

har-modular F4 module male straight



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

Part number	02 53 904 1201
Specification	har-modular F4 module male straight
HARTING eCatalogue	https://b2b.harting.com/02539041201

Identification

Category	Connectors
Series	har-modular®
Identification	F4 module
Element	Male connector
Description of the contact	Straight

Version

Termination method	Reflow soldering termination (THR) Wave soldering termination
Connection type	Mezzanine
Power contacts	4
Contact configuration	Rows a and c, positions 1 and 3
Termination length	4.8 mm
Performance level	1 acc. to IEC 60603-2

Technical characteristics

Contact spacing (mating side)	5.08 mm
Rated current	6 A
Clearance distance	3 mm
Creepage distance	3 mm
Insulation resistance	$>10^{12} \Omega$
Contact resistance	$\leq 15 \text{ m}\Omega$



Pushing Performance

Technical characteristics

Limiting temperature	-55 ... +125 °C (during reflow soldering max. +240 °C for 15 s)
Mating cycles	≥500
Isolation group	I (600 ≤ CTI)
Hot plugging	No
Moisture Sensitivity Level (MSL)	1 acc. to ECA/IPC/JEDEC J-STD-020D

Material properties

Material (insert)	Polyamide (PA)
Colour (insert)	Black
Material (contacts)	Copper alloy
Surface (contacts)	Noble metal Mating side Sn over Ni Termination side
Material flammability class acc. to UL 94	V-0
Length	10.16 mm

Specifications and approvals

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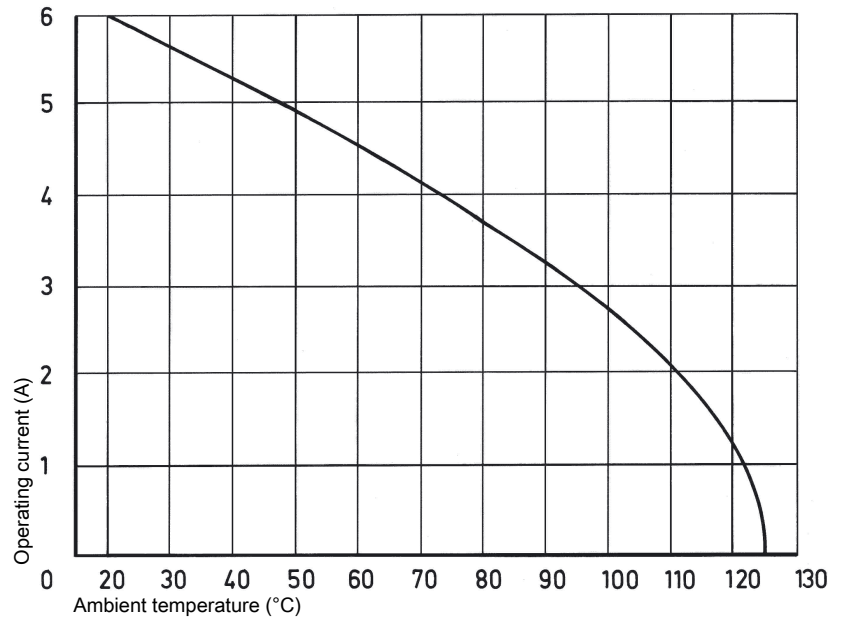
Commercial data

Packaging size	1
Country of origin	Romania
European customs tariff number	85389099
eCl@ss	27440402 PCB connector

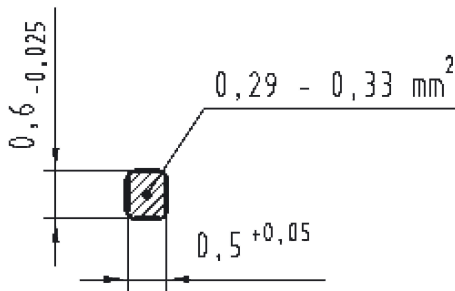
Current carrying capacity

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



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 = 2 (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.



Pushing Performance

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.

Soldering instructions

The connectors should be protected when being soldered. Otherwise, they might become contaminated as a result of soldering operations or deformed as a result of overheating.

- 1) For prototypes and short runs protect the connectors with an industrial adhesive tape, e.g. Tesaband 4331 (www.tesa.de). Cover the underside of the connector moulding and the adjacent parts of the pcb as well as the open sides of the connector. This will prevent heat and gases of the soldering apparatus from damaging the connector. About 140 + 5 mm of the tape should suffice.
- 2) For large series a jig is recommended. Its protective cover with a fast action mechanical locking device shields the connectors from gas and heat generated by the soldering apparatus. As an additional protection a foil can be used for covering the parts that should not be soldered.
- 3) For prototypes and short runs the protection described under point 1) can be replaced by a solder protection cap. This cap can be ordered under the part no. 09 02 000 9935.