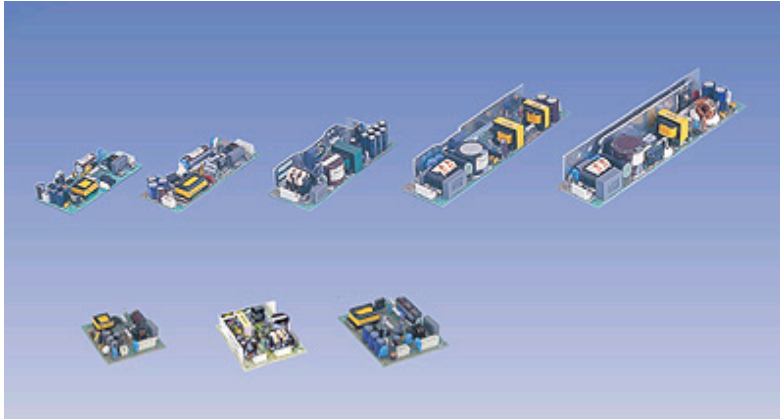


50 WATT AC-DC CONVERTER

BNB-SA Series



RoHS compliant

General Description

BN-Series are open frame, board type power supply with AC input range of 85~132 VAC for use in Japan and North America market. Simplified circuit design gives high cost-effectiveness and small size. This series meets UL/CSA and Japan Electrical Appliance and Material Control law, in addition to EMI limits of FCC class B and VCCI class.



Features

1. Board Type
2. Ultra Small size
3. Universal input(AC 85V to 264V)
4. Harmonic current complies to IEC61000-3-2
5. Power factor BFE: 0.98/0.93 (AC 100/230V)
6. High efficiency
7. Low Cost
8. EMI: complies to FCC class B, or EN55022 class B, or VCCI class B
9. Safety: UL 60950, C-UL, EN 60950

Options

N/A

Specifications<AC/DC>	Model							
BNB**SA-U 50WATTS/SINGLE	BNB3.3SA-U	BNB05SA-U	BNB09SA-U	BNB12SA-U	BNB15SA-U	BNB24SA-U	BNB36SA-U	BNB48SA-U
Input Characteristic								
Input Voltage	AC100V-115V							
Input Current	1.4A							
Input Range	AC85-132V(DC110-175V)							
Input Frequency	50/60Hz							
Input Frequency Range	47-440Hz							
Phase	Single							
Inrush Current *1	30A(typical) at AC100V							
Efficiency [%] (typical) *2	74	80	80	82	83	84	84	84

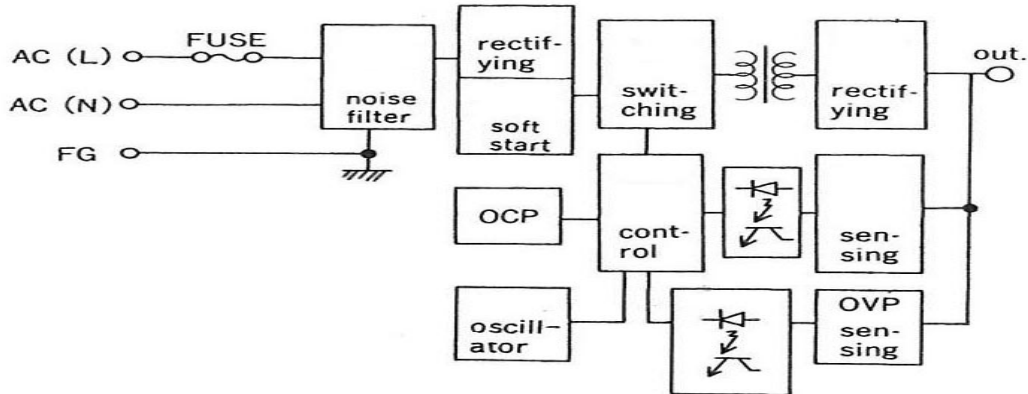
Specifications<AC/DC> BNB**SA-U 50WATTS/SINGLE	Model							
	BNB3.3SA-U	BNB05SA-U	BNB09SA-U	BNB12SA-U	BNB15SA-U	BNB24SA-U	BNB36SA-U	BNB48SA-U
Output Characteristic								
Output Voltage [V]	3.3	5	9	12	15	24	36	48
Output Current [A]	10.0	10.0	5.5	4.3	3.5	2.5	1.7	1.3
Voltage Adjust Range	+/- 10% of Rated Output Voltage(at no load within the input range)							
Ripple and Noise [mVp-p](maximum) 0 to +60C *3	120	120	120	150	150	150	250	350
	160	160	160	180	180	180	300	400
Regulation								
a.Statistic Line Regulation [mV](maximum)	26	40	72	96	120	192	288	384
b.Statistic Load Regulation [mV](maximum)	30	45	81	108	135	216	324	432
c.Temperature Coefficient *4	0.03%/C							
d.Drift[mV](maximum) *5	32	40	60	75	90	135	195	255
e.Dynamic Load Regulation [mV](typical) *6	not specified							
f.Recovery Time *6	not specified							
Rise up time	200mS(maximum) at 25C and rated input/output							
Hold up time	20mS (typical) at 25C and rated input/output							
Functions								
Overcurrent Protection *7 = or >105% of Rated Output Current[A]	Current Limiting with automatic recovery							
	10.5	10.5	5.78	4.52	3.68	2.63	1.79	1.37
Overvoltage Protection = or >115% of Rated Output Voltage[V]	Output shutdown(to reset,leave 1minute after shut-off)							
	3.8	5.75	10.4	13.8	17.3	27.6	41.4	55.2
Remote Sense	not available							
Remote On/Off	not available							
Environmental								
Operating Temperature	-10 to +50C							
Operating Humidity	20 to 90%RH(non-condensing)							
Storage Temperature	-20 to +75C							
Storage Humidity	20 to 90%RH(non-condensing)							
Withstanding Voltage	Primary-Secondary AC2,000V for 1minute							
	Primary-Frame Ground AC2,000V for 1minute							
	Secondary-Frame Ground AC500V for 1minute							
Isolation Resistance	Primary-Secondary-Frame Ground 50MOhm(minimum) by DC500V insulation tester							
Vibration	5-10Hz:10mm double amplitude,10-55Hz:19.6m/s ² , 20minutes' period for 60minutes each along X,Y,Z axes(non-operating)							
Shock	196m/s ²							
Cooling	Convection							
Leakage Current	0.5mA(maximum) at 25C,rated input/output and rated input frequency							
Line Conducted Noise	Built to meet FCC Part15-B Class B							
	Built to meet VCCI Class B							
Safety	UL: UL1950							
	C-UL: CSA C22.2 No.950							
Weight (typical)	open board type:180g							
MTBF [H]	480,000							
Switching Frequency[kHz](typical) *8	90	90	90	90	90	90	90	90

Conditions:

- *1 at cold start
- *2 at DC130V input and rated output
- *3 measured by a bayonet probe at the end of a pair of 15cm-long wires terminated with a 100uF electrolytic capacitor and a 0.1uF film capacitor in parallel at a 0 to 20MHz bandwidth
- *4 at -10 to +50°C
- *5 for 7hour period after 1hour warm-up at 25°Cand rated input/output
- *6 when output current changed from 25% of rated output current to 75% rapidly at AC100V input
- *7 for less than 1minute of overcurrent and short circuit
- *8 variable on input voltage and load conditions



BLOCK DIAGRAM



Terminal Connection

input (CNI)	
PIN NO.	function
1	ACIN (L)
3	ACIN (N)
5	FG

output (CN5I)	
PIN NO.	function
1	-V out
2	-V out
3	+V out
4	+V out

	applied housing	function
CNI	VHR-5N	SVH-2IT-PI.I
CN5I	VHR-4N	SVH-2IT-PI.I