

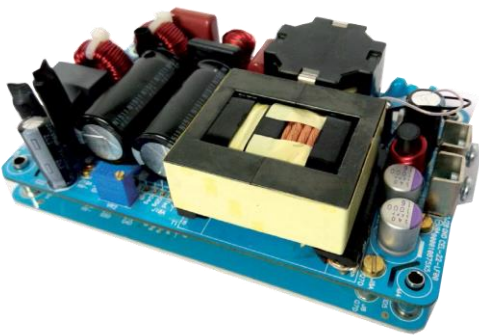
# ABC550 Series

## Open Frame Power Supplies

The ABC550 Series of open frame power supplies feature a wide universal AC input range of 90 – 264 VAC, offering up to 550 W of output power with forced air cooling, or 250 W with conduction cooling in a compact footprint, with a variety of isolated single output voltages.

The high efficiency and high power density of the ABC family ensures minimal power loss in end-use equipment, thereby facilitating higher reliability, easier thermal management and meets regulatory approvals for environmentally-friendly end products.

These power supplies are ideal for medical, telecom, datacom, industrial equipment and other applications.



### Key Features & Benefits

- 5 x 3 x 1.5 Inch Form Factor
- Up to 550 Watts with Forced Air Cooling
- Efficiencies up to 92%
- -40 to 70°C Operating Temperature
- 12 V / 0.5 A Fan Output, Thermal Shut-Down Feature
- MTBF >3 million hours as per Telcordia SR-332, Issue 3
- RoHS Compliant
- CE Marked

### Applications

- Instrumentation
- Lighting
- Industrial Applications
- Applied Computing
- Renewable Energy
- Test and Measurement
- Robotics
- Wireless Communication



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## 1. MODEL SELECTION

MODEL NUMBER	VOLTAGE	MAX. LOAD (CONVECTION)	MAX. LOAD (CONDUCTION)	MAX. LOAD <sup>2</sup> (400 LFM)	MIN. LOAD	RIPPLE & NOISE <sup>2</sup>
ABC550-1T12	12 V	9.17 A	16.67 A	41.67 A	0.0 A	2%
ABC550-1T15	15 V	7.33 A	13.33 A	33.33 A	0.0 A	2%
ABC550-1T24	24 V	6.25 A	10.42 A	22.92 A	0.0 A	1%
ABC550-1T30	30 V	5.00 A	8.33 A	18.33 A	0.0 A	1%
ABC550-1T48	48 V	3.13 A	5.21 A	11.46 A	0.0 A	1%
ABC550-1T58	58 V	2.59 A	4.31 A	9.48 A	0.0 A	1%

## 2. INPUT SPECIFICATIONS

Specifications are for nominal input voltage, 25°C unless otherwise stated.

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Input Voltage	Universal (Derate from 100% at 115 VAC to 78% at 90 VAC)	90-264 VAC / 390 VDC
Input Frequency		47-63 Hz
Input Current	115 VAC: 230 VAC:	6 A max. 3 A max.
No Load Power	115 VAC: 230 VAC:	< 0.5 W < 0.7 W
Inrush Current	115 VAC: 230 VAC: 264 VAC:	25 A 45 A 75 A
Leakage Current	115 VAC: 230 VAC:	< 200 µA < 400 µA
Power Factor	@ Full Load	> 0.95
Switching Frequency	PFC Resonant	70 to 130 kHz 68 to 80 kHz

## 3. OUTPUT SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Output Power <sup>3</sup>	Forced air cooled: Conduction cooled: Convection cooled:	up to 550 W up to 250 W up to 150 W
Efficiency (typical @ 230 VAC full load)	48 V: 24 V: 12 V, 15 V:	92% 91% 90%
Hold-up Time (typical)	Full Load Convection Load Conduction Load	> 16 ms > 55 ms > 30 ms
Line Regulation		+/-0.5%
Load Regulation		+/-1%
Transient Response	50-100% step load change, at 0.1A/µs slew rate, 50% duty cycle, 50 Hz = 5%	recovery time < 5 ms

<sup>1</sup> Refer Recommended Conduction Plate & Clearance on Page 8.

<sup>2</sup> Ripple is peak to peak with 20 MHz bandwidth and 10 µF (Tantalum capacitor) in parallel with a 0.1 µF capacitor at rated line voltage and load ranges. Output ripple can be more than 10% of the output voltage.

<sup>3</sup> Combined output power of main output, fan supply shall not exceed max. Power rating.

Voltage Adjustment		+/-3%
Rise Time	Typical	55 ms
Set Point Tolerance <sup>4</sup>		+/-1%
Over Current Protection	Hiccup mode / Auto recovery	> 110%
Over Voltage Protection	Hiccup mode / Auto recovery	110 to 140%
Short Circuit Protection	Hiccup mode / Auto recovery	

## 4. ENVIRONMENTAL SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Operating Temperature <sup>5</sup>	Startup guaranteed with spec. deviation	-40 to +70°C -40 to 0°C
Storage Temperature		-40 to +85°C
Relative Humidity	Non-condensing	5% to 95%
Altitude	Operating: Non-operating:	16,000 ft. 40,000 ft.

## 5. EMC SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Conducted Emissions	EN55032-B, CISPR22-B, FCC PART15-B	Pass
Radiated Emissions	EN 55032 A; with external core (King core K5B RC 25x12x15-M in input cable)	Pass Level B
Input Current Harmonics	EN 61000-3-2	Class D
Voltage Fluctuation and Flicker	EN 61000-3-3	Pass
ESD Immunity	EN 61000-4-2	Level 3, Criterion A
Radiated Field Immunity	EN 61000-4-3	Level 3, Criterion A
Electrical Fast Transient Immunity	EN 61000-4-4	Level 3, Criterion A
Surge Immunity	EN 61000-4-5	Level 3, Criterion A
Conducted Immunity	EN 61000-4-6	Level 3, Criterion A
Magnetic Field Immunity	EN 61000-4-8	Level 3, Criterion A
Voltage Dips, Interruptions	EN 61000-4-11	Criterion A & B

## 6. SAFETY SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Isolation Voltage	Input to Output: (for ITE applications) Input to GND:	3000 VAC 1500 VAC
Safety Standard(s)	Approved to the latest edition of the following standards: CSA/UL60950-1, EN60950-1 and IEC60950-1.	
Agency Approvals	Nemko, UL, C-UL	
CE mark	Complies with LVD Directive	

<sup>4</sup> Fan supply output voltage tolerance incl. set point accuracy, line and load regulation is +/-10% and Ripple and noise is less than 10%.  
<sup>5</sup> Thermal shutdown feature: The power supply goes in hiccup mode when the temperature of Substrate PCB exceeds 110 °C (+/-10 °C).



### 7. CONNECTOR & PIN DESCRIPTION

CONNECTOR	PIN	DESCRIPTION / CONDITION	MANUFACTURER / PN
AC Input Connector	J1	Pin 1 AC Line Pin 2 Not Fitted Pin 3 AC Neutral	JST : B3P-VH-B(LF)(SN) or equivalent Mating: VHR-3M or equivalent Pins : SVH-41T-P1.1 or equivalent
DC Output Connector (Screw Terminal)	J2	Pin 1 V1 +VE Pin 2 V1 -VE	6-32 inches Screw Pan HD Mating: Designed to accept Ring Tongue Terminal AMP: 8-31886-1, wherein one 16 AWG (max) wire can be crimped. Note: One Ring Tongue Terminal with 16 AWG is recommended for current up to 11 A only. Use multiple tongue terminals with wire for more current.
Aux (Fan) Output	J3	Pin 1 FAN +VE Pin 2 FAN -VE	AMP: 640456-2 Mating: 640440-2
Earth	J4		Molex: 19705-4301 Mating: 19003-0001

### 8. MECHANICAL SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION
Weight	approx. 500 g
Dimensions	127 x 76.2 x 38.1 mm (5 x 3 x 1.5 inches)

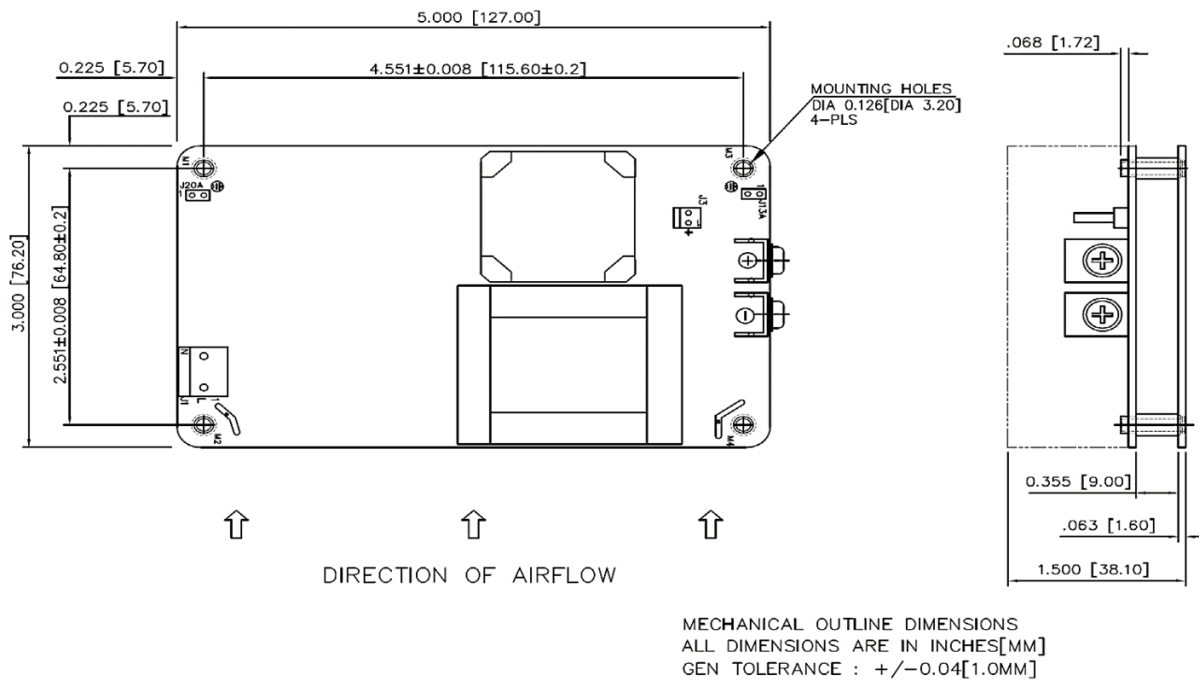
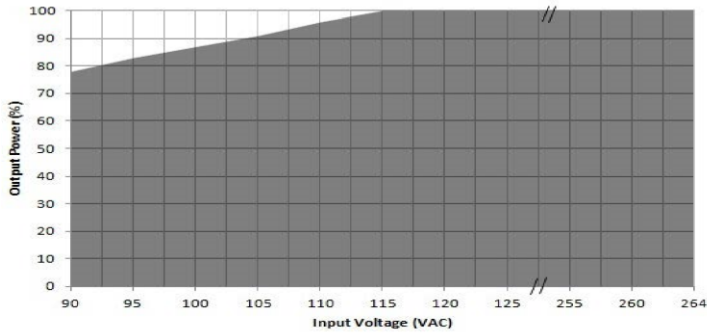


Figure 1. Mechanical Drawing

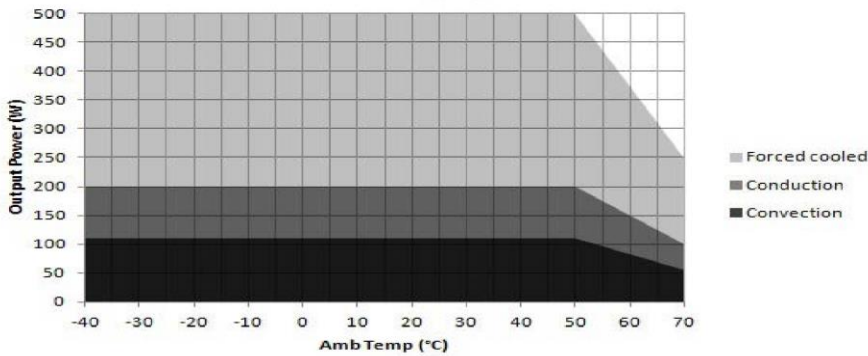
## DERATING CURVES

**Power De-rating : w.r.t. Input**  
For all mounting options a to f



De-rate linearly from 100% at 115 VAC to 78% at 90 VAC

**Power De-rating : 12V, 15V**  
For all mounting options a to f

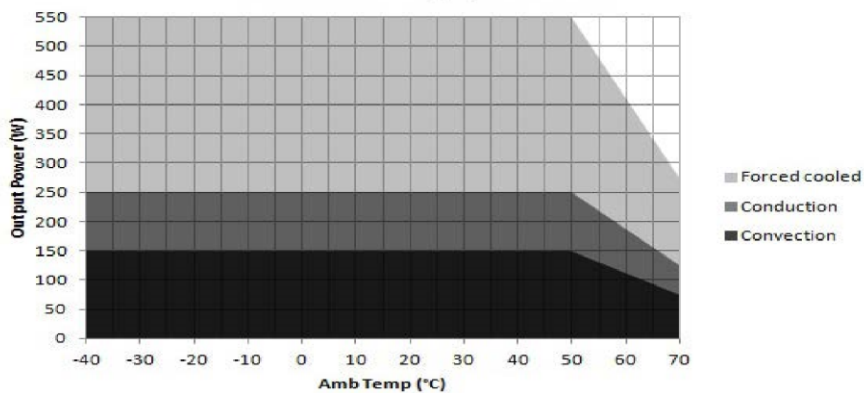


Convection load: 110 W up to 50 °C  
De-rate above 50 °C @ 2.5% per °C

Conduction load: 200 W up to 50 °C  
De-rate above 50 °C @ 2.5% per °C

Forced air cooled load:  
500 W up to 50°C  
De-rate above 50 °C @ 2.5% per °C

**Power De-rating : 24V, 30V, 48V, 58V**  
For all mounting options a to f



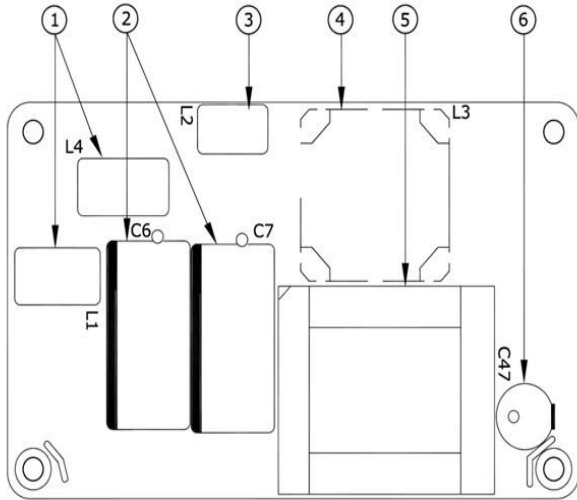
Convection load: 150 W up to 50 °C  
De-rate above 50 °C @ 2.5% per °C

Conduction load: 250 W up to 50 °C  
De-rate above 50 °C @ 2.5% per °C

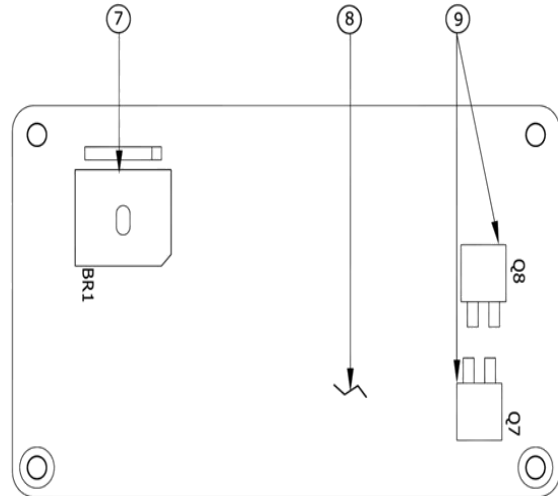
Forced air cooled load:  
550 W up to 50°C  
De-rate above 50 °C @ 2.5% per °C

## MAXIMUM OPERATING TEMPERATURE

For reliable and safe operation, please make sure the maximum component temperatures given in table below is not exceeded.



TOP PCB



BOTTOM PCB

INDENT NO	DESCRIPTION	MAXIMUM TEMP. ALLOWED (°C)
1	Common mode chokes	95
2	Input Bulk Capacitors	90
3	Differential choke	110
4	Boost Choke	110
5	Output Transformer	125 (for 12 V & 15 V) 110 (for 24 V,30 V,48 V,58 V)
6	Output Capacitor	90
7	Bridge Rectifier	120
8	Aluminum Clad PCB	105
9	Output Rectifiers	110

## MOUNTING OPTIONS

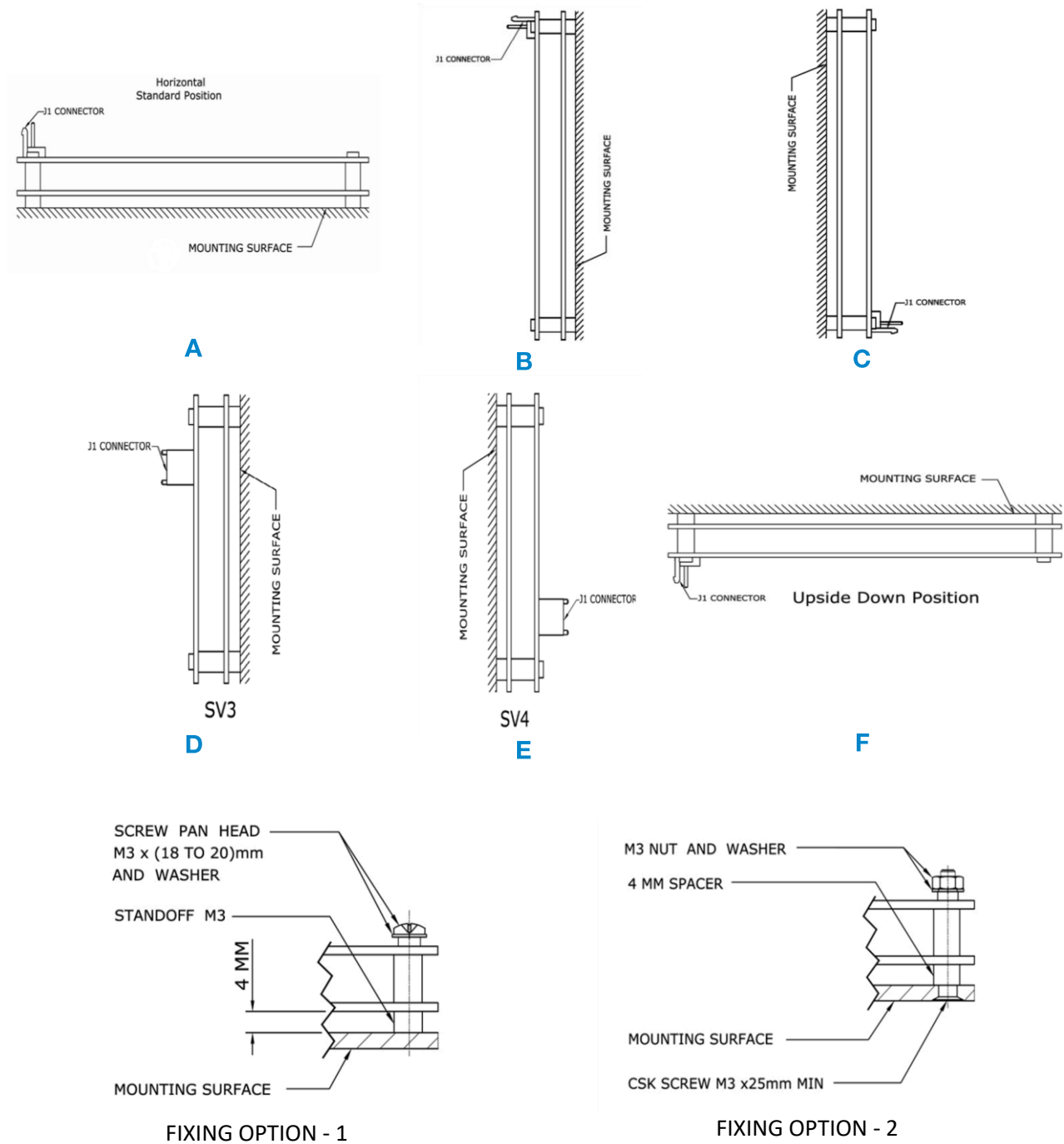
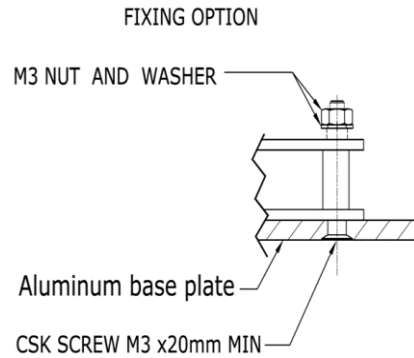
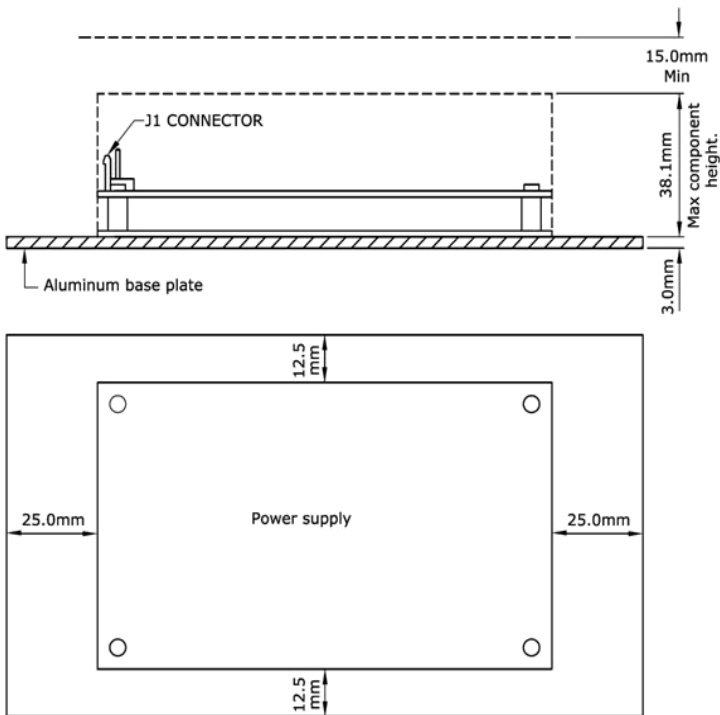


Figure 2. Mounting Options

## RECOMMENDED CONDUCTION PLATE & CLEARANCE

Conduction power rating mentioned in the table is with additional aluminum base plate of 3 mm thickness with 177.8 mm (7in) length & 101.6 mm (4in) width.

Clearance of minimum 15 mm above the component height is recommended for better thermal management.



**For more information on these products consult: [tech.support@psbel.com](mailto:tech.support@psbel.com)**

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