

## HBPO5 SERIES AC - DC POWER SUPPLY

### ■ Special Features

- Small multi-purpose power supply
- Wide Input Range(85Vac~265Vac)
- Isolated output
- Short circuit protection
- Over voltage protection
- Thermal shutdown
- Ultra compact size



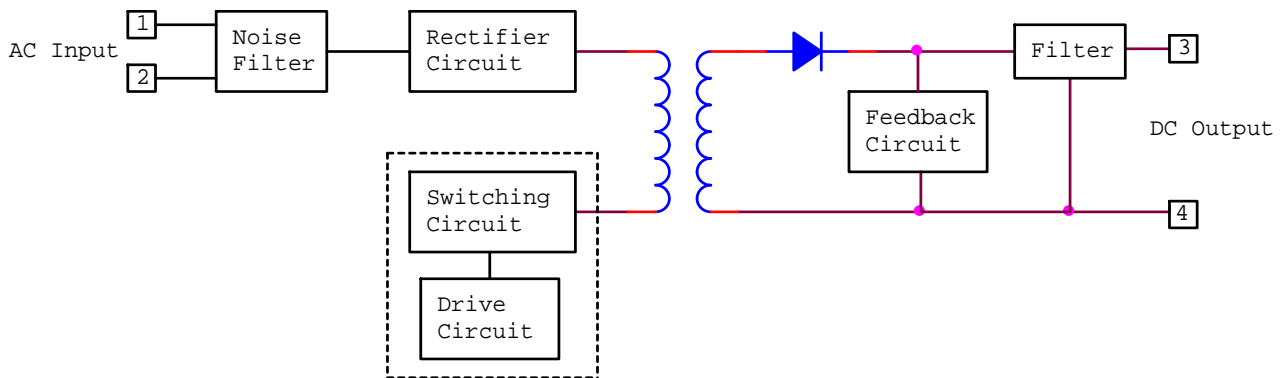
### ■ Electrical Characteristics

Characteristics		Condition	Min.	Typ.	Max.	Unit
AC Input	Input Voltage Range	-	85	220	265	V
	Frequency	Vi=AC220V	47	-	440	Hz
	inrush current	Vi=AC220V	-	30	-	Apk
	Stand-by Power Consumption	Vi=AC220V	-	-	0.3	W
Output	Voltage set accuracy	Vi=AC220V, Io= Full load	-	±1	±2	%
	Line Regulation	Vi=AC85~265V, Io= Full load	-	±0.1	±0.5	%
	Load Regulation	Vi=AC220V, Io= Full load	-	±1.0	±1.5	%
	Ripple Voltage	Vi=AC220V, Io= Full load	-	-	150	mVp-p
	hold-up time	Vi=AC220V	80	-	-	ms
	switching frequency	Vi=AC220V, Io= Full load	-	130	-	KHz
	isolation voltage-	1 minute at 5mA	3000	-	-	Vac
Ambient Temperature	Operating Range	Vi=AC220V, Io= Full load	-20	-	80	°C
	Storage Range		-30	-	105	°C

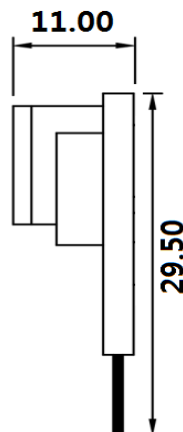
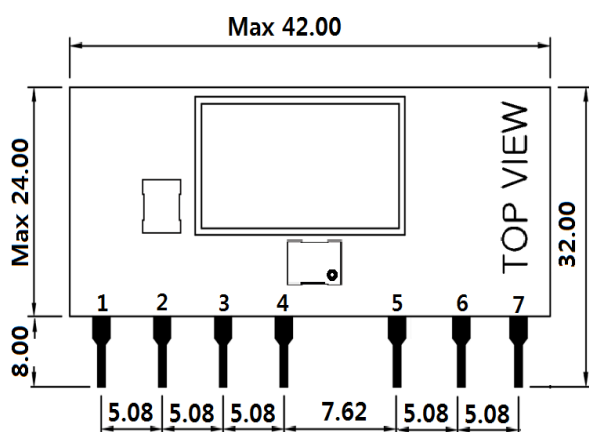
■ Model Guide

Model	output voltage(Vdc)	output current(mA)	output power(W)	Efficiency (%)	Ripple and noise(mVp-p)
HBP0533	3.3	1000	3.3	67	120
HBP0505	5	1000	5	72	120
HBP0509	9	560	5	75	120
HBP0512	12	420	5	76	120
HBP0515	15	340	5	76	120
HBP0524	24	210	5	78	120

■ Block Diagram



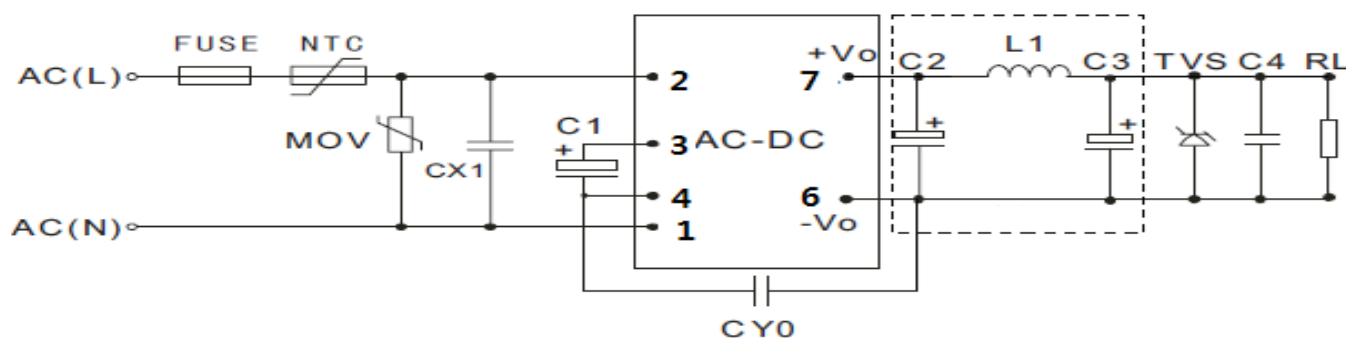
■ Dimension



Pin No.	Description
1	AC(N)
2	AC(L)
3	+V(CAP)
4	-V(CAP)
5	ADJ
6	GND
7	DC OUTPUT

Notes 1.Dimension in mm, 2. PIN : Ø 1.6

Application Circuit



Recommended external circuit components											
V <sub>OUT</sub> (Vdc)	C1 <sup>1</sup>	C2 <sup>1</sup>	L1 <sup>1</sup>	C3 <sup>1</sup>	C4	CX1	CY0	FUSE	NTC	MOV	TVS
3.3	22μF/400V	470μF/10V	0.47μH	150μF/35V	100nF/50V	0.1μF/275Vac	1nF/400Vac	1A/250V	5D-9	S14K350	SMBJ7.0A
5	22μF/400V	470μF/16V	0.47μH	150μF/35V	100nF/50V	0.1μF/275Vac	1nF/400Vac	1A/250V	5D-9	S14K350	SMBJ7.0A
9	22μF/400V	330μF/25V	1μH	150μF/35V	100nF/50V	0.1μF/275Vac	1nF/400Vac	1A/250V	5D-9	S14K350	SMBJ12A
12	22μF/400V	330μF/25V	1μH	150μF/35V	100nF/50V	0.1μF/275Vac	1nF/400Vac	1A/250V	5D-9	S14K350	SMBJ20A
15	22μF/400V	330μF/25V	1μH	150μF/35V	100nF/50V	0.1μF/275Vac	1nF/400Vac	1A/250V	5D-9	S14K350	SMBJ20A
24	22μF/400V	100μF/35V	4.7μH	47μF/35V	100nF/50V	0.1μF/275Vac	1nF/400Vac	1A/250V	5D-9	S14K350	SMBJ30A

FUSE	Fuse	Please make sure to use quick acting fuse 1A or higher
C1	Capacitor for input voltage smoothing	Capacitance : 33μF~820μF, Rated voltage : 400V or higher Ripple current is 0.13Arms above.
CX1	For noise terminal voltage reduction	Capacitance : 0.1μF~0.22μF, Rated voltage : 400V or higher Film capacitor or ceramic capacitor. Reduce the noise terminal voltage. The constant value should be evaluated in the set
C2, C3	Capacitor for Safety	Capacitance : 1nF~4.7nF, Rated voltage : 35V or higher
C4	Bypass Capacitor for high frequency noise	Capacitance : 10nF~100nF, Rated voltage : 50V or higher Film capacitor or ceramic capacitor. Reduce the high frequency noise terminal output
L1	Choke Coil	L : 4.7~10μH, Allowable current : 3A or higher Please use the one that is hard to be magnetic saturated even in the high temperature.

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