



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

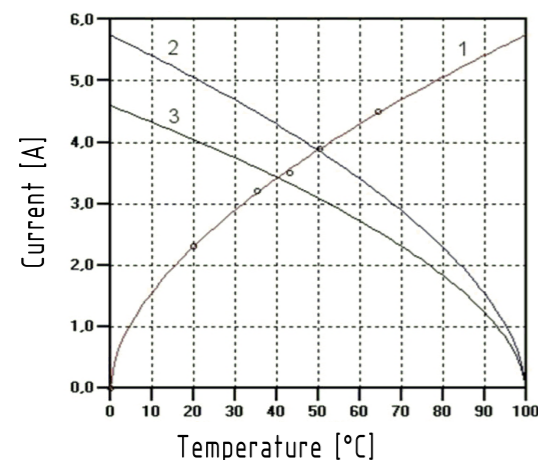
Material	LCP (liquid crystalline polymer, glass fiber reinforcement 30%)
Color	black
UL classification	UL 94-V0
Material group acc. IEC 60664-1	IIIa (175 ≤ CTI < 400)

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)

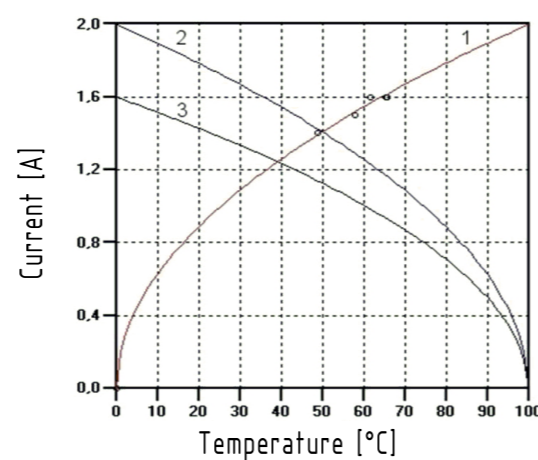
Power conductor, requirement min. 1,52 A @ 70° C



Curve 1 shows raise in temperature

Curve 2 shows nominal derating

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

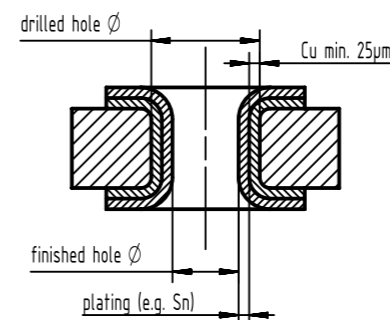


Curve 3 shows reduced values as per IEC512

Recommended configuration of plated through holes for press-in termination

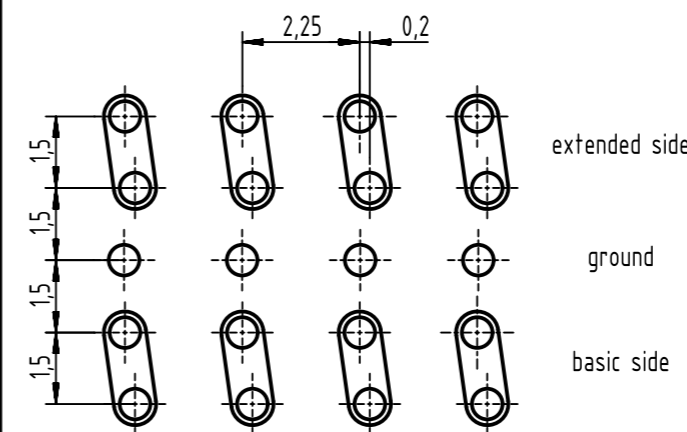
The press-in zone of the AdvancedMC™ connector is tested according to Telcordia/Bellcore GR 1217CORE Part7. It is approved to be used with a plated through hole according IEC 60352-5 with a diameter of 0.55±0.05 mm (drilled hole 0.64±0.01 mm).

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	Finished hole Ø
Tin plated PCB (HAL)	Sn	0,64 ± 0,01 mm
	finished hole Ø	5 - 15 µm
Chemical tin plated PCB	Sn	0,64 ± 0,01 mm
	finished hole Ø	0,8 - 1,5 µm
Gold /Nickel plated PCB	Sn	0,64 ± 0,01 mm
	finished hole Ø	3 - 7 µm
Silver plated PCB	Au	0,05 - 0,12 µm
	finished hole Ø	0,55 - 0,60 mm
Copper plated PCB (OSP)	Ag	0,1 - 0,3 µm
	finished hole Ø	0,56 - 0,60 mm
All surfaces	Drilled hole Ø	0,64 ± 0,01 mm
	finished hole Ø	0,56 - 0,60 mm
	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	Created by	Inspected by	Standardisation	Date	State
	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	
		Type	Number	Rev.	Page	
		DS	16112100101	A	1/2	

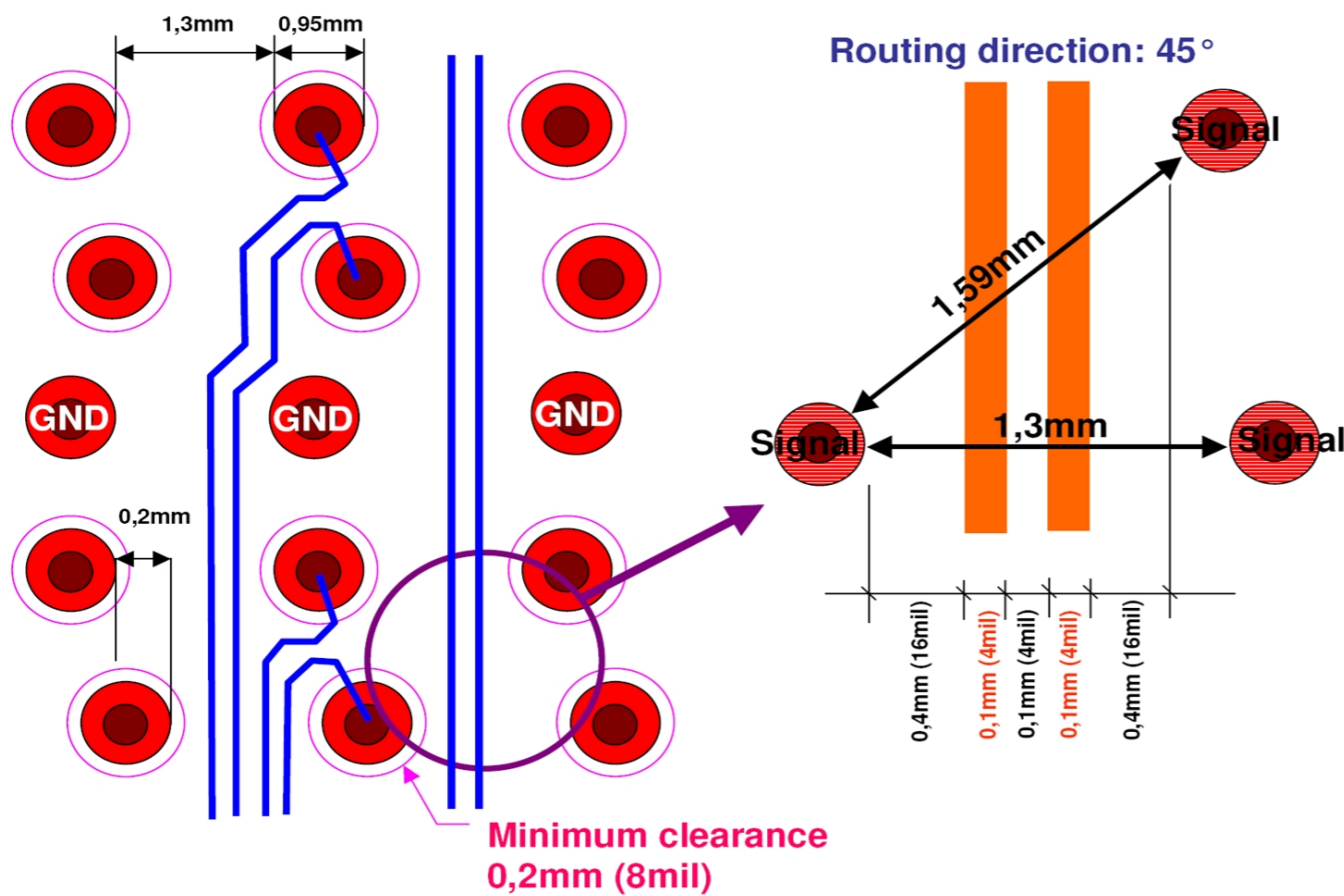
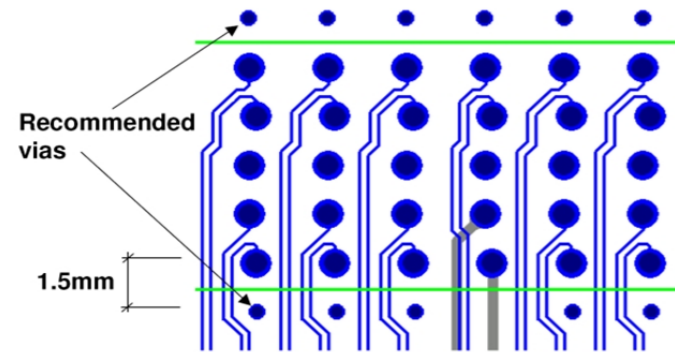


AdvancedMC™ connector for MicroTCA™



Routing proposal

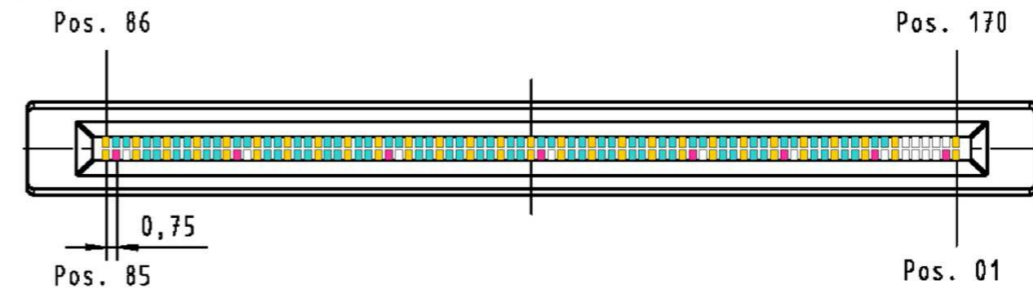
Additional vias are recommended to guide the electrical field in the footprint area for improved crosstalk performance. The differential signals have no skew as they enter the surface pad of the plated thru hole. "Zero Skew Pad Fan-out" is recommended to minimize common modes along the traces of the 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

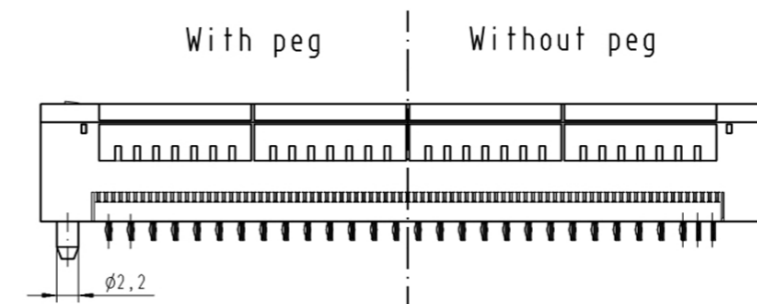


Please note: The ground contacts arranged opposite each other are combined in the connector and lead out in only one termination pin (except the contacts 1 and 170, please compare the footprint). The combined ground reduces the pin count in the PCB termination area to 143 contacts resulting in enhanced 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	
	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	
		Type	Number		Rev.	Page	
		DS	16112100101		A	2/2	