CHOICE OF THE HEATSINK

The user must choose according to the working conditions of the component (power, room temperature).
Maximum working temperature must not exceed 125 °C. The dissipated power is simply calculated by the following ratio:

$$P = \frac{\Delta T}{R_{TH\ (j-c)} + R_{TH\ (c-h)} + R_{TH\ (h-a)}} \quad (1)$$

P: Expressed in W

ΔT: Difference between maximum working temperature and room temperature or fluid cooling temperature.

$R_{th\ (j-c)}$: Thermal resistance value measured between resistive layer and outer side of the resistor. It is the thermal resistance of the component.

$R_{th\ (c-h)}$: Thermal resistance value measured between outer side of the resistor and upper side of the heatsink. This is the thermal resistance of the interface (grease, thermal pad), and the quality of the fastening device.

$R_{th\ (h-a)}$: Thermal resistance of the heatsink.

HV+ TSMP:	**mounted on the bottom plate of the accumulator**	
Rth (j-c)	Area: ~ 54.7 in^2	the entire plate is 364.6 in^2, but much of that area is also in contact with the batteries, so we took ~15% of the area, which is not shared by the batteries
	Thickness: .125 in	
	Thermal conductivity: 237 W/m·k	Aluminum
	Rth: 0.0003796 C/W	
Rth (c-h)	using thermal paste as the interface	
	Area: 1.15 in^2	size of resistor
	Thickness: .0039 in (.1mm)	
	Thermal conductivity: 5 W/m·K	
	Rth: 0.027 C/W	
Rth (h-a)	.8 C/W	
ΔT	35 C	keeping below 60 C
Power rating:	42.3 W	

CHOICE OF THE HEATSINK

The user must choose according to the working conditions of the component (power, room temperature).
Maximum working temperature must not exceed 125 °C. The dissipated power is simply calculated by the following ratio:

$$P = \frac{\Delta T}{R_{TH\ (j-c)} + R_{TH\ (c-h)} + R_{TH\ (h-a)}} \quad (1)$$

P: Expressed in W

ΔT: Difference between maximum working temperature and room temperature or fluid cooling temperature.

$R_{th\ (j-c)}$: Thermal resistance value measured between resistive layer and outer side of the resistor. It is the thermal resistance of the component.

$R_{th\ (c-h)}$: Thermal resistance value measured between outer side of the resistor and upper side of the heatsink. This is the thermal resistance of the interface (grease, thermal pad), and the quality of the fastening device.

$R_{th\ (h-a)}$: Thermal resistance of the heatsink.

HV- TSMP:	**mounted on checkbox**	
Rth (j-c)	Area: ~ 3.814 in^2	the plate of the checkbox it's mounted on is irregular in shape, this calculation just takes a rectangular area that is much smaller than the actual size
	Thickness: .063 in	
	Thermal conductivity: 237 W/m·K	Aluminum
	Rth: 0.002744 C/W	
Rth (c-h)	using thermal paste as the interface	
	Area: 1.15 in^2	size of resistor
	Thickness: .0039 in (.1mm)	
	Thermal conductivity: 5 W/m·K	
	Rth: 0.027 C/W	
Rth (h-a)	.8 C/W	
ΔT	35 C	keeping below 60 C
Power rating:	42.1 W	