DHS-series

■ Feature
  Ideal for distributed power systems
  Thin and small size
  Built-in overcurrent, overvoltage and thermal protection circuits
  Built-in remote ON/OFF
  Mounting hole (M3 tapped)

■ Optional parts
  Heat sink

■ CE marking
  Low Voltage Directive
  RoHS Directive

■ Safety agency approvals
  UL60950-1, C-UL, EN60950-1

■ 5-year warranty

June 26, 2020
## DHS50A Specifications

### Input
- **Voltage** [V]: DC60 - 160
- **Current** [A]: 0.55 A
- **Efficiency (%)**: 84.0 typ

### Output
- **Voltage**: 5, 12, 15, 24 V
- **Current**: 10 A, 4.2 A, 3.4 A, 2.1 A
- **Line Regulation [mV]**: 10 max, 24 max, 30 max, 48 max
- **Load Regulation [mV]**: 10 max, 24 max, 30 max, 48 max
- **Ripple [mVp-p]**: 80 max, 120 max, 120 max, 120 max
- **Ripple Noise [mVp-p]**: 120 max, 150 max, 150 max, 150 max
- **Temperature Regulation [mV]**: 50 max, 120 max, 150 max, 240 max
- **Drift [mV]**: 20 max, 40 max, 60 max, 90 max

### Protection
- **Overcurrent Protection**: Works over 105% of rating and recovers automatically
- **Overvoltage Protection [V]**: 6.30 - 7.60, 13.90 - 17.55, 17.25 - 21.75, 27.60 - 34.80

### Remote Sensing
- **Remote ON/OFF**: Provided (Negative Logic: L : ON, H : OFF)

### Isolation
- **Input-Output**: AC3.000V 1 minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15°C)
- **Input-FG**: AC2.000V 1 minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15°C)
- **Output-FG**: AC500V 1 minute, Cutoff current = 100mA, DC500V 50MΩ min (20±15°C)

### Environment
- **Operating Temp. Hum. and Altitude**: -40 to +100°C (On aluminum base plate), 20 - 95%RH (Non-condensing) (Refer to "Derating"), 3,000m (10,000 feet) max
- **Storage Temp. Hum. and Altitude**: -45 to +105°C, 20 - 95%RH (Non-condensing), 9,000m (30,000 feet) max
- **Vibration**: 10 - 55Hz, 48.0ms² (5G), 3 minutes period, 60 minutes each along X, Y and Z axis, Complies with IEC61373 Category 1 Class B
- **Impact**: 196.1ms² (20G), 11ms, once along each X, Y and Z axis, Complies with IEC61373 Category 1 Class B

### Safety
- **Agency Approvals**: UL60950-1, C-UL (CSA60950-1), EN60950-1

### Others
- **Case Size/Weight**: 58.4 X 12.7 X 37.3mm [2.3 X 0.5 X 1.47 inches] (W X H X D) / 60g max
- **Cooling Method**: Conduction cooling (e.g., heat radiation from the aluminum base plate to the attached heat sink)

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**Notes:**
- At rated input (DC110V) and rated load.
- Ripple and ripple noise is measured by using measuring board. Refer to the manual.
- 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.
- Refer to the manual for input range.

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**June 26, 2020**
External view

Recommending size for processing PCB (TOP VIEW)

- Dimensions in mm, [ ]-inches
- Tolerance: ±0.3 [±0.012]
- Weight: 60g max
- Mounting hole screwing torque: 0.49N·m (5.0kgf·cm) max
# DC-DC Converters Bus Converter - Power Module Type

## DHS100A

### Ordering information

- **Series name**: DH S 100 A 05 -
- **Ordering information**: Providing heat sink as option.

### Specifications

#### Model Overview

- **Model**: DHS100A05, DHS100A12, DHS100A15, DHS100A24
- **Max Output Wattage [W]**: 100.0, 100.8, 100.5, 100.8
- **DC Output**: 5V 20A, 12V 8.4A, 15V 6.7A, 24V 4.2A

#### Input

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<td>80 max</td>
<td>120 max</td>
<td>50 max</td>
<td>20 max</td>
<td>200 max</td>
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<td>4.97 - 5.13</td>
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<td>150 max</td>
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<td>40 max</td>
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<td>240 max</td>
<td>60 max</td>
<td>240 max</td>
<td>17.25 - 21.75, 21.60 - 26.40</td>
<td>14.76 - 15.24</td>
<td>Provided</td>
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<td>240 max</td>
<td>480 max</td>
<td>90 max</td>
<td>240 max</td>
<td>27.60 - 34.80, 26.40 - 34.80</td>
<td>23.62 - 24.38</td>
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</tbody>
</table>

#### Protection Circuit and Others

- **Overcurrent Protection**: Works over 105% of rating and recovers automatically
- **Overvoltage Protection [V]**: 6.30 - 7.60, 13.90 - 17.55, 17.25 - 21.75, 27.60 - 34.80
- **Remote Sensing**: Nothing
- **Remote ON/OFF**: Provided (Negative Logic L : ON, H : OFF)

#### Isolation

- **Input-Output**: AC3,000V 1 minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15°C)
- **Input-FG**: AC2,000V 1 minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15°C)
- **Output-FG**: AC500V 1 minute, Cutoff current = 100mA, DC500V 50MΩ min (20±15°C)

#### Environment

- **Operating Temp. and Altitude**: -40 to +100°C (On aluminum base plate), 20 - 95%RH (Non condensing, Refer to “Derating”), 3,000m (10,000 feet) max
- **Storage Temp. and Altitude**: -40 to +100°C, 20 - 95%RH (Non condensing), 9,000m (30,000 feet) max
- **Vibration**: 10 - 55Hz, 49.0 m/s² (5G), 3 minutes period, 8 minutes each along X, Y, and Z axis
- **Impact**: 196.1 m/s² (20G), 11ms, once each along X, Y, and Z axis

#### Safety

- **Agency Approvals**: UL60950-1-C-UL (CSA60950-1), EN60950-1
- **Others**: Safety compliance with IEC61373 Category 1 Class B

### Additional Information

- **Cooling Method**: Conduction cooling (e.g., heat radiation from the aluminum base plate to the attached heat sink)
- **Case Size/Weight**: 58.4 x 12.7 x 37.3mm (2.3 x 0.5 x 1.47 inches) [W x H x D] / 60g max

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*1 At rated input (DC110V) and rated load.
*2 Ripple and ripple noise is measured by using measuring board. 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 input range.
DHS100A

External view

- Base Plate (Aluminum)
- Lot No.
- Case (PBT)
- Name Plate
- Mounting Hole
- 2-M3

Recomending size for processing PCB
(TOP VIEW)

- 4-Ø1.5 [0.06]
- 2-Ø3.5 [0.14]
- 2-Ø2.5 [0.1]
- 48.3 [1.9]
- 7.62 [0.3]

- Dimensions in mm, [ ]=inches
- Tolerance: ±0.3 [±0.012]
- Weight: 60g max
- Mounting hole screwing torque: 0.49N·m (5.0kgf·cm) max

June 26, 2020
# DC-DC Converters Bus Converter - Power Module Type

## DHS200A

### Ordering Information

- **Series name:** DHS
- **Single output:** S
- **Output wattage:** 200, 200.4, 201.0, 201.6
- **A:** DC60-160V
- **Output voltage:** Optional
- **T:** with Mounting hole (Ø3.4 thru)

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>MAX Output Wattage[W]</th>
<th>DC Output</th>
<th>Specifications</th>
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<tbody>
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<td>DHS200A05</td>
<td>200.0</td>
<td>5V 40A</td>
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<td>DHS200A12</td>
<td>200.4</td>
<td>12V 16.7A</td>
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<td>DHS200A15</td>
<td>201.0</td>
<td>15V 13.4A</td>
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<tr>
<td>DHS200A24</td>
<td>201.6</td>
<td>24V 8.4A</td>
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#### Input

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<th>Voltage[V]</th>
<th>Current[A]</th>
<th>Efficiency[%]</th>
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<td>5</td>
<td>2.1A</td>
<td>87.0typ</td>
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<td>DHS200A12</td>
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<td>2.1A</td>
<td>88.0typ</td>
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<tr>
<td>DHS200A15</td>
<td>15</td>
<td>2.1A</td>
<td>88.0typ</td>
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<tr>
<td>DHS200A24</td>
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<td>2.1A</td>
<td>88.0typ</td>
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#### Output

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<td>12</td>
<td>10max</td>
<td>120max</td>
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<td>2max</td>
<td>200max</td>
<td>3.00 - 6.00</td>
<td>4.97 - 5.13</td>
<td>Provided</td>
<td>Provided</td>
<td>AC3.000V 1minute, Cutoff current = 10mA, DC500V 50Ω min (20±15°C)</td>
<td>UL60950-1, C-UL (CSA60950-1), EN60950-1</td>
<td>58.4 X 12.7 X 61mm (2.3 X 0.5 X 2.4 inches) / 100g max</td>
<td>Conduction cooling (e.g. heat radiation from the aluminum base plate to the attached heat sink)</td>
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<td>DHS200A12</td>
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<td>16.7</td>
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<td>4max</td>
<td>200max</td>
<td>7.20 - 13.20</td>
<td>11.91 - 12.29</td>
<td>Provided</td>
<td>Provided</td>
<td>AC2.000V 1minute, Cutoff current = 10mA, DC500V 50Ω min (20±15°C)</td>
<td>Works over 105% of rating and recovers automatically</td>
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<td>150max</td>
<td>150max</td>
<td>6max</td>
<td>200max</td>
<td>9.00 - 16.50</td>
<td>14.76 - 15.24</td>
<td>Provided</td>
<td>Provided</td>
<td>AC500V 1minute, Cutoff current = 100mA, DC500V 50Ω min (20±15°C)</td>
<td>Fixed (TRM pin open), adjustable by external VR or external voltage</td>
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<tr>
<td>DHS200A24</td>
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<td>8.4</td>
<td>48max</td>
<td>120max</td>
<td>240max</td>
<td>90max</td>
<td>2000max</td>
<td>14.40 - 26.40</td>
<td>23.62 - 24.38</td>
<td>Provided</td>
<td>Provided</td>
<td>AC500V 1minute, Cutoff current = 100mA, DC500V 50Ω min (20±15°C)</td>
<td>Works over 105% of rating and recovers automatically</td>
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</tbody>
</table>

#### Protection Circuit and Others

- **Overcurrent Protection:** Works over 105% of rating and recovers automatically
- **Remote Sensing:** Provided
- **Remote On/Off:** Provided (Negative Logic L : ON, H : OFF)

#### Isolation

- **Input-Output:** AC3.000V 1minute, Cutoff current = 10mA, DC500V 50Ω min (20±15°C)
- **Input-FG:** AC2.000V 1minute, Cutoff current = 10mA, DC500V 50Ω min (20±15°C)
- **Output-FG:** AC500V 1minute, Cutoff current = 100mA, DC500V 50Ω 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”), 3,000m (10,000 feet) max
- **Storage Temp., Humid. and Altitude:** -40 to +100°C (On aluminum base plate), 20 - 95%RH (Non condensing), 9,000m (30,000 feet) max
- **Vibration:** 10 - 55Hz, 49.0m/s² (5G), 3minutes period, 60minutes each along X, Y and Z axis
- **Impact:** 196.1m/s² (20G), 11ms, once each along X, Y and Z axis

#### Safety AGENCY APPROVALS

- **UL60950-1, C-UL (CSA60950-1), EN60950-1**

#### Others

- **Case Size/Weight:** 58.4 X 12.7 X 61mm (2.3 X 0.5 X 2.4 inches) / 100g max
- **Cooling Method:** Conduction cooling (e.g. heat radiation from the aluminum base plate to the attached heat sink)

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*1 At rated input (DC110V) and rated load.
*2 Ripple and ripple noise is measured by using measuring board. 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 input range.
Recomending size for processing PCB (TOP VIEW)

- Dimensions in mm, [ ]=inches
- Div. : 0.2inch

- Tolerance : ±0.3 [±0.012]
- Weight : 100g max
- Dimensions in mm, [ ]=inches
- Mounting hole screwing torque : 0.49N·m (5.0kgf·cm) max

June 26, 2020
DC-DC Converters Bus Converter Power Module Type

DHS50B

Ordering information

1. Series name
2. Single output
3. Output wattage
4. B: DC200-400V
5. Output voltage
6. Optional
   T: with Mounting hole (ϕ3.4 thru)

MODEL DHS50B03 DHS50B05 DHS50B12 DHS50B15 DHS50B24 DHS50B28
MAX OUTPUT WATTAGE[W] 33.0 50.0 50.4 51.0 50.4 50.4
DC OUTPUT 3.3V 10A 5V 10A 12V 4.2A 15V 3.4A 24V 2.1A 28V 1.8A

SPECIFICATIONS

MODEL DHS50B03 DHS50B05 DHS50B12 DHS50B15 DHS50B24 DHS50B28

INPUT

VOLTAGE[V] DC200 - 400
CURRENT[A] 0.15A 0.22A 0.22A 0.22A 0.22A 0.22A
EFFICIENCY[%] 77.0typ 80.0typ 83.0typ 83.0typ 83.0typ 82.0typ

OUTPUT

VOLTAGE[V] 3.3 5 12 15 24 28
CURRENT[A] 10 10 4.2 3.4 2.1 1.8
LINE REGULATION[mV] 10max 50max 24max 30max 48max 56max
LOAD REGULATION[mV] 10max 50max 24max 30max 48max 56max
RIPPLE[mVp-p] 80max 80max 120max 120max 120max 120max
-40 to +85°C
160max 160max 240max 240max 240max 240max
-40 to +125°C
240max 240max 300max 300max 300max 300max
-40 to +125°C
DRIFT[mV] 16max 20max 40max 60max 90max 90max

PROTECTION CIRCUIT AND OTHERS

REMOTE SENSING None
REMOTE ON/OFF Provided (Negative Logic L : ON, H :OFF)

ISOLATION

INPUT-OUTPUT AC3.00V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15°C)
INPUT-FG AC2.00V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15°C)
OUTPUT-FG AC50V 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”), 3,000m (10,000 feet) max
STORAGE TEMP.HUMID. AND ALTITUDE -40 to +100°C, 20 - 95%RH (Non condensing), 9,000m (30,000 feet) max
VIBRATION 10 - 55Hz, 49.0m/s² (5G), 3minutes period, 60minutes each along X, Y and Z axis
IMPACT 196.1m/s² (20G), 11ms, once each along X, Y and Z axis

SAFETY AGENCY APPROVALS UL60950-1, C-UL, EN60950-1

OTHERS

CASE SIZE/WEIGHT 58.4 X 12.7 X 37.3mm [2.3 X 0.5 X 1.47 inches] (W X H X D) / 60g max
COOLING METHOD Conduction cooling (e.g. heat radiation from the aluminum base plate to the attached heat sink)

*1 At rated input(DC280V) and rated load.
*2 Ripple and ripple noise is measured by using measuring board. 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 input range.

June 26, 2020
DHS50B

External view

- Base Plate (Aluminum)
- Case (PBT)
- Lot No.

Specifications:
- Dimensions in mm, [ ] inches
- Tolerance: ±0.3 [±0.012]
- Weight: 60g max
- Mounting hole screwing torque: 0.49N·m (5.0kgf·cm) max

Recomending size for processing PCB (TOP VIEW)

Dimensions in mm, [ ] inches
Div: 0.2inch

June 26, 2020
### DHS100B Specifications

#### Max Output Wattage [W]

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<th>DHS100B05</th>
<th>DHS100B12</th>
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#### DC Output

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<th>3.3V 20A</th>
<th>5V 20A</th>
<th>12V 8.4A</th>
<th>15V 6.7A</th>
<th>24V 4.2A</th>
<th>28V 3.6A</th>
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</thead>
</table>

#### Specifications

<table>
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<tr>
<th>Model</th>
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<th>DHS100B05</th>
<th>DHS100B12</th>
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<tr>
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<td>Current [A]</td>
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<td>Temperature Regulation [mV]</td>
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<td>Drift [mV]</td>
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<td>60max</td>
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<td>Protection Circuit and Others</td>
<td>Overcurrent Protection Works over 105% of rating and recovers automatically</td>
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</tr>
<tr>
<td>Overvoltage Protection [V]</td>
<td>4.20 - 5.70</td>
<td>6.30 - 7.60</td>
<td>13.90 - 17.55</td>
<td>17.25 - 21.75</td>
<td>27.60 - 34.80</td>
<td>32.20 - 40.60</td>
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<tr>
<td>Remote Sensing</td>
<td>None</td>
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<tr>
<td>Remote On/Off</td>
<td>Provided (Negative Logic L : ON, H :OFF)</td>
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<td></td>
<td></td>
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<tr>
<td>Isolation</td>
<td>AC3.00V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15°C)</td>
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<tr>
<td>INPUT-FG</td>
<td>AC2.00V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15°C)</td>
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<tr>
<td>OUTPUT-FG</td>
<td>AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (20±15°C)</td>
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<tr>
<td>Environment</td>
<td>OPERATING TEMP. HUMID. AND ALTITUDE</td>
<td>-40 to +100°C (On aluminum base plate), 20 - 95%RH (Non condensing) (Refer to &quot;Derating&quot;), 3,000m (10,000 feet) max</td>
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<tr>
<td>Storage Temp.</td>
<td>-40 to +100°C (On aluminum base plate), 20 - 95%RH (Non condensing) (Refer to &quot;Derating&quot;), 3,000m (10,000 feet) max</td>
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<td></td>
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<tr>
<td>Vibration</td>
<td>10 - 55Hz, 49.0m/s² (5G), 3minutes period, 60minutes each along X, Y and Z axis</td>
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<td></td>
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<tr>
<td>Impact</td>
<td>196.1m/s² (20G), 11ms, once each along X, Y and Z axis</td>
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<tr>
<td>Safety</td>
<td>AGENCY APPROVALS</td>
<td>UL60950-1, C-UL, EN60950-1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>CASE SIZE/WEIGHT</td>
<td>58.4 X 12.7 X 37.3mm [2.3 X 0.5 X 1.47 inches]</td>
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<tr>
<td>Cooling Method</td>
<td>Conduction cooling (e.g. heat radiation from the aluminum base plate to the attached heat sink)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

*1 At rated input (DC280V) and rated load.  
*2 Ripple and ripple noise is measured by using measuring board. 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 input range.
DHS100B

External view

Case (PBT)
Base Plate (Aluminum)
Lot No.

Name Plate
2-M3
Mounting Hole

58.4 max
(5.0)
(0.2)

4-φ1.5
[0.06]

2-φ2 ±0.2
[0.08]

2-φ2.5
[1.9]
[0.19]

48.3 ±0.5
[1.9]

48.3 ±0.5
[1.9]
[0.19]

7.62 ±0.2
[0.08]

7.62 ±0.2
[0.08]

27.94 ±0.5

12.7 ±0.5

25.6 (TOP VIEW)
Recomending size for processing PCB

※ Dimensions in mm, [ ]=inches
※ Tolerance : ±0.3 [±0.012]
※ Weight : 60g max
※ Dimensions in mm, [ ]=inches
※ Mounting hole screwing torque : 0.49N·m (5.0kgf·cm) max

June 26, 2020

DHS-11
## DHS250B

### Ordering information

<table>
<thead>
<tr>
<th>DH</th>
<th>S</th>
<th>250</th>
<th>B</th>
<th>05</th>
</tr>
</thead>
</table>

**DHS-12**

**DHS250B**

**DC-DC Converters Bus Converter Power Module Type**

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>DHS250B03</th>
<th>DHS250B05</th>
<th>DHS250B07</th>
<th>DHS250B12</th>
<th>DHS250B15</th>
<th>DHS250B24</th>
<th>DHS250B28</th>
<th>DHS250B48</th>
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</thead>
<tbody>
<tr>
<td>Max Output Wattage [W]</td>
<td>165.0</td>
<td>250.0</td>
<td>247.5</td>
<td>252.0</td>
<td>247.5</td>
<td>252.0</td>
<td>252.0</td>
<td>249.6</td>
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<tr>
<td>DC Output</td>
<td>3.3V 50A</td>
<td>5V 50A</td>
<td>7.5V 33A</td>
<td>12V 21A</td>
<td>15V 16.5A</td>
<td>24V 10.5A</td>
<td>28V 9.0A</td>
<td>48V 5.2A</td>
</tr>
</tbody>
</table>

### Input

| Voltage [V] | DC200 - 400 |
| Current [A] | 0.67A 1.0A 1.0A 1.0A 1.0A 1.0A 1.0A 1.0A |
| Efficiency [%] | 88.0typ 90.0typ 88.0typ 88.0typ 88.0typ 88.0typ 88.0typ 89.0typ |

### Output

| Voltage [V] | 3.3 5 7.5 12 15 24 28 48 |
| Current [A] | 50 50 33 21 16 5 9.0 5.2 |
| Ripple [mVp-p] | 80max 80max 100max 120max 120max 120max 200max 200max |
| Ripple Noise [mVp-p] | 120max 120max 130max 150max 150max 150max 250max 250max |
| Temperature Regulation [mV] | 35max 50max 70max 120max 120max 120max 280max 280max |
| Drift [mV] | 16max 20max 30max 40max 60max 90max 90max 180max |
| Start-up Time [ms] | 200max (DCIN 280V, Io=100%) |

### Protection Circuit and Others

<table>
<thead>
<tr>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>Overcurrent Protection</td>
<td>Works over 105% of rating and recovers automatically</td>
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<tr>
<td>Overvoltage Protection [V]</td>
<td>4.20 - 4.85</td>
<td>6.30 - 7.30</td>
<td>8.70 - 10.20</td>
<td>13.30 - 16.35</td>
<td>17.25 - 20.25</td>
<td>27.60 - 32.40</td>
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<tr>
<td>Remote Sensing</td>
<td>Provided</td>
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</tr>
<tr>
<td>Remote On/Off</td>
<td>Provided (Negative Logic L : ON, H : OFF)</td>
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<tr>
<td>AC3.000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15°C)</td>
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<td></td>
<td></td>
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</tbody>
</table>

### Safety

| Agency Approvals | UL60950-1, C-UL, EN60950-1 |

### Cooling Method

<table>
<thead>
<tr>
<th>Case/Weight</th>
<th>58.4 x 12.7 x 61mm (2.3 x 0.5 x 2.4 inches)</th>
</tr>
</thead>
</table>

### Notes

1. At rated input (DC280V) and rated load.
2. Ripple and ripple noise is measured by using measuring board. 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 input range.

June 26, 2020
External view

Recomending size for processing PCB
(TOP VIEW)

- Dimensions in mm, [ ]=inches
- Tolerance : ±0.3 [±0.012]
- Weight : 100g max
- Dimensions in mm, [ ]=inches
- Mounting hole screwing torque : 0.49N \cdot m (5.0kgf \cdot cm) max
### Pin Configuration

#### DHS50/100

```
+VIN ①
-TRM ②
-VIN ③
+VOUT ④
RC ⑤
```

#### DHS200/250

```
+VIN ①
-S ④
-TRM ⑤
-VIN ⑥
+VOUT ⑧
```

### Implementation・Mounting Method

**Mounting method**

- The unit can be mounted in any direction. When two or more power supplies are used side by side, position them with proper intervals to allow enough air ventilation. Aluminum base plate temperature around each power supply should not exceed the temperature range shown in "Derating".

- Avoid placing the DC input line pattern lay out underneath the unit, it will increase the line conducted noise. Make sure to leave an ample distance between the line pattern lay out and the unit. Also avoid placing the DC output line pattern underneath the unit because it may increase the output noise. Lay out the pattern away from the unit.

- High-frequency noise radiates directly from the unit to the atmosphere. Therefore, design the shield pattern on the printed circuit board and connect its one to FG.

  The shield pattern prevents noise radiation.

---

No. | Pin Connection | Function |
---|---------------|----------|
① | +VIN | +DC input |
② | RC | Remote ON/OFF |
③ | -VIN | -DC input |
④ | +VOUT | +DC output |
⑤ | +S | Remote sensing |
⑥ | TRM | Adjustment of output voltage |
⑦ | -S | Remote sensing |
⑧ | -VOUT | -DC output |
---|---|---|
| | Mounting hole | Mounting hole |
Implementation • Mounting Method

Stress onto the pins

- Applying excessive stress to the input or output pins of the power module may damage internal connections. Avoid applying stress in excess of that shown in right figure.
- Input and output pins are soldered onto the internal PCB. Do not bend or pull the leads with excessive force.
- As unexpected stress may be applied to the pins, set the diameter of the PCB mounting hole at 3.5mm.
- As unexpected stress may be applied to the pins from vibration or shock, fix the power module by using the mounting holes with screws to reduce stress.
- Fix the power module to the PCB with the screws before soldering the input and output pins to prevent the PCB pattern being damaged.

Soldering temperature

- Flow soldering: 260°C for up to 15 seconds.
- Soldering iron (26W): 450°C for up to 5 seconds.

Derating

- Use the power modules with conduction cooling (e.g. heat dissipation from the aluminum base plate to the attached heat sink). Below shows the derating curves with respect to the aluminum base plate temperature. Note that operation within the hatched areas will cause a significant level of ripple and ripple noise.
- Please measure the temperature on the aluminum base plate edge side when you cannot measure the temperature of the center part of the aluminum base plate. In this case, please take 5deg temperature margin from the derating characteristic of below.
- It is necessary to note the thermal fatigue life by power cycle. Please reduce the temperature fluctuation range as much as possible when the up and down of the temperature are frequently generated. Contact us for more information on cooling methods.

DHS-series
Derating

**DHS200**

![Graph showing derating for DHS200]

**DHS250**

![Graph showing derating for DHS250]

Instruction Manual

◆ It is necessary to read the “Instruction Manual” and “Before using our product” before you use our product.

Before using our product  https://en.cosel.co.jp/technical/caution/index.html

Basic Characteristics Data

<table>
<thead>
<tr>
<th>Model</th>
<th>Circuit method</th>
<th>Switching frequency [kHz]</th>
<th>Input current [A]</th>
<th>Rated input fuse</th>
<th>PCB/Pattern</th>
<th>Series/Parallel operation availability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>Material</td>
<td>Single sided</td>
</tr>
<tr>
<td>DHS50A</td>
<td>Forward converter</td>
<td>470</td>
<td>*1</td>
<td>-</td>
<td>Aluminum</td>
<td>Yes</td>
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<td>DHS50B</td>
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</table>

*1 Refer to Specification.
*2 Refer to Instruction Manual.