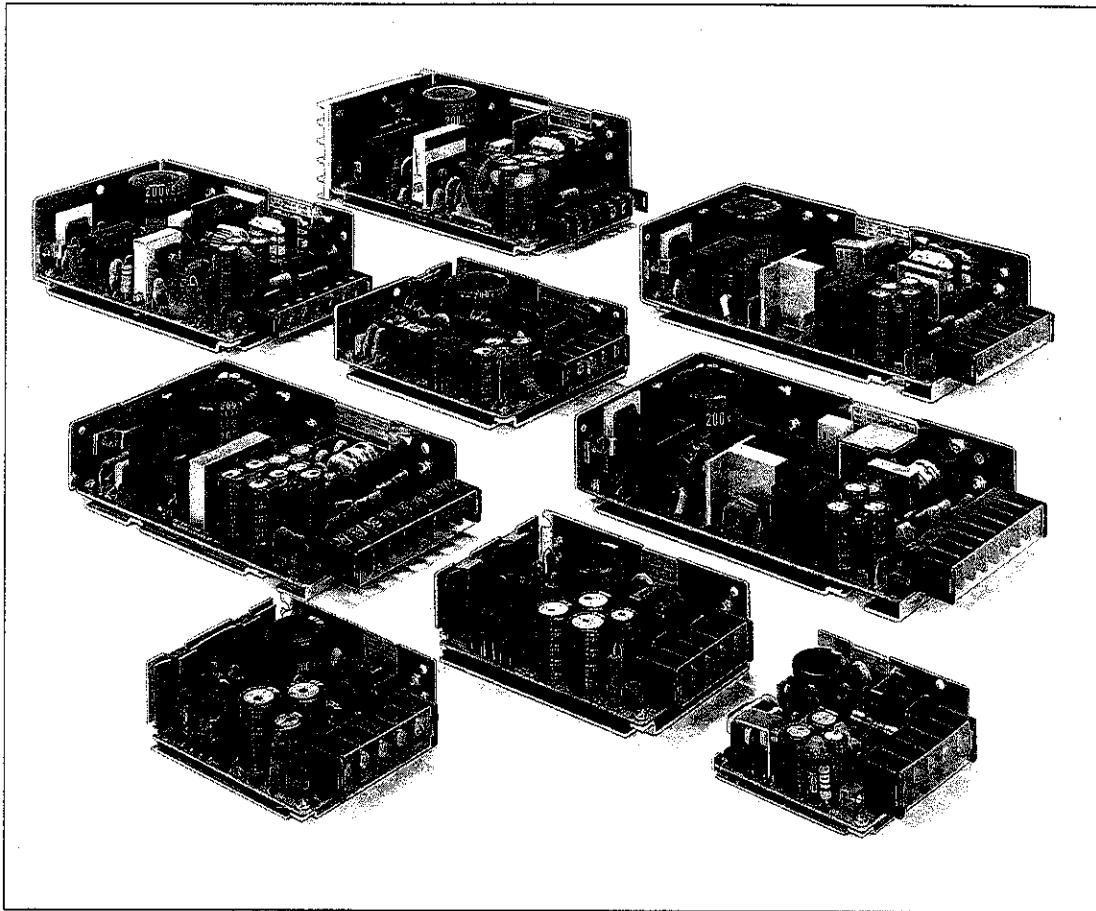


Part I – AC-to-DC Power Supplies

LAMBDA'S LS SERIES



High Density, Low Cost Power Supplies

Space is always at a premium in electronic applications, and form factor plays an important role in utilization of that space. Lambda's LS Series provides single and multiple output solutions in a modular form for the most efficient use of available space.

The LS Series features 10 single and triple output packages up to 48V, up to 30A, providing over 2.2W/in³. All models are designed with built-in overvoltage protection, in-rush current limiting and 2000VAC input to output isolation.

Targeted for cost driven industrial applications in the US, Canadian and Far Eastern markets, the LS Series provides full output power from 85 to 132VAC. In addition, their thermal design allows for full rated power at 50°C ambient temperature in a convection cooled environment. Barrier strip connections provide ease of installation and replacement during equipment upgrading cycles.

LS SERIES SPECIFICATIONS

AC Input

line85 to 132VAC, 47-440Hz.

Efficiency

72% typical for 5V LSS models. 70% typical for LST models, and 12V and 15V LSS models. 82% typical on 24V through 48V LSS models.

DC Input

110 to 175VDC.

DC Output

Voltage range shown in tables.

Regulated Voltage

regulation, line0.4% for input variations from 85 to 132VAC or 132 to 85VAC.
 regulation, load0.8% for load changes from zero to full load and from full load to zero on LSS models. 0.8% for load changes from 0.75A to full load on main output of LST-37; from 1.5A to full load on main output of LST-38, LST-39; from 3A to full load on LST-40. 150mV max from zero to full load and full load to zero on auxiliary outputs of LST-37, 38, 39, 40 with main output preloaded.

ripple and noise.
 (20MHz Bandwidth)15mV RMS for all models;
 120mV pk-pk for 5V and 6V models;
 150mV pk-pk for 12V and 15V models;
 200mV pk-pk for 24V and 28V models.
 250mV pk-pk for 48V models.

temperature coefficient0.02%/°C.

Hold Up Time

5V and 6V LSS models, and all LST models will remain within regulation limits for at least 16.7 msec. after loss of AC power when operating at full load, nominal output voltage and 100VAC input voltage.

Overload Protection

External overload protection, automatic electronic current limiting circuit, limits output current to a safe, preset value, thereby protecting the load as well as the power supply. Avoid short circuit operation longer than 30 seconds.

Overvoltage Protection

Overvoltage protection is standard on all LSS models and on main output of LST Models. If output voltage increases above a preset level, inverter drive is removed.

Overshoot

No overshoot at turn-on, turn-off or power failure.

In-rush Current Limiting

The turn-on in-rush current will not exceed 15A typical on LSS-38, LSS-39, LST-37, LST-38, LST-39; 20A typical on LST-40; 24A typical for LSS-34; 30A typical for LSS-35, LSS-36, LSS-37.

Cooling

Convection cooled, no fans or blowers needed.

Operating Temperature Range

0-60°C with suitable derating above 50°C. (65°C operation on LST-40 is possible. Consult factory.)

Storage Temperature Range

-30°C to +85°C.

Remote Sensing

Provision is made for remote sensing to eliminate the effects of power output lead resistance on DC regulation for LSS-38 and LSS-39.

Isolation Rating

2000V RMS input to output.

DC Output Controls

Simple screwdriver adjustment.

Input and Output Connections

All input and output connections are made via barrier strip terminals.

Output Status Indicator

LED indicates presence of output voltage on LSS models and 5V output of LST models.

Mounting

Two mounting surfaces, two mounting positions. One mounting surface and one mounting position for LSS-39. Some derating may be required in horizontal mounting position. Consult factory.

Finish

Aluminum.

Physical Data

Package Model	Weight		Size Inches
	Lbs. Net	Lbs. Ship	
LSS-34	0.46	0.55	1.06 × 2.75 × 2.68
LSS-35	0.64	0.75	1.26 × 2.75 × 3.35
LSS-36	0.66	0.75	1.38 × 2.75 × 4.14
LSS-37	0.88	1.00	1.38 × 3.74 × 4.72
LST-37	0.93	1.10	1.42 × 3.74 × 6.10
LST-38	1.21	1.41	1.61 × 3.74 × 6.89
LST-39	1.54	1.79	1.93 × 3.74 × 7.48
LSS-38	1.54	1.85	2.00 × 3.74 × 6.30
LSS-39	2.31	2.50	2.40 × 3.74 × 7.09
LST-40	2.70	2.80	1.93 × 3.74 × 10.24

Accessories

For rack adapters and other accessories, see pages 151-152.

Safety Agency Approvals

All models are UL recognized and most are CSA certified. Consult factory.

Guarantee

One year guarantee includes labor as well as parts. Guarantee applies to operation at full published specifications at end of one year.

Commercial Ratings Table – Single Output

K SERIES
 • PCB Mount
 • Small Footprint
 • High Density

V SERIES
 • Lowest Cost 110VAC Input
 • PCB and Chassis Mount
 • Meets FCC Curve B on Duals and Triples

Z SERIES
 • Lowest Cost 110/220VAC Input
 • PCB Construction
 • Meets FCC and VDE Curve B

LV SERIES
 • Chassis Mount
 • 110/220VAC Input
 • Molex Connections

LS SERIES
 • 110VAC Input
 • Chassis Mount
 • High Density

25°C	MAX CURRENT (AMPS) AT AMBIENT TEMPERATURE OF				V _{out} ADJ. RANGE	COMPLETE ELEC. SPEC. PG.	UNIT PRICE PER DELIVERED QUANTITY					MODEL
	40°C	50°C	60°C	71°C			1	10	25	100	250	
SINGLE OUTPUT. 110VAC INPUT.												
5V OUTPUT												
2.00	2.00	2.00	1.00	—	4.75-5.25	87	57	55	52	40	30	LSS-34-5
3.00	3.00	3.00	1.50	—	4.75-5.25	87	66	64	60	50	35	LSS-35-5
5.00	5.00	5.00	2.50	—	4.75-5.25	87	101	97	93	70	56	LSS-36-5
10.00	10.00	10.00	5.00	—	4.75-5.25	87	136	130	125	102	74	LSS-37-5
20.00	20.00	20.00	10.00	—	4.75-5.25	87	193	184	176	156	119	LSS-38-5
30.00	30.00	30.00	15.00	—	4.75-5.25	87	275	263	251	191	164	LSS-39-5
12V OUTPUT												
0.90	0.90	0.90	0.45	—	11.40-12.60	87	57	55	52	40	30	LSS-34-12
1.30	1.30	1.30	0.65	—	11.40-12.60	87	66	64	60	50	35	LSS-35-12
4.20	4.20	4.20	2.10	—	11.40-12.60	87	136	130	125	102	74	LSS-37-12
8.50	8.50	8.50	4.25	—	11.40-12.60	87	193	184	176	156	119	LSS-38-12
12.50	12.50	12.50	6.30	—	11.40-12.60	87	275	263	251	191	164	LSS-39-12
15V OUTPUT												
0.70	0.70	0.70	0.35	—	14.25-15.75	87	57	55	52	40	30	LSS-34-15

15V output models continued on page 65.

*Rating for VS150 is at 35°C.

Commercial Ratings Table – Single Output

K SERIES
 • PCB Mount
 • Small Footprint
 • High Density

V SERIES
 • Lowest Cost 110VAC Input
 • PCB and Chassis Mount
 • Meets FCC Curve B on Duals and Triples

Z SERIES
 • Lowest Cost 110/220VAC Input
 • PCB Construction
 • Meets FCC and VDE Curve B

LV SERIES
 • Chassis Mount
 • 110/220VAC Input
 • Molex Connections

LS SERIES
 • 110VAC Input
 • Chassis Mount
 • High Density

MAX CURRENT (AMPS) AT AMBIENT TEMPERATURE OF					V _{out} ADJ. RANGE	COMPLETE ELEC. SPEC. PG.	UNIT PRICE PER DELIVERED QUANTITY					MODEL
25°C	40°C	50°C	60°C	71°C			1	10	25	100	250	
SINGLE OUTPUT. 110VAC INPUT.												
15V OUTPUT (CONT'D.)												
1.70	1.70	1.70	0.85	—	14.25-15.75	87	\$ 101	\$ 97	\$ 93	\$ 70	\$ 56	LSS-36-15
3.40	3.40	3.40	1.70	—	14.25-15.75	87	136	130	125	102	74	LSS-37-15
7.00	7.00	7.00	3.50	—	14.25-15.75	87	193	184	176	156	119	LSS-38-15
10.00	10.00	10.00	5.00	—	14.25-15.75	83	275	263	251	191	164	LSS-39-15
24V OUTPUT												
0.50	0.50	0.50	0.25	—	22.80-25.20	87	57	55	52	40	30	LSS-34-24
0.70	0.70	0.70	0.35	—	22.80-25.20	87	66	64	60	50	35	LSS-35-24
1.10	1.10	1.10	0.55	—	22.80-25.20	87	101	97	93	70	56	LSS-36-24
2.10	2.10	2.10	1.05	—	22.80-25.20	87	136	130	125	102	74	LSS-37-24
4.50	4.50	4.50	2.25	—	22.80-25.20	87	193	184	176	156	119	LSS-38-24
6.50	6.50	6.50	3.25	—	22.80-25.20	87	275	263	251	191	164	LSS-39-24
28V OUTPUT												
0.40	0.40	0.40	0.20	—	26.60-29.40	87	57	55	52	40	30	LSS-34-28
0.60	0.60	0.60	0.30	—	26.60-29.40	87	66	64	60	50	35	LSS-35-28
0.90	0.90	0.90	0.45	—	26.60-29.40	87	101	97	93	70	56	LSS-36-28
1.80	1.80	1.80	0.90	—	26.60-29.40	87	136	130	125	102	74	LSS-37-28
3.80	3.80	3.80	1.90	—	26.60-29.40	87	193	184	176	156	119	LSS-38-28
5.50	5.50	5.50	2.75	—	26.60-29.40	87	275	263	251	191	164	LSS-39-28
48V OUTPUT												
0.20	0.20	0.20	0.10	—	45.60-50.40	87	57	55	52	40	30	LSS-34-48
0.30	0.30	0.30	0.15	—	45.60-50.40	87	66	64	60	50	35	LSS-35-48
0.50	0.50	0.50	0.25	—	45.60-50.40	87	101	97	93	70	56	LSS-36-48

*Rating for VS150 is at 35°C.

Commercial Ratings Table – Triple Output

K SERIES
 • PCB Mount
 • Small Footprint
 • High Density

V SERIES
 • Lowest Cost 110VAC Input
 • PCB and Chassis Mount
 • Meets FCC Curve B on Duals and Triples

Z SERIES
 • Lowest Cost 110/220VAC Input
 • PCB Construction
 • Meets FCC and VDE Curve B

LV SERIES
 • Chassis Mount
 • 110/220VAC Input
 • Molex Connections

LS SERIES
 • 110VAC Input
 • Chassis Mount
 • High Density

Vout	MAX CURRENT (AMPS) AT AMBIENT TEMPERATURE OF			MAX POWER (WATTS) AT AMBIENT TEMPERATURE OF			Vout ADJ. RANGE	COMPLETE ELEC. SPEC. PG.	UNIT PRICE PER DELIVERED QUANTITY					MODEL
	40°C	50°C	60°C	40°C	50°C	60°C			1	10	25	100	250	
5	7.00	7.00	4.55	50.00	50.00	32.50	5.00-5.25	87	158	151	145	102	86	LST-37-133
+12	1.50	1.50	0.97				±5% Fixed							
-12	0.50	0.50	0.32				±5% Fixed							
5	8.00	8.00	5.20	76.00	76.00	49.40	5.00-5.25	87	197	187	179	131	116	LST-38-133
+12	3.20	3.20	2.00				±5% Fixed							
-12	0.50	0.50	0.32				±5% Fixed							
5	13.00	13.00	8.50	101.00	101.00	65.60	5.00-5.25	87	227	216	207	156	142	LST-39-133
+12	4.00	4.00	2.60				±5% Fixed							
-12	1.00	1.00	0.65				±5% Fixed							
5	20.00	20.00	13.60	160.00	160.00	126.50	5.00-5.25	87	297	283	271	218	192	LST-40-133
+12	5.00	5.00	3.40				±5% Fixed							
-12	2.00	2.00	1.40				±5% Fixed							

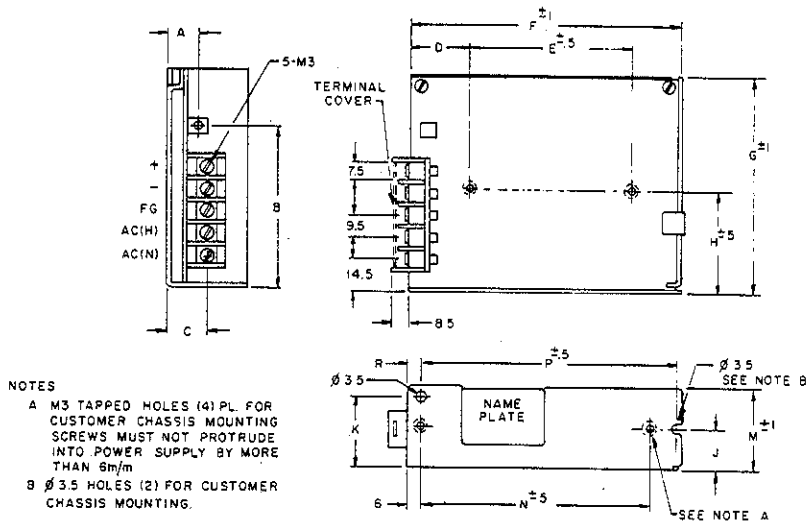
5V, +15V, -15V OUTPUT

5	7.00	7.00	4.55	50.00	50.00	32.50	5.00-5.25	87	158	151	145	102	86	LST-37-144
+15	1.20	1.20	0.78				±5% Fixed							
-15	0.50	0.50	0.32				±5% Fixed							
5	8.00	8.00	5.20	75.00	75.00	49.00	5.00-5.25	87	197	187	179	131	116	LST-38-144
+15	2.50	2.50	1.60				±5% Fixed							
-15	0.50	0.50	0.32				±5% Fixed							
5	13.00	13.00	8.45	103.00	103.00	67.00	5.00-5.25	87	227	216	207	156	142	LST-39-144
+15	3.20	3.20	2.00				±5% Fixed							
-15	1.00	1.00	0.65				±5% Fixed							
5	20.00	20.00	13.60	160.00	160.00	129.50	5.00-5.25	87	297	283	271	218	192	LST-40-144
+15	4.00	4.00	2.70				±5% Fixed							
-15	2.00	2.00	1.40				±5% Fixed							

Part I – AC-to-DC Power Supplies

LS SERIES MECHANICAL DRAWINGS

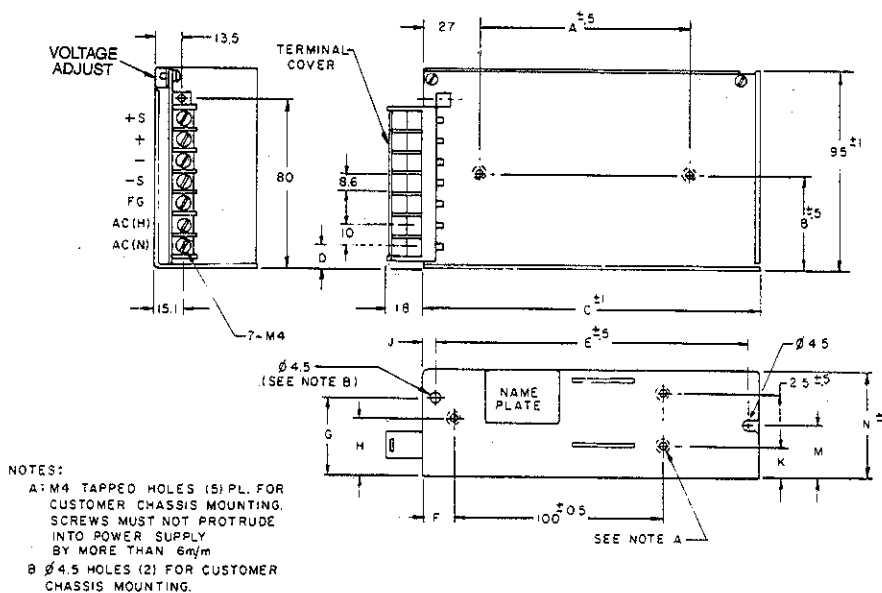
LSS-34, LSS-35
LSS-36, LSS-37



DIMENSIONS	A	B	C	D	E	F	G	H	J	K	M	N	P	R
MODEL LSS-34	10	62.5	14	11.5	50	66	70	37	14	24.5	27	26	53	12
-35	10	62.5	14	11.5	55	85	70	37	16	27	32	74	76	6
-36	13.1	62.5	17.2	11.5	70	105	70	37	17.5	30	35	90	96	6
-37	13.5	70	17.6	27	70	120	95	45	17.5	30	35	100	111	6

ALL DIMENSIONS ARE IN MM.

LSS-38
LSS-39

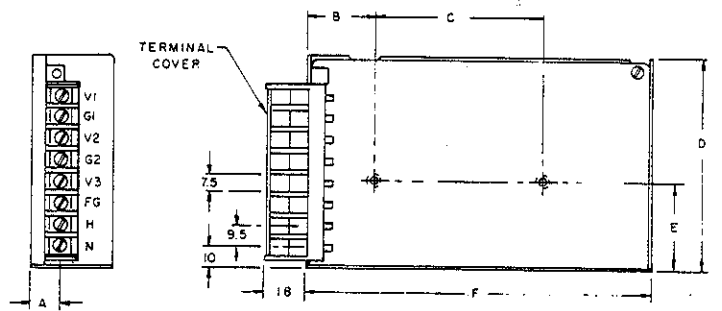


DIMENSIONS	A	B	C	D	E	F	G	H	J	K	M	N
MODEL LSS-38	100	45	160	10.5	148	15	27.5	37.5	6.5	15	25	51
MODEL LSS-39	82	41	180	11.0	156	15.5	35.5	49.5	15.5	23	30	61

ALL DIMENSIONS ARE IN MM.

LS SERIES MECHANICAL DRAWINGS

LST-37
LST-38

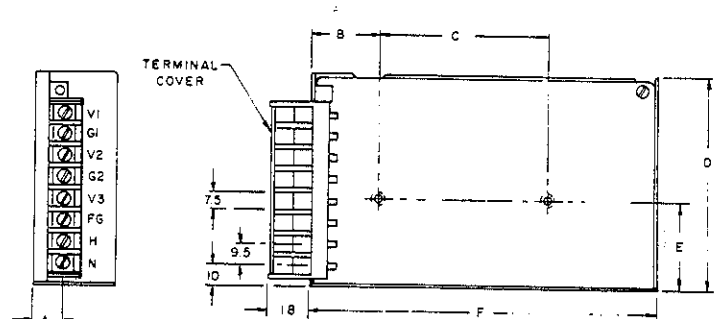


- NOTES
- A: M4 TAPPED HOLES (4) PL FOR CUSTOMER CHASSIS MOUNTING. SCREWS MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN 6m/m.
 - B: \varnothing 4.5 HOLES (2) FOR CUSTOMER CHASSIS MOUNTING

DIMENSIONS	A	B	C	D	E	F	G	H	J	K	M	N
MODEL LST-37	13.7	30	75	95	40	155	36	20	75	9	131	16
LST-38	15.7	33	125	95	45	175	41	21	100	11	152	20

All dimensions are in millimeters.

LST-39
LST-40



- NOTES
- A: M4 TAPPED HOLES (4) PL FOR CUSTOMER CHASSIS MOUNTING. SCREWS MUST NOT PROTRUDE INTO POWER SUPPLY BY MORE THAN 6m/m.
 - B: ON LST-39 (5) M4 TAPPED HOLES ARE AVAILABLE.
 - C: \varnothing 4.5 HOLES (2) FOR CUSTOMER CHASSIS MOUNTING

DIMENSIONS	A	B	C	D	E	F	G	H	J	K	M	N
LST-39	17.1	51.5	125	95	47.5	190	49	25	125	10	170	24
LST-40	15.7	51.5	125	95	47.5	260	49	25	125	10	170	24

All dimensions are in millimeters.