# SEK 19 male standard connector solder straight

RoHS compliant

## General information

| | | |
|---|---|---|
| Design | IEC 60603-13 | |
| No. of contacts | 6,10,14,16,20,24,26,30,34,40,50,60,64 | |
| Contact spacing | 2,54 mm x 2,54 mm | |
| Test voltage Ur.m.s | 1 kV | |
| Working voltage | 500 V for pollution degree 1 | |
| Contact resistance | max. 20mOhm | |
| Insulation resistance | min. 10⁹Ohm | |
| Working current acc. to IEC 60512-2 | See derating diagram | |
| Temperature range | -55°C ... +125°C | |
| Termination technology | solder | |
| Clearance & creepage distance | min. 0,5 mm clearance min. 0,56 creepage | |
| Insertion and withdrawal forces | 6-pole max. 12N for PL1-2 / 18N for PL3 | ; 30-pole max. 60N for PL1-2 / 90N for PL3 |
| | 10-pole max. 20N for PL1-2 / 30N for PL3 | ; 34-pole max. 68N for PL1-2 / 102N for PL3 |
| | 14-pole max. 28N for PL1-2 / 42 for PL3 | ; 40-pole max. 80N for PL1-2 / 120N for PL3 |
| | 16-pole max. 32N for PL1-2 / 48N for PL3 | ; 50-pole max. 100N for PL1-2 / 150N for PL3 |
| | 20-pole max. 40N for PL1-2 / 60N for PL3 | ; 60-pole max. 120N for PL1-2 / 180N for PL3 |
| | 24-pole max. 48N for PL1-2 / 72N for PL3 | ; 64-pole max. 128N for PL1-2 / 192N for PL3 |
| | 26-pole max. 52N for PL1-2 / 78N for PL3 | |
| Mating cycles | S4 surface treatment | Au over PdNi (min. 0,76 µm) |
| | PL 1 acc. to IEC 60603-13 | 500 mating cycles 10 days gas test |
| | PL 2 acc. to IEC 60603-13 | 250 mating cycles 4 days gas test |
| | PL 3 acc. to IEC 60603-13 | 50 mating cycles No gas test |
| UL file | No | |
| RoHS - compliant | Yes | |
| Leadfree | Yes | |
| Hot plugging | No | |

## Insulator material

| | |
|---|---|
| Material | PCT (thermoplastics, glass fiber reinforcement 30%) |
| Color | Black (RAL 7001) or beige |
| UL classification | UL94-V0 |
| Material group acc. IEC 60664-1 | II (400 < CTI < 600) |
| NF F 16-101 classification | No |

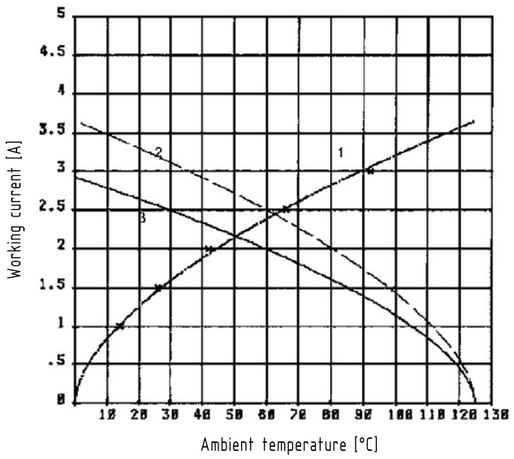
## Contact material

| | |
|---|---|
| Contact material | Copper alloy |
| Plating termination zone | Sn over Ni |
| Plating contact sliding side | Au or Au over PdNi (according to performance level) |

## Derating diagram acc to IEC 60512-2 (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, not 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.

1) Temperature rise
2) Derating
3) Derating curve at I max x 0.8(IEC 60512-2)




## Soldering instructions

THR (Through Hole Reflow) connectors are designed to be used in a reflow oven. THR connectors can also be used together with SMD (Surface Mount Device) components in a reflow oven. 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 millimeters 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.

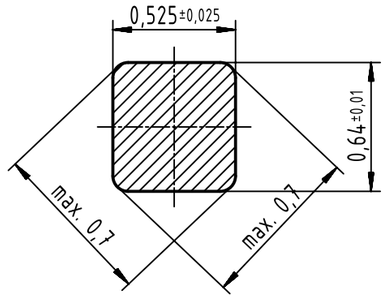
## Quantity of solder paste

Before the components are assembled, solder paste must be applied to all 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.
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 plated through hole
VP= 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.

## Cross section of solder terminations




## Packaging material (only for plastic tray)

| | |
|---|---|
| Material | Polystyrol |
| Color | Yellow |
| Standardization | acc. to DIN EN / IEC 61340-5-1 and ANSI / ESD S541-2003 |

- Safe protection for electronic components against electrostatic charges

| | | | | | |
|---|---|---|---|---|---|
| All Dimensions in mm<br>Original Size DIN A3 | Scale 1:1 | Free size tol. | | Ref.<br>Sub. | |
| All rights reserved | Created by STORCK | Inspected by ELLERMANN | Standardisation HOFFMANN | Date 2017-03-01 | State Final Release |
| Department EC PD - DE | Title SEK 19 male standard connector solder straight | | | | Doc-Key / ECM-Nr. 100555060/UGD/001/E 500000116390 |
| HARTING Electronics GmbH<br>D-32339 Espelkamp | Type DS | Number 09191230202 | | Rev. E | Page 1/1 |

A3

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