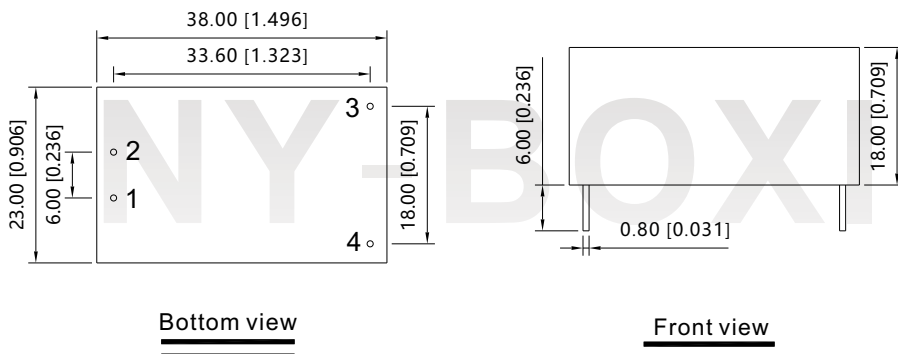


**5W AC/DC SMPS**
**DESCRIPTION**


- ★ Wide input : AC85~264V & DC100~375V
- ★ Output short circuit, over-current protection
- ★ Compact size, high power density
- ★ Low ripple & noise
- ★ RoHS Compliant
- ★ Industrial grade, high reliability
- ★ Three-year quality assurance

HLK-5MxxNBX series is one of Nyboxing's highly efficient green power AC-DC Converter series. They feature ultra-wide wide input range accepting either AC or DC voltage, high efficiency, low power consumption and Class II reinforced insulation.

**Dimensions**


PIN	Function	
	AC IN	DC IN
1	N	DC
2	L	DC
3	+Vo	+Vo
4	-Vo	-Vo

Note:  
 Unit:mm[inch]  
 Pin length: 6.0[0.236]  
 Pin diameter tolerances:±0.20[±0.008]  
 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)
HLK-5M03NBX	5W	3.3V/1000mA	68%	1000μF	38.0×23.0×18.0mm
HLK-5M05NBX		5V/1000mA	70%	680μF	
HLK-5M09NBX		9V/550mA	73%	470μF	
HLK-5M12NBX		12V/420mA	68%	330μF	
HLK-5M15NBX		15V/330mA	70%	250μF	
HLK-5M24NBX		24V/210mA	73%	100μF	

**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		--	0.2W	--
Input Current	115VAC	--	100mA	--
	230VAC	--	50mA	--

### Output Specifications

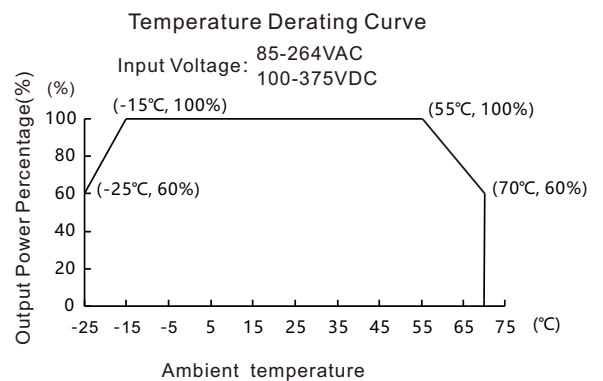
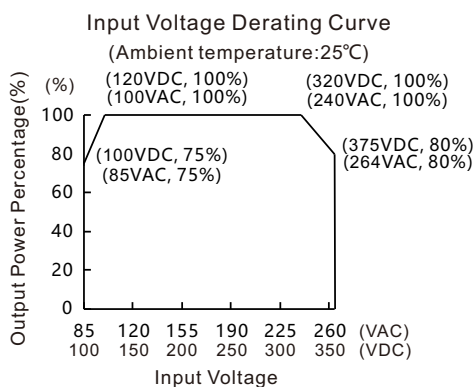
Item	Operating Conditions	Min	Typ	Max
Output Voltage Accuracy	3.3V Output	--	±5%	--
	Other Output	--	±3%	--
Line Regulation	Full load	--	±1.5%	--
Load Regulation	10%~100% Load	--	±2.5%	--
Ripple & Noise	20MHz bandwidth	--	150mV	--
Minimum Load	(peak-to-peak value)	0	--	--
Start delay time		--	500ms	--
Hold-up Time		--	20ms	--

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	1000VAC	--	--
Operating Temperature		-25°C	--	+70°C
Storage Temperature		-40°C		+105°C
Storage Humidity		--	--	95%RH
Working frequency		--	65KHz	--
MTBF	MIL-HDBK-217F, 25°C		215,000h	
Casing Material	Black flame-retardant and heat-resistant plastic (UL94-V0)			

### Product Characteristic Curve



## Design Reference

### 1 Typical application

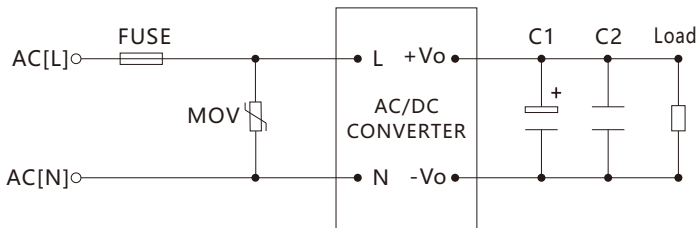


Fig. 1: Typical circuit diagram

#### Note

We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C1 (refer to manufacturer'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

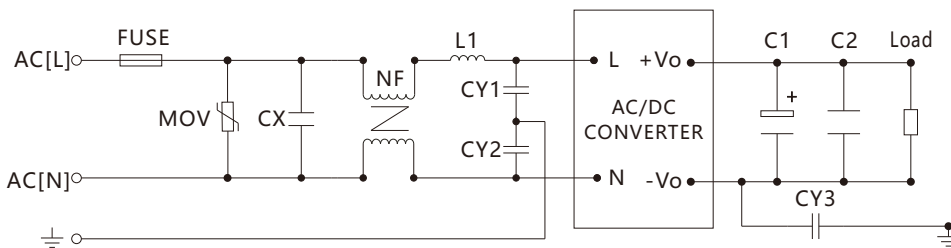


Fig 2: EMC application circuit with higher requirements

### 3 Input part: parameter recommendation

Component	Recommended value
FUSE	10Ω/1W Safety Resistance
MOV	471KD10
CX	0.1μF/275VAC
L1	470μH
NF	10mH-30mH
CY1,CY2,CY3	1000pF/250V

### 4 Output part: parameter recommendation

Output voltage	3.3V	5V	9V	12V	15V	24V
C1	220μF/10V	220μF/10V	100μF/16V	100μF/25V	100μF/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°C, 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](http://www.gzny-boxing.com) ) or email us ( [sales@gzny-boxing.com](mailto:sales@gzny-boxing.com) ).