

CBS50

CB S 50 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 | 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°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] | *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 | | | | | | | | | |
| 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] | *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°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] | *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 | | | | | | | | | |
| 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 50MΩ min(20±15℃) |
| | INPUT-CASE PIN, BASE PLATE | DC1,500V or AC1,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min(20±15℃) |
| | OUTPUT-CASE PIN, 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 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 | 57.9×12.7×61.0mm [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) and rated load.
- *2 Ripple and ripple noise is measured by using measuring board with recommended capacitor Co & the film capacitor 0.1 μF. 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℃, 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] | 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, Io=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, Io=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 50MΩ min(20±15°C) |
| | INPUT-CASE PIN, BASE PLATE | DC1,500V or AC1,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min(20±15°C) |
| | OUTPUT-CASE PIN, 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 |
| 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 | 57.9×12.7×61.0mm [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) and rated load.
- *2 Ripple and ripple noise is measured by using measuring board with recommended capacitor Co & the film capacitor 0.1 μF. 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°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
□: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 | 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] | *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 | | | | | | | | | |
| 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 | 80max | 80max | 80max | 80max | 120max | 120max | 120max | 120max | 200max |
| | | -40 to -20°C | 120max | 120max | 120max | 120max | 150max | 150max | 150max | 150max | 250max |
| | RIPPLE NOISE[mVp-p] | -20 to +100°C | 120max | 120max | 120max | 120max | 150max | 150max | 150max | 150max | 250max |
| | | -40 to -20°C | 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 | | | | | | | | | | |
| 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 50MΩ min(20±15°C) |
| | INPUT-CASE PIN, BASE PLATE | DC1,500V or AC1,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min(20±15°C) |
| | OUTPUT-CASE PIN, 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 [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) and rated load.
- *2 Ripple and ripple noise is measured by using measuring board with recommended capacitor Co & the film capacitor 0.1 μF. 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°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 | | | | | |
| | 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°C *2 | 120max | 150max | 180max | 180max | 300max | 120max | 150max | 180max | 180max | 300max |
| | | -40 to -20°C *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°C *2 | 150max | 180max | 220max | 220max | 360max | 150max | 180max | 220max | 220max | 360max |
| | | -40 to -20°C *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°C | 120max | 240max | 280max | 320max | 480max | 120max | 240max | 280max | 320max | 480max | |
| | -40 to +100°C | 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%) | | | | | |
| OUTPUT VOLTAGE ADJUSTMENT RANGE[V] | *4 | Fixed (TRM pin open), adjustable by external resistor | | | | | | | | | | |
| 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 | |
| PROTECTION CIRCUIT AND OTHERS | 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 | | | | | | | | | | |
| | 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 | | | | | | | | | | |
| 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 × 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



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°C *2 | 180max | 210max | 210max |
| | | -40 to -20°C *2 | 220max | 260max | 260max |
| | | 0 to 15%Load *2 | 360max | 430max | 430max |
| | RIPPLE NOISE[mVp-p] | -20 to +100°C *2 | 220max | 260max | 260max |
| | | -40 to -20°C *2 | 280max | 330max | 330max |
| | | 0 to 15%Load *2 | 440max | 520max | 520max |
| | TEMPERATURE REGULATION[mV] | 0 to +65°C | 240max | 280max | 280max |
| | | -40 to +100°C | 480max | 560max | 560max |
| | DRIFT[mV] | *3 90max | 90max | 120max | |
| START-UP TIME[ms] | 200max (DCIN 48V, Io=100%) | | | | |
| OUTPUT VOLTAGE ADJUSTMENT RANGE[V] *4 | 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 | | |
| PROTECTION CIRCUIT AND OTHERS | OVERCURRENT PROTECTION | Works over 105% of rating and recovers automatically | | | |
| | 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) | | | |
| 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 [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°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 Refer to the manual for the input range.

External view



- ※Weight : 83g max
- ※Tolerance : ±0.3 [±0.012]
- ※Case : PBT
- ※Base Plate: Aluminum
- ※Dimensions in mm, []= inches
- ※Mounting hole screwing torque : 0.49N•m(5.0kgf•cm)max

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Cosel:

[CBS1004828](#) [CBS1002424-F2](#) [CBS1002428](#) [CBS1002403-F6](#) [CBS100481R8-R](#) [CBS100242R5-F4](#) [CBS1004824-F2](#) [CBS1002415-RF2](#) [CBS1002412-T](#) [CBS1004805-RT](#) [CBS1002412-F1](#) [CBS1002412-F4](#) [CBS1004812-F5](#) [CBS1002403](#) [CBS1004803-RF2](#) [CBS1002405-RF1](#) [CBS100242R5-RF1](#) [CBS1002428-RT](#) [CBS1004803-F2](#) [CBS1002403-F3](#) [CBS1004805](#) [CBS1002424-F5](#) [CBS1004824-F5](#) [CBS1004815-F6](#) [CBS100241R8-F4](#) [CBS100242R5-T](#) [CBS100481R8-T](#) [CBS1002415-F6](#) [CBS1002412-RF1](#) [CBS1002428-F3](#) [CBS100481R8-F4](#) [CBS100482R5-T](#) [CBS1002405-F4](#) [CBS1002412-F5](#) [CBS1002403-RT](#) [CBS1004815-F3](#) [CBS1002405-RT](#) [CBS100482R5-RF1](#) [CBS1004828-RT](#) [CBS1004828-F3](#) [CBS100241R8-R](#) [CBS100242R5-F1](#) [CBS100481R8-F1](#) [CBS1004824-RF2](#) [CBS1002405-F1](#) [CBS1004803-F6](#) [CBS1004805-R](#) [CBS1004828-R](#) [CBS1004815-F2](#) [CBS1004805-F3](#) [CBS100242R5-R](#) [CBS1004812-T](#) [CBS1002428-F2](#) [CBS1004824-T](#) [CBS100242R5-RT](#) [CBS1004805-F6](#) [CBS100482R5-R](#) [CBS1004828-RF2](#) [CBS1004828-F2](#) [CBS1002424-RF1](#) [CBS1004812-F4](#) [CBS1004824-F1](#) [CBS100241R8-F6](#) [CBS1004803-RF1](#) [CBS1002415-F5](#) [CBS100241R8](#) [CBS100482R5-F4](#) [CBS1002424-T](#) [CBS1002405](#) [CBS1002403-F2](#) [CBS1004815-F5](#) [CBS1002415-RF1](#) [CBS1002405-RF4](#) [CBS100242R5](#) [CBS100482R5-F1](#) [CBS1002428-F6](#) [CBS1004803-F5](#) [CBS100241R8-F3](#) [CBS100481R8](#) [CBS100241R8-RT](#) [CBS1002424-F1](#) [CBS100481R8-RT](#) [CBS1002405-R](#) [CBS1004828-F6](#) [CBS1002428-RF2](#) [CBS100481R8-F3](#) [CBS100482R5-RT](#) [CBS1004812-RF1](#) [CBS1004812-F1](#) [CBS1002403-RF2](#) [CBS1002415-F2](#) [CBS1004824-RF1](#) [CBS1004815-RF2](#) [CBS1002424-F4](#) [CBS100242R5-F3](#) [CBS1004824-F4](#) [CBS100242R5-F6](#) [CBS100482R5](#) [CBS1002412-F3](#) [CBS1004824-RT](#)

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели,
кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: ocean@oceanchips.ru

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А