

MORNSUN®

AY_D-1W & BY_D-1W SERIES 1W, FIXED INPUT, ISOLATED & UNREGULATED DUAL / SINGLE OUTPUT DC-DC CONVERTER



RoHS

FEATURES

- 12KVDC Isolation
- DIP Package
- Temperature Range: -40°C ~ +85°C
- No Heat sink Required
- No External Component Required
- Low isolation capacitance
- Internal SMD Construction
- Industry Standard Pinout
- RoHS Compliance

APPLICATIONS

The AY_D-1W & BY_D-1W Series are specially designed for applications where a group of polar power supplies are isolated from the input power supply in a distributed power supply system on a circuit board.

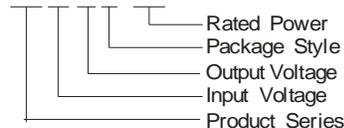
These products apply to:

- 1) Where the voltage of the input power supply is fixed (voltage variation $\leq \pm 10\%$);
- 2) Where isolation is necessary between input and output (isolation voltage $\leq 12000\text{VDC}$);
- 3) Where the regulation of the output voltage and the output ripple noise are not demanding.

Such as: purely digital circuits, ordinary low frequency analog circuits, and IGBT power device driving circuits.

MODEL SELECTION

AY1212D-1W



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PRODUCT PROGRAM

| Part Number | Input | | Output | | Efficiency (%) (Typ) |
|-------------|---------------|-------------|---------------|--------------|----------------------|
| | Voltage (VDC) | range (VDC) | Voltage (VDC) | Current (mA) | |
| AY1212D-1W | 12 | 10.8-13.2 | ± 12 | ± 41.6 | 78 |
| BY1212D-1W | 12 | 10.8-13.2 | 12 | 83 | 78 |

INPUT SPECIFICATIONS

| Item | Test Conditions | Min | Typ | Max | Units |
|-----------------------------------|-----------------|-----|--------|-----|-------|
| Input current (No-load/Full-load) | | | 15/106 | | mA |
| Surge voltage (1S max) | | | | 21 | V |

OUTPUT SPECIFICATIONS

| Item | Test Conditions | Min | Typ | Max | Units |
|-------------------------|----------------------------------|------------------------------|-----|-----------|---------------|
| Output power | | | | 1 | W |
| Line regulation | For V_{in} change of $\pm 1\%$ | | | ± 1.2 | % |
| Load regulation | 10% to 100% load | | | 15 | % |
| Output voltage accuracy | | See tolerance envelope graph | | | |
| Temperature drift | 100% full load | | | 0.03 | %/°C |
| Ripple and noise* | 20MHz bandwidth | | | 100 | mVp-p |
| Switching frequency | Full load, nominal input | | 100 | | KHz |
| Maximum capacitive Load | AY1212D-1W | 100/-100 | | | μF |
| | BY1212D-1W | 100 | | | |

*Test ripple and noise by "parallel cable" method. See detailed operation instructions at Testing of Power Converter section, application notes.

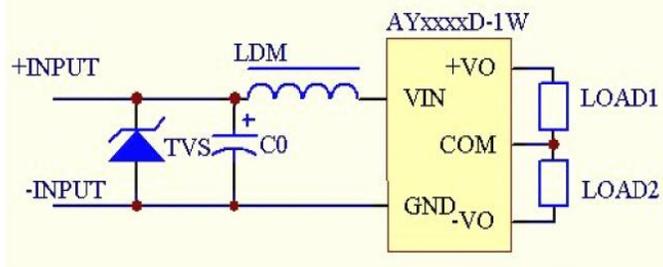
COMMON SPECIFICATIONS

| Item | Test Conditions | Min | Typ | Max | Units |
|--------------------------|---------------------------------|---------------------|-----|-----|------------|
| Storage humidity | | | | 95 | % |
| Operating temperature | | -40 | | 85 | °C |
| Storage temperature | | -55 | | 125 | |
| Temp. rise at full load | | | 20 | 30 | |
| Lead temperature | 1.5mm from case for 10 seconds | | | 300 | |
| Short circuit protection | | Continuous | | | |
| Cooling | | Free air convection | | | |
| Case material | | Plastic(UL94-V0) | | | |
| MTBF | | 1000 | | | k hours |
| Weight | | | 23 | | g |
| Isolation voltage | Tested for 1 minute and 1mA max | 12000 | | | VDC |
| Isolation resistance | Test at 500VDC | 1000 | | | M Ω |
| Isolation capacitance | | | | 5 | pF |

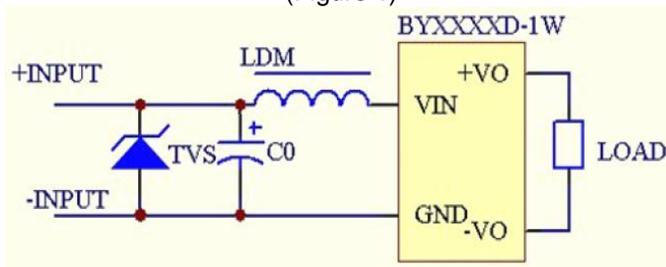
EMC SPECIFICATIONS

| | | | |
|-----|--|---|---|
| EMI | CE | CISPR22/EN55022 Class B (External Circuit Refer to Figure1、2) | |
| | RE | CISPR22/EN55022 Class B (External Circuit Refer to Figure1、2) | |
| EMS | ESD | IEC/EN 61000-4-2 | Air ±8KV / Contact ±6KV perf. Criteria B |
| | RS | IEC/EN61000-4-3 | 10V/m perf. Criteria A |
| | EFT | IEC/EN 61000-4-4 | ±2KV (External Circuit Refer to Figure1、2) perf. Criteria B |
| | Surge | IEC/EN 61000-4-5 | ±1KV (External Circuit Refer to Figure1、2) perf. Criteria B |
| | CS | IEC/EN61000-4-6 | 10 Vr.m.s perf. Criteria A |
| | PFM | IEC/EN61000-4-8 | 10A/m perf. Criteria A |
| | Voltage dips, short and interruptions immunity | IEC/EN61000-4-29 | 0%-40% perf. Criteria B |

EMC RECOMMENDED CIRCUIT



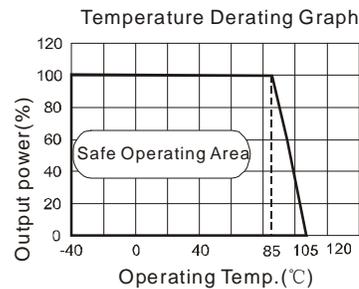
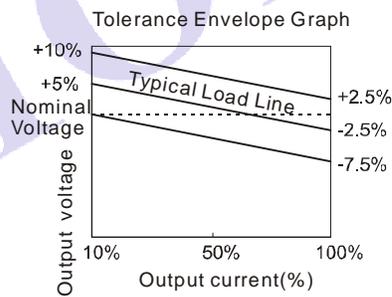
(Figure 1)



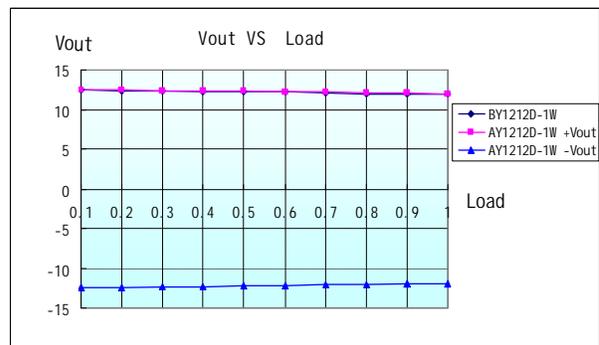
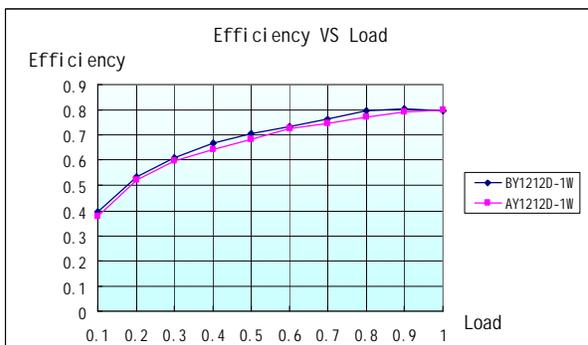
(Figure 2)

EMC recommended external circuit parameters
 TVS:SMCJ18A,1500W(Epcos)
 C0:220µF/25V(Rubycon)
 LDM:6.8µH CD43

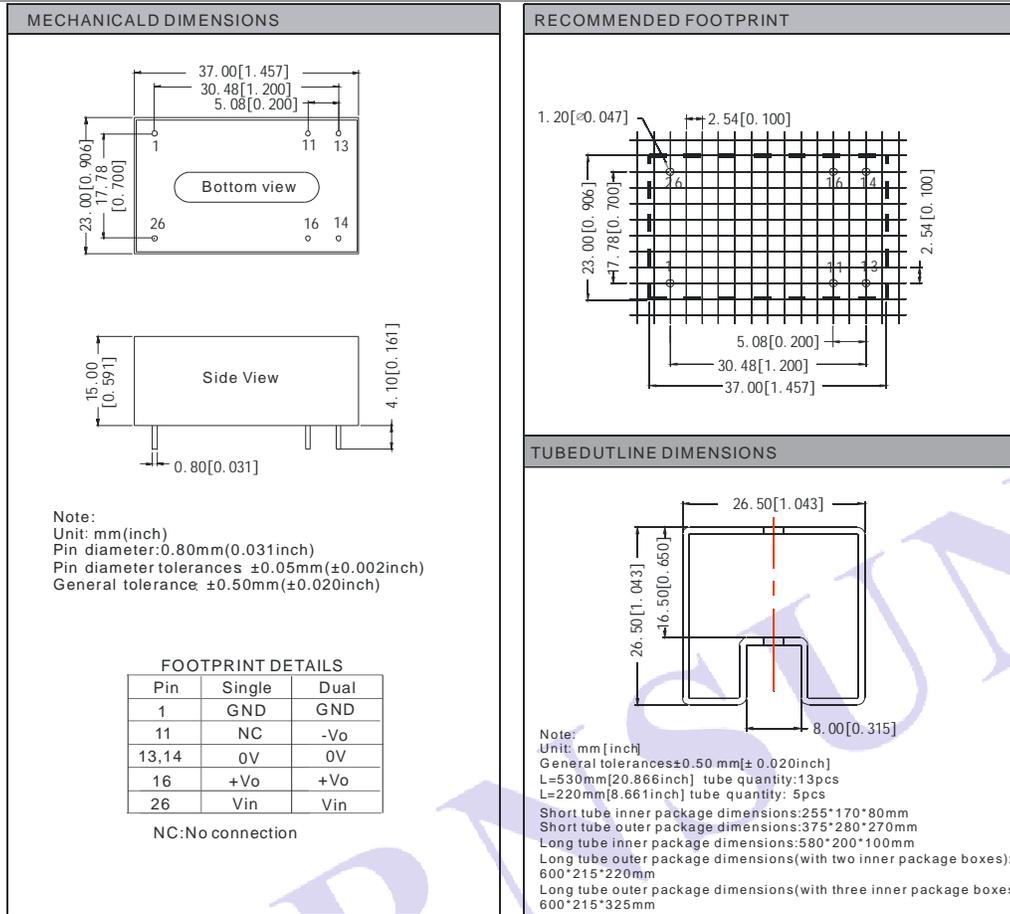
TYPICAL CHARACTERISTICS



TYPICAL EFFICIENCY CURVE



OUTLINE DIMENSIONS 、 RECOMMENDED FOOTPRINT & FOOTPRINT DETAILS



Note:

1. Operation under minimum load will not damage the converter; However, they may not meet all specification listed, and that will reduce the life of product.
2. All specifications measured at $T_a=25^\circ\text{C}$, humidity < 75%, nominal input voltage and rated output load unless otherwise specified.
3. In this datasheet, all the test methods of indications are based on corporate standards.
4. Only typical models listed, other models may be different, please contact our technical person for more details.