

MMT

A decorative graphic consisting of several overlapping, wavy, translucent blue lines that flow across the top half of the page, creating a sense of motion and energy.

DC/DC CONVERTER

A decorative graphic in the bottom left corner featuring a cluster of vibrant green leaves with water droplets, and several flowing, ribbon-like green shapes that sweep across the bottom of the page.

10 Watt

2019

<http://www.mmtmachrone.com>

FEATURES :

- 10W SIP PACKAGE
- 4:1 WIDE INPUT RANGE
- 100% BURNED IN
- HIGH EFFICIENCY
- UL94V-0 PACKAGE MATERIAL
- CUSTOMIZED SOLUTIONS AVAILABLE
- RoHS COMPLIANT
- Medical EMC Standard of EMI EN 55011 : 2009 + A1 : 2010 (CLASS A) Approved
- Medical EMC Standard of EMS EN 60601-1-2 : 2015 Approved
- Medical /Industry/ITE Application



DC-DC Converter

30DW-10WM SERIES

10Watt 3KVac Isolated

4 : 1 Input Voltage Range

Single & Dual Output

SIP

Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

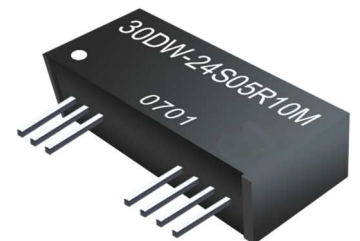
| Part Number | Input Voltage | Input Current | | Output Voltage | Output Current | Efficiency |
|-----------------|---------------|------------------|--------------------|----------------|----------------|------------|
| | Vdc | No Load (mA TYP) | Full Load (mA TYP) | Vdc | Full Load (mA) | %TYP |
| 30DW-24S03R10WM | 9-36 | 50 | 503 | 3.3 | 2500 | 80 |
| 30DW-24S05R10WM | 9-36 | 50 | 508 | 5 | 2000 | 82 |
| 30DW-24S12R10WM | 9-36 | 30 | 502 | 12 | 833 | 83 |
| 30DW-24S15R10WM | 9-36 | 30 | 505 | 15 | 670 | 83 |
| 30DW-24D05R10WM | 9-36 | 30 | 502 | ±5 | ±1000 | 83 |
| 30DW-24D12R10WM | 9-36 | 30 | 506 | ±12 | ±420 | 83 |
| 30DW-24D15R10WM | 9-36 | 30 | 512 | ±15 | ±340 | 83 |
| 30DW-48S03R10WM | 18-75 | 30 | 252 | 3.3 | 2500 | 80 |
| 30DW-48S05R10WM | 18-75 | 30 | 254 | 5 | 2000 | 82 |
| 30DW-48S12R10WM | 18-75 | 20 | 251 | 12 | 833 | 83 |
| 30DW-48S15R10WM | 18-75 | 20 | 252 | 15 | 670 | 83 |
| 30DW-48D05R10WM | 18-75 | 20 | 251 | ±5 | ±1000 | 83 |
| 30DW-48D12R10WM | 18-75 | 20 | 253 | ±12 | ±420 | 83 |
| 30DW-48D15R10WM | 18-75 | 20 | 256 | ±15 | ±340 | 83 |

Input Specifications

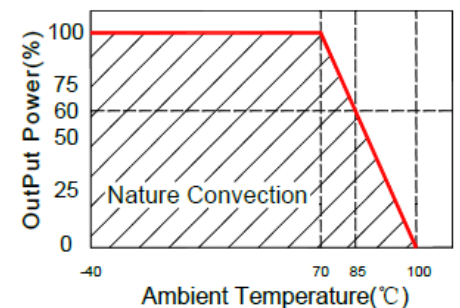
| Parameters | Conditions | Min | Typ | Max | Units |
|---------------|------------|-----|------------|-----|-------|
| Voltage Types | | | | 4:1 | % |
| Filter | | | PI Network | | |

Output Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|---------------------------------|--------------------------------------|-----|-----|------------|-------|
| Voltage Tolerance | Full load@Vin(nom.) | | | ±2 | % |
| Short Circuit Protection | Hiccup, automatic Recovery | | | | |
| Line Regulation | | | | ±0.5 | % |
| Load Regulation | Single Dual(Balance Load) | | | ±0.5 | % |
| Cross Regulation | Dual(25% To 100% Load) | | | ±5 | % |
| Ripple & Noise | Output:3-15V TYPES BW=DC To 20MHz | | | 100 | mVp-p |
| Ripple & Noise | Output > 15V TYPES BW=DC To 20MHz | | | 1% of Vout | mVp-p |
| Transient response setting time | 25% load step change | | | 350 | us |



Temperature Derating Graph



General Specifications

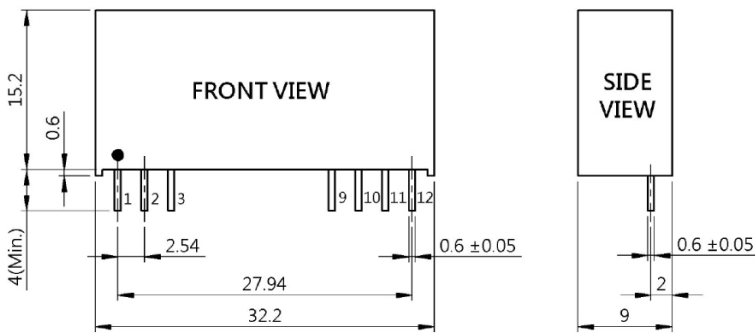
| Parameters | Conditions | Min | Typ | Max | Units |
|-----------------------|---------------------|--------|---------------|---------|-------|
| Isolation Voltage | | | 3000 | | Vac |
| Isolation Resistance | 500Vdc | 1000 | | | MΩ |
| Switching Frequency | | | 400 | | KHz |
| Operating Temperature | With derating | -40 | | 100 | °C |
| Storage Temperature | | -55 | | 125 | °C |
| Humidity | Non Condensing | | | 95 | % |
| Cooling | Free air Convection | | | | |
| Case material | | | | Plastic | |
| MTBF | MIL-HDBK-217F@25°C | 700000 | | | Hours |
| Weight | | | 12.5 | | g |
| Dimensions | | | 32.2x15.2x9.0 | | mm |

Part Number

30DW - 24 S 03 R 10W M
 A B C D E F G

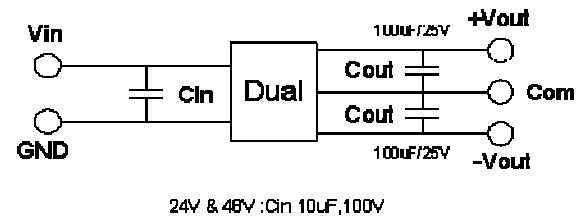
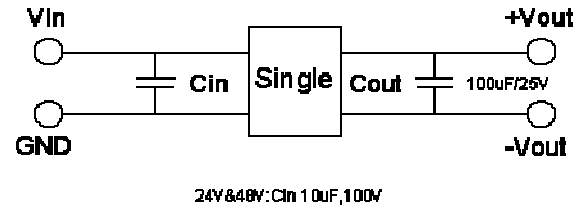
- A: Series
- B: Input Voltage
- C: Single Output(D),Dual(D)
- D: Output Voltage
- E: Regulated (R)
- F: Power Rating
- G: Medical Application

Markings and dimensions



UNIT : mm
 TOLERANCES UNLESS OTHERWISE SPECIFIED : ±0.25

Recommended Test Circuit



PIN Assignment

| Pin | 1 | 2 | 3 | 9 | 10 | 11 | 12 |
|--------|------|------|---------------|----|-------|--------|------|
| Single | -Vin | +Vin | Remote ON/OFF | NC | +Vout | -Vout | NC |
| Dual | -Vin | +Vin | Remote ON/OFF | NC | +Vout | Common | -Vin |

FEATURES :

- 2:1Wide Input Voltage
- 10 Watt Package
- Efficiency To 80%
- PI Input Filter
- 1500Vdc Isolation
- MTBF:>1,500,000 hrs
- Operating Temperature:-40°C TO +100°C



Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

| Part Number | Input Voltage | Input Current | | Output Voltage | Output Current | Efficiency | Capacitor Load |
|--------------|---------------|------------------|--------------------|----------------|----------------|------------|----------------|
| | Vdc | No-Load (mA TYP) | Full Load (mA TYP) | Vdc | Full Load (mA) | %TYP | uF TYP |
| 61D-12S03RNL | 9-18 | 30 | 705 | 3.3 | 2000 | 78 | 2200 |
| 61D-12S05RNL | 9-18 | 30 | 1016 | 5 | 2000 | 82 | 2200 |
| 61D-12S09RNL | 9-18 | 30 | 1004 | 9 | 1111 | 83 | 1000 |
| 61D-12S12RNL | 9-18 | 30 | 992 | 12 | 833 | 84 | 680 |
| 61D-12S15RNL | 9-18 | 30 | 992 | 15 | 666 | 84 | 470 |
| 61D-12S18RNL | 9-18 | 30 | 980 | 18 | 555 | 85 | 470 |
| 61D-12S24RNL | 9-18 | 30 | 980 | 24 | 416 | 85 | 330 |
| 61D-12D05RNL | 9-18 | 30 | 1016 | ±5 | ±1000 | 82 | ±1000 |
| 61D-12D09RNL | 9-18 | 30 | 992 | ±9 | ±555 | 84 | ±470 |
| 61D-12D12RNL | 9-18 | 30 | 992 | ±12 | ±416 | 84 | ±470 |
| 61D-12D15RNL | 9-18 | 30 | 980 | ±15 | ±333 | 85 | ±330 |
| 61D-12D18RNL | 9-18 | 30 | 980 | ±18 | ±277 | 85 | ±220 |
| 61D-12D24RNL | 9-18 | 30 | 980 | ±24 | ±208 | 85 | ±220 |
| 61D-24S03RNL | 18-36 | 25 | 352 | 3.3 | 2000 | 78 | 2200 |
| 61D-24S05RNL | 18-36 | 25 | 508 | 5 | 2000 | 82 | 2200 |
| 61D-24S09RNL | 18-36 | 25 | 496 | 9 | 1111 | 84 | 1000 |
| 61D-24S12RNL | 18-36 | 25 | 496 | 12 | 833 | 84 | 680 |
| 61D-24S15RNL | 18-36 | 25 | 490 | 15 | 666 | 85 | 470 |
| 61D-24S18RNL | 18-36 | 25 | 490 | 18 | 555 | 85 | 470 |
| 61D-24S24RNL | 18-36 | 25 | 484 | 24 | 416 | 86 | 330 |
| 61D-24D05RNL | 18-36 | 25 | 508 | ±5 | ±1000 | 82 | ±1000 |
| 61D-24D09RNL | 18-36 | 25 | 502 | ±9 | ±555 | 83 | ±470 |
| 61D-24D12RNL | 18-36 | 25 | 496 | ±12 | ±416 | 84 | ±470 |
| 61D-24D15RNL | 18-36 | 25 | 496 | ±15 | ±333 | 84 | ±330 |
| 61D-24D18RNL | 18-36 | 25 | 490 | ±18 | ±277 | 85 | ±220 |
| 61D-24D24RNL | 18-36 | 25 | 490 | ±24 | ±208 | 85 | ±220 |

DC-DC Converter

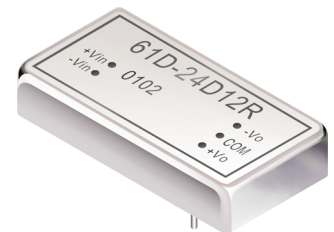
61D SERIES

10Watt 1.5KV Isolated

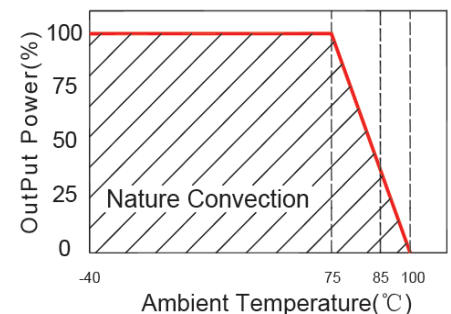
2 : 1 Input Voltage Range

Single & Dual Output

2" x 1"



Temperature Derating Graph



Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

| Part Number | Input Voltage | Input Current | | Output Voltage | Output Current | Efficiency | Capacitor Load |
|--------------|---------------|------------------|--------------------|----------------|----------------|------------|----------------|
| | Vdc | No-Load (mA TYP) | Full Load (mA TYP) | Vdc | Full Load (mA) | %TYP | uF TYP |
| 61D-48S03RNL | 36-72 | 20 | 176 | 3.3 | 2000 | 78 | 2200 |
| 61D-48S05RNL | 36-72 | 20 | 251 | 5 | 2000 | 83 | 2200 |
| 61D-48S09RNL | 36-72 | 20 | 248 | 9 | 1111 | 84 | 1000 |
| 61D-48S12RNL | 36-72 | 20 | 248 | 12 | 833 | 84 | 680 |
| 61D-48S15RNL | 36-72 | 20 | 248 | 15 | 666 | 84 | 470 |
| 61D-48S18RNL | 36-72 | 20 | 245 | 18 | 555 | 85 | 470 |
| 61D-48S24RNL | 36-72 | 20 | 245 | 24 | 416 | 86 | 330 |
| 61D-48D05RNL | 36-72 | 20 | 254 | ±5 | ±1000 | 82 | ±1000 |
| 61D-48D09RNL | 36-72 | 20 | 248 | ±9 | ±555 | 84 | ±470 |
| 61D-48D12RNL | 36-72 | 20 | 245 | ±12 | ±416 | 85 | ±470 |
| 61D-48D15RNL | 36-72 | 20 | 245 | ±15 | ±333 | 85 | ±330 |
| 61D-48D18RNL | 36-72 | 20 | 242 | ±18 | ±277 | 86 | ±220 |
| 61D-48D24RNL | 36-72 | 20 | 242 | ±24 | ±208 | 86 | ±220 |

Input Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|---------------|------------|-----|-----|-----|-------|
| Voltage Types | | | | 2:1 | |
| Filter | Pi TYPE | | | | |

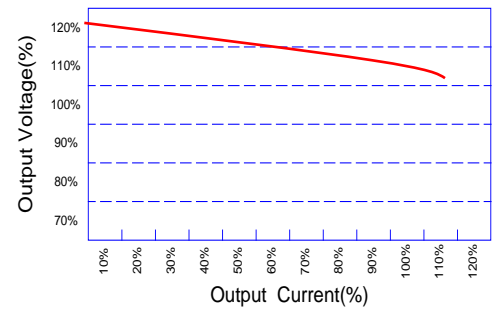
Output Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|---------------------------------|---------------------------------|-----|-----|------|-------|
| Voltage Tolerance | Full load@Vin(nom.) | | | ±2 | % |
| Short Circuit Protection | Hiccup, automatic recovery | | | | |
| Line Regulation | | | | ±0.5 | % |
| Load Regulation | Single (25% to 100%) | | | ±0.5 | % |
| Load Regulation | Dual (25% to 100%,Balance Load) | | | ±2.0 | % |
| Cross Regulation | DUAL (25% to 100%) | | | ±5.0 | % |
| Ripple & Noise | BW=DC To 20MHz | | | 100 | mVp-p |
| Transient response setting time | 50% load step change | | 350 | | us |

General Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|-----------------------|--|------|-----------------------|-----|-------|
| Isolation Resistance | 500Vdc | 1000 | | | MΩ |
| Switching Frequency | | | 300 | | KHz |
| Operating Temperature | With derating | -40 | | 100 | °C |
| Humidity | Non Condensing | | | 95 | % |
| Cooling | Free air Convection | | | | |
| Case material | Nickel Coated With Non-Conductive Base | | | | |
| Weight | | | 36.5 | | g |
| Dimensions | | | 50.8x25.4x10.6 | | mm |
| Potting Material | | | Epoxy (UL94V-0 rated) | | |

Tolerance Envelope Graph

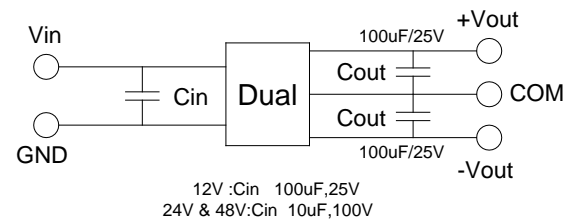
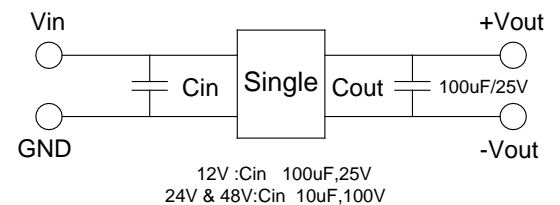


Part Number

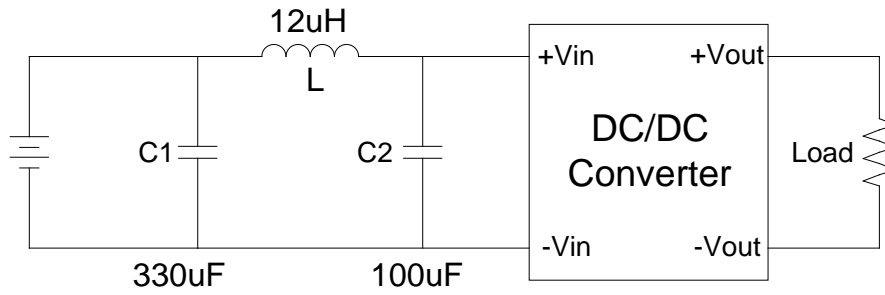
61D - 12 S 05 R NL
A B C D E F

- A:Series
- B:Input Voltage
- C:Single(S)Dual(D)
- D:Output Voltage
- E:Regulated(R)
- F:RoHS Version

Recommended Test Circuit

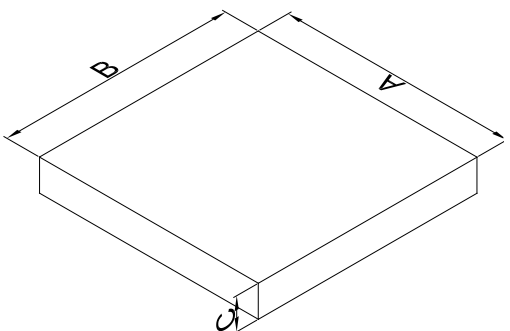
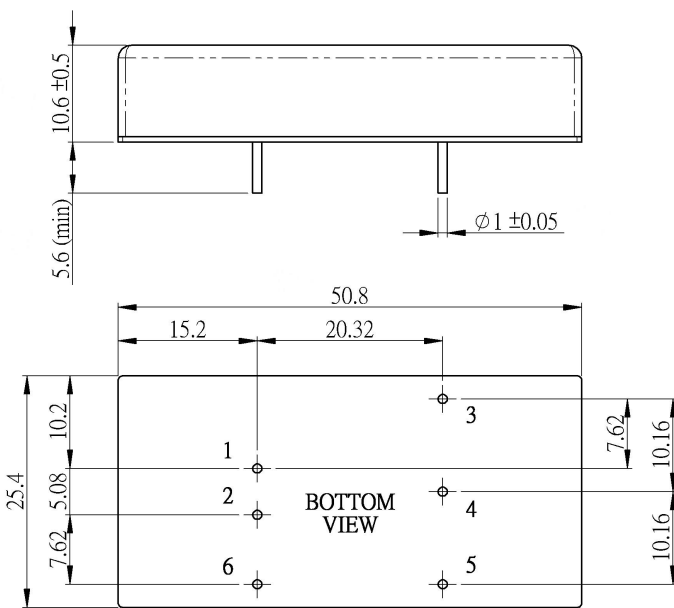


Suggest adding input external filter(C1,C2,L)to meet conducted emissions(EN55022 class A)



Markings and dimensions

Packaging



| Size(mm) | | |
|----------|--------|-------|
| A | B | C |
| 210.00 | 210.00 | 30.00 |

Unit : mm
Tolerance : XX.X ± 0.5 , XX.XX ± 0.25

PIN Connection

| Pin | 1 | 2 | 3 | 4 | 5 | 6 |
|--------|------|------|-------|--------|-------|--------|
| Single | +Vin | -Vin | +Vout | NO PIN | -Vout | NO PIN |
| Dual | +Vin | -Vin | +Vout | COM | -Vout | NO PIN |

FEATURES :

- 2:1Wide Input Voltage
- 10 Watt Package
- Efficiency To 82%
- PI Input Filter
- 1500Vdc Isolation
- MTBF:>1,500,000 hrs
- Operating Temperature:-40°C TO +85°C



Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

| Part Number | Input Voltage | Input Current | | Output Voltage | Output Current | Efficiency | Capacitor Load |
|--------------|---------------|------------------|--------------------|----------------|----------------|------------|----------------|
| | Vdc | No-Load (mA TYP) | Full Load (mA TYP) | Vdc | Full Load (mA) | %TYP | uF TYP |
| 61D-12S03BNL | 9-18 | 30 | 733 | 3.3 | 2000 | 75 | 2200 |
| 61D-12S05BNL | 9-18 | 30 | 1054 | 5 | 2000 | 79 | 2200 |
| 61D-12S12BNL | 9-18 | 30 | 1041 | 12 | 833 | 80 | 1000 |
| 61D-12S15BNL | 9-18 | 30 | 1027 | 15 | 666 | 81 | 470 |
| 61D-12S24BNL | 9-18 | 30 | 1014 | 24 | 416 | 82 | 330 |
| 61D-12D05BNL | 9-18 | 30 | 1054 | ±5 | ±1000 | 79 | ±1000 |
| 61D-12D12BNL | 9-18 | 30 | 1027 | ±12 | ±416 | 81 | ±470 |
| 61D-12D15BNL | 9-18 | 30 | 1014 | ±15 | ±333 | 82 | ±330 |
| 61D-12D24BNL | 9-18 | 30 | 1014 | ±24 | ±208 | 82 | ±220 |
| 61D-24S03BNL | 18-36 | 25 | 366 | 3.3 | 2000 | 75 | 2200 |
| 61D-24S05BNL | 18-36 | 25 | 527 | 5 | 2000 | 79 | 2200 |
| 61D-24S12BNL | 18-36 | 25 | 514 | 12 | 833 | 81 | 680 |
| 61D-24S15BNL | 18-36 | 25 | 507 | 15 | 666 | 82 | 470 |
| 61D-24S24BNL | 18-36 | 25 | 507 | 24 | 416 | 82 | 470 |
| 61D-24D05BNL | 18-36 | 25 | 527 | ±5 | ±1000 | 79 | ±1000 |
| 61D-24D12BNL | 18-36 | 25 | 514 | ±12 | ±416 | 81 | ±470 |
| 61D-24D15BNL | 18-36 | 25 | 514 | ±15 | ±333 | 81 | ±330 |
| 61D-24D24BNL | 18-36 | 25 | 507 | ±24 | ±208 | 82 | ±220 |
| 61D-48S03BNL | 36-72 | 20 | 183 | 3.3 | 2000 | 75 | 2200 |
| 61D-48S05BNL | 36-72 | 20 | 263 | 5 | 2000 | 79 | 2200 |
| 61D-48S12BNL | 36-72 | 20 | 257 | 12 | 833 | 81 | 680 |
| 61D-48S15BNL | 36-72 | 20 | 257 | 15 | 666 | 81 | 470 |
| 61D-48S24BNL | 36-72 | 20 | 253 | 24 | 416 | 82 | 330 |
| 61D-48D05BNL | 36-72 | 20 | 263 | ±5 | ±1000 | 79 | ±1000 |
| 61D-48D12BNL | 36-72 | 20 | 253 | ±12 | ±416 | 82 | ±470 |
| 61D-48D15BNL | 36-72 | 20 | 253 | ±15 | ±333 | 82 | ±330 |
| 61D-48D24BNL | 36-72 | 20 | 253 | ±24 | ±208 | 82 | ±220 |

DC-DC Converter

61D-BNL SERIES

10Watt 1.5KV Isolated

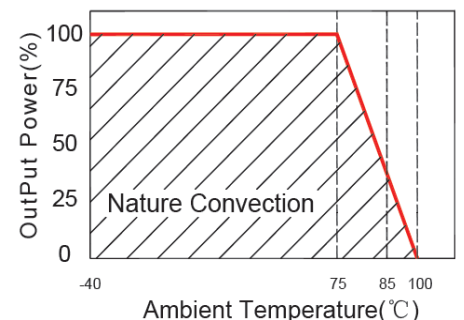
2 : 1 Input Voltage Range

Single & Dual Output

2" x 1"



Temperature Derating Graph



Input Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|---------------|------------|-----|-----|-----|-------|
| Voltage Types | | | | 2:1 | |
| Filter | Pi TYPE | | | | |

Output Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|---------------------------------|----------------------|-----|-----|------|-------|
| Voltage Tolerance | | | | ±2 | % |
| Short Circuit Protection | Continuous | | | | |
| Line Regulation | | | | ±0.5 | % |
| Load Regulation | Single (25% to 100%) | | | ±0.5 | % |
| Load Regulation | Dual | | | ±2.0 | % |
| Ripple & Noise | BW=DC To 20MHz | | | 100 | mVp-p |
| Transient response setting time | 50% load step change | | 350 | | us |

General Specifications

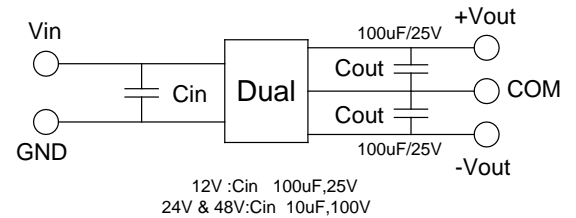
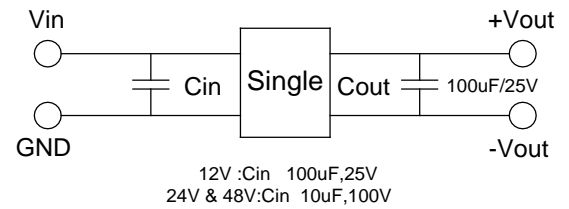
| Parameters | Conditions | Min | Typ | Max | Units |
|-----------------------|------------------------------|--------|-------------------------|-----|-------|
| Isolation Resistance | 500Vdc | 1000 | | | MΩ |
| Switching Frequency | | | 200 | | KHz |
| Operating Temperature | | -40 | | 85 | °C |
| Humidity | Non Condensing | | | 95 | % |
| Cooling | Free air Convection | | | | |
| Case material | | Copper | | | |
| Weight | | | 36.5 | | g |
| Dimensions | | | 51.0x25.4x11.5 | | mm |
| Potting Material | | | Silicone(UL94V-0 rated) | | |
| Radiated Emissions | EN55022 | | CLASS A | | |
| | FCC 47 CFR Part 15 subpart A | | CLASS A | | |

Part Number

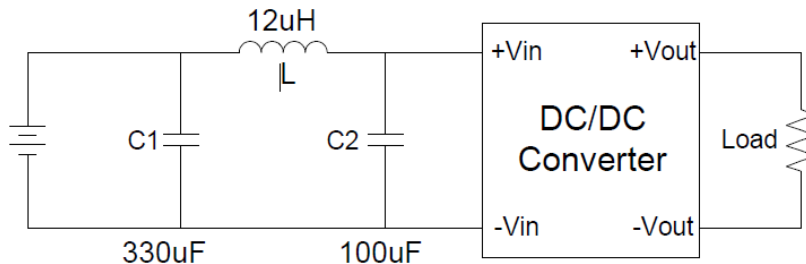
61D - 48 S 05 B NL
A B C D E F

- A: Series
- B: Input Voltage
- C: Single (S) / Dual (D)
- D: Output Voltage
- E: Version
- F: RoHs Version

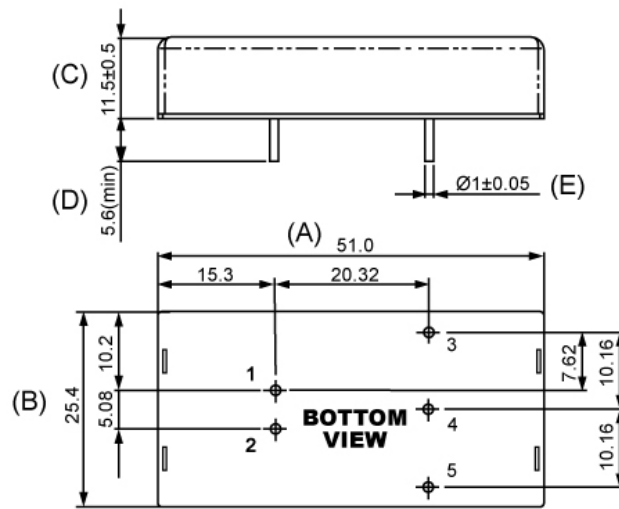
Recommended Test Circuit



Suggest adding input external filter(C1,C2,L)to meet conducted emissions(EN55022 class A)



Markings and dimensions



UNIT : mm

Tolerances : XX.X ± 0.5 , XX.XX ± 0.25

PIN Connection

| Pin | 1 | 2 | 3 | 4 | 5 |
|--------|------|------|-------|--------|-------|
| Single | +Vin | -Vin | +Vout | NO PIN | -Vout |
| Dual | +Vin | -Vin | +Vout | COM | -Vout |

FEATURES :

- 10W DIL PACKAGE
- 2:1 WIDE INPUT RANGE
- 100% BURNED IN
- HIGH EFFICIENCY
- UL94V-0 PACKAGE MATERIAL
- CUSTOMIZED SOLUTIONS AVAILABLE
- RoHS COMPLIANT
- Remote Control:On/Off



Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

| Part Number | Input Voltage | Input Current | | Output Voltage | Output Current | Efficiency | Capacitor Load |
|-------------|---------------|------------------|--------------------|----------------|----------------|------------|----------------|
| | Vdc | No-Load (mA TYP) | Full Load (mA TYP) | Vdc | Full Load (mA) | %TYP | uF MAX |
| 61D-12S03R3 | 9-18 | 70 | 994 | 3.3 | 3000 | 83 | 1500 |
| 61D-12S05R3 | 9-18 | 70 | 980 | 5 | 2000 | 85 | 1500 |
| 61D-12S12R3 | 9-18 | 30 | 971 | 12 | 835 | 86 | 120 |
| 61D-12S15R3 | 9-18 | 30 | 967 | 15 | 665 | 86 | 120 |
| 61D-12D05R3 | 9-18 | 70 | 1004 | ±5 | ±1000 | 83 | ±1000 |
| 61D-12D12R3 | 9-18 | 30 | 972 | ±12 | ±418 | 86 | ±120 |
| 61D-12D15R3 | 9-18 | 30 | 968 | ±15 | ±333 | 86 | ±120 |
| 61D-24S03R3 | 18-36 | 70 | 497 | 3.3 | 3000 | 83 | 3300 |
| 61D-24S05R3 | 18-36 | 70 | 490 | 5 | 2000 | 85 | 3300 |
| 61D-24S12R3 | 18-36 | 30 | 485 | 12 | 835 | 86 | 330 |
| 61D-24S15R3 | 18-36 | 30 | 483 | 15 | 665 | 86 | 330 |
| 61D-24D05R3 | 18-36 | 70 | 502 | ±5 | ±1000 | 83 | ±2000 |
| 61D-24D12R3 | 18-36 | 30 | 486 | ±12 | ±418 | 86 | ±330 |
| 61D-24D15R3 | 18-36 | 30 | 484 | ±15 | ±333 | 86 | ±330 |
| 61D-48S03R3 | 36-75 | 40 | 248 | 3.3 | 3000 | 83 | 5600 |
| 61D-48S05R3 | 36-75 | 40 | 245 | 5 | 2000 | 85 | 5600 |
| 61D-48S12R3 | 36-75 | 30 | 243 | 12 | 835 | 86 | 680 |
| 61D-48S15R3 | 36-75 | 30 | 242 | 15 | 665 | 86 | 680 |
| 61D-48D05R3 | 36-75 | 40 | 251 | ±5 | ±1000 | 83 | ±3300 |
| 61D-48D12R3 | 36-75 | 30 | 243 | ±12 | ±418 | 86 | ±220 |
| 61D-48D15R3 | 36-75 | 30 | 242 | ±15 | ±333 | 86 | ±220 |

Input Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|---------------|------------|-----|-----|-----|-------|
| Voltage Types | | | | 2:1 | |
| Filter | PI TYPE | | | | |

DC-DC Converter

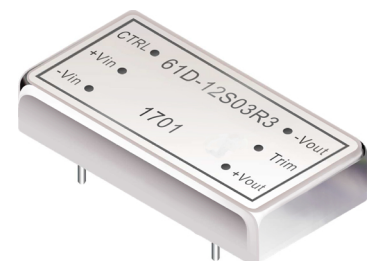
61D-R3 SERIES

10Watt 1.5KV Isolated

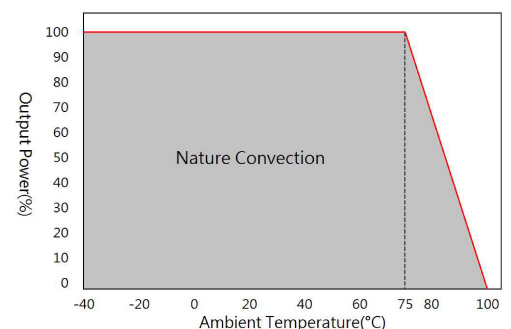
2 : 1 Input Voltage Range

Single & Dual Output

2" x 1"



Temperature Derating Graph



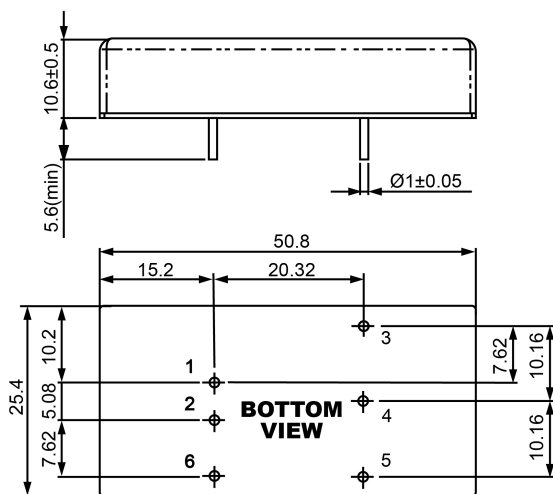
Output Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|---------------------------------|--------------------------------------|-----|-----|------------|-------|
| Voltage Tolerance | Full load@Vin(nom.) | | | ±2 | % |
| Short Circuit Protection | Hiccup, automatic recovery | | | | |
| Line Regulation | | | | ±0.5 | % |
| Load Regulation | Single | | | ±0.5 | % |
| | Dual(Balance Load) | | | ±1.0 | % |
| Cross Regulation | DUAL (25% to 100%) | | | ±5 | % |
| Ripple & Noise | Output:3-15V TYPES BW=DC To 20MHz | | | 100 | mVp-p |
| Ripple & Noise | Output > 15V TYPES BW=DC To 20MHz | | | 1% of Vout | mVp-p |
| Transient response setting time | 25% load step change | | 300 | | us |

General Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|-----------------------|--|-----------------------|----------------|-----|-------|
| Isolation Voltage | | | 1500 | | Vdc |
| Isolation Resistance | 500Vdc | 1000 | | | MΩ |
| Switching Frequency | | | 300 | | KHz |
| Operating Temperature | With derating | -40 | | 100 | °C |
| Storage Temperature | | -55 | | 125 | °C |
| Humidity | Non Condensing | 5 | | 95 | % |
| Cooling | Free air Convection | | | | |
| Case material | Nickel Coated With Non-Conductive Base | | | | |
| MTBF | MIL-HDBK-217F@25°C | 3.342x10 ⁶ | | | Hours |
| Weight | | | 32.6 | | g |
| Dimensions | | | 50.8x25.4x10.6 | | mm |

Markings and dimensions



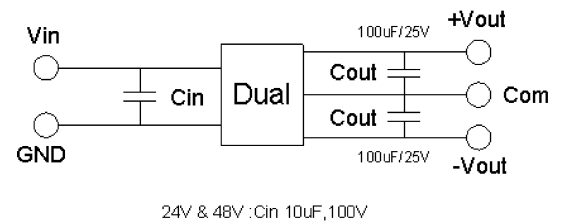
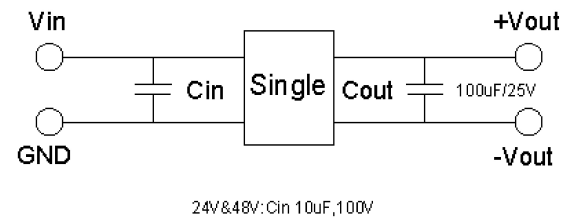
UNIT : mm
Tolerances : XX.X ±0.5, XX.XX ±0.25

Part Number

61D - 12 S 03 R 3
A B C D E F

- A: Series
- B: Input Voltage
- C: Single Output(S), Dual (D)
- D: Output Voltage
- E: Regulated(R)
- F: Package

Recommended Test Circuit



PIN Assignment

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

FEATURES :

- 4:1Wide Input Voltage
- 10 Watt Package
- Efficiency To 80%
- PI Input Filter
- 1500Vdc Isolation
- MTBF:>1,500,000 hrs
- Operating Temperature:-40°C TO +100°C

Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

| Part Number | Input Voltage | Input Current | | Output Voltage | Output Current | Efficiency | Capacitor Load |
|---------------|---------------|------------------|--------------------|----------------|----------------|------------|----------------|
| | Vdc | No-Load (mA TYP) | Full Load (mA TYP) | Vdc | Full Load (mA) | %TYP | uF TYP |
| 61DW-24S05RNL | 9-36 | 25 | 508 | 5 | 2000 | 82 | 3300 |
| 61DW-24S09RNL | 9-36 | 25 | 502 | 9 | 1111 | 83 | 680 |
| 61DW-24S12RNL | 9-36 | 25 | 490 | 12 | 833 | 85 | 680 |
| 61DW-24S15RNL | 9-36 | 25 | 490 | 15 | 666 | 85 | 470 |
| 61DW-24D05RNL | 9-36 | 25 | 508 | ±5 | ±1000 | 82 | ±2200 |
| 61DW-24D09RNL | 9-36 | 25 | 502 | ±9 | ±555 | 83 | ±470 |
| 61DW-24D12RNL | 9-36 | 25 | 490 | ±12 | ±416 | 85 | ±470 |
| 61DW-24D15RNL | 9-36 | 25 | 490 | ±15 | ±333 | 85 | ±330 |
| 61DW-48S05RNL | 18-72 | 20 | 254 | 5 | 2000 | 82 | 1000 |
| 61DW-48S09RNL | 18-72 | 20 | 251 | 9 | 1111 | 83 | 680 |
| 61DW-48S12RNL | 18-72 | 20 | 245 | 12 | 833 | 85 | 680 |
| 61DW-48S15RNL | 18-72 | 20 | 245 | 15 | 666 | 85 | 470 |
| 61DW-48D05RNL | 18-72 | 20 | 254 | ±5 | ±1000 | 82 | ±2200 |
| 61DW-48D09RNL | 18-72 | 20 | 251 | ±9 | ±555 | 83 | ±470 |
| 61DW-48D12RNL | 18-72 | 20 | 245 | ±12 | ±416 | 85 | ±470 |
| 61DW-48D15RNL | 18-72 | 20 | 245 | ±15 | ±333 | 85 | ±330 |

Input Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|---------------|------------|-----|-----|-----|-------|
| Voltage Types | | | | 4:1 | |
| Filter | PI TYPE | | | | |

Output Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|---------------------------------|---------------------------------|-----|-----|------|-------|
| Voltage Tolerance | Full load@Vin(nom.) | | | ±2 | % |
| Short Circuit Protection | Hiccup, automatic recovery | | | | |
| Line Regulation | | | | ±0.5 | % |
| Load Regulation | Single (25% to 100%) | | | ±0.5 | % |
| Load Regulation | Dual (25% to 100%,Balance Load) | | | ±2.0 | % |
| Cross Regulation | DUAL (25% to 100%) | | | ±5.0 | % |
| Ripple & Noise | BW=DC To 20MHz | | | 100 | mVp-p |
| Transient response setting time | 50% load step change | | 350 | | us |



DC-DC Converter

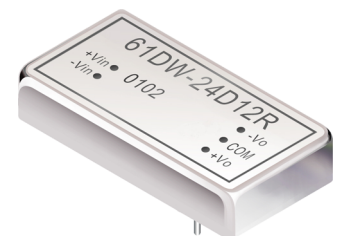
61DW SERIES

10Watt 1.5KV Isolated

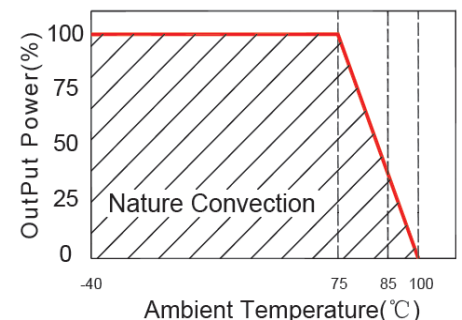
4 : 1 Input Voltage Range

Single & Dual Output

2" x 1"



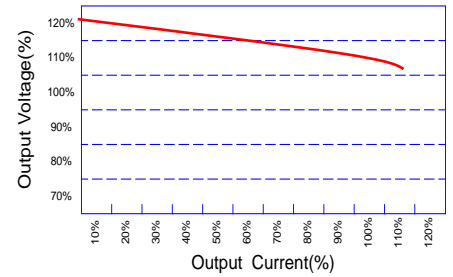
Temperature Derating Graph



General Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|-----------------------|--|------|----------------|-----|-------|
| Isolation Resistance | 500Vdc | 1000 | | | MΩ |
| Switching Frequency | | | 300 | | KHz |
| Operating Temperature | With derating | -40 | | 100 | °C |
| Humidity | Non Condensing | | | 95 | % |
| Cooling | Free air Convection | | | | |
| Case material | Nickel Coated With Non-Conductive Base | | | | |
| Weight | | | 36.5 | | g |
| Dimensions | | | 50.8x25.4x10.6 | | mm |
| Potting Material | Epoxy (UL94V-0 rated) | | | | |

Tolerance Envelope Graph

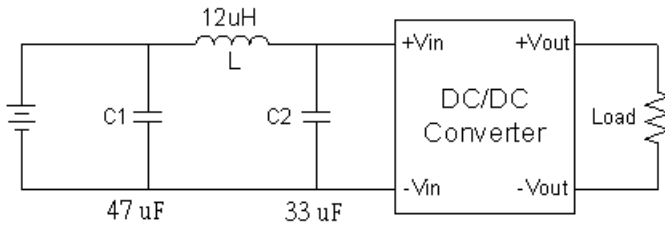


Part Number

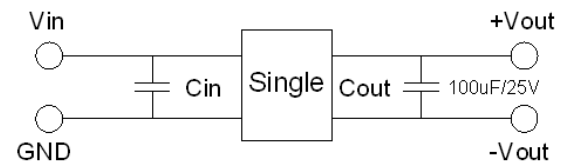
61DW - 24 S 05 R NL
A B C D E F

- A:Series
- B:Input Voltage
- C:Single(S)Dual(D)
- D:Output Voltage
- E:Regulated(R)
- F:RoHS Version

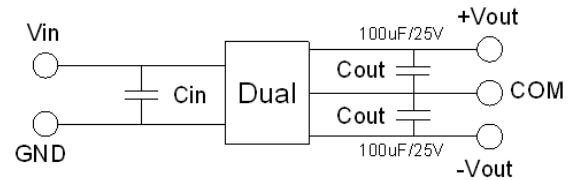
Suggest adding input external filter(C1,C2,L)to meet conducted emissions(EN55022 class A)



Recommended Test Circuit

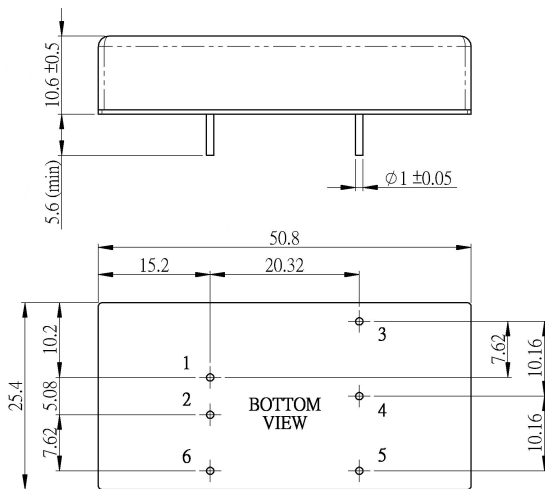


24V & 48V:Cin 10uF,100V



24V & 48V:Cin 10uF,100V

Markings and dimensions

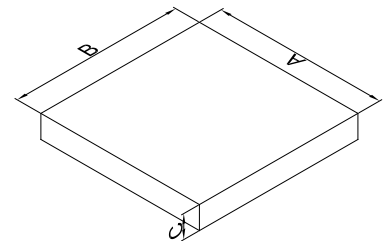


Unit : mm
Tolerance : XX.X ±0.5 , XX.XX ±0.25

PIN Connection

| Pin | 1 | 2 | 3 | 4 | 5 | 6 |
|--------|------|------|-------|--------|-------|--------|
| Single | +Vin | -Vin | +Vout | NO PIN | -Vout | NO PIN |
| Dual | +Vin | -Vin | +Vout | COM | -Vout | NO PIN |

Packaging



| Size(mm) | | |
|----------|--------|-------|
| A | B | C |
| 210.00 | 210.00 | 30.00 |

FEATURES :

- 10W DIL PACKAGE
- 4:1 WIDE INPUT RANGE
- 100% BURNED IN
- HIGH EFFICIENCY
- UL94V-0 PACKAGE MATERIAL
- CUSTOMIZED SOLUTIONS AVAILABLE
- RoHS COMPLIANT
- Remote Control:On/Off



Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

| Part Number | Input Voltage | | Input Current | | Output Voltage | | Output Current | | Efficiency | Capacitor Load |
|--------------|---------------|------------------|--------------------|-----|----------------|------|----------------|--|------------|----------------|
| | Vdc | No-Load (mA TYP) | Full Load (mA TYP) | Vdc | Full Load (mA) | %TYP | uF MAX | | | |
| 61DW-24S03R3 | 9-36 | 60 | 497 | 3.3 | 3000 | 83 | 3300 | | | |
| 61DW-24S05R3 | 9-36 | 60 | 484 | 5 | 2000 | 86 | 3300 | | | |
| 61DW-24S12R3 | 9-36 | 40 | 474 | 12 | 835 | 88 | 330 | | | |
| 61DW-24S15R3 | 9-36 | 20 | 483 | 15 | 665 | 86 | 330 | | | |
| 61DW-24D05R3 | 9-36 | 70 | 502 | ±5 | ±1000 | 83 | ±2000 | | | |
| 61DW-24D12R3 | 9-36 | 40 | 486 | ±12 | ±418 | 86 | ±330 | | | |
| 61DW-24D15R3 | 9-36 | 40 | 484 | ±15 | ±333 | 86 | ±330 | | | |
| 61DW-48S03R3 | 18-75 | 30 | 248 | 3.3 | 3000 | 83 | 5600 | | | |
| 61DW-48S05R3 | 18-75 | 30 | 245 | 5 | 2000 | 85 | 5600 | | | |
| 61DW-48S12R3 | 18-75 | 30 | 243 | 12 | 835 | 86 | 680 | | | |
| 61DW-48S15R3 | 18-75 | 30 | 242 | 15 | 665 | 86 | 680 | | | |
| 61DW-48D05R3 | 18-75 | 30 | 251 | ±5 | ±1000 | 83 | ±3300 | | | |
| 61DW-48D12R3 | 18-75 | 30 | 243 | ±12 | ±418 | 86 | ±220 | | | |
| 61DW-48D15R3 | 18-75 | 30 | 242 | ±15 | ±333 | 86 | ±220 | | | |

Input Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|---------------|------------|-----|-----|-----|-------|
| Voltage Types | | | | 4:1 | |
| Filter | Pi TYPE | | | | |

Output Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|---------------------------------|--------------------------------------|-----|-----|--------------|-------|
| Voltage Tolerance | Full load@Vin(nom.) | | | ±2 | % |
| Short Circuit Protection | Hiccup, automatic recovery | | | | |
| Line Regulation | | | | ±0.5 | % |
| Load Regulation | Single Dual(Balance Load) | | | ±0.5 ±1.0 | % |
| Cross Regulation | DUAL (25% to 100% Load) | | | ±5 | % |
| Ripple & Noise | Output:3-15V TYPES BW=DC To 20MHz | | | 100 | mVp-p |
| Ripple & Noise | Output > 15V TYPES BW=DC To 20MHz | | | 1% of Vout | mVp-p |
| Transient response setting time | 25% load step change | | 300 | | us |

DC-DC Converter

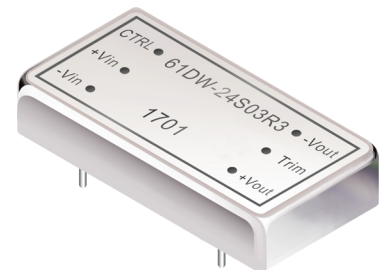
61DW-R3 SERIES

10Watt 1.5KV Isolated

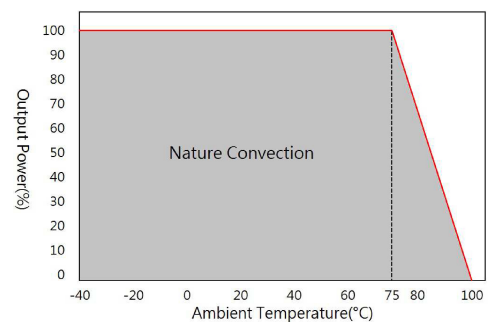
4 : 1 Input Voltage Range

Single & Dual Output

2" x 1"



Temperature Derating Graph



General Specifications

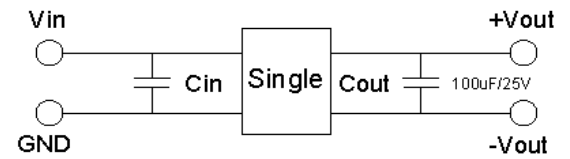
| Parameters | Conditions | Min | Typ | Max | Units |
|-----------------------|--|-----------------------|------|-----|-------|
| Isolation Voltage | | | 1500 | | Vdc |
| Isolation Resistance | 500Vdc | 1000 | | | MΩ |
| Switching Frequency | | | 300 | | KHz |
| Operating Temperature | With derating | -40 | | 100 | °C |
| Storage Temperature | | -55 | | 125 | °C |
| Humidity | Non Condensing | 5 | | 95 | % |
| Cooling | Free air Convection | | | | |
| Case material | Nickel coated copper with no-conductive base | | | | |
| MTBF | MIL-HDBK-217F@25°C | 3.342x10 ⁶ | | | Hours |
| Weight | | | 32.6 | | g |
| Dimensions | | 50.8x25.4x10.6 | | | mm |

Part Number

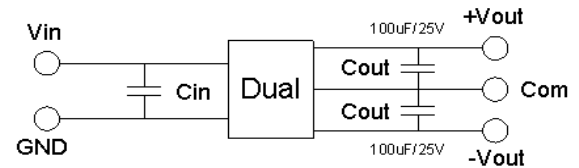
61DW - 24 S 03 R 3
 A B C D E F

- A: Series
- B: Input Voltage
- C: Single Output(S), Dual (D)
- D: Output Voltage
- E: Regulated(R)
- F: Package

Recommended Test Circuit

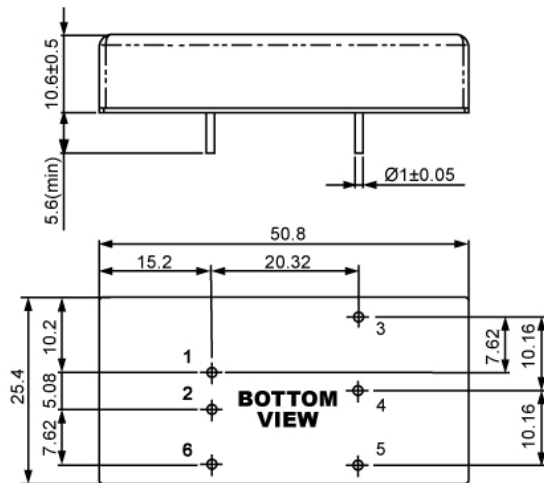


24V&48V: Cin 10uF,100V



24V & 48V :Cin 10uF,100V

Markings and dimensions



UNIT : mm
 Tolerances : XX.X ±0.5, XX.XX±0.25

PIN Assignment

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

FEATURES :

- 10W DIL PACKAGE
- 2:1 WIDE INPUT RANGE
- 100% BURNED IN
- HIGH EFFICIENCY
- UL94V-0 PACKAGE MATERIAL
- CUSTOM SOLUTIONS AVAILABLE
- RoHS COMPLIANT
- 3 YEARS WARRANTY
- Remote Control:On/Off



DC-DC Converter

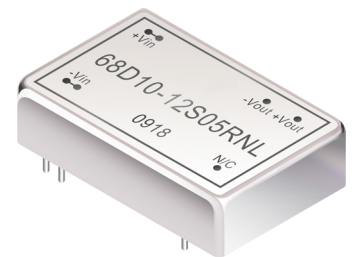
68D10 SERIES

10Watt 1.5KV Isolated

2 : 1 Input Voltage Range

Single & Dual Output

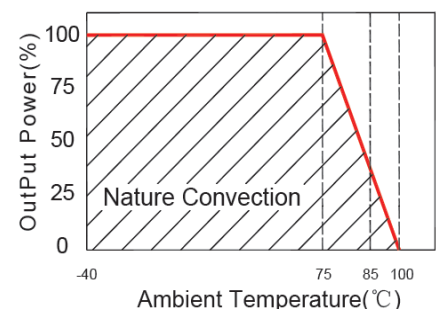
1.25" x 0.8"



Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

| Part Number | Input Voltage | | Input Current | | Output Voltage | | Output Current | | Efficiency |
|----------------|---------------|------------------|--------------------|-----|----------------|------|----------------|--|------------|
| | Vdc | No Load (mA TYP) | Full Load (mA TYP) | Vdc | Full Load (mA) | %TYP | | | |
| 68D10-12S03RNL | 9-18 | 50 | 1006 | 3.3 | 3000 | 82 | | | |
| 68D10-12S05RNL | 9-18 | 50 | 1016 | 5 | 2000 | 82 | | | |
| 68D10-12S12RNL | 9-18 | 30 | 1004 | 12 | 833 | 83 | | | |
| 68D10-12S15RNL | 9-18 | 30 | 1009 | 15 | 670 | 83 | | | |
| 68D10-12D05RNL | 9-18 | 30 | 1004 | ±5 | ±1000 | 83 | | | |
| 68D10-12D12RNL | 9-18 | 30 | 1012 | ±12 | ±420 | 83 | | | |
| 68D10-12D15RNL | 9-18 | 30 | 1024 | ±15 | ±340 | 83 | | | |
| 68D10-24S03RNL | 18-36 | 40 | 503 | 3.3 | 3000 | 82 | | | |
| 68D10-24S05RNL | 18-36 | 40 | 508 | 5 | 2000 | 82 | | | |
| 68D10-24S12RNL | 18-36 | 30 | 502 | 12 | 833 | 83 | | | |
| 68D10-24S15RNL | 18-36 | 30 | 504 | 15 | 670 | 83 | | | |
| 68D10-24D05RNL | 18-36 | 30 | 502 | ±5 | ±1000 | 83 | | | |
| 68D10-24D12RNL | 18-36 | 30 | 506 | ±12 | ±420 | 83 | | | |
| 68D10-24D15RNL | 18-36 | 30 | 512 | ±15 | ±340 | 83 | | | |
| 68D10-48S03RNL | 36-75 | 30 | 251 | 3.3 | 3000 | 82 | | | |
| 68D10-48S05RNL | 36-75 | 30 | 254 | 5 | 2000 | 82 | | | |
| 68D10-48S12RNL | 36-75 | 20 | 251 | 12 | 833 | 83 | | | |
| 68D10-48S15RNL | 36-75 | 20 | 252 | 15 | 670 | 83 | | | |
| 68D10-48D05RNL | 36-75 | 20 | 251 | ±5 | ±1000 | 83 | | | |
| 68D10-48D12RNL | 36-75 | 20 | 253 | ±12 | ±420 | 83 | | | |
| 68D10-48D15RNL | 36-75 | 20 | 256 | ±15 | ±340 | 83 | | | |

Temperature Derating Graph



Input Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|---------------|------------|------------|-----|-----|-------|
| Voltage Types | | | | 2:1 | |
| Filter | | PI Network | | | |

Output Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|---------------------------------|--------------------------------------|-----|-----|--------------|-------|
| Voltage Tolerance | Full load@Vin(nom.) | | | ±2 | % |
| Short Circuit Protection | Hiccup, automatic Recovery | | | | |
| Line Regulation | | | | ±0.5 | % |
| Load Regulation | Single Dual(Balance Load) | | | ±0.5 ±0.5 | % |
| Cross Regulation | Dual (25% To 100% Load) | | | ±5 | % |
| Ripple & Noise | Output:3-15V TYPES BW=DC To 20MHZ | | | 100 | mVp-p |
| Ripple & Noise | Output > 15V TYPES BW=DC To 20MHZ | | | 1% of Vout | mVp-p |
| Transient response setting time | 25% load step change | | 350 | | us |

General Specifications

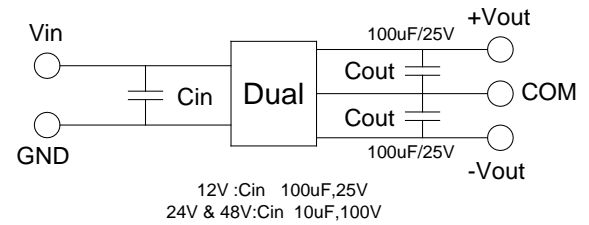
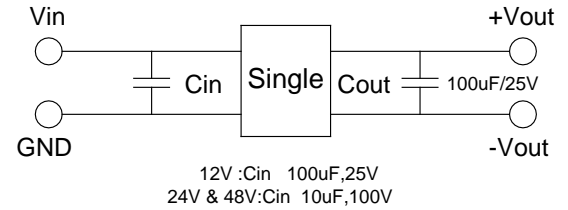
| Parameters | Conditions | Min | Typ | Max | Units |
|-----------------------|--|--------|----------------|-----|-------|
| Isolation Voltage | | | 1500 | | Vdc |
| Isolation Resistance | 500Vdc | 1000 | | | MΩ |
| Switching Frequency | | | 400 | | KHz |
| Operating Temperature | With derating | -40 | | 100 | °C |
| Storage Temperature | | -55 | | 125 | °C |
| Humidity | Non Condensing | | | 95 | % |
| Cooling | Free air Convection | | | | |
| Case material | Nickel coated copper with no-conductive base | | | | |
| MTBF | MIL-HDBK-217F@25°C | 900000 | | | Hours |
| Weight | | | 17.5 | | g |
| Dimensions | | | 31.6x20.1x10.0 | | mm |

Part Number

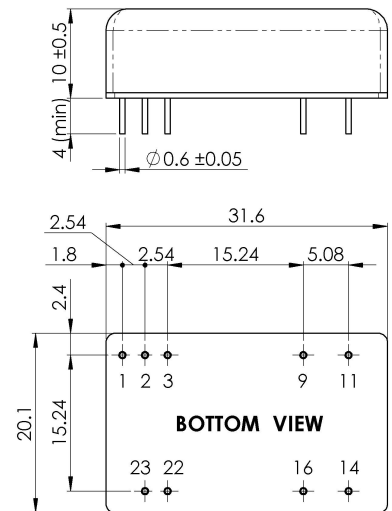
68D10 - 24 S 03 R NL
A B C D E F

- A: Series
- B: Input Voltage
- C: Single Output (S),Dual (D)
- D: Output Voltage
- E: Regulated(R)
- F: RoHs Version

Recommended Test Circuit



Markings and dimensions



Unit : mm
Tolerance : XX.X ±0.5 , XX.XX ±0.25

PIN Assignment

| Pin | 1 | 2,3 | 9 | 11 | 14 | 16 | 22,23 |
|--------|---------------|------|--------|-------|-------|--------|-------|
| Single | Remote ON/OFF | -Vin | NC | NC | +Vout | -Vout | +Vin |
| Dual | Remote ON/OFF | -Vin | Common | -Vout | +Vout | Common | +Vin |

FEATURES :

- 10W DIL PACKAGE
- 4:1 WIDE INPUT RANGE
- 100% BURNED IN
- HIGH EFFICIENCY
- UL94V-0 PACKAGE MATERIAL
- CUSTOMIZED SOLUTIONS AVAILABLE
- RoHS COMPLIANT
- Design refer to EN50155
- Remote Control: On/Off

Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

| Part Number | Input Voltage | Input Current | | Output Voltage | Output Current | Efficiency |
|---------------|---------------|------------------|--------------------|----------------|----------------|------------|
| | Vdc | No Load (mA TYP) | Full Load (mA TYP) | Vdc | Full Load (mA) | %TYP |
| 68DW-24S03R1 | 9-36 | 50 | 485 | 3.3 | 3000 | 85 |
| 68DW-24S05R1 | 9-36 | 50 | 485 | 5 | 2000 | 86 |
| 68DW-24S12R1 | 9-36 | 30 | 479 | 12 | 833 | 87 |
| 68DW-24S15R1 | 9-36 | 30 | 474 | 15 | 670 | 88 |
| 68DW-24D05R1 | 9-36 | 30 | 502 | ±5 | ±1000 | 83 |
| 68DW-24D12R1 | 9-36 | 30 | 474 | ±12 | ±420 | 88 |
| 68DW-24D15R1 | 9-36 | 30 | 474 | ±15 | ±340 | 88 |
| 68DW-48S03R1 | 18-75 | 30 | 243 | 3.3 | 3000 | 85 |
| 68DW-48S05R1 | 18-75 | 30 | 243 | 5 | 2000 | 86 |
| 68DW-48S12R1 | 18-75 | 20 | 240 | 12 | 833 | 87 |
| 68DW-48S15R1 | 18-75 | 20 | 237 | 15 | 670 | 88 |
| 68DW-48D05R1 | 18-75 | 20 | 251 | ±5 | ±1000 | 83 |
| 68DW-48D12R1 | 18-75 | 20 | 237 | ±12 | ±420 | 88 |
| 68DW-48D15R1 | 18-75 | 20 | 237 | ±15 | ±340 | 88 |
| 68DW-110S03R1 | 40-160 | 12 | 106 | 3.3 | 3000 | 85 |
| 68DW-110S05R1 | 40-160 | 12 | 106 | 5 | 2000 | 86 |
| 68DW-110S12R1 | 40-160 | 6 | 105 | 12 | 833 | 87 |
| 68DW-110S15R1 | 40-160 | 6 | 104 | 15 | 670 | 88 |
| 68DW-110D05R1 | 40-160 | 6 | 110 | ±5 | ±1000 | 83 |
| 68DW-110D12R1 | 40-160 | 6 | 104 | ±12 | ±420 | 88 |
| 68DW-110D15R1 | 40-160 | 6 | 104 | ±15 | ±340 | 88 |

Input Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|---------------|------------|-----|------------|-----|-------|
| Voltage Types | | | | 4:1 | % |
| Filter | | | PI Network | | |



DC-DC Converter

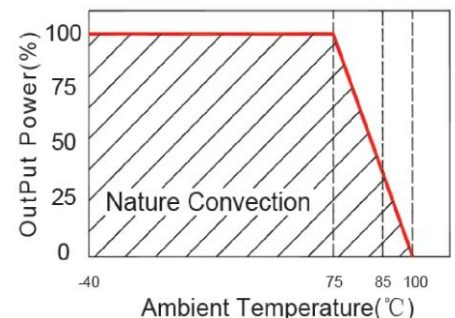
68DW-R1 SERIES

10Watt 1.6KV Isolated

4 : 1 Input Voltage Range

Single & Dual Output

DIL

**Temperature Derating Graph**

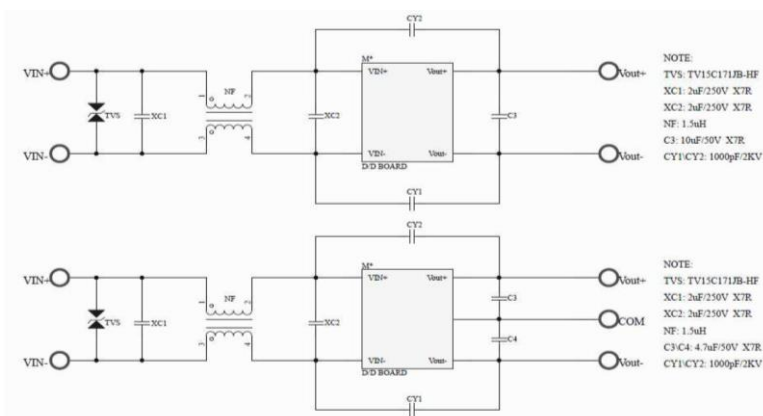
Output Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|---------------------------------|--------------------------------------|-----|-----|--------------|-------|
| Voltage Tolerance | Full load@ Vin(nom.) | | | ±2 | % |
| Short Circuit Protection | Hiccup, automatic Recovery | | | | |
| Line Regulation | | | | ±0.5 | % |
| Load Regulation | Single Dual(Balance Load) | | | ±0.5 ±0.5 | % |
| Cross Regulation | Dual(25% To 100% Load) | | | ±5 | % |
| Ripple & Noise | Output:3-15V TYPES BW=DC To 20MHz | | | 100 | mVp-p |
| Ripple & Noise | Output > 15V TYPES BW=DC To 20MHz | | | 1% of Vout | mVp-p |
| Transient response setting time | 25% load step change | | | 350 | us |

General Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|-----------------------|--|--------|----------------|-----|-------|
| Isolation Voltage | | | 1600 | | Vdc |
| Isolation Resistance | 500Vdc | 1000 | | | MΩ |
| Switching Frequency | | | 400 | | KHz |
| Operating Temperature | With derating | -40 | | 100 | °C |
| Storage Temperature | | -55 | | 125 | °C |
| Humidity | Non Condensing | | | 95 | % |
| Cooling | Free air Convection | | | | |
| Case material | Nickel coated copper with no-conductive base | | | | |
| MTBF | MIL-HDBK-217F@25°C | 900000 | | | Hours |
| Weight | | | 17.5 | | g |
| Dimensions | | | 31.6x20.1x10.0 | | mm |

Recommended Test Circuit

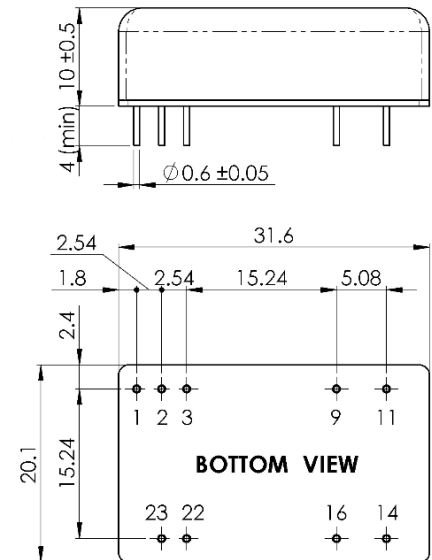


Part Number

| | | | | | | |
|------|---|----|---|----|---|---|
| 68DW | - | 24 | S | 03 | R | 1 |
| A | | B | C | D | E | F |

- A : Series
B : Input Voltage
C : Single(S);Dual(D)
D : Output Voltage
E : Regulated(R)
F : Case Type

Markings and dimensions



Unit : mm
Tolerance : XX.X ±0.5 , XX.XX ±0.25

PIN Assignment

| Pin | 1 | 2,3 | 9 | 11 | 14 | 16 | 22,23 |
|--------|--------|------|--------|-------|-------|--------|-------|
| Single | Remote | -Vin | NC | NC | +Vout | -Vout | +Vin |
| Dual | Remote | -Vin | Common | -Vout | +Vout | Common | +Vin |

FEATURES :

- 10W DIL PACKAGE
- 4:1 WIDE INPUT RANGE
- 100% BURNED IN
- HIGH EFFICIENCY
- UL94V-0 PACKAGE MATERIAL
- CUSTOM SOLUTIONS AVAILABLE
- RoHS COMPLIANT
- 3 YEARS WARRANTY
- Remote Control: On/Off



DC-DC Converter

68DW10 SERIES

10Watt 1.5KV Isolated

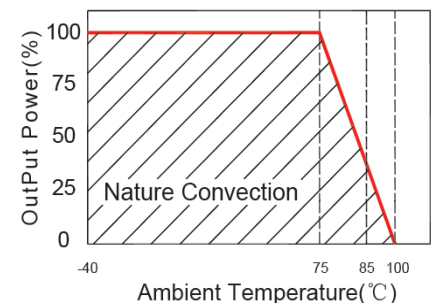
4 : 1 Input Voltage Range

Single & Dual Output

1.25" x 0.8"



Temperature Derating Graph



Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

| Part Number | Input Voltage | Input Current | | Output Voltage | Output Current | Efficiency |
|-----------------|---------------|------------------|--------------------|----------------|----------------|------------|
| | Vdc | No Load (mA TYP) | Full Load (mA TYP) | Vdc | Full Load (mA) | %TYP |
| 68DW10-24S03RNL | 9-36 | 50 | 503 | 3.3 | 3000 | 82 |
| 68DW10-24S05RNL | 9-36 | 50 | 508 | 5 | 2000 | 82 |
| 68DW10-24S12RNL | 9-36 | 30 | 502 | 12 | 833 | 83 |
| 68DW10-24S15RNL | 9-36 | 30 | 505 | 15 | 670 | 83 |
| 68DW10-24D05RNL | 9-36 | 30 | 502 | ±5 | ±1000 | 83 |
| 68DW10-24D12RNL | 9-36 | 30 | 506 | ±12 | ±420 | 83 |
| 68DW10-24D15RNL | 9-36 | 30 | 512 | ±15 | ±340 | 83 |
| 68DW10-48S03RNL | 18-75 | 30 | 252 | 3.3 | 3000 | 82 |
| 68DW10-48S05RNL | 18-75 | 30 | 254 | 5 | 2000 | 82 |
| 68DW10-48S12RNL | 18-75 | 20 | 251 | 12 | 833 | 83 |
| 68DW10-48S15RNL | 18-75 | 20 | 252 | 15 | 670 | 83 |
| 68DW10-48D05RNL | 18-75 | 20 | 251 | ±5 | ±1000 | 83 |
| 68DW10-48D12RNL | 18-75 | 20 | 253 | ±12 | ±420 | 83 |
| 68DW10-48D15RNL | 18-75 | 20 | 256 | ±15 | ±340 | 83 |

Input Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|---------------|------------|-----|------------|-----|-------|
| Voltage Types | | | | 4:1 | |
| Filter | | | PI Network | | |

Output Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|---------------------------------|--------------------------------------|-----|-----|--------------|-------|
| Voltage Tolerance | Full load@Vin(nom.) | | | ±2 | % |
| Short Circuit Protection | Hiccup, automatic Recovery | | | | |
| Line Regulation | | | | ±0.5 | % |
| Load Regulation | Single Dual(Balance Load) | | | ±0.5 ±0.5 | % |
| Cross Regulation | Dual (25% To 100% Load) | | | ±5 | % |
| Ripple & Noise | Output:3-15V TYPES BW=DC To 20MHz | | | 100 | mVp-p |
| Ripple & Noise | Output > 15V TYPES BW=DC To 20MHz | | | 1% of Vout | mVp-p |
| Transient response setting time | 25% load step change | | | 350 | us |

General Specifications

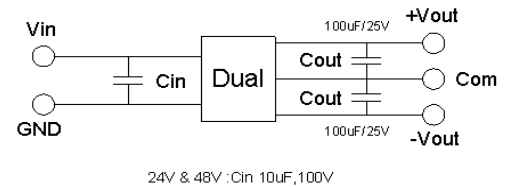
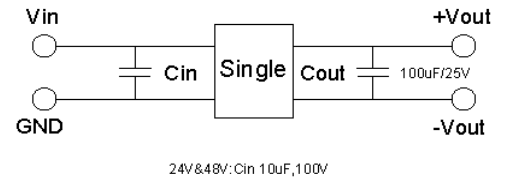
| Parameters | Conditions | Min | Typ | Max | Units |
|-----------------------|--|--------|----------------|-----|-------|
| Isolation Voltage | | | 1500 | | Vdc |
| Isolation Resistance | 500Vdc | 1000 | | | MΩ |
| Switching Frequency | | | 400 | | KHz |
| Operating Temperature | With derating | -40 | | 100 | °C |
| Storage Temperature | | -55 | | 125 | °C |
| Humidity | Non Condensing | | | 95 | % |
| Cooling | Free air Convection | | | | |
| Case material | Nickel coated copper with no-conductive base | | | | |
| MTBF | MIL-HDBK-217F@25°C | 900000 | | | Hours |
| Weight | | | 17.5 | | g |
| Dimensions | | | 31.6x20.1x10.0 | | mm |

Part Number

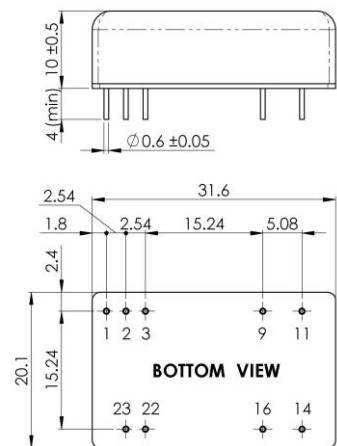
68DW10 - 24 S 03 R NL
 A B C D E F

- A: Series
- B: Input Voltage
- C: Single Output (S),Dual (D)
- D: Output Voltage
- E: Regulated(R)
- F: RoHs Version

Recommended Test Circuit



Markings and dimensions



Unit : mm
 Tolerance : XX.X ±0.5 , XX.XX ±0.25

PIN Assignment

| Pin | 1 | 2,3 | 9 | 11 | 14 | 16 | 22,23 |
|--------|---------------|------|--------|-------|-------|--------|-------|
| Single | Remote ON/OFF | -Vin | NC | NC | +Vout | -Vout | +Vin |
| Dual | Remote ON/OFF | -Vin | Common | -Vout | +Vout | Common | +Vin |

FEATURES :

- 10W DIL PACKAGE
- 4:1 WIDE INPUT RANGE
- 100% BURNED IN
- HIGH EFFICIENCY
- UL94V-0 PACKAGE MATERIAL
- CUSTOMIZED SOLUTIONS AVAILABLE
- RoHS COMPLIANT
- Remote Control: On/Off

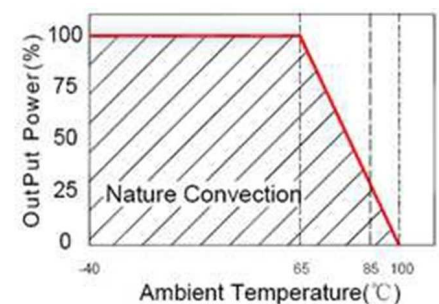
**DC-DC Converter****68DW10-R6 SERIES****10Watt 1.5KV Isolated****4 : 1 Input Voltage Range****Single & Dual Output****1" x 1"**

Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

| Part Number | Input Voltage | Input Current | | Output Voltage | Output Current | Efficiency |
|----------------|---------------|------------------|--------------------|----------------|----------------|------------|
| | Vdc | No Load (mA TYP) | Full Load (mA TYP) | Vdc | Full Load (mA) | %TYP |
| 68DW10-24S03R6 | 9-36 | 50 | 388 | 3.3 | 2400 | 85 |
| 68DW10-24S05R6 | 9-36 | 40 | 496 | 5 | 2000 | 84 |
| 68DW10-24S12R6 | 9-36 | 20 | 482 | 12 | 830 | 86 |
| 68DW10-24S15R6 | 9-36 | 20 | 474 | 15 | 660 | 87 |
| 68DW10-24D12R6 | 9-36 | 20 | 482 | ±12 | ±415 | 86 |
| 68DW10-24D15R6 | 9-36 | 20 | 474 | ±15 | ±330 | 87 |
| 68DW10-48S03R6 | 18-75 | 30 | 194 | 3.3 | 2400 | 85 |
| 68DW10-48S05R6 | 18-75 | 40 | 248 | 5 | 2000 | 84 |
| 68DW10-48S12R6 | 18-75 | 10 | 241 | 12 | 830 | 86 |
| 68DW10-48S15R6 | 18-75 | 10 | 237 | 15 | 660 | 87 |
| 68DW10-48D12R6 | 18-75 | 10 | 241 | ±12 | ±415 | 86 |
| 68DW10-48D15R6 | 18-75 | 10 | 374 | ±15 | ±330 | 87 |

Input Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|---------------|------------|-----|------------|-----|-------|
| Voltage Types | | | | 4:1 | |
| Filter | | | PI Network | | |

Temperature Derating Graph

Output Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|---------------------------------|--------------------------------------|-----|-----|------------|-------|
| Voltage Tolerance | Full load@Vin(nom.) | | | ±2 | % |
| Short Circuit Protection | Hiccup, automatic Recovery | | | | |
| Line Regulation | | | | ±0.5 | % |
| Load Regulation | Single Dual(Balance Load) | | | ±0.5 ±1 | % |
| Cross Regulation | Dual (25% To 100% Load) | | | ±5 | % |
| Ripple & Noise | Output:3-15V TYPES BW=DC To 20MHz | | | 100 | mVp-p |
| Ripple & Noise | Output > 15V TYPES BW=DC To 20MHz | | | 1% of Vout | mVp-p |
| Transient response setting time | 25% load step change | | 300 | | us |

General Specifications

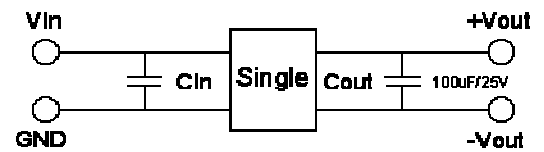
| Parameters | Conditions | Min | Typ | Max | Units |
|-----------------------|--|----------------|------|-----|-------|
| Isolation Voltage | | | 1500 | | Vdc |
| Isolation Resistance | 500Vdc | 1000 | | | MΩ |
| Switching Frequency | | | 400 | | KHz |
| Operating Temperature | With derating | -40 | | 100 | °C |
| Storage Temperature | | -55 | | 125 | °C |
| Humidity | Non Condensing | | | 95 | % |
| Cooling | Free air Convection | | | | |
| Case material | Nickel coated copper with no-conductive base | | | | |
| MTBF | MIL-HDBK-217F@25°C | 560000 | | | Hours |
| Weight | | | 16.5 | | g |
| Dimensions | | 25.4x25.4x10.6 | | | mm |

Part Number

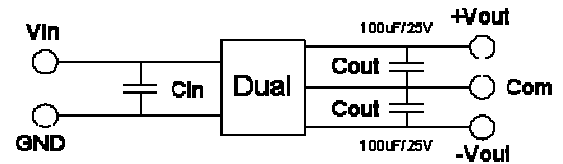
68DW10 - 24 S 05 R 6
A B C D E F

A: Series
B: Input Voltage
C: Single Output(S),Dual(D)
D: Output Voltage
E: Regulated (R)
F: Package

Recommended Test Circuit

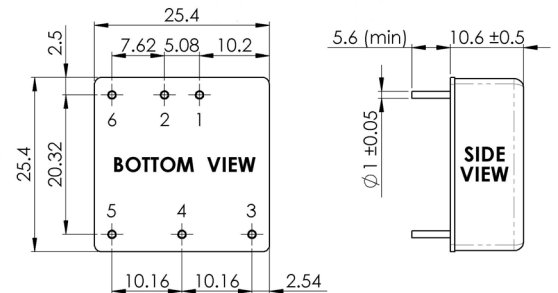


24V&48V :Cin 10uF,100V



24V & 48V :Cin 10uF,100V

Markings and dimensions



Unit : mm
Tolerance : XX.X ± 0.5 , XX.XX ± 0.25

PIN Assignment

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

FEATURES :

- 10W DIL PACKAGE
- 4:1 WIDE INPUT RANGE
- 100% BURNED IN
- HIGH EFFICIENCY
- UL94V-0 PACKAGE MATERIAL
- CUSTOMIZED SOLUTIONS AVAILABLE
- RoHS COMPLIANT
- Medical EMC Standard of EMI EN 55011:2009 + A1:2010 (CLASS A) Approved.
- Medical EMC Standard of EMS EN 60601-1-2:2015 Approved.
- Medical/Industry/ITE Application



DC-DC Converter

68DW10-M SERIES

10Watt 5KVac Isolated

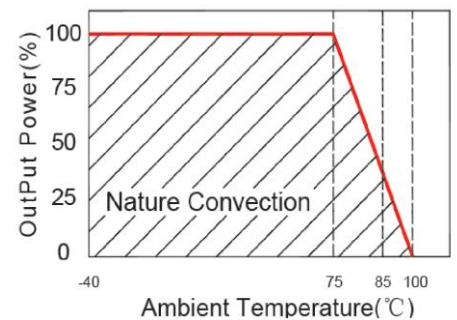
4 : 1 Input Voltage Range

Single & Dual Output

DIL



Temperature Derating Graph



Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

| Part Number | Input Voltage | Input Current | | Output Voltage | Output Current | Efficiency |
|----------------|---------------|------------------|--------------------|----------------|----------------|------------|
| | Vdc | No Load (mA TYP) | Full Load (mA TYP) | Vdc | Full Load (mA) | %TYP |
| 68DW10-24S03RM | 9-36 | 7 | 414 | 3.3 | 2500 | 83 |
| 68DW10-24S05RM | 9-36 | 7 | 496 | 5 | 2000 | 84 |
| 68DW10-24S12RM | 9-36 | 7 | 496 | 12 | 833 | 84 |
| 68DW10-24S15RM | 9-36 | 7 | 499 | 15 | 670 | 84 |
| 68DW10-24D05RM | 9-36 | 7 | 496 | ±5 | ±1000 | 84 |
| 68DW10-24D12RM | 9-36 | 7 | 494 | ±12 | ±420 | 85 |
| 68DW10-24D15RM | 9-36 | 7 | 500 | ±15 | ±340 | 85 |
| 68DW10-48S03RM | 18-75 | 4 | 207 | 3.3 | 2500 | 83 |
| 68DW10-48S05RM | 18-75 | 4 | 248 | 5 | 2000 | 84 |
| 68DW10-48S12RM | 18-75 | 4 | 248 | 12 | 833 | 84 |
| 68DW10-48S15RM | 18-75 | 4 | 249 | 15 | 670 | 84 |
| 68DW10-48D05RM | 18-75 | 4 | 248 | ±5 | ±1000 | 84 |
| 68DW10-48D12RM | 18-75 | 4 | 247 | ±12 | ±420 | 85 |
| 68DW10-48D15RM | 18-75 | 4 | 250 | ±15 | ±340 | 85 |

Input Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|---------------|------------|-----|------------|-----|-------|
| Voltage Types | | | | 4:1 | % |
| Filter | | | PI Network | | |

Output Specifications

| Parameters | Conditions | Min | Typ | Max | Units |
|---------------------------------|--------------------------------------|-----|-----|------------|-------|
| Voltage Tolerance | Full load@ Vin(nom.) | | | ±2 | % |
| Short Circuit Protection | Hiccup, automatic Recovery | | | | |
| Line Regulation | | | | ±0.5 | % |
| Load Regulation | Single Dual(Balance Load) | | | ±0.5 | % |
| Cross Regulation | Dual(25% To 100% Load) | | | ±5 | % |
| Ripple & Noise | Output:3-15V TYPES BW=DC To 20MHz | | | 100 | mVp-p |
| Ripple & Noise | Output > 15V TYPES BW=DC To 20MHz | | | 1% of Vout | mVp-p |
| Transient response setting time | 25% load step change | | | 350 | us |

General Specifications

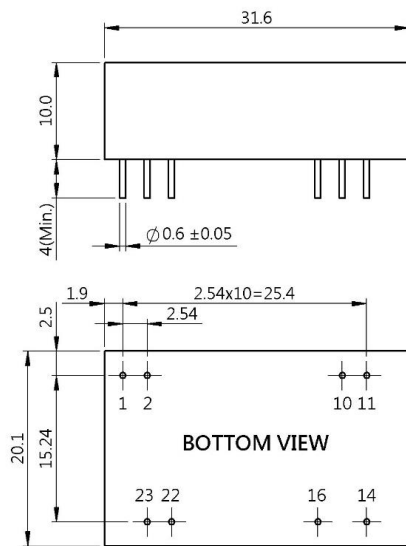
| Parameters | Conditions | Min | Typ | Max | Units |
|-----------------------|---------------------|--------|----------------|---------|-------|
| Isolation Voltage | | | 5000 | | Vac |
| Isolation Resistance | 500Vdc | 1000 | | | MΩ |
| Switching Frequency | | | 300 | | KHz |
| Operating Temperature | With derating | -40 | | 100 | °C |
| Storage Temperature | | -55 | | 125 | °C |
| Humidity | Non Condensing | | | 95 | % |
| Cooling | Free air Convection | | | | |
| Case material | | | | Plastic | |
| MTBF | MIL-HDBK-217F@25°C | 900000 | | | Hours |
| Weight | | | 15.5 | | g |
| Dimensions | | | 31.6x20.1x10.0 | | mm |

Part Number

68DW10 - 24 S 03 R M
 A B C D E F

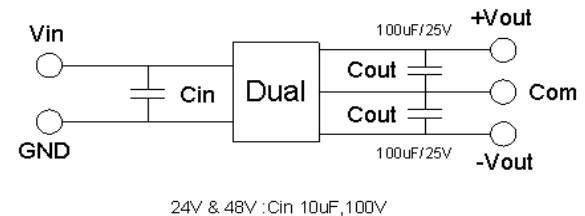
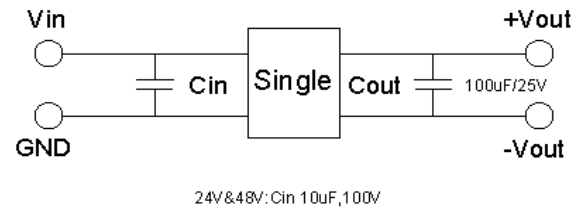
- A: Series
- B: Input Voltage
- C: Single Output(D),Dual(D)
- D: Output Voltage
- E: Regulated (R)
- F: Medical Application

Markings and dimensions



Unit : mm
 Tolerance : XX.X ±0.5 , XX.XX ±0.25

Recommended Test Circuit



PIN Assignment

| Pin | 1 | 2 | 10 | 11 | 14 | 16 | 22 | 23 |
|--------|------|------|------|-------|-------|--------|------|------|
| Single | Ctrl | -Vin | Trim | NC | +Vout | -Vout | +Vin | +Vin |
| Dual | Ctrl | -Vin | Trim | -Vout | +Vout | Common | +Vin | +Vin |