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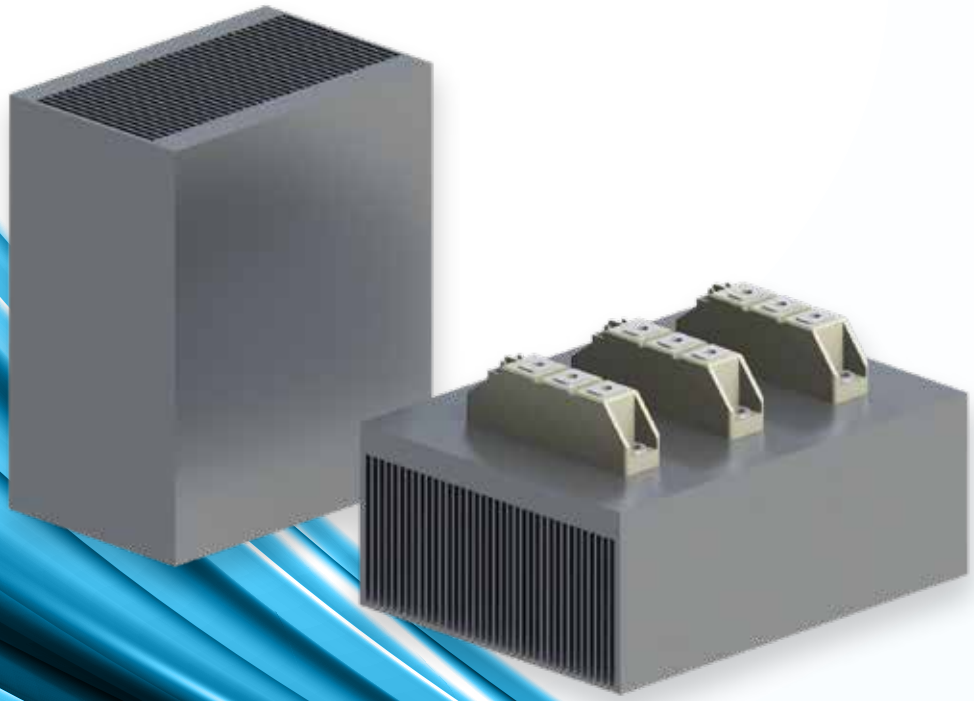
TECNDAL
MECHANICAL ENGINEERING FOR ELECTRONICS

NEW 1050 ALLOY HEAT SINKS



TECNOAL MECHANICAL ENGINEERING FOR ELECTRONICS

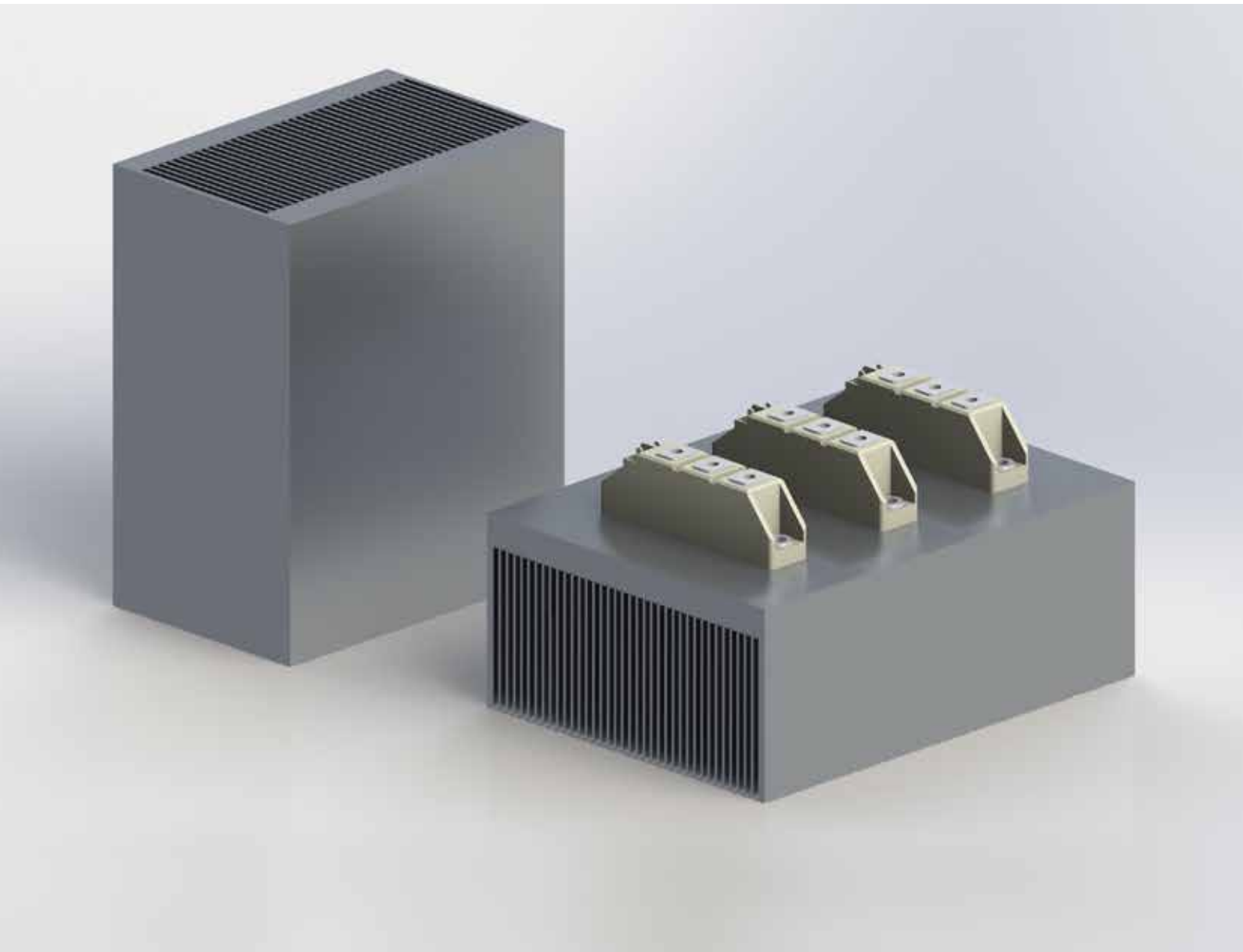
NEW 1050 ALLOY HEAT SINKS

To meet the needs of designers and overcome the performance limits of extrusion heat sinks without necessarily having to use expensive alternative solutions. Tecnoal S.r.l. has engineered two new types of high-performance heat sinks with forced ventilation.

These are heat sinks made of 1050 aluminum alloy, which are characterised by better thermal conductivity with respect to normal extrusion alloys.

The first one, called EV-B (Bundled fins), allows to obtain profiles with 3 or 4 surfaces on which to apply the components to be dissipated.

The second one, EV-I (Implanted fins), allows to obtain comb heat sinks with a single surface where the components must be applied, with the possibility of using different materials on the same heat sink (Aluminum and Copper).



EV-B SERIES

EV-B (Bundled fins)

Following laboratory tests, some parameters have been standardised:
Fin pitch.
This is the most important and concerns the solid-void ratio of the profile. The results of the technical and laboratory tests, in case of forced ventilation, show the following solid/void ratios as optimal according to the length of the heat sink.

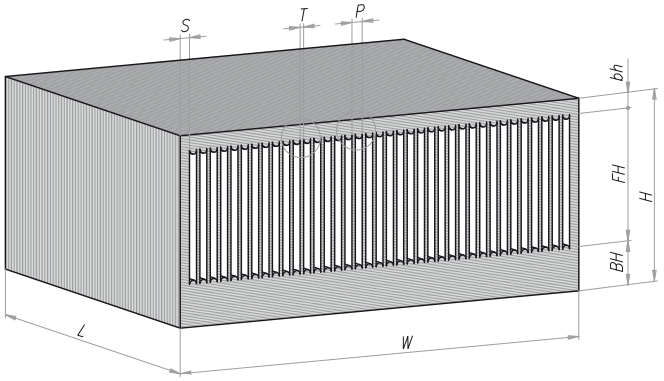
Type of tunnel	Heat sink length	Solid-void ratio
Extra short tunnels	Less than 50mm	1:1
Short tunnels	From 50mm to 100mm	2:1
Medium tunnels	From 100mm to 300mm	2:1
Long tunnels	From 300mm to 500mm	2:1
Extra long tunnels	Greater than 500mm	2,5:1 or 3:1

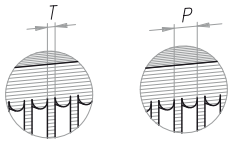
Fin thickness
It is optimised on values from 1.3mm to 1.5mm and will substantially depend on the height of the fin and the features of the fan.

Thermal load concentration
Depending on this aspect, it will be necessary to adjust the thickness of the main surface.
The standards considered by us assume an average surface load ratio of approximately ½ .

The available dimensions are 1200 mm for length and 1000 mm for width.
The EV-B series can be manufactured in 2 variants, with 4 usable surfaces for dissipation (closed profile) or with 3 usable surfaces (open profile):

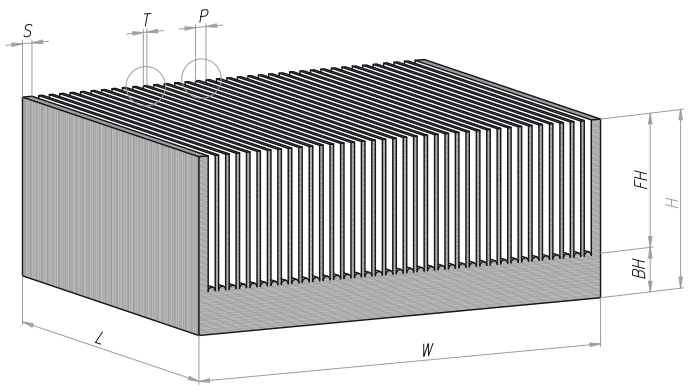
EV-B SERIES (closed profile)

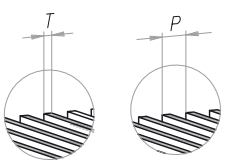




DIMENSIONS							
Width (W)	Length (L)	Thick base thickness (BH)	Thin base thicknes (bh)	Standard profile height (H)	Fin thickness (T)	Fin pitch (P)	Closing device thickness (S)
From 50 to 500	From 50 to 500	7 - 10 - 12 - 15 - 18	7 - 10 - 12 - 15 - 18	40 - 50 - 60 - 80 - 92 120 - 135	1,0 - 1,2 - 1,3 - 1,5 - 2,0	(T)x3	From 3 to 6
The table dimensions are the standard ones, managed normally, different ones can be made on request.							

EV-B SERIES (open profile)





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SERIE EV-I

EV-I (implanted fins)

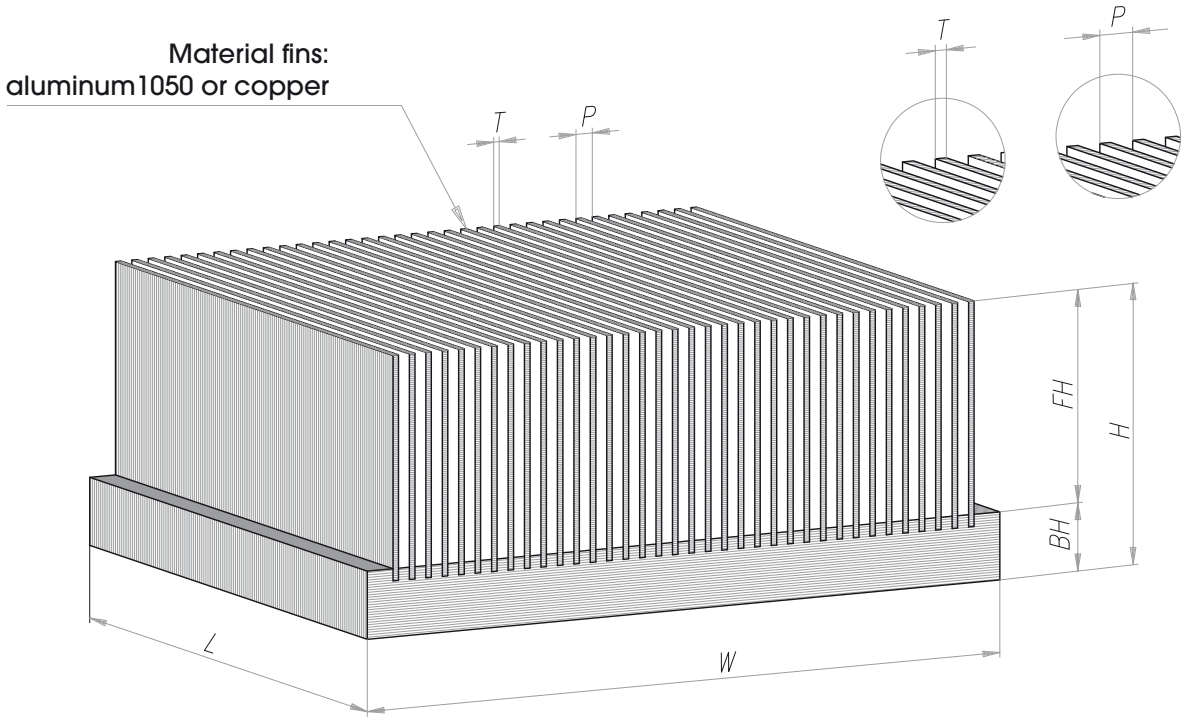
With this technology, the fin pitch can be varied a great deal, obtaining values that are not achievable with extrusion.
Accurate laboratory tests have shown some particularly efficient Base-Fin coupling ratios.

Fin pitch
The 5 mm pitch for all piece lengths,
For very long pieces, the 5.5 mm pitch may be recommended, while for short ones the efficiency can be optimised with the 4.5 mm pitch

Fin thickness
The value of 1.5 mm is deemed more beneficial and advisable for a range of heights ranging from about 50 mm up to 150 mm

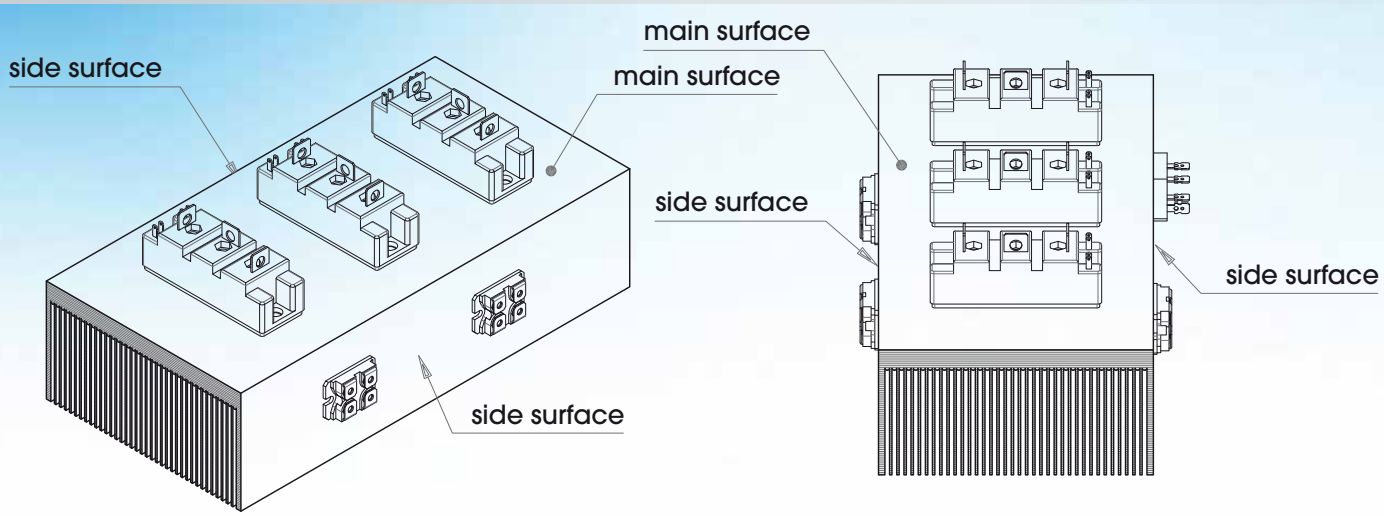
Thermal load concentration
As for the thickness of the base, a range of measurements that covers almost all conditions of thermal load concentration with good efficiency ranges from 14 mm to 17 mm, reaching 20 mm for very concentrated loads. For special uses, it can be applied to the aluminum base of the copper fins or vice-versa. This trick allows to increase the efficiency of the device.

The maximum dimensions that can be supplied are approximately 1000 mm in length and 1500 mm in width.
Obviously, these dimensions are to be understood as maximum overall dimensions and should not be considered as applicable both to the same article.

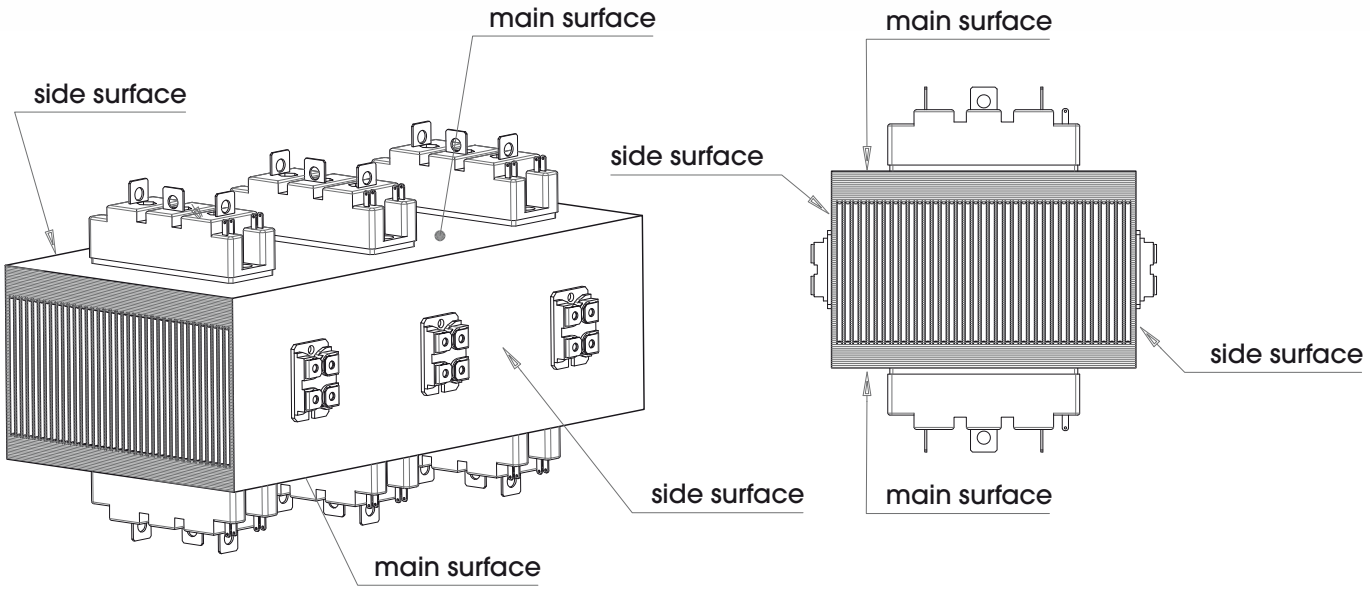


DIMENSIONS					
Width (W)	Length (L)	Thick base thickness (BH)	Standard profile height (H)	Fin thickness (T)	Fin pitch (P)
From 50 to 500	From 50 to 500	7 - 10 - 12 - 15 - 18	40 - 50 - 60 - 80 - 92 120 - 135	1,0 - 1,2 - 1,3 - 1,5 - 2,0	(T)x3
The table dimensions are the standard ones, managed normally. different ones can be made on request.					

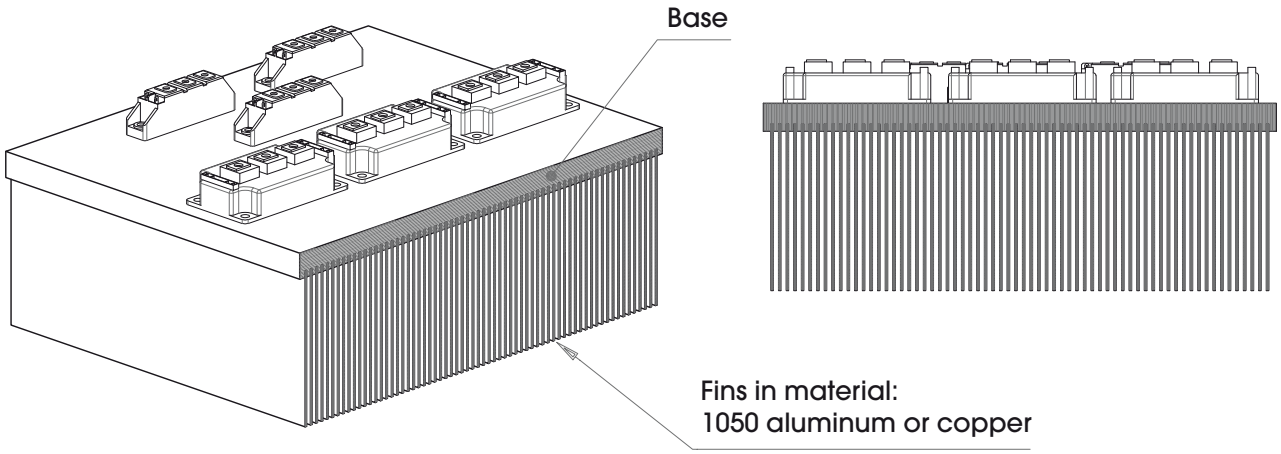
Example EV-B SERIES heat sink (open profile) with components to be dissipated assembled on 3 sides



Example EV-B SERIES heat sink (open profile) with components to be dissipated assembled on 4 sides



Example EV-I SERIES heat sink



The fins and the base can be in 1050 aluminum or copper
it is also possible to have a combination of the 2.

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