

# Smart Card Interconnect Devices

## CCM01

For Transaction terminals and Set Top boxes:

MKII: Compact space saving design,  
integration with low profile sealed switch

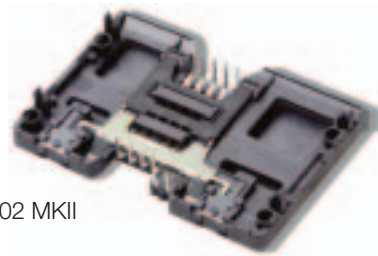


CCM01 MKII

## CCM02

When extended life is needed:

- 500,000 mating cycles
- Integrates low profile sealed switch
- SMT version available
- Landing technology



CCM02 MKII

## CCM03

SIM and SAM cards:

- MKII: Compact design with hinged,  
fixed covers, auto lock hinged  
cover and switch
- MKIII: Smallest solution for SIM/SAM  
cards with low profile sealed switch

CCM03 MKII with Auto Lock Cover



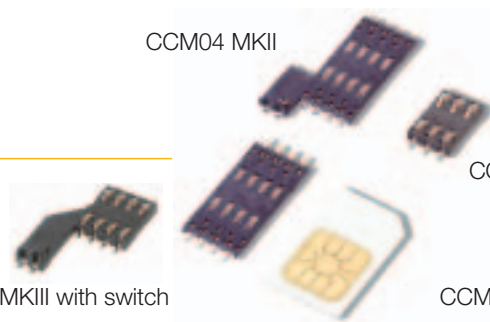
CCM03 MKIII

## CCM04

For applications where the card guidance is built  
into the equipment:

- Wide range of SMT
- Variety of contact configurations
- Variety of heights
- Optional card detection switches
- Packaged in tape and reel

CCM04 MKII



CCM04 MKIII

CCM04 MKIII with switch

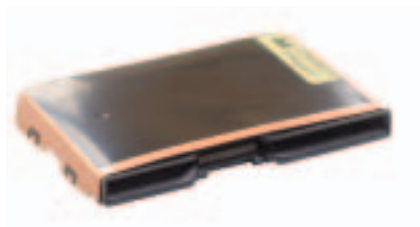
CCM04 MKII

# Smart Card Interconnect Selector Guide and Index

 **New**

	CCM01 MK II	CCM02 MK I	CCM02 MK II	CCM03 MKII	CCM03 MK II Auto Lock	CCM03 MK III	CCM04 MK II	CCM04 MK III	CCM04 MKIII Switch	CCM PCI	
Designed for ISO Card (85,6 mm x 54 mm)	•	•	•				•	•	•		
Designed for Micro Card (25 mm x 15 mm)				•	•	•	•	•			
Blade switch versions				•	•						
Sealed switch versions	•	•	•			•	•		•		
Fixed contacts	•			•	•	•	•	•	•		
Landing contacts		•	•								
Through hole versions	•	•	•								
Surface mount versions	•			•	•	•	•	•	•		
Number of contacts	8	8	8	6 & 8	6	6	6 & 8	6 & 8	8		
Inlay contact finish	•			•		•	•		•		
Page Number	6	8	10	12	17	20	22	24	27		

## **New Products**



CCM PCI



*Dimensions are shown in mm  
Specifications and dimensions subject to change*

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# CCM01 MK II



EMV™ compatible

The CCM01 MK II connectors with fixed contacts have been developed for applications where a landing contact mechanism is not required but performance and reliability are still key considerations.

## Features

- Available with 8 contacts which are designed to give a consistently reliable normal force over the life of the connector.
- For added reliability, the card detection switch (which is normally open) is sealed against dust and debris.
- Available with through-hole or surface mount contact termination and its light-weight design means that the connector can be automatically pick-and-placed.
- The moldings are made from high temperature thermoplastics suited for infrared and convection soldering processes.
- Plastic springs in the cover give a positive feel as the card is fully inserted. In case of special version with low card insertions and withdrawal, then the CCM connector is supplied without this spring effect.
- The reduced size of the contact base saves PCB space, making the connector more stable during soldering. This creates an air gap between the contacts and card entry slot which reduces the risk of an electrostatic transfer to the PCB.
- 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.
- A chamfered opening to the card entry slot improves the card guidance into the connector.
- The contact area is spooned to reduce the risk of accidental (or deliberate) damage and to optimize the electrical connection with the card.
- Robustly formed printed circuit tails allow a coplanarity of  $\pm 0.05$  mm to be maintained.

EMV™ is a trademark owned by EMVCoLLC.



Construction	
Contacts	Copper alloy
Plating	Contact area : Gold alloy inlay Terminals : Tin lead (2 $\mu$ min)
Moldings	High temp. thermoplastic UL 94V-0 rated
Card detection switch	Stainless steel and copper alloy

Mechanical Data	
Number of Contacts	8
Mechanical life	100,000 cycles min
Card insertion force	10 N max
Card extraction force	1 N min / 10 N max (4N max for CCM01-2253, 2255)
Contact force	0.25 N min / 0.50 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	Frequency 10 to 500 Hz. Acceleration 50m/s <sup>2</sup> Duration 6 hours - amplitude 0,35 mm; Max electrical discontinuity 1 $\mu$ s
Shock	Peak value 500 m/s <sup>2</sup> - Duration 11 ms 3 shocks in each direction of each axis; Max electrical discontinuity 1 $\mu$ s

Contact Electrical Data	
Insulation resistance	1,000 M $\Omega$ min
Resistance	100 m $\Omega$ max
Current rating	10 $\mu$ A min / 1 A max
Dielectric strength	750 Vrms min

Switch Electrical Data	
Card detection switch	Normally open
Contact resistance	100 m $\Omega$ max
Dielectric strength	250 Vrms min
Current rating	1 mA min / 10 mA max
Maximum 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 against dust

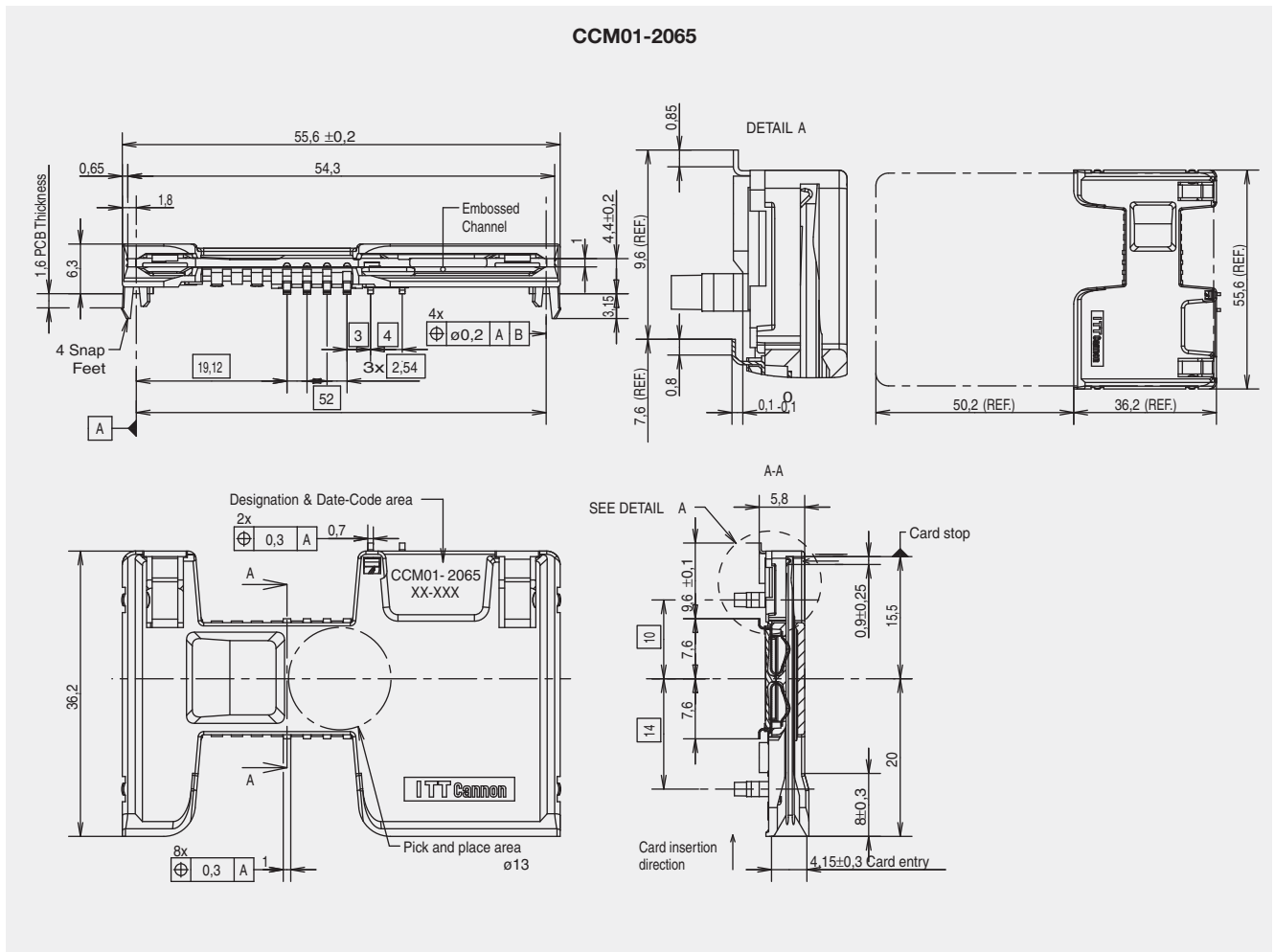
Ordering Code				
Part Number	Number of Contacts	Termination Tail Design	Retention Force	Packaging Multiple
CCM01-2064	8	THT w/board lock	<10N	300
CCM01-2065	8	SMT w/board lock	<10N	300
CCM01-2251	8	SMT	<10N	300
CCM01-2253	8	SMT	<4N	300
CCM01-2255	8	Through-hole	<4N	300

Packaging	
30 per tray, 10 trays per box.	

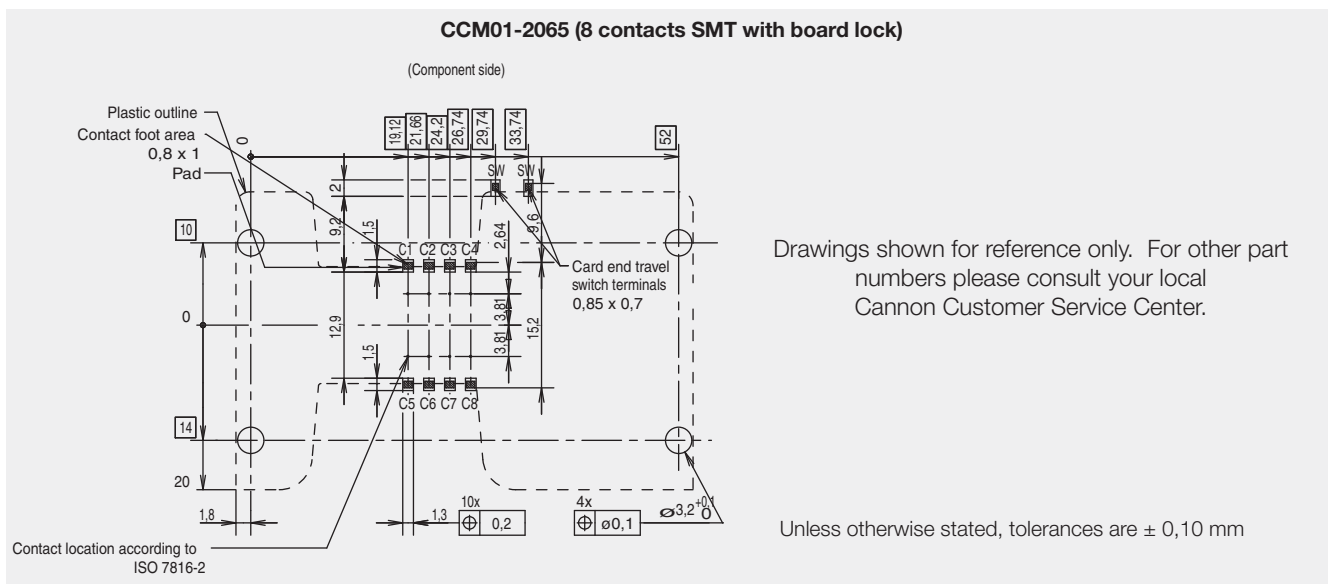
Dimensions are shown in mm  
Specifications and dimensions subject to change

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## Dimensional Drawings



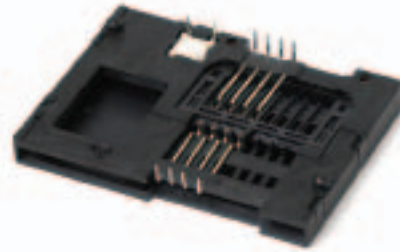
## PCB Layout



Dimensions are shown in mm  
Specifications and dimensions subject to change

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# CCM02 MK I



CCM02 MK I is a connector with landing contacts.

## Features

- Available with 8 through hole contacts.
- 100,000 card insertion cycles.
- The contacts do not touch the card until it is almost fully inserted - a minimal wiping action removes any non-conductive material.
- The connector has been designed to give a positive feel as the card is fully inserted.
- For added reliability, the integrated card end-travel switch (which is normally open) is sealed against dust and grit.

## Construction

Contacts	Copper alloy
Plating	Contact area : Gold over Nickel Terminals : Tin lead (2µ min)
Moldings	Thermoplastic UL 94V-0 rated

## Mechanical Data

Number of Contacts	8
Mechanical life	100,000 cycles min
Card insertion force	10 N max
Card extraction force	1 N min / 10 N max
Contact force	0.15 N min / 0.35 N max
Vibration	Frequency 10 to 500 Hz. Acceleration 50m/s <sup>2</sup> Duration 6 hours - amplitude 0,35 mm Max electrical discontinuity 1µs
Shock	Peak value 500 m/s <sup>2</sup> - Duration 11 ms 3 shocks in each direction of each axis Max electrical discontinuity 1 µs

## Contact Electrical Data

Insulation resistance	1,000 MΩ min
Resistance	100 mΩ max
Current rating	10 µA min / 1 A max
Dielectric strength	750 Vrms min

## Switch Electrical Data

Card detection switch	Normally open
Contact resistance	100 mΩ max
Dielectric strength	250 Vrms min
Current rating	1 mA min / 10 mA max
Maximum power	0.2 VA

## Environmental Data

Operating temperature	-40°C to +85°C
Soldering temperature	Wave: 260°C / 5 sec
Damp heat	IEC 512 test number 11c (10 days)
Salt mist	IEC 512 test number 11f (96 hours)
Card detection switch	Sealed IP 54

## Ordering Code

Part Number	Number of Contacts	Packaging Multiple
CCM02-1N0-3	8	300
CCM02-1N0-32	8	300
CCM02-1N0-35	8 with extended cover	200

## Packaging

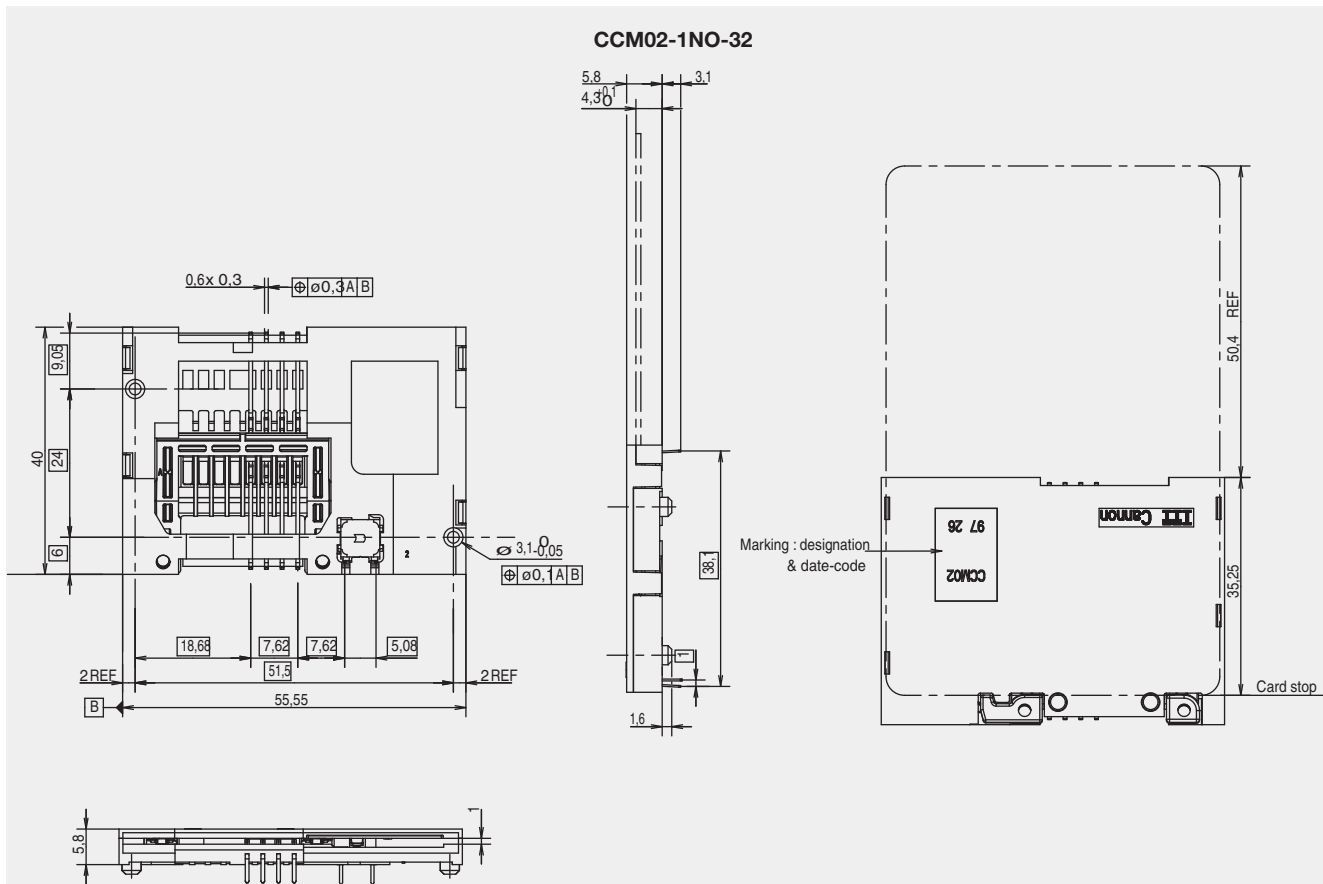
30 per tray, 10 trays per box.  
Exception: CCM02-1N0-35, 20 per tray, 10 per box.



Dimensions are shown in mm  
Specifications and dimensions subject to change

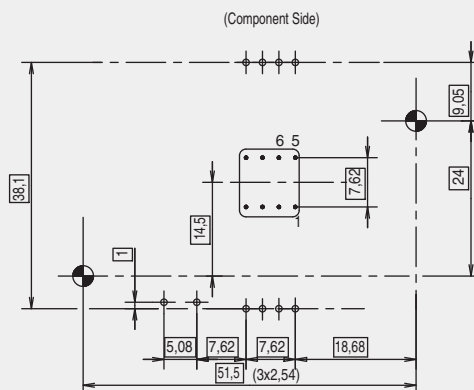
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## Dimensional Drawings



## PCB Layout

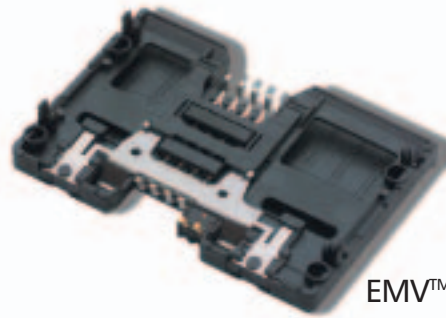
### CCM02-1NO-32 (8 contacts through hole)



Drawings shown for reference only. For other part numbers please consult your local Customer Service Center.

Unless otherwise stated, tolerances are  $\pm 0,10$  mm

# CCM02 MK II



The CCM02 MK II connectors with landing contacts are dedicated for applications where the reader usage is high and the life span of the card is a key consideration. A connector with contacts which land on the card, rather than slide over it, should be specified so as to minimize card wear. The CCM02 has been redesigned to give an even higher performance in a compact, affordable package.

## Features

- 500,000 card insertion cycles.
- The contacts do not touch the card until it is almost fully inserted – A minimal wiping action removes any non-conductive material.
- The connector has been designed to give a positive indication once the card has been fully inserted.
- The reduced size of the contact base saves PCB space, making the connector more stable during surface mounting, and creates an air gap between the contacts and card entry slot, which reduces the risk of an electrostatic transfer to the PCB.
- For added reliability, the integrated card end-travel switch, which is normally open, 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 contact area is spooned to reduce the risk of accidental (or deliberate) damage and to optimize the electrical connection with the card.
- Snap-locks underneath the molding position and hold the connector on the PCB, and give additional support to the contact terminals.
- The plastic moldings are made from a high temperature thermoplastic suited for infrared and convection soldering processes.

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## Construction

Contacts	Copper alloy
Plating	Contact area : Gold alloy inlay Terminals: Tin lead (2µ min)
Moldings	High temp. thermoplastic UL 94V-0 rated
Spring	Stainless steel
Card detection switch actuator	Stainless steel

## Mechanical Data

Number of Contacts	8
Mechanical life	500,000 cycles min
Card insertion force	10 N max
Card extraction force	1 N min / 10 N max
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 1,0 mm from card stop) 1.8 N max for complete depression
Vibration	Frequency 10 to 500 Hz. Acceleration 50m/s <sup>2</sup> Duration 6 hours - amplitude 0,35 mm Max electrical discontinuity 1µs
Shock	Peak value 500 m/s <sup>2</sup> – Duration 11 ms 3 shocks in each direction of each axis Max electrical discontinuity 1 µs

## Contact Electrical Data

Insulation resistance	1,000 MΩ min
Resistance	100 mΩ max
Current rating	10 µA min / 1 A max
Dielectric strength	750 Vrms min

## Switch Electrical Data

Card detection switch	Normally open
Contact resistance	100 mΩ max
Dielectric strength	250 Vrms min
Current rating	1 mA min / 10 mA max
Maximum 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

## Ordering Code

Part Number	Number of Contacts	Termination Tails Design	PCB Locating	Packaging Multiple
CCM02-2503	8	Through Hole	4 Board Lock (PCB 1.6 mm thick)	300
CCM02-2504	8	SMT	4 Board Lock (PCB 1.6 mm thick)	300
CCM02-2508	8	SMT	2 Pegs	300
CCM02-2511	8	Through Hole	4 Pegs	300
CCM02-2512	8	SMT	4 Pegs	300
CCM02-2758	8	SMT	2 Pegs (without cover)	300
CCM02-2763	8	SMT	4 Board Lock + 2 Pegs	300
CCM02-2765	8	Through Hole	4 Board Lock (PCB 1mm thick)	300
CCM02-2766	8	SMT	4 Board Lock (PCB 1mm thick)	300

## Packaging

30 per tray, 10 trays per box.

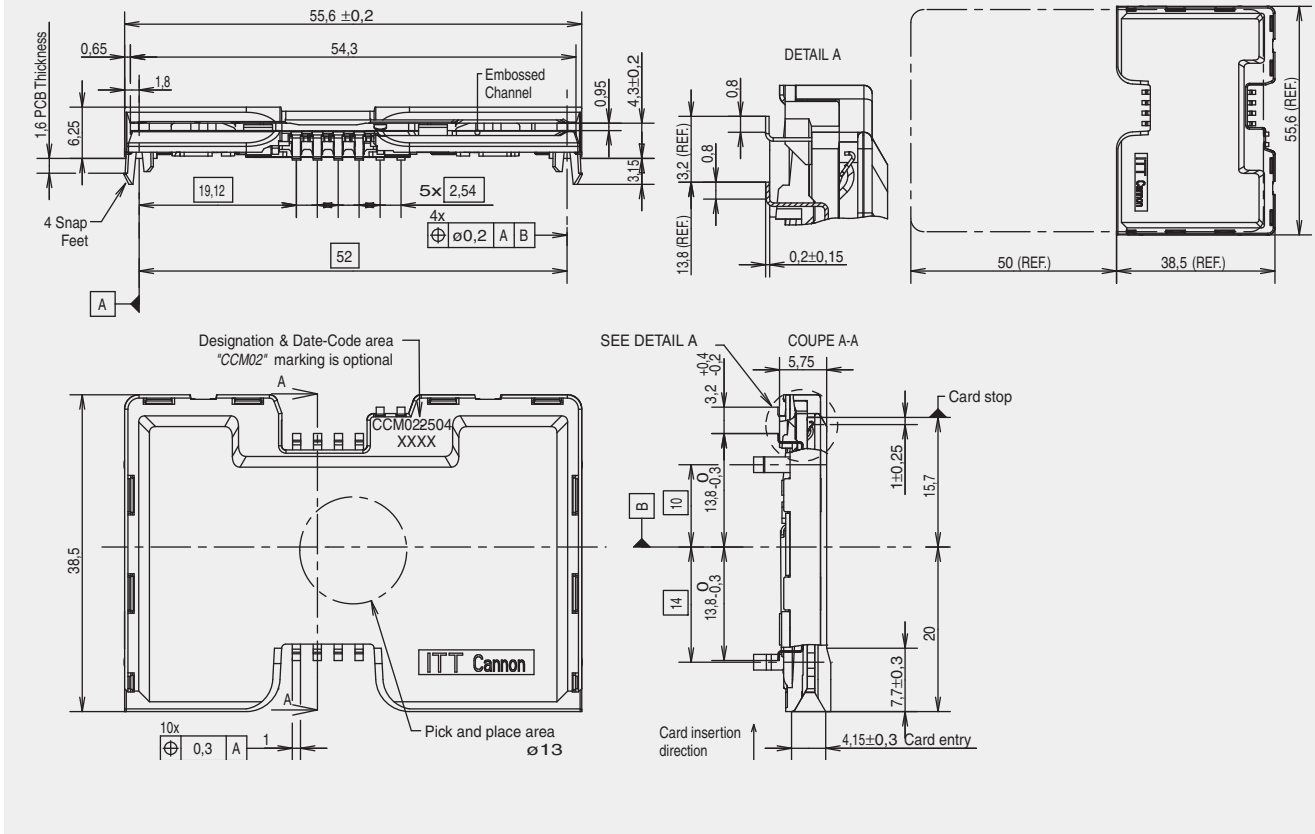
Dimensions are shown in mm  
Specifications and dimensions subject to change

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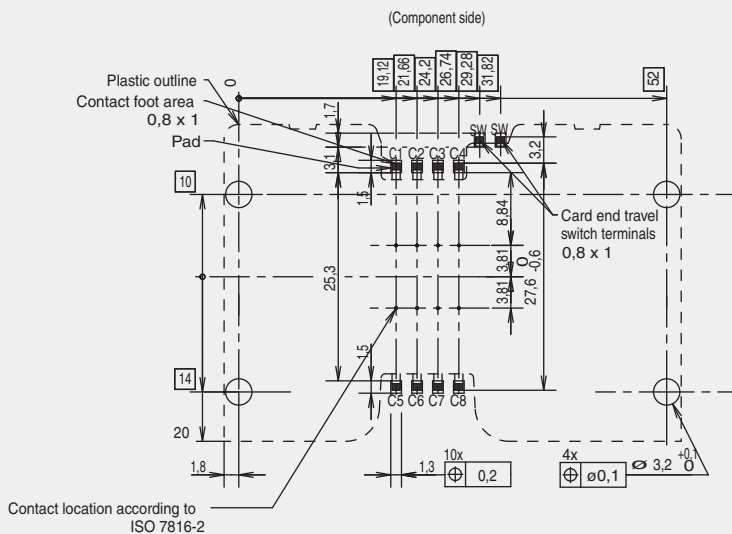
## Dimensional Drawings

CCM02-2504 (8 contacts SMT - 4 board lock)



## PCB Layout

CCM02-2504 (8 contacts SMT - 4 board lock)

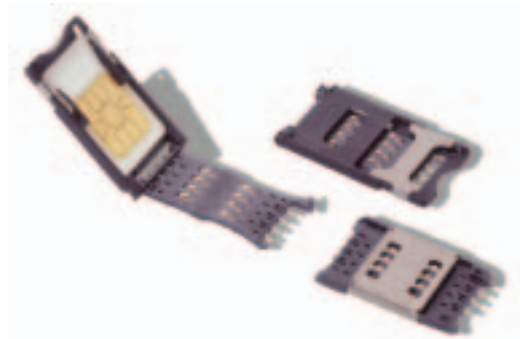


Drawings shown for reference only. For other part numbers please consult your local Customer Service Center.

Unless otherwise stated, tolerances are  $\pm 0,10$  mm



# CCM03 MK II



A new range of CCM03 connectors have been developed to interface with SIM/SAM cards as defined by GSM11-11 and ENV1375-1. The connectors are available with either hinged covers or fixed covers and have been designed to minimize the amount of space needed for PCB mounting.

## Features

### Hinged Cover

- Available with 6 or 8 contacts, with or without PCB locating pegs.
- Available with insulated card presence switch.
- The cover springs open when unlocked while the card is in place.
- The molding is polarized so that the cover can only be closed if the card is correctly inserted.
- The cover can be replaced without removing the connector from the PCB.
- Inspection slots allow an electrical test to be made without opening the cover.
- The overall height of the connector is only 2,5 mm. The amount of space needed to mount the connector is just 29,65 mm x 17,2 mm.

### Fixed Cover

- Available with 6 or 8 contacts.
- The overall height of the connector is 2,85 mm max. Only 25,5 mm x 17,2 mm of board space is required to mount the connector.

### General

- With tape and reel packaging as standard, the connectors are designed to be automatically pick-and-placed.
- The high temperature thermoplastic moldings are suited for infrared and convection soldering processes.
- By using an inlay finish in the contact area the life of the precious metal is extended by over 10 times that of standard gold plating.
- Robustly formed printed circuit tails allow a co-planarity of  $\pm 0,05$  mm to be maintained.

## Construction

Contacts	Copper alloy
Plating	Contact area : Gold alloy inlay or gold over nickel Terminals : Tin lead (2 $\mu$ min)
Moldings	High temp. thermoplastic UL 94V-0 rated
Slide lock/metal cover	Stainless steel

## Mechanical Data

Number of Contacts	6 or 8
Mechanical life, hinged cover	10,000 cycles min
Mechanical life, fixed cover	50,000 cycles
Card insertion force	Hinged cover: 1 N max Fixed cover: 3 N max
Card extraction force	Hinged cover: 1 N max Fixed cover: 0.80 N min / 3 N max
Contact force	0.25 N min / 0.50 N max
Slide locking force	2 N min / 6 N max
Vibration	Frequency 10 to 500 Hz. Acceleration 50m/s <sup>2</sup> Duration 6 hours - amplitude 0,35 mm Max electrical discontinuity 1 $\mu$ s
Shock	Peak value 500 m/s <sup>2</sup> – Duration 11 ms 3 shocks in each direction of each axis Max electrical discontinuity 1 $\mu$ s

## Contact Electrical Data

Insulation resistance	1,000 M $\Omega$ min
Resistance	100 m $\Omega$ max
Current rating	10 $\mu$ A min / 1 A max
Dielectric strength	750 Vrms min

## Switch Electrical Data

Card detection switch	Normally open
Contact resistance	100 m $\Omega$ max
Dielectric strength	250 Vrms min
Current rating	1 mA min / 10mA max
Maximum 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)

## Packaging

Quantity per reel, see table next page.



Dimensions are shown in mm  
Specifications and dimensions subject to change

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## Ordering Code

Part Number	Number of Contacts	Cover	PCB Locating Pegs	Quantity per reel	Contact Finish	Switch lock	Card Presence switch
CCM03-3001 R102	6	Hinged	No	1000	Inlay	No	No
CCM03-3002 R102	6	Hinged	Yes	1000	Inlay	No	No
CCM03-3003 R102	8	Hinged	No	1000	Inlay	No	No
CCM03-3004 R102	8	Hinged	Yes	1000	Inlay	No	No
CCM03-3009 R102	6	Hinged	No	1000	Gold	No	No
CCM03-3010 R102	6	Hinged	Yes	1000	Gold	No	No
CCM03-3011 R102	8	Hinged	No	1000	Gold	No	No
CCM03-3012 R102	8	Hinged	Yes	1000	Gold	No	No
CCM03-3013 R102	6	Hinged	No	1000	Gold	No	Yes (insulated)
CCM03-3514 R102	6	Hinged	No	1000	Inlay	Yes	No
CCM03-3504 R122	8	Fixed	No	1200	Inlay	No	No
CCM03-3505 R122	6	Fixed	No	1200	Inlay	No	No

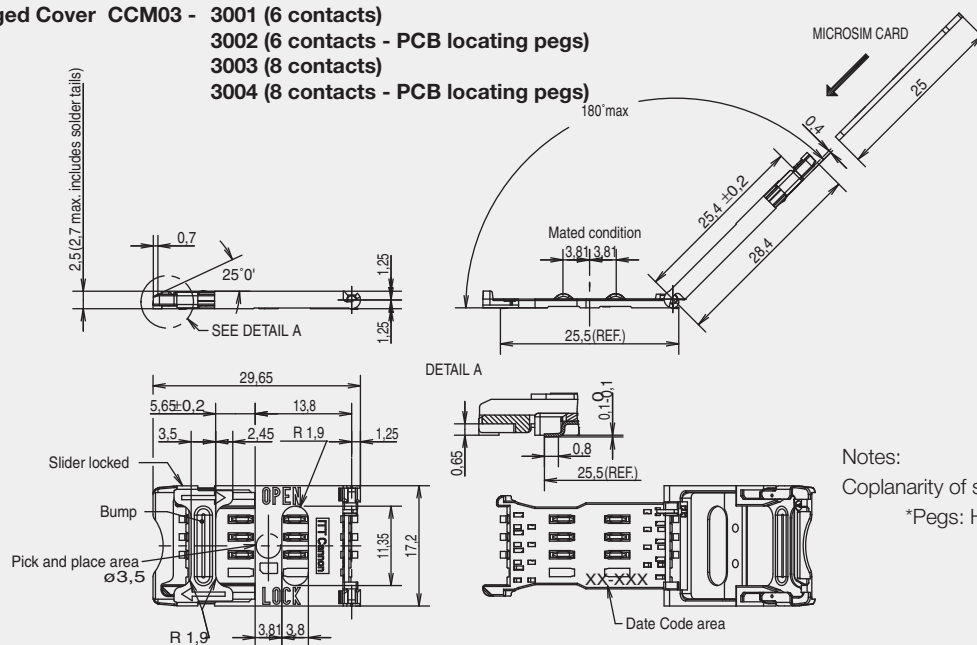
## Dimensional Drawings

### Hinged Cover CCM03 - 3001 (6 contacts)

3002 (6 contacts - PCB locating pegs)

3003 (8 contacts)

3004 (8 contacts - PCB locating pegs)



### Notes:

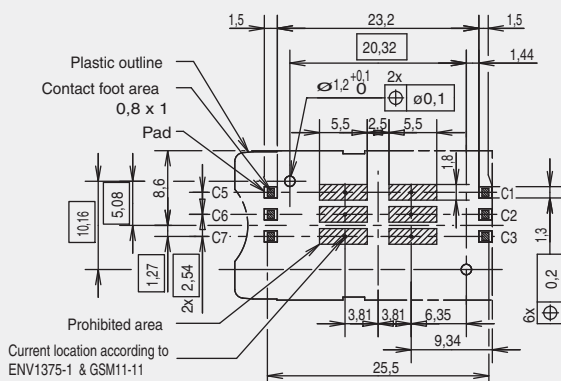
Coplanarity of soldering surfaces:  $\pm 0,05$  mm

\*Pegs: Height 0,7 mm and  $\varnothing 1$  mm

## PCB Layout

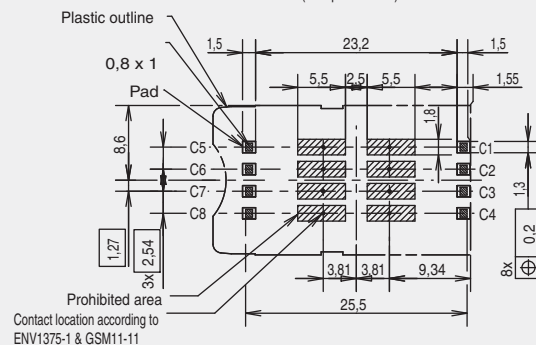
### CCM03-3001 / 3002

(Component side)



### CCM03-3003 / 3004

(Component side)



Unless otherwise stated, tolerances are  $\pm 0,10$  mm



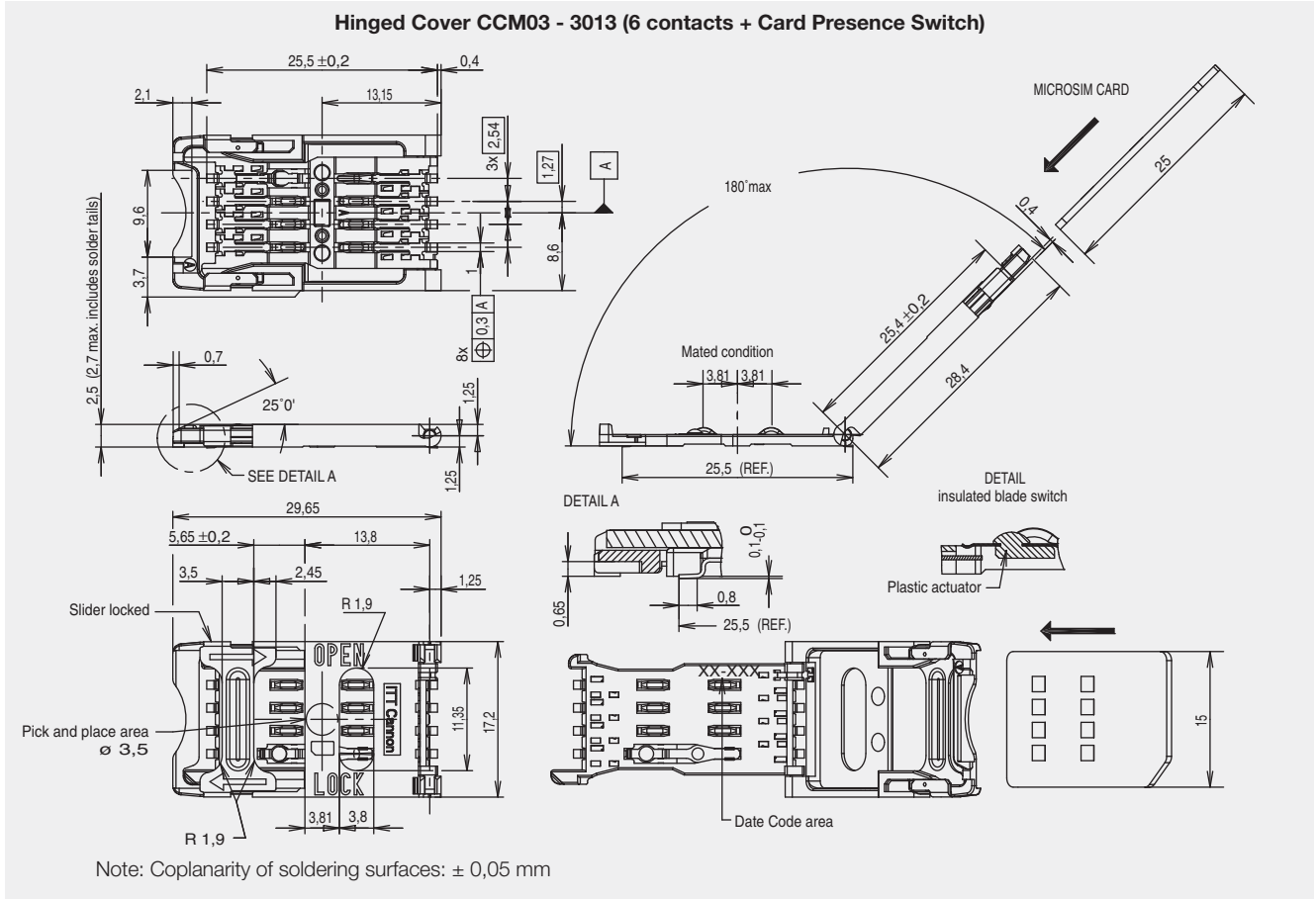
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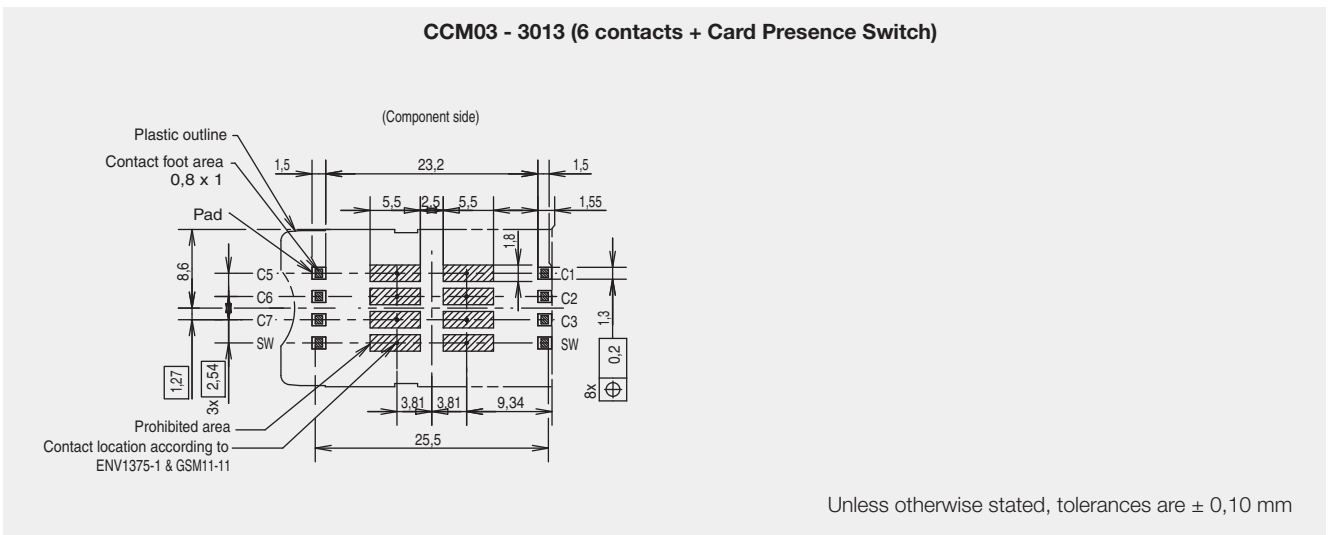
# CCM03 MK II Hinged Cover

## Insulated Card Presence Switch

### Dimensional Drawings

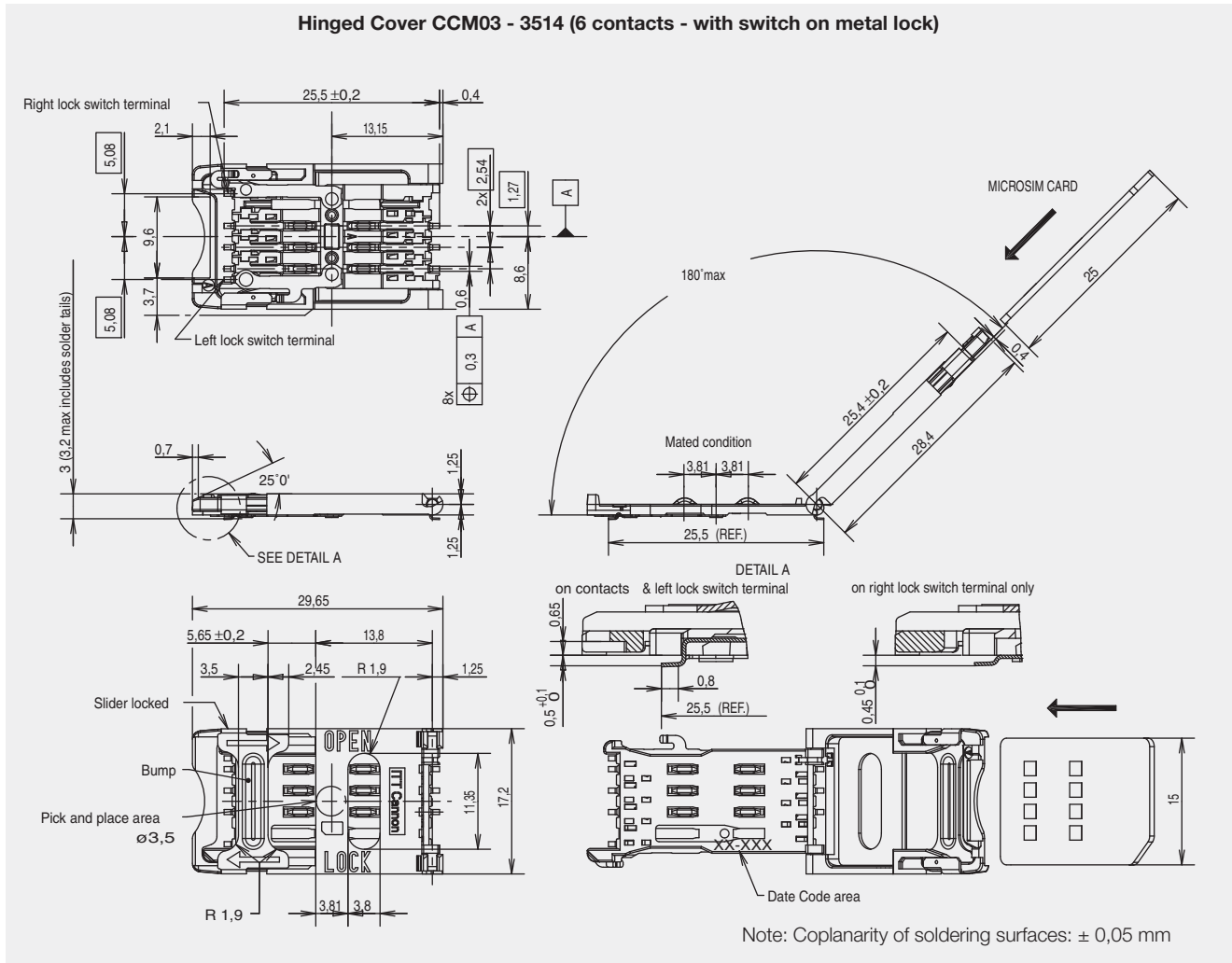


### PCB Layout

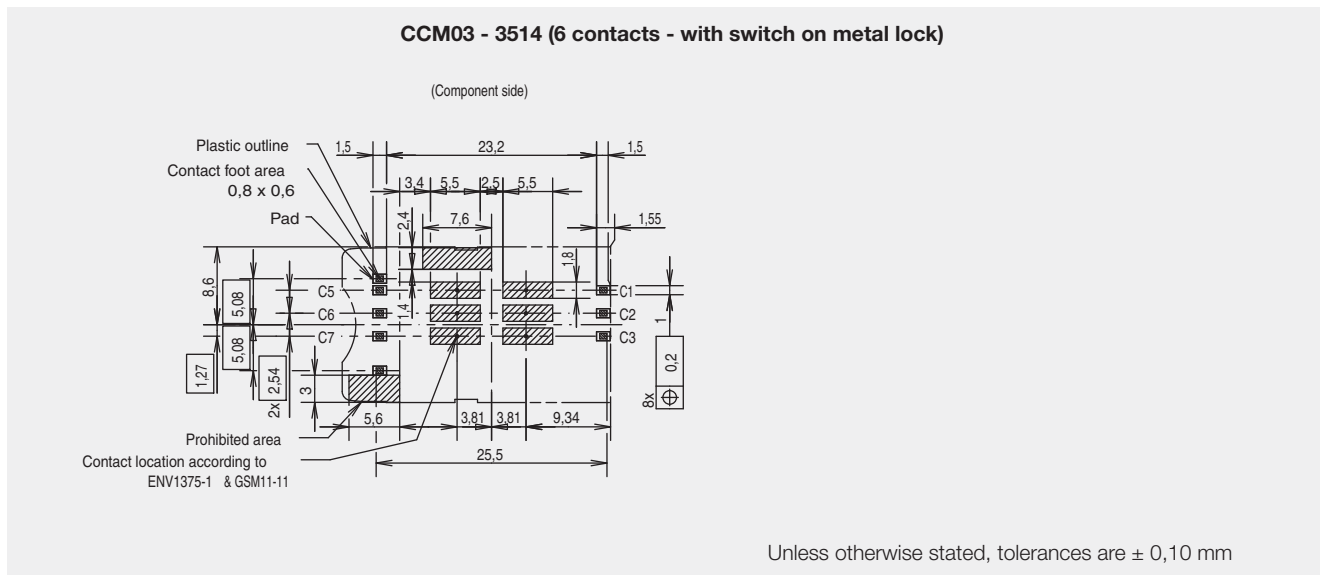


# CCM03 MK II Hinged Cover

## Dimensional Drawings



## PCB Layout



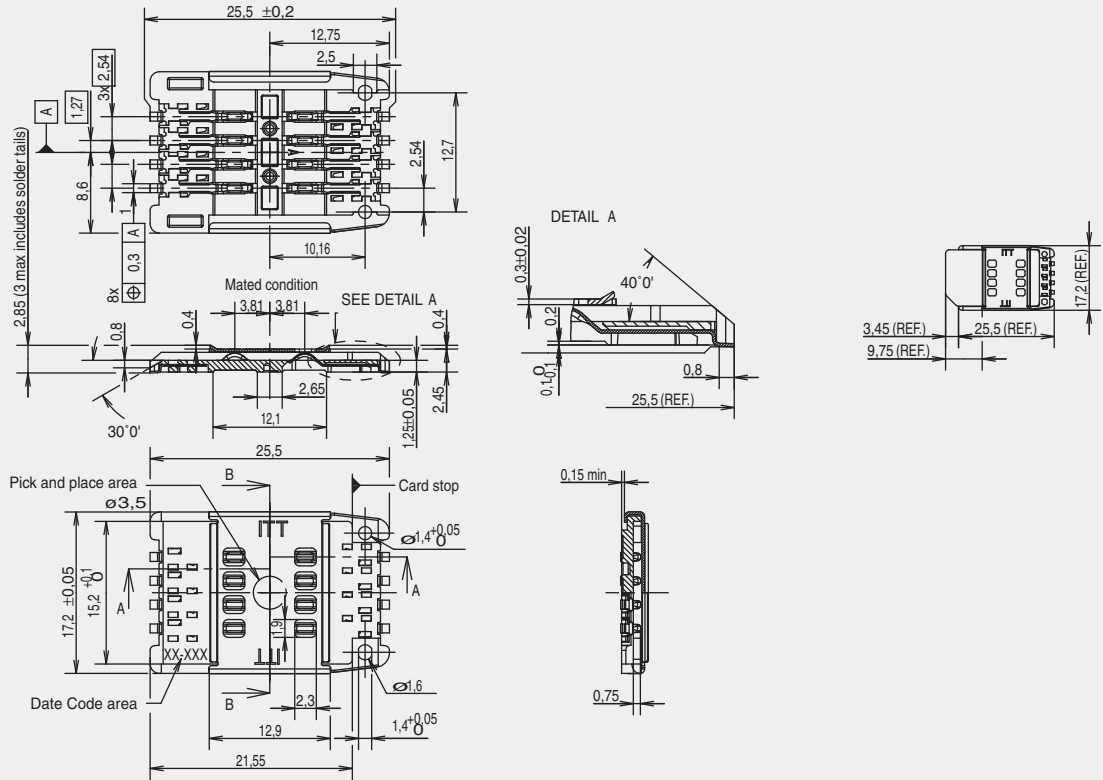
Dimensions are shown in mm  
Specifications and dimensions subject to change

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# CCM03 MK II Fixed Cover

## Dimensional Drawings

Fixed cover CCM03 - 3504 (8 contacts)

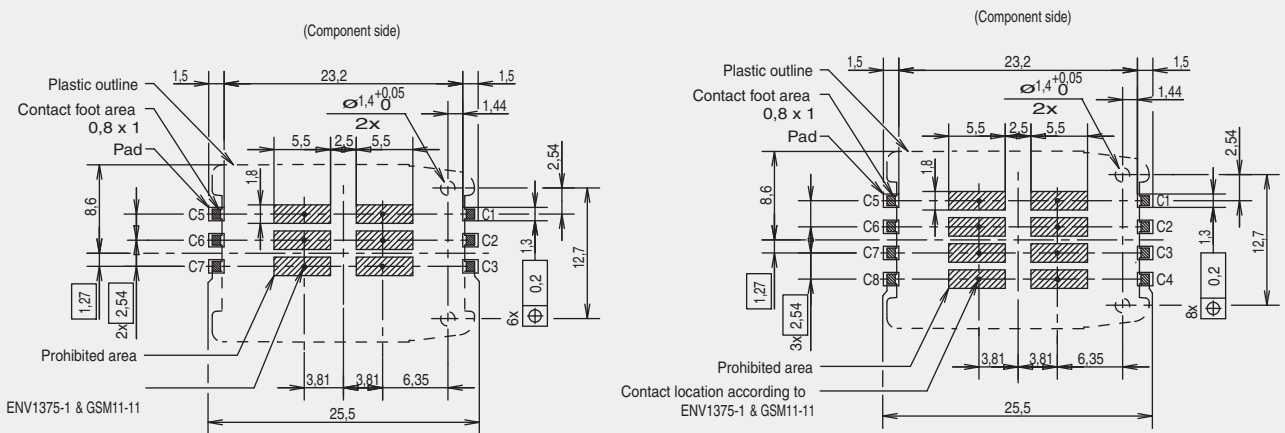


Note: Coplanarity of soldering surfaces: ± 0,05 mm

## PCB Layout

CCM03 - 3505

CCM03 - 3504



Unless otherwise stated, tolerances are ± 0,10 mm



Dimensions are shown in mm  
Specifications and dimensions subject to change

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# CCM03 MK II with Auto Lock cover



A new range of CCM03 connectors have been developed to interface with SIM/SAM cards as defined by GSM11-11 and ENV1375-1. The connectors are available with a hinged metallic cover and have been designed to provide an easier open/lock function and side card entry.

## Features

- Available with 6 cross contacts which are designed to give a consistently reliable normal force over the life of the connector.
- The hinged metallic cover can automatically lock by pressure.
- Side entry of the card ensures easier positioning of the card into the connector.
- Insulated blade switch version available for detection card when cover is closed.
- The molding is polarized so that the cover can only be closed if the card is correctly inserted.
- Inspection slots allow an electrical test to be made without opening the cover.
- With tape and reel packaging as standard, the connectors are designed to be automatically pick-and-placed.
- The moldings are made from high-temperature thermoplastics suited to infrared and convection soldering processes.
- Robustly formed printed circuit tails allow a coplanarity of  $\pm 0,05$  mm to be maintained.

## Construction

Contacts	Copper alloy
Contacts finish	Gold over nickel
PC tail plating	Tin lead (2 $\mu$ min)
Molding	High temp. thermoplastic, UL94V-0
Cover	Stainless steel

## Mechanical Data

Number of Contacts	6
Mechanical life	10,000 cycles min
Contact force	0.35 N min / 0.50 N max
Vibration	Frequency 10 to 500 Hz. Acceleration 50m/s <sup>2</sup> Duration 6 hours - amplitude 0.35 mm (0.014) Max electrical discontinuity 1 $\mu$ s

## Contact Electrical Data

Insulation resistance	1,000 M $\Omega$ min
Resistance	100 m $\Omega$ max
Current rating	10 $\mu$ A min / 1 A max
Dielectric strength	750 Vrms min

## Switch Electrical Data

Card detection switch	Normally open
Contact resistance	100 m $\Omega$ max
Dielectric strength	250 Vrms min
Current rating	1mA min / 10m A max
Maximum 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)

## Ordering Code

Part Number	Number of Contacts	Cover	Card Presence Switch	Quantity per reel
CCM03-3517	6	Side Hinged	No	1300
CCM03-3518	6	Front Hinged	Yes (insulated)	1300
CCM03-3529	6	Front Hinged	No	1300

## Packaging

5 reels per box.



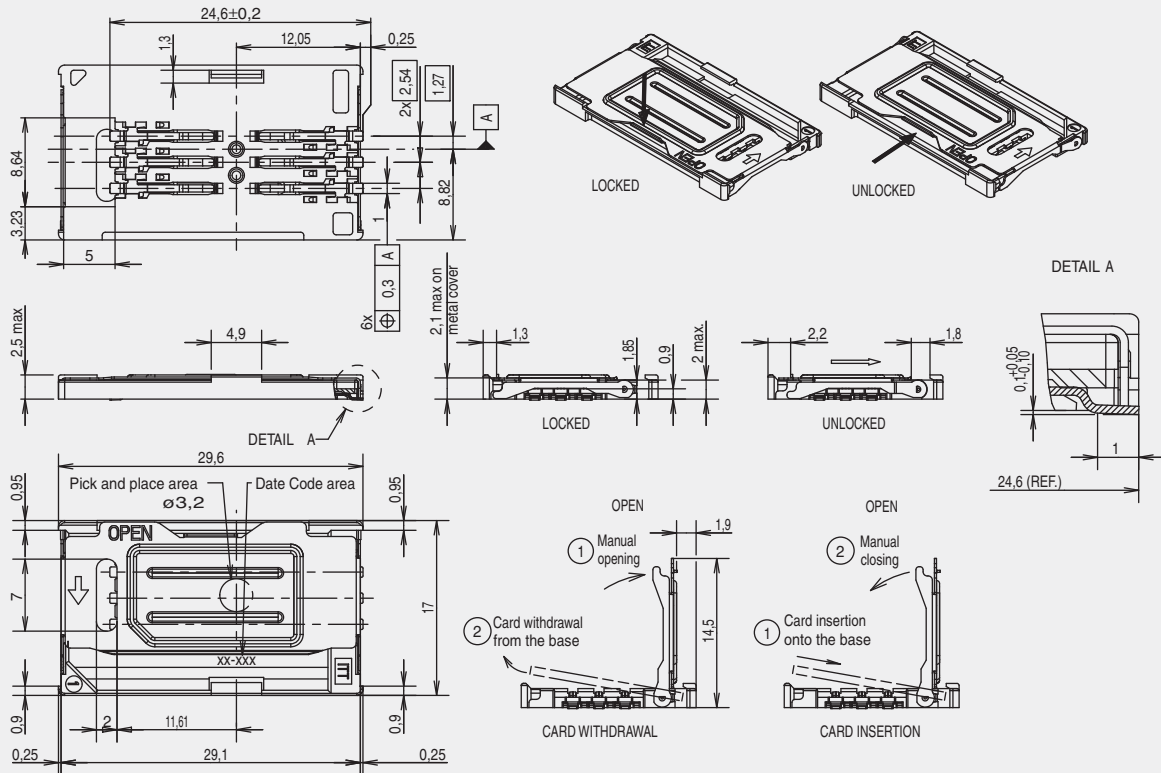
Dimensions are shown in mm  
Specifications and dimensions subject to change

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# CCM03 MK II with Auto Lock cover

## Dimensional Drawings

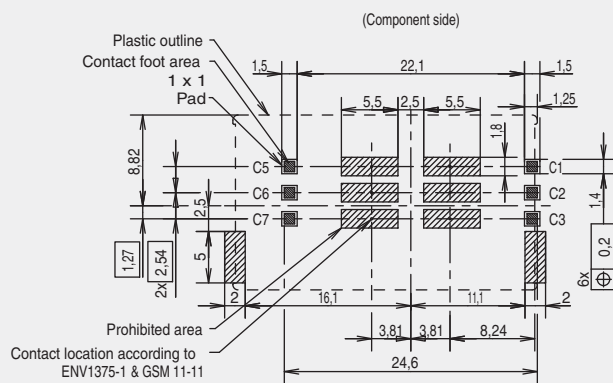
### Hinged Cover CCM03 - 3517 (6 contacts)



Note: Coplanarity of soldering surfaces:  $\pm 0,05$  mm

## PCB Layout

### CCM03 - 3517 (6 contacts)

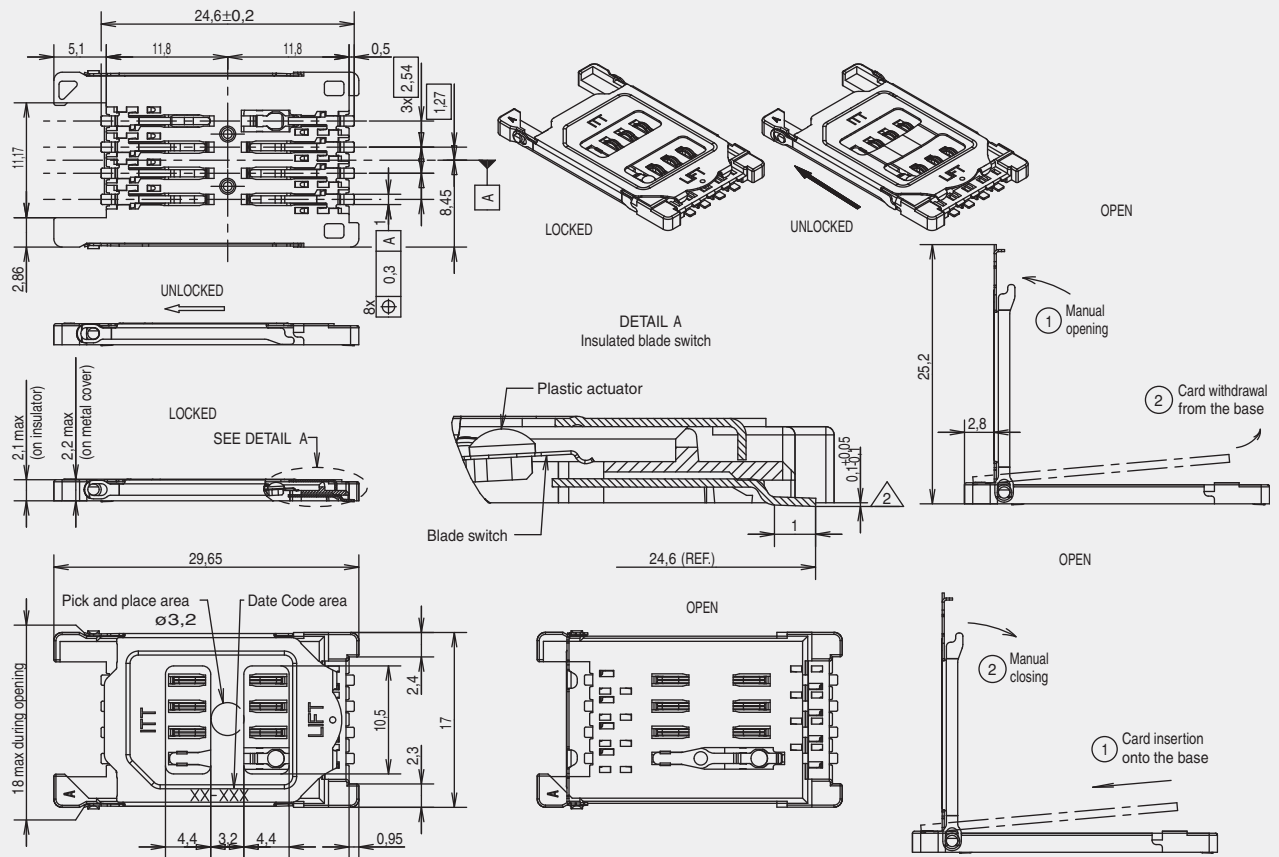


Unless otherwise stated, tolerances are  $\pm 0,10$  mm

# CCM03 MK II with Auto Lock cover

## Dimensional Drawings

Hinged Cover CCM03 - 3518 (6 contacts and switch)

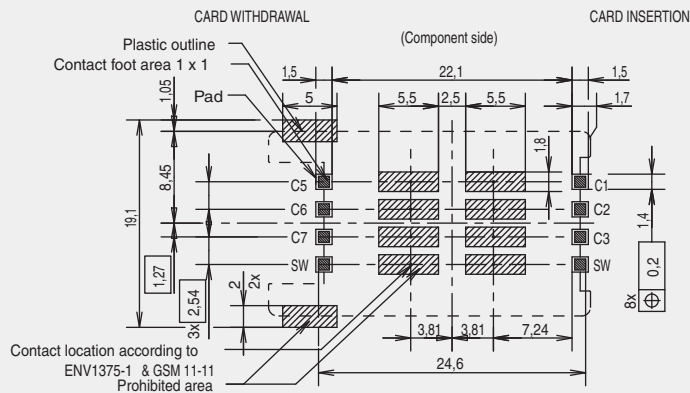


Note: Coplanarity of soldering surfaces:  $\pm 0,05$  mm

## PCB Layout

CCM03 - 3518 (6 contacts and switch)

CCM03-3529 (without switch) layout is similar except SW pads



Unless otherwise stated, tolerances are  $\pm 0,10$  mm



Dimensions are shown in mm  
Specifications and dimensions subject to change

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# CCM03 MK III



The CCM03 Series SIM/SAM Card Connector features an integrated card detection switch. This connector provides a competitive advantage to smart card reader device manufacturers by minimizing the space usage on the PCB, and features a side entry to offer convenient card access without opening the device. The unique design of this compact-size connector makes it ideal for telecommunications, portable electronics, POS terminals and similar applications, and meets GSM 11-11 specifications.

## Features

- Unique card-guiding design.
- 6 spoon-shaped, gold-alloyed contacts resist wear and improve connectivity.
- Sealed card detection switches reduce connectivity problems caused by dust or moisture.
- Switch design detects and holds the card while providing firm contact.
- Unique side entry design offers card access without opening the device.
- Stainless steel cover and UL 94V-0 high-temperature thermoplastic insulator.

## Construction

Insulator	High temperature thermoplastic UL 94V-0
Contacts	Copper Alloy
Contact finish	Gold Alloy Inlay
PC Tail plating	Tin lead (2 µm min)

## Mechanical Data

Mechanical life	10,000 cycles minimum
Contact force	0.25 N min / 0.5 N max

## Contact Electrical Data

Insulation resistance	1000 MΩ min
Resistance	100 mΩ max
Current rating	10 µA min / 1 A max
Dielectric strength	500 Vrms min

## Switch Electrical Data

Card detection switch	Normally open
Contact resistance	100 mΩ max
Dielectric strength	250 Vrms min
Current rating	1 mA min / 10 mA max
Maximum 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
Salt mist	IEC 512 test number 11f (96 hours)
Damp heat	IEC 512 test number 11c (10 days)

## Ordering Code

Part Number	Number of contacts	Cover	Quantity per reel
CCM03-3752 R102	6	Without chamfer	1000
CCM03-3754 R102	6	With chamfer	1000

Other versions without cover, without switch, with ground terminals, contact your local Customer Service Center.

## Packaging

5 reels per box.

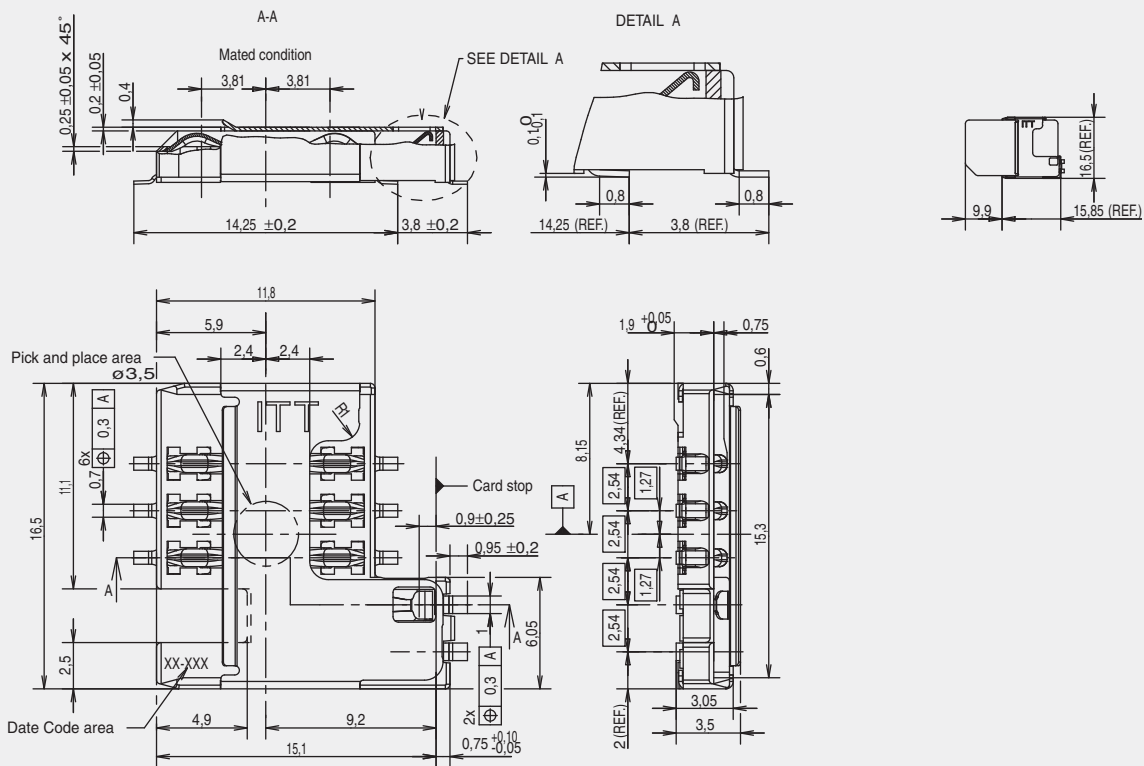


Dimensions are shown in mm  
Specifications and dimensions subject to change

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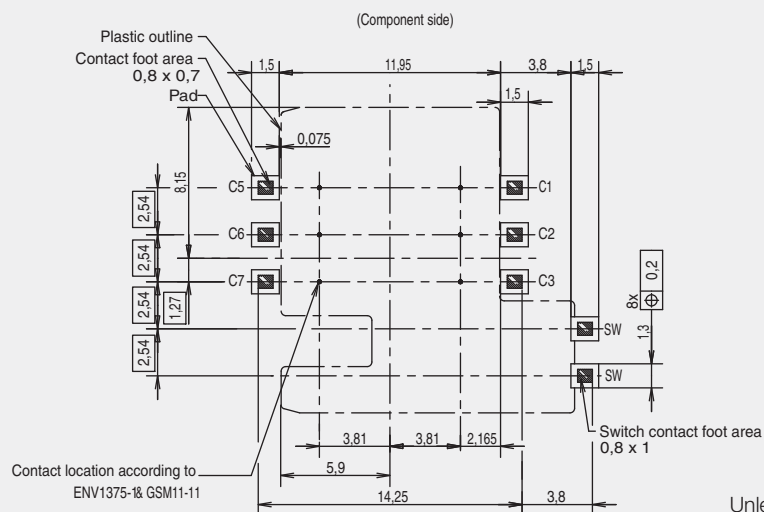
## Dimensional Drawings

CCM03-3754



## PCB Layout

CCM03-3754



Unless otherwise stated, tolerances are  $\pm 0,10$  mm



Dimensions are shown in mm  
Specifications and dimensions subject to change

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# 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 two molding heights 1,25 mm and 2,75 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, 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.
- 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 Terminals : Tin lead (2µ min)
Moldings	High temp. thermoplastic UL 94V-0 rated

Mechanical Data	
Number of Contacts	6, 8
Mechanical life	50,000 cycles min
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 50m/s <sup>2</sup>	Frequency 10 to 500 Hz. Acceleration Duration 6 hours - amplitude 0,35 mm Max electrical discontinuity 1µs
Shock	Peak value 500 m/s <sup>2</sup> – Duration 11 ms 3 shocks in each direction of each axis Max electrical discontinuity 1 µs

Contact Electrical Data	
Insulation resistance	1,000 MΩ min
Resistance	100 mΩ max
Current rating	10 µA min / 1 A max
Dielectric strength	750 Vrms min

Switch Electrical Data	
Card detection switch	Normally open (closes on card insertion)
Contact resistance	100mΩ max
Dielectric strength	250 Vrms min
Current rating	1 mA min/ 10 mA max
Maximum 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 Sealed against dust for other versions

Ordering Code			
Part Number	Number of Contacts	Card Presence Switch	Quantity per Reel
CCM04-1801	6	No	1800
CCM04-1814	8	No	1300
CCM04-1889	8	Yes	1000

## Packaging

5 reels per box.

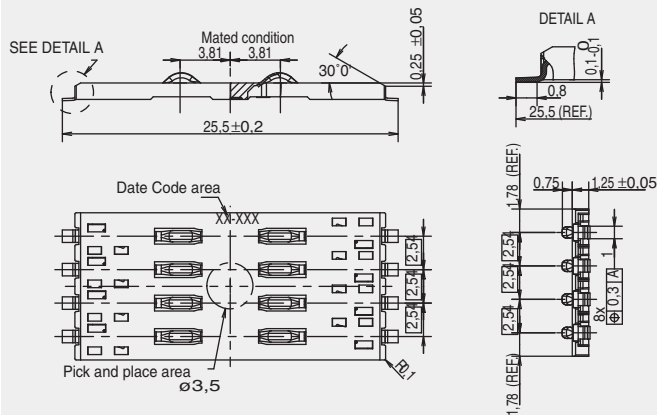


Dimensions are shown in mm  
Specifications and dimensions subject to change

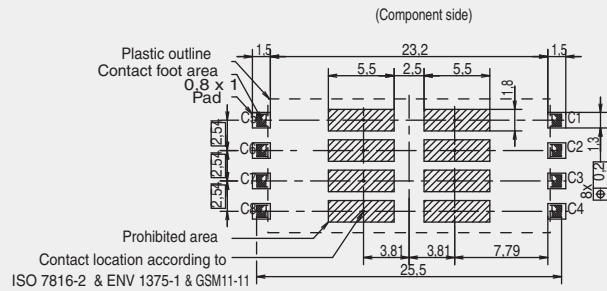
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## Dimensional Drawings

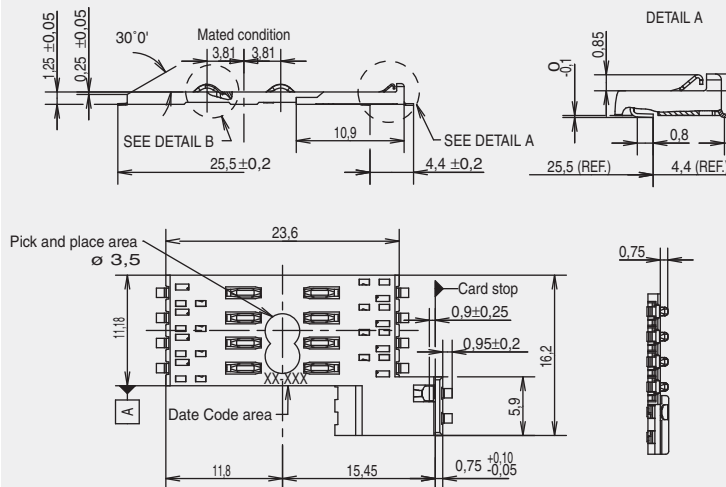
### CCM04-1814 2 x 4 contacts



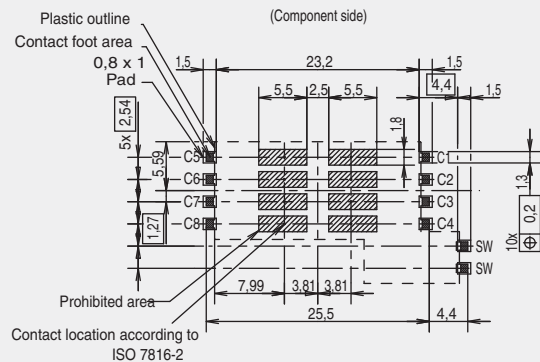
### CCM04-1814 PCB layout



### CCM04-1889 2 x 4 contacts + switch



### CCM04-1889 PCB Layout



Unless otherwise stated, tolerances are ± 0,10 mm

# 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 .

## Features

- Available with 6 or 8 contacts.
- 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.

## Construction

Insulator	High temperature thermoplastic UL 94V-0
Contacts	Copper Alloy
Contact finish	Gold over nickel
PC Tail plating	Tin lead (2 µm min)

## Mechanical Data

Mechanical life	50,000 cycles minimum
Contact force	0.25 N min / 0.5 N max
Contact travel	0,75mm

## Electrical Contacts Data

Insulation resistance	1000 MΩ min
Contact resistance max	100 mΩ max
Switching current	10 µA 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 days)
Damp heat	IEC 512 test number 11c (10 days)

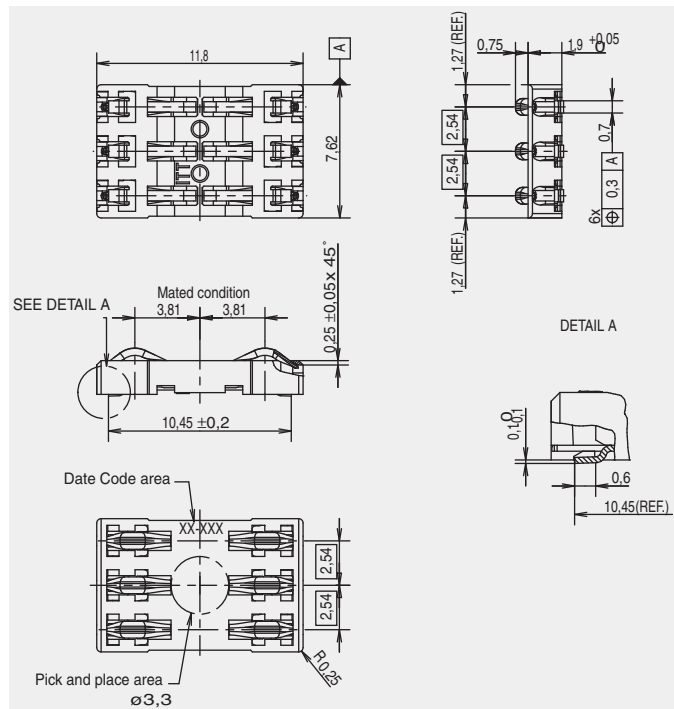
## Packaging

8 reels per box. See part number table for other packaging details.

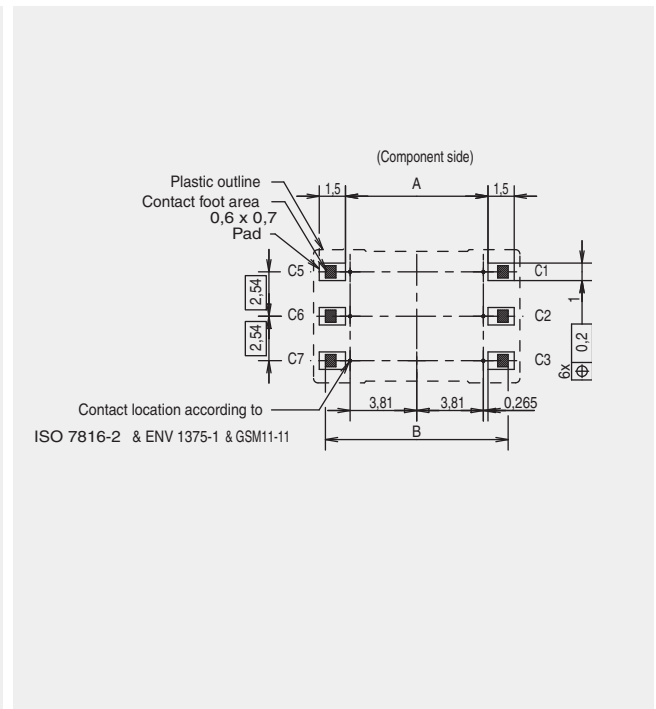
## 6 Contacts Versions

Part Number	Total Height	Total Length	Terminal Design	Quantity per Reel	Packaging Code	Dimension A	Dimension B
CCM04-5137	1,90	11,8	SMT IN	2400	R242	8,15	10,45
CCM04-5111	1,90	14,3	SMT OUT	2400	R242	12,85	15,15
CCM04-5116	2,10	11,8	SMT IN	1900	R192	8,35	10,65
CCM04-5112	2,10	14,3	SMT OUT	1900	R192	11,95	14,25
CCM04-5120	2,40	14,3	SMT OUT	1900	R192	11,95	14,25
CCM04-5106	2,50	11,8	SMT IN	1900	R192	8,85	11,15
CCM04-5121	2,65	14,3	SMT OUT	1900	R192	11,95	14,25
CCM04-5115	2,80	11,8	SMT IN	1900	R192	8,65	10,95
CCM04-5122	2,90	14,3	SMT OUT	1600	R162	11,95	14,25
CCM04-5107	3,15	11,8	SMT IN	1900	R192	8,85	11,15

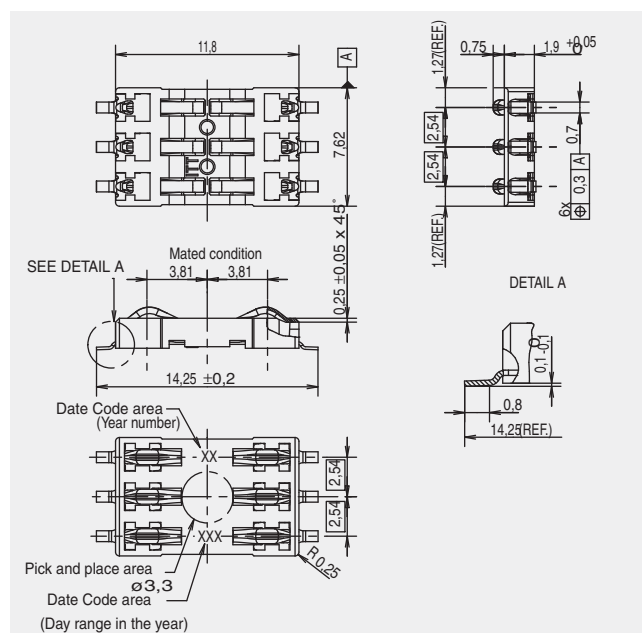
## 2 x 3 contacts SMT IN - Dimensional Drawings



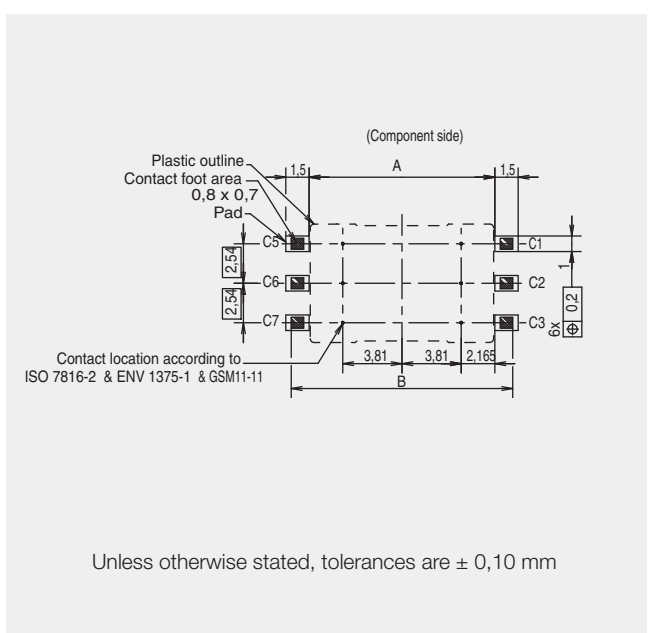
## PCB Layout



## 2 x 3 contacts SMT OUT - Dimensional Drawings



## PCB Layout



Unless otherwise stated, tolerances are  $\pm 0,10$  mm



Dimensions are shown in mm  
Specifications and dimensions subject to change

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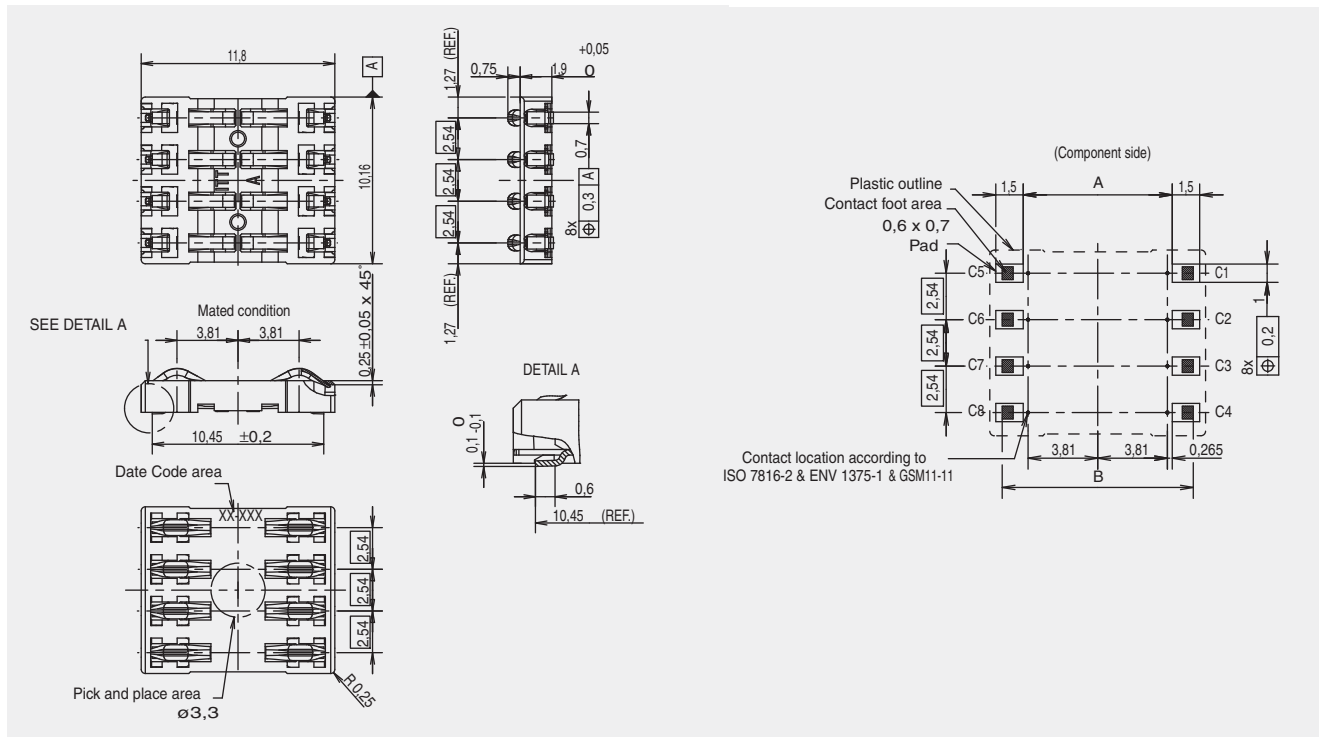
# CCM04 MK III

## 8 Contacts Versions

Part Number	Total Height	Total Length	Terminal Design	Quantity per Reel	Packaging Code	Dimension A	Dimension B
CCM04-5123	1,90	11,8	SMT IN	2400	R242	8,15	10,45
CCM04-5129	1,90	14,3	SMT OUT	2400	R242	11,95	14,25
CCM04-5113	2,10	11,8	SMT IN	1900	R192	8,35	10,65
CCM04-5130	2,10	14,3	SMT OUT	1900	R192	11,95	14,25
CCM04-5131	2,40	14,3	SMT OUT	1900	R192	11,95	14,25
CCM04-5125	2,50	11,8	SMT IN	1900	R192	8,85	11,15
CCM04-5132	2,65	14,3	SMT OUT	1900	R192	11,95	14,25
CCM04-5127	2,80	11,8	SMT IN	1900	R192	8,65	10,95

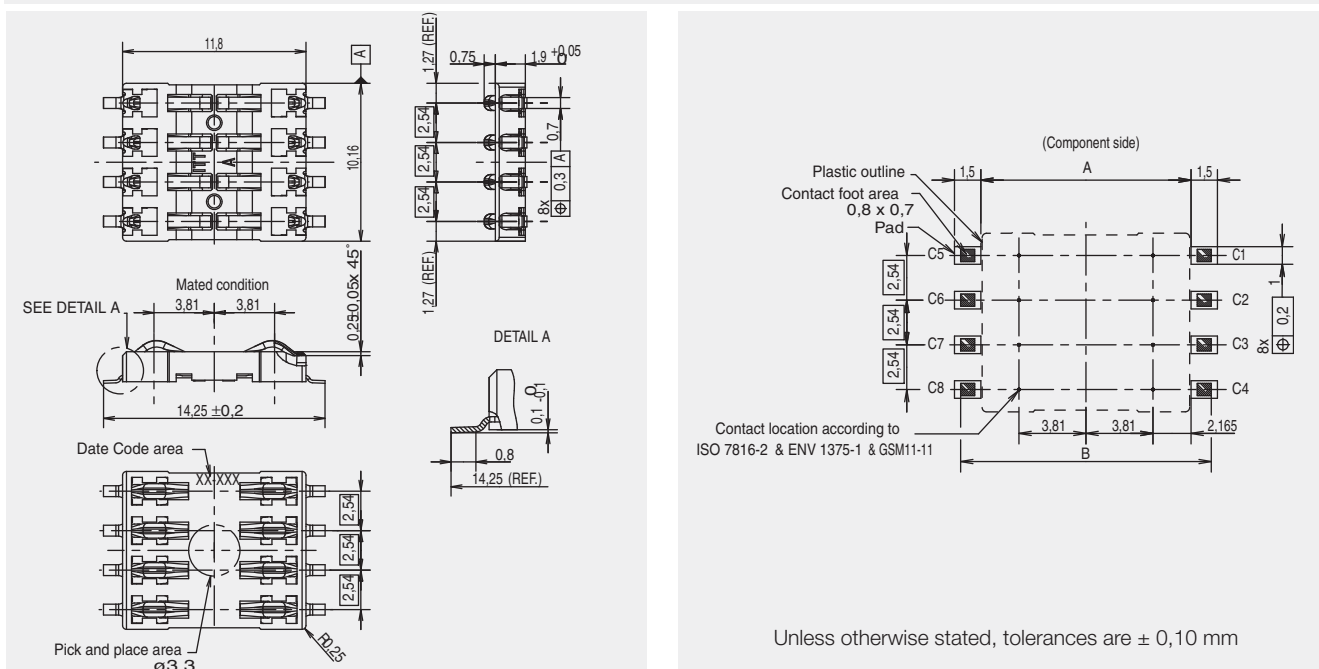
### 2 x 4 contacts SMT IN - Dimensional Drawings

### PCB Layout



### 2 x 4 contacts SMT OUT - Dimensional Drawings

### PCB Layout



Unless otherwise stated, tolerances are  $\pm 0,10$  mm



Dimensions are shown in mm  
Specifications and dimensions subject to change

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# CCM04 MK III with switch



EMV™ compatible

For applications that require a switch and you do not want to struggle with correct sequencing and PCB saving is still a must.

## Features

- Available with 8 contacts.
- Integrated card stop.
- Ultra low profile sealed switch included.
- Meets EMV requirements.
- 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.

EMV™ is a trademark owned by EMVCoLLC.

Construction	
Insulator	High temperature thermoplastic UL 94V-0
Contacts	Copper Alloy
Contact finish	Gold Alloy Inlay
PC Tail plating	Tin lead (2 µm min)

Mechanical Data	
Mechanical life	50,000 cycles minimum
Contact force	0.25 N min / 0.5 N max
Contact travel	0,75 mm

Electrical Contacts Data	
Insulation resistance	1000 MΩ min
Contact resistance max	100 mΩ max
Switching current	10 µA min / 1 A max
Dielectric strength	500 Vrms min

Electrical Switch Data	
Card detection switch	Normally open
Rc card detection switch	100 mΩ max
Dielectric strength card detection switch	250 Vrms min
Switch current rating	1 mA min / 10 mA max
Maximum switch power	0.2 V

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)

Ordering Code			
Part Number	Total Height	Termination Design	Quantity per reel
CCM04-4248	1,90 mm	SMT	1000
CCM04-4251	2,65 mm	SMT	1000
CCM04-4333	1,90 mm	In board mount SMT PCB thickness 1,1 mm	900

**Packaging**  
5 reels per box.



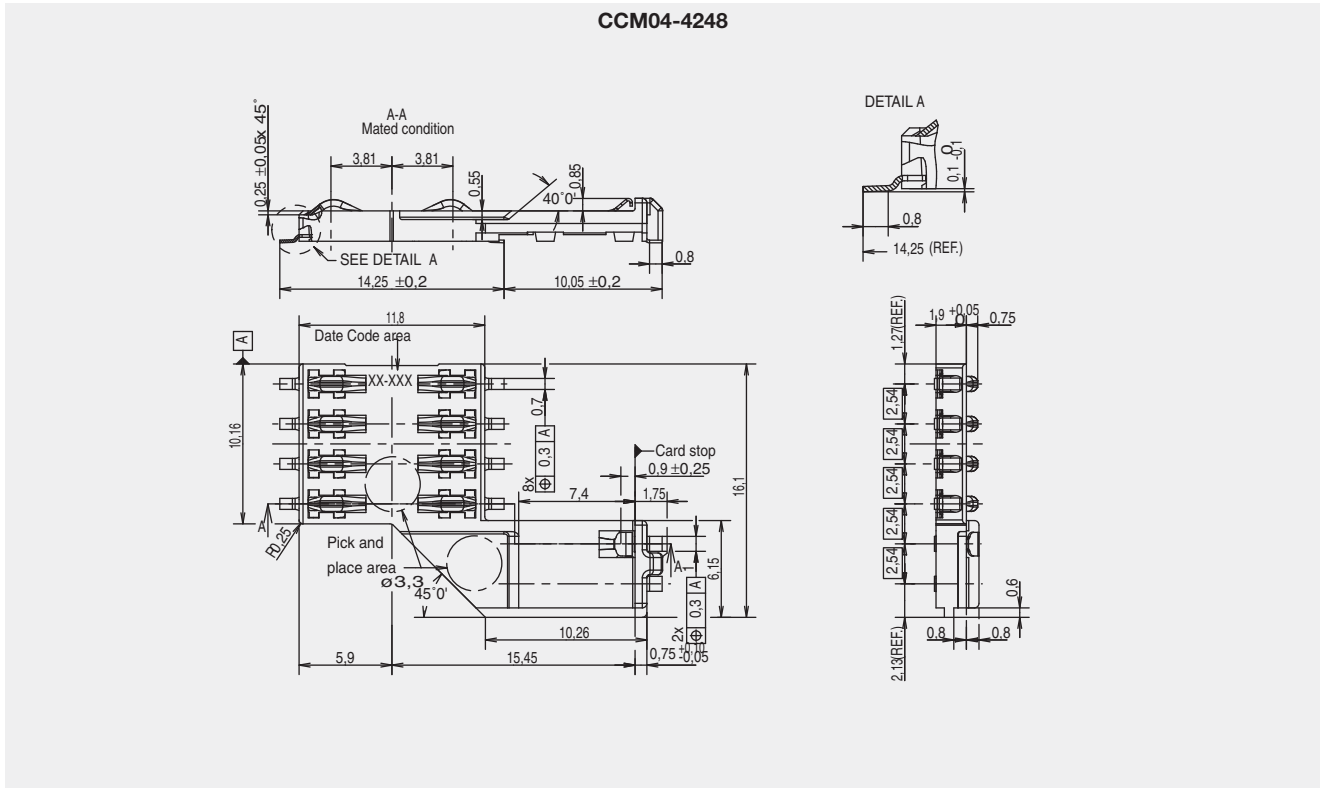
Dimensions are shown in mm  
Specifications and dimensions subject to change

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# CCM04 MK III with switch

## 2 x 4 contacts SMT OUT - Dimensional Drawings



## PCB Layout

