



AdvancedMC™ connector for MicroTCA™



General information

| | |
|-------------------------------------|--|
| Design | PICMG MTCA.0 R1.0 |
| No. of contacts | 170 |
| Contact spacing | 0,75 mm |
| Test voltage | 80 V r.m.s. |
| Contact resistance | < 25 mOhm |
| Insulation resistance | > 10 ⁹ Ohm |
| Nominal differential impedance | 100 Ohm ± 10% |
| Working current as defined in AMC.0 | ≥ 1,52 A @ 70°C, max 30°C temperature rise (as defined in PICMG MTCA.0 R1.0) |
| Temperature range | -55°C ... +105°C |
| Termination technology | press-in |
| Clearance & creepage distance | > 0,1 mm |
| Insertion force | < 100 N |
| Withdrawal force | < 65 N |
| Mating cycles | 200 |
| UL file | E102079 |
| RoHS - compliant | Yes |
| Leadfree | Yes |

Insulator material

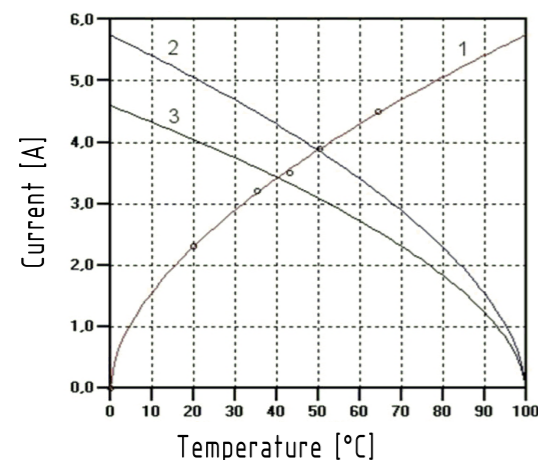
| | |
|---------------------------------|---|
| Material | LCP (liquid crystalline polymer, glass fiber reinforcement 30%) |
| Color | black |
| UL classification | UL 94-V0 |
| Material group acc. IEC 60664-1 | IIIa (175 ≤ CTI < 400) |

Contact material

| | |
|-----------------------|----------------------------------|
| Contact material | Copper alloy |
| Plating press-in zone | Ni |
| Plating contact zone | Au over Pd over Ni or Au over Ni |

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

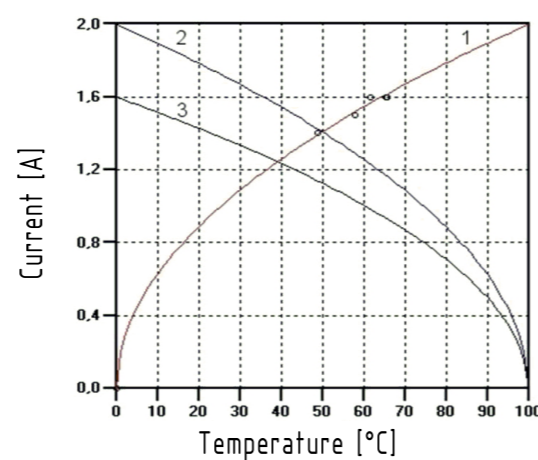
Power conductor, requirement min. 1,52 A @ 70° C



Curve 1 shows raise in temperature

Curve 2 shows nominal derating

Diff. pair conductor, requirement min. 0,1 A @ 70° C

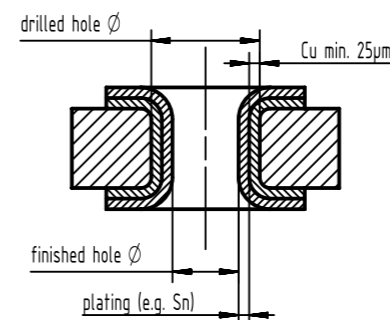


Curve 3 shows reduced values as per IEC512

Recommended configuration of plated through holes for press-in termination

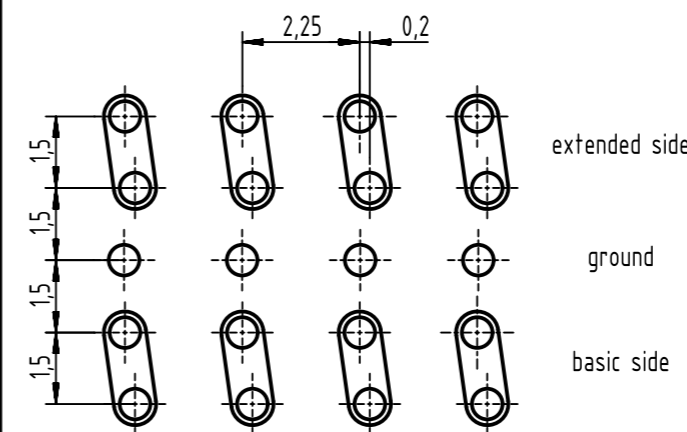
The press-in zone of the AdvancedMC™ connector is tested according to Telcordia/Bellcore GR 1217CORE Part7. It is approved to be used with a plated through hole according IEC 60352-5 with a diameter of 0.55±0.05 mm (drilled hole 0.64±0.01 mm).

Based on our experiences regarding the production process of the PCB manufacturer we recommend a plated through hole configuration like shown in the table on the right side. To achieve the recommended plated through hole diameter, it is important to specify especially the drilled hole diameter of 0.64±0.01 mm to your PCB supplier. For drillings use e.g. drill bit # 72 (0.025" ≈ 0.64 mm).



| Plating | Drilled hole Ø | 0,64 ± 0,01 mm |
|-------------------------|----------------------|----------------|
| | Tin plated PCB (HAL) | Sn |
| Chemical tin plated PCB | finished hole Ø | 0,53 - 0,60 mm |
| | Sn | 0,8 - 1,5 µm |
| Gold /Nickel plated PCB | Drilled hole Ø | 0,64 ± 0,01 mm |
| | Ni | 3 - 7 µm |
| | Au | 0,05 - 0,12 µm |
| Silver plated PCB | finished hole Ø | 0,55 - 0,60 mm |
| | Ag | 0,1 - 0,3 µm |
| Copper plated PCB (OSP) | Drilled hole Ø | 0,64 ± 0,01 mm |
| | finished hole Ø | 0,56 - 0,60 mm |
| All surfaces | Pad size Ø | min. 0,95 mm |

Pin grid



Available on request:

- PCB library (PADS/Dx-Designer)
- SPICE models
- S-Parameter

| | | |
|--------------------------------|---------------------------------|--------|
| Differential propagation delay | Basic side | 75 ps |
| | Extended side | 75 ps |
| Differential skew | Between basic and extended side | ± 2 ps |
| | Within basic and extended side | ± 2 ps |

Crosstalk

| | |
|---|--------------|
| Max. crosstalk @ 25 ps risetime | Bottom route |
| Adjacent | 0.58% |
| Basic-to-extended (diagonal) | 0.30% |
| Basic-to-extended (opposite) | 0.38% |
| Multiline (five multi-aggressor differential pairs) | 1.91% max. |

| | | | | | |
|---|--|--|---------------------------|--------------------|--|
| | All rights reserved Department EC PD - DE | All Dimensions in mm Original Size DIN A3 | Scale 1:1 | Free size tol. | Ref. Sub. DS 16 11 210 01 01 Mod. EC02426 2011-04-29 |
| Created by THIELEMANN | | Inspected by TADJE | Standardisation KOHLER | Date 2014-07-16 | State Final Release |
| Title AdvancedMC connector for MicroTCA | | | | | Doc-Key / ECM-Nr. 100580879/UGD/000/A 500000076062 |
| HARTING Electronics GmbH D-32339 Espelkamp | | Type DS | Number 16112100101 | | Rev. A |
| | | | | | Page 1/2 |

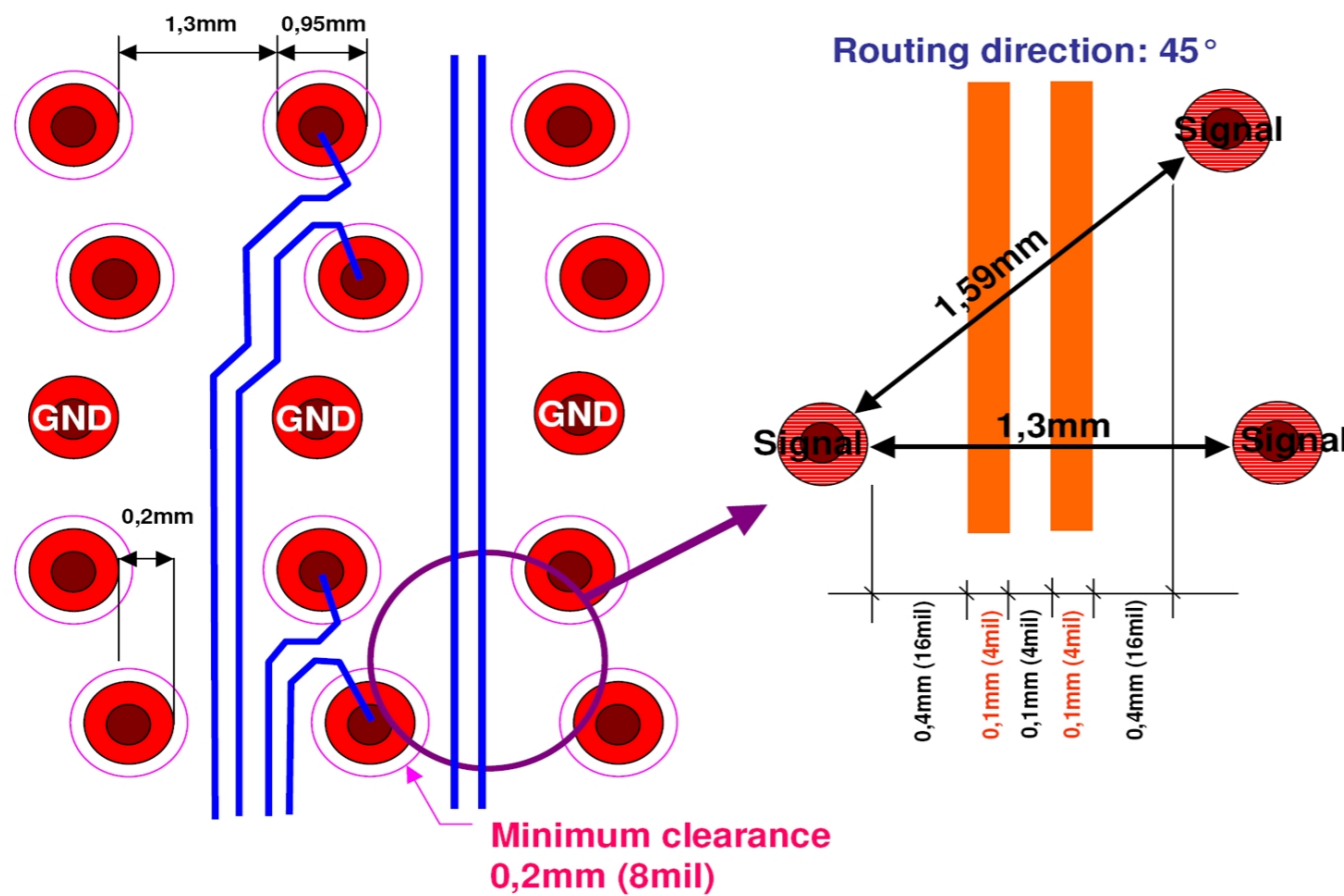
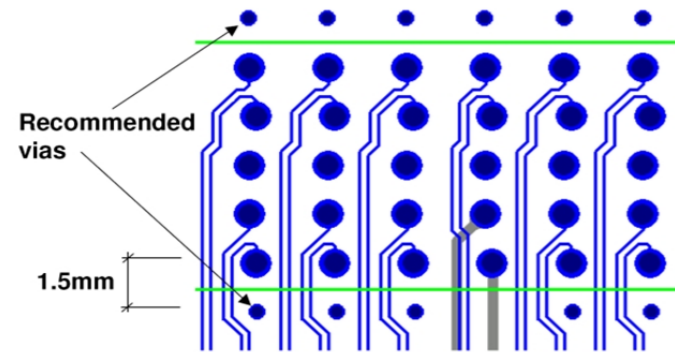


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Routing proposal

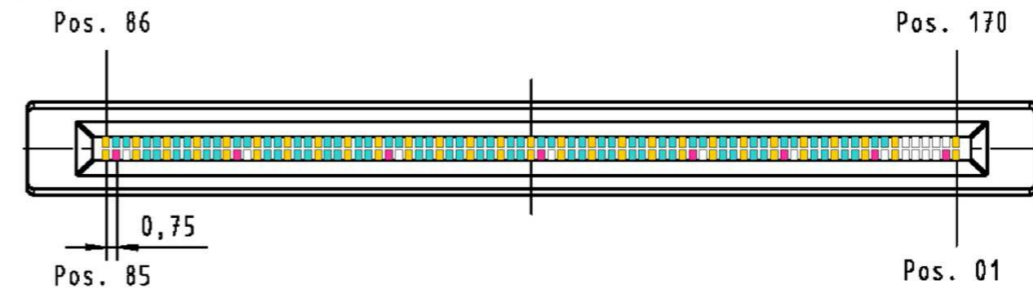
Additional vias are recommended to guide the electrical field in the footprint area for improved crosstalk performance. The differential signals have no skew as they enter the surface pad of the plated thru hole. "Zero Skew Pad Fan-out" is recommended to minimize common modes along the traces of the backplane.
The clearance between pad and copper pour should be at least 0.2mm, leaving a 0.9mm routing channel (0.7mm for straight routing).



Contact assignment

Overall number of contacts: 170 in a grid of 0.75mm in the mating face. The connector for MicroTCA is according to the PICMG MTCA.0 standard with the following contact assignment in the mating face:

| | |
|--|--|
| 8 Power contacts | 2, 9, 18, 27, 42, 57, 72, 84 |
| 56 Ground contacts (2 each combined to 1 press-in pin) | 1, 7, 10, 13, 16, 19, 22, 25, 28, 31, 34, 37, 40, 43, 46, 49, 52, 55, 58, 61, 64, 67, 70, 73, 76, 79, 82, 85, 86, 89, 92, 95, 98, 101, 104, 107, 110, 113, 116, 119, 122, 125, 128, 131, 134, 137, 140, 143, 146, 149, 152, 155, 158, 161, 164, 170 |
| 16 contacts for general purposes | 3, 4, 5, 6, 8, 17, 26, 41, 56, 71, 83, 165, 166, 167, 168, 169 |
| 90 signal contacts, arranged for 45 differential pairs | 11/12, 14/15, 20/21, 23/24, 29/30, 32/33, 35/36, 38/39, 44/45, 47/48, 50/51, 53/54, 59/60, 62/63, 65/66, 68/69, 74/75, 77/78, 80/81, 87/88, 90/91, 93/94, 96/97, 99/100, 102/103, 105/106, 108/109, 111/112, 114/115, 117/118, 120/121, 123/124, 126/127, 129/130, 132/133, 135/136, 138/139, 141/142, 144/145, 147/148, 150/151, 153/154, 156/157, 159/160, 162/163 |

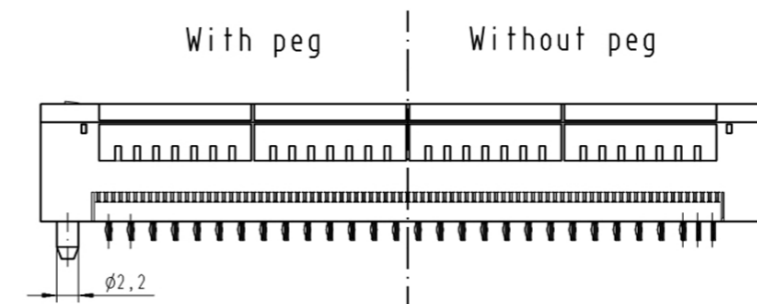


Please note: The ground contacts arranged opposite each other are combined in the connector and lead out in only one termination pin (except the contacts 1 and 170, please compare the footprint). The combined ground reduces the pin count in the PCB termination area to 143 contacts resulting in enhanced routing capabilities through the connector pin field.
The number of differential pairs can be extended to 56, each separated by ground pins, by using the power pins and the general purpose pins also for differential signal transmission (deviant to MTCA.0).

Additional fixing

In general the retention force of the press-in pins are that high enough to fix the connector on the backplane. For additional fixing, the connector versions without alignment peg (16111705202000, 16111705205000) can be screwed to the backplane.

Recommendation of the screws:
Use fillister-head tapping screws 2.2 x length, acc. to ISO 7049, shape F.
Screw length = PCB thickness + min. 6.5mm / max. 10mm.
Reference for screwing torque:
Screw length = PCB thickness + 6.5mm: 20cNm
Screw length = PCB thickness + 10mm: 40cNm



| | | | | | | | |
|---|-----------------------|--|-----------------------|-----------------|---|---------------|---|
| | All rights reserved | Created by | Inspected by | Standardisation | Date | State | Ref. Sub. DS 16 11 210 01 01 Mod. EC02426 2011-04-29 |
| | Department EC PD - DE | THIELEMANN | TADJE | KOHLER | 2014-07-16 | Final Release | |
| HARTING Electronics GmbH D-32339 Espelkamp | | Title AdvancedMC connector for MicroTCA | | | Doc-Key / ECM-Nr. 100580879/UGD/000/A 50000076062 | | Rev. A Page 2/2 |
| | | Type DS | Number 16112100101 | | | | |

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