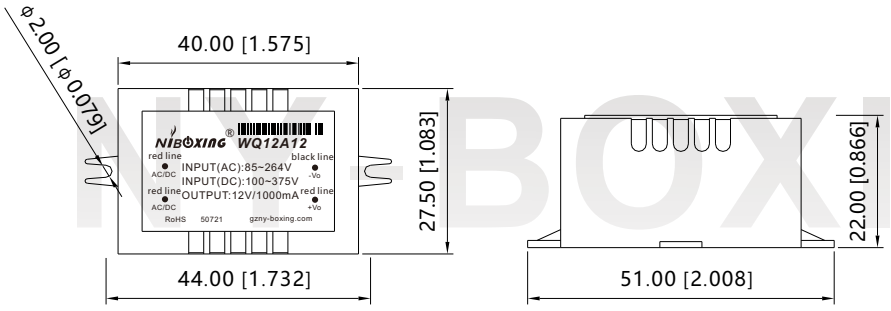
**12W AC/DC SMPS**

## DESCRIPTION

- ★ Wide input：AC85~264V & DC100~375V
- ★ Output short circuit, over-current protection
- ★ Compact size, high power density
- ★ I/O isolation test voltage 3k VAC
- ★ Low ripple & noise
- ★ RoHS Compliant
- ★ Industrial grade, high reliability

WQ12Axx series is one of Nyboxing's highly efficient green power AC-DC Converter series. They featu re ultra-wide wide input range accepting either AC or DC voltage, high efficiency, low power consumption and Class II reinforced insulation.

## Dimensions




Top view　　Front view

| PIN | Function | |
|---|---|---|
| | AC IN | DC IN |
| Red Line | AC | DC |
| Red Line | AC | DC |
| Red Line | +Vo | +Vo |
| Black Line | -Vo | -Vo |

Note:
Unit:mm[inch]
General tolerances:±0.50[±0.020]

## Selection Guide

| Part No. | Output Power | Nominal Output Voltage and Current | Efficiency at 230VAC (%) Typ. | Capacitive Load (μF) Max. | Dimensions (L×W×H) |
|---|---|---|---|---|---|
| WQ12A03 | 6.6W | 3.3V/2000mA | 75% | 1000μF | 40.0×27.5×22.0mm |
| WQ12A05 | 10W | 5V/2000mA | 78% | 1000μF | |
| WQ12A09 | 12W | 9V/1330mA | 80% | 820μF | |
| WQ12A12 | | 12V/1000mA | 81% | 680μF | |
| WQ12A15 | | 15V/800mA | 82% | 470μF | |
| WQ12A24 | | 24V/500mA | 84% | 330μF | |

## Input Specifications

| Item | Operating Conditions | Min | Typ | Max |
|---|---|---|---|---|
| Input Voltage Range | AC input | 85VAC | -- | 264VAC |
| | DC input | 100VDC | -- | 375VDC |

| | | | | |
|---|---|---|---|---|
| Input Frequency | | 47Hz | -- | 63Hz |
| Stand-by Power Consumption | | -- | 0.1W | -- |
| Input Current | 115VAC | -- | 200mA | -- |
| | 230VAC | -- | 100mA | -- |

## Output Specifications

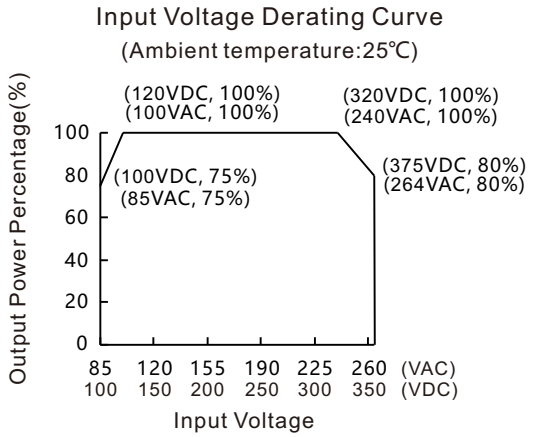
| Item | Operating Conditions | | Min | Typ | Max |
|---|---|---|---|---|---|
| Output Voltage Accuracy | | | -- | ±1% | -- |
| Line Regulation | Full load | | -- | ±1.5% | -- |
| Load Regulation | 10%~100% Load | | -- | ±2.5% | -- |
| Ripple & Noise* | 20MHz bandwidth (peak-to-peak value) | 3.3V/5V Output | -- | 150mV | -- |
| | | Other Output | -- | 100mV | -- |
| Short Circuit Protection | Hiccup, continuous, self-recovery | | | | |
| Over-current Protection | ≥110%Io | | | | |
| Minimum Load | | | 0 | -- | -- |
| Start delay time | | | -- | 500ms | -- |
| Hold-up Time | | | -- | 10ms | -- |
| Minimum Load | 0% | | | | |

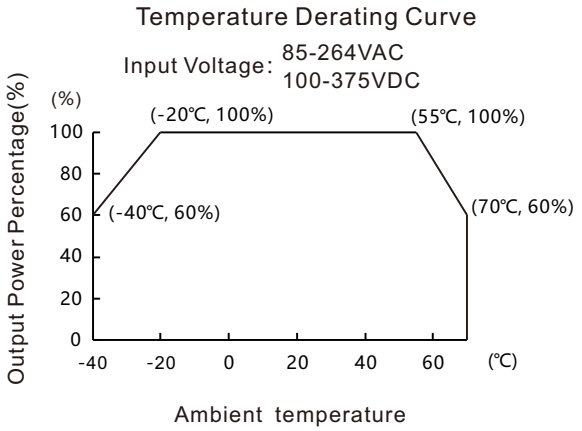
Note: * The "parallel cable" method is used for Ripple and noise test, please refer to AC-DC Converter Application Notes for specific information.

## General Specifications

| Item | Operating Conditions | Min | Typ | Max |
|---|---|---|---|---|
| Isolation | Input-Output, Test for 1min | -- | 3000VAC | -- |
| Operating Temperature | | -25℃ | -- | +55℃ |
| Storage Temperature | | -40℃ | | +105℃ |
| Storage Humidity | | -- | -- | 95%RH |
| Working frequency | | -- | 65KHz | -- |
| MTBF | MIL-HDBK-217F, 25°C | | 215,000h | |
| Casing Material | White Heat-resistant plastic | | | |

## Product Characteristic Curve



## Design Reference

### 1 Typical application

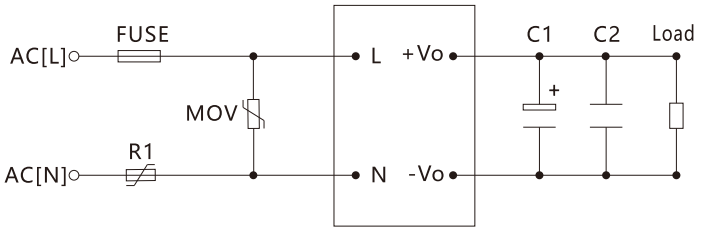



Fig. 1: Typical circuit diagram

**Note**

We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C1 (refer to manufactur-e's datasheet). Choose a Capacitor voltage rating with at least 20% margin, in other words not exceeding 80%. C2 is a ceramic capacitor used for filtering high-frequency noise.

### 2 EMC compliance recommended circuit

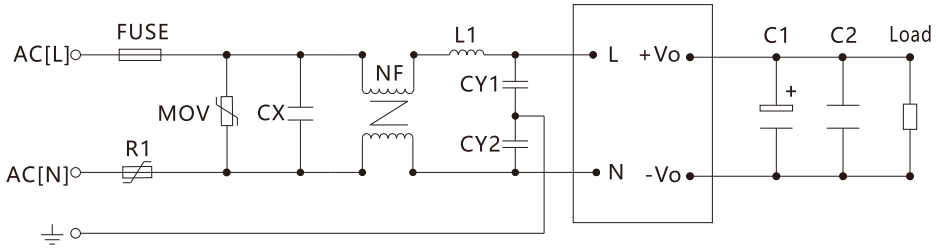



Fig 2: EMC application circuit with higher requirements

### 3 Input part: parameter recommendation

| Component | Recommended value |
|---|---|
| FUSE | 2A/250V slow-blow required |
| R1 | 5D-9 |
| MOV | 471KD10 |
| CX | 0.1μF/275VAC |
| L1 | 470μH |
| NF | 10mH-30mH |
| CY1,CY2 | 1000pF/250V |

### 4 Output part: parameter recommendation

| Output Voltage | 3.3V | 5V | 9V | 12V | 15V | 24V |
|---|---|---|---|---|---|---|
| C1 | 220μF/10V | | 220μF/25V | | | 68μF/35V |
| C2 | 1μF/50V | | | | | |

## Safety precautions

1.If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;

2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75% with nominal input voltage and rated output load;

3. All index testing methods in this datasheet are based on our Company's corporate standards;

4. We can provide product customization service, please contact our technicians directly for specific information;

5. For more product information, please visit our official website ( www.gzny-boxing.com ) or email us ( sales@gzny-boxing.com ) .