

Extract from new
Device Connectivity catalogue

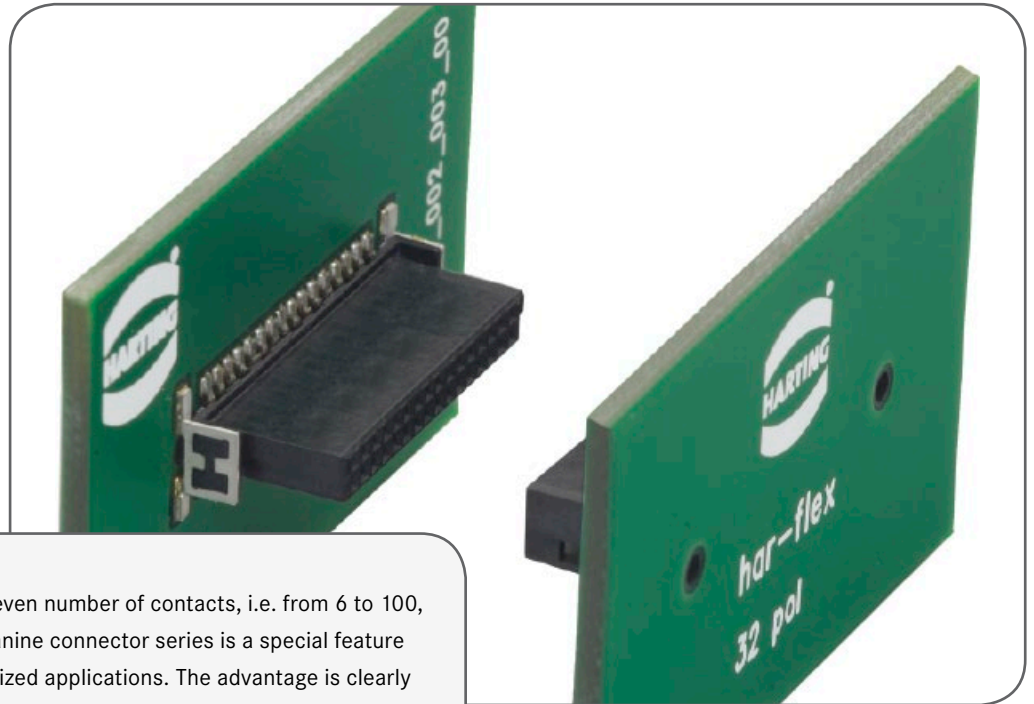


Pushing Performance

HARTING *har-flex*®



People | Power | Partnership



The continuous scalability by an even number of contacts, i.e. from 6 to 100, of the HARTING's *har-flex*® mezzanine connector series is a special feature forming an ideal basis for customized applications. The advantage is clearly evident considering that the connector is always optimized to suit specific applications on the device PCB, while also covering the medium- and small-scale volume range that is typical for the production of industrial devices.

Application profile:

CONNECTION TYPE		ENVIRONMENT		APPLICATION							
Board to Board	Cable/Wire to Board	IP 20	IP 65 / IP 67	Data	Signal	Power	high performance				
							Data transfer rate	Shielding	Number of contacts, contact density	Voltage, working current	
Cable termination			PCB termination			Application standard					
<i>Han-Quick Lock</i> ®	IDC	Crimp	THT	SMC	SMT						
Screw	Cage clamp	Axial screw	Press-in			Housing integration					
						Separate housing		Integrated housing			

har-flex® CONNECTORS

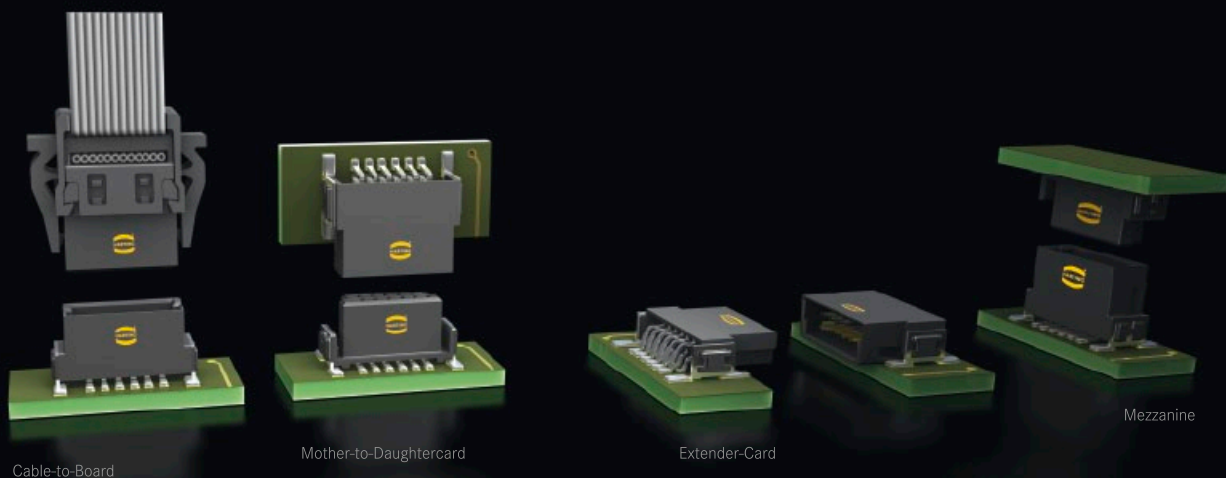
With *har-flex*®, HARTING has developed a general-purpose series for internal and external Device Connectivity. The product range provides both internal solutions with optimized PCB connectivity in a first step, as well as external solutions for Installation Technology based on a wide spectrum of interfaces in a second step.

The continuous scalability by an even number of contacts, i.e. from 6 to 100, of the HARTING's *har-flex*® mezzanine connector series is a special feature forming an ideal basis for customized applications. The advantage is clearly evident considering that the connector is always optimized to suit specific applications on the device PCB, while also covering the medium- and small-scale volume range that is typical for the production of industrial devices.

This flexibility is new – and represents a standard at HARTING. The triad of Device Connectivity, Installation Technology, and Automation IT creates ideal connectivity solutions for the data, power, and signal lifelines. Solutions that position customer applications as decisive factors. And the outlooks are bright – because there is a lot more to come.

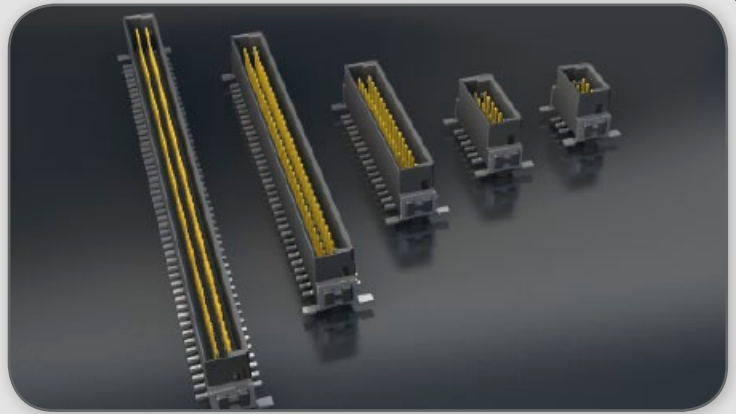
PRODUCT DIVERSITY

The *har-flex*® product range with SMT technology is based on a 1.27 mm grid. With its angled and straight variants that support four different stacking heights and a range of cable connectors, HARTING provides connectivity solutions for many different board-to-board applications.



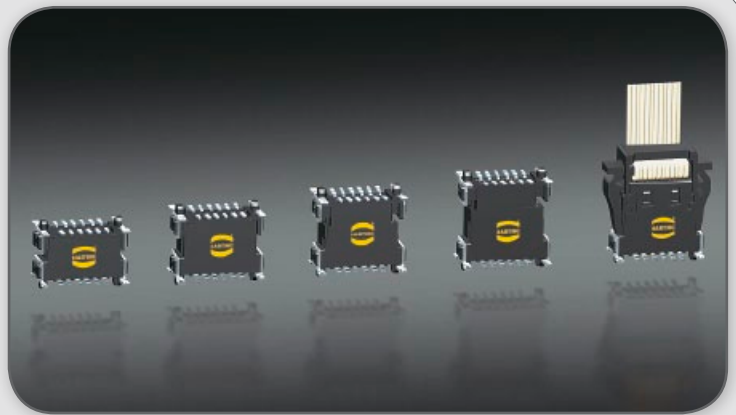
Many pin count options

HARTING has developed a modular tooling concept which offers a broad choice of configurations between 6 and 100 poles in even numbered positions. This flexibility in the choice of number of contacts, combined with high density contact spacing, allow the designer to maximize the use of PCB real estate, thereby achieving overall space savings and cost efficiencies.



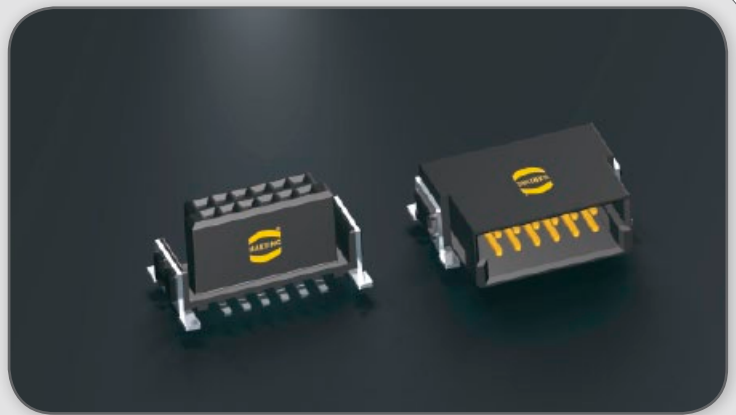
Flexible board-to-board distances

HARTING covers mezzanine applications with a range of straight versions for four different stacking heights that can be used to interconnect PCBs arranged in parallel stacks with spacing between 8.0 mm and 13.8 mm. Additional stacking heights are in development. For applications requiring larger spacing between boards HARTING offers compatible cable-to-board connectors with insulation displacement technology.



Robust design

The special SMT fixing ensures a robust and enduring connection to the PCB and helps to absorb mechanical stress on the solder contacts resulting from insertion and removal forces.



Automated processing features

The *har-flex*® SMT connectors meet the highest demands in terms of their processing capabilities. Special blister packaging provides protection during shipping and handling, while the "pick and place" pads enable automated assembly of the PCBs. The temperature resistant materials of the insulating body, in combination with consistent testing of the coplanarity of contacts, ensure reliable soldering capabilities of the connectors in the reflow process.



Number of contacts 6, 8, 10 ... 96, 98, 100

Connector pitch 1.27 mm x 1.27 mm
[0.050" x 0.050"]

Clearance and creepage distance

Board connectors (SMT) min. 0.4 mm
Cable connectors (IDC)
AWG 30/1 (solid) min. 0.35 mm
AWG 30/7 (stranded) min. 0.4 mm

Test voltage $U_{r.m.s.}$ 500 V
Contact resistance < 25 mΩ
Insulation resistance > 10 GΩ

Insertion and withdrawal force approx. 0.5 N / contact

Working temperature range - 55 °C ... + 125 °C

The higher temperature limit includes the local ambient and heating effects of the contacts under load

Temperature during reflow soldering (acc. to ECA/IPC/JEDEC J-STD-075 Level PSL R0) min. 150 s > 217 °C
min. 30 s > 240 °C

Electrical termination

Board connectors SMT (Surface Mount Technology)
Cable connectors IDC (Insulation Displacement Connection)

Materials

Moulding material LCP
UL approval UL 94-V0
CTI value (Comparative Tracking Index) 175

Contacts base material Copper alloy

Contact surface

Mating side
Board connectors Au over PdNi (acc. performance level)
Cable connectors Au over PdNi (acc. performance level)

Termination side
Board connectors (SMT) Sn
Cable connectors (IDC) Sn

Flat cable requirements for IDC connectors

PVC flat cables: AWG 30/1 (solid)
AWG 30/7 (stranded)
PTFE flat cables: AWG 30/1 (solid)
Insulation diameter: min. 0.55 mm - max. 0.75 mm

Working current acc. to IEC 60512

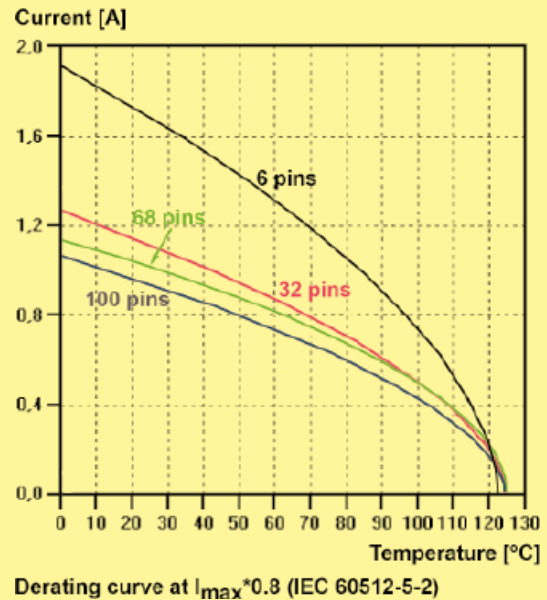
70 °C ambient temperature @ 80 % derating
6 pins 1.2 A
32 pins 0.8 A
68 pins 0.75 A
100 pins 0.7 A

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.



Durability

Performance level 1

Initial 250 mating cycles, 10 days gas test (25 °C/75 % r.h.) using H₂S 10 ppb, NO₂ 200 ppb, CL₂ 10 ppb, SO₂ 200 ppb. Measurement of contact resistance. The remaining 250 mating cycles are subject to measurement of contact resistance and visual inspection. Visual inspection. No abrasion of the contact finish through to the base material. No functional impairment.

Part number definition: 15 2... ..

Performance level 2

Initial 125 mating cycles, 4 days gas test (25 °C/75% r.h.) using H₂S 10 ppb, NO₂ 200 ppb, CL₂ 10 ppb, SO₂ 200 ppb. Measurement of contact resistance. The remaining 125 mating cycles are subject to measurement of contact resistance and visual inspection. Visual inspection. No abrasion of the contact finish through to the base material. No functional impairment.

Part number definition: 15 6... ..

Performance level S4

Defined contact surface of min. 0.06 μm Au over 0.7+0.2 μm PdNi.

Part number definition: 15 5... ..

Working voltage acc. to IEC 60664-1

The working voltage depends on user specific operational conditions. Depending on the installation category, the degree of pollution and the entire electrical environment, the working voltage is different. The standard IEC 60664-1 specifies, in general, the minimum insulation distances for equipment. But it can also be used to determine the maximum working voltage with given requirements.

The following table shows the most common conditions applicable for the har-flex® connectors and exemplary calculations for the working voltage. For installation category, degree of pollution and other requirements which are not shown in the table we refer to the IEC 60664-1.

Clearance / Creepage distance	0.4 mm			
CTI-Value	< 400			
Isolation group	III a/b			
Electrical field type	Case A (Inhomogeneous field)		Case B (Homogeneous field)	
Installation category	I	II	I	II
Degree of pollution	1	1	1	1
Working voltage max.	150 V	100 V	150 V	150 V

Explanations:

- CTI value and isolation group are fixed values by the har-flex® connector characteristics.
- Installation category I: Equipment is intended for use only in appliances or installation parts, in which no overvoltages can occur. Equipment in this installation category is normally operated at extra low voltage.
- Installation category II: Equipment is intended for use in installations or parts of installations, in which lightning overvoltages need not be considered. Overvoltages caused by switching must be taken into account.
- Pollution degree 1: No pollution or only dry, non-conductive pollution occurs. The pollution has no influence.
- Pollution degree 2: Only non-conductive pollution occurs. A temporary conductive caused by condensation must be expected occasionally.

Part number definition

The har-flex® part numbers have 14 digits and are based on the following scheme:



15 har-flex® family

Connector style

- 11 straight male connector
1.75 mm stacking height
- 12 straight male connector
3.25 mm stacking height
- 15 angled male connector
- 21 straight female connector
6.25 mm stacking height
- 22 straight female connector
9.05 mm stacking height
- 25 angled female connector
- 29 IDC flat band cable connector / accessories

Number of contacts

Durability

- 2 performance level 1
- 5 performance level S4
- 6 performance level 2

Termination

- 5 IDC termination
- 6 SMT termination

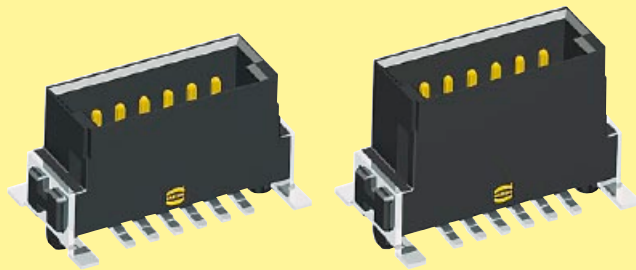
Counting number

Packaging

- 000 Tape and reel packaging
- 333 Samples

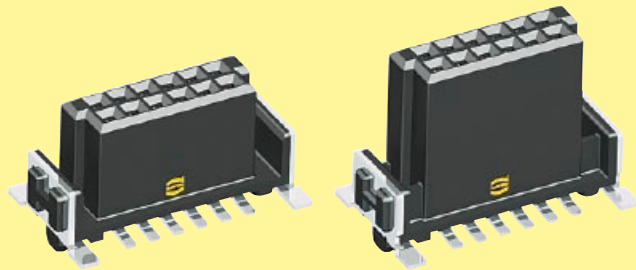
Stacking heights of straight connector versions

The har-flex® connectors cover mezzanine applications with a range of straight versions for four different stacking heights that can be used to interconnect PCBs arranged in parallel stacks with spacing between 8.0 mm and 13.8 mm.



Male 1.75 mm

Male 3.25 mm



Female 6.25 mm

Female 9.05 mm

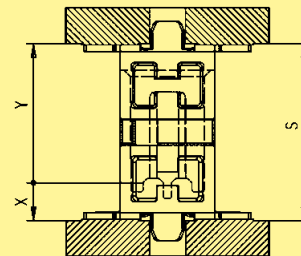
Due to the wiping lengths of 1.5 mm, these four connectors cover the distance of 8 mm to 13.8 mm continuously.

14 mm				
13 mm				
12 mm				
11 mm				
10 mm				
9 mm				
8 mm				
stacking heights	male 1.75 mm female 6.25 mm	male 3.25 mm female 6.25 mm	male 1.75 mm female 9.05 mm	male 3.25 mm female 9.05 mm
PCB distance	8 mm - 9.5 mm	9.5 mm - 11 mm	10.8 mm - 12.3 mm	12.3 mm - 13.8 mm
part numbers	15 11 ... 15 21 ...	15 12 ... 15 21 ...	15 11 ... 15 22 ...	15 12 ... 15 22 ...

Mating options

Mezzanine connection

straight female



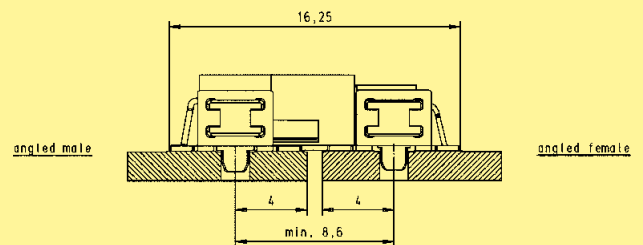
straight male

3.25	9.05	12.3	13.8
1.75	9.05	10.8	12.3
3.25	6.25	9.5	11
1.75	6.25	8	9.5
X	Y	Smin	* Smax

* Smax = Smin + 1.5 wiping length with additional contact overlap security

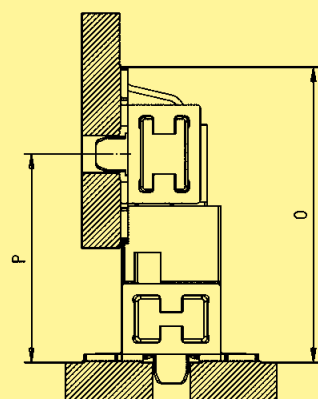
Extender Card connection

EXTENDER CARD CONFIGURATION

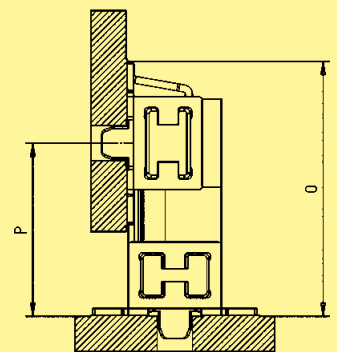


Mother-to-Daughtercard connection

angled female



angled male



straight male

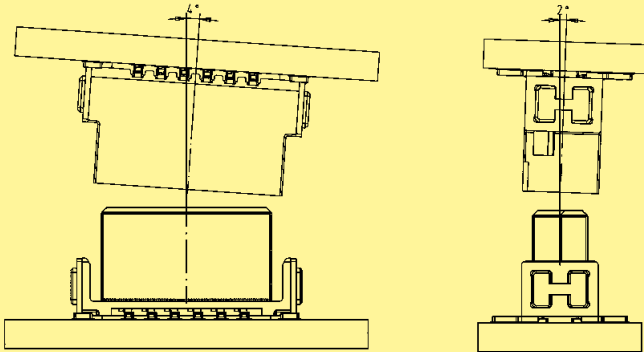
3.25	10.25	14.08
1.75	8.75	12.58
X	P min.	O

straight female

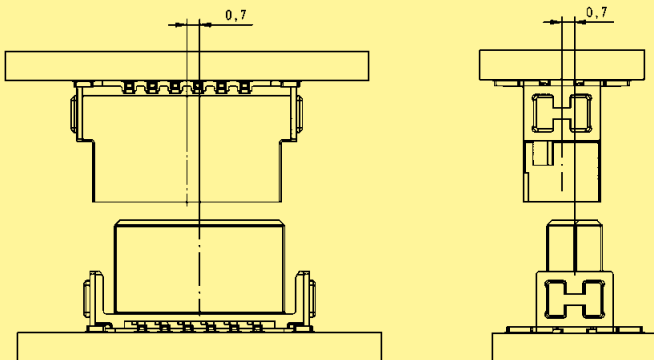
9.05	10.5	14.33
6.25	7.7	11.53
Y	P min.	O

Mating conditions

Inclination



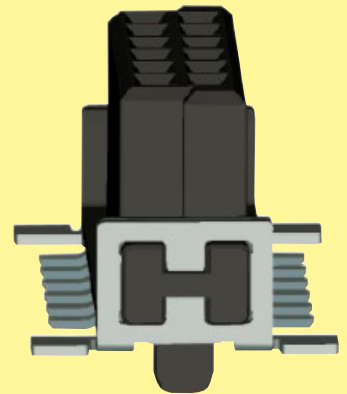
Mismatching



SMT processing notes

The har-flex® SMT connectors meet the highest demands in terms of their processing capabilities.

The connectors are delivered in a tape and reel packaging optimized for automatic assembly machines. A vacuum cover enables the automatic assembly with a vacuum nozzle.



The insulation body material is high temperature resistant, and due to the black colour a secure camera recognition is ensured.

For a reliable SMT solder process, the termination pins are 100 % checked for a coplanarity of < 0.1 mm.

Process / Moisture Sensitivity

During the reflow solder process, the connector has to resist extreme variations in temperature. Connectors consist in general of both plastic and metal parts, which have a different behaviour during the solder process. The Process Sensivity and also the Moisture Sensivity are tested according the ECA/IPC/JEDEC J-STD-075 specification.

Process Sensivity:

PSL means Process Sensivity Level. PSL is a rating used to identify a component that is solder process sensitive. Damages of the connector after three times soldering are not permitted (e.g. melted edges).

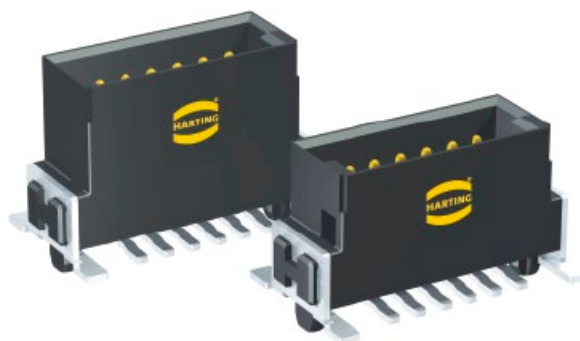
Moisture Sensivity:

MSL means Moisture Sensivity Level. MSL is a rating indicating a component's susceptibility to damage due to absorbed moisture during storage. Damages of the connector after storage in damp heat and three times soldering are not permitted (e.g. blisters).

The har-flex® connectors are rated with **PSL R0** and **MSL 1**. This is the maximum possible rating in both categories. The har-flex® connector resists three times soldering at the following conditions without damages:

- min. 150 s beyond 217 °C (liquidus temperature, the melting point of the solder paste)
- min. 30 s beyond classification temperature (240 °C / 245 °C for har-flex®)
- Temperature solder profile according to ECA/IPC/JEDEC J-STD-075
- For MSL test, a storage of 168 hours at 85 °C and 85 % rel. humidity was carried out

As the result, the har-flex® connectors are not process sensitive and not moisture sensitive according to ECA/IPC/JEDEC J-STD-075.



Male connectors, straight

Identification Number of contacts Part No. Dimensions in mm

Male connector, straight,
stacking heights
1.75 / 3.25 mm

6	15 1 . 006 . 601
8	15 1 . 008 . 601
10	15 1 . 010 . 601
12	15 1 . 012 . 601
14	15 1 . 014 . 601
16	15 1 . 016 . 601
18	15 1 . 018 . 601
20	15 1 . 020 . 601
22	15 1 . 022 . 601
24	15 1 . 024 . 601
26	15 1 . 026 . 601
28	15 1 . 028 . 601
30	15 1 . 030 . 601
32	15 1 . 032 . 601
34	15 1 . 034 . 601
36	15 1 . 036 . 601
38	15 1 . 038 . 601
40	15 1 . 040 . 601
42	15 1 . 042 . 601
44	15 1 . 044 . 601
46	15 1 . 046 . 601
48	15 1 . 048 . 601
50	15 1 . 050 . 601
52	15 1 . 052 . 601
54	15 1 . 054 . 601
56	15 1 . 056 . 601
58	15 1 . 058 . 601
60	15 1 . 060 . 601
62	15 1 . 062 . 601
64	15 1 . 064 . 601
66	15 1 . 066 . 601
68	15 1 . 068 . 601
70	15 1 . 070 . 601
72	15 1 . 072 . 601
74	15 1 . 074 . 601
76	15 1 . 076 . 601
78	15 1 . 078 . 601
80	15 1 . 080 . 601
82	15 1 . 082 . 601
84	15 1 . 084 . 601
86	15 1 . 086 . 601
88	15 1 . 088 . 601
90	15 1 . 090 . 601
92	15 1 . 092 . 601
94	15 1 . 094 . 601
96	15 1 . 096 . 601
98	15 1 . 098 . 601
100	15 1 . 100 . 601

A	B	C	D	E	F
2.54	6.96	8.89	5.76	4.76	6.56
3.81	8.23	10.16	7.03	6.03	7.83
5.08	9.50	11.43	8.30	7.30	9.10
6.35	10.77	12.70	9.57	8.57	10.37
7.62	12.04	13.97	10.84	9.84	11.64
8.89	13.31	15.24	12.11	11.11	12.91
10.16	14.58	16.51	13.38	12.38	14.18
11.43	15.85	17.78	14.65	13.65	15.45
12.70	17.12	19.05	15.92	14.92	16.72
13.97	18.39	20.32	17.19	16.19	17.99
15.24	19.66	21.59	18.46	17.46	19.26
16.51	20.93	22.86	19.73	18.73	20.53
17.78	22.20	24.13	21.00	20.00	21.80
19.05	23.47	25.40	22.27	21.27	23.07
20.32	24.74	26.67	23.54	22.54	24.34
21.59	26.01	27.94	24.81	23.81	25.61
22.86	27.28	29.21	26.08	25.08	26.88
24.13	28.55	30.48	27.35	26.35	28.15
25.40	29.82	31.75	28.62	27.62	29.42
26.67	31.09	33.02	29.89	28.89	30.69
27.94	32.36	34.29	31.16	30.16	31.96
29.21	33.63	35.56	32.43	31.43	33.23
30.48	34.90	36.83	33.70	32.70	34.50
31.75	36.17	38.10	34.97	33.97	35.77
33.02	37.44	39.37	36.24	35.24	37.04
34.29	38.71	40.64	37.51	36.51	38.31
35.56	39.98	41.91	38.78	37.78	39.58
36.83	41.25	43.18	40.05	39.05	40.85
38.10	42.52	44.45	41.32	40.32	42.12
39.37	43.79	45.72	42.59	41.59	43.39
40.64	45.06	46.99	43.86	42.86	44.66
41.91	46.33	48.26	45.13	44.13	45.93
43.18	47.60	49.53	46.40	45.40	47.20
44.45	48.87	50.80	47.67	46.67	48.47
45.72	50.14	52.07	48.94	47.94	49.74
46.99	51.41	53.34	50.21	49.21	51.01
48.26	52.68	54.61	51.48	50.48	52.28
49.53	53.95	55.88	52.75	51.75	53.55
50.80	55.22	57.15	54.02	53.02	54.82
52.07	56.49	58.42	55.29	54.29	56.09
53.34	57.76	59.69	56.56	55.56	57.36
54.61	59.03	60.96	57.83	56.83	58.63
55.88	60.30	62.23	59.10	58.10	59.90
57.15	61.57	63.50	60.37	59.37	61.17
58.42	62.84	64.77	61.64	60.64	62.44
59.69	64.11	66.04	62.91	61.91	63.71
60.96	65.38	67.31	64.18	63.18	64.98
62.23	66.65	68.58	65.45	64.45	66.25

Please insert digit
for stacking height

1.75 mm ▶ 1
3.25 mm ▶ 2

for performance level 1
for performance level S4
for performance level 2

2
5
6

333
000

for samples
for 280 pieces on reel



Female connectors, straight

Identification Number of contacts Part No. Dimensions in mm

Female connector, straight, stacking heights 6.25 / 9.05 mm

6	15 2 . 006 . 601
8	15 2 . 008 . 601
10	15 2 . 010 . 601
12	15 2 . 012 . 601
14	15 2 . 014 . 601
16	15 2 . 016 . 601
18	15 2 . 018 . 601
20	15 2 . 020 . 601
22	15 2 . 022 . 601
24	15 2 . 024 . 601
26	15 2 . 026 . 601
28	15 2 . 028 . 601
30	15 2 . 030 . 601
32	15 2 . 032 . 601
34	15 2 . 034 . 601
36	15 2 . 036 . 601
38	15 2 . 038 . 601
40	15 2 . 040 . 601
42	15 2 . 042 . 601
44	15 2 . 044 . 601
46	15 2 . 046 . 601
48	15 2 . 048 . 601
50	15 2 . 050 . 601
52	15 2 . 052 . 601
54	15 2 . 054 . 601
56	15 2 . 056 . 601
58	15 2 . 058 . 601
60	15 2 . 060 . 601
62	15 2 . 062 . 601
64	15 2 . 064 . 601
66	15 2 . 066 . 601
68	15 2 . 068 . 601
70	15 2 . 070 . 601
72	15 2 . 072 . 601
74	15 2 . 074 . 601
76	15 2 . 076 . 601
78	15 2 . 078 . 601
80	15 2 . 080 . 601
82	15 2 . 082 . 601
84	15 2 . 084 . 601
86	15 2 . 086 . 601
88	15 2 . 088 . 601
90	15 2 . 090 . 601
92	15 2 . 092 . 601
94	15 2 . 094 . 601
96	15 2 . 096 . 601
98	15 2 . 098 . 601
100	15 2 . 100 . 601

A	B	C	D	E
2.54	6.96	8.89	5.56	4.56
3.81	8.23	10.16	6.83	5.83
5.08	9.50	11.43	8.10	7.10
6.35	10.77	12.70	9.37	8.37
7.62	12.04	13.97	10.64	9.64
8.89	13.31	15.24	11.91	10.91
10.16	14.58	16.51	13.18	12.18
11.43	15.85	17.78	14.45	13.45
12.70	17.12	19.05	15.72	14.72
13.97	18.39	20.32	16.99	15.99
15.24	19.66	21.59	18.26	17.26
16.51	20.93	22.86	19.53	18.53
17.78	22.20	24.13	20.80	19.80
19.05	23.47	25.40	22.07	21.07
20.32	24.74	26.67	23.34	22.34
21.59	26.01	27.94	24.61	23.61
22.86	27.28	29.21	25.88	24.88
24.13	28.55	30.48	27.15	26.15
25.40	29.82	31.75	28.42	27.42
26.67	31.09	33.02	29.69	28.69
27.94	32.36	34.29	30.96	29.96
29.21	33.63	35.56	32.23	31.23
30.48	34.90	36.83	33.50	32.50
31.75	36.17	38.10	34.77	33.77
33.02	37.44	39.37	36.04	35.04
34.29	38.71	40.64	37.31	36.31
35.56	39.98	41.91	38.58	37.58
36.83	41.25	43.18	39.85	38.85
38.10	42.52	44.45	41.12	40.12
39.37	43.79	45.72	42.39	41.39
40.64	45.06	46.99	43.66	42.66
41.91	46.33	48.26	44.93	43.93
43.18	47.60	49.53	46.20	45.20
44.45	48.87	50.80	47.47	46.47
45.72	50.14	52.07	48.74	47.74
46.99	51.41	53.34	50.01	49.01
48.26	52.68	54.61	51.28	50.28
49.53	53.95	55.88	52.55	51.55
50.80	55.22	57.15	53.82	52.82
52.07	56.49	58.42	55.09	54.09
53.34	57.76	59.69	56.36	55.36
54.61	59.03	60.96	57.63	56.63
55.88	60.30	62.23	58.90	57.90
57.15	61.57	63.50	60.17	59.17
58.42	62.84	64.77	61.44	60.44
59.69	64.11	66.04	62.71	61.71
60.96	65.38	67.31	63.98	62.98
62.23	66.65	68.58	65.25	64.25

Please insert digit for stacking height

6.25 mm ▶ 1
9.05 mm ▶ 2

for performance level 1
for performance level S4
for performance level 2

2
5
6

333
000

for samples
for 280 pieces on reel



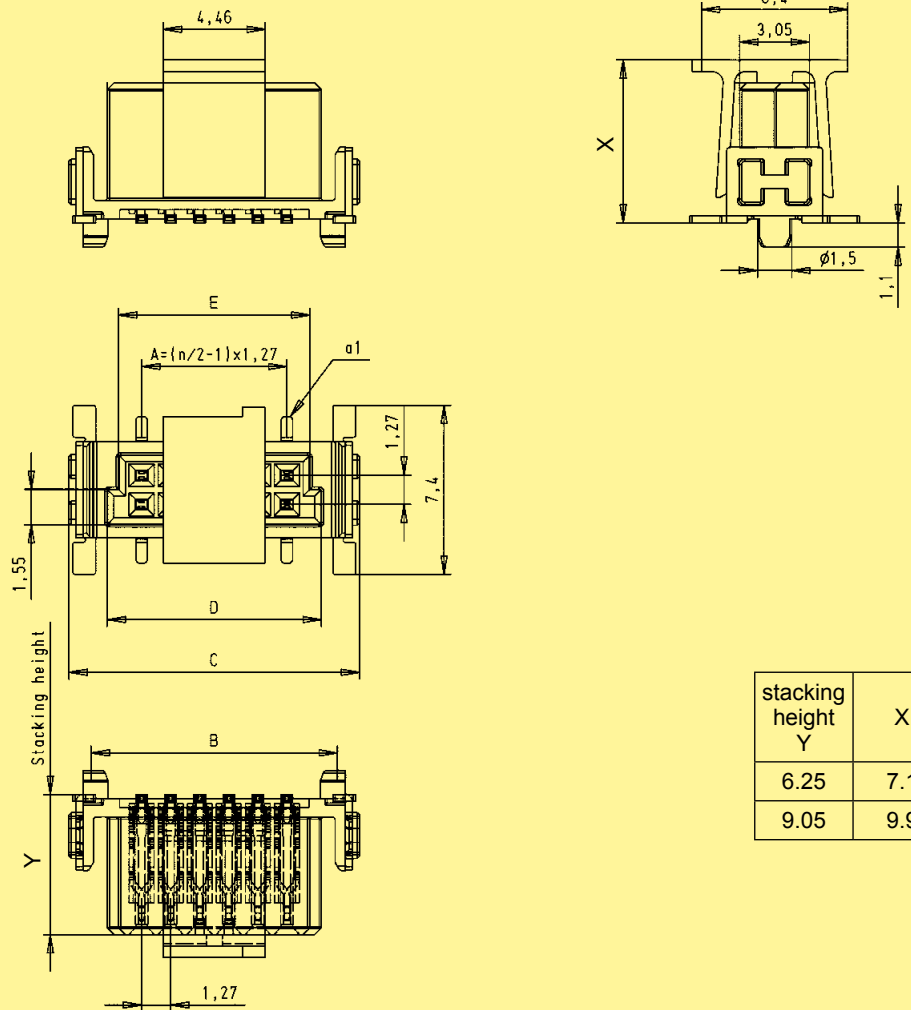
Female connectors, straight

Identification

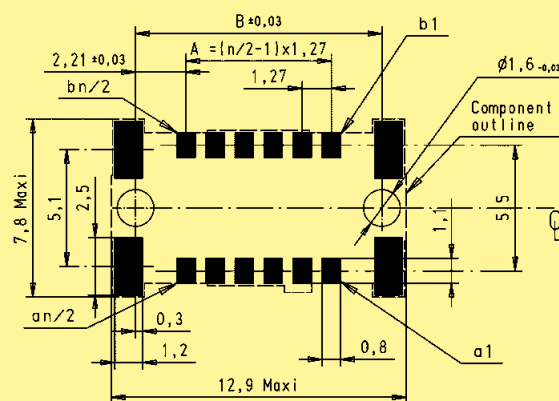
Drawing

Dimensions in mm

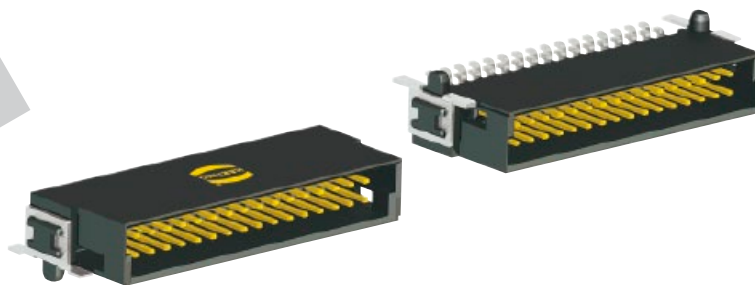
Dimensions



PCB layout



available
Q1/2012



Male connectors, angled

Identification Number of contacts Part No. Dimensions in mm

Male connector, angled

A	B	C	D	E
2.54	6.96	8.89	5.76	4.76
3.81	8.23	10.16	7.03	6.03
5.08	9.50	11.43	8.30	7.30
6.35	10.77	12.70	9.57	8.57
7.62	12.04	13.97	10.84	9.84
8.89	13.31	15.24	12.11	11.11
10.16	14.58	16.51	13.38	12.38
11.43	15.85	17.78	14.65	13.65
12.70	17.12	19.05	15.92	14.92
13.97	18.39	20.32	17.19	16.19
15.24	19.66	21.59	18.46	17.46
16.51	20.93	22.86	19.73	18.73
17.78	22.20	24.13	21.00	20.00
19.05	23.47	25.40	22.27	21.27
20.32	24.74	26.67	23.54	22.54
21.59	26.01	27.94	24.81	23.81
22.86	27.28	29.21	26.08	25.08
24.13	28.55	30.48	27.35	26.35
25.40	29.82	31.75	28.62	27.62
26.67	31.09	33.02	29.89	28.89
27.94	32.36	34.29	31.16	30.16
29.21	33.63	35.56	32.43	31.43
30.48	34.90	36.83	33.70	32.70
31.75	36.17	38.10	34.97	33.97
33.02	37.44	39.37	36.24	35.24
34.29	38.71	40.64	37.51	36.51
35.56	39.98	41.91	38.78	37.78
36.83	41.25	43.18	40.05	39.05
38.10	42.52	44.45	41.32	40.32
39.37	43.79	45.72	42.59	41.59
40.64	45.06	46.99	43.86	42.86
41.91	46.33	48.26	45.13	44.13
43.18	47.60	49.53	46.40	45.40
44.45	48.87	50.80	47.67	46.67
45.72	50.14	52.07	48.94	47.94
46.99	51.41	53.34	50.21	49.21
48.26	52.68	54.61	51.48	50.48
49.53	53.95	55.88	52.75	51.75
50.80	55.22	57.15	54.02	53.02
52.07	56.49	58.42	55.29	54.29
53.34	57.76	59.69	56.56	55.56
54.61	59.03	60.96	57.83	56.83
55.88	60.30	62.23	59.10	58.10
57.15	61.57	63.50	60.37	59.37
58.42	62.84	64.77	61.64	60.64
59.69	64.11	66.04	62.91	61.91
60.96	65.38	67.31	64.18	63.18
62.23	66.65	68.58	65.45	64.45

6	15 15 006 . 601 . . .
8	15 15 008 . 601 . . .
10	15 15 010 . 601 . . .
12	15 15 012 . 601 . . .
14	15 15 014 . 601 . . .
16	15 15 016 . 601 . . .
18	15 15 018 . 601 . . .
20	15 15 020 . 601 . . .
22	15 15 022 . 601 . . .
24	15 15 024 . 601 . . .
26	15 15 026 . 601 . . .
28	15 15 028 . 601 . . .
30	15 15 030 . 601 . . .
32	15 15 032 . 601 . . .
34	15 15 034 . 601 . . .
36	15 15 036 . 601 . . .
38	15 15 038 . 601 . . .
40	15 15 040 . 601 . . .
42	15 15 042 . 601 . . .
44	15 15 044 . 601 . . .
46	15 15 046 . 601 . . .
48	15 15 048 . 601 . . .
50	15 15 050 . 601 . . .
52	15 15 052 . 601 . . .
54	15 15 054 . 601 . . .
56	15 15 056 . 601 . . .
58	15 15 058 . 601 . . .
60	15 15 060 . 601 . . .
62	15 15 062 . 601 . . .
64	15 15 064 . 601 . . .
66	15 15 066 . 601 . . .
68	15 15 068 . 601 . . .
70	15 15 070 . 601 . . .
72	15 15 072 . 601 . . .
74	15 15 074 . 601 . . .
76	15 15 076 . 601 . . .
78	15 15 078 . 601 . . .
80	15 15 080 . 601 . . .
82	15 15 082 . 601 . . .
84	15 15 084 . 601 . . .
86	15 15 086 . 601 . . .
88	15 15 088 . 601 . . .
90	15 15 090 . 601 . . .
92	15 15 092 . 601 . . .
94	15 15 094 . 601 . . .
96	15 15 096 . 601 . . .
98	15 15 098 . 601 . . .
100	15 15 100 . 601 . . .

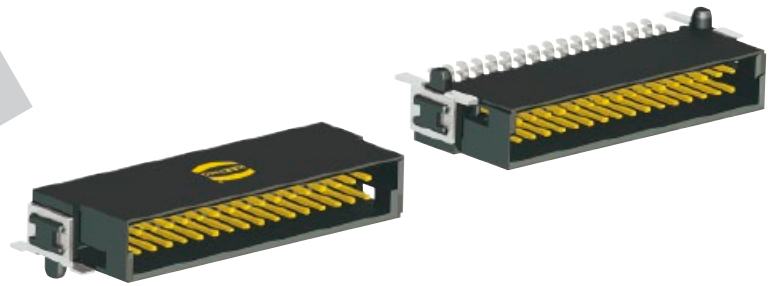
for performance level 1
for performance level S4
for performance level 2

2
5
6

333
000

for samples
for 560 pieces on reel

available
Q1/2012



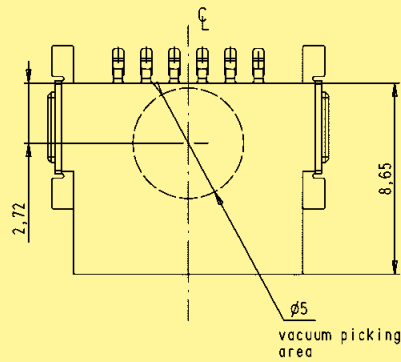
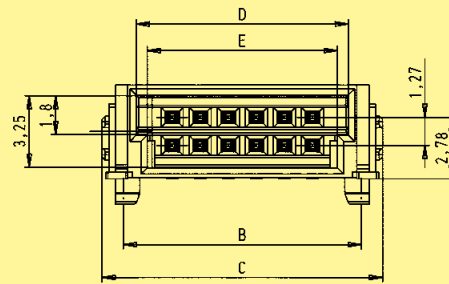
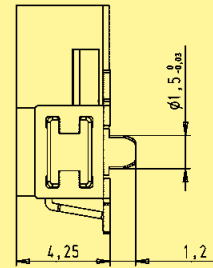
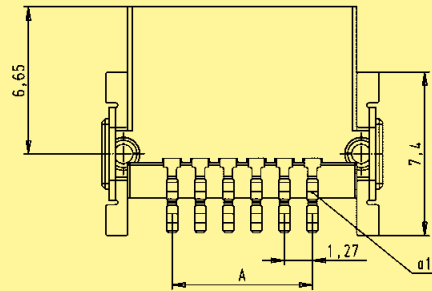
Male connectors, angled

Identification

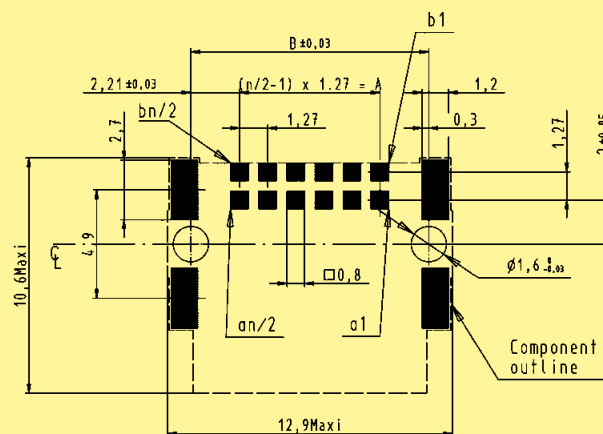
Drawing

Dimensions in mm

Dimensions



PCB layout



available
Q2/2012



Female connectors, angled

Identification Number of contacts Part No. Dimensions in mm

Female connector, angled

6	15 25 006 . 601
8	15 25 008 . 601
10	15 25 010 . 601
12	15 25 012 . 601
14	15 25 014 . 601
16	15 25 016 . 601
18	15 25 018 . 601
20	15 25 020 . 601
22	15 25 022 . 601
24	15 25 024 . 601
26	15 25 026 . 601
28	15 25 028 . 601
30	15 25 030 . 601
32	15 25 032 . 601
34	15 25 034 . 601
36	15 25 036 . 601
38	15 25 038 . 601
40	15 25 040 . 601
42	15 25 042 . 601
44	15 25 044 . 601
46	15 25 046 . 601
48	15 25 048 . 601
50	15 25 050 . 601
52	15 25 052 . 601
54	15 25 054 . 601
56	15 25 056 . 601
58	15 25 058 . 601
60	15 25 060 . 601
62	15 25 062 . 601
64	15 25 064 . 601
66	15 25 066 . 601
68	15 25 068 . 601
70	15 25 070 . 601
72	15 25 072 . 601
74	15 25 074 . 601
76	15 25 076 . 601
78	15 25 078 . 601
80	15 25 080 . 601
82	15 25 082 . 601
84	15 25 084 . 601
86	15 25 086 . 601
88	15 25 088 . 601
90	15 25 090 . 601
92	15 25 092 . 601
94	15 25 094 . 601
96	15 25 096 . 601
98	15 25 098 . 601
100	15 25 100 . 601

A	B	C	D	E
2.54	6.96	8.89	5.56	4.56
3.81	8.23	10.16	6.83	5.83
5.08	9.50	11.43	8.10	7.10
6.35	10.77	12.70	9.37	8.37
7.62	12.04	13.97	10.64	9.64
8.89	13.31	15.24	11.91	10.91
10.16	14.58	16.51	13.18	12.18
11.43	15.85	17.78	14.45	13.45
12.70	17.12	19.05	15.72	14.72
13.97	18.39	20.32	16.99	15.99
15.24	19.66	21.59	18.26	17.26
16.51	20.93	22.86	19.53	18.53
17.78	22.20	24.13	20.80	19.80
19.05	23.47	25.40	22.07	21.07
20.32	24.74	26.67	23.34	22.34
21.59	26.01	27.94	24.61	23.61
22.86	27.28	29.21	25.88	24.88
24.13	28.55	30.48	27.15	26.15
25.40	29.82	31.75	28.42	27.42
26.67	31.09	33.02	29.69	28.69
27.94	32.36	34.29	30.96	29.96
29.21	33.63	35.56	32.23	31.23
30.48	34.90	36.83	33.50	32.50
31.75	36.17	38.10	34.77	33.77
33.02	37.44	39.37	36.04	35.04
34.29	38.71	40.64	37.31	36.31
35.56	39.98	41.91	38.58	37.58
36.83	41.25	43.18	39.85	38.85
38.10	42.52	44.45	41.12	40.12
39.37	43.79	45.72	42.39	41.39
40.64	45.06	46.99	43.66	42.66
41.91	46.33	48.26	44.93	43.93
43.18	47.60	49.53	46.20	45.20
44.45	48.87	50.80	47.47	46.47
45.72	50.14	52.07	48.74	47.74
46.99	51.41	53.34	50.01	49.01
48.26	52.68	54.61	51.28	50.28
49.53	53.95	55.88	52.55	51.55
50.80	55.22	57.15	53.82	52.82
52.07	56.49	58.42	55.09	54.09
53.34	57.76	59.69	56.36	55.36
54.61	59.03	60.96	57.63	56.63
55.88	60.30	62.23	58.90	57.90
57.15	61.57	63.50	60.17	59.17
58.42	62.84	64.77	61.44	60.44
59.69	64.11	66.04	62.71	61.71
60.96	65.38	67.31	63.98	62.98
62.23	66.65	68.58	65.25	64.25

harflex

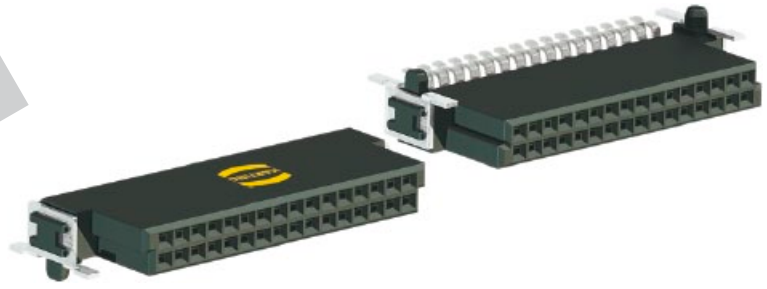
for performance level 1
for performance level S4
for performance level 2

2
5
6

333
000

for samples
for 560 pieces on reel

available
Q2/2012



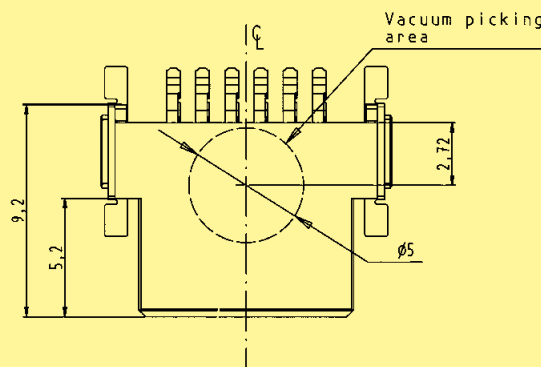
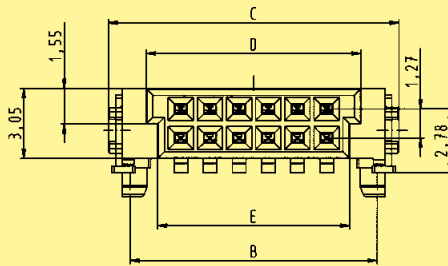
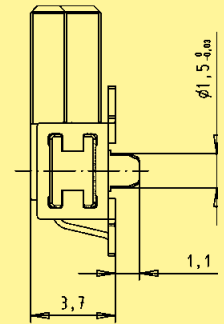
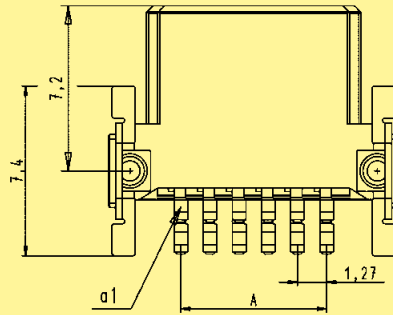
Female connectors, angled

Identification

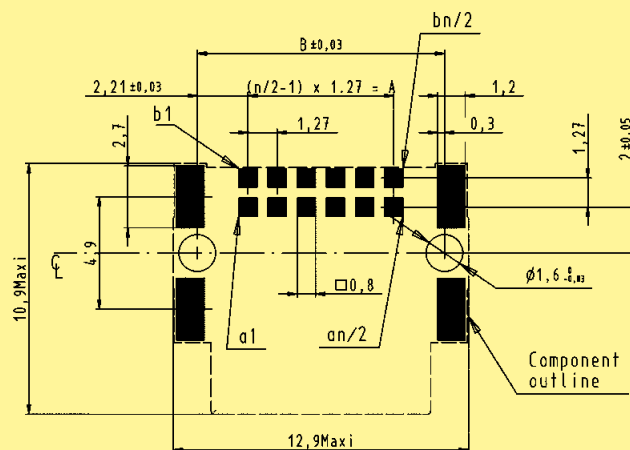
Drawing

Dimensions in mm

Dimensions



PCB layout





Female connectors, IDC

Identification Number of contacts Part No. Dimensions in mm

Female connector, IDC in a tray packaging

6	15 29 006	. 50 . 000
8	15 29 008	. 50 . 000
10	15 29 010	. 50 . 000
12	15 29 012	. 50 . 000
14	15 29 014	. 50 . 000
16	15 29 016	. 50 . 000
18	15 29 018	. 50 . 000
20	15 29 020	. 50 . 000
22	15 29 022	. 50 . 000
24	15 29 024	. 50 . 000
26	15 29 026	. 50 . 000
28	15 29 028	. 50 . 000
30	15 29 030	. 50 . 000
32	15 29 032	. 50 . 000
34	15 29 034	. 50 . 000
36	15 29 036	. 50 . 000
38	15 29 038	. 50 . 000
40	15 29 040	. 50 . 000
42	15 29 042	. 50 . 000
44	15 29 044	. 50 . 000
46	15 29 046	. 50 . 000
48	15 29 048	. 50 . 000
50	15 29 050	. 50 . 000
52	15 29 052	. 50 . 000
54	15 29 054	. 50 . 000
56	15 29 056	. 50 . 000
58	15 29 058	. 50 . 000
60	15 29 060	. 50 . 000
62	15 29 062	. 50 . 000
64	15 29 064	. 50 . 000
66	15 29 066	. 50 . 000
68	15 29 068	. 50 . 000
70	15 29 070	. 50 . 000
72	15 29 072	. 50 . 000
74	15 29 074	. 50 . 000
76	15 29 076	. 50 . 000
78	15 29 078	. 50 . 000
80	15 29 080	. 50 . 000
82	15 29 082	. 50 . 000
84	15 29 084	. 50 . 000
86	15 29 086	. 50 . 000
88	15 29 088	. 50 . 000
90	15 29 090	. 50 . 000
92	15 29 092	. 50 . 000
94	15 29 094	. 50 . 000
96	15 29 096	. 50 . 000
98	15 29 098	. 50 . 000
100	15 29 100	. 50 . 000

A	B	C	D	E
2.54	11.59	5.56	4.56	15.00
3.81	12.86	6.83	5.83	15.00
5.08	14.13	8.10	7.10	15.00
6.35	15.40	9.37	8.37	15.00
7.62	16.67	10.64	9.64	15.00
8.89	17.94	11.91	10.91	15.00
10.16	19.21	13.18	12.18	15.00
11.43	20.48	14.45	13.45	15.00
12.70	21.75	15.72	14.72	15.00
13.97	23.02	16.99	15.99	15.00
15.24	24.29	18.26	17.26	15.00
16.51	25.56	19.53	18.53	15.00
17.78	26.83	20.80	19.80	15.00
19.05	28.10	22.07	21.07	15.00
20.32	29.37	23.34	22.34	15.00
21.59	30.64	24.61	23.61	15.00
22.86	31.91	25.88	24.88	15.00
24.13	33.18	27.15	26.15	15.00
25.40	34.45	28.42	27.42	15.00
26.67	35.72	29.69	28.69	15.00
27.94	36.99	30.96	29.96	15.00
29.21	38.26	32.23	31.23	15.00
30.48	39.53	33.50	32.50	15.00
31.75	40.80	34.77	33.77	15.00
33.02	42.07	36.04	35.04	15.00
34.29	43.34	37.31	36.31	15.00
35.56	44.61	38.58	37.58	15.00
36.83	45.88	39.85	38.85	16.20
38.10	47.15	41.12	40.12	16.20
39.37	48.42	42.39	41.39	16.20
40.64	49.69	43.66	42.66	16.20
41.91	50.96	44.93	43.93	16.20
43.18	52.23	46.20	45.20	16.20
44.45	53.50	47.47	46.47	16.20
45.72	54.77	48.74	47.74	16.20
46.99	56.04	50.01	49.01	16.20
48.26	57.31	51.28	50.28	16.20
49.53	58.58	52.55	51.55	16.20
50.80	59.85	53.82	52.82	16.20
52.07	61.12	55.09	54.09	16.20
53.34	62.39	56.36	55.36	16.20
54.61	63.66	57.63	56.63	16.20
55.88	64.93	58.90	57.90	16.20
57.15	66.20	60.17	59.17	16.20
58.42	67.47	61.44	60.44	16.20
59.69	68.74	62.71	61.71	16.20
60.96	70.01	63.98	62.98	16.20
62.23	71.28	65.25	64.25	16.20

Please insert digit

- for performance level 1 ▶ 2
- for performance level S4 ▶ 5
- for performance level 2 ▶ 6

without strain relief
with strain relief

1
2



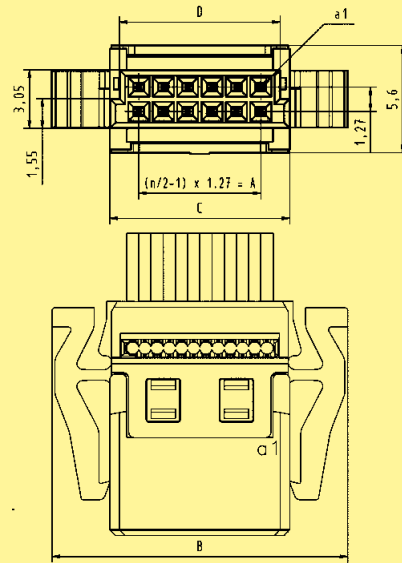
Female connectors, IDC

Identification

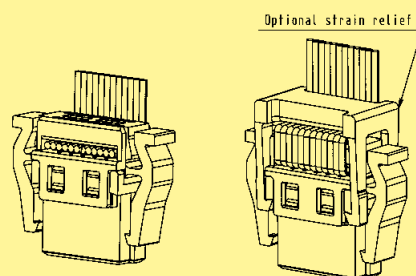
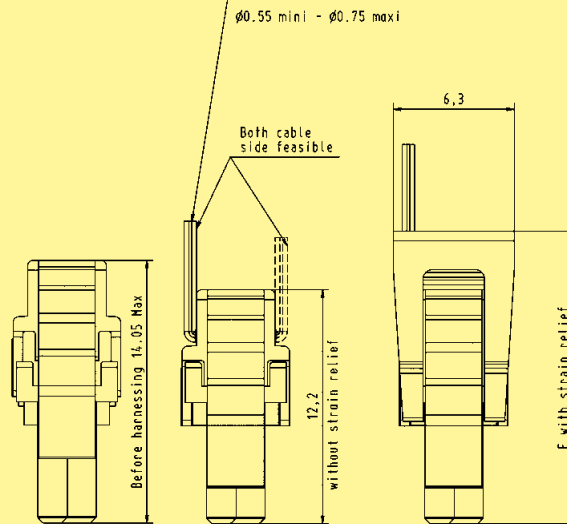
Drawing

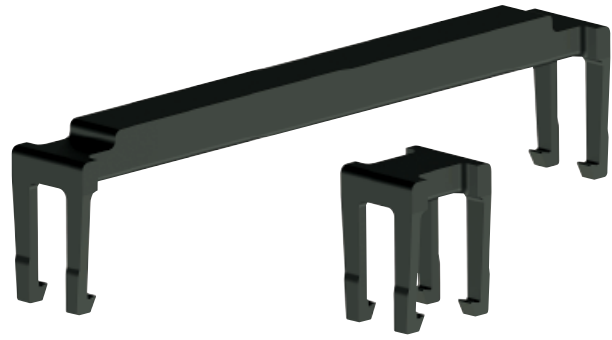
Dimensions in mm

Dimensions



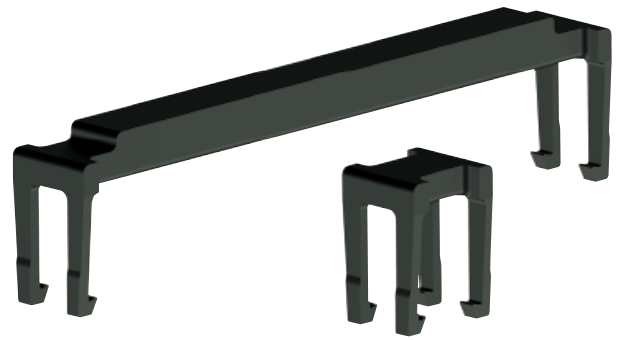
PVC FLAT CABLE : AWG 30/1 (solid)
 AWG 30/7 (stranded)
 PTFE FLAT CABLE : AWG 30/1 (Solid)
 $\phi 0.55$ mini - $\phi 0.75$ maxi





Strain reliefs for female connectors,
IDC

Identification	Number of contacts	Part No.	Dimensions in mm
Strain reliefs for female connectors, IDC	6	15 29 006 0503 000	A
	8	15 29 008 0503 000	7.31
	10	15 29 010 0503 000	8.58
	12	15 29 012 0503 000	9.85
	14	15 29 014 0503 000	11.12
	16	15 29 016 0503 000	12.39
	18	15 29 018 0503 000	13.66
	20	15 29 020 0503 000	14.93
	22	15 29 022 0503 000	16.20
	24	15 29 024 0503 000	17.47
	26	15 29 026 0503 000	18.74
	28	15 29 028 0503 000	20.01
	30	15 29 030 0503 000	21.28
	32	15 29 032 0503 000	22.55
	34	15 29 034 0503 000	23.82
	36	15 29 036 0503 000	25.09
	38	15 29 038 0503 000	26.36
	40	15 29 040 0503 000	27.63
	42	15 29 042 0503 000	28.90
	44	15 29 044 0503 000	30.17
	46	15 29 046 0503 000	31.44
	48	15 29 048 0503 000	32.71
	50	15 29 050 0503 000	33.98
	52	15 29 052 0503 000	35.25
	54	15 29 054 0503 000	36.52
	56	15 29 056 0503 000	37.79
	58	15 29 058 0503 000	39.06
	60	15 29 060 0503 000	40.33
	62	15 29 062 0503 000	41.60
	64	15 29 064 0503 000	42.87
	66	15 29 066 0503 000	44.14
	68	15 29 068 0503 000	45.41
	70	15 29 070 0503 000	46.68
	72	15 29 072 0503 000	47.95
	74	15 29 074 0503 000	49.22
	76	15 29 076 0503 000	50.49
	78	15 29 078 0503 000	51.76
	80	15 29 080 0503 000	53.03
	82	15 29 082 0503 000	54.30
	84	15 29 084 0503 000	55.57
	86	15 29 086 0503 000	56.84
	88	15 29 088 0503 000	58.11
90	15 29 090 0503 000	59.38	
92	15 29 092 0503 000	60.65	
94	15 29 094 0503 000	61.92	
96	15 29 096 0503 000	63.19	
98	15 29 098 0503 000	64.46	
100	15 29 100 0503 000	65.73	
			67.00



Strain reliefs for female connectors, IDC

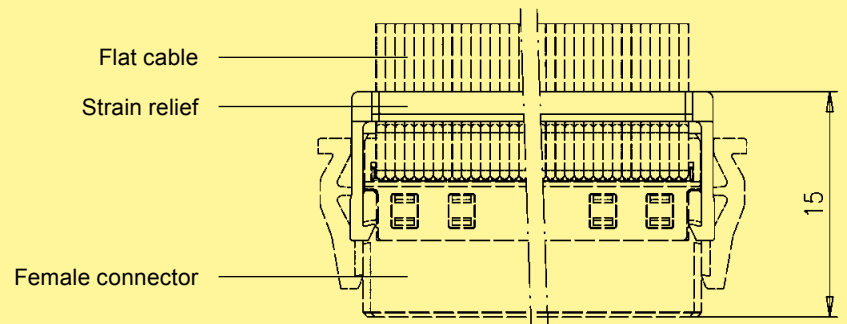
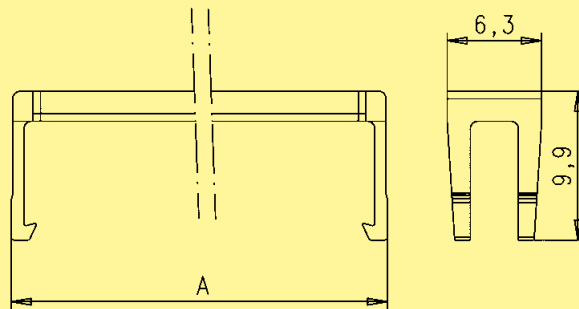
Identification

Drawing

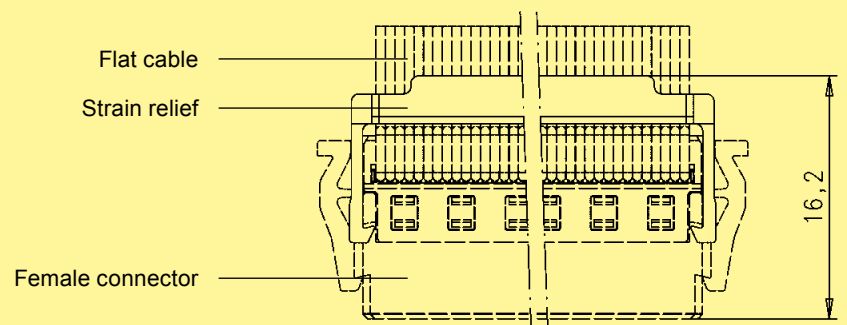
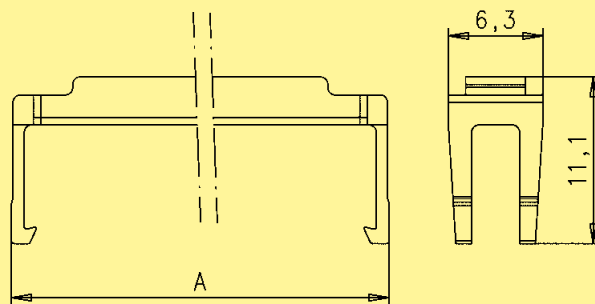
Dimensions in mm

Dimensions

6 – 58 contacts



60 – 100 contacts





Pushing Performance

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