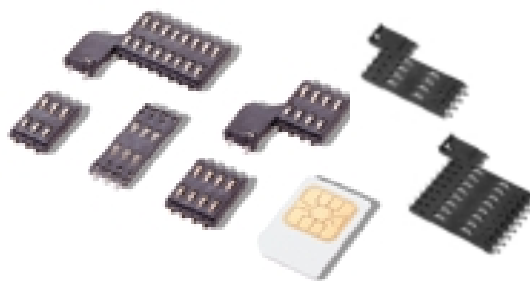


# CCM04 MKII



The CCM04 without card guidance is used where space is at a premium and the card guidance can be built around the connector (rather than provided by the connector itself).

The CCM04 low profile without card guidance is dedicated to applications where the overall height of the connector is paramount. A range of low profile CCM04 connectors are available with 1.25 mm thick moldings.

The wide choice of contact configurations and molding heights suit a broad range of applications.

## Features

- Available in a variety of molding heights from 1.25 mm to 5 mm.
- The integrated card detection switch (optional) is sealed against dust and grit.
- By using an inlay finish in the contact area, the life of the precious metal is extended by more than 10 times that of standard gold plating.
- The height of the contact above the insulator is 0.75 mm, so allowing a wider tolerance for the card entry slot.
- The contact area is spooned to reduce the risk of accidental (or deliberate) damage, and to optimize the electrical connection with the card.
- The tip of the contact is protected by the molding so that it cannot catch on the card as the card is being inserted.
- The contact design ensures a consistent and reliable contact force over the life of the connector.
- Robustly formed printed circuit tails are well protected by the insulator body: a coplanarity of  $\pm 0.05$  mm is guaranteed.
- The moldings are made from high temperature thermoplastic suited for infrared and convection soldering processes.
- With tape and reel packaging as standard, the connectors are designed to be automatically picked & placed.

| Construction                          |                                                                                                                                  |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Contacts                              | Copper alloy                                                                                                                     |
| Plating                               | Contact area : Gold alloy inlay<br>Terminals : Tin lead (2μ min)                                                                 |
| Moldings                              | High temp. thermoplastic UL 94V-0 rated                                                                                          |
| Mechanical data                       |                                                                                                                                  |
| Number of Contacts                    | 6, 8 or 16                                                                                                                       |
| Mechanical life                       | 50,000 cycles min                                                                                                                |
| Durability of inlay                   | 5,000 cycles min (see note 1)                                                                                                    |
| Contact force                         | 0.25 N min / 0.5 N max                                                                                                           |
| Card detection switch actuation force | 0.8 N max for actuation (end travel switch actuates when card is 0.9 mm from card stop) 1.8 N max for complete depression        |
| Vibration<br>50m/s <sup>2</sup>       | Frequency 10 to 500 Hz. Acceleration<br>Duration 6 hours - amplitude 0.35 mm<br>Max electrical discontinuity 1μs                 |
| Shock                                 | Peak value 500 m/s <sup>2</sup> - Duration 11 ms<br>3 shocks in each direction of each axis<br>Max electrical discontinuity 1 μs |
| Electrical data                       |                                                                                                                                  |
| Insulation resistance                 | 1,000 MΩ min                                                                                                                     |
| Contact resistance max                | 100 mΩ max                                                                                                                       |
| Switching current                     | 10 μA min / 1 A max                                                                                                              |
| Dielectric strength                   | 750 Vrms min                                                                                                                     |
| Card detection switch                 | Normally open (closes on card insertion)                                                                                         |
| Switch contact resistance             | 100mΩ max                                                                                                                        |
| Dielectric switch contacts            | 250 Vrms min                                                                                                                     |
| Maximum switch power                  | 0.2 VA                                                                                                                           |
| Environmental data                    |                                                                                                                                  |
| Operating temperature                 | -40°C to +85°C                                                                                                                   |
| Soldering temperature                 | Temperature/time profile acc. to CECC00802 para. 6.1, Fig. 3 with peak temperature 250°C                                         |
| Damp heat                             | IEC 512 test number 11c (10 days)                                                                                                |
| Salt mist                             | IEC 512 test number 11f (96 hours)                                                                                               |
| Card detection switch                 | Sealed IP 54 For CCM04 1889 & 1905<br>Sealed against dust for other versions                                                     |

Note 1: Inlay (precious metal) rating is based on a very abrasive card being used and is intended to represent worst case.

# CCM04 MKII

| Ordering code  |           |                |                |                |                |
|----------------|-----------|----------------|----------------|----------------|----------------|
|                |           | Without Switch |                | With Switch    |                |
| Molding Height | SMT Tails | 2 x 3 contacts | 2 x 4 contacts | 2 x 4 contacts | 2 x 8 contacts |
| 1.25 mm        | Standard  | CCM04-1801     | CCM04-1814     | CCM04-1889     | CCM04-1905     |
| 1.25 mm        | Straight  | CCM04-1800*    | CCM04-1813*    | CCM04-1888*    |                |
| 2.00 mm        | Standard  | CCM04-5004**   | CCM04-1415*    |                |                |
| 2.75 mm        | Straight  | CCM04-1200     | CCM04-1217*    | CCM04-1316     | CCM04-1333*    |
| 2.75 mm        | Standard  | CCM04-1201     | CCM04-1218     | CCM04-1317     | CCM04-1334     |
| 3.50 mm        | Standard  | CCM04-1202     | CCM04-1219*    | CCM04-1318     |                |
| 4.25 mm        | Standard  | CCM04-1203*    | CCM04-1220     | CCM04-1319*    |                |
| 5.00 mm        | Standard  |                | CCM04-1221     | CCM04-1320     |                |

\*Note: On request

\*\*Note: Replaced by CCM04-5102 (see page 53)

## Packaging

Connectors without a switch are packaged in accordance with EIA 481-2 or IEC 286-3.

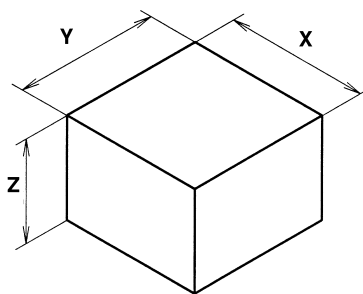
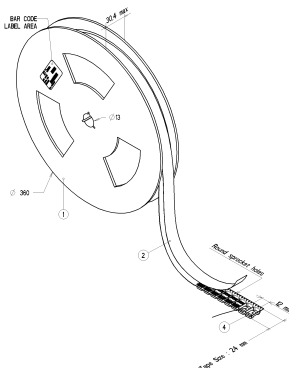
Connectors with a switch are packaged in accordance with EIA 481-3 or IEC 286-3

Standard packaging is in tape and reel. A modification code is added to the part number that indicates reel packaging and the number of components per reel (which varies according to the molding height).

Example: A CCM04 with 8 contacts plus switch and a molding height of 3.50 mm has a part number CCM04-1318-R751.

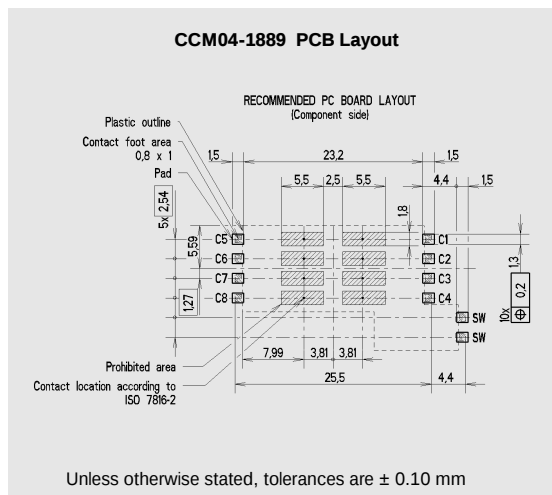
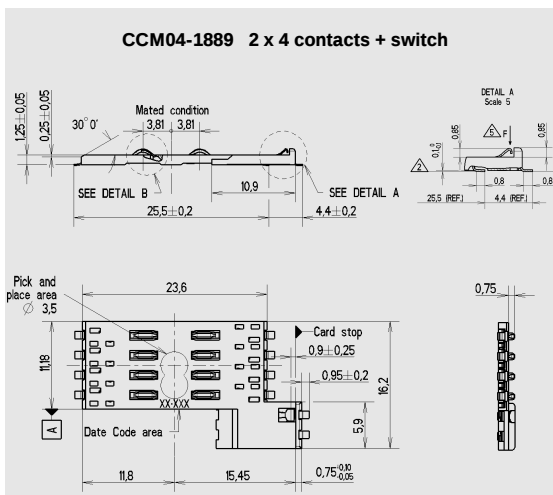
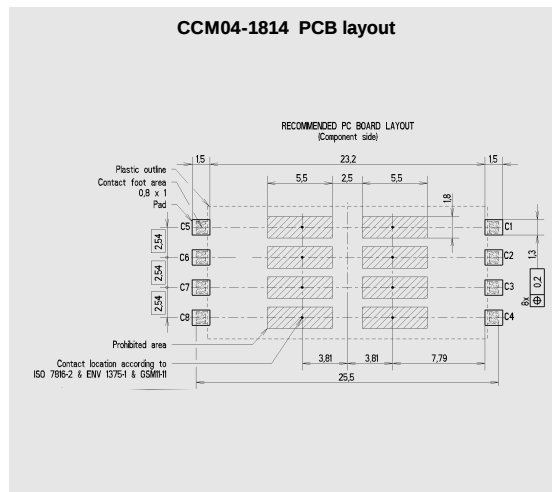
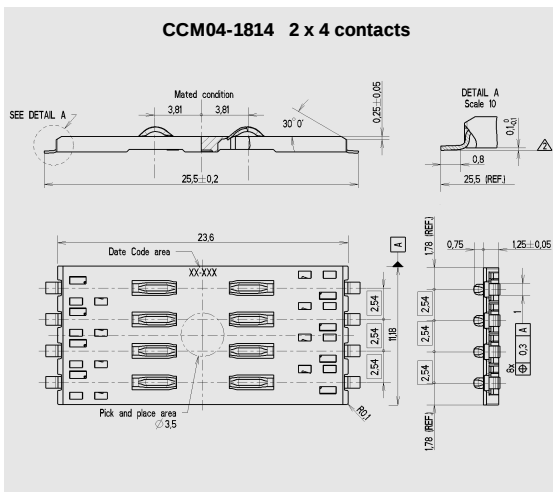
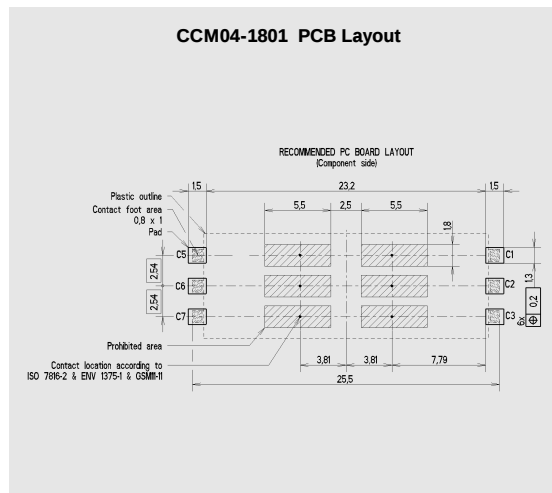
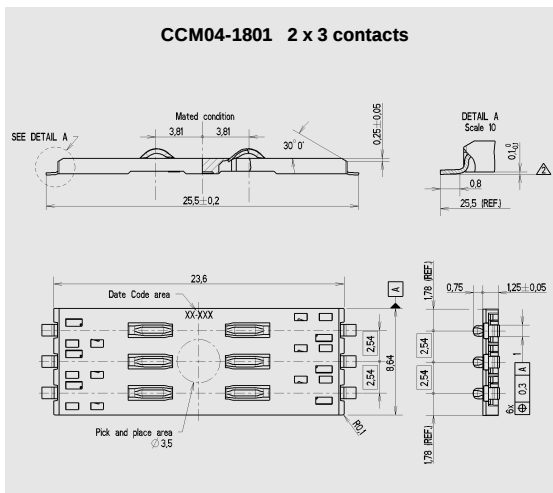
| Molding Height | SMT Tails | Without Switch |                | With Switch    |                | N° reels per box |
|----------------|-----------|----------------|----------------|----------------|----------------|------------------|
|                |           | 2 x 3 contacts | 2 x 4 contacts | 2 x 4 contacts | 2 x 8 contacts |                  |
| 1.25 mm        | Standard  | R182 (1800pcs) | R132 (1300pcs) | R102 (1000pcs) | R651 (650pcs)  | 5                |
| 1.25 mm        | Straight  | R182 (1800pcs) | R132 (1300pcs) | R102 (1000pcs) |                | 5                |
| 2.00 mm        | Standard  | R122 (1200pcs) | R901 (900pcs)  |                |                | 5                |
| 2.75 mm        | Straight  | R122 (1200pcs) | R901 (900pcs)  | R801 (800pcs)  | R451 (450pcs)  | 5                |
| 2.75 mm        | Standard  | R122 (1200pcs) | R901 (900pcs)  | R801 (800pcs)  | R451 (450pcs)  | 5                |
| 3.50 mm        | Standard  | R112 (1100pcs) | R801 (800pcs)  | R751 (750pcs)  |                | 5                |
| 4.25 mm        | Standard  | R951 (950pcs)  | R701 (700pcs)  | R651 (650pcs)  |                | 5                |
| 5.00 mm        | Standard  |                | R651 (650pcs)  | R601 (600pcs)  |                | 5                |

R = Reel

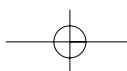


| Reel Diameter | Reel Width | X      | Y      | Z   |
|---------------|------------|--------|--------|-----|
| 360 mm        | 24.4 mm    | 344 mm | 350 mm | 152 |

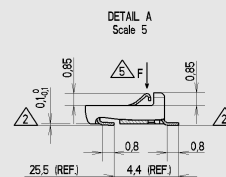
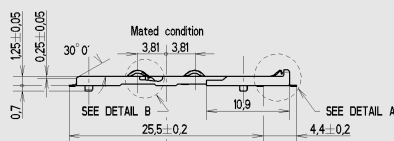
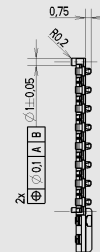
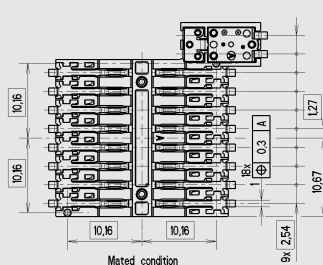
## Dimensional Drawings



Unless otherwise stated, tolerances are  $\pm 0.10$  mm



## Dimensional Drawings



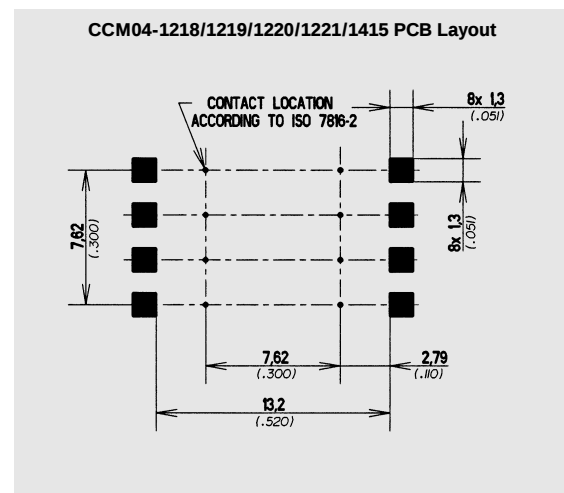
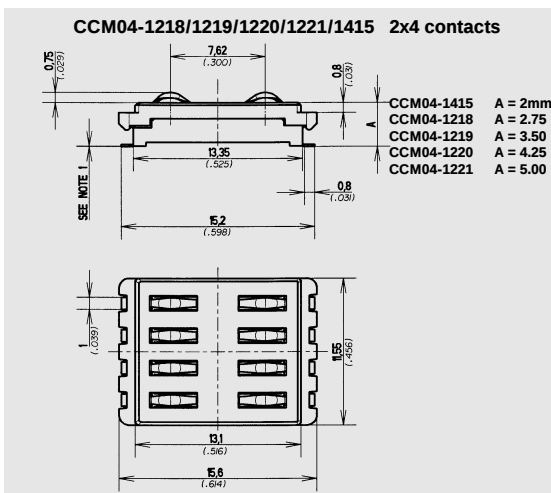
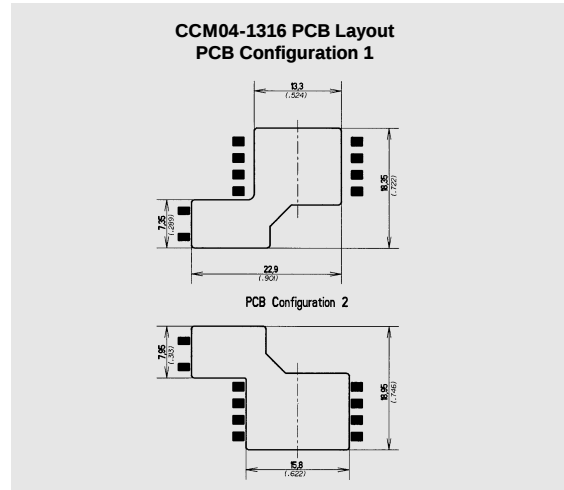
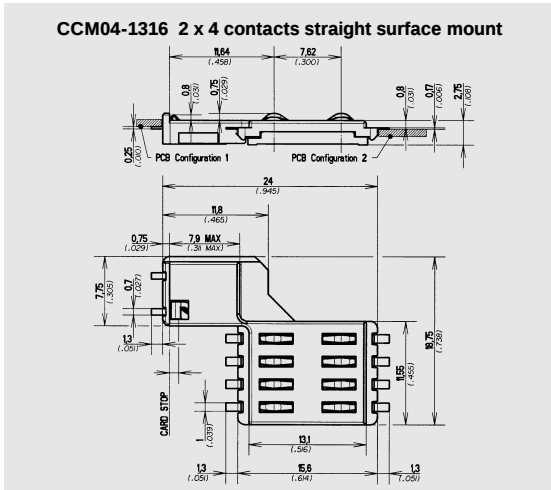
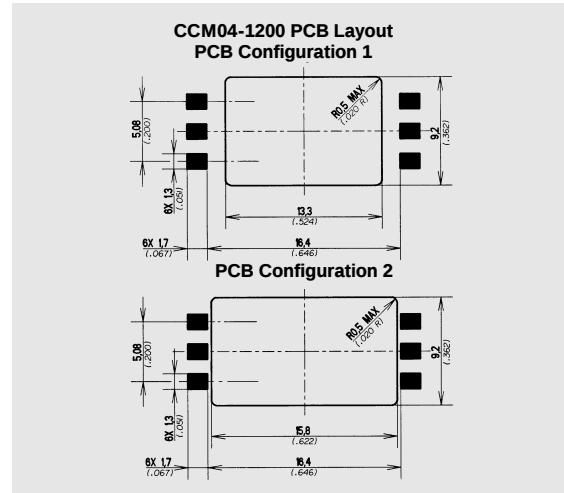
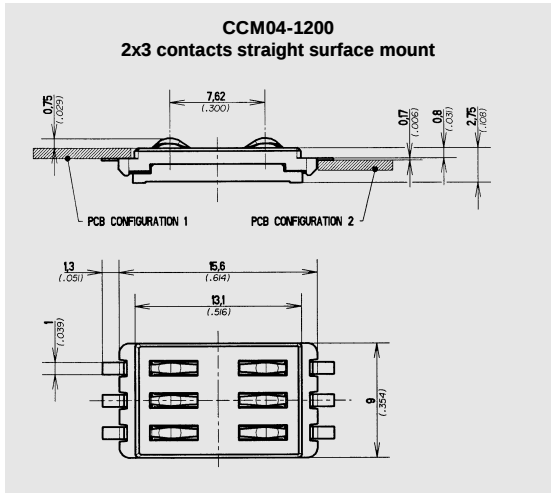
## CCM04-1905

[illegible]

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# CCM04 MK II

## Dimensional Drawings



## Dimensional Drawings

CCM04-1317 A = 2.75  
 CCM04-1318 A = 3.50  
 CCM04-1319 A = 4.25  
 CCM04-1320 A = 5.00

Figure 1: Dimensions of the contact grid. The diagram shows a grid of contacts with dimensions in inches and millimeters (in parentheses). The top row has two groups of contacts: 2x11 (1.045) and 2x17 (1.067). The bottom row has two groups: 8x13 (1.05) and 9x13 (1.09). The grid is defined by horizontal and vertical dashed lines. Dimensions are: 92 (2.362) and 132 (3.519) for the top row; 762 (1.900) for the bottom row; and 4 (0.1016) and 3 (0.0762) for the right side. A callout points to a contact location according to ISO 7816-2.

**PCB Configuration**

9.2 (1.362)

13.2 (1.59)

2x 1.1 (0.043)

2x 1.7 (0.067)

R0.13 (0.029)

17.78 (1.750)

CONTACT LOCATION  
ACCORDING TO ISO 786-2

Technical drawings of CCM04-5004\* and CCM04-5102 components.

**CCM04-5004\* Dimensions:**

- Top Width: 7.62 (±.003)
- Top Thickness: 0.75 (±.023)
- Side Thickness: 0.8 (±.030)
- Bottom Width: 13.25 (±.023)
- Bottom Thickness: 0.8 (±.030)
- Overall Width: 5.2 (±.028)

**CCM04-5102 Dimensions:**

- Side Thickness: 1 (±.030)
- Overall Width: 13.1 (±.040)
- Overall Height: 9 (±.354)

**Legend:**

- CCM04-5004\* A = 2.75
- CCM04-1201 A = 3.50
- CCM04-1202 A = 3.50
- CCM04-1203 A = 4.25
- CCM04-1204 A = 5.00

**\*CCM04-5004 replaced by CCM04-5102 (see page 53)**

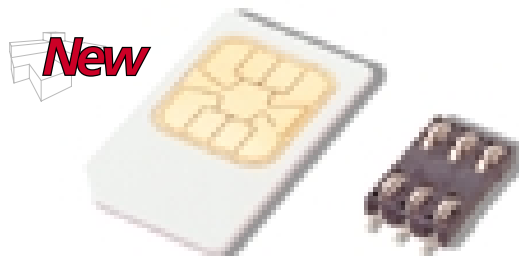
Figure 1: Dimensions of the test specimen. The diagram shows a rectangular specimen with three horizontal rows of square contact pads. Key dimensions are labeled: vertical spacing between rows is 5.08 (.200); horizontal spacing between the first and second rows of pads is 7.62 (.300); horizontal spacing between the second and third rows is 2.79 (.110); total horizontal width is 13.2 (.520); and the size of each contact pad is 6 x 13 (.051). An arrow points to the top row of pads with the text "CONTACT LOCATION ACCORDING TO ISO 7816-2".



Dimensions are shown in mm  
Dimensions subject to change

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## CCM04 MK III Miniature Connectors



Introducing a new range of CCM04 connectors designed to interface with either full or SIM/SAM smart cards and designed to minimize space usage on the PCB while maximizing price economy.

### Features

- Available with 6 or 8 contacts.
- By using an inlay finish in the contact area, the life of the precious metal is extended by up to 10 times that of a standard gold plating.
- The contact area is spooned to reduce the risk of accidental (or deliberate) damage and to optimize the electrical connection with the card.
- The insulators, molded from high temperature thermoplastic, are suited for infrared and convection soldering processes.
- With tape and reel packaging as standard, the connectors are designed to be automatically pick and placed.
- Gold plating versions are also available.

### Construction

|                 |                                         |
|-----------------|-----------------------------------------|
| Insulator       | High temperature thermoplastic UL 94V.0 |
| Contacts        | Copper Alloy                            |
| Contact finish  | Gold Alloy Inlay (Au / Ag / Pd)         |
| PC Tail plating | Tin lead (2 $\mu$ m min) Sn / Pb        |

### Mechanical data

|                 |                                  |
|-----------------|----------------------------------|
| Mechanical life | 50,000 cycles minimum            |
| Precious metal  | 5000 cycles minimum (see note 1) |
| Contact force   | 0.25N min / 0.5N max             |
| Contact travel  | 0.75mm                           |

### Electrical data

|                        |                          |
|------------------------|--------------------------|
| Insulation resistance  | 1000 M $\Omega$ min      |
| Contact resistance max | 100 m $\Omega$ max       |
| Switching current      | 10 $\mu$ A min / 1 A max |
| Dielectric strength    | 500 Vrms min             |

### Environmental data

|                       |                                                                                    |
|-----------------------|------------------------------------------------------------------------------------|
| Operating temperature | -40°C to +85°C                                                                     |
| Soldering temperature | Temperature/time profile acc. to CECC00802 para. 6.1, Fig. 3 with peak temperature |
| Salt mist             | IEC 512 test number 11f (96 hours)                                                 |
| Damp heat             | IEC 512 test number 11c (10 days)                                                  |

# CCM04 MK III

## 6 Contacts Versions

| Part Number | N° of Contacts | Total Height | Total Length | Terminal Design | Contact Plating |      | Insulator Width | Packaging | Modification Code |
|-------------|----------------|--------------|--------------|-----------------|-----------------|------|-----------------|-----------|-------------------|
|             |                |              |              |                 | Inlay           | Gold |                 |           |                   |
| CCM04-4105  | 6              | 1.90         | 11.8         | SMT IN          | X               |      | 7.62            | 2400      | R242              |
| CCM04-5137  | 6              | 1.90         | 11.8         | SMT IN          |                 | X    | 7.62            | 2400      | R242              |
| CCM04-4118  | 6              | 1.90         | 14.3         | SMT OUT         | X               |      | 7.62            | 2400      | R242              |
| CCM04-5102* | 6              | 1.90         | 15.2         | SMT OUT         |                 | X    | 7.62            | 2400      | R242              |
| CCM04-5111  | 6              | 1.90         | 14.3         | SMT OUT         |                 | X    | 7.62            | 2400      | R242              |
| CCM04-4106  | 6              | 2.10         | 11.8         | SMT IN          | X               |      | 7.62            | 1900      | R192              |
| CCM04-5116  | 6              | 2.10         | 11.8         | SMT IN          |                 | X    | 7.62            | 1900      | R192              |
| CCM04-4119  | 6              | 2.10         | 14.3         | SMT OUT         | X               |      | 7.62            | 1900      | R192              |
| CCM04-5112  | 6              | 2.10         | 14.3         | SMT OUT         |                 | X    | 7.62            | 1900      | R192              |
| CCM04-4120  | 6              | 2.40         | 14.3         | SMT OUT         | X               |      | 7.62            | 1900      | R192              |
| CCM04-5120  | 6              | 2.40         | 14.3         | SMT OUT         |                 | X    | 7.62            | 1900      | R192              |
| CCM04-5106  | 6              | 2.50         | 11.8         | SMT IN          |                 | X    | 7.62            | 1900      | R192              |
| CCM04-5114  | 6              | 2.50         | 11.8         | SMT IN          | X               |      | 7.62            | 1900      | R192              |
| CCM04-4121  | 6              | 2.65         | 14.3         | SMT OUT         | X               |      | 7.62            | 1900      | R192              |
| CCM04-5121  | 6              | 2.65         | 14.3         | SMT OUT         |                 | X    | 7.62            | 1900      | R192              |
| CCM04-5115  | 6              | 2.80         | 11.8         | SMT IN          |                 | X    | 7.62            | 1900      | R192              |
| CCM04-5134  | 6              | 2.80         | 11.8         | SMT IN          | X               |      | 7.62            | 1900      | R192              |
| CCM04-4122* | 6              | 2.90         | 14.3         | SMT OUT         | X               |      | 7.62            | 1600      | R162              |
| CCM04-5122* | 6              | 2.90         | 14.3         | SMT OUT         |                 | X    | 7.62            | 1600      | R162              |

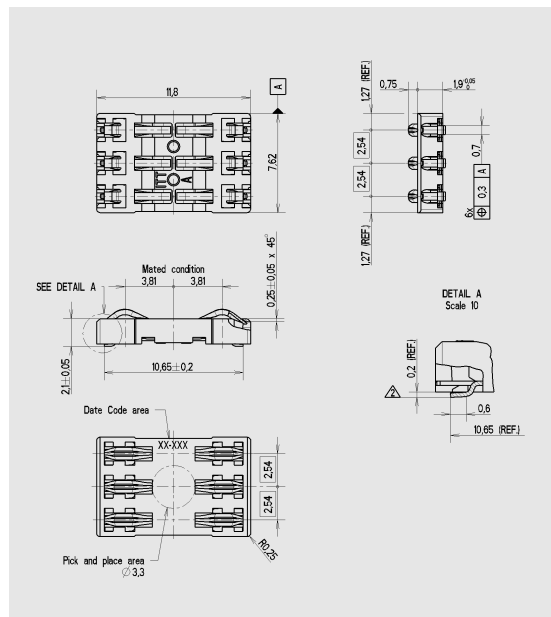
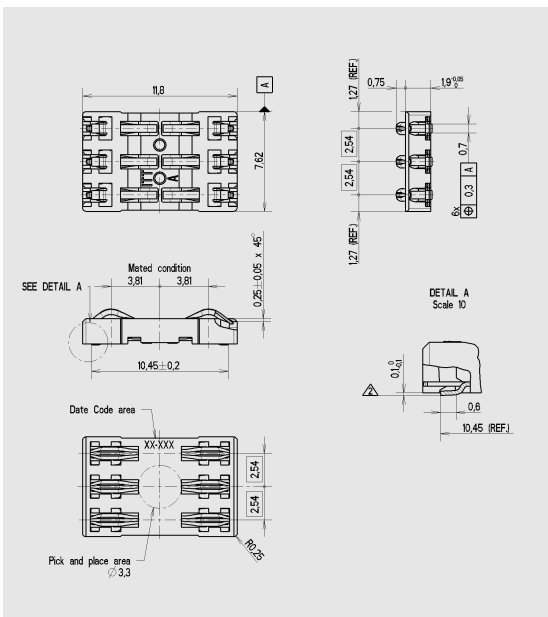
## 8 Contacts Versions

| Part Number | N° of Contacts | Total Height | Total Length | Terminal Design | Contact Plating |      | Insulator Width | Packaging | Modification Code |
|-------------|----------------|--------------|--------------|-----------------|-----------------|------|-----------------|-----------|-------------------|
|             |                |              |              |                 | Inlay           | Gold |                 |           |                   |
| CCM04-4135* | 8              | 1.90         | 11.8         | SMT IN          | X               |      | 10.16           | 2400      | R242              |
| CCM04-5123* | 8              | 1.90         | 11.8         | SMT IN          |                 | X    | 10.16           | 2400      | R242              |
| CCM04-4148* | 8              | 1.90         | 14.3         | SMT OUT         | X               |      | 10.16           | 2400      | R242              |
| CCM04-5129* | 8              | 1.90         | 14.3         | SMT OUT         |                 | X    | 10.16           | 2400      | R242              |
| CCM04-4136  | 8              | 2.10         | 11.8         | SMT IN          | X               |      | 10.16           | 1900      | R192              |
| CCM04-5113  | 8              | 2.10         | 11.8         | SMT IN          |                 | X    | 10.16           | 1900      | R192              |
| CCM04-4149  | 8              | 2.10         | 14.3         | SMT OUT         | X               |      | 10.16           | 1900      | R192              |
| CCM04-5130  | 8              | 2.10         | 14.3         | SMT OUT         |                 | X    | 10.16           | 1900      | R192              |
| CCM04-4150  | 8              | 2.40         | 14.3         | SMT OUT         | X               |      | 10.16           | 1900      | R192              |
| CCM04-5131  | 8              | 2.40         | 14.3         | SMT OUT         |                 | X    | 10.16           | 1900      | R192              |
| CCM04-5109  | 8              | 2.50         | 11.8         | SMT IN          | X               |      | 10.16           | 1900      | R192              |
| CCM04-5125  | 8              | 2.50         | 11.8         | SMT IN          |                 | X    | 10.16           | 1900      | R192              |
| CCM04-4151  | 8              | 2.65         | 14.3         | SMT OUT         | X               |      | 10.16           | 1900      | R192              |
| CCM04-5132  | 8              | 2.65         | 14.3         | SMT OUT         |                 | X    | 10.16           | 1900      | R192              |
| CCM04-5108  | 8              | 2.80         | 11.8         | SMT IN          | X               |      | 10.16           | 1900      | R192              |
| CCM04-5127  | 8              | 2.80         | 11.8         | SMT IN          |                 | X    | 10.16           | 1900      | R192              |
| CCM04-4152* | 8              | 2.90         | 14.3         | SMT OUT         | X               |      | 10.16           | 1600      | R162              |
| CCM04-5133* | 8              | 2.90         | 14.3         | SMT OUT         |                 | X    | 10.16           | 1600      | R162              |

Note: \*Versions on request

1

## Dimensional Drawings



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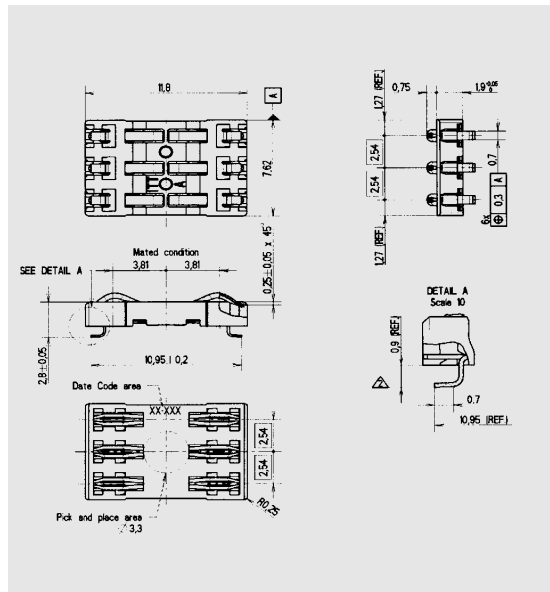
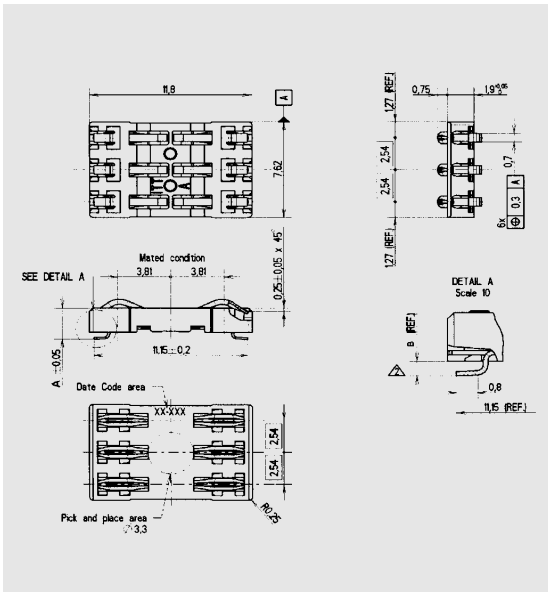
# CCM04 MK III

## 2 x 3 contacts SMT IN

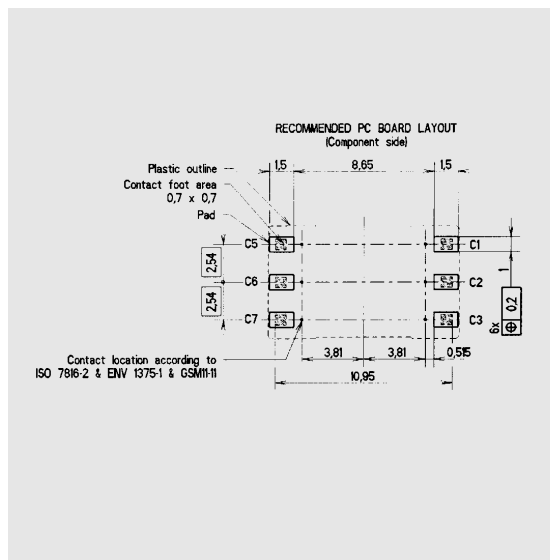
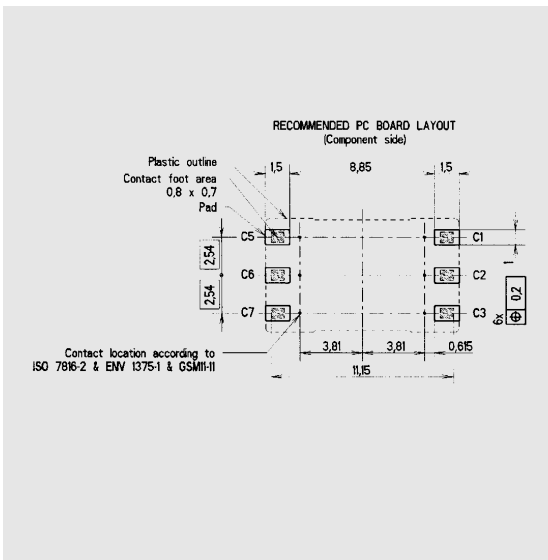
| Height A | Height B | Inlay       | Gold        |
|----------|----------|-------------|-------------|
| 2.4 mm   | 0.5 mm   | CCM04-4107* | CCM04-5117* |
| 2.5 mm   | 0.6 mm   | CCM04-5114  | CCM04-5106  |
| 2.65 mm  | 0.75 mm  | CCM04-4108* | CCM04-5118* |
| 2.9 mm   | 1 mm     | CCM04-4109* | CCM04-5119* |
| 3.15 mm  | 1.25 mm  | CCM04-4110* | CCM04-5107* |

| Height | Inlay      | Gold       |
|--------|------------|------------|
| 2.8 mm | CCM04-5134 | CCM04-5115 |

## Dimensional Drawings



## PCB Layout



Note: \* Versions on request



Cannon

Dimensions are shown in mm  
Dimensions subject to change

[www.ittcannon.com](http://www.ittcannon.com)

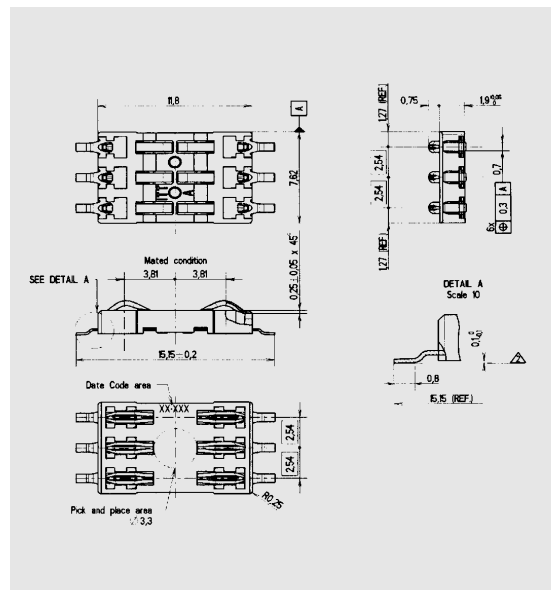
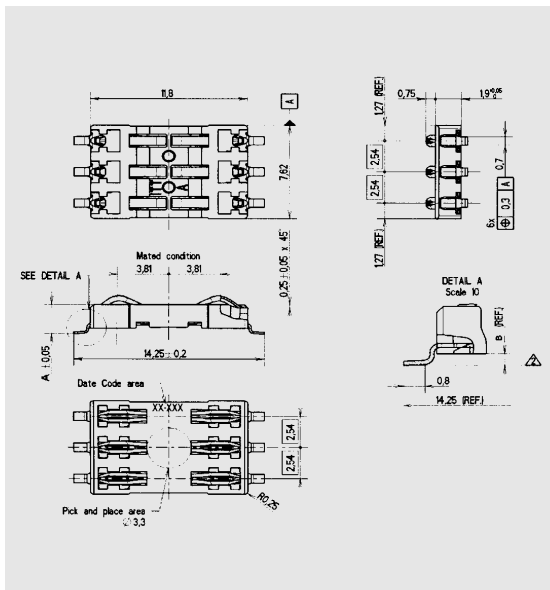
1

**2 x 3 contacts SMT OUT LONG**

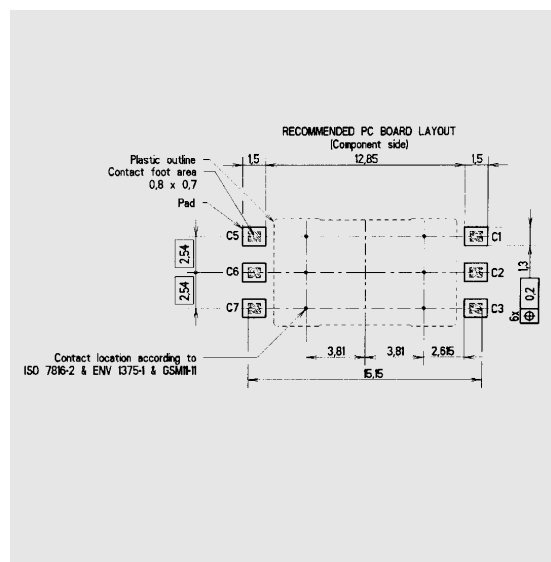
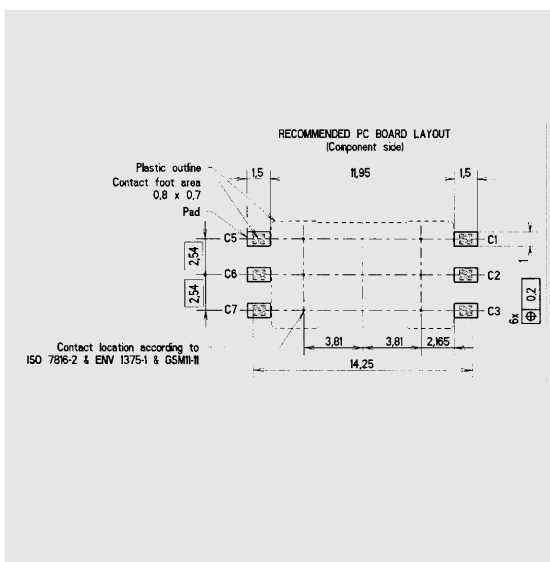
| Height A | Height B | Inlay       | Gold        |
|----------|----------|-------------|-------------|
| 1.9 mm   | 0.1 mm   | CCM04-4118  | CCM04-5111  |
| 2.1 mm   | 0.2 mm   | CCM04-4119  | CCM04-5112  |
| 2.4 mm   | 0.5 mm   | CCM04-4120  | CCM04-5120  |
| 2.65 mm  | 0.75 mm  | CCM04-4121  | CCM04-5121  |
| 2.9 mm   | 1.0 mm   | CCM04-4122* | CCM04-5122* |

|               |              |             |
|---------------|--------------|-------------|
| <b>Height</b> | <b>Inlay</b> | <b>Gold</b> |
| 1.9 mm        |              | CCM04-5102* |

## Dimensional Drawings



## PCB Layout



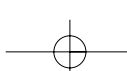
Note: \* Versions on request



Cannon

Dimensions are shown in mm  
Dimensions subject to change

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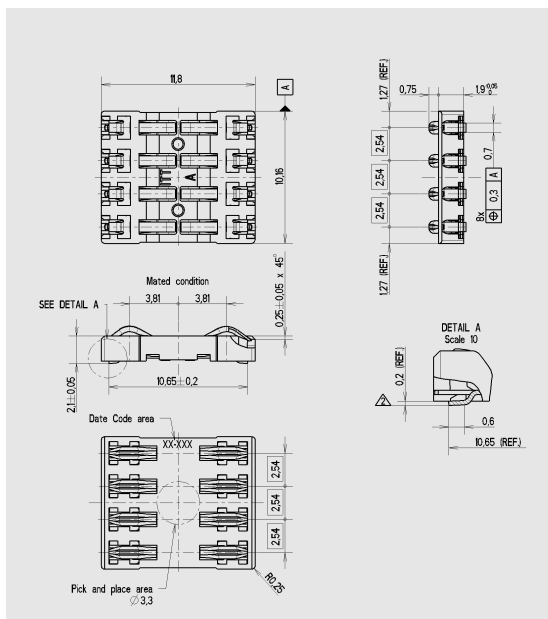
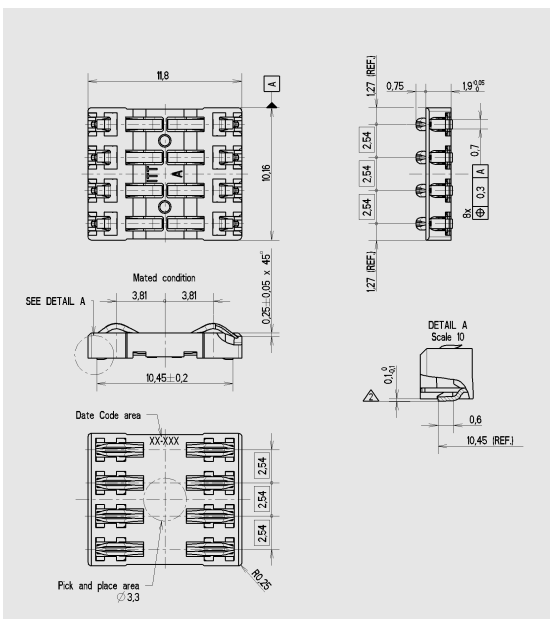
# CCM04 MK III

## 2 x 4 contacts SMT IN

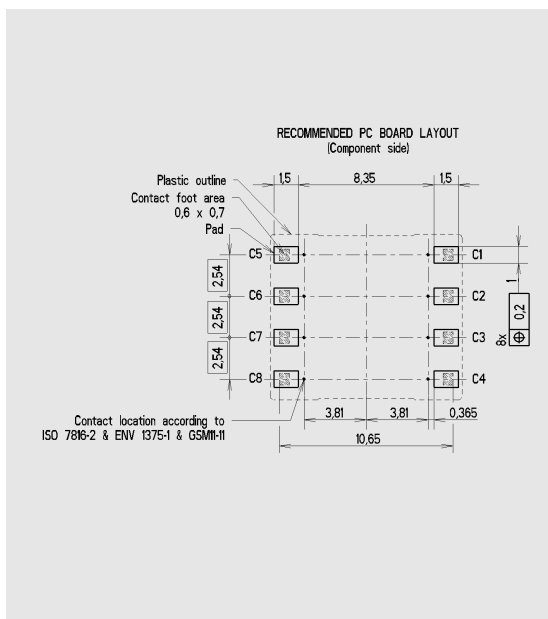
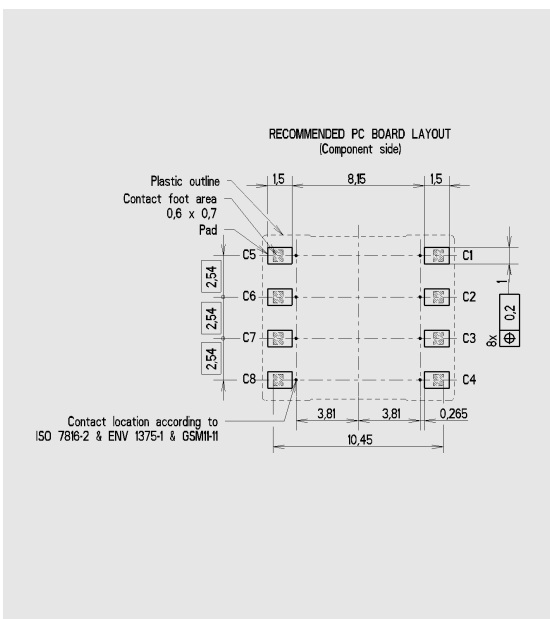
| Height  | Inlay      | Gold       |
|---------|------------|------------|
| 1.90 mm | CCM04-4135 | CCM04-5123 |

| Height | Inlay      | Gold       |
|--------|------------|------------|
| 2.1 mm | CCM04-4136 | CCM04-5113 |

## Dimensional Drawings



## PCB Layout



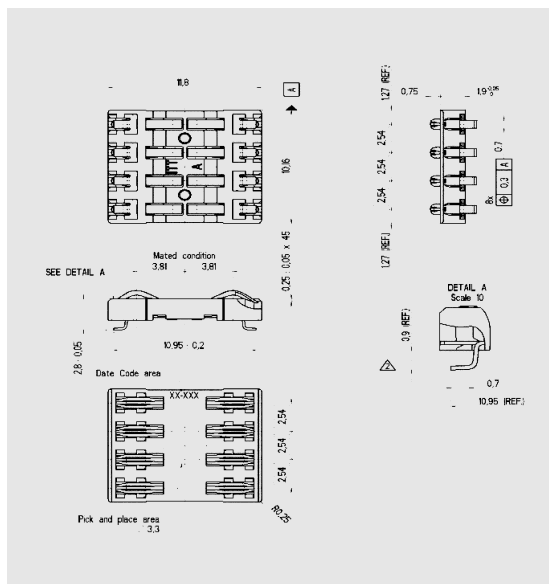
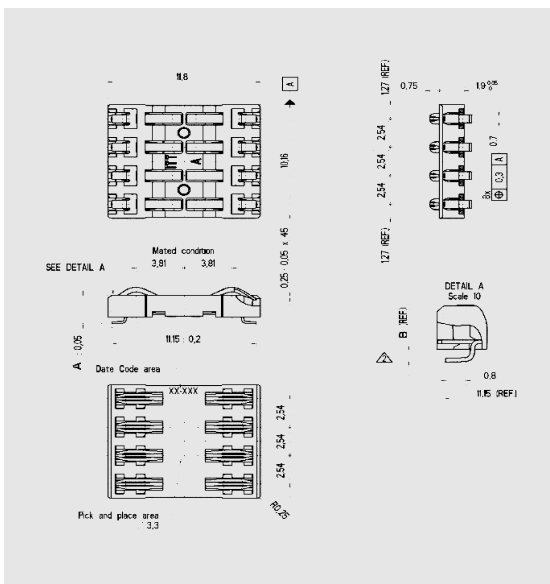
# CCM04 MK III

## 2 x 4 contacts SMT IN

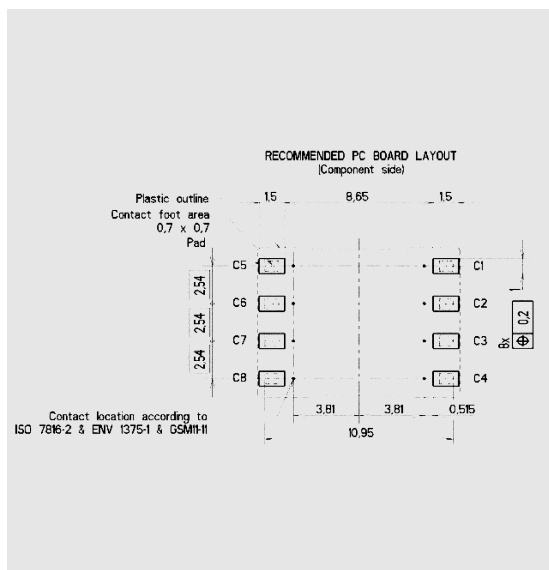
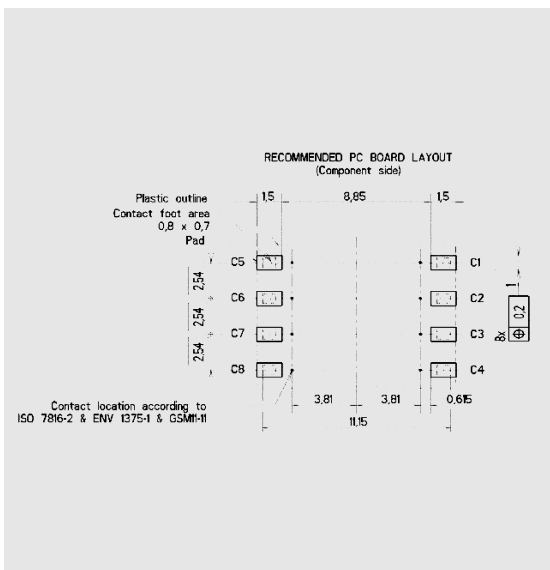
| Height A | Height B | Inlay       | Gold        |
|----------|----------|-------------|-------------|
| 2.4 mm   | 0.5 mm   | CCM04-4137* | CCM04-5124* |
| 2.5 mm   | 0.6 mm   | CCM04-5109  | CCM04-5125  |
| 2.65 mm  | 0.75 mm  | CCM04-4138* | CCM04-5126* |
| 2.9 mm   | 1.0 mm   | CCM04-4139* | CCM04-5128* |
| 3.15 mm  | 1.25 mm  | CCM04-4140  | CCM04-5135* |

| Height | Inlay      | Gold       |
|--------|------------|------------|
| 2.8 mm | CCM04-5108 | CCM04-5127 |

## Dimensional Drawings



## PCB Layout



Note: \* Versions on request

