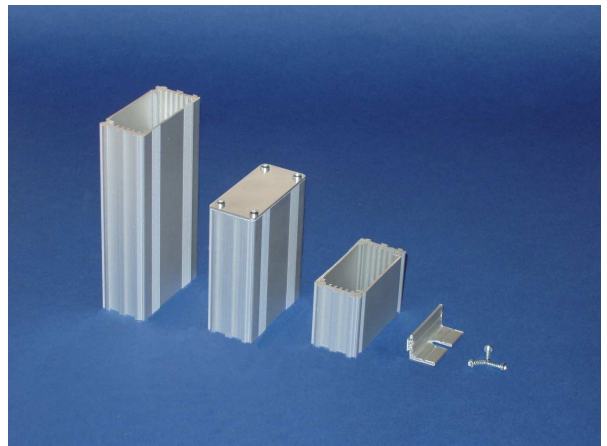


## BES-1

Silver or black anodized **aluminum extruded box section** to take 55 x 40mm, 55 x 80mm or 55 x 120mm circuit boards. Ideal for small circuits, R.F. amplifiers etc. The maximum height of components on a board mounted in the bottom slot is 18mm/20mm depending on orientation. This box features dovetail slots down the side which accept mounting feet to facilitate **surface mounting**. Optional gaskets allow **waterproofing**. One side of the box features two sets of appearance enhancing grooves. Between the sets of grooves is a shallow (0.5mm deep) recess which could be used for a label.

This is the smallest in a series of sections which include **BES-2**, **BES-3** and **BES-4**.



**Length Tolerance:** Nominal length -0mm/+1mm

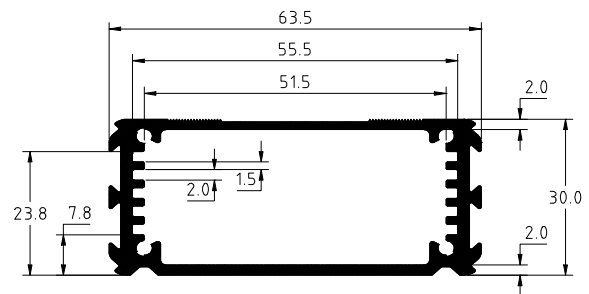
**Non-Standard Lengths:** Available. See separate datasheet.

**Material:** Aluminum 6063 T6 (HE9).

**Finish:** Silver anodized 5 µm thickness to BS 1615 - can be painted directly if required. The inside and cut ends are not anodized. Black anodized 20 µm thickness, the inside and ends are anodized.

**Weight:** 1.0 Kg/m.

**Perimeter:** 220mm outside, 217mm inside.



**Standard Length Order Codes:**

Length	Black	Silver
40mm	BES-1-B40	BES-1-S40
80mm	BES-1-B80	BES-1-S80
120mm	BES-1-B120	BES-1-S120

**Screw ports:** Nominal diameter 2.7mm to take a No.4 self-tapping screw with a 3mm major diameter of a type normally used for plastic. They are not suitable for ordinary self-tapping screws that have a 2.9 mm diameter with a wide tolerance. The screw ports can be threaded M3 using a thread-rolling tap, but a thread cutting tap will make a weak thread. Alternatively an M3 thread-forming screw can be used to roll its own thread.

**End plate:** End plate 1 is size 63.5 x 29.5 x 1.5mm to suit profile 1 of the BES range of extruded enclosures. This includes both standard enclosures and non-standard lengths. The end plate is available in three finishes, black anodized, silver (clear) anodized and natural.

Natural end plates are anodizing grade and have a removable plastic coating on one side to prevent unwanted scratches prior to application. Initially, natural end plates will look the same as silver anodized, but over time will become dull or corrode if used in an application without surface protection. They would be an ideal starting point if a paint or alochrome finish were required. Silver anodized end plates are intended as partners for BES-1-S (silver) electronic enclosures and black anodized end plates are intended as partners for BES-1-B (black) electronic enclosures.

**Application Information:** The end plates are made using a 'pierce and blank' tool and therefore have a front with rounded edges and a back with square edges. The screw holes in the end plate are symmetrical about a vertical center line but lie closer (at 3.5mm) to the top than the bottom. This conforms to the geometry of the BES enclosure. They are designed to lie flush with the enclosure top and bottom and overlap the dovetails on the sides. Any mounting feet inserted in a dovetail will be retained by the end plates.

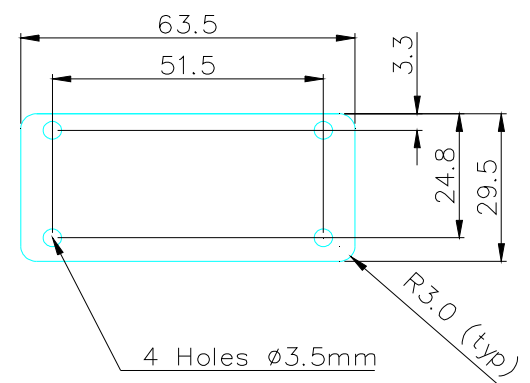
**Material of end plate:** Aluminium J57S or 5251 H22.

**Weight of end plate:** 7.5g

**End Plate Order Codes:**

Profile	Black	Silver	Natural
1	EP-B1	EP-S1	EP-N1

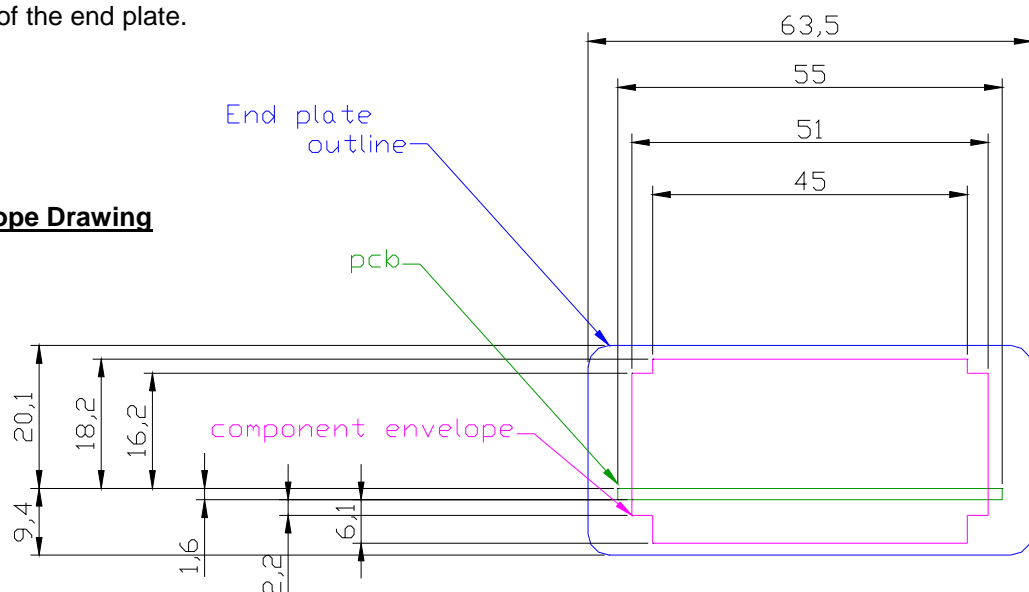
**End Plate 1**



The envelope drawing shows the relationship between three things:

1. The circuit board in the bottom slot of the enclosure.
2. The envelope within which components must be placed.
3. The outside of the end plate.

**BES-1 Envelope Drawing**

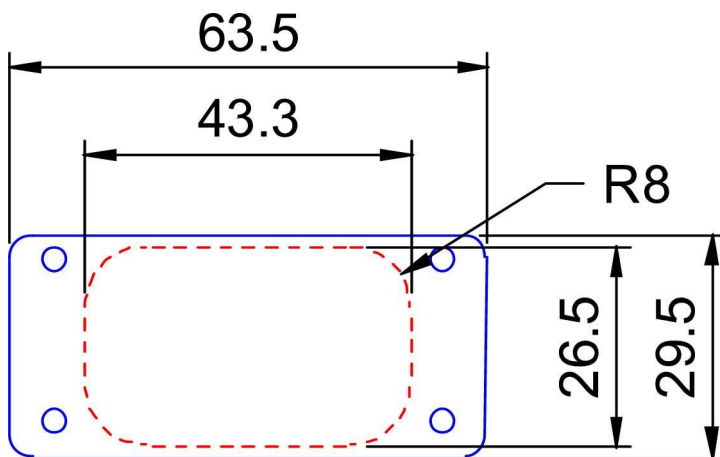


## Accessories:

**Bezel** – Optional black ABS plastic bezel renders cosmetic improvement for BES-1. It fits over the end plate and conceals the edges. Screws pass through the bezel as well as the end plate. Inserts conceal the heads of the screws. The bezel is particularly suited to concealing the edges of self-adhesive polycarbonate labels or membrane panels fitted on top of the end plate. Order Code: BEZ-1

The bezel outline drawing shows the central area of the end plate (dotted line) not covered by the plastic of the bezel.

### BES-1 Bezel Outline Drawing



### BES-1 Bezel on BES-1-B80



**Gasket set** – comprises 2 gaskets and 8 washers to optionally fit under screw heads. Washers increase rating from IP65 to IP66. Order Code: GSK-1. Full details on BES Accessories datasheet.

**Mounting Feet** – Silver Order Code: MF-S40 (40mm), MF-S80 (80mm); Black Order Code MF-B40 (40mm), MF-B80 (80mm). Full details on BES Accessories datasheet.

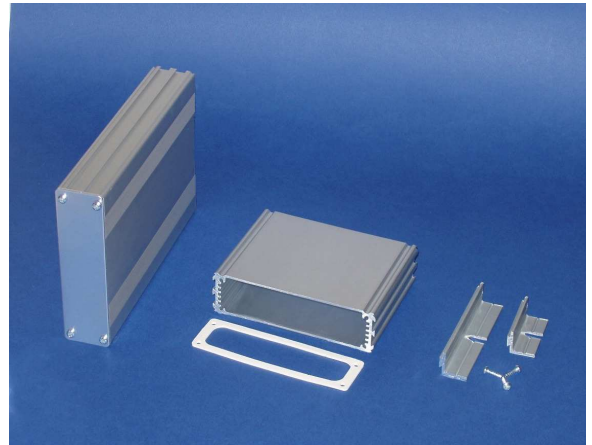
**Screws** - No.4 x 3/8" Plastite™ posi-pan self-tapping screws: Silver Order Code: STS-S8 (pack of 8), STS-S400 (pack of 400). Black Order Code: STS-B8 (pack of 8), STS-B400 (pack of 400).

M3 x 10 TORX™ thread-forming screws. Silver Order Code: STF-S8 (pack of 8), STF-S400 (pack of 400). Black Order Code: STF-B8 (pack of 8), STF-B400 (pack of 400).

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## BES-2

Silver or black anodized **aluminum extruded box section** to take 100 x 80mm, 100 x 160mm or 100 x 220mm circuit boards. Slim profile for space conscious applications. This box features dovetail slots down the side which accept mounting feet to facilitate **surface mounting**. Optional gaskets allow **waterproofing**. The maximum height of components on a board mounted in the bottom slot is 18mm/20mm depending on orientation. One side of the box features two sets of appearance enhancing grooves. Between the sets of grooves is a shallow (0.5mm deep) recess that could be used for a label.

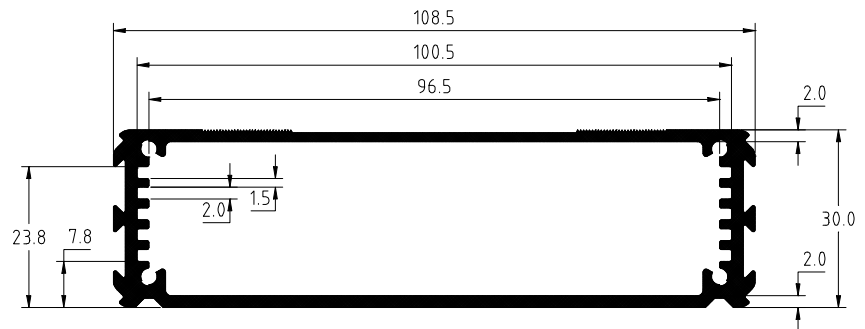


This is one of a series of sections that includes **BES-1**, **BES-3** and **BES-4**.

**Length Tolerance:** Nominal length -0mm/+1mm

**Non-Standard Lengths:** Available. See separate datasheet.

**Material:** Aluminum 6063 T6 (HE9).



**Finish:** Silver anodized 5 µm thickness to BS 1615 - can be painted directly if required. The inside and cut ends are not anodized. Black anodized 20 µm thickness, the inside and ends are anodized.

**Weight:** 1.38 Kg/m.

**Standard Length Order Codes:**

Length	Black	Silver
80mm	BES-2-B80	BES-2-S80
160mm	BES-2-B160	BES-2-S160
220mm	BES-2-B220	BES-2-S220

**Perimeter:** 316mm outside, 306mm inside.

**Screw ports:** Nominal diameter 2.7mm to take a No.4 self-tapping screw with a 3mm major diameter of a type normally used for plastic. They are not suitable for ordinary self-tapping screws that have a 2.9 mm diameter with a wide tolerance. The screw ports can be threaded M3 using a thread-rolling tap, but a thread cutting tap will make a weak thread. Alternatively an M3 thread-forming screw can be used to roll its own thread.

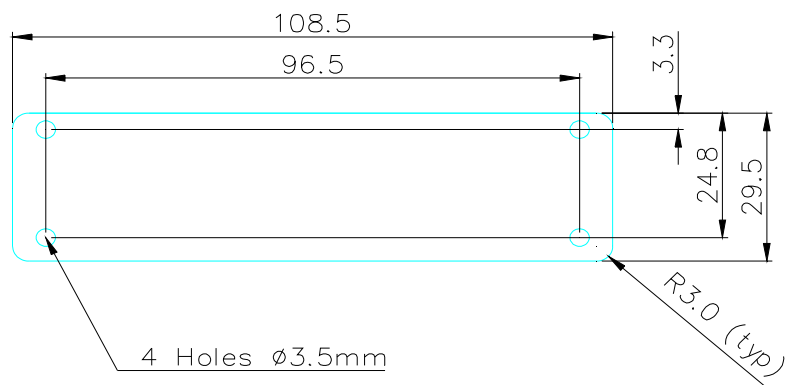
**End plate:** End plate 2 is size 108.5 x 29.5 x 1.5mm to suit profile 2 of the BES range of extruded enclosures. This includes both standard enclosures and non-standard lengths. The end plate is available in three finishes, black anodized, silver (clear) anodized and natural. Natural end plates are anodizing grade and have a removable plastic coating on one side to prevent unwanted scratches prior to application. Initially, natural end plates will look the same as silver anodized, but over time will become dull or corrode if used in an application without surface protection. They would be an ideal starting point if a paint or alochrome finish were required. Silver anodized end plates are intended as partners for BES-2-S (silver) electronic enclosures and black anodized end plates are intended as partners for BES-2-B (black) electronic enclosures.

**Application Information:** The end plates are made using a 'pierce and blank' tool and therefore have a front with rounded edges and a back with square edges. The screw holes in the end plate are symmetrical about a vertical center line but lie closer (at 3.5mm) to the top than the bottom. This conforms to the geometry of the BES enclosure. They are designed to lie flush with the enclosure top and bottom and overlap the dovetails on the sides. Any mounting feet inserted in a dovetail will be retained by the end plates.

**Material of end plate:** Aluminum J57S or 5251 H22.

**Weight of end plate:** 12g.

**End Plate 2**

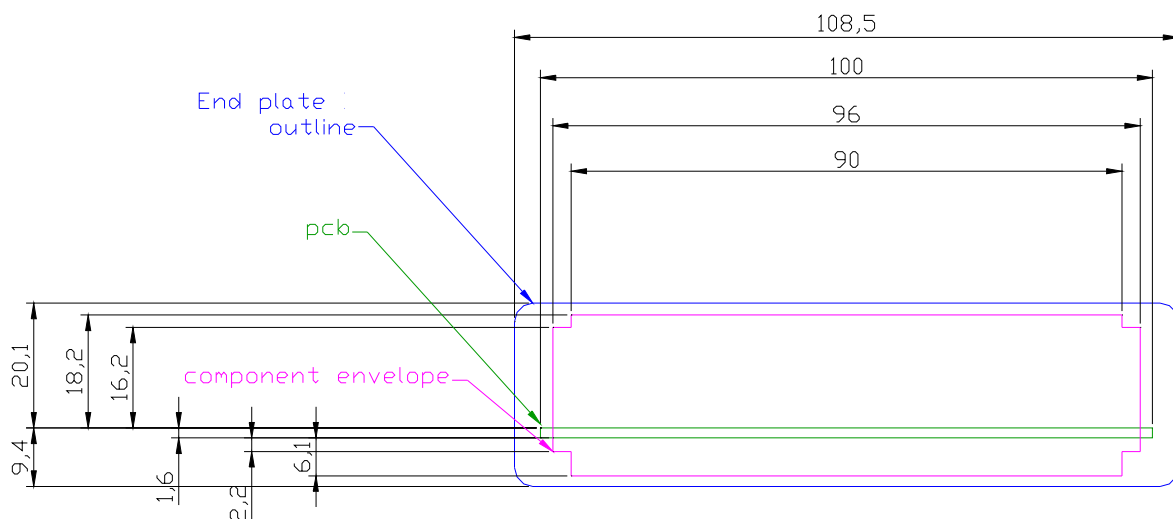


**End plate Order Codes:**

Profile	Black	Silver	Natural
2	EP-B2	EP-S2	EP-N2

The envelope drawing shows the relationship between three things:

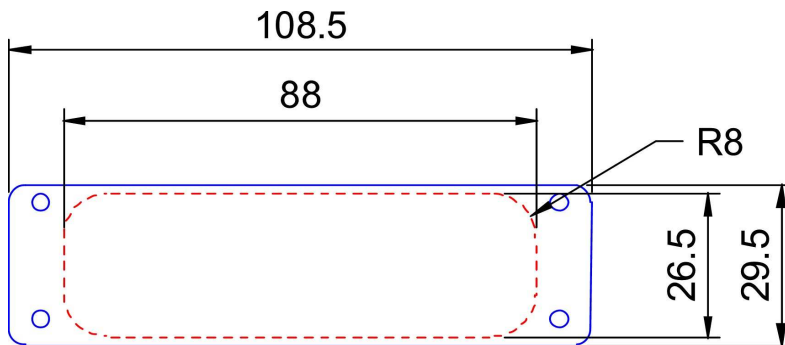
1. The circuit board in the bottom slot of the enclosure.
2. The envelope within which components must be placed.
3. The outside of the end plate



## Accessories:

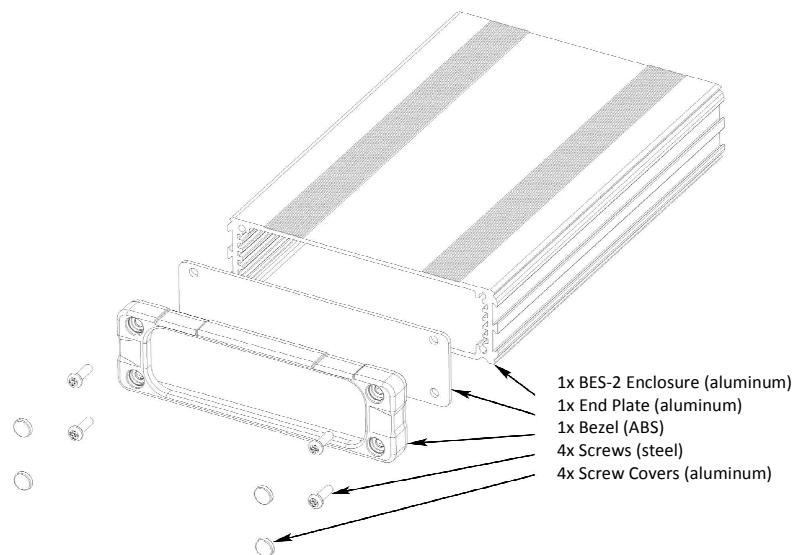
**Bezel** – Optional black ABS plastic bezel renders cosmetic improvement for BES-2. It fits over the end plate and conceals the edges. Screws pass through the bezel as well as the end plate. Inserts conceal the heads of the screws. The bezel is particularly suited to concealing the edges of self-adhesive polycarbonate labels or membrane panels fitted on top of the end plate. Order Code: BEZ-2

The bezel outline drawing shows the central area of the end plate (dotted line) not covered by the plastic of the bezel.



**BES-2 Bezel Outline Drawing**

**BES-2 Bezel Illustration**



**Gasket set** – comprises 2 gaskets and 8 washers to optionally fit under screw heads. Washers increase rating from IP65 to IP66. Order Code: GSK-2. Full details are on the BES Accessories datasheet.

**Mounting feet** – Silver Order Code: MF-S40 (40mm), MF-S80 (80mm); Black Order Code MF-B40 (40mm), MF-B80 (80mm). Full details on BES Accessories datasheet.

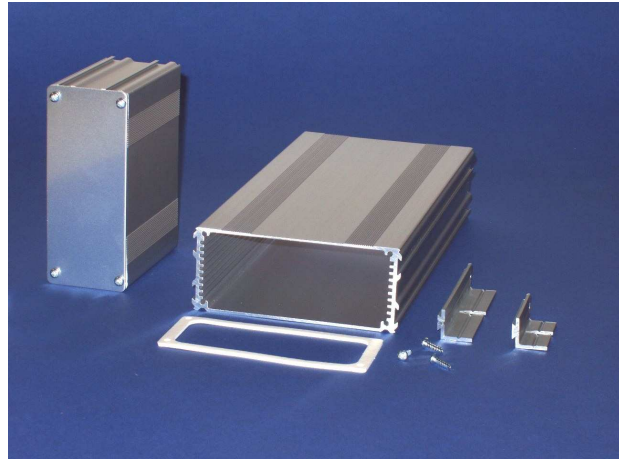
**Screws** - No.4 x 3/8" Plastite™ posi-pan self-tapping screws: Silver Order Code: STS-S8 (pack of 8), STS-S400 (pack of 400). Black Order Code: STS-B8 (pack of 8), STS-B400 (pack of 400).

M3 x 10 TORX™ thread-forming screws. Silver Order Code: STF-S8 (pack of 8), STF-S400 (pack of 400). Black Order Code: STF-B8 (pack of 8), STF-B400 (pack of 400).

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## BES-3

Silver or black anodized **aluminum extruded box section** to take 100 x 80mm, 100 x 160mm or 100 x 220mm circuit boards. This box features dovetail slots down the side which accept mounting feet to facilitate **surface mounting**. Optional gaskets allow **waterproofing**. The maximum height of components on a board mounted in the bottom slot is 33mm. One side of the box features two sets of appearance enhancing grooves. Between the sets of grooves is a shallow (0.5mm deep) recess that could be used for a label.



This is one of a series of sections that includes **BES-1**, **BES-2** and **BES-4**.

**Length Tolerance:** Nominal length -0mm/+1mm

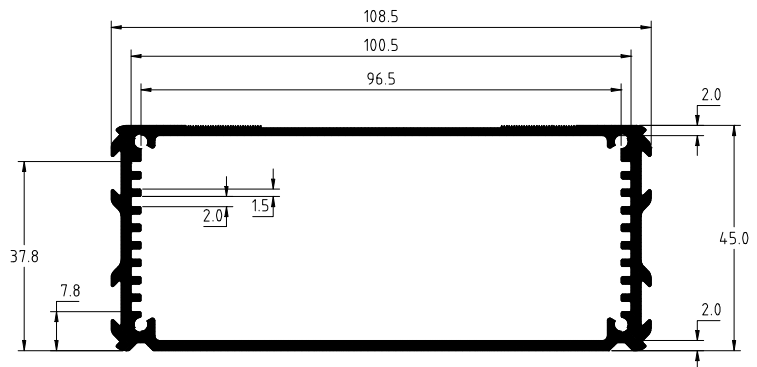
**Non-Standard Lengths:** Available. See separate datasheet.

**Material:** Aluminum 6063 T6 (HE9).

**Finish:** Silver anodized 5 µm thickness to BS 1615 - can be painted directly if required. The inside and cut ends are not anodized. Black anodized 20 µm thickness, the inside and outside are anodized

**Weight:** 1.63 Kg/m.

**Perimeter:** 348mm outside, 362mm inside.



length	Black	Silver
80mm	BES-3-B80	BES-3-S80
160mm	BES-3-B160	BES-3-S160
220mm	BES-3-B220	BES-3-S220

**Standard Length Order Codes:**

**Screw ports:** Nominal diameter 2.7mm to take a No.4 self-tapping screw with a 3mm major diameter of a type normally used for plastic. They are not suitable for ordinary self-tapping screws, which have a 2.9 mm diameter with a wide tolerance. The screw ports can be threaded M3 using a thread-rolling tap, but a thread cutting tap will make a weak thread. Alternatively an M3 thread-forming screw can be used to roll its own thread.

### Application Information:

**End plate 3** is size 108.5 x 44.5 x 1.5 mm to suit profile 3 of the BES range of extruded enclosures. This includes both standard enclosures and non-standard lengths.

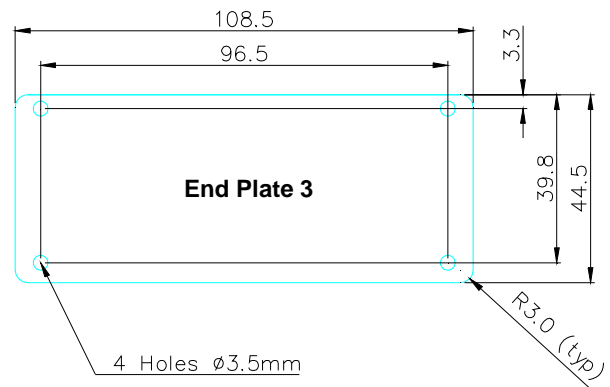
The end plate is available in three finishes, black anodized, silver (clear) anodized and natural.

Natural end plates are anodizing grade and have a removable plastic coating on one side to prevent unwanted scratches prior to application. Initially, natural end plates will look the same as silver anodized, but over time will become dull or corrode if used in an application without surface protection. They would be an ideal starting point if a paint or alchrom finish were required. Silver anodized end plates are intended as partners for BES-3-S (silver) electronic enclosures and black anodized end plates are intended as partners for BES-3-B (black) electronic enclosures.

The end plates are made using a 'pierce and blank' tool and therefore have a front with rounded edges and a back with square edges. The screw holes in the end plate are symmetrical about a vertical center line but lie closer (at 3.5mm) to the top than the bottom. This conforms to the geometry of the BES enclosure. The end plate is designed to lie flush with the enclosure top and bottom and overlap the dovetails on the sides. Any Mounting feet inserted in a dovetail will be retained by the end plates.

**Material of end plate:** Aluminum J57S or 5251 H22.

**Weight:** 20g



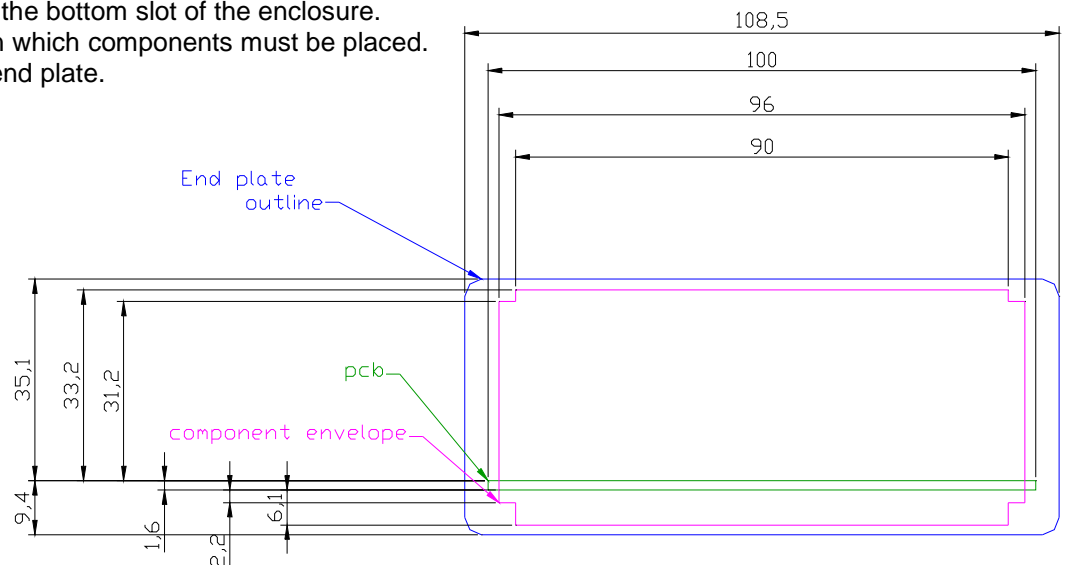
**End plate order code:**

Profile	Black	Silver	Natural
3	EP-B3	EP-S3	EP-N3

The envelope drawing shows the relationship between three things:

1. The circuit board in the bottom slot of the enclosure.
2. The envelope within which components must be placed.
3. The outside of the end plate.

### Envelope drawing



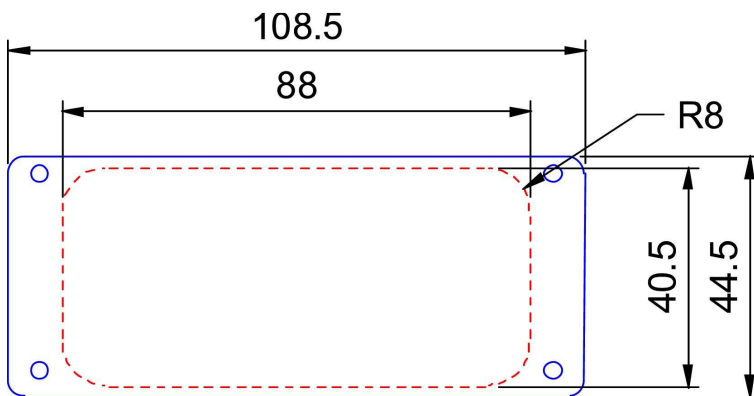


## Accessories:

**Bezel** – Optional black or silver ABS plastic bezel renders cosmetic improvement for BES-3. It fits over the end plate and conceals the edges. Screws pass through the bezel as well as the end plate. Inserts conceal the heads of the screws. The bezel is particularly suited to concealing the edges of self-adhesive polycarbonate labels or membrane panels fitted on top of the end plate. Order Code: BEZ-3

The bezel outline drawing shows the central area of the end plate (dotted line) not covered by the plastic of the bezel.

### Typical application with black bezel



**BES-3 Bezel Outline Drawing**

**Gasket set** – comprises 2 gaskets and 8 washers to optionally fit under screw heads. Washers increase rating from IP65 to IP66. Order Code: GSK-3. Full details are on the BES Accessories datasheet.

**Mounting feet** – Silver Order Code: MF-S40 (40mm), MF-S80 (80mm); Black Order Code MF-B40 (40mm), MF-B80 (80mm). Full details on BES Accessories datasheet.

**Screws** - No.4 x 3/8" Plastite™ posi-pan self-tapping screws: Silver Order Code: STS-S8 (pack of 8), STS-S400 (pack of 400). Black Order Code: STS-B8 (pack of 8), STS-B400 (pack of 400).

M3 x 10 TORX™ thread-forming screws. Silver Order Code: STF-S8 (pack of 8), STF-S400 (pack of 400). Black Order Code: STF-B8 (pack of 8), STF-B400 (pack of 400).

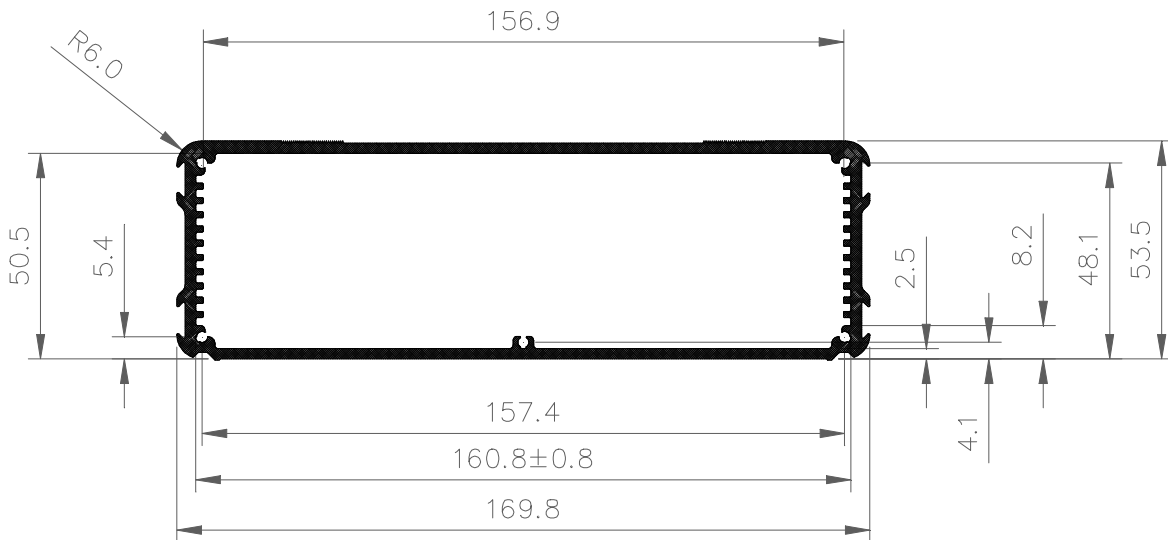
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## BES-4

Silver or black anodized **aluminum extruded box section** to take 160 x 80mm, 160 x 160mm or 160 x 220mm circuit boards. The maximum height of components on a board mounted in the bottom slot is 40mm. This box features dovetail slots down the side which accept mounting feet to facilitate **surface mounting**. Optional gaskets allow **waterproofing**. One side of the box features two sets of appearance enhancing grooves. Between the sets of grooves is a shallow (0.5mm deep) recess which could be used for a label.



This is one of a series of sections that includes **BES-1, BES-2 and BES-3**.



### Standard Length Order Codes:

Length	Black	Silver
80mm	BES-4-B80	BES-4-S80
160mm	BES-4-B160	BES-4-S160
220mm	BES-4-B220	BES-4-S220

**Non-Standard Lengths:** Available. See separate datasheet

**Length Tolerance:** Nominal length -0mm/+1mm

**Material & Finish:** Aluminum 6063 T6 (HE9). Silver anodized 5 µm thickness - can be painted directly if required. The inside and cut ends are not anodized. Black anodized is 20 µm thickness, the inside and ends are anodized.

**Weight:** 3.4 Kg/m. **Perimeter:** 480mm outside, 516mm inside.

**Screw ports:** Nominal diameter 2.7mm to take a No.4 thread-forming screw with a 3mm major diameter of a type normally used for plastic. They are not suitable for ordinary self-tapping screws that have a 2.9 mm

diameter with a wide tolerance. The screw ports can be threaded M3 using a thread-rolling tap, but a thread cutting tap will make a weak thread. Alternatively an M3 thread-forming screw can be used to roll its own thread.

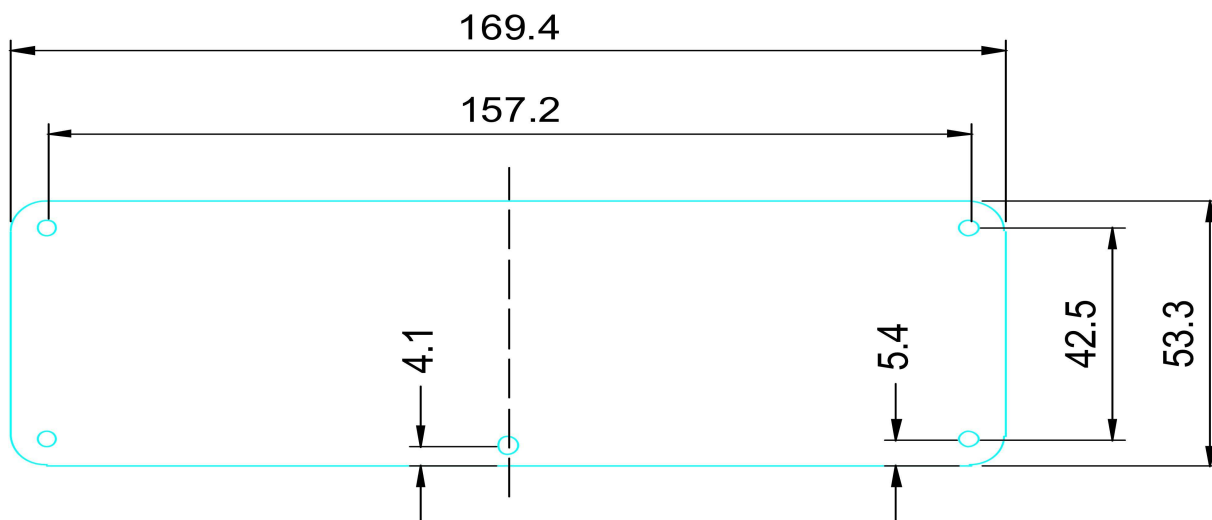
**End plate:** End plate 4 is size 169.4 x 53.3 x 2mm to suit profile 4 of the BES range of extruded enclosures. This includes both standard enclosures and non-standard lengths. The end plate comes with either 5 holes or 4 holes. The original shape 5-hole plate has the extra hole on the center-line that aligns with the center screw port on the extrusion. It is designated by the suffix "1". The 4-hole end plate was introduced because the new bezel interfered with the fifth hole. In bezel applications the extra fixing strength is not required. The 4-hole plate is designated by the suffix "2". The end plates are available in three finishes, black anodized, silver (clear) anodized and natural. Natural end plates are anodizing grade and have a removable plastic coating on one side to prevent unwanted scratches prior to application. Initially, natural end plates will look the same as silver anodized, but over time will become dull or corrode if used in an application without surface protection. They would be an ideal starting point if a paint or alochrom finish were required. Silver anodized end plates are intended as partners for BES-4-S (silver) electronic enclosures and black anodized end plates are intended as partners for BES-4-B (black) electronic enclosures.

**Application Information:** The end plates are made using a 'pierce and blank' tool and therefore have a front with rounded edges and a back with square edges. They are designed to lie flush with the enclosure top and bottom and overlap the dovetails on the sides. Any mounting feet inserted in a dovetail will be retained by the end plates.

The dimensions on the end plate drawing do not exactly match those on the extrusion drawing. This is because the extrusion sizes are nominal with a large tolerance. The first samples of the extrusion had dimensions similar to the end plate.

**Material of end plate:** Aluminum J57S or 5251 H22.

**Weight of end plate:** 46g.



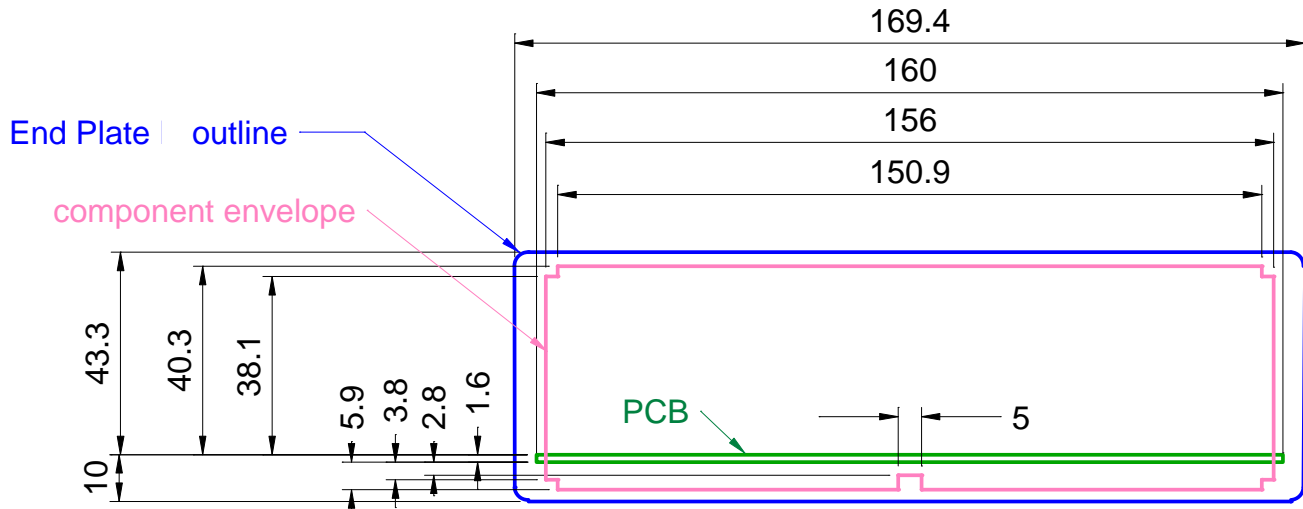
**End plate Order Codes:**

Profile	Black	Silver	Natural
4 (5 hole)	EP-B4-5	EP-S4-5	EP-N4-5
4 (4 hole)	EP-B4-4	EP-S4-4	EP-N4-4

## Envelope drawing

The envelope drawing shows the relationship between three things:

1. The circuit board in the bottom slot of the enclosure.
2. The envelope within which components must be placed.
3. The outside of the end plate



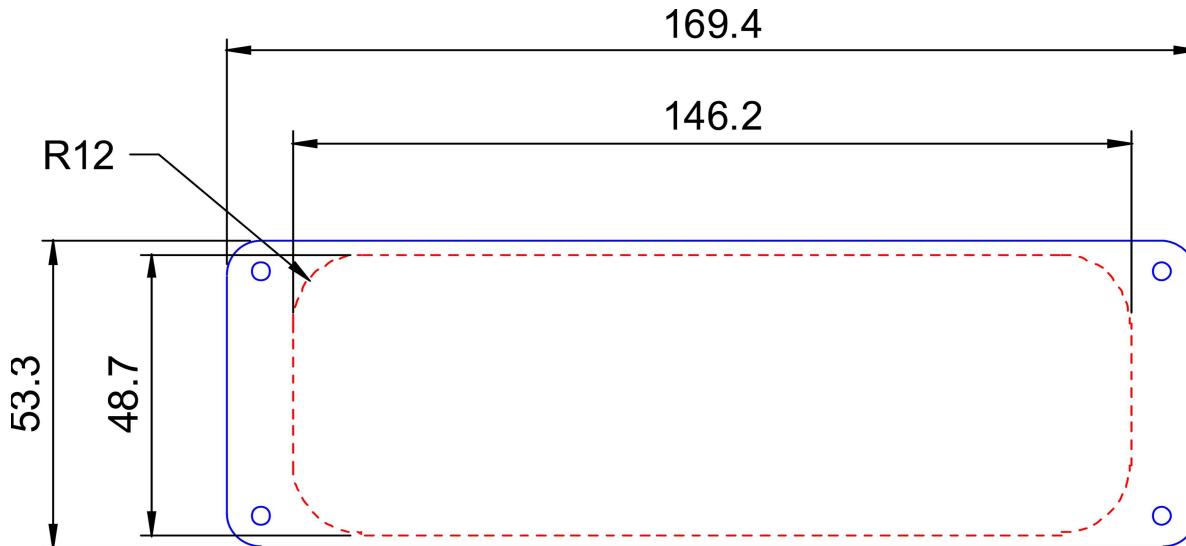
## Accessories:

**Bezel** – Optional black or silver ABS plastic bezel renders cosmetic improvement for BES-4. It fits over the end plate and conceals the edges. Screws pass through the bezel as well as the end plate. Inserts conceal the heads of the screws. The bezel is particularly suited to concealing the edges of self-adhesive polycarbonate labels or membrane panels fitted on top of the end plate.

Order Code: BEZ-4B (black) or BEZ-4S (silver). Use with end plates EP-N4-4, EP-S4-4, EP-B4-4.

The bezel outline drawing shows the central area of the end plate (dotted line) not covered by the plastic of the bezel.

## BES-4 Bezel Outline Drawing



**Gasket set** – comprises 2 gaskets and 8 washers to optionally fit under screw heads. Washers increase rating from IP65 to IP66. Order Code: GSK-4. Full details are on the BES Accessories datasheet.

**Mounting feet** – Silver Order Code: MF-S40 (40mm), MF-S80 (80mm); Black Order Code MF-B40 (40mm), MF-B80 (80mm). Full details on BES Accessories datasheet.

**Screws** - No.4 x 3/8" Plastite™ posi-pan self-tapping screws: Silver Order Code: STS-S8 (pack of 8), STS-S400 (pack of 400). Black Order Code: STS-B8 (pack of 8), STS-B400 (pack of 400).

M3 x 10 TORX™ thread-forming screws. Silver Order Code: STF-S8 (pack of 8), STF-S400 (pack of 400). Black Order Code: STF-B8 (pack of 8), STF-B400 (pack of 400).

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