INTRODUCTION 2

The function of a heatsink is to increase the surface area available for the transfer of heat from a component or device thereby increasing the amount of heat that can be dissipated.

The following products/services are available:

1. **A range of Standard heatsinks and accessories** which permit optimum flexibility in the design of Electrical and Electronic equipment requiring heatsink applications.
2. **Custom designed heatsinks.** We have facilities available which enable us to provide design and manufacturing of custom and specialised heatsinks to your requirements.

HEATSINK SELECTION

The main factors to consider when selecting a heatsink are:-

1. Geometry
2. Thermal Resistance
3. Cost

Defining the necessary heatsink performance.
In order to calculate the maximum acceptable thermal resistance for the heatsink so that the device being cooled does not overheat it is first necessary to define the thermal parameters under which it is to operate.

The basic equation for thermal equilibrium is:-

$$\text{Power dissipated} = \frac{\text{Temperature difference across the system}}{\text{Sum of all the thermal resistance in the heat flow path.}}$$

Thermal Performance of any heatsink is influenced by many factors and for this reason all performance figures quoted should be treated as indicative only. It is recommended that the effectiveness of any heatsink is tested in the specific operating environment in which it will be subjected.

EQUATION 1

Thus $$PD = \frac{Tj - Ta}{Øjc + Øcs + Øsa}$$

Where
- PD = Power dissipation (W)
- Tj = Max allowable junction temp (^{o}C) (specified by device manufacturer)
- Ta = Ambient temperature (^{o}C)
- Øjc = Thermal resistance junction to case (^{o}C/W) (specified by device manufacturer)
- Øcs = Thermal resistance, case to heatsink (^{o}C/W)
- Øsa = Thermal resistance, heatsinks to ambient air (^{o}C/W)

The maximum value for thermal resistance heatsink to air (sa) is usually determined by rearranging equation 1 to the following:

EQUATION 2

$$Øsa = \frac{Tj - Ta}{PD} - (Øjc + Øcs)$$

The result of the above equation provides a thermal resistance value which must be equalled or bettered by the heatsink selected.

EXAMPLE

A semi-conductor device is to be operated with its junction temperature not exceeding 80^{o}C whilst dissipating 16 watts to ambient air at a temperature of40^{o}C. The thermal resistance, junction to case, is specified by the manufacturer as 1.25^{o}C/W and the thermal resistance, case to sink (using an insulating washer and thermally conductive compound) is taken as 0.50^{o}C/W.

$$Øsa = \frac{80 - 40 - (1.25 + 0.50)}{16}$$

$$= 0.75^{o}C/W$$

The heatsink therefore must have a thermal resistance which does not exceed 0.75^{o}C/W.

GENERAL INFORMATION

MATERIAL

Aluminium Alloy to BS1474 6063, T6.

DIMENSIONS

Profile Tolerances: All profile dimensions are toleranced within BS1474 and this should be taken into consideration when designing our profiles into your equipment. Further details of specific tolerances can be supplied if required.

Length Tolerances: +/- 0.4mm
Tighter Tolerances can be offered if required.

SURFACE FINISH

- Plain
- Matt black anodised
- Alocromed
- Powder Coated
- Wet spray painted
- Clear anodised
- Coloured anodised

HOLE PATTERNS

- Standard hole patterns for popular devices TO3/TO66/TO220 etc.
- Non standard hole patterns to customers own requirements.

PERFORMANCE

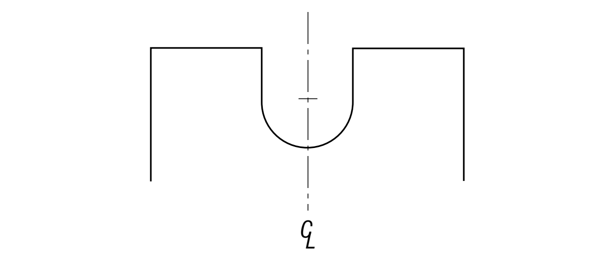
Performance figures given are for natural convection operating conditions and are for a 60°C temperature rise with a centrally mounted heat source and vertically mounted fins. Under general operating conditions the thermal mounting arrangement of devices is not known and therefore the figures should be used only as a guide to heatsink selection.
It is recommended that the effectiveness of any heatsink is confirmed in the specific operating environment in which it will be subjected

SAFETY

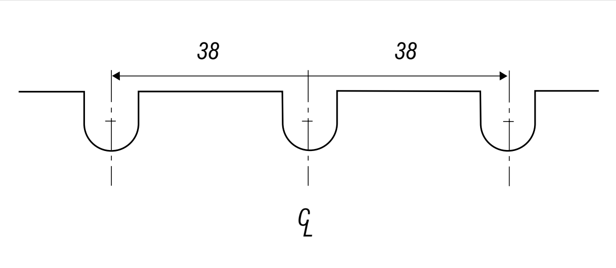
In some circumstances exposed heatsink surfaces may become very hot. Contact with these surfaces may cause burns damage to skin.

INSTALLATION NOTCHES

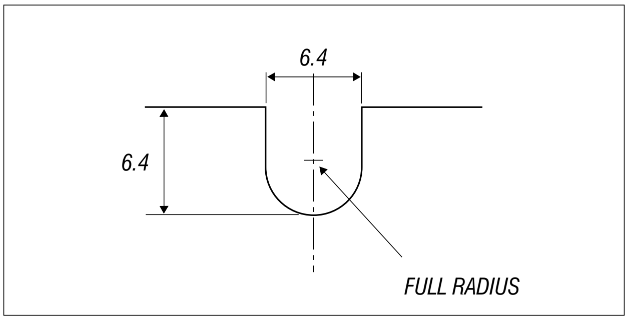
For heatsink lengths up to 87.5mm one single notch in each flange centrally along its length.



For heatsink lengths from 88mm to 150mm three notches in each flange 38mm apart.



STANDARD NOTCH DIMENSIONS



STUDS AND SOLDERABLE PINS

Some heatsinks have standard solderable pins for flow soldering to circuit boards. Non standard pins and studs can also be fitted.

CLIPS

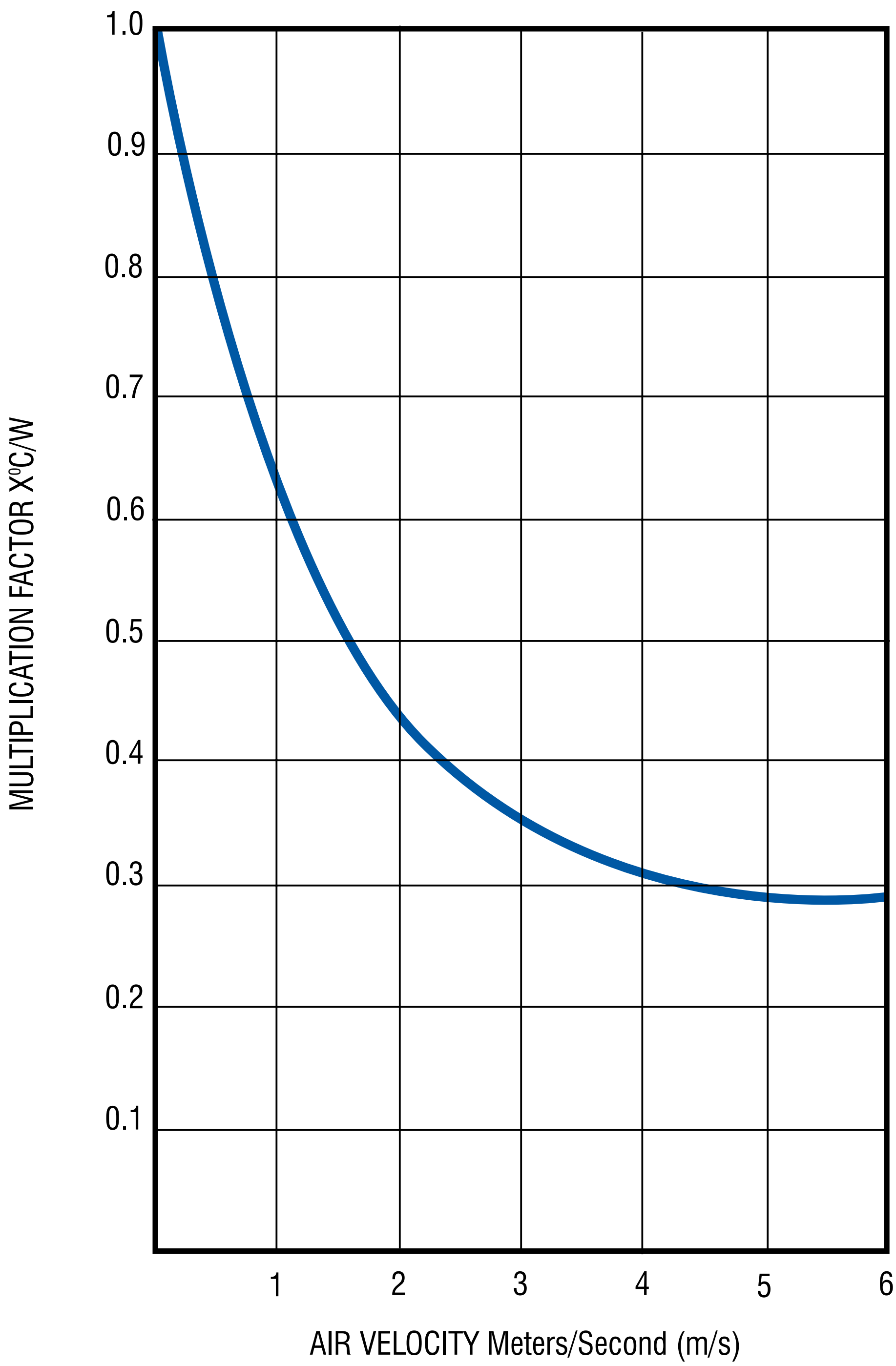
A full range of standard clips are available from stock.

FORCED AIR COOLING

This graph may be used as a guide to determine the Thermal resistance of any extruded section with forced convection.

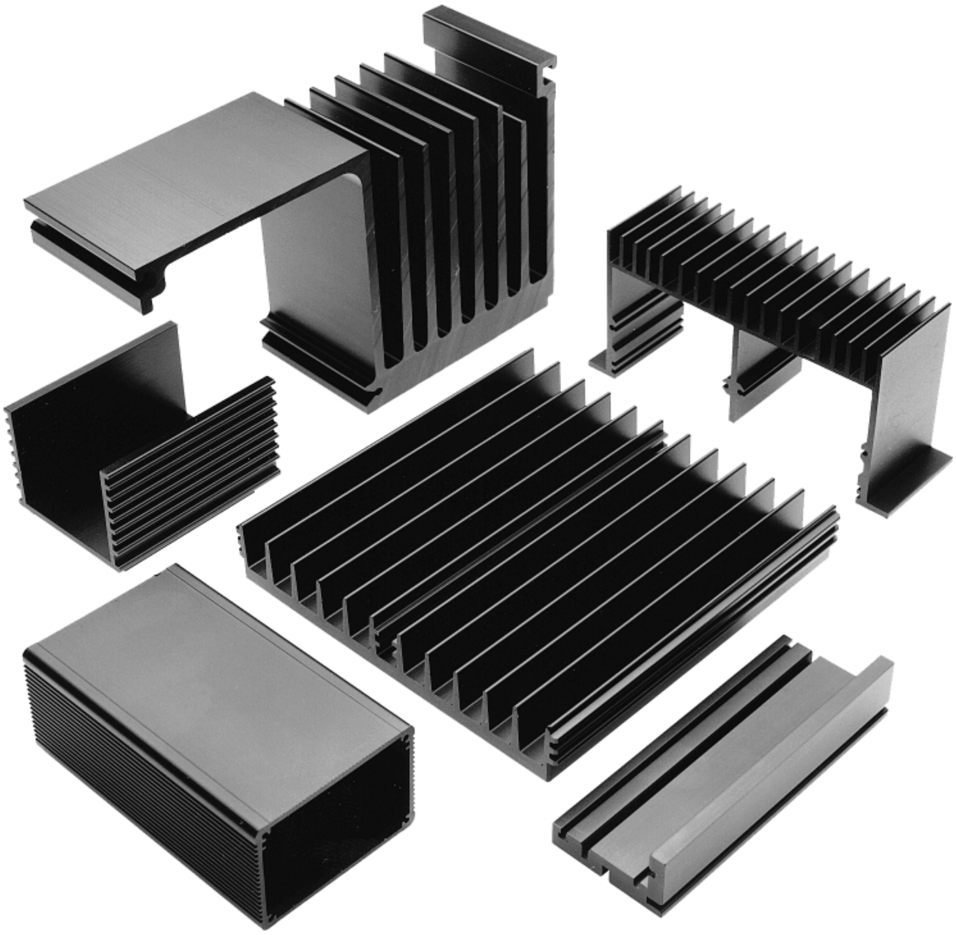
EXAMPLE

The thermal resistance of a heatsink is 0.35ºC/W assume the heatsink is placed in a air velocity of 4m/s. Then 0.35ºC/W x 0.3 becomes 0.105ºC/W approx.



CUSTOM DESIGN

For those customers that require their own specific heatsink we can offer facilities for design, technical drawing and prototype manufacture.



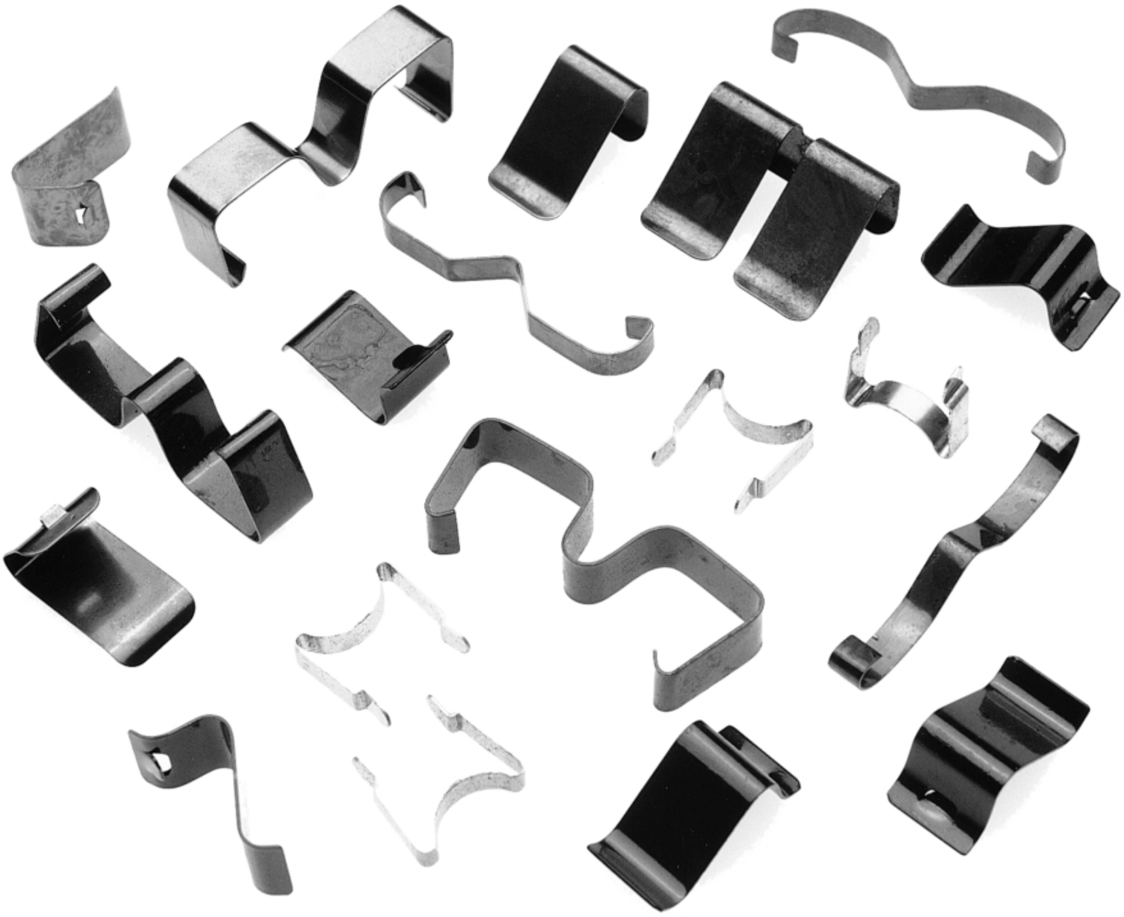
PRODUCT RANGE

In addition to our extensive range of heatsinks we manufacture components that are complimentary to the Electronics and Telecommunications Industries. Typical items of this nature include:- MODEM CASES, FRONT & REAR PANELS, ELECTRONIC ENCLOSURES, CHASSIS ETC.

MANUFACTURING AND FINISHING FACILITIES

- FREE ISSUE OR TOTAL SUPPLY CAPACITY.
- AUTOMATIC AND MANUAL SAW CUTTING.
- CNC MACHINING, DRILLING AND TAPPING.
- PRESSWORK, FORMING AND BENDING.
- BRUSH AND VIBRO DEBURRING.
- SULPHURIC AND CHROMIC ANODISING.
- POWDER AND WET SPRAY PAINTING.
- WET SPRAY PAINTING ON PLASTICS.
- ALOCROM 1000 AND 1200 FINISHES.
- ASSEMBLY WORK
- SPECIAL PACKING
- TOOL AND JIG MAKING.

SPRING CLIPS



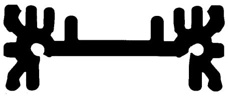
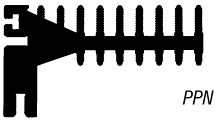
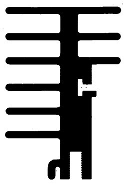
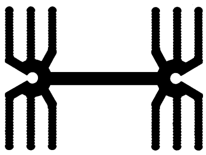
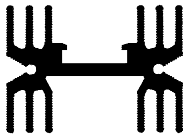
PRODUCT RANGE

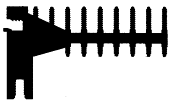
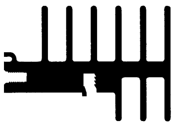
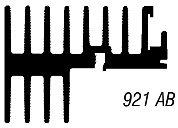
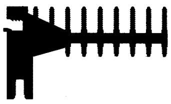
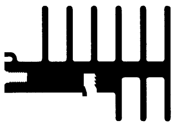
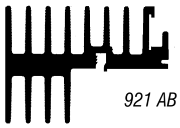
Using our spring clips to fix plastic packages eg. TO220 and TO3P type devices offers several advantages over conventional methods:-

- OPTIMISES THERMAL TRANSFER.
- SAVES TIME.
- SAVES COST.
- REDUCES INVENTORY.
- ENABLES SINGLE SUPPLY SOURCE FOR HEATSINKS AND CLIPS.

SEE BOARD MOUNTING SERIES FOR MORE DETAILS.

SPRING CLIPS 7

CLIP REF	CLIP 01	CLIP 02	CLIP 03
			
HEATSINKS	 PP	 PPN  PPT	 PPB  PPD

CLIP REF	CLIP 04	CLIP 05	CLIP 06
			 *DOUBLE CLIP (2 X CLIP 05)*
HEATSINKS	*FOR USE WITH PRESSED ALUMINIUM LOUVRE SINKS*	 PPM  PPR  921 AB	 PPM  PPR  921 AB

Performance figures are shown as an indication of a heatsinks actual performance. It is recommended that the effectiveness of any heatsink is tested in the specific operating environment in which it will be subjected