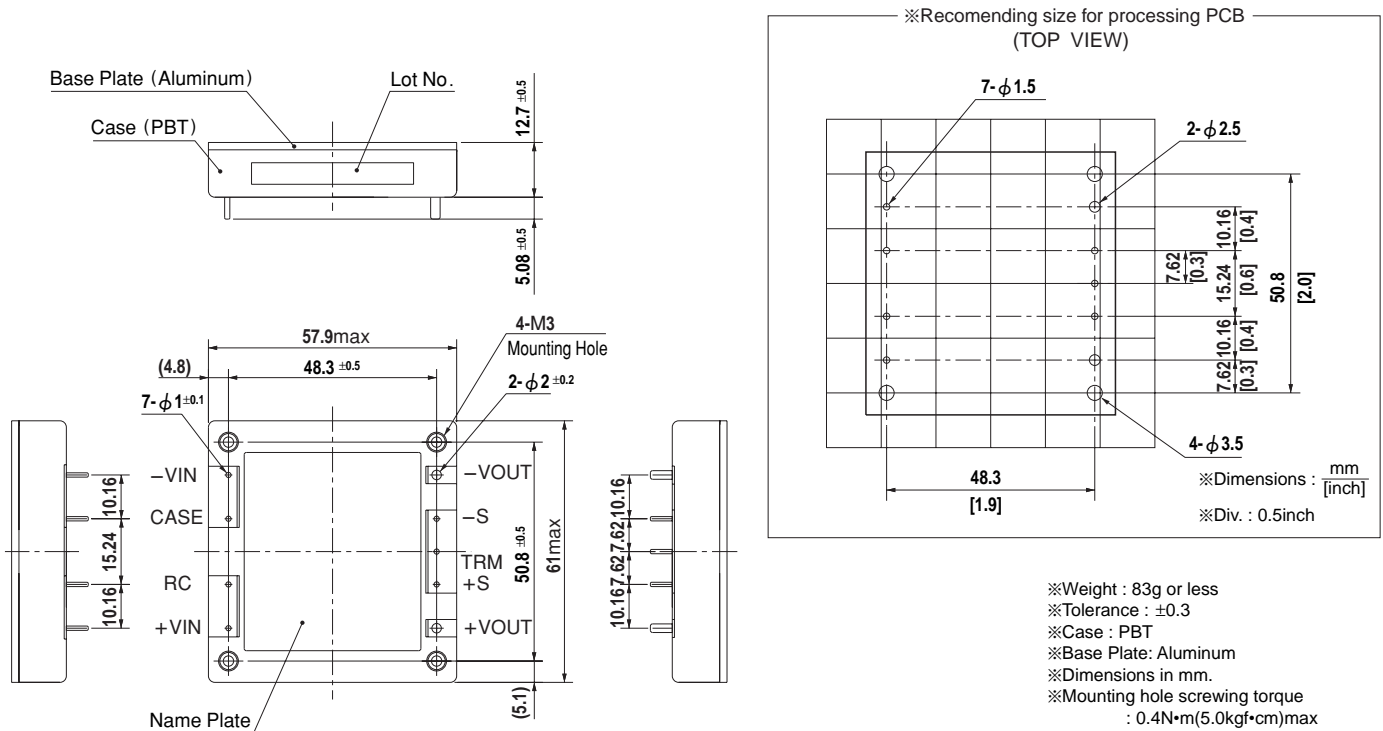
| | MODEL | CBS200481R8 | CBS200482R5 | CBS2004803 | CBS2004805 | CBS2004812 | CBS2004815 | CBS2004824 | CBS2004828 | CBS2004848 | |
|------------------------------------|---|---------------|-------------|-------------|-------------|---------------|---------------|---------------|---------------|---------------|--------|
| 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 |
| | | -40 to -20°C | *2 120max | 120max | 120max | 120max | 150max | 150max | 150max | 150max | 250max |
| | RIPPLE NOISE[mVp-p] | -20 to +100°C | *2 120max | 120max | 120max | 120max | 150max | 150max | 150max | 150max | 250max |
| | | -40 to -20°C | *2 200max | 200max | 200max | 200max | 200max | 200max | 250max | 250max | 400max |
| | TEMPERATURE REGULATION[mV] | 0 to +65°C | 35max | 35max | 35max | 50max | 120max | 150max | 240max | 280max | 480max |
| | | -40 to +100°C | 66max | 66max | 66max | 100max | 240max | 300max | 480max | 560max | 960max |
| DRIFT[mV] | *3 16max | 16max | 16max | 20max | 40max | 60max | 90max | 90max | 180max | | |
| START-UP TIME[ms] | 200max (DCIN 48V, I _o =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 | 43.2 - 52.8 | |
| 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 | 46.56 - 49.44 | |
| 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 Ω min(20 \pm 15 $^{\circ}$ C) |
| | INPUT-CASE PIN, BASE PLATE | DC1,500V or AC1,000V 1minute. Cutoff current = 10mA, DC500V 50M Ω min(20 \pm 15 $^{\circ}$ C) |
| | OUTPUT-CASE PIN, BASE PLATE | AC500V 1minute. Cutoff current = 100mA, DC500V 50M Ω 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 |
| | IMPACT | 196.1m/s 2 (20G), 11ms, once each along X, Y and Z axis |
| SAFETY | AGENCY APPROVALS | UL60950-1, C-UL, EN60950-1 |
| OTHERS | CASE SIZE/WEIGHT | 57.9 \times 12.7 \times 61.0mm (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) |

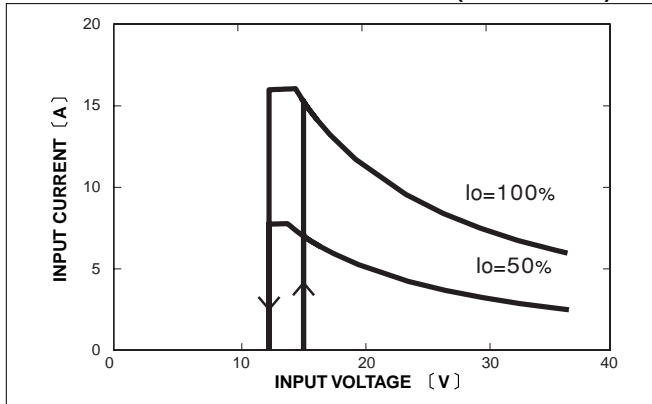
- *1 At rated input(DC24V,DC48V) and rated load.
- *2 Ripple and ripple noise is measured by using measuring board with recommended capacitor Co & the film capacitor 0.1 μ F. Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN:RM101).
- *3 Drift is the change in DC output 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

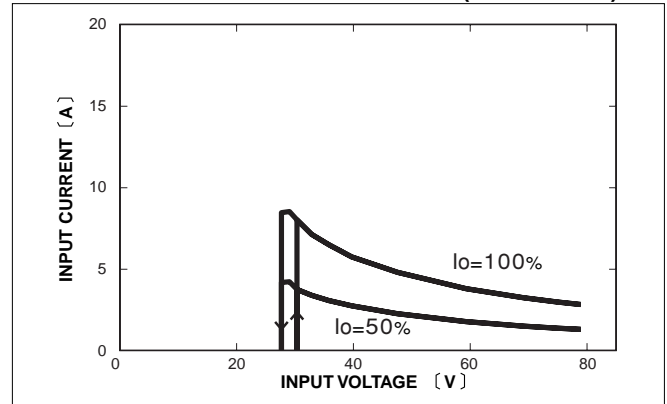


Performance data

INPUT CURRENT CHARACTERISTICS (CBS2002428)



INPUT CURRENT CHARACTERISTICS (CBS2004828)



COSEL

Power module type

CBS350

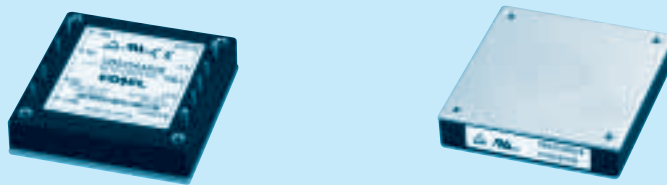
Ordering information

CB S 350 48 12 - □

① ② ③ ④ ⑤ ⑥



RoHS



- ① Series name
- ② Single output
- ③ Output wattage
- ④ Input voltage
24:DC20 - 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

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

SPECIFICATIONS

| | MODEL | CBS3502412 | CBS3502424 | CBS3502428 | CBS3502432 | CBS3504812 | CBS3504824 | CBS3504828 | CBS3504832 | |
|---------------------------------------|---|--|---------------|---------------|----------------------------|---------------|---------------|---------------|------------|--------|
| INPUT | VOLTAGE[V] | DC20 - 36 | | | | DC36 - 76 | | | | |
| | CURRENT[A] | *1 14.5typ | 16.7typ | 16.4typ | 16.5typ | 8.33typ | 8.15typ | 8.10typ | 8.15typ | |
| | EFFICIENCY[%] | *1 86typ | 87typ | 89typ | 89typ | 87typ | 89typ | 90typ | 90typ | |
| OUTPUT | VOLTAGE[V] | 12 | 24 | 28 | 32 | 12 | 24 | 28 | 32 | |
| | CURRENT[A] | 25 | 14.5 | 12.5 | 11 | 29 | 14.5 | 12.5 | 11 | |
| | LINE REGULATION[mV] | 24max | 48max | 56max | 64max | 24max | 48max | 56max | 64max | |
| | LOAD REGULATION[mV] | 24max | 48max | 56max | 64max | 24max | 48max | 56max | 64max | |
| | RIPPLE[mVp-p] | -20 to +100°C *2 | 120max | 150max | 180max | 180max | 120max | 150max | 180max | 180max |
| | | -40 to -20°C *2 | 150max | 180max | 220max | 220max | 150max | 180max | 220max | 220max |
| | | 0 to 15%Load *2 | 240max | 300max | 360max | 360max | 240max | 300max | 360max | 360max |
| | RIPPLE NOISE[mVp-p] | -20 to +100°C *2 | 150max | 180max | 220max | 220max | 150max | 180max | 220max | 220max |
| | | -40 to -20°C *2 | 200max | 250max | 280max | 280max | 200max | 250max | 280max | 280max |
| | | 0 to 15%Load *2 | 300max | 360max | 440max | 440max | 300max | 360max | 440max | 440max |
| | TEMPERATURE REGULATION[mV] | 0 to +65°C | 120max | 240max | 280max | 320max | 120max | 240max | 280max | 320max |
| | | -40 to +100°C | 240max | 480max | 560max | 640max | 240max | 480max | 560max | 640max |
| | DRIFT[mV] | *3 40max | 90max | 90max | 120max | 40max | 90max | 90max | 120max | |
| START-UP TIME[ms] | 200max (DCIN 24V, Io=100%) | | | | 200max (DCIN 48V, Io=100%) | | | | | |
| OUTPUT VOLTAGE ADJUSTMENT RANGE[V] *4 | Fixed (TRM pin open), adjustable by external resistor | | | | | | | | | |
| | 7.2 - 13.2 | 14.4 - 26.4 | 16.8 - 30.8 | 25.6 - 35.2 | 7.2 - 13.2 | 14.4 - 26.4 | 16.8 - 30.8 | 25.6 - 35.2 | | |
| OUTPUT VOLTAGE SETTING[V] *1 | 11.88 - 12.12 | 23.76 - 24.24 | 27.72 - 28.28 | 31.68 - 32.32 | 11.88 - 12.12 | 23.76 - 24.24 | 27.72 - 28.28 | 31.68 - 32.32 | | |
| 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 | 13.80 - 16.80 | 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) | | | | | | | | | |
| ISOLATION | INPUT-OUTPUT | DC1,500V or AC1,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min(20±15°C) | | | | | | | | |
| | INPUT-BASE PLATE | DC1,500V or AC1,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min(20±15°C) | | | | | | | | |
| | OUTPUT-BASE PLATE | AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (20±15°C) | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP., HUMID. AND ALTITUDE | -40 to +100°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°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 | | | | | | | | |
| | IMPACT | 196.1m/s ² (20G), 11ms, once each along X, Y and Z axis | | | | | | | | |
| SAFETY | AGENCY APPROVALS | UL60950-1, C-UL, EN60950-1 | | | | | | | | |
| OTHERS | CASE SIZE/WEIGHT | 57.9×12.7×61.0mm (W×H×D) / 83g max | | | | | | | | |
| | COOLING METHOD | Conduction cooling (e.g. heat radiation from the aluminum base plate to the attached heat sink) | | | | | | | | |

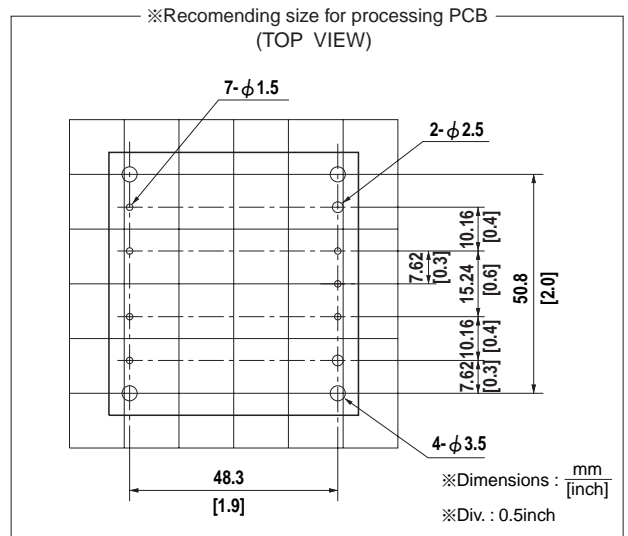
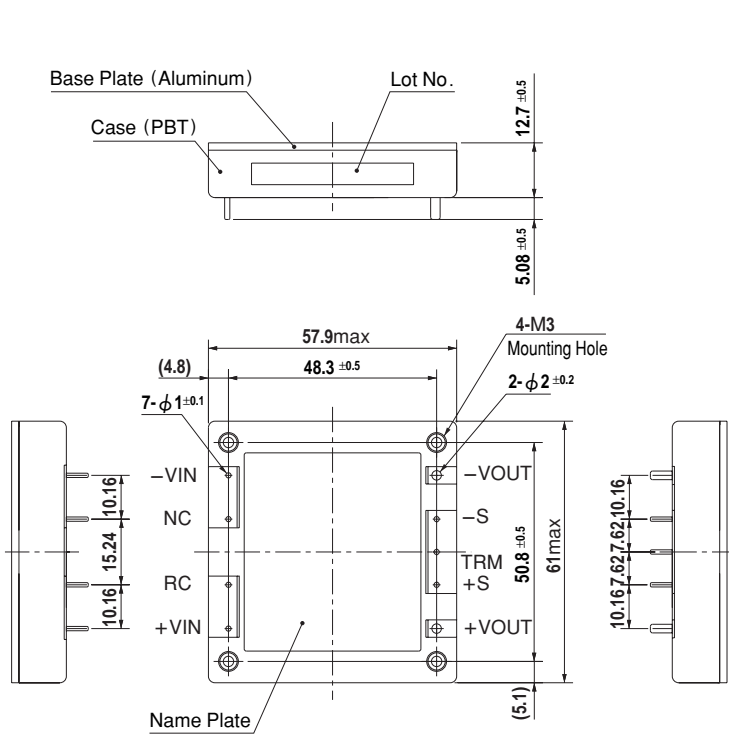
*1 At rated input(DC24V,DC48V), rated load, and aluminum base plate temperature 25°C.

*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 or less
- ※Tolerance : ±0.3
- ※Case : PBT
- ※Base Plate: Aluminum
- ※Dimensions in mm.
- ※Mounting hole screwing torque : 0.4N•m(5.0kgf•cm)max