



DIN Signal male connector - SMC - tape & reel



General information

| | | |
|--------------------------------|-----------------------------------|----------------------------|
| Design | IEC 60603-2 | types: 3B, 2C, 3Q, 3R male |
| No. of contacts | max. 48 | |
| Contact spacing | 2,54mm | |
| Test voltage | 1000V | |
| Contact resistance | max. 15mOhm | |
| Insulation resistance | min. 10 ¹⁰ Ohm | |
| Working current | 2A at 20°C (see derating diagram) | |
| Temperature range | -55°C ... +125°C | |
| Termination technology | SMC with solder pins | |
| Clearance & creepage distance | min. 1,2mm each | |
| Insertion and withdrawal force | 20-pole max. 20N | |
| | 30-pole max. 30N | |
| | 48-pole max. 45N | |
| Mating cycles | PL 1 acc. to IEC 60603-2 | 500 mating cycles |
| | PL 2 acc. to IEC 60603-2 | 400 mating cycles |
| | PL 3 acc. to IEC 60603-2 | 50 mating cycles |
| UL file | E102079 | |
| RoHS - compliant | Yes | |
| Leadfree | Yes | |
| Hot plugging | No | |

Insulator material

| | |
|---------------------------------|--|
| Material | PCT (thermoplastics, glass fiber reinforcement 30%) |
| Colour | natural coloured, colour deviations and speckles permitted |
| UL classification | UL 94-V0 |
| Material group acc. IEC 60664-1 | II (400 ≤ CTI < 600) |
| NFF classification | I3, F3 |

Contact material

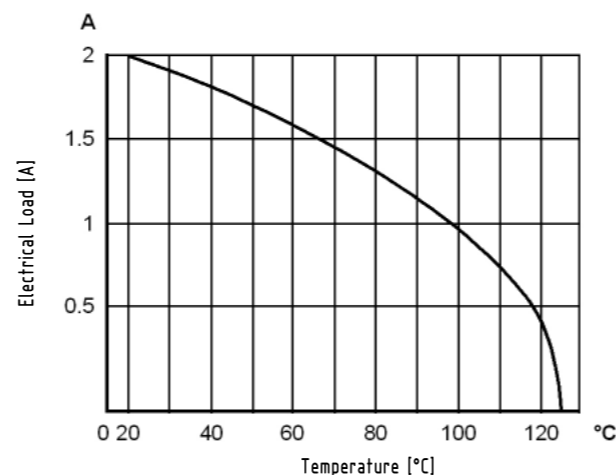
| | |
|--------------------------|----------------------|
| Contact material | Copper alloy |
| Plating termination zone | Sn over Ni |
| Plating contact zone | Au over PdNi over Ni |

Derating diagram acc. to IEC 60512-5 (current carrying capacity)

The current carrying capacity is limited by maximum temperature of materials for inserts and contacts including terminals.

The current capacity curve is valid for continuous, non interrupted current loaded contacts of connectors when simultaneous power on all contacts is given, without exceeding the maximum temperature.

Control and test procedures according to DIN IEC 60512-5



Soldering instructions

SMC (Surface Mount Compatible) connectors are designed to be used in a reflow oven together with other SMD (Surface Mount Device) components. In this 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 paste 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.

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:

$$VPaste = 2(VH - VP)$$

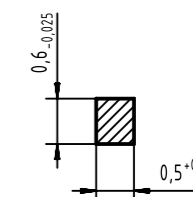
in which:

VPaste = Required volume of solder paste

VH = Volume of the plated through hole

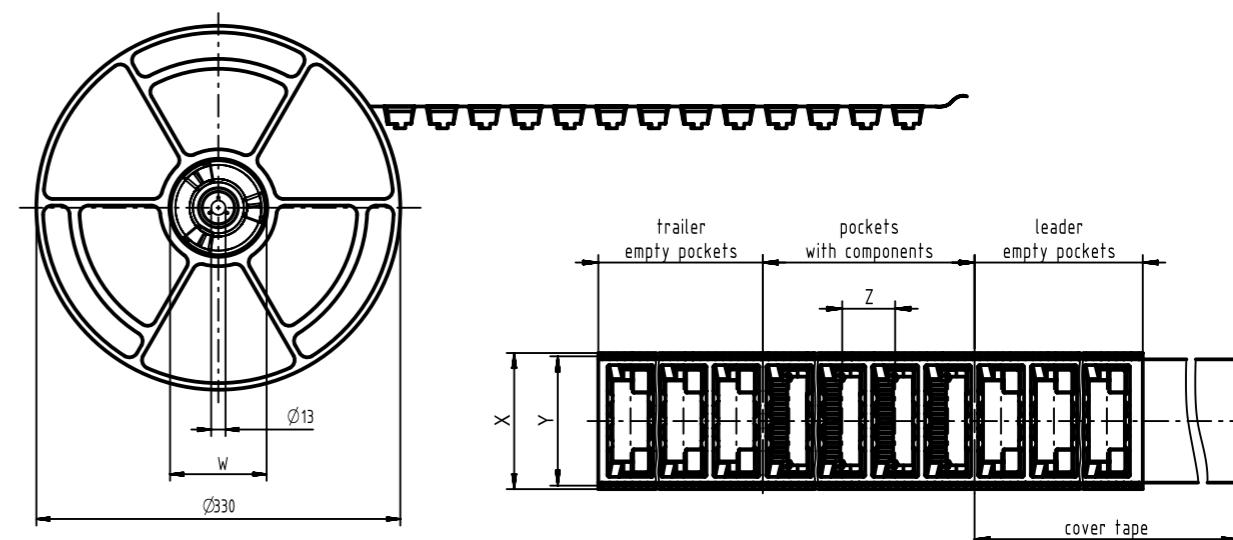
VP = Volume of the connector termination in the hole

Cross section of solder pins: $A = 0,29mm^2 - 0,33mm^2$



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.

Tape & reel layout acc. to EIA-481-D



| type | 2C | 3B | 3Q | 3R |
|-------------------------|---------|---------|---------|---------|
| W | Ø 178mm | Ø 178mm | Ø 100mm | Ø 100mm |
| X | 72mm | 56mm | 56mm | 56mm |
| Y | 68,4mm | 52,4mm | 52,4mm | 52,4mm |
| Z | 28mm | 24mm | 24mm | 24mm |
| leading pockets | 5 | 7 | 7 | 7 |
| trailing pockets | 6 | 9 | 9 | 9 |
| pockets with components | 150 | 180 | 130 | 80 |
| cover tape | 400mm | 428mm | 428mm | 428mm |

| | | | | | | |
|---|-----------------------|---|----------------------|--------------------------|-----------------|---|
| | All rights reserved | Created by HAGEMEYERE | Inspected by LEHNERT | Standardisation HOFFMANN | Date 2016-08-01 | State Final Release |
| | Department EC PD - DE | Title DIN Signal male connector - SMC - tape & reel | | | | Doc-Key / ECM-Nr. 100561099/UGD/001/D 50000107210 |
| HARTING Electronics GmbH D-32339 Espelkamp | | Type DS | Number 09031230203 | | Rev. D | Page 1/1 |