

14. har-flex® Connectors



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	IP20	IP65 / IP67	Data	Signal	Power	high performance		
							Data transfer rate	Shielding	Number of contacts, contact density
Cable termination			PCB termination			Application standard			
Han-Quick Lock®	IDC	Crimp	THT	THR (SMC)	SMT				
Housing integration			Press-in			Housing integration			
Screw	Cage clamp	Axial screw				Separate housing	Integrated housing		

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har-flex® CONNECTORS

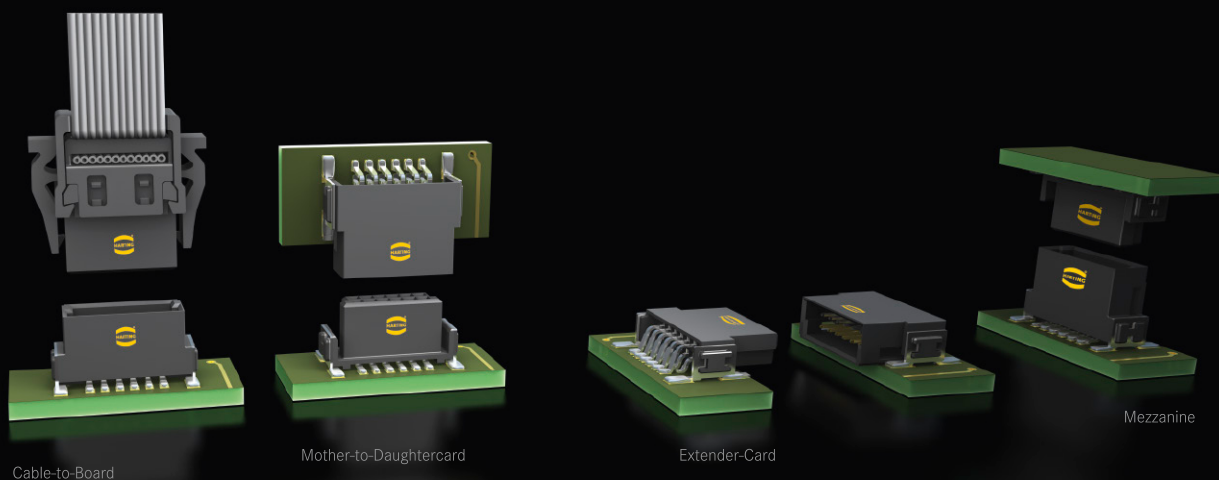
With *har-flex*®, HARTING has developed a general-purpose PCB connector series for internal and external Device Connectivity. The continuous scalability by an even number of contacts from 6 to 100 is a special feature forming an ideal basis for customized applications. The advantage is clearly evident 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 – HARTING turns an individual design into a standard component. No special tooling changes are needed for customer-specific solutions, thus HARTING can realize a short delivery time.

PRODUCT DIVERSITY

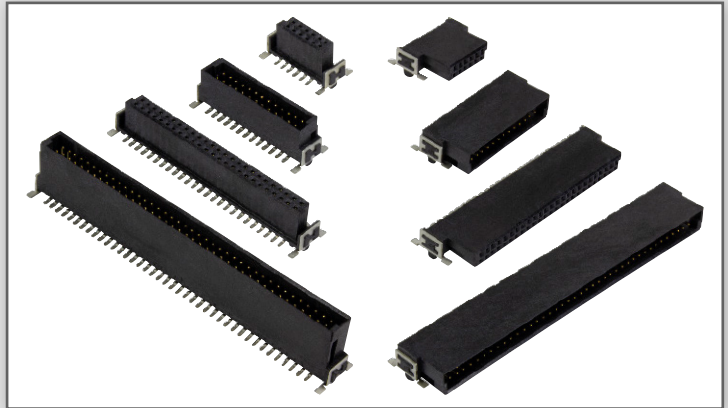
The *har-flex*® product range is based on a 1.27 mm grid. With its diverse variants, HARTING provides connectivity solutions for many different board-to-board and cable-to-board applications. For example, two straight connectors are used for mezzanine applications, two angled connectors for extender cards on one level, and a combination of straight and angled connectors allows the well-known pairing of mother and daughtercards. By using individually tailored IDC flat cables, it is possible to bridge long PCB distances.

Smaller, more powerful and more robust at the same time is the credo in all areas on the way to I4.0. Due to the miniaturized design and the high variability of the *har-flex*® connectors, device manufacturers have a freely scalable connection technology that meets the requirements of miniaturization.



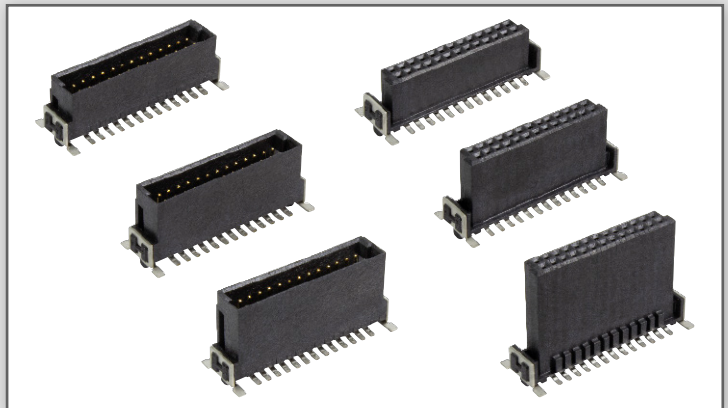
Variable pole counts for highest flexibility

- Male and female connectors with even pole counts from 6 to 100 contacts available
- This flexibility in the choice of number of contacts combined with high density contact spacing allows for an optimal use of PCB space, thereby achieving overall space savings and cost efficiencies



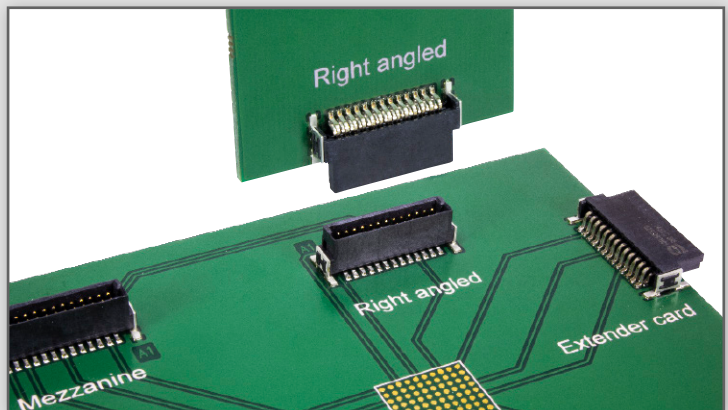
Flexible board-to-board distances

- Different stacking heights and a wiping length of 1.5 mm allow for (mezzanine) board-to-board distances from 8 to 20 mm



High-quality contacts for a high number of mating cycles

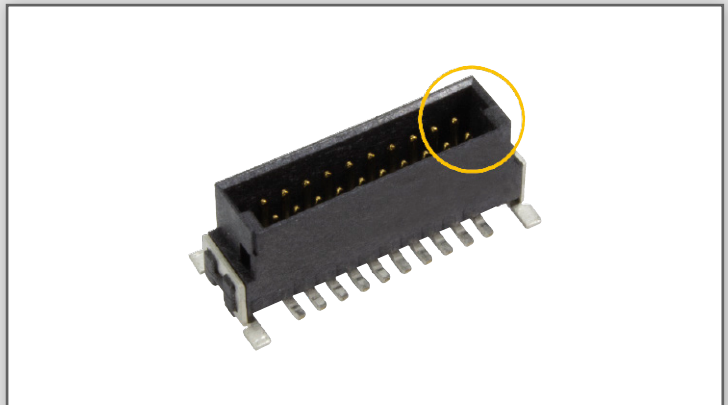
- Polished Performance Level 1 (PL1) contacts ensure reliable connections for up to 500 mating cycles
- A gas test after the initial 250 of 500 mating cycles ensures high quality and long-term reliability



har-flex

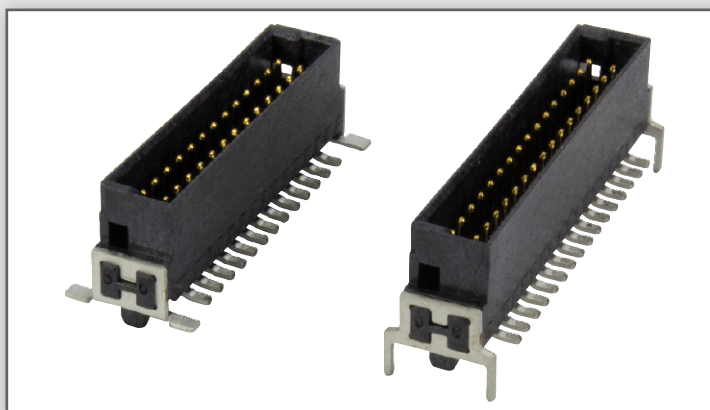
Accurate mating process

- Mating profiles prevent mating in the opposite direction
- Slanted guidances compensate angle and center offsets and ensure a secure mating process



Robust fixation on the PCB

- SMT and THR hold-downs allow for a robust mechanical fixation
- SMT hold-downs reduce the mechanical strain on the signal pins
- THR hold-downs are optionally available for strong protection against particularly high mechanical transverse forces



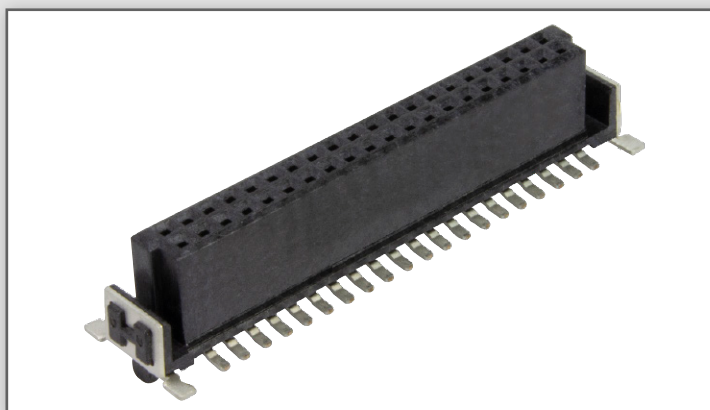
Secure handling of cable connectors

- Vibration-proof catch mechanism on both sides prevents accidental loosening
- Optional strain relief protects the IDC contacts against pulling forces
- Customized cable assemblies provide perfectly fitting solutions



Reliable soldering process

- A reliable soldering process is ensured by a contact coplanarity of ≤ 0.1 mm
- An optimal position on the PCB is achieved by guiding pegs



Automated processing features

- Tape & reel packaging provides protection during shipping and handling
- SMT and THR versions are suitable for automatic pick & place assembly and reflow soldering



Different types of cable

- Number of contacts: 6 - 100
- AWG 30/7
- Pitch: 0.635 mm
- Flame retardant acc. UL 758: VW-1
- **Standard (PVC)** Operating temperature: -20 °C ... +105 °C
- **Halogen free (TPE)** Operating temperature: -40 °C ... +125 °C



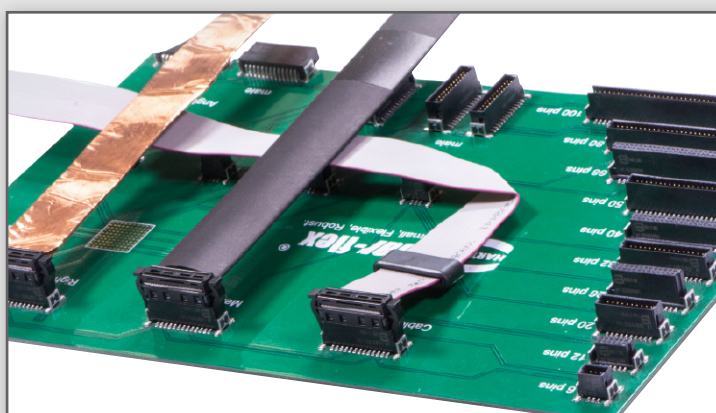
Customised

We can add value with:

- Ferrit cores
- Shrinking tube
- Customised folding, customised labels

Your cable is not mentioned?

Don't be afraid. We will handle it. Please tell us your requirements.



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

for connectors: – 55 °C ... + 125 °C
for flat cable assembly: depends on cable type
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)
THR
Cable connectors IDC (Insulation Displacement Connection)

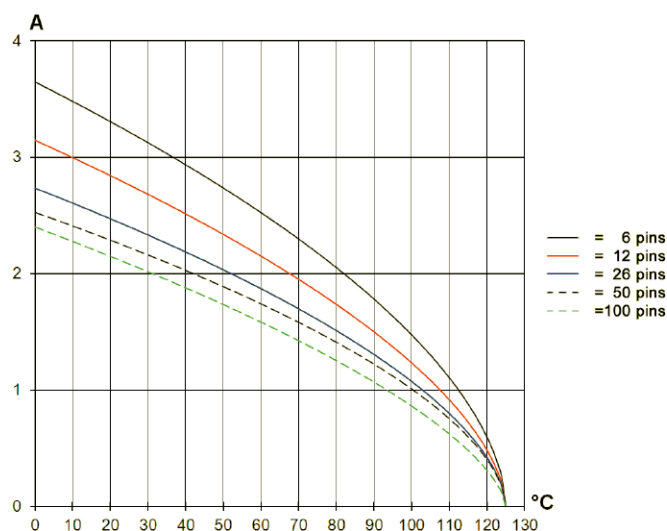
Materials

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 / THR) Sn
Cable connectors (IDC) Sn

Current carrying capacity acc. to IEC 60512-5-2

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 60512-5-2.



Durability

Performance level 1 (recommended for majority of applications)

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. No abrasion of the contact finish through to the base material. No functional impairment.

Part number definition: 15 2

Performance level 2 (available on request)

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. No abrasion of the contact finish through to the base material. No functional impairment.

Part number definition: 15 6

Performance level S4 (available on request)

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.

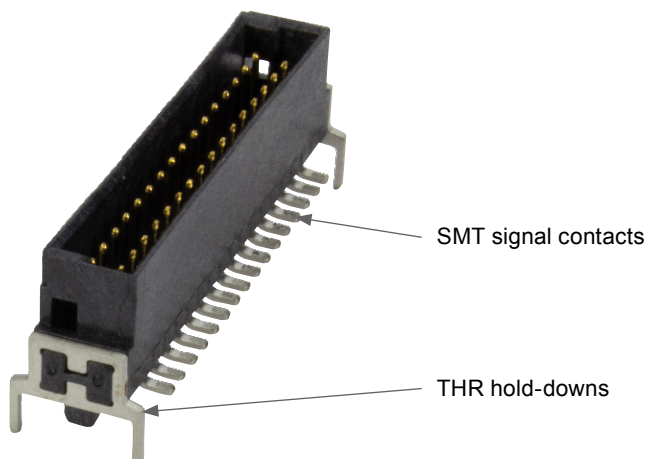
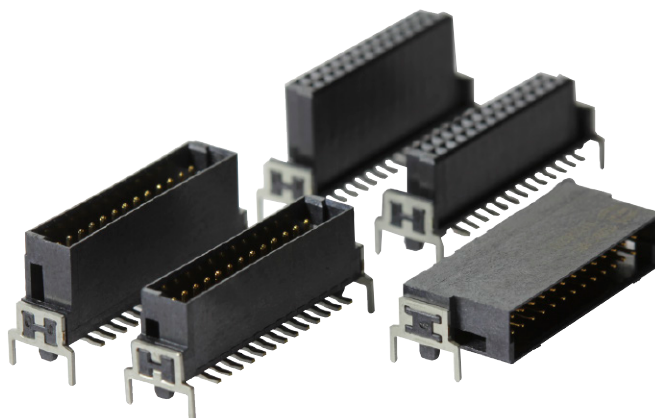
Clearance / Creepage distance	0.4 mm			
CTI-Value	< 400			
Isolation group	III a/b			
Electrical field type	Case A (Inhomogeneous field)		Case B (Homogeneous field)	
Installation category	I	II	I	II
Degree of pollution	1	1	1	1
Working voltage max.	150 V	100 V	150 V	150 V

Explanations:

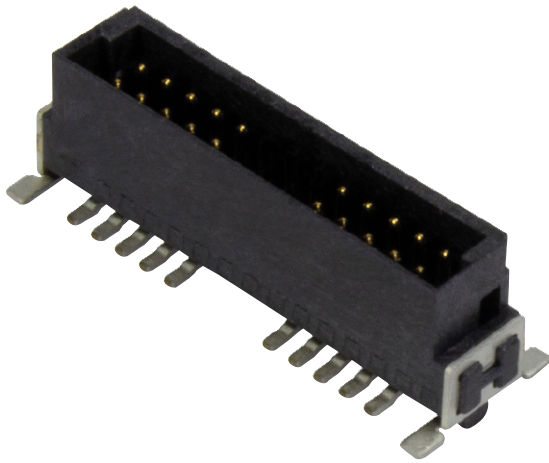
- CTI value and isolation group are fixed values by the *har-flex*® connector characteristics.
- Installation category I: Equipment is intended for use only in appliances or installation parts, in which no overvoltages can occur. Equipment in this installation category is normally operated at extra low 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.

har-flex® with THR hold-downs

THR stands for “Through Hole Reflow”, which appropriately describes the underlying technology. While SMT (i.e. “Surface Mount Technology”) connections are created by soldering the connector on the PCB surface during the reflow soldering process, THR means that the hold-down pins are inserted and soldered into designated holes on the PCB. This combines the fully automatic reflow soldering process with the advantages of traditional wave soldering: the inserted hold-down pins make the *har-flex*® more stable mechanically and more resilient to shear forces. This is especially relevant for PCB connectors and particularly for applications that require blind mating - meaning that the connectors are hidden from view during the mating process, which increases the chance of high mechanical stresses on the contacts. The resulting risk is mitigated by using hold-downs (additional mechanical fixing features). The optionally available THR hold-downs increase the robustness and reliability and protect the SMT signal contacts, which is particularly useful for angled connectors mounted on daughtercards, for example.

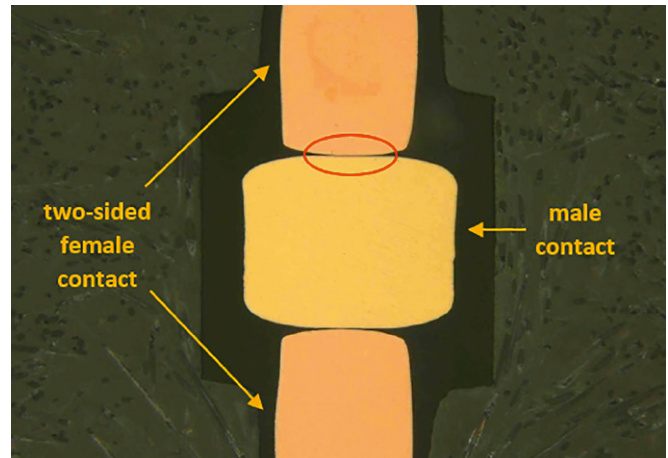


Partial loading



In specific cases it is possible that special requirements are not covered by the available standard variants. For example, it might be necessary to have a higher working voltage or allow for PCB traces under the connector. In such cases, it is possible to load the connector partially, i.e. leave out certain contact pins. By this means it is possible to increase the creepage and clearance distances and create free space for additional PCB tracks under the connector. HARTING offers the possibility to leave out one or several contacts in any position, which ensures a high degree of flexibility.

Reliable contacting



The production of stamped contacts has been one of HARTING's core competencies for a long time. HARTING leveraged this experience to create reliable contacts for *harflex*®. To achieve this goal, both a high-quality contacting area and a suitable plating are crucial in order to maintain the contacting functionality of the contact over the course of its lifetime. The female contact is made with high precision, and a special polishing process ensures a defined contacting area, so that the contact point features a particularly high quality. In conjunction with the standard plating for performance level 1 this method guarantees a reliable electric connection for at least 500 mating cycles.

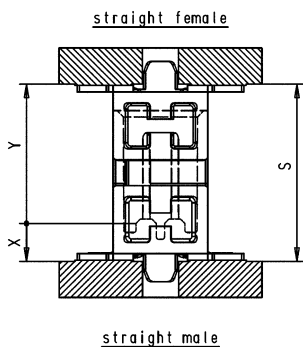
Stacking heights for mezzanine applications

Straight male and female *har-flex*® variants are available in three different stacking heights each. In conjunction with a wiping length of 1.5 mm these *har-flex*® variants can cover PCB distances from 8 to 20 mm in mezzanine applications.

S	20 mm								
	19 mm								
	18 mm								
	17 mm								
	16 mm								
	15 mm								
	14 mm								
	13 mm								
	12 mm								
	11 mm								
	10 mm								
	9 mm								
	8 mm								
X&Y	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	male 4.85 mm female 9.05 mm	male 1.75 mm female 13.65 mm	male 3.25 mm female 13.65 mm	male 4.85 mm female 13.65 mm
S	PCB distance	8 mm - 9.5 mm	9.5 mm - 11 mm	10.8 mm - 12.3 mm	12.3 mm - 13.8 mm	13.9 mm - 15.4 mm	15.4 mm - 16.9 mm	16.9 mm - 18.4 mm	18.5 mm - 20 mm
	part numbers	1511... 1521...	1512... 1521...	1511... 1522...	1512... 1522...	1513... 1522...	1511... 1523...	1512... 1523...	1513... 1523...

Mating options

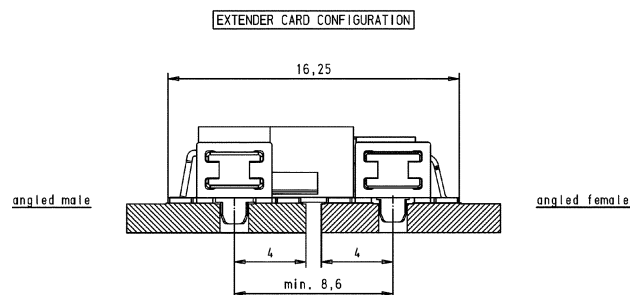
Mezzanine connection



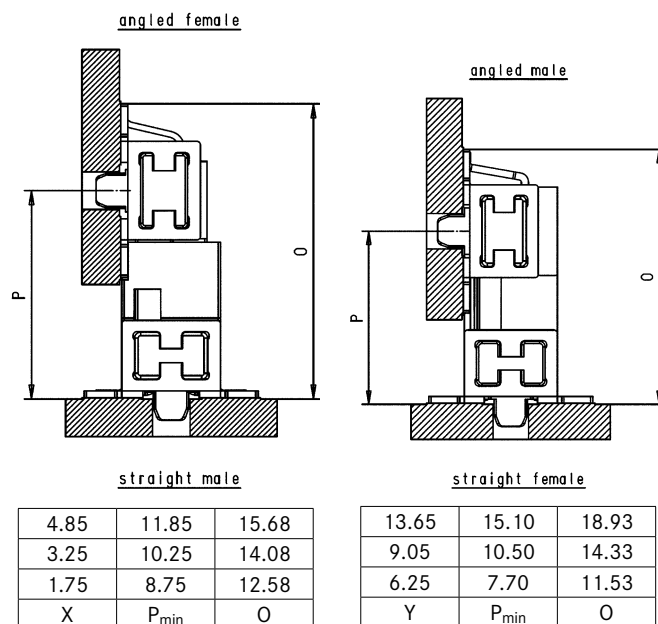
4.85	13.65	18.50	20.00
3.25	13.65	16.90	18.40
1.75	13.65	15.40	16.90
4.85	9.05	13.90	15.40
3.25	9.05	12.30	13.80
1.75	9.05	10.80	12.30
4.85	6.25	11.10	12.60
3.25	6.25	9.50	11.00
1.75	6.25	8.00	9.50
X	Y	S _{min}	*S _{max}

*S_{max} = S_{min} + 1.5 mm wiping length with additional contact overlap security

Extender Card connection

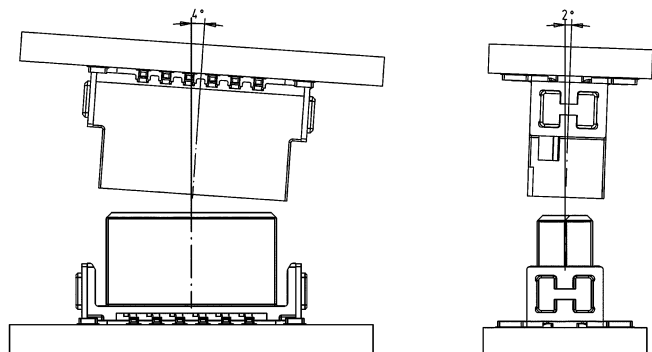


Mother-to-Daughtercard connection

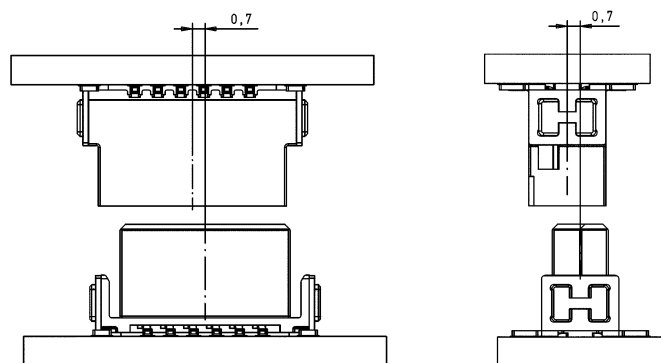


Mating conditions

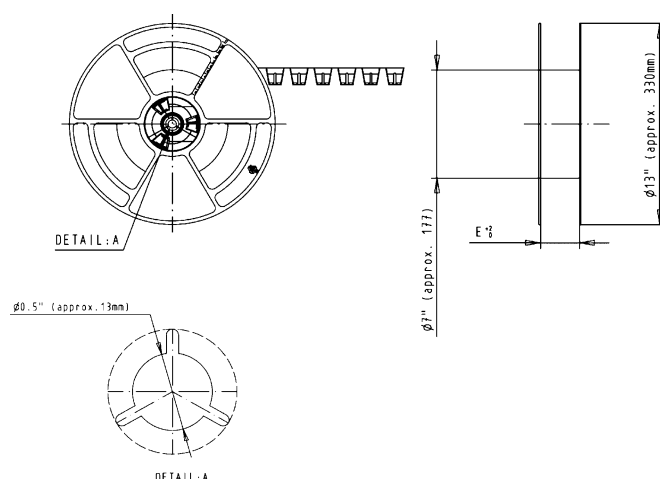
Inclination



Mismating



Tape acc. to IEC 60286-3



Tape dimensions:	E
poles 6 to 12	24.4
poles 14 to 20	32.4
poles 22 to 40	44.4
poles 42 to 56	56.4
poles 58 to 80	72.4
poles 82 to 100	88.4

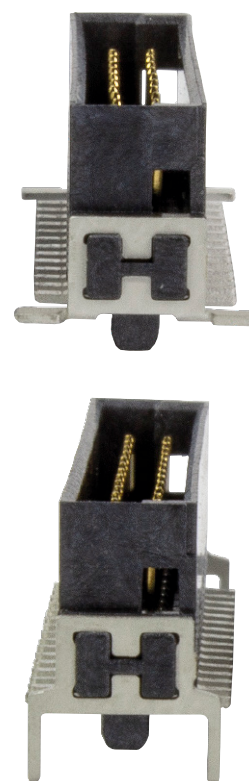
Processing notes

The har-flex® SMT/THR 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.

To ensure a reliable reflow soldering process, the signal pins are 100 % checked for coplanarity.



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 Sensitivity and also the Moisture Sensitivity are tested according to the ECA/IPC/JEDEC J-STD-075 specification.

Process Sensitivity:

PSL means Process Sensitivity 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 Sensitivity:

MSL means Moisture Sensitivity 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).

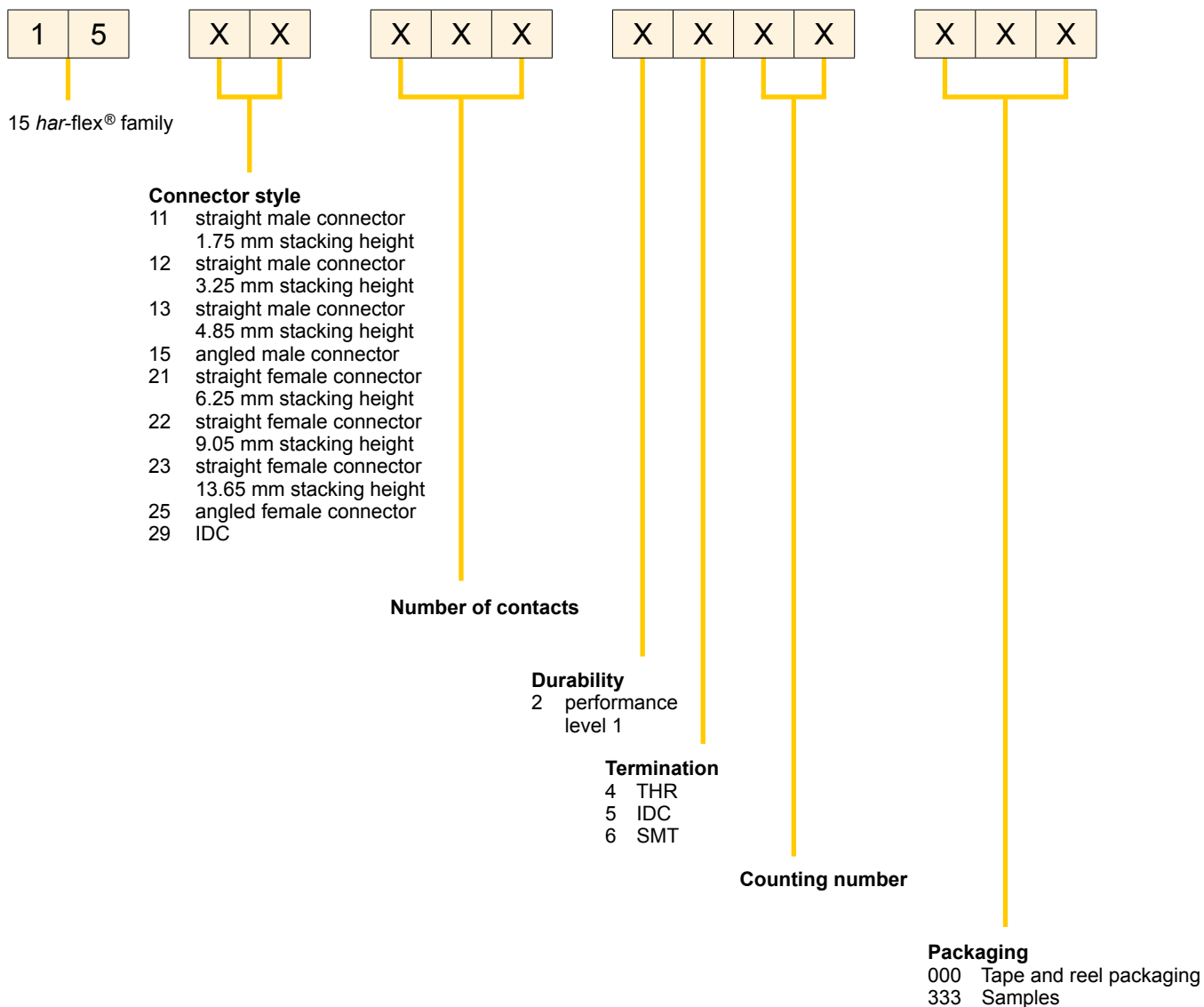
The har-flex® connectors are rated with **PSL R0** and **MSL 1**. This is the maximum possible rating in both categories. The har-flex® connector resists three times soldering at the following conditions without damages:

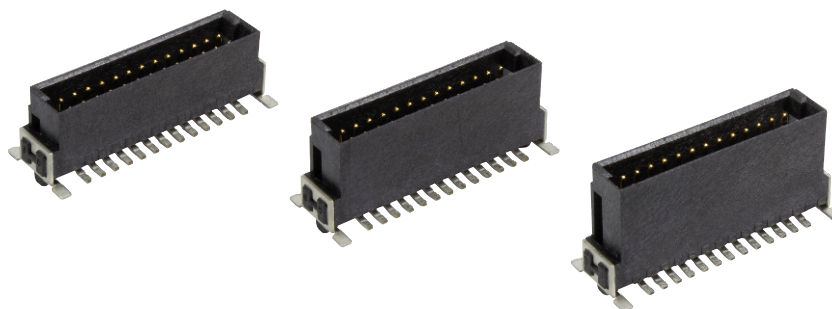
- min. 150 s beyond 217 °C (liquidus temperature, the melting point of the solder paste)
- min. 30 s beyond classification temperature (240 °C / 245 °C for har-flex®)
- Temperature solder profile according to ECA/IPC/JEDEC J-STD-075
- For MSL test, a storage of 168 hours at 85 °C and 85 % rel. humidity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

Part number definition

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



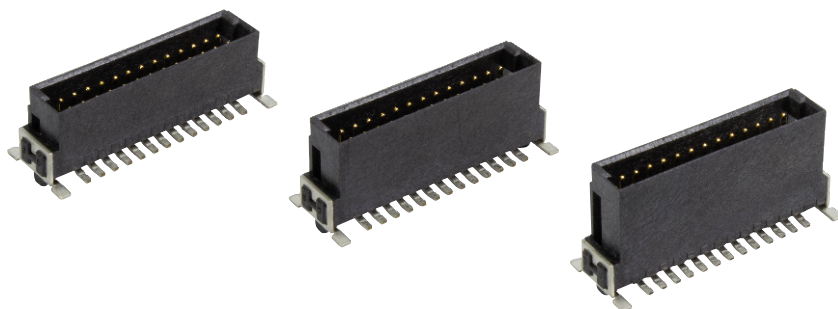


Male connectors, straight, SMT

Identification	No. of contacts	Part number	Dimensions in mm						
Male connector, straight, SMT stacking heights 1.75 mm / 3.25 mm / 4.85 mm	6	15 1 . 006 2601 ...	A	B	C	D	E	F	G
	8	15 1 . 008 2601 ...	2.54	6.96	8.89	5.76	4.76	6.56	1.05
	10	15 1 . 010 2601 ...	3.81	8.23	10.16	7.03	6.03	7.83	1.69
	12	15 1 . 012 2601 ...	5.08	9.50	11.43	8.30	7.30	9.10	2.32
	14	15 1 . 014 2601 ...	6.35	10.77	12.70	9.57	8.57	10.37	2.96
	16	15 1 . 016 2601 ...	7.62	12.04	13.97	10.84	9.84	11.64	3.59
	18	15 1 . 018 2601 ...	8.89	13.31	15.24	12.11	11.11	12.91	4.23
	20	15 1 . 020 2601 ...	10.16	14.58	16.51	13.38	12.38	14.18	4.88
	22	15 1 . 022 2601 ...	11.43	15.85	17.78	14.65	13.65	15.45	5.50
	24	15 1 . 024 2601 ...	12.70	17.12	19.05	15.92	14.92	16.72	6.13
	26	15 1 . 026 2601 ...	13.97	18.39	20.32	17.19	16.19	17.99	6.77
	28	15 1 . 028 2601 ...	15.24	19.66	21.59	18.46	17.46	19.26	7.40
	30	15 1 . 030 2601 ...	16.51	20.93	22.86	19.73	18.73	20.53	8.04
	32	15 1 . 032 2601 ...	17.78	22.20	24.13	21.00	20.00	21.80	8.67
	34	15 1 . 034 2601 ...	19.05	23.47	25.40	22.27	21.27	23.07	9.31
	36	15 1 . 036 2601 ...	20.32	24.74	26.67	23.54	22.54	24.34	9.94
	38	15 1 . 038 2601 ...	21.59	26.01	27.94	24.81	23.81	25.61	10.58
	40	15 1 . 040 2601 ...	22.86	27.28	29.21	26.08	25.08	26.88	11.21
	42	15 1 . 042 2601 ...	24.13	28.55	30.48	27.35	26.35	28.15	11.85
	44	15 1 . 044 2601 ...	25.40	29.82	31.75	28.62	27.62	29.42	12.48
	46	15 1 . 046 2601 ...	26.67	31.09	33.02	29.89	28.89	30.69	13.12
	48	15 1 . 048 2601 ...	27.94	32.36	34.29	31.16	30.16	31.96	13.75
	50	15 1 . 050 2601 ...	29.21	33.63	35.56	32.43	31.43	33.23	14.39
	52	15 1 . 052 2601 ...	30.48	34.90	36.83	33.70	32.70	34.50	15.02
	54	15 1 . 054 2601 ...	31.75	36.17	38.10	34.97	33.97	35.77	15.66
	56	15 1 . 056 2601 ...	33.02	37.44	39.37	36.24	35.24	37.04	16.29
	58	15 1 . 058 2601 ...	34.29	38.71	40.64	37.51	36.51	38.31	16.93
	60	15 1 . 060 2601 ...	35.56	39.98	41.91	38.78	37.78	39.58	17.56
	62	15 1 . 062 2601 ...	36.83	41.25	43.18	40.05	39.05	40.85	18.20
	64	15 1 . 064 2601 ...	38.10	42.52	44.45	41.32	40.32	42.12	18.83
	66	15 1 . 066 2601 ...	39.37	43.79	45.72	42.59	41.59	43.39	19.47
	68	15 1 . 068 2601 ...	40.64	45.06	46.99	43.86	42.86	44.66	20.10
	70	15 1 . 070 2601 ...	41.91	46.33	48.26	45.13	44.13	45.93	20.74
	72	15 1 . 072 2601 ...	43.18	47.60	49.53	46.40	45.40	47.20	21.37
	74	15 1 . 074 2601 ...	44.45	48.87	50.80	47.67	46.67	48.47	22.01
	76	15 1 . 076 2601 ...	45.72	50.14	52.07	48.94	47.94	49.74	22.64
	78	15 1 . 078 2601 ...	46.99	51.41	53.34	50.21	49.21	51.01	23.28
	80	15 1 . 080 2601 ...	48.26	52.68	54.61	51.48	50.48	52.28	23.91
	82	15 1 . 082 2601 ...	49.53	53.95	55.88	52.75	51.75	53.55	24.55
	84	15 1 . 084 2601 ...	50.80	55.22	57.15	54.02	53.02	54.82	25.18
	86	15 1 . 086 2601 ...	52.07	56.49	58.42	55.29	54.29	56.09	25.82
	88	15 1 . 088 2601 ...	53.34	57.76	59.69	56.56	55.56	57.36	26.45
	90	15 1 . 090 2601 ...	54.61	59.03	60.96	57.83	56.83	58.63	27.09
	92	15 1 . 092 2601 ...	55.88	60.30	62.23	59.10	58.10	59.90	27.72
	94	15 1 . 094 2601 ...	57.15	61.57	63.50	60.37	59.37	61.17	28.36
	96	15 1 . 096 2601 ...	58.42	62.84	64.77	61.64	60.64	62.44	28.99
	98	15 1 . 098 2601 ...	59.69	64.11	66.04	62.91	61.91	63.71	29.63
	100	15 1 . 100 2601 ...	60.96	65.38	67.31	64.18	63.18	64.98	30.26
Please insert digit for stacking height	1.75 mm ► 1		62.23	66.65	68.58	65.45	64.45	66.25	30.90
	3.25 mm ► 2								
	4.85 mm ► 3								

333
000

for samples
for 280 pieces on reel (250 pcs. for 4.85 mm stacking height)



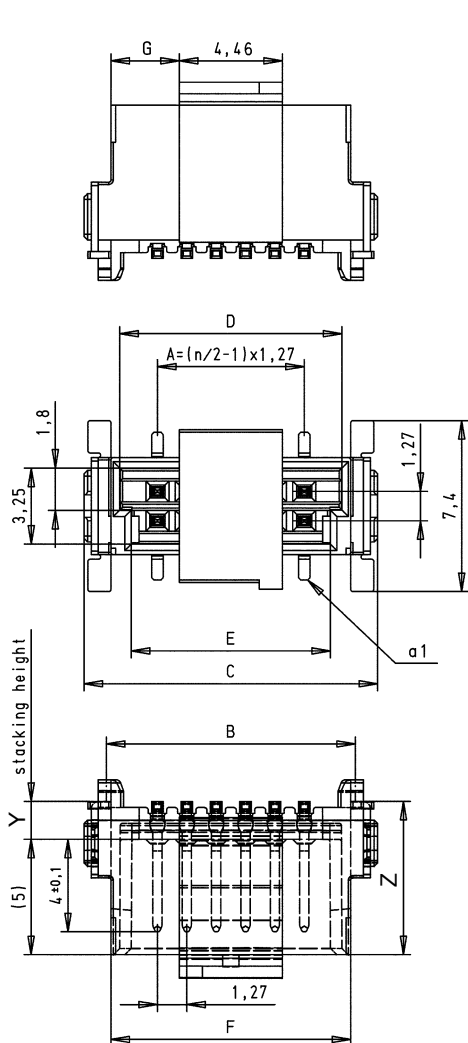
Male connectors, straight, SMT

Identification

Drawing

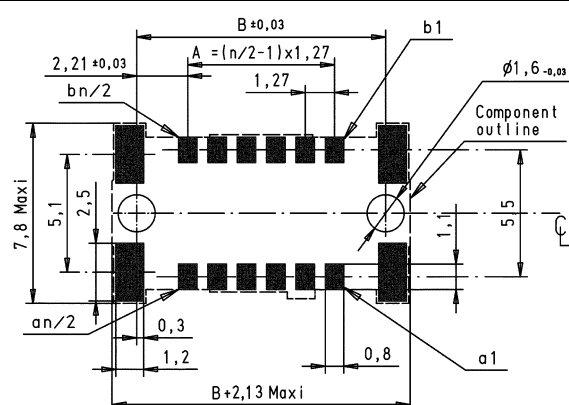
Dimensions in mm

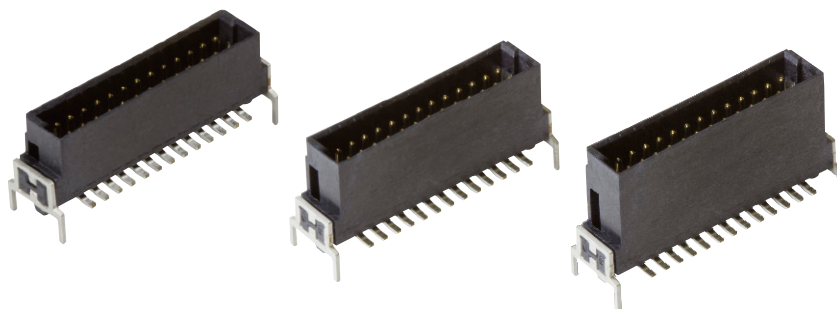
Dimensions



stacking height Y	height with vacuum cover X	unmated height Z
1.75	7.6	6.6
3.25	9.1	8.1
4.85	10.7	9.7

PCB layout



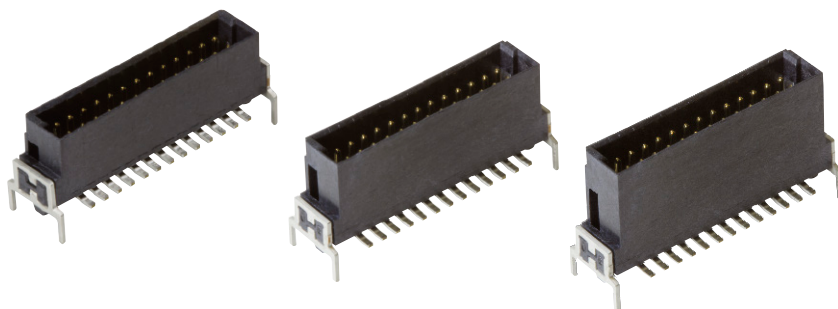


Male connectors, straight, THR

Identification	No. of contacts	Part number	Dimensions in mm						
Male connector, straight, THR stacking heights 1.75 mm / 3.25 mm / 4.85 mm	6	15 1 . 006 2401 ...	A	B	C	D	E	F	G
	8	15 1 . 008 2401 ...	2.54	6.96	8.89	5.76	4.76	6.56	1.05
	10	15 1 . 010 2401 ...	3.81	8.23	10.16	7.03	6.03	7.83	1.69
	12	15 1 . 012 2401 ...	5.08	9.50	11.43	8.30	7.30	9.10	2.32
	14	15 1 . 014 2401 ...	6.35	10.77	12.70	9.57	8.57	10.37	2.96
	16	15 1 . 016 2401 ...	7.62	12.04	13.97	10.84	9.84	11.64	3.59
	18	15 1 . 018 2401 ...	8.89	13.31	15.24	12.11	11.11	12.91	4.23
	20	15 1 . 020 2401 ...	10.16	14.58	16.51	13.38	12.38	14.18	4.88
	22	15 1 . 022 2401 ...	11.43	15.85	17.78	14.65	13.65	15.45	5.50
	24	15 1 . 024 2401 ...	12.70	17.12	19.05	15.92	14.92	16.72	6.13
	26	15 1 . 026 2401 ...	13.97	18.39	20.32	17.19	16.19	17.99	6.77
	28	15 1 . 028 2401 ...	15.24	19.66	21.59	18.46	17.46	19.26	7.40
	30	15 1 . 030 2401 ...	16.51	20.93	22.86	19.73	18.73	20.53	8.04
	32	15 1 . 032 2401 ...	17.78	22.20	24.13	21.00	20.00	21.80	8.67
	34	15 1 . 034 2401 ...	19.05	23.47	25.40	22.27	21.27	23.07	9.31
	36	15 1 . 036 2401 ...	20.32	24.74	26.67	23.54	22.54	24.34	9.94
	38	15 1 . 038 2401 ...	21.59	26.01	27.94	24.81	23.81	25.61	10.58
	40	15 1 . 040 2401 ...	22.86	27.28	29.21	26.08	25.08	26.88	11.21
	42	15 1 . 042 2401 ...	24.13	28.55	30.48	27.35	26.35	28.15	11.85
	44	15 1 . 044 2401 ...	25.40	29.82	31.75	28.62	27.62	29.42	12.48
	46	15 1 . 046 2401 ...	26.67	31.09	33.02	29.89	28.89	30.69	13.12
	48	15 1 . 048 2401 ...	27.94	32.36	34.29	31.16	30.16	31.96	13.75
	50	15 1 . 050 2401 ...	29.21	33.63	35.56	32.43	31.43	33.23	14.39
	52	15 1 . 052 2401 ...	30.48	34.90	36.83	33.70	32.70	34.50	15.02
	54	15 1 . 054 2401 ...	31.75	36.17	38.10	34.97	33.97	35.77	15.66
	56	15 1 . 056 2401 ...	33.02	37.44	39.37	36.24	35.24	37.04	16.29
	58	15 1 . 058 2401 ...	34.29	38.71	40.64	37.51	36.51	38.31	16.93
	60	15 1 . 060 2401 ...	35.56	39.98	41.91	38.78	37.78	39.58	17.56
	62	15 1 . 062 2401 ...	36.83	41.25	43.18	40.05	39.05	40.85	18.20
	64	15 1 . 064 2401 ...	38.10	42.52	44.45	41.32	40.32	42.12	18.83
	66	15 1 . 066 2401 ...	39.37	43.79	45.72	42.59	41.59	43.39	19.47
	68	15 1 . 068 2401 ...	40.64	45.06	46.99	43.86	42.86	44.66	20.10
	70	15 1 . 070 2401 ...	41.91	46.33	48.26	45.13	44.13	45.93	20.74
	72	15 1 . 072 2401 ...	43.18	47.60	49.53	46.40	45.40	47.20	21.37
	74	15 1 . 074 2401 ...	44.45	48.87	50.80	47.67	46.67	48.47	22.01
	76	15 1 . 076 2401 ...	45.72	50.14	52.07	48.94	47.94	49.74	22.64
	78	15 1 . 078 2401 ...	46.99	51.41	53.34	50.21	49.21	51.01	23.28
	80	15 1 . 080 2401 ...	48.26	52.68	54.61	51.48	50.48	52.28	23.91
	82	15 1 . 082 2401 ...	49.53	53.95	55.88	52.75	51.75	53.55	24.55
	84	15 1 . 084 2401 ...	50.80	55.22	57.15	54.02	53.02	54.82	25.18
	86	15 1 . 086 2401 ...	52.07	56.49	58.42	55.29	54.29	56.09	25.82
	88	15 1 . 088 2401 ...	53.34	57.76	59.69	56.56	55.56	57.36	26.45
	90	15 1 . 090 2401 ...	54.61	59.03	60.96	57.83	56.83	58.63	27.09
	92	15 1 . 092 2401 ...	55.88	60.30	62.23	59.10	58.10	59.90	27.72
	94	15 1 . 094 2401 ...	57.15	61.57	63.50	60.37	59.37	61.17	28.36
	96	15 1 . 096 2401 ...	58.42	62.84	64.77	61.64	60.64	62.44	28.99
	98	15 1 . 098 2401 ...	59.69	64.11	66.04	62.91	61.91	63.71	29.63
	100	15 1 . 100 2401 ...	60.96	65.38	67.31	64.18	63.18	64.98	30.26
Please insert digit for stacking height	1.75 mm ▶ 1		62.23	66.65	68.58	65.45	64.45	66.25	30.90
	3.25 mm ▶ 2								
	4.85 mm ▶ 3								

333
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for samples
for 280 pieces on reel (250 pcs. for 4.85 mm stacking height)



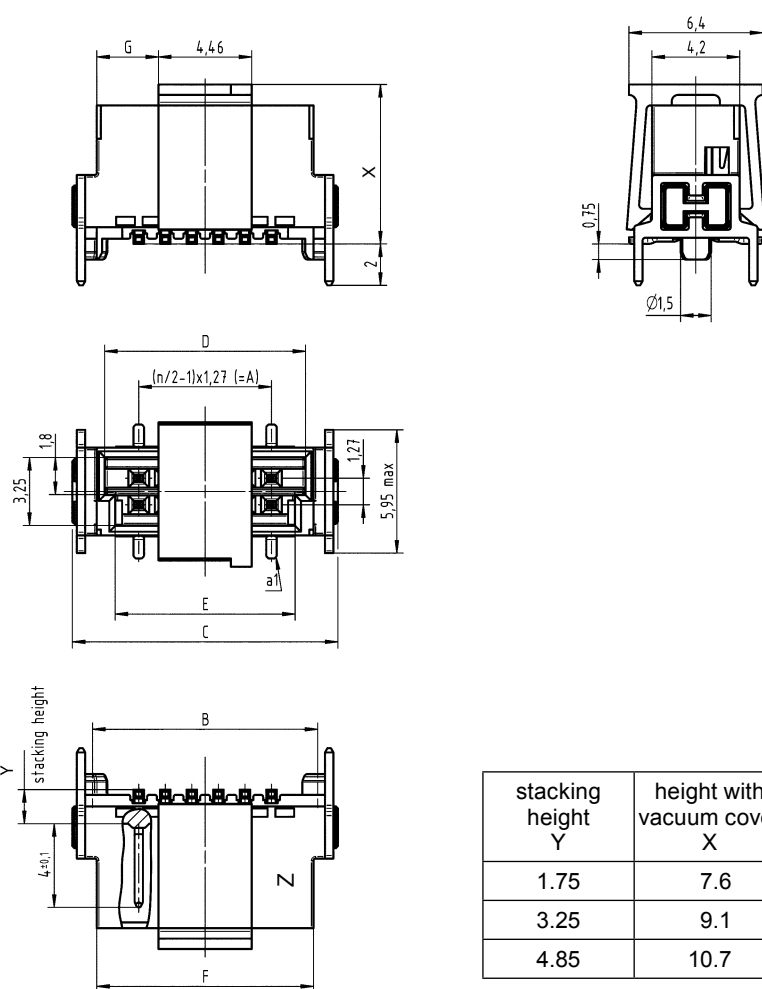
Male connectors, straight, THR

Identification

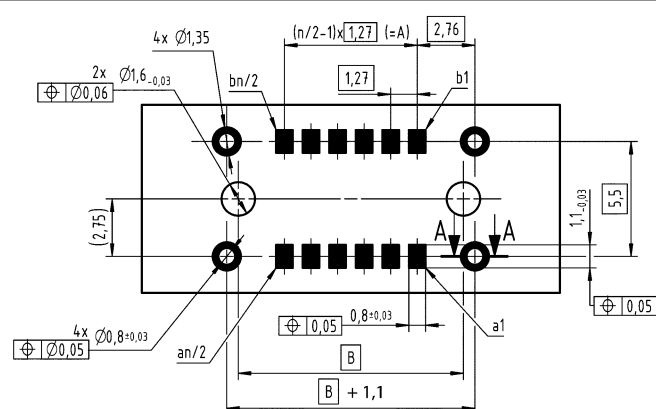
Drawing

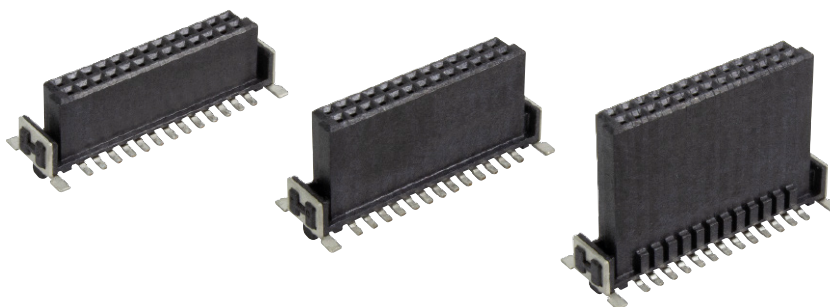
Dimensions in mm

Dimensions



PCB layout





Female connectors, straight, SMT

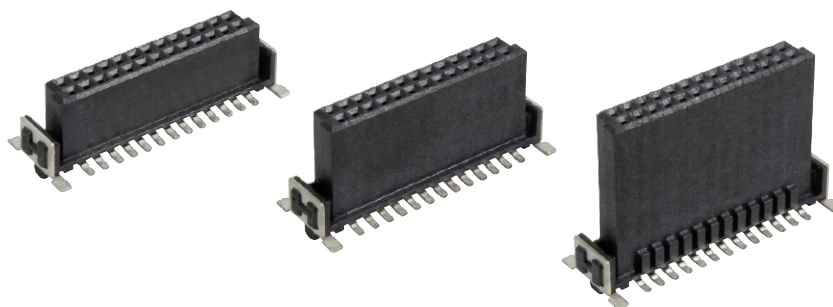
Identification	No. of contacts	Part number	Dimensions in mm					
Female connector, straight, SMT stacking heights 6.25 / 9.05 / 13.65 mm	6	15 2 . 006 2601 ...	A	B	C	D	E	G
	8	15 2 . 008 2601 ...	2.54	6.96	8.89	5.56	4.56	1.19
	10	15 2 . 010 2601 ...	3.81	8.23	10.16	6.83	5.83	1.19
	12	15 2 . 012 2601 ...	5.08	9.50	11.43	8.10	7.10	2.46
	14	15 2 . 014 2601 ...	6.35	10.77	12.70	9.37	8.37	2.46
	16	15 2 . 016 2601 ...	7.62	12.04	13.97	10.64	9.64	3.73
	18	15 2 . 018 2601 ...	8.89	13.31	15.24	11.91	10.91	3.73
	20	15 2 . 020 2601 ...	10.16	14.58	16.51	13.18	12.18	5.00
	22	15 2 . 022 2601 ...	11.43	15.85	17.78	14.45	13.45	5.00
	24	15 2 . 024 2601 ...	12.70	17.12	19.05	15.72	14.72	6.27
	26	15 2 . 026 2601 ...	13.97	18.39	20.32	16.99	15.99	6.27
	28	15 2 . 028 2601 ...	15.24	19.66	21.59	18.26	17.26	7.54
	30	15 2 . 030 2601 ...	16.51	20.93	22.86	19.53	18.53	7.54
	32	15 2 . 032 2601 ...	17.78	22.20	24.13	20.80	19.80	8.81
	34	15 2 . 034 2601 ...	19.05	23.47	25.40	22.07	21.07	8.81
	36	15 2 . 036 2601 ...	20.32	24.74	26.67	23.34	22.34	10.08
	38	15 2 . 038 2601 ...	21.59	26.01	27.94	24.61	23.61	10.08
	40	15 2 . 040 2601 ...	22.86	27.28	29.21	25.88	24.88	11.35
	42	15 2 . 042 2601 ...	24.13	28.55	30.48	27.15	26.15	11.35
	44	15 2 . 044 2601 ...	25.40	29.82	31.75	28.42	27.42	12.62
	46	15 2 . 046 2601 ...	26.67	31.09	33.02	29.69	28.69	12.62
	48	15 2 . 048 2601 ...	27.94	32.36	34.29	30.96	29.96	13.89
	50	15 2 . 050 2601 ...	29.21	33.63	35.56	32.23	31.23	13.89
	52	15 2 . 052 2601 ...	30.48	34.90	36.83	33.50	32.50	15.16
	54	15 2 . 054 2601 ...	31.75	36.17	38.10	34.77	33.77	15.16
	56	15 2 . 056 2601 ...	33.02	37.44	39.37	36.04	35.04	16.43
	58	15 2 . 058 2601 ...	34.29	38.71	40.64	37.31	36.31	16.43
	60	15 2 . 060 2601 ...	35.56	39.98	41.91	38.58	37.58	17.70
	62	15 2 . 062 2601 ...	36.83	41.25	43.18	39.85	38.85	17.70
	64	15 2 . 064 2601 ...	38.10	42.52	44.45	41.12	40.12	18.97
	66	15 2 . 066 2601 ...	39.37	43.79	45.72	42.39	41.39	18.97
	68	15 2 . 068 2601 ...	40.64	45.06	46.99	43.66	42.66	20.24
	70	15 2 . 070 2601 ...	41.91	46.33	48.26	44.93	43.93	20.24
	72	15 2 . 072 2601 ...	43.18	47.60	49.53	46.20	45.20	21.51
	74	15 2 . 074 2601 ...	44.45	48.87	50.80	47.47	46.47	21.51
	76	15 2 . 076 2601 ...	45.72	50.14	52.07	48.74	47.74	22.78
	78	15 2 . 078 2601 ...	46.99	51.41	53.34	50.01	49.01	22.78
	80	15 2 . 080 2601 ...	48.26	52.68	54.61	51.28	50.28	24.05
	82	15 2 . 082 2601 ...	49.53	53.95	55.88	52.55	51.55	24.05
	84	15 2 . 084 2601 ...	50.80	55.22	57.15	53.82	52.82	25.32
	86	15 2 . 086 2601 ...	52.07	56.49	58.42	55.09	54.09	25.32
	88	15 2 . 088 2601 ...	53.34	57.76	59.69	56.36	55.36	26.59
	90	15 2 . 090 2601 ...	54.61	59.03	60.96	57.63	56.63	26.59
	92	15 2 . 092 2601 ...	55.88	60.30	62.23	58.90	57.90	27.86
	94	15 2 . 094 2601 ...	57.15	61.57	63.50	60.17	59.17	27.86
	96	15 2 . 096 2601 ...	58.42	62.84	64.77	61.44	60.44	29.13
	98	15 2 . 098 2601 ...	59.69	64.11	66.04	62.71	61.71	29.13
	100	15 2 . 100 2601 ...	60.96	65.38	67.31	63.98	62.98	30.40
			62.23	66.65	68.58	65.25	64.25	30.40

Please insert digit
for stacking height

6.25 mm ► 1
9.05 mm ► 2
13.65 mm ► 3

333
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for samples
for 280 pieces on reel (170 pcs. for 13.65 mm stacking height)



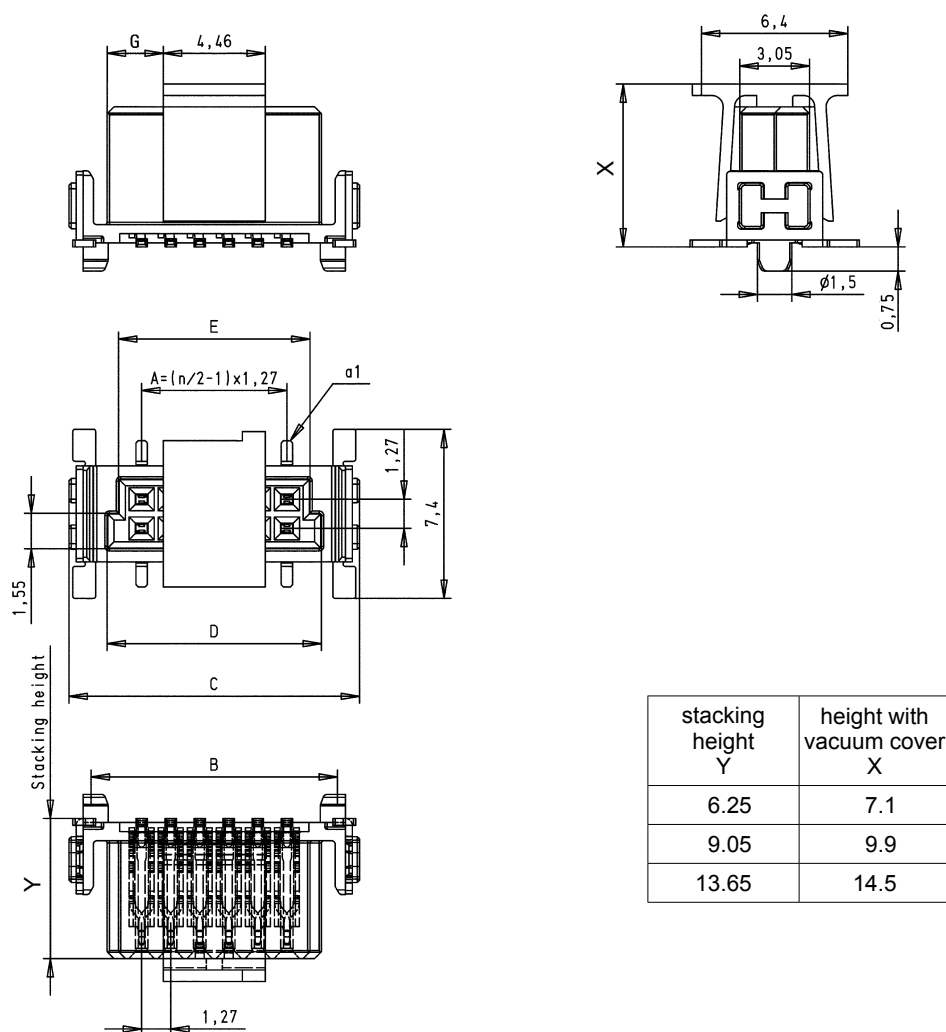
Female connectors, straight, SMT

Identification

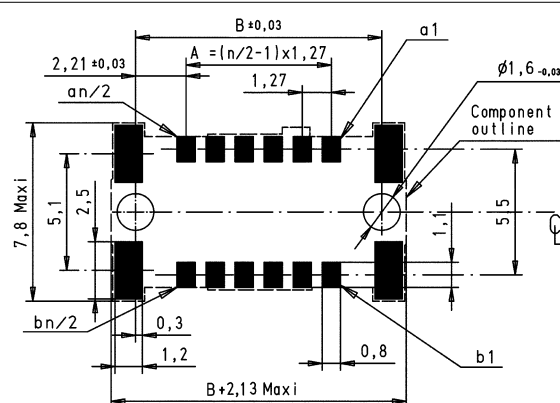
Drawing

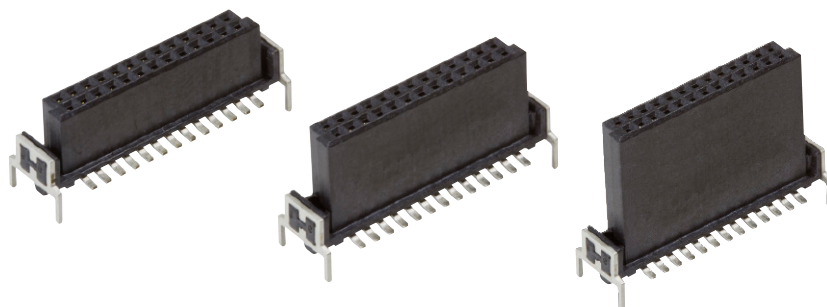
Dimensions in mm

Dimensions



PCB layout



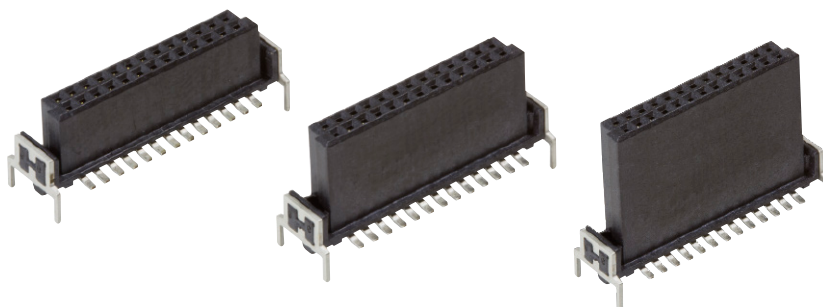


Female connectors, straight, THR

Identification	No. of contacts	Part number	Dimensions in mm					
Female connector, straight, THR stacking heights 6.25 / 9.05 / 13.65 mm	6	15 2 . 006 2401 ...	A	B	C	D	E	G
	8	15 2 . 008 2401 ...	2.54	6.96	8.89	5.56	4.56	1.19
	10	15 2 . 010 2401 ...	3.81	8.23	10.16	6.83	5.83	1.19
	12	15 2 . 012 2401 ...	5.08	9.50	11.43	8.10	7.10	2.46
	14	15 2 . 014 2401 ...	6.35	10.77	12.70	9.37	8.37	2.46
	16	15 2 . 016 2401 ...	7.62	12.04	13.97	10.64	9.64	3.73
	18	15 2 . 018 2401 ...	8.89	13.31	15.24	11.91	10.91	3.73
	20	15 2 . 020 2401 ...	10.16	14.58	16.51	13.18	12.18	5.00
	22	15 2 . 022 2401 ...	11.43	15.85	17.78	14.45	13.45	5.00
	24	15 2 . 024 2401 ...	12.70	17.12	19.05	15.72	14.72	6.27
	26	15 2 . 026 2401 ...	13.97	18.39	20.32	16.99	15.99	6.27
	28	15 2 . 028 2401 ...	15.24	19.66	21.59	18.26	17.26	7.54
	30	15 2 . 030 2401 ...	16.51	20.93	22.86	19.53	18.53	7.54
	32	15 2 . 032 2401 ...	17.78	22.20	24.13	20.80	19.80	8.81
	34	15 2 . 034 2401 ...	19.05	23.47	25.40	22.07	21.07	8.81
	36	15 2 . 036 2401 ...	20.32	24.74	26.67	23.34	22.34	10.08
	38	15 2 . 038 2401 ...	21.59	26.01	27.94	24.61	23.61	10.08
	40	15 2 . 040 2401 ...	22.86	27.28	29.21	25.88	24.88	11.35
	42	15 2 . 042 2401 ...	24.13	28.55	30.48	27.15	26.15	11.35
	44	15 2 . 044 2401 ...	25.40	29.82	31.75	28.42	27.42	12.62
	46	15 2 . 046 2401 ...	26.67	31.09	33.02	29.69	28.69	12.62
	48	15 2 . 048 2401 ...	27.94	32.36	34.29	30.96	29.96	13.89
	50	15 2 . 050 2401 ...	29.21	33.63	35.56	32.23	31.23	13.89
	52	15 2 . 052 2401 ...	30.48	34.90	36.83	33.50	32.50	15.16
	54	15 2 . 054 2401 ...	31.75	36.17	38.10	34.77	33.77	15.16
	56	15 2 . 056 2401 ...	33.02	37.44	39.37	36.04	35.04	16.43
	58	15 2 . 058 2401 ...	34.29	38.71	40.64	37.31	36.31	16.43
	60	15 2 . 060 2401 ...	35.56	39.98	41.91	38.58	37.58	17.70
	62	15 2 . 062 2401 ...	36.83	41.25	43.18	39.85	38.85	17.70
	64	15 2 . 064 2401 ...	38.10	42.52	44.45	41.12	40.12	18.97
	66	15 2 . 066 2401 ...	39.37	43.79	45.72	42.39	41.39	18.97
	68	15 2 . 068 2401 ...	40.64	45.06	46.99	43.66	42.66	20.24
	70	15 2 . 070 2401 ...	41.91	46.33	48.26	44.93	43.93	20.24
	72	15 2 . 072 2401 ...	43.18	47.60	49.53	46.20	45.20	21.51
	74	15 2 . 074 2401 ...	44.45	48.87	50.80	47.47	46.47	21.51
	76	15 2 . 076 2401 ...	45.72	50.14	52.07	48.74	47.74	22.78
	78	15 2 . 078 2401 ...	46.99	51.41	53.34	50.01	49.01	22.78
	80	15 2 . 080 2401 ...	48.26	52.68	54.61	51.28	50.28	24.05
	82	15 2 . 082 2401 ...	49.53	53.95	55.88	52.55	51.55	24.05
	84	15 2 . 084 2401 ...	50.80	55.22	57.15	53.82	52.82	25.32
	86	15 2 . 086 2401 ...	52.07	56.49	58.42	55.09	54.09	25.32
	88	15 2 . 088 2401 ...	53.34	57.76	59.69	56.36	55.36	26.59
	90	15 2 . 090 2401 ...	54.61	59.03	60.96	57.63	56.63	26.59
	92	15 2 . 092 2401 ...	55.88	60.30	62.23	58.90	57.90	27.86
	94	15 2 . 094 2401 ...	57.15	61.57	63.50	60.17	59.17	27.86
	96	15 2 . 096 2401 ...	58.42	62.84	64.77	61.44	60.44	29.13
	98	15 2 . 098 2401 ...	59.69	64.11	66.04	62.71	61.71	29.13
	100	15 2 . 100 2401 ...	60.96	65.38	67.31	63.98	62.98	30.40
			62.23	66.65	68.58	65.25	64.25	30.40
Please insert digit for stacking height								
6.25 mm ►			1					
9.05 mm ►			2					
13.65 mm ►			3					

333
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for samples
for 280 pieces on reel (170 pcs. for 13.65 mm stacking height)



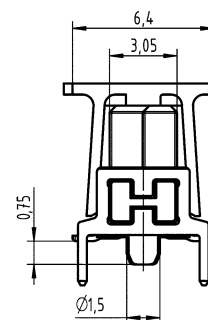
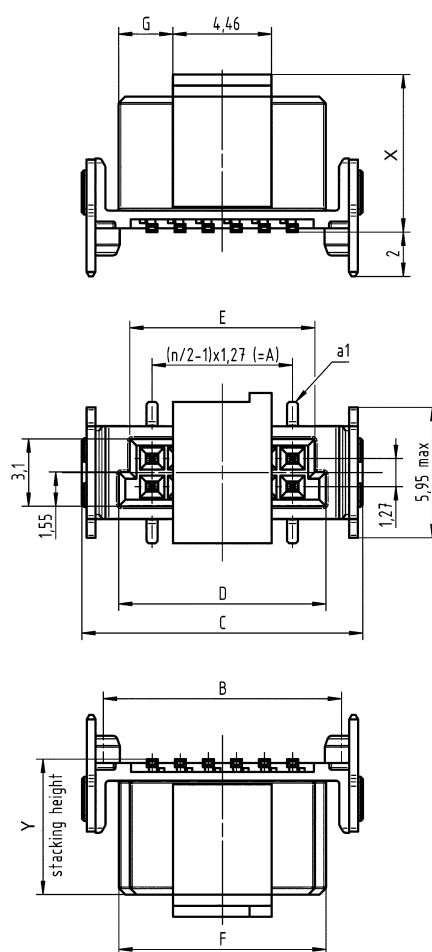
Female connectors, straight, THR

Identification

Drawing

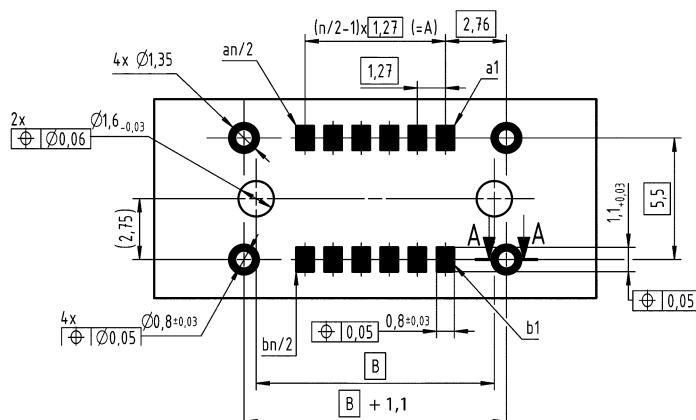
Dimensions in mm

Dimensions



stacking height Y	height with vacuum cover X
6.25	7.1
9.05	9.9
13.65	14.5

PCB layout





Male connectors, angled, SMT

Identification	No. of contacts	Part number	Dimensions in mm				
Male connector, angled, SMT	6	15 15 006 2601 ...	A	B	C	D	E
	8	15 15 008 2601 ...	2.54	6.96	8.89	5.76	4.76
	10	15 15 010 2601 ...	3.81	8.23	10.16	7.03	6.03
	12	15 15 012 2601 ...	5.08	9.50	11.43	8.30	7.30
	14	15 15 014 2601 ...	6.35	10.77	12.70	9.57	8.57
	16	15 15 016 2601 ...	7.62	12.04	13.97	10.84	9.84
	18	15 15 018 2601 ...	8.89	13.31	15.24	12.11	11.11
	20	15 15 020 2601 ...	10.16	14.58	16.51	13.38	12.38
	22	15 15 022 2601 ...	11.43	15.85	17.78	14.65	13.65
	24	15 15 024 2601 ...	12.70	17.12	19.05	15.92	14.92
	26	15 15 026 2601 ...	13.97	18.39	20.32	17.19	16.19
	28	15 15 028 2601 ...	15.24	19.66	21.59	18.46	17.46
	30	15 15 030 2601 ...	16.51	20.93	22.86	19.73	18.73
	32	15 15 032 2601 ...	17.78	22.20	24.13	21.00	20.00
	34	15 15 034 2601 ...	19.05	23.47	25.40	22.27	21.27
	36	15 15 036 2601 ...	20.32	24.74	26.67	23.54	22.54
	38	15 15 038 2601 ...	21.59	26.01	27.94	24.81	23.81
	40	15 15 040 2601 ...	22.86	27.28	29.21	26.08	25.08
	42	15 15 042 2601 ...	24.13	28.55	30.48	27.35	26.35
	44	15 15 044 2601 ...	25.40	29.82	31.75	28.62	27.62
	46	15 15 046 2601 ...	26.67	31.09	33.02	29.89	28.89
	48	15 15 048 2601 ...	27.94	32.36	34.29	31.16	30.16
	50	15 15 050 2601 ...	29.21	33.63	35.56	32.43	31.43
	52	15 15 052 2601 ...	30.48	34.90	36.83	33.70	32.70
	54	15 15 054 2601 ...	31.75	36.17	38.10	34.97	33.97
	56	15 15 056 2601 ...	33.02	37.44	39.37	36.24	35.24
	58	15 15 058 2601 ...	34.29	38.71	40.64	37.51	36.51
	60	15 15 060 2601 ...	35.56	39.98	41.91	38.78	37.78
	62	15 15 062 2601 ...	36.83	41.25	43.18	40.05	39.05
	64	15 15 064 2601 ...	38.10	42.52	44.45	41.32	40.32
	66	15 15 066 2601 ...	39.37	43.79	45.72	42.59	41.59
	68	15 15 068 2601 ...	40.64	45.06	46.99	43.86	42.86
	70	15 15 070 2601 ...	41.91	46.33	48.26	45.13	44.13
	72	15 15 072 2601 ...	43.18	47.60	49.53	46.40	45.40
	74	15 15 074 2601 ...	44.45	48.87	50.80	47.67	46.67
	76	15 15 076 2601 ...	45.72	50.14	52.07	48.94	47.94
	78	15 15 078 2601 ...	46.99	51.41	53.34	50.21	49.21
	80	15 15 080 2601 ...	48.26	52.68	54.61	51.48	50.48
	82	15 15 082 2601 ...	49.53	53.95	55.88	52.75	51.75
	84	15 15 084 2601 ...	50.80	55.22	57.15	54.02	53.02
	86	15 15 086 2601 ...	52.07	56.49	58.42	55.29	54.29
	88	15 15 088 2601 ...	53.34	57.76	59.69	56.56	55.56
	90	15 15 090 2601 ...	54.61	59.03	60.96	57.83	56.83
	92	15 15 092 2601 ...	55.88	60.30	62.23	59.10	58.10
	94	15 15 094 2601 ...	57.15	61.57	63.50	60.37	59.37
	96	15 15 096 2601 ...	58.42	62.84	64.77	61.64	60.64
	98	15 15 098 2601 ...	59.69	64.11	66.04	62.91	61.91
	100	15 15 100 2601 ...	60.96	65.38	67.31	64.18	63.18
			62.23	66.65	68.58	65.45	64.45



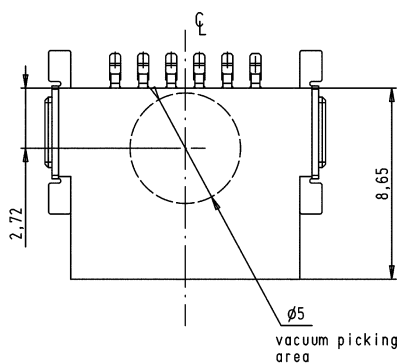
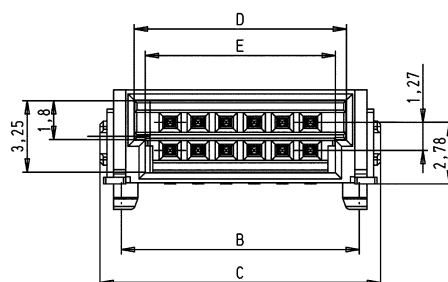
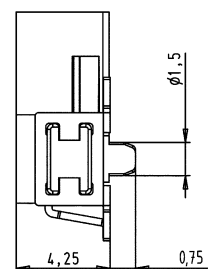
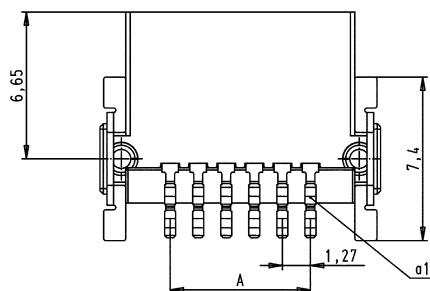
Male connectors, angled, SMT

Identification

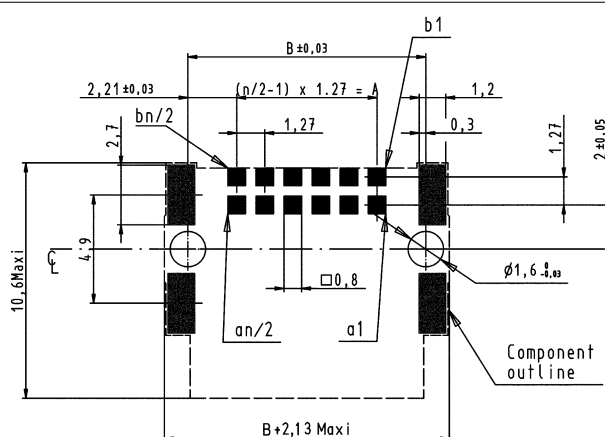
Drawing

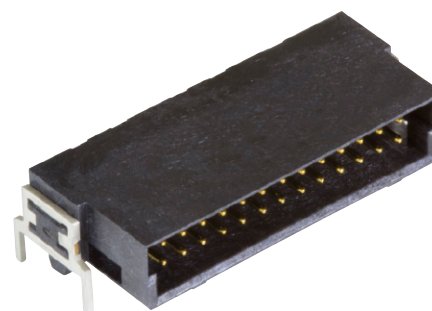
Dimensions in mm

Dimensions



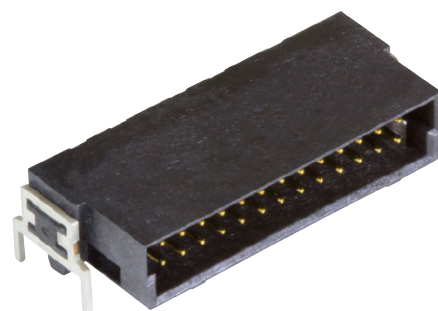
PCB layout





Male connectors, angled, THR

Identification	No. of contacts	Part number	Dimensions in mm				
Male connector, angled, THR	6	15 15 006 2401 ...	A	B	C	D	E
	8	15 15 008 2401 ...	2.54	6.96	8.89	5.76	4.76
	10	15 15 010 2401 ...	3.81	8.23	10.16	7.03	6.03
	12	15 15 012 2401 ...	5.08	9.50	11.43	8.30	7.30
	14	15 15 014 2401 ...	6.35	10.77	12.70	9.57	8.57
	16	15 15 016 2401 ...	7.62	12.04	13.97	10.84	9.84
	18	15 15 018 2401 ...	8.89	13.31	15.24	12.11	11.11
	20	15 15 020 2401 ...	10.16	14.58	16.51	13.38	12.38
	22	15 15 022 2401 ...	11.43	15.85	17.78	14.65	13.65
	24	15 15 024 2401 ...	12.70	17.12	19.05	15.92	14.92
	26	15 15 026 2401 ...	13.97	18.39	20.32	17.19	16.19
	28	15 15 028 2401 ...	15.24	19.66	21.59	18.46	17.46
	30	15 15 030 2401 ...	16.51	20.93	22.86	19.73	18.73
	32	15 15 032 2401 ...	17.78	22.20	24.13	21.00	20.00
	34	15 15 034 2401 ...	19.05	23.47	25.40	22.27	21.27
	36	15 15 036 2401 ...	20.32	24.74	26.67	23.54	22.54
	38	15 15 038 2401 ...	21.59	26.01	27.94	24.81	23.81
	40	15 15 040 2401 ...	22.86	27.28	29.21	26.08	25.08
	42	15 15 042 2401 ...	24.13	28.55	30.48	27.35	26.35
	44	15 15 044 2401 ...	25.40	29.82	31.75	28.62	27.62
	46	15 15 046 2401 ...	26.67	31.09	33.02	29.89	28.89
	48	15 15 048 2401 ...	27.94	32.36	34.29	31.16	30.16
	50	15 15 050 2401 ...	29.21	33.63	35.56	32.43	31.43
	52	15 15 052 2401 ...	30.48	34.90	36.83	33.70	32.70
	54	15 15 054 2401 ...	31.75	36.17	38.10	34.97	33.97
	56	15 15 056 2401 ...	33.02	37.44	39.37	36.24	35.24
	58	15 15 058 2401 ...	34.29	38.71	40.64	37.51	36.51
	60	15 15 060 2401 ...	35.56	39.98	41.91	38.78	37.78
	62	15 15 062 2401 ...	36.83	41.25	43.18	40.05	39.05
	64	15 15 064 2401 ...	38.10	42.52	44.45	41.32	40.32
	66	15 15 066 2401 ...	39.37	43.79	45.72	42.59	41.59
	68	15 15 068 2401 ...	40.64	45.06	46.99	43.86	42.86
	70	15 15 070 2401 ...	41.91	46.33	48.26	45.13	44.13
	72	15 15 072 2401 ...	43.18	47.60	49.53	46.40	45.40
	74	15 15 074 2401 ...	44.45	48.87	50.80	47.67	46.67
	76	15 15 076 2401 ...	45.72	50.14	52.07	48.94	47.94
	78	15 15 078 2401 ...	46.99	51.41	53.34	50.21	49.21
	80	15 15 080 2401 ...	48.26	52.68	54.61	51.48	50.48
	82	15 15 082 2401 ...	49.53	53.95	55.88	52.75	51.75
	84	15 15 084 2401 ...	50.80	55.22	57.15	54.02	53.02
	86	15 15 086 2401 ...	52.07	56.49	58.42	55.29	54.29
	88	15 15 088 2401 ...	53.34	57.76	59.69	56.56	55.56
	90	15 15 090 2401 ...	54.61	59.03	60.96	57.83	56.83
	92	15 15 092 2401 ...	55.88	60.30	62.23	59.10	58.10
	94	15 15 094 2401 ...	57.15	61.57	63.50	60.37	59.37
	96	15 15 096 2401 ...	58.42	62.84	64.77	61.64	60.64
	98	15 15 098 2401 ...	59.69	64.11	66.04	62.91	61.91
	100	15 15 100 2401 ...	60.96	65.38	67.31	64.18	63.18
			62.23	66.65	68.58	65.45	64.45



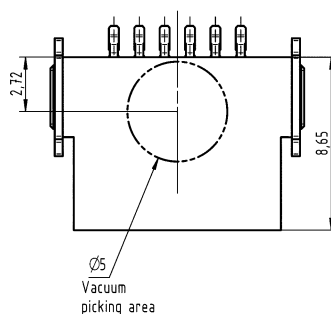
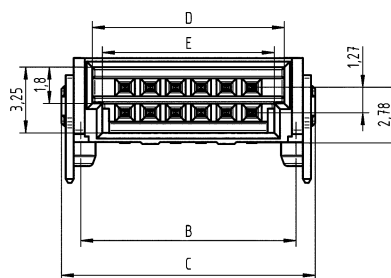
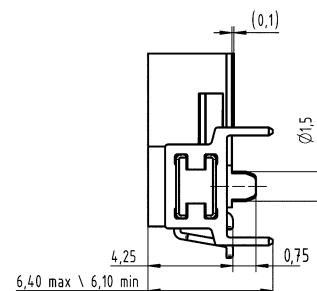
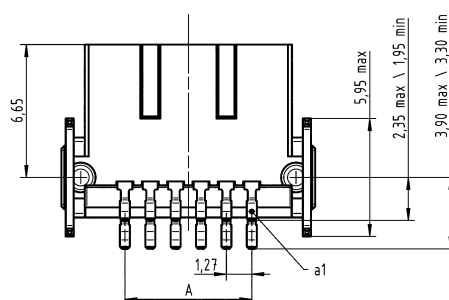
Male connectors, angled, THR

Identification

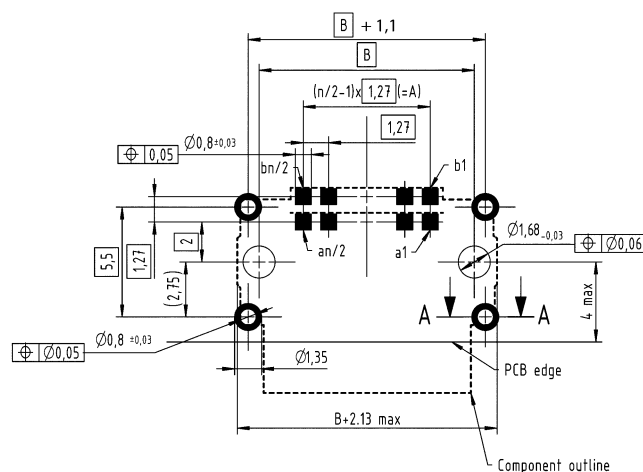
Drawing

Dimensions in mm

Dimensions



PCB layout





Female connectors, angled, SMT

Identification	No. of contacts	Part number	Dimensions in mm				
Female connector, angled, SMT	6	15 25 006 2601 ...	A	B	C	D	E
	8	15 25 008 2601 ...	2.54	6.96	8.89	5.56	4.56
	10	15 25 010 2601 ...	3.81	8.23	10.16	6.83	5.83
	12	15 25 012 2601 ...	5.08	9.50	11.43	8.10	7.10
	14	15 25 014 2601 ...	6.35	10.77	12.70	9.37	8.37
	16	15 25 016 2601 ...	7.62	12.04	13.97	10.64	9.64
	18	15 25 018 2601 ...	8.89	13.31	15.24	11.91	10.91
	20	15 25 020 2601 ...	10.16	14.58	16.51	13.18	12.18
	22	15 25 022 2601 ...	11.43	15.85	17.78	14.45	13.45
	24	15 25 024 2601 ...	12.70	17.12	19.05	15.72	14.72
	26	15 25 026 2601 ...	13.97	18.39	20.32	16.99	15.99
	28	15 25 028 2601 ...	15.24	19.66	21.59	18.26	17.26
	30	15 25 030 2601 ...	16.51	20.93	22.86	19.53	18.53
	32	15 25 032 2601 ...	17.78	22.20	24.13	20.80	19.80
	34	15 25 034 2601 ...	19.05	23.47	25.40	22.07	21.07
	36	15 25 036 2601 ...	20.32	24.74	26.67	23.34	22.34
	38	15 25 038 2601 ...	21.59	26.01	27.94	24.61	23.61
	40	15 25 040 2601 ...	22.86	27.28	29.21	25.88	24.88
	42	15 25 042 2601 ...	24.13	28.55	30.48	27.15	26.15
	44	15 25 044 2601 ...	25.40	29.82	31.75	28.42	27.42
	46	15 25 046 2601 ...	26.67	31.09	33.02	29.69	28.69
	48	15 25 048 2601 ...	27.94	32.36	34.29	30.96	29.96
	50	15 25 050 2601 ...	29.21	33.63	35.56	32.23	31.23
	52	15 25 052 2601 ...	30.48	34.90	36.83	33.50	32.50
	54	15 25 054 2601 ...	31.75	36.17	38.10	34.77	33.77
	56	15 25 056 2601 ...	33.02	37.44	39.37	36.04	35.04
	58	15 25 058 2601 ...	34.29	38.71	40.64	37.31	36.31
	60	15 25 060 2601 ...	35.56	39.98	41.91	38.58	37.58
	62	15 25 062 2601 ...	36.83	41.25	43.18	39.85	38.85
	64	15 25 064 2601 ...	38.10	42.52	44.45	41.12	40.12
	66	15 25 066 2601 ...	39.37	43.79	45.72	42.39	41.39
	68	15 25 068 2601 ...	40.64	45.06	46.99	43.66	42.66
	70	15 25 070 2601 ...	41.91	46.33	48.26	44.93	43.93
	72	15 25 072 2601 ...	43.18	47.60	49.53	46.20	45.20
	74	15 25 074 2601 ...	44.45	48.87	50.80	47.47	46.47
	76	15 25 076 2601 ...	45.72	50.14	52.07	48.74	47.74
	78	15 25 078 2601 ...	46.99	51.41	53.34	50.01	49.01
	80	15 25 080 2601 ...	48.26	52.68	54.61	51.28	50.28
	82	15 25 082 2601 ...	49.53	53.95	55.88	52.55	51.55
	84	15 25 084 2601 ...	50.80	55.22	57.15	53.82	52.82
	86	15 25 086 2601 ...	52.07	56.49	58.42	55.09	54.09
	88	15 25 088 2601 ...	53.34	57.76	59.69	56.36	55.36
	90	15 25 090 2601 ...	54.61	59.03	60.96	57.63	56.63
	92	15 25 092 2601 ...	55.88	60.30	62.23	58.90	57.90
	94	15 25 094 2601 ...	57.15	61.57	63.50	60.17	59.17
	96	15 25 096 2601 ...	58.42	62.84	64.77	61.44	60.44
	98	15 25 098 2601 ...	59.69	64.11	66.04	62.71	61.71
	100	15 25 100 2601 ...	60.96	65.38	67.31	63.98	62.98
			62.23	66.65	68.58	65.25	64.25



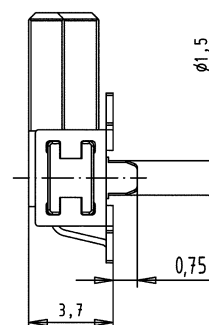
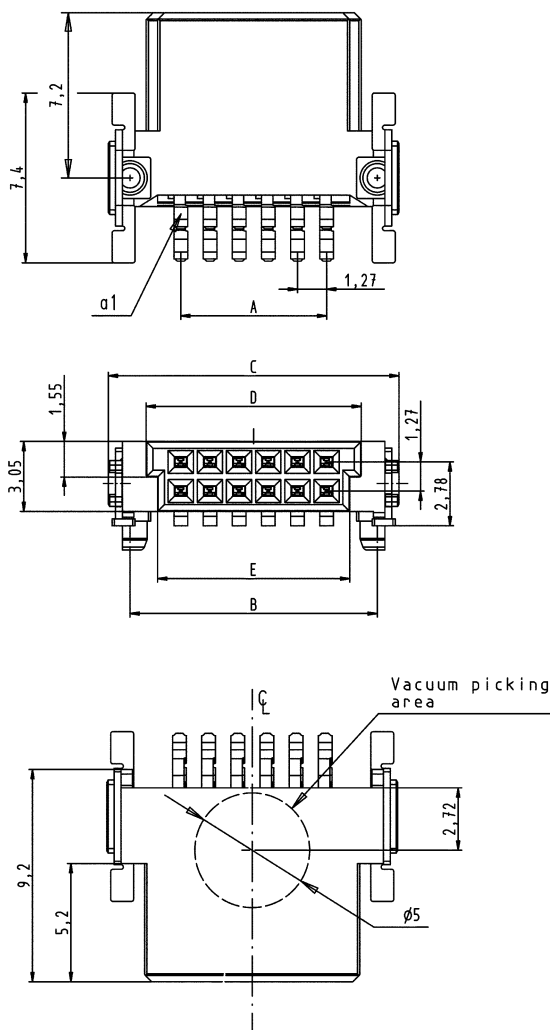
Female connectors, angled, SMT

Identification

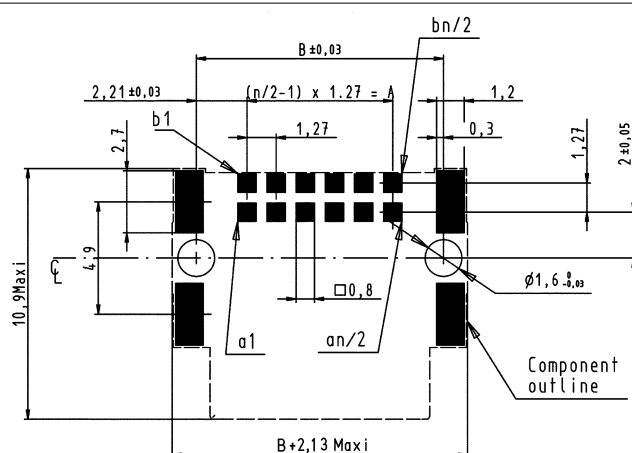
Drawing

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 29 006 250 . 000	A	B	C	D	E
	8	15 29 008 250 . 000	2.54	11.59	5.56	4.56	15.00
	10	15 29 010 250 . 000	3.81	12.86	6.83	5.83	15.00
	12	15 29 012 250 . 000	5.08	14.13	8.10	7.10	15.00
	14	15 29 014 250 . 000	6.35	15.40	9.37	8.37	15.00
	16	15 29 016 250 . 000	7.62	16.67	10.64	9.64	15.00
	18	15 29 018 250 . 000	8.89	17.94	11.91	10.91	15.00
	20	15 29 020 250 . 000	10.16	19.21	13.18	12.18	15.00
	22	15 29 022 250 . 000	11.43	20.48	14.45	13.45	15.00
	24	15 29 024 250 . 000	12.70	21.75	15.72	14.72	15.00
	26	15 29 026 250 . 000	13.97	23.02	16.99	15.99	15.00
	28	15 29 028 250 . 000	15.24	24.29	18.26	17.26	15.00
	30	15 29 030 250 . 000	16.51	25.56	19.53	18.53	15.00
	32	15 29 032 250 . 000	17.78	26.83	20.80	19.80	15.00
	34	15 29 034 250 . 000	19.05	28.10	22.07	21.07	15.00
	36	15 29 036 250 . 000	20.32	29.37	23.34	22.34	15.00
	38	15 29 038 250 . 000	21.59	30.64	24.61	23.61	15.00
	40	15 29 040 250 . 000	22.86	31.91	25.88	24.88	15.00
	42	15 29 042 250 . 000	24.13	33.18	27.15	26.15	15.00
	44	15 29 044 250 . 000	25.40	34.45	28.42	27.42	15.00
	46	15 29 046 250 . 000	26.67	35.72	29.69	28.69	15.00
	48	15 29 048 250 . 000	27.94	36.99	30.96	29.96	15.00
	50	15 29 050 250 . 000	29.21	38.26	32.23	31.23	15.00
	52	15 29 052 250 . 000	30.48	39.53	33.50	32.50	15.00
	54	15 29 054 250 . 000	31.75	40.80	34.77	33.77	15.00
	56	15 29 056 250 . 000	33.02	42.07	36.04	35.04	15.00
	58	15 29 058 250 . 000	34.29	43.34	37.31	36.31	15.00
	60	15 29 060 250 . 000	35.56	44.61	38.58	37.58	15.00
	62	15 29 062 250 . 000	36.83	45.88	39.85	38.85	16.20
	64	15 29 064 250 . 000	38.10	47.15	41.12	40.12	16.20
	66	15 29 066 250 . 000	39.37	48.42	42.39	41.39	16.20
	68	15 29 068 250 . 000	40.64	49.69	43.66	42.66	16.20
	70	15 29 070 250 . 000	41.91	50.96	44.93	43.93	16.20
	72	15 29 072 250 . 000	43.18	52.23	46.20	45.20	16.20
	74	15 29 074 250 . 000	44.45	53.50	47.47	46.47	16.20
	76	15 29 076 250 . 000	45.72	54.77	48.74	47.74	16.20
	78	15 29 078 250 . 000	46.99	56.04	50.01	49.01	16.20
	80	15 29 080 250 . 000	48.26	57.31	51.28	50.28	16.20
	82	15 29 082 250 . 000	49.53	58.58	52.55	51.55	16.20
	84	15 29 084 250 . 000	50.80	59.85	53.82	52.82	16.20
	86	15 29 086 250 . 000	52.07	61.12	55.09	54.09	16.20
	88	15 29 088 250 . 000	53.34	62.39	56.36	55.36	16.20
	90	15 29 090 250 . 000	54.61	63.66	57.63	56.63	16.20
	92	15 29 092 250 . 000	55.88	64.93	58.90	57.90	16.20
	94	15 29 094 250 . 000	57.15	66.20	60.17	59.17	16.20
	96	15 29 096 250 . 000	58.42	67.47	61.44	60.44	16.20
	98	15 29 098 250 . 000	59.69	68.74	62.71	61.71	16.20
	100	15 29 100 250 . 000	60.96	70.01	63.98	62.98	16.20
			62.23	71.28	65.25	64.25	16.20

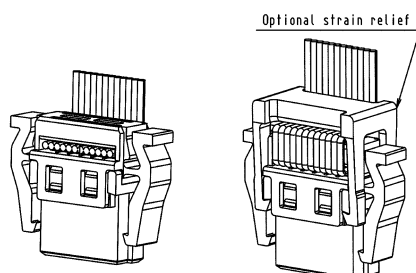
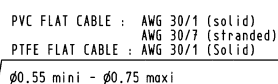
without strain relief
with strain relief

1
2



Dimensions

Dimensions in mm





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

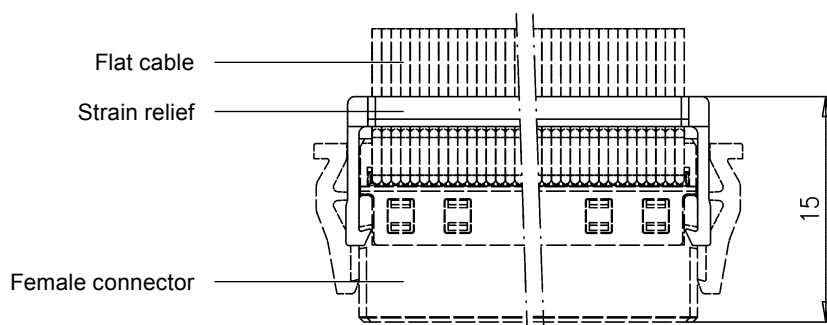
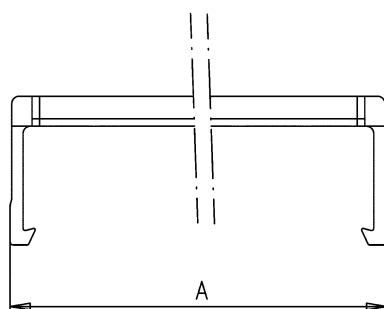
Identification

Drawing

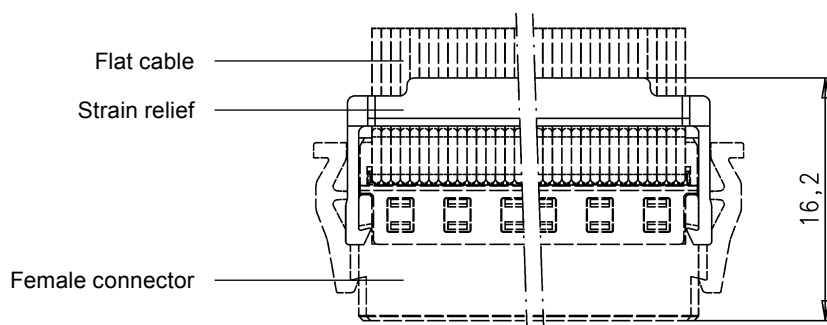
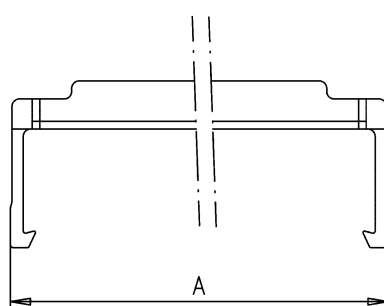
Dimensions in mm

Dimensions

6 – 58 contacts



60 – 100 contacts



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

Rated voltage 150 V

Core structure AWG 30/7

Strain relief with / without

Connector direction same / different

Wiring 1 : 1 / crossed

Cable types

PVC

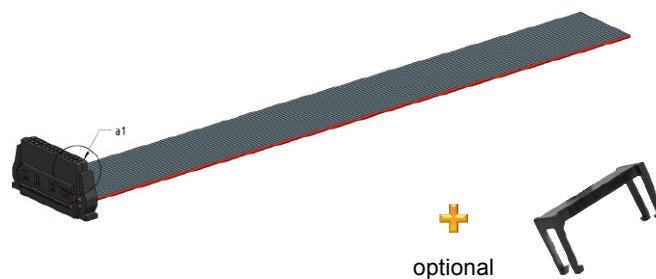
Operating temperatures -20 °C ... +105 °C

Halogen free

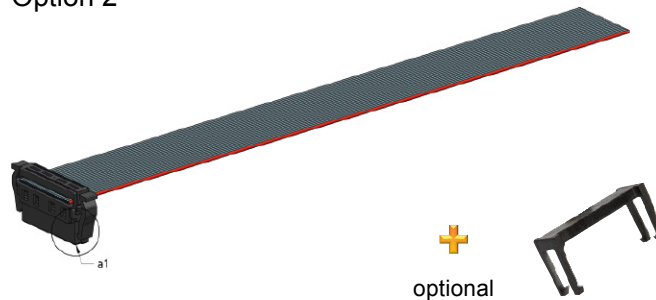
Operating temperatures -40 °C ... +125 °C

Options

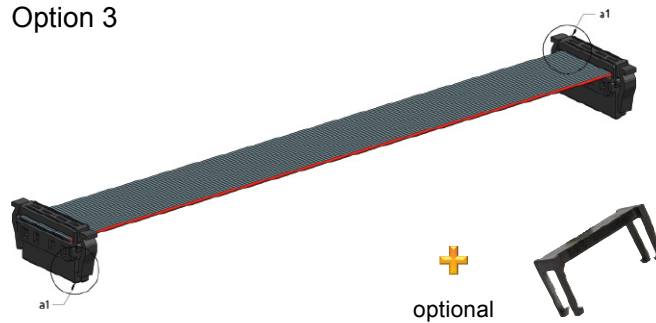
Option 1



Option 2

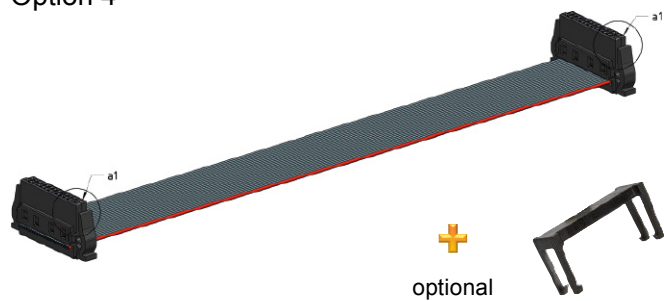


Option 3



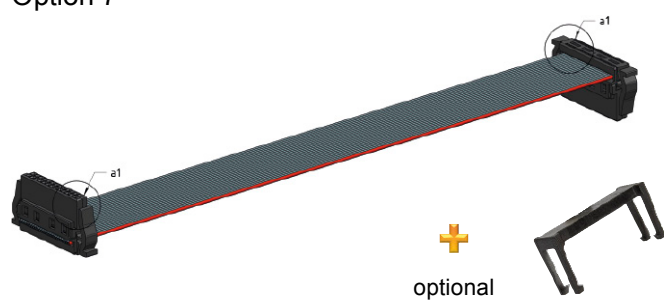
Options

Option 4

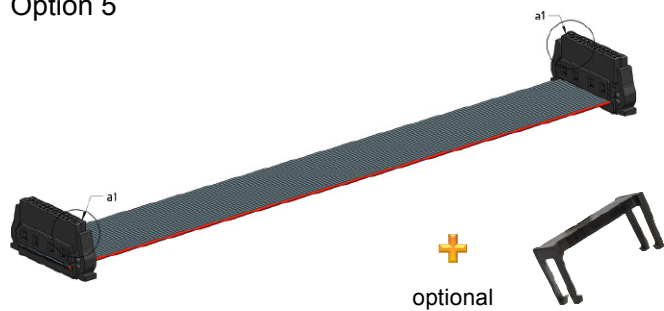


Options

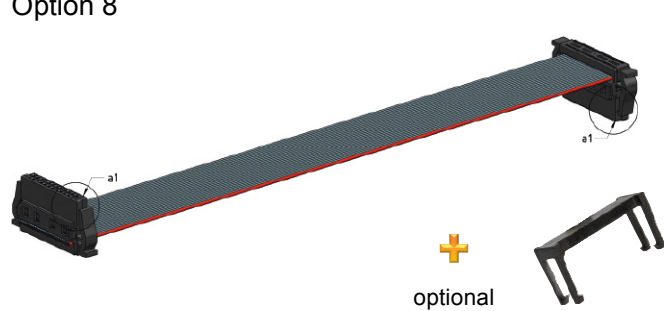
Option 7



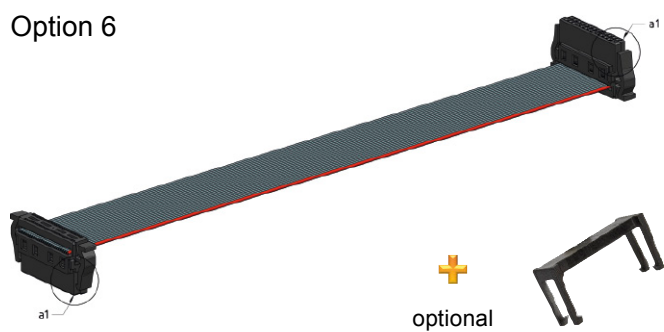
Option 5



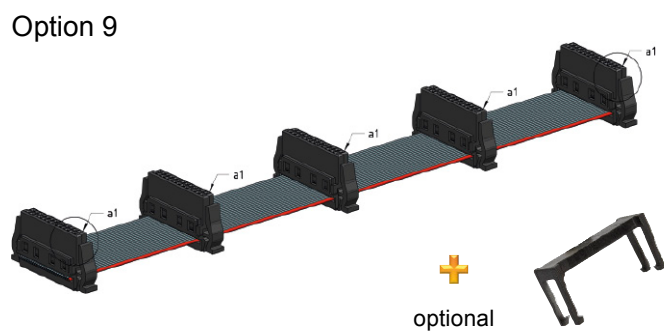
Option 8



Option 6



Option 9





Cable assemblies

Identification	Part number	Drawing	Dimensions in mm
Cable assembly har-flex® and different connector direction Cable: Flat cable PVC, AWG 30/7, 0.635 mm pitch Wiring: 1:1			
Connectors with strain relief 6 poles Length: L = 0.1 m L = 0.2 m L = 0.5 m	33 15 243 0100 001 33 15 243 0200 002 33 15 243 0500 003		
Connectors without strain relief 6 poles Length: L = 0.1 m L = 0.2 m L = 0.5 m	33 15 243 0100 373 33 15 243 0200 373 33 15 243 0500 373		
Connectors with strain relief 12 poles Length: L = 0.1 m L = 0.2 m L = 0.5 m	33 15 243 0100 004 33 15 243 0200 005 33 15 243 0500 006		
Connectors without strain relief 12 poles Length: L = 0.1 m L = 0.2 m L = 0.5 m	33 15 243 0100 374 33 15 243 0200 374 33 15 243 0500 374		



Cable assemblies

Identification	Part number	Drawing	Dimensions in mm
Cable assembly <i>har-flex</i>® and different connector direction Cable: Flat cable PVC, AWG 30/7, 0.635 mm pitch Wiring: 1:1			
Connectors with strain relief 26 poles Length: L = 0.1 m L = 0.2 m L = 0.5 m	33 15 243 0100 007 33 15 243 0200 008 33 15 243 0500 009		
Connectors without strain relief 26 poles Length: L = 0.1 m L = 0.2 m L = 0.5 m	33 15 243 0100 375 33 15 243 0200 375 33 15 243 0500 375		
Connectors with strain relief 32 poles Length: L = 0.1 m L = 0.2 m L = 0.5 m	33 15 243 0100 010 33 15 243 0200 011 33 15 243 0500 012		
Connectors without strain relief 32 poles Length: L = 0.1 m L = 0.2 m L = 0.5 m	33 15 243 0100 376 33 15 243 0200 376 33 15 243 0500 376		

Further pin counts on request



Cable assemblies

Identification	Part number	Drawing	Dimensions in mm
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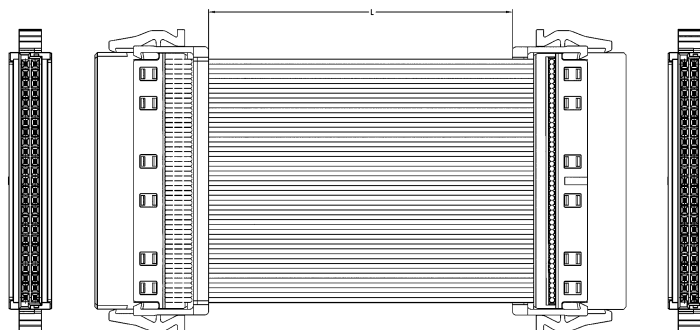
Cable assembly har-flex®
and different
connector direction

Cable: Flat cable PVC,
AWG 30/7, 0.635 mm pitch
Wiring: 1:1

Connectors
with strain relief

50 poles Length: L = 0.1 m
L = 0.2 m
L = 0.5 m

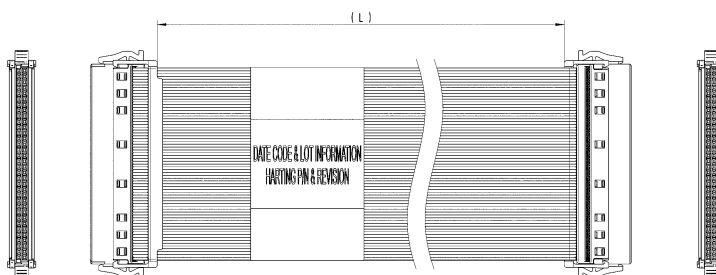
33 15 243 0100 013
33 15 243 0200 014
33 15 243 0500 015



Connectors
without strain relief

50 poles Length: L = 0.1 m
L = 0.2 m
L = 0.5 m

33 15 243 0100 377
33 15 243 0200 377
33 15 243 0500 377



Connectors
with strain relief

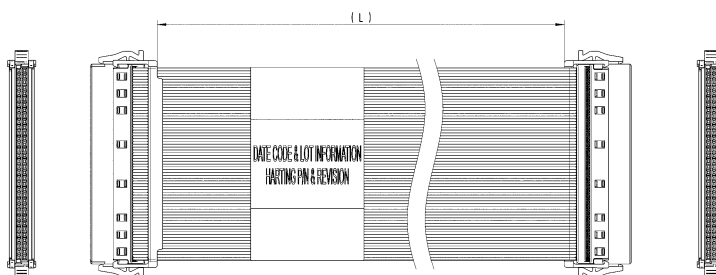
68 poles Length: L = 0.1 m
L = 0.2 m
L = 0.5 m

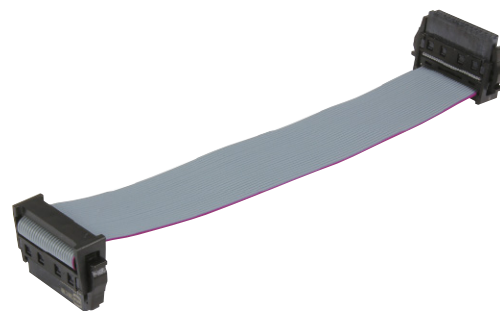
33 15 243 0100 122
33 15 243 0200 122
33 15 243 0500 122

Connectors
without strain relief

68 poles Length: L = 0.1 m
L = 0.2 m
L = 0.5 m

33 15 243 0100 378
33 15 243 0200 378
33 15 243 0500 378





Identification

Drawing

Dimensions in mm

Cable: Flat cable PVC,
AWG 30/7, 0.635 mm pitch
Wiring: 1:1

Connectors with strain relief

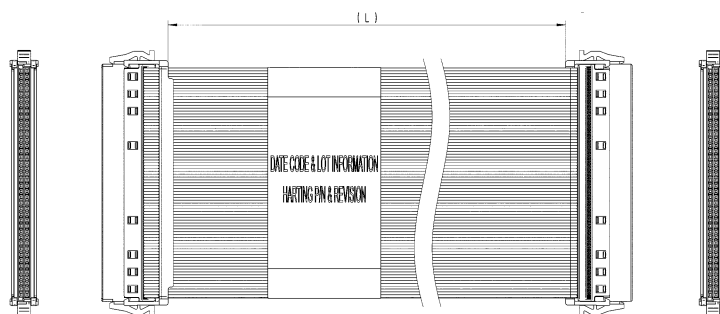
80 poles Length: $L = 0.1 \text{ m}$
 $L = 0.2 \text{ m}$
 $L = 0.5 \text{ m}$

33 15 243 0100 123
33 15 243 0200 123
33 15 243 0500 123

Connectors without strain relief

80 poles Length: $L = 0.1 \text{ m}$
 $L = 0.2 \text{ m}$
 $L = 0.5 \text{ m}$

33 15 243 0100 379
33 15 243 0200 379
33 15 243 0500 379





Cable assemblies

Identification	Part number	Drawing	Dimensions in mm
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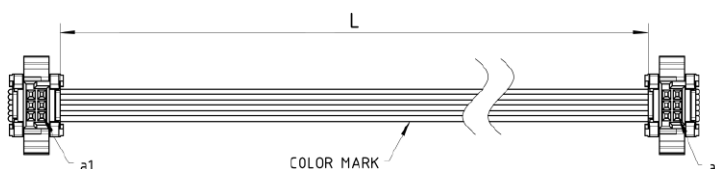
Cable assembly har-flex® and similar connector direction

Cable: Flat cable PVC, AWG 30/7, 0.635 mm pitch
Wiring: 1:1

Connectors with strain relief

6 poles Length: L = 0.1 m
L = 0.2 m
L = 0.5 m

33 15 243 0100 382
33 15 243 0200 382
33 15 243 0500 382



Connectors without strain relief

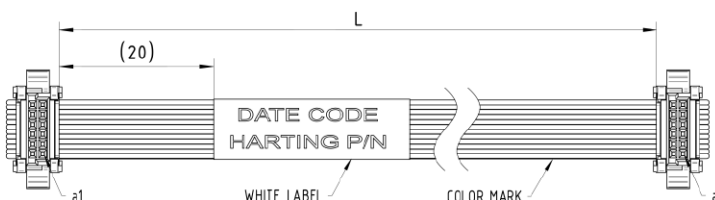
6 poles Length: L = 0.1 m
L = 0.2 m
L = 0.5 m

33 15 243 0100 380
33 15 243 0200 380
33 15 243 0500 380

Connectors with strain relief

12 poles Length: L = 0.1 m
L = 0.2 m
L = 0.5 m

33 15 243 0100 102
33 15 243 0200 102
33 15 243 0500 102



Connectors without strain relief

12 poles Length: L = 0.1 m
L = 0.2 m
L = 0.5 m

33 15 243 0100 145
33 15 243 0200 145
33 15 243 0500 145



Cable assemblies

Identification	Part number	Drawing	Dimensions in mm
Cable assembly har-flex® and similar connector direction Cable: Flat cable PVC, AWG 30/7, 0.635 mm pitch Wiring: 1:1			
Connectors with strain relief 26 poles Length: L = 0.1 m L = 0.2 m L = 0.5 m	33 15 243 0100 065 33 15 243 0200 065 33 15 243 0500 065		
Connectors without strain relief 26 poles Length: L = 0.1 m L = 0.2 m L = 0.5 m	33 15 243 0100 125 33 15 243 0200 125 33 15 243 0500 125		
Connectors with strain relief 32 poles Length: L = 0.1 m L = 0.2 m L = 0.5 m	33 15 243 0100 383 33 15 243 0200 383 33 15 243 0500 383		
Connectors without strain relief 32 poles Length: L = 0.1 m L = 0.2 m L = 0.5 m	33 15 243 0100 381 33 15 243 0200 381 33 15 243 0500 381		

Further pin counts on request



Cable assemblies

Identification	Part number	Drawing	Dimensions in mm
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Cable assembly *har-flex*®
and similar
connector direction

Cable: Flat cable PVC,
AWG 30/7, 0.635 mm pitch
Wiring: 1:1

Connectors
with strain relief

50 poles Length: L = 0.1 m
L = 0.2 m
L = 0.5 m

33 15 243 0100 384
33 15 243 0200 384
33 15 243 0500 384

Connectors
without strain relief

50 poles Length: L = 0.1 m
L = 0.2 m
L = 0.5 m

33 15 243 0100 147
33 15 243 0200 147
33 15 243 0500 147

Connectors
with strain relief

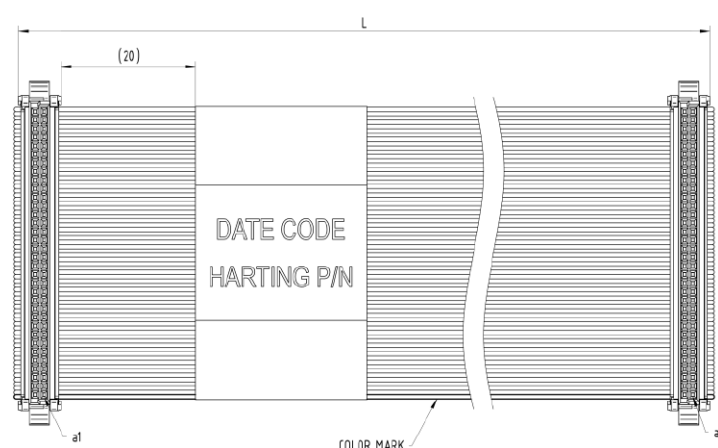
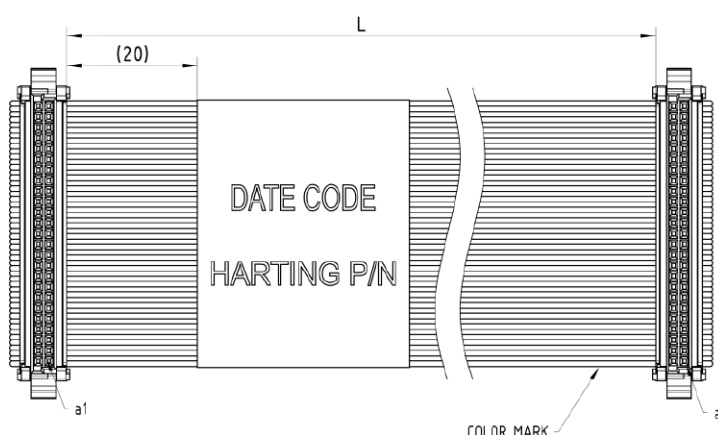
68 poles Length: L = 0.1 m
L = 0.2 m
L = 0.5 m

33 15 243 0100 385
33 15 243 0200 385
33 15 243 0500 385

Connectors
without strain relief

68 poles Length: L = 0.1 m
L = 0.2 m
L = 0.5 m

33 15 243 0100 148
33 15 243 0200 148
33 15 243 0500 148





Cable assemblies

Identification	Part number	Drawing	Dimensions in mm
Cable assembly <i>har-flex</i>® and similar connector direction Cable: Flat cable PVC, AWG 30/7, 0.635 mm pitch Wiring: 1:1 Connectors with strain relief 80 poles Length: L = 0.1 m L = 0.2 m L = 0.5 m Connectors without strain relief 80 poles Length: L = 0.1 m L = 0.2 m L = 0.5 m			
	33 15 243 0100 386 33 15 243 0200 386 33 15 243 0500 386		
	33 15 243 0100 149 33 15 243 0200 149 33 15 243 0500 149		

Further pin counts on request