



60W Single Output Class II Switching Power Supplies

BSL60 series



2"W x 4"L x 1.17"H

- Up to 60W Output Power
- Universal 90-264VAC Input
- Single Outputs from 5VDC to 48VDC
- High Efficiency up to 82%
- 3000V Isolation
- 1U Compatible Height



Model Number	Output Voltage	Max. O/P Amps	Min. O/P Amps	Efficiency	R&N p-p max.	Capacitive Load
SINGLE OUTPUT						
BSL60-5-A	5VDC	9	0	77% typ.	100mV	23,000uF
BSL60-9-A	9VDC	6.5	0	80% typ.	120mV	10,200uF
BSL60-12-A	12VDC	5	0	82% typ.	120mV	4,000uF
BSL60-15-A	15VDC	4	0	82% typ.	150mV	5,500uF
BSL60-24-A	24VDC	2.5	0	82% typ.	240mV	1,300uF
BSL60-36-A	36VDC	1.67	0	82% typ.	360mV	600uF
BSL60-48-A	48VDC	1.25	0	82% typ.	400mV	270uF



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INPUT SPECIFICATIONS

Input Voltage Range	90-264 VAC
Frequency Range	47-63 Hz
Input Current (90 / 264 Vin)	1.5A / 0.7A
Inrush Current (115 / 230 Vin)	30A / 60A typical *
Leakage Current (264V / 50Hz)	<0.25mA

OUTPUT SPECIFICATIONS

Voltage and Current (Note 3)	See Selection Chart
Turn On Delay Time	<1S
Rise Time	<30mS
Load Regulation (20%-FL)	± 1% max
Line Regulation (LL-HL)	± 1% max
Preset Accuracy (FL, 115Vin)	1%
Transient Response	See Page 3
Over-Shoot and Under-Shoot	<10% of O/P Voltage
Ripple/Noise (Note 1 & 4)	See Selection Chart
Over Voltage Protection	Latching re-power
Current Limit, Self Recovering	150% max., hiccup mode *
Short Circuit Protection	Latching, Auto Recover *
Hold Up Time (115V / 60Hz)	8 mS, typ.
Capacitive Loading (Note 5)	See Selection Chart

PHYSICAL SPECIFICATIONS

Size (Inches / mm)	2" x 4" x 1.17" / 50.8 x 101.6 x 29.6
Construction	Open Frame
Weight	5.61oz (157.2g)

All specifications are typical at nominal input, full load, and 25°C unless otherwise noted

* These are stress ratings. Exposure of the devices to any of these conditions may adversely affect long term reliability. Proper operation under conditions other than the standard operating conditions is neither warranted nor implied.

Astrodyne products are not authorized or warranted for use as critical components in life support systems, equipment used in hazardous environments, nuclear controls systems, or other mission-critical applications.

GENERAL SPECIFICATIONS

Input-Out Isolation	3000VAC
Insulation Resistance	≥20MΩ; 500VDC, 1S I/P-O/P
Efficiency (typ.)	See Selection Chart
Switching Frequency	65Khz, (fixed, typical)
Safety	UL/cUL: UL60950-1, Class II
	TUV: EN60950-1, Class II
	CE: EN60601-1-2, Class II
	CB: IEC60950-1, Class II
	CSA: C22.2 60950.1, Class II

ENVIRONMENTAL SPECIFICATIONS

Oper. Temperature (Note 2)	-10 to +70°C, See Derate
Storage Temperature	-25 to +85°C *
Relative Humidity	0-95% *
ESD	IEC61000-4-2
RS	IEC61000-4-3
EFT	IEC61000-4-4
Surge	IEC61000-4-5
CS	IEC61000-4-6
DIPS	IEC61000-4-11
EMI	EN55022B / CISPR 11 B
MTBF	185,000 Hrs
	Mil Std 217, 25°C
Vibration	2G Peak, 10-500Hz, 3 Axis, 30 min
Drop Test	70 cm Height

NOTES

1. Make all measurements directly at the pins of the supply
2. Specified for free air convection cooling
3. 115Vin minimum required for full load start up
4. Measured by paralleling 47uF/EC and 0.1uF ceramic capacitors on the output at a 20MHz band-width
5. The power supply should start up and operate normally into these capacitive loads within specified input voltage and output current ranges over the specified operating temperature range and according to Derate.

Dynamic load/Transient Response

All output voltages shall remain within regulation limits for transient/step loading and capacitive loads conditions specified in Table 1.

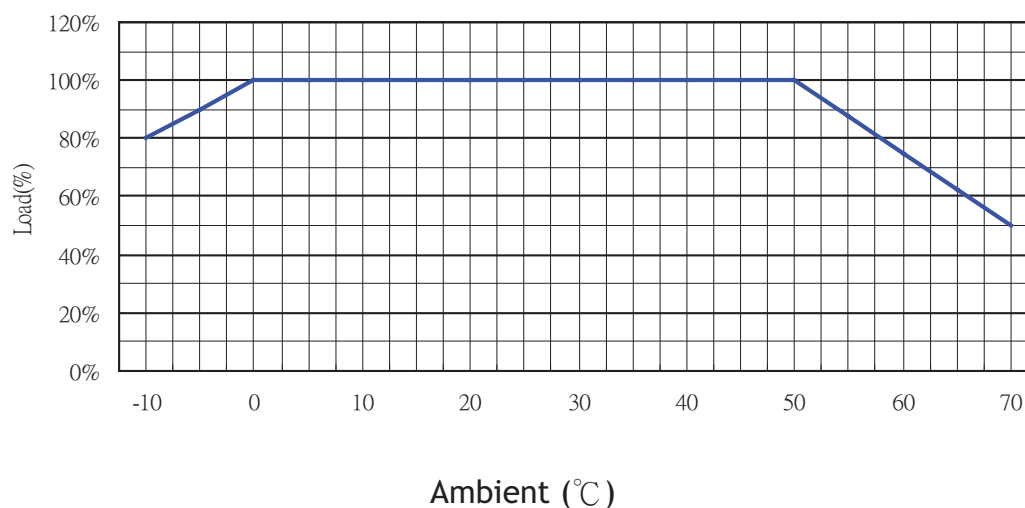
Dynamic load transient repetition rate shall be tested between 50Hz - 5KHz at duty cycle ranging from 10 - 90%. The Δ step load may occur anywhere within the min. load to max. load shown in Table 1.

Table 1

Output	5V		9V		12V		15V	
Δ Step load (A)	60%	100%	60%	100%	60%	100%	60%	100%
	5.4	9	3.9	6.5	3	5	2.4	4
Load slew rate (A/ μ sec.)	1		1		1		1	
Transient voltage response time (msec.)	10		10		10		10	

Output	24V		36V		48V	
Δ Step load (A)	60%	100%	60%	100%	60%	100%
	1.5	2.5	1	1.67	0.75	1.25
Load slew rate (A/ μ sec.)	1		1		1	
Transient voltage response time (msec.)	10		10		10	

Derating Curve

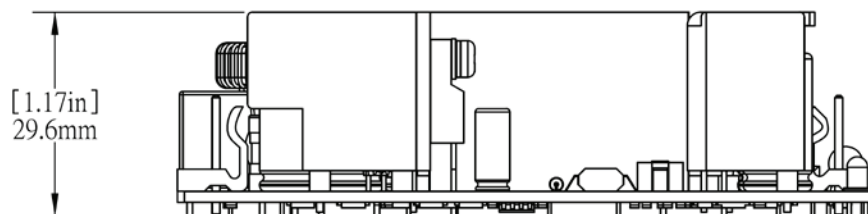
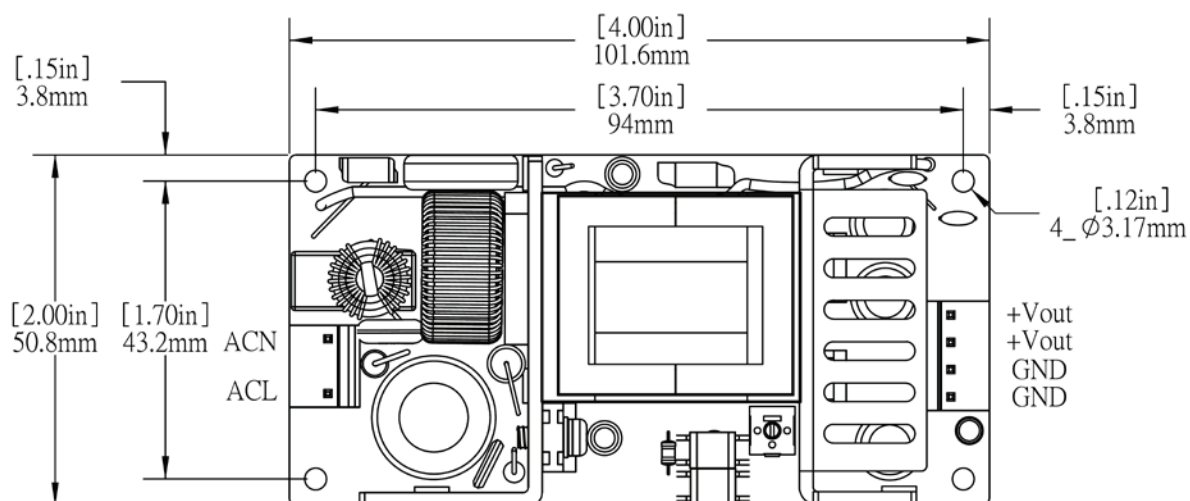




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MECHANICAL DIMENSIONS



Tolerance : $\pm 0.12\text{mm}$