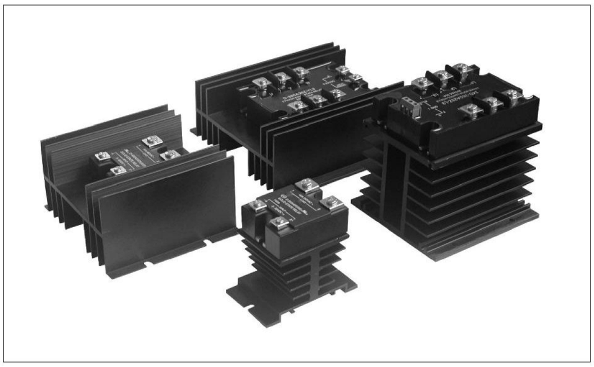
HF92B Series HEAT SINK



Introduction:

Medium and high current SSR's dissipate heat during switching. When using an SSR this problem of heat dissipation must be managed. It is very important to select the correct heatsink to allow maximum performance from the SSR. The use of the correct heatsink has a direct influence on the maximum load current that can be switched and the maximum ambient temperature of the SSR. To assist with heat dissipation a thermal pad should be used between the relay and heatsink, or alternatively thermal conductive grease can be used. For very high performance applications, air cooling may also be necessary. Failure to manage the generation of heat by the SSR during switching may damage the SSR and lead to product failure.

We can use a simple thermal model to calculate the heat dissipation as follows:

TJ-TA=P X RJA

In the above formula TJ stands for the junction temperature of the power parts of semiconductor(˚C), TA stands for the ambient temperature (˚C), P stands for general power consumption (W) and RJA stands for thermal resistance (˚C/W) from junction to ambient. The thermal resistance of simplified SSR relays is made up of two parts as follow: RJA=RJC+RCA. In the formula, RJC stands for thermal resistance from junction to case and RCA stands for the thermal resistance from case to ambient.

For example, when we calculate the heat dissipation of KS15/D-24Z25, RJC of this relay is about 1.2˚C/W, RCA is about 8.5˚C/W. The max. allowable junction temperature is 12˚C and the power consumption is P=U x I. When the current is 10A or below 10A, the TRIAC voltage drop is about 1.1V. The formula of product without heat sink is show as follow, 125- TA=1.1 X I X (1.2+8.5).

According to the above formula, the max. current is 9.3A at 25˚C ambient temperature and 6A at 60˚C ambient temperature when the product dose not add a heat sink.

If we add HF92B-120 heat sink to this relay and the reference thermal resistance is about 1.1˚C/W. Neglecting the thermal resistance from SSR metal base to heat sink, and the voltage drop is about 1.25V on full load current. The formula will be 125- TA=1.5 X I X (1.2+1.1). Max. ambient temperature will be 40˚C when the operating current is 25A and the max. current will be 18A when the ambient temperature is 60˚C. Due to the different heat sink types, the corresponding thermal resistance changes. So there are different current values under corresponding ambient temperature.

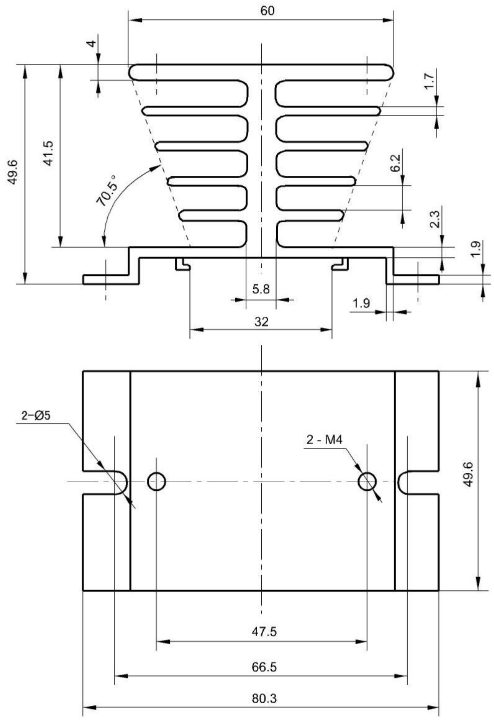
Part Number	Dimension(mm)	Thermal Resistance	Matching SSR
HF92B-80	50×50×80	2.4˚C/W	**KS15:** 10A,15A type **KS33:** 30D50, 200D10 type
HF92B-120	64×110×118	1.1˚C/W	**KS15:** 20A,25A type **KS33:** 400D10, 150D50, 100D20, 50D40, 30D100 type
HF92B-150A	55×142×150	0.6˚C/W	**KS15:** 40A type **KS21, KS24:** 10A,15A, 25A type **KS34:** 40A, 50A type **KS33:** 50D80, 100D40, 200D40 type
HF92B-150C (Require an additional cooling fan)	80×100×110		**KS34:** 60A and above types **KS24, KS21,KS28:** 40A and above types

OUTLINE DIMENSIONS

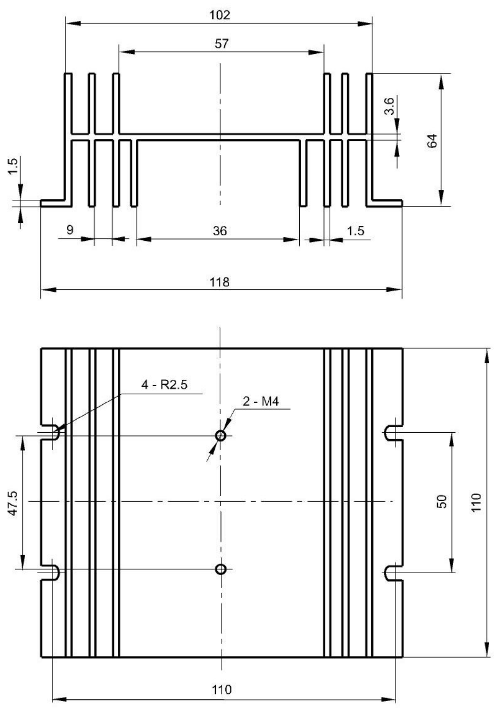
Unit:mm

Outline Dimensions

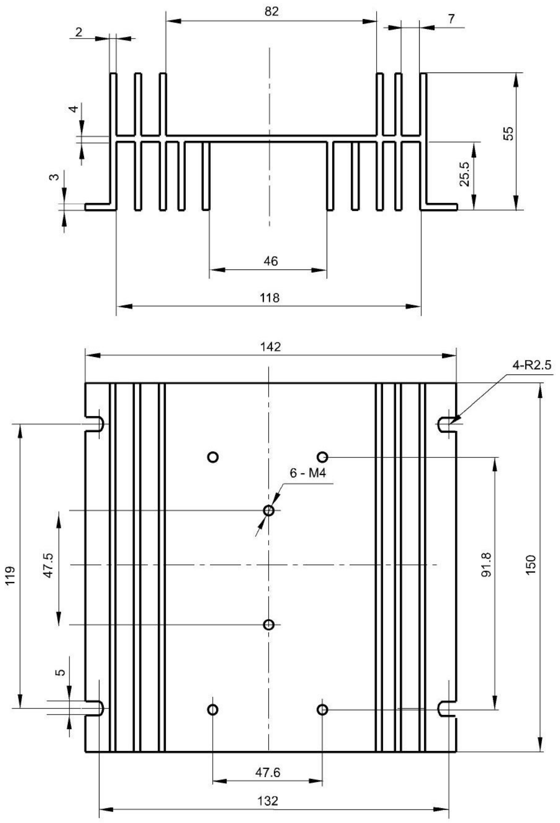
HF92B-80



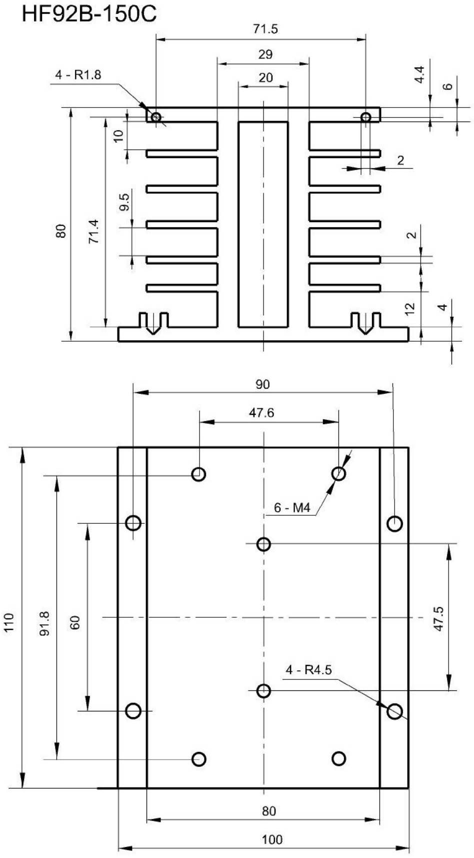
HF92B-120



HF92B-150A



HF92B-150C



Remark: The above dimensions are typical values.