

40DAW4_1.5 Series

40W - Single/Dual Output - Ultra Wide Input - Isolated & Regulated
DIP DC-DC Converter

DC-DC Converter

40 Watt

- ⊕ High efficiency up to 90%
- ⊕ 4:1 wide input voltage range
- ⊕ Isolation voltage 1500VDC
- ⊕ Six-sided metal shield
- ⊕ Short circuit protection (SCP) (automatic recovery)
- ⊕ Operating temperature: -40°C to +85°C
- ⊕ Over temperature protection
- ⊕ Industry standard pinout
- ⊕ Under voltage lockout

The 40DAW4_1.5 series offers 40W of output, wide input voltage of 9-36VDC and 18-75VDC and features 1500VDC isolation, six-sided metal shield over current and short circuit protection.

All models are particularly suited to tele-communications, industrial, test equipments power etc.



| Common specifications | |
|---------------------------------|---------------------------------------|
| Cooling: | Free air convection |
| Short circuit protection: | Hiccup, auto-recovery |
| Operation temperature range: | -40°C~+85°C |
| Storage temperature range: | -55°C~+125°C |
| Case temperature: | 105°C |
| Thermal shutdown: | 105°C TYP |
| Lead temperature range: | 265°C MAX, 1.5mm from case for 10 sec |
| Switching frequency (PWM mode): | 350kHz TYP |
| Humidity: | non-condensing, 95% MAX |
| Case material: | Metal |
| Potting material: | Epoxy (UL94V-0 rated) |
| MTBF (MIL-HDBK-217F @25°C)*: | ≥328,000 hours |
| Weight: | 30g |

* BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C. (Ground fixed and controlled environment)

| Input specifications | | | | | |
|--|----------------------------------|-----|--------------------|-----------|------------|
| Item | Test condition | Min | Typ | Max | Units |
| Start-up voltage / under voltage lockout | • 24Vin • 48Vin | | 17.8/15.8 36/33 | | VDC VDC |
| Surge voltage | 100ms max. • 24Vin • 48Vin | | | 50 100 | V V |
| Protection | Fuse recommended | | | | |
| Filter | Pi type | | | | |

* The 40DAW4_1.5 series can meet EN55022 Class A with parallel an external capacitor to the input pins. Recommend:
24Vin: 4.7µF/50V X7R 1812 MLCC.
48Vin: 2.2µF/100V X7R 1812 MLCC.

| Isolation specifications | | | | | |
|--------------------------|---|------|-----|------|-------|
| Item | Test condition | Min | Typ | Max | Units |
| Isolation voltage | Input/Output, tested for 1 minute and 1mA max | | | 1500 | VDC |
| Isolation resistance | Test at 500VDC | 1000 | | | MΩ |
| Isolation capacitance | Input/Output, 100KHz/0.1V | | | 1500 | pF |

| Output specifications | | | | | | |
|--------------------------------|--|-----|------------------------|------------|------------------|--|
| Item | Test condition | Min | Typ | Max | Units | |
| Voltage tolerance | | | | ±2 | % | |
| Output voltage adjustment | | | | ±10 | % | |
| Line regulation | Vin min to Vin max, F.L | | | ±0.5 | % | |
| Load regulation | 10% to 100% load • Single output • Dual output | | | ±0.5 ±2 | % | |
| Cross variation | 25% / 100% (Dual output) | | | ±5 | % | |
| Ripple and noise ¹⁾ | 20MHz Bandwidth | | | 100 | mV | |
| Start-up time | nominal Vin and constant resistive load | | 25 | | ms | |
| Transient response time | 25% load step change | | 300 | | µs | |
| Over load protection | Input voltage range | | | 150 | %Io | |
| Over voltage protection | • 3.3VDC • 5VDC • 12VDC • 15VDC | | 3.9 6.2 15 18 | | V V V V | |
| Remote ON/OFF ²⁾ | • ON • OFF | | Open | | Short to -Vin | |

- 1) Test ripple and noise by "parallel cable" method. Typical value at nominal input voltage and no load.
- 2) The ON/OFF control pin voltage is referenced to -Input. (Leave open if not used.)

Model selection:

WCTV_xxyyN##

W= Watt; C=Case; T= Type; V= Voltage Variation (omitted ± 10%);
xx= Vin; yy= Vout; N= Numbers of Output; ##= Isolation (kVDC)

Example:

40DAW4_2415S1.5

40= 40Watt; D= DIP; A= series; W4= wide input (4:1) 9-36Vin;
15Vout; S= single output; 1.5= 1500VDC

Note:

1. Input voltage can't exceed this value, or will cause the permanent damage.
2. The load shouldn't be less than 5%, otherwise ripple will increase dramatically.
3. Max. Capacitive Load is tested on Vin-nominal and full load.
4. All specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
5. In this datasheet, all the test methods of indications are based on corporate standards.
6. Only typical models listed, other models may be different, please contact our technical person for more details.
7. Specifications subject to change without notice.

40DAW4_1.5 Series

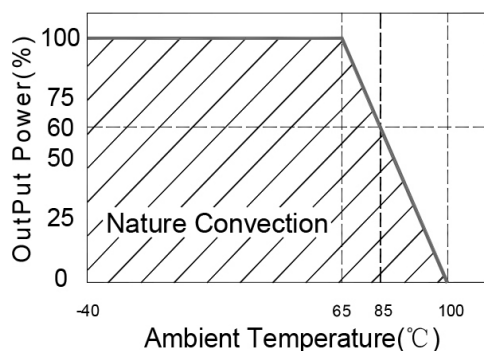
40W - Single/Dual Output - Ultra Wide Input - Isolated & Regulated
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| Part Number | Input Voltage Range [VDC] | Input current [mA, typ] | | Output Voltage [VDC] | Output Current [mA] | Efficiency [%, Typ.] | Capacitive load* [μF, max.] |
|-----------------|---------------------------|-------------------------|-----------|----------------------|---------------------|----------------------|-----------------------------|
| | | no load | full load | | | | |
| 40DAW4_2403S1.5 | 9-36 | 90 | 1235 | 3.3 | 8000 | 89 | 16000 |
| 40DAW4_2405S1.5 | 9-36 | 90 | 1851 | 5 | 8000 | 90 | 10000 |
| 40DAW4_2412S1.5 | 9-36 | 50 | 1876 | 12 | 3340 | 89 | 1800 |
| 40DAW4_2415S1.5 | 9-36 | 50 | 1875 | 15 | 2670 | 89 | 1200 |
| 40DAW4_2424S1.5 | 9-36 | 50 | 1860 | 24 | 1670 | 89 | 1000 |
| 40DAW4_4803S1.5 | 18-75 | 60 | 617 | 3.3 | 8000 | 89 | 16000 |
| 40DAW4_4805S1.5 | 18-75 | 60 | 925 | 5 | 8000 | 90 | 10000 |
| 40DAW4_4812S1.5 | 18-75 | 40 | 927 | 12 | 3340 | 90 | 1800 |
| 40DAW4_4815S1.5 | 18-75 | 40 | 927 | 15 | 2670 | 90 | 1200 |
| 40DAW4_4824S1.5 | 18-75 | 50 | 910 | 24 | 1670 | 89 | 1000 |
| 40DAW4_2412D1.5 | 9-36 | 50 | 1897 | ±12 | ±1670 | 88 | ±1000 |
| 40DAW4_2415D1.5 | 9-36 | 50 | 1903 | ±15 | ±1340 | 88 | ±680 |
| 40DAW4_4812D1.5 | 18-75 | 40 | 948 | ±12 | ±1670 | 88 | ±1000 |
| 40DAW4_4815D1.5 | 18-75 | 40 | 951 | ±15 | ±1340 | 88 | ±680 |

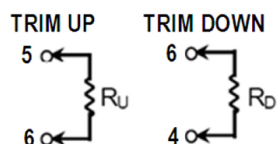
* Test by normal Vin and constant resistive load.

Typical characteristics

Temperature derating graph

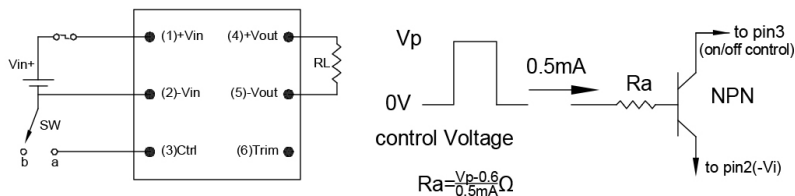


External output trimming



Output can be externally trimmed by using the method shown above.

Output voltage adjustment



When pin3 short to pin2, D/D ON=>OFF

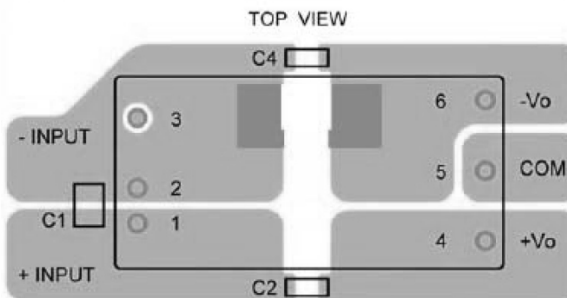
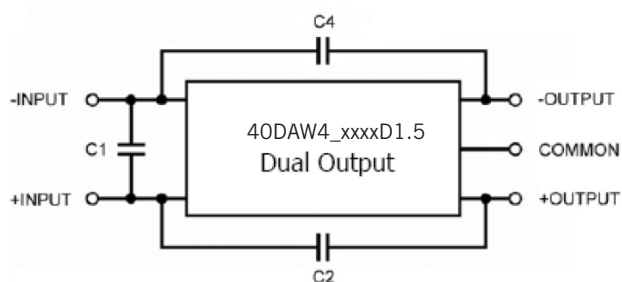
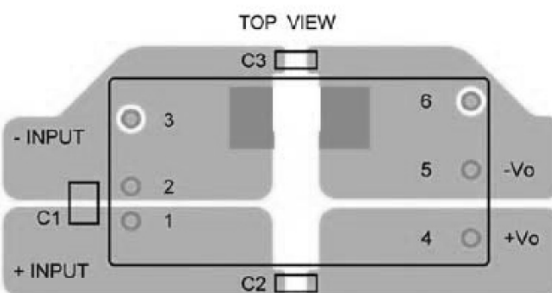
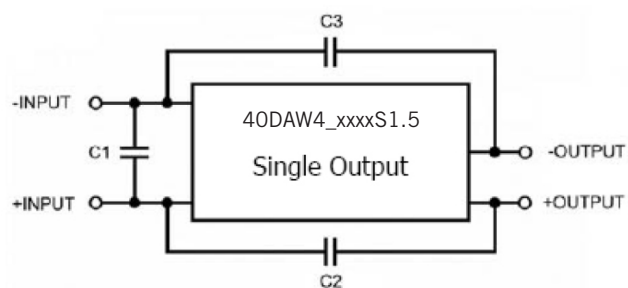
When pin3 leave open, D/D =>ON

Suggest Circuit:

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EMC considerations



Suggested Schematic to comply with Conducted Noise according to EN55022 Class A

Recommended Layout with input Filter

Following components are needed to comply with EN55022 Class A conducted noise:

40DAW4_24xxS

| Component | Value | Voltage | Reference |
|-----------|--------|---------|-----------|
| C1 | 4.7µF | 50V | 1812 MLCC |
| C2, C3 | 1000pF | 2KV | 1808 MLCC |

40DAW4_24xxD

| Component | Value | Voltage | Reference |
|-----------|--------|---------|-----------|
| C1 | 4.7µF | 50V | 1812 MLCC |
| C2, C4 | 1000pF | 2KV | 1808 MLCC |

40DAW4_48xxS

| Component | Value | Voltage | Reference |
|-----------|--------|---------|-----------|
| C1 | 2.2µF | 100V | 1812 MLCC |
| C2, C3 | 1000pF | 2KV | 1808 MLCC |

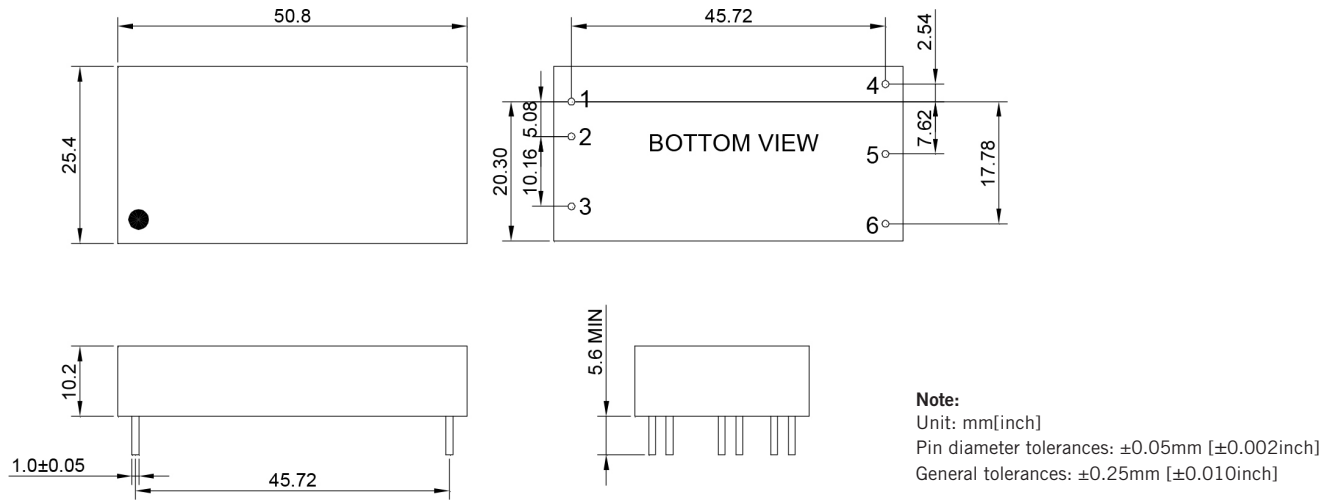
40DAW4_48xxD

| Component | Value | Voltage | Reference |
|-----------|--------|---------|-----------|
| C1 | 2.2µF | 100V | 1812 MLCC |
| C2, C4 | 1000pF | 2KV | 1808 MLCC |

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Mechanical dimensions



PIN connection

| PIN | 1 | 2 | 3 | 4 | 5 | 6 |
|--------|------|------|---------------|-------|-------|-------|
| Single | +Vin | -Vin | Remote On/Off | +Vout | -Vout | Trim |
| Dual | +Vin | -Vin | Remote On/Off | +Vout | COM | -Vout |