

DIN-Signal 2C048MR-3,0C1-2

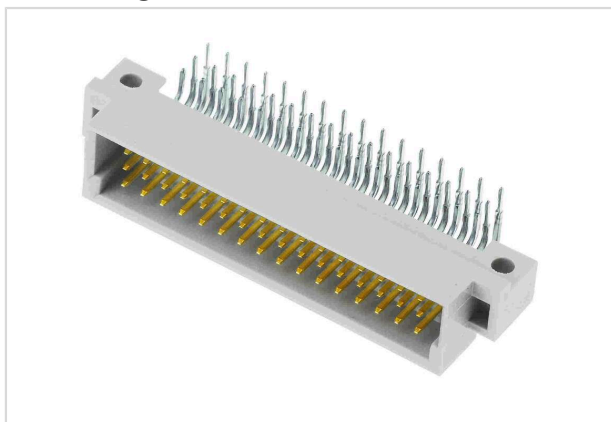


Image is for illustration purposes only. Please refer to product description.

| | |
|--------------------|-------------------------------------------------------------------------------|
| Part number | 09 23 148 6919 |
| Specification | DIN-Signal 2C048MR-3,0C1-2 |
| HARTING eCatalogue | https://harting.com/09231486919 |

Identification

| | |
|----------------------------|--------------------------------------------------------------------------------------------------|
| Category | Connectors |
| Series | DIN 41612 |
| Identification | Type 2C |
| Element | Male connector |
| Description of the contact | Angled |
| Features | Colour deviations and speckles permitted Slight color change possible after reflow soldering. |

Version

| | |
|-----------------------|--------------------------------------------------------------|
| Termination method | Reflow soldering termination (THR) |
| Connection type | Motherboard to daughtercard Extender card PCB to cable |
| Number of contacts | 48 |
| Contact configuration | Rows a, b and c, positions 1, 2, ... , 15, 16 |
| Coding | Coding with loss of contacts |
| PCB fixing | With fixing flange |

Technical characteristics

| | |
|------------------------------------|-----------------------------------------------------------------|
| Contact rows | 3 |
| Contact spacing (termination side) | 2.54 mm |
| Contact spacing (mating side) | 2.54 mm |
| Rated current | 2 A |
| Rated current | Rated current measured at 20 °C, see derating curve for details |



Pushing Performance
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Technical characteristics

| | |
|----------------------------------|-----------------------------------------------------------------|
| Clearance distance | ≥1.2 mm |
| Creepage distance | ≥1.2 mm |
| Insulation resistance | >10 ¹¹ Ω |
| Contact resistance | ≤20 mΩ |
| Limiting temperature | -55 ... +125 °C (during reflow soldering max. +240 °C for 15 s) |
| Insertion force | ≤45 N |
| Withdrawal force | ≤30 N |
| Performance level | 2 acc. to IEC 60603-2 |
| Mating cycles | ≥400 |
| Test voltage U _{r.m.s.} | 1 kV |
| Isolation group | I (600 ≤ CTI) |
| Hot plugging | No |

Material properties

| | |
|-------------------------------------------|----------------------------------------------------------------|
| Material (insert) | Thermoplastic resin, glass-fibre filled |
| Colour (insert) | RAL 7035 (light grey) |
| Material (contacts) | Copper alloy |
| Surface (contacts) | Au over NiP over Ni Mating side Sn over Ni Termination side |
| Material flammability class acc. to UL 94 | V-0 |
| RoHS | compliant |
| ELV status | compliant |
| China RoHS | e |
| REACH Annex XVII substances | Not contained |
| REACH ANNEX XIV substances | Not contained |
| REACH SVHC substances | Not contained |
| California Proposition 65 substances | Yes |
| California Proposition 65 substances | Lead Nickel |
| Fire protection on railway vehicles | EN 45545-2 (2020-08) |
| Requirement set with Hazard Levels | R26 |

Specifications and approvals

| | |
|----------------|-----------------------------|
| Specifications | IEC 60603-2 (complementary) |
|----------------|-----------------------------|



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Specifications and approvals

UL / CSA UL 1977 ECBT2.E102079
 CSA-C22.2 No. 182.3 ECBT8.E102079

Railway classification F1/I2 acc. to NFF 16-101/102

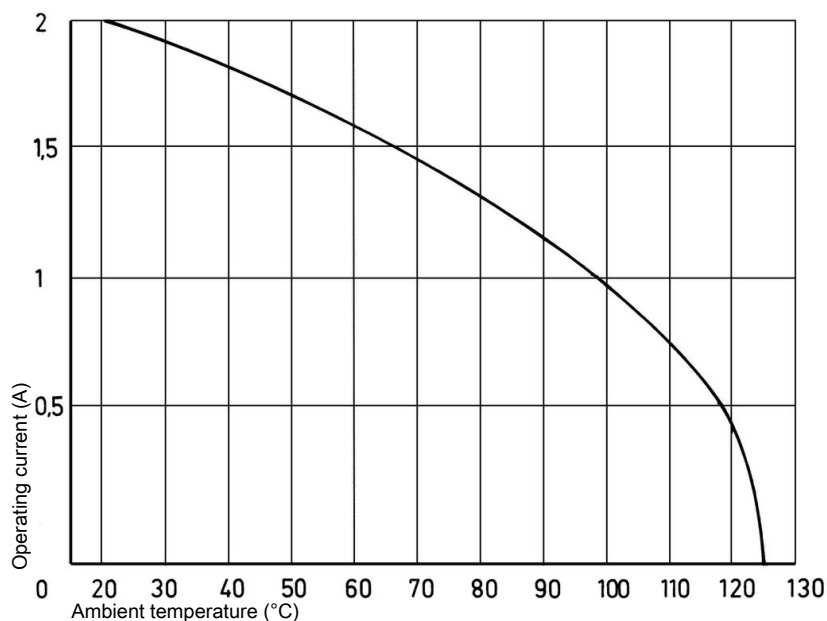
Commercial data

| | |
|--------------------------------|------------------------------------------|
| Packaging size | 20 |
| Net weight | 7.78 g |
| Country of origin | Germany |
| European customs tariff number | 85366990 |
| GTIN | 5713140041646 |
| eCl@ss | 27460201 PCB connector (board connector) |
| ETIM | EC002637 |
| UNSPSC 24.0 | 39121415 |

Current carrying capacity

The current carrying capacity of the connectors is limited by the thermal load capability of the contact element material including the connections and the insulating parts. The derating curve is therefore valid for currents which flow constantly (non-intermittent) through each contact element of the connector evenly, without exceeding the allowed maximum temperature.

Measuring and testing techniques acc. to IEC 60512-5-2



Coding with loss of contacts

To avoid cross-plugging of adjacent connectors a coding system is required.

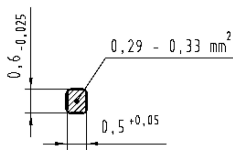
The coding is achieved by means of a code pin which is inserted into the selected chamber of the female connector (the contact cavity must be filled with a female contact!).

The opposite male contact must be removed with the help of the specially designed tool. It's recommended to use a number of code pins in relation to the total number of contacts per connector: 3 pins for 64 contacts, 7 pins for 160 contacts

Coding pin 09 02 000 9901

Removal tool for male contacts 09 99 000 0133

Cross section of solder termination



Quantity of solder paste

Before the components are assembled, solder paste must be applied to all the solder pads (for connecting surface-mount components) and the plated through holes. To ensure that the plated through holes are completely filled, significantly more solder paste must be applied than traditional solder pads on the pcb surface. There are numerous calculation methods available which are complicated to apply. The following rule of thumb has proved valuable in practice.

Required volume of paste = 2x (Volume of plated through hole - Volume of the connector termination in the hole)

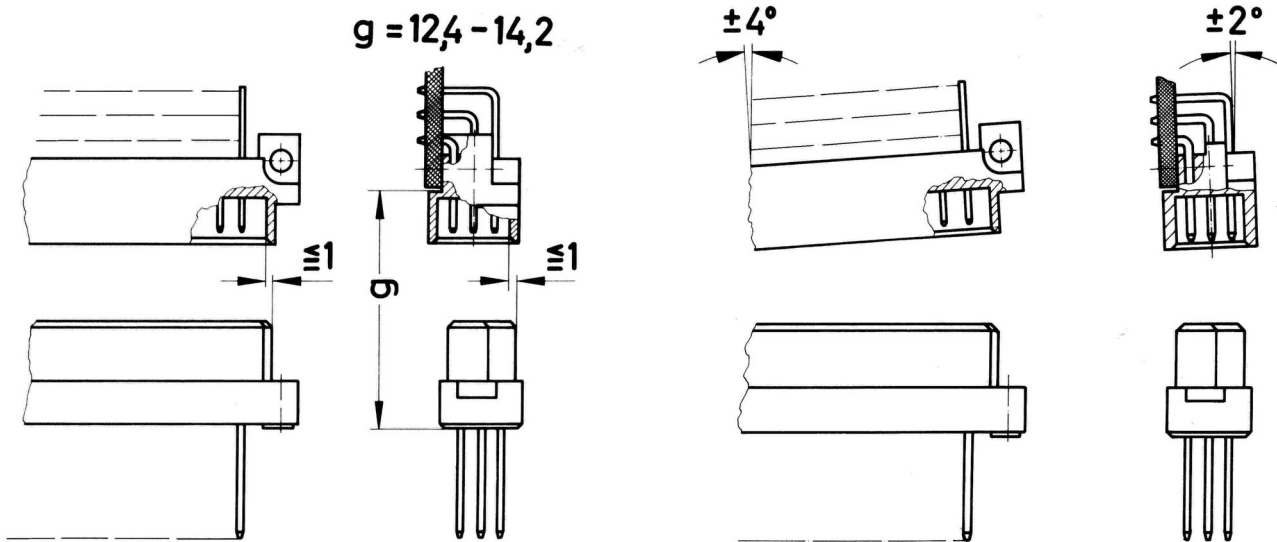
Comment: the multiplier "2" compensates for solder paste shrinkage during soldering. For this purpose, it was assumed that 50% of the paste consists of the actual solder, the other 50% being soldering aids.

Soldering instructions

THR (ThroughHoleReflow) connectors are designed to be used in a reflow oven together with other SMD (SurfaceMountDevice) components. In the process, called as well "Pin in Hole Intrusive Reflow", the connectors are inserted into plated through holes in a comparable way to conventional component mounting. All other components can be assembled on the pcb surface.

The length of the connector contacts should be such that they protrude by no more than 1.5 millimetres after insertion to the pcb. Each contact collects solder on its tip as it penetrates the solder paster in the hole. So if the contact is too long, this solder would no longer be able to reflow back into the plated through hole by capillary action during the soldering process, therefore the quality of the soldered connection would suffer as a result.

Mating conditions



To ensure reliable connections and prevent unnecessary damage, please refer to the application data diagrams. These recommendations are set out in IEC 60603-2. The connectors should not be coupled and decoupled under electrical load.