254 / HE701

Single-sided connectors for PCB

The 254 series is a single sided, 2,54 [.100] pitch, range of connectors for printed circuit boards.
Both direct or indirect connections could be made:
- For direct connection, the female receptacle mates with a 1,6 ± 0,2 [.063 ± .008] printed circuit board
- For indirect connection, the female receptacle mates with the male plugs

A well-proven technology

- The 254 series uses a 2,54[.100] pitch, single sided
- The arrangements available are from 11 contacts to 47 contacts for 254 series and 6 contacts to 24 contacts for 508 series

A simple choice of solutions, adaptable to all type of configurations

- 2 receptacle versions are available:
  - Type A:
    - Floating contacts
    - Terminations in two rows, 2,54[.100] pitch
  - Type B:
    - Removable contacts
    - Terminations in two rows, 5,08[.200] pitch

- For motherboard: female receptacle with straight PC tails (Y)
- For mounting on cables: female receptacle with solder cup contacts (Z)

- For extender boards
  - Female extender with right angle PC tails (YC)
  - Type B only
    - Removable contacts
    - Terminations in two rows, 5,08[.200] pitch

- In case of direct connection: the female receptacle mates directly with a 1,6 ± 0,2 [.063 ± .008] printed circuit board

- In case of indirect connection, the male plug with right angle PC tails is used. 3 versions are available
  A: standard types as per norm B: open ended mounting ears C: without mounting ears

- Various polarization system are available (for both direct or indirect connection)
- The 508 series is a derivate version of the standardized range, with only odd-numbered contacts mounted

The 254 series complies with here below standards:

NFC/UTE 93-421
HE701

Series	Gender	Signal contacts	Number of contacts		Polarization system
245 series or 508 series	**Female receptacle** Type A Type B	Sraight PC tails Y Solder cup Z Right angle PC tails (YC, for extender)	From 6 to 47	+	For direct connection For indirect connection
	Male plug Type A Type B Type C	Right angle PC tails			
Pages 18 & 27	Pages 23 to 25	Pages 20 & 21	Pages 23 to 25		Page 26

All dimensions are given for information only and are in mm [inch], except as otherwise specified

254 / HE701 Series

Table of contents

The 254 / HE7 series serves various **markets**, including :


Security & Defense


Navy


Industrial

All dimensions are given for information only and are in mm [inch], except as otherwise specified

254 / HE701 >>> GENERAL SPECIFICATIONS

MEDIUM DENSITY

- 2,54[.100] pitch
- Proven and reliable double-sided PCB connectors
- Direct connection: female receptacle mates with 1,6 ± 0,2 [.063 ± .008] printed circuit board
- Indirect connection: female receptacle mates with male plug

Main characteristics

- 2 x 13 to 2 x 55 signal contacts
- 3A per signal contact
- Fully compatible with all the standard connectors HE701 on the market

Markets

Standard

NFC/UTE 93/421
HE701

How to order

Series (see page 19)	
254	254 series (2.54 [.100] pitch)
508	508 series (5.08 [.200] pitch)

Type / Gender (See pages 22 to 25)	
Receptacle	Plug
AF Female type A	AM Male type A
BF Female type B	BM Male type B
	CM Male type C

254 -- -- --

Number of signal contacts (see pages 22 to 25 & 27)								
254 series		508 series						
Female type AF Male type AM, BM, or CM	Female type BF	Female receptacle				Male plug		
		AF Y	AF Z	BF Y	BF Z	AM	BM	CM
			6			6		
			8			8		8
11		9	9	9		9	9	9
17	17	12	12					
23	23		13	13		13		
25	25	14						14
29	29	15		15		15	15	15
35	35	17	17					17
41	41	18	18	18	18	18	18	18
47	47		21	21		21		
		23	23					23
		24	24			24	24	24

Signal contacts (see pages 20 to 21)				
Female receptacle	254	AF	Z	Solder cup
			Y	Straight PC tails
		BF	Z	Solder cup
			Y	Straight PC tails
			YC 01	Right angle PC tails
	508	AF BF	Z	Solder cup
			Y	Straight PC tails
Male plug 254 ou 508		AM BM CM	Vide	Right angle PC tails

Series (see page 19)	
HE701	254 series

Type / Gender (See pages 22 to 25)	
Receptacle	Plug
EN Female type A	F Male type A
EV Female type B	

HE701 -- -- --

Number of signal contacts (see pages 22 to 25)	
Female receptacle type A (EN) Male plug type A (F)	Female receptacle type B (EV)
11	
17	17
23	23
29	29
35	35
41	41
47	47

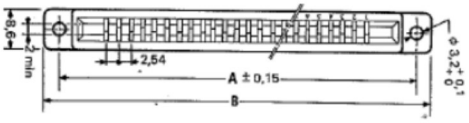
Signal contacts (see pages 20 to 21)				
Female receptacle	254	AF	Z	Solder cup
			Y	Straight PC tails
		BF	Z	Solder cup
			Y	Straight PC tails
			YC 01	Right angle PC tails
	508	AF BF	Z	Solder cup
			Y	Straight PC tails
Male plug 254 ou 508		AM BM CM	Vide	Right angle PC tails

All dimensions are given for information only and are in mm [inch], except as otherwise specified

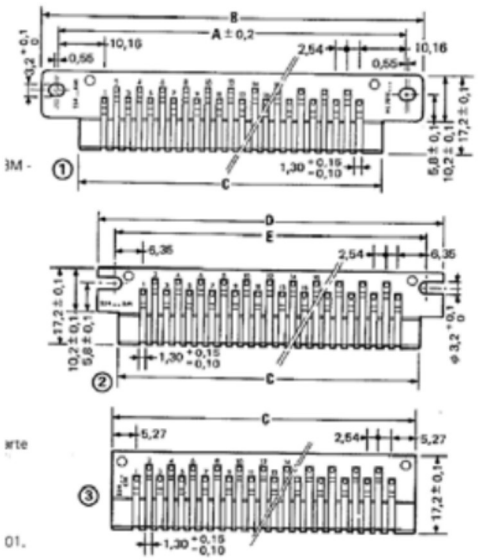
254 / HE701 >>> GENERAL SPECIFICATIONS

Dimensional characteristics

Receptacle



Plug



Receptacle:

- B = 53,1 [2.091] to 144,6 [5.693] (type A)
- B = 68,4 [2.693] to 144,6 [5.693] (type B)

Plug:

- B = 53,1 [2.091] to 144,6 [5.693] (Type A)
- D = 45,5 [1.791] to 136,9 [5.390] (Type B)
- C = 35,95 [1.415] to 127,40 [5.016] (Type C)

508 series:
Connectors are made from the same mouldings and contacts as 254 series. Only odd-numbered contacts are mounted

Female contact

Floating lyre **contact (Y & Z) for type A**
Patented double lyre **contact (Z, Z & YC) for type B**
Material

- Copper alloy

Plating

- Terminations: gold over nickel
- Active contact area: gold over nickel

Male contact

Material

- Copper alloy

Plating

- Terminations: gold over nickel
- Active contact area: gold over nickel

Materials

- **Polarising key:** thermoplastic
- **Plastic insert:** thermoset

MECHANICAL CHARACTERISTICS	254 / HE701
Backoff[1] (mm)	1.20 MAX
Mating force per contact pair (N) **Unmating force** per contact pair(N)	2.7 MAX
Contact retention in housing (N)	
Solder on wire	20 MIN
Stright PC tail / SMT	20 MIN
ENVIRONMENTAL CHARACTERISTICS	
Thermal shocks (°C)	-55 / +125
ELECTRICAL CHARACTERISTICS	
Current rating per contacts (A) direct connection	3
Current rating per contacts (A) indirect connection	5
Insulation resistance (GΩ)	5 MIN
Contact resistance (mΩ)	10 MAX
Capacitance between contacts (pF)	5 MAX
Service voltage at 50Hz	200
Test voltage at sea level (Vrms)	900
Test voltage at 20 mbar (Vrms)	200

1: When both connectors are fully mated, the backoff is the maximum distance the connectors can be unmated while functioning properly

All dimensions are given for information only and are in mm [inch], except as otherwise specified

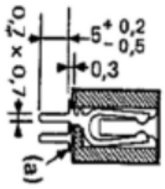
254 / HE701 >>> SIGNAL CONTACT

Direct connection is made by a female receptacle directly mated with a 1,6 ± 0,2 [.063 ± .008] printed circuit board
Indirect connection is made by a female receptacle mated with a male plug (two-part connectors)

FEMALE CONTACTS TYPE A

Floating contacts, terminations in two row, 2,54 [.100] pitch

Straight PC tail

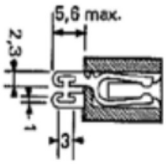


- Thru hole soldering
- Used for direct connection: mate with a 1,6 ± 0,2 [.063 ± .008] printed circuit board
- Used for indirect connection: mate with male plug
- Mother board
- Termination section: 0,7x 0,7 [.028 x .028]
- PCB thickness: 3,2 MAX [.126]
- Weight: 0,15g

(a): insulated washer stuck on the underside of the end feet of connectors to enable board cleaning

Termination style	254 ** AF Y HE701 EN ** Y

Solder cup



- Hard-soldering on wire
- O: 1 MAX [.039] on core section
- Used for direct connection: mate with a 1,6 ± 0,2 [.063 ± .008] printed circuit board
- Used for indirect connection: mate with male plug
- Weight 0,16g

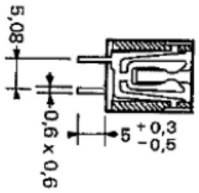
Termination style	254 ** AF Z HE701 EN ** Z

FEMALE CONTACTS TYPE B

Removable contacts, terminations in two row, 5,08 [.200] pitch

The mention → or ← means the contact removal direction

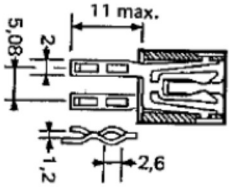
Straight PC tail



- Thru hole soldering
- Used for direct connection: mate with a 1,6 ± 0,2 [.063 ± .008] printed circuit board
- Used for indirect connection: mate with male plug
- Mother board
- Termination section: 0,6 x 0,6 [.024 x .024]
- PCB thickness: 3,2 MAX [.126]
- Weight: 0,27g
- *To order the contact alone* *043247*

Termination style	254 ** BF Y HE701 EV ** Y

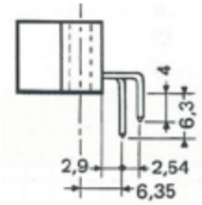
Solder cup



- Hard-soldering on wire
- For soldering two wires, one of which can be a busbar joining adjacent connectors (supply, ground)
- Used for direct connection: mate with a 1,6 ± 0,2 [.063 ± .008] printed circuit board
- Used for indirect connection: mate with male plug
- Weight: 0,37g
- *To order the contact alone* *042635*

Termination style	254 ** BF Z HE701 EV ** Z

Right angle PC tail

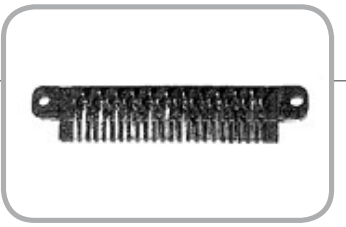


Thru hole soldering
Used for direct connection: mate with a 1,6 ± 0,2 [.063 ± .008] printed circuit board
Used for indirect connection: mate with male plug
Extender board
Weight: 0,31g

Termination style	254 ** BF YC01

All dimensions are given for information only and are in mm [inch], except as otherwise specified

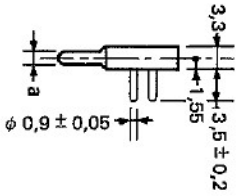
254 / HE701 >>> SIGNAL CONTACT



Direct connection is made by a female receptacle directly mated with a 1,6 ± 0,2 [.063 ± .008] printed circuit board
Indirect connection is made by a female receptacle mated with a male plug (two-part connectors)

MALE CONTACTS

Right angle PC tail



- Thru hole soldering
- Used for indirect connection: mate with female receptacle
- Daughter board
- Termination diameter: 0,9 ± 0,05 [.035 ± .002]
- PCB thickness: 2,6 MAX [.102]
- (a): 1,9 [.075] over the moulding, 1,6 ± 0,15 [.063 ± .006] over the contacts

Termination style	254 ** AM HE701 F ** Y 254 ** BM 254 ** CM

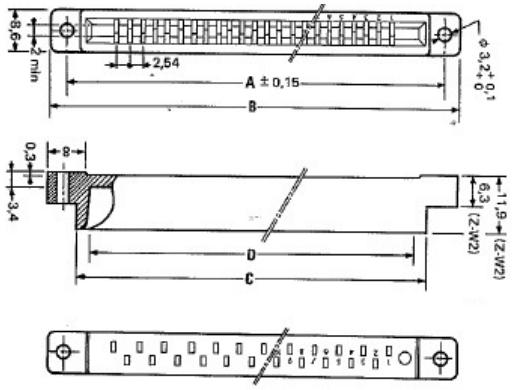
All dimensions are given for information only and are in mm [inch], except as otherwise specified

254 / HE701 >>> TYPICAL ARRANGEMENTS

FEMALE RECEPTACLES TYPE A

Equipped with straight PC tails or solder cup contacts (Y or Z)

External dimensions



**: number of contacts
*: type of contacts (Z or Y)

Part number	254 ** AF * HE701 EN **

Mother board layout

- Female receptacle equipped with straight PC tails (Y)
- The positional tolerance of the holes is 0,1 [.004] from the theoretical position
- The board is shown from the connector side. Contact #1 is given for reference
- *Having mounted the connector on the board, insert a male plug or a board to correctly position the contacts*

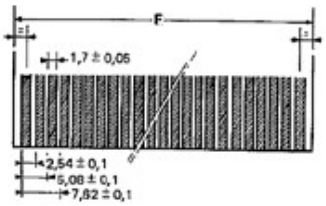
Part number	254 ** AF Y HE701 EN ** Y

Panel cut outs

- Female receptacle equipped with solder cup contacts (Z)

Part number	254 ** AF Z HE701 EN ** Z

Daughterboard layout (for direct connection only)

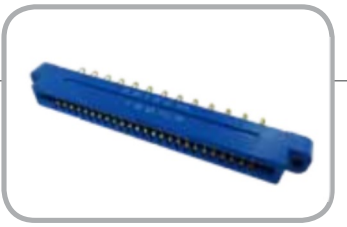


- Direct connection is made by a female receptacle directly mated with a 1,6 ± 0,2 [.063 ± .008] printed circuit board
- Daughterboard cut outs

Number of contacts	A	B ± 0.3 [± .012]	C ± 0.3 [± .012]	$D^{+0.15}_{-0.1}$	E_{MIN}	F ± 0.1 [± .004]	Housing weight (g)
11	46,7 [1.839]	53,1 [2.091]	40,8 [1.606]	36,05 [1.419]	41,40 [1.630]	35,85[1.411]	5,8
17	62,0 [2.441]	68,4 [2.693]	56,1 [2.209]	51,30 [2.020]	56,60 [2.228]	51,10 [2.012]	7,6
23	77,2 [3.039]	83,6 [3.291]	71,3 [2.807]	66,55 [2.620]	71,90 [2.831]	66,35 [2.612]	9,3
25	82,3 [3.241]	88,7 [3.492]	76,4 [3.008]	71,62 [2.820]	77,00 [3.031]	71,42 [2.812]	9,9
29	92,5 [3.642]	98,9 [3.894]	86,6 [3.409]	81,80 [3.220]	87,10 [3.429]	81,60 [3.213]	11,1
35	107,7 [4.240]	114,1 [4.492]	101,8 [4.008]	97,00 [3.819]	102,40 [4.031]	96,80 [3.811]	12,8
41	122,9 [4.839]	129,3 [5.091]	117,0 [4.606]	112,25 [4.419]	117,60 [4.630]	112,05 [4.411]	14,6
47	138,2 [5.441]	144,6 [5.693]	132,3 [5.209]	127,50 [5.020]	132,90 [5.232]	127,30 [5.012]	16,4

All dimensions are given for information only and are in mm [inch], except as otherwise specified

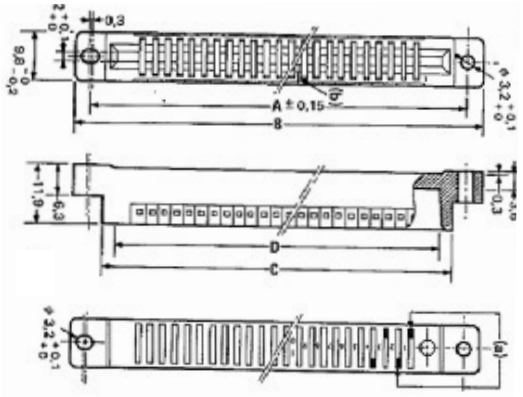
254 / HE701 >>> TYPICAL ARRANGEMENTS



FEMALE RECEPTACLES TYPE B

Equipped with straight PC tails or solder cup contacts (Y or Z)

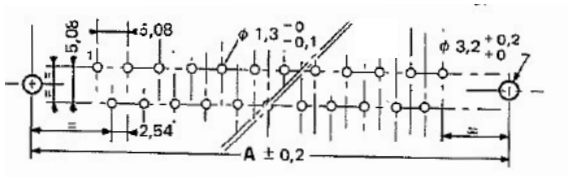
External dimensions



- **: number of contacts
- *: type of contacts (Z or Y)
- **(a)**: position of contact termination
- **(b)**: identification of every 10th contact on mating side

Part number	254 ** BF * HE701 EV **

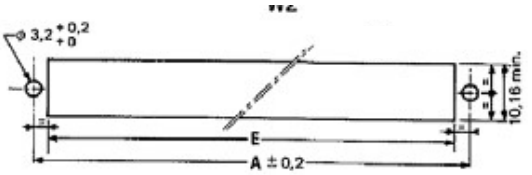
Mother board layout



- Female receptacle equipped with straight PC tails (Y)
- The positional tolerance of the holes is 0,1 [.004] from the theoretical position
- The board is shown from the connector side. Contact #1 is given for reference

Part number	254 ** BF Y HE701 EV **Y

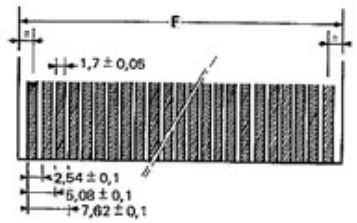
Panel cut outs



- Female receptacle equipped with solder cup contacts (Z)

Part number	254 ** BF Z HE701 EV **Z

Daughterboard layout (for direct connection only)



- Direct connection is made by a female receptacle directly mated with a 1,6 ± 0,2 [.063 ± .008] printed circuit board
- Daughterboard cut outs

Number of contacts	A	B ± 0.3 [± .012]	C ± 0.3 [± .012]	D +0.15 -0.1	E MIN	F ± 0.1 [± .004]	Housing weight (g)
17	62,0 [2.441]	68,4 [2.693]	56,1 [2.209]	51,30 [2.020]	56,60 [2.228]	51,10 [2.012]	8,7
23	77,2 [3.039]	83,6 [3.291]	71,3 [2.807]	66,55 [2.620]	71,90 [2.831]	66,35 [2.612]	10,5
25	82,3 [3.241]	88,7 [3.492]	76,4 [3.008]	71,62 [2.820]	77,00 [3.031]	71,42 [2.812]	11,2
29	92,5 [3.642]	98,9 [3.894]	86,6 [3.409]	81,80 [3.220]	87,10 [3.429]	81,60 [3.213]	12,3
35	107,7 [4.240]	114,1 [4.492]	101,8 [4.008]	97,00 [3.819]	102,40 [4.031]	96,80 [3.811]	14,2
41	122,9 [4.839]	129,3 [5.091]	117,0 [4.606]	112,25 [4.419]	117,60 [4.630]	112,05 [4.411]	16
47	138,2 [5.441]	144,6 [5.693]	132,3 [5.209]	127,50 [5.020]	132,90 [5.232]	127,30 [5.012]	17,8

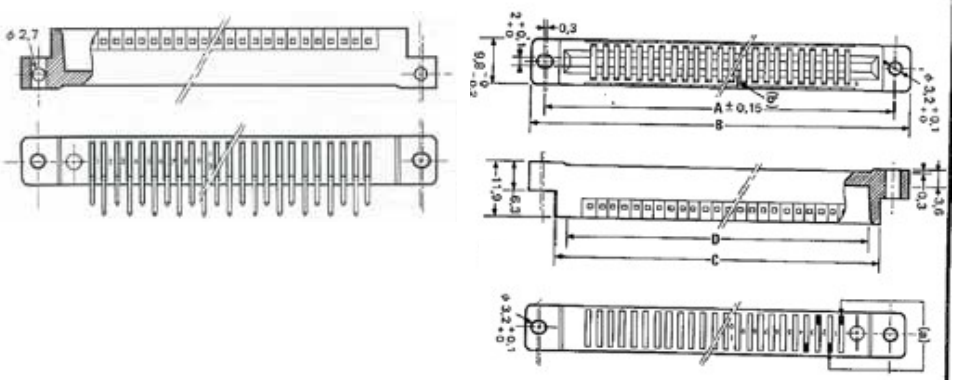
All dimensions are given for information only and are in mm [inch], except as otherwise specified

254 / HE701 >>> TYPICAL ARRANGEMENTS

FEMALE EXTENDER RECEPTACLES TYPE B

Equipped with right angle PC tails (YC01)

External dimensions



**: number of contacts
- **(a)**: position of contact termination
- **(b)**: identification of every 10th contact on mating side
- *Housing identical to receptacles type B, with transverse drilling of end feet for board mounting*

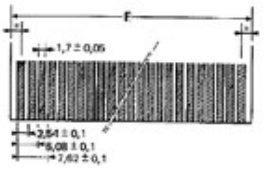
Part number	254 ** BF YC01

Extender board layout

- Female receptacle equipped with right angle PC tails (YC01)
- Contact #1 is given for reference

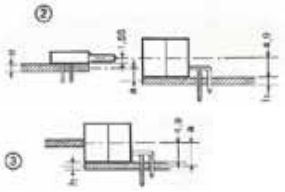
Part number	254 ** BF YC01

Daughterboard layout (for direct connection only)



- Direct connection is made by a female receptacle directly mated with a 1,6 ± 0,2 [.063 ± .008] printed circuit board
- Daughterboard cut outs

Extender board offset



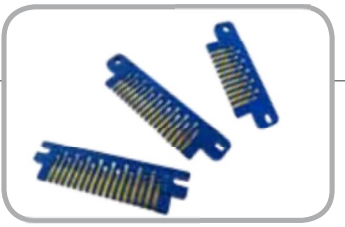
- The axis of the board soldered to the extender is offset with respect to the connecting board by a:
- Indirect insertion **(2)** a = 3,35 + h/2 –e/2
- Direct insertion **(3)** a = 4,9 + h/2

h: thickness of the board soldered to the extender
e: thickness of the board soldered to the plug

Number of contacts	A	B ± 0.3 [± .012]	C ± 0.3 [± .012]	D $^{+0.15}_{-0.1}$	E MIN	F ± 0.1 [± .004]	G	Housing weight (g)
17	62,0 [2.441]	68,4 [2.693]	56,1 [2.209]	51,30 [2.020]	56,60 [2.228]	51,10 [2.012]	62,0 [2.441]	8,7
23	77,2 [3.039]	83,6 [3.291]	71,3 [2.807]	66,55 [2.620]	71,90 [2.831]	66,35 [2.612]	77,2 [3.039]	10,5
25	82,3 [3.241]	88,7 [3.492]	76,4 [3.008]	71,62 [2.820]	77,00 [3.031]	71,42 [2.812]	82,3 [3.241]	11,2
29	92,5 [3.642]	98,9 [3.894]	86,6 [3.409]	81,80 [3.220]	87,10 [3.429]	81,60 [3.213]	92,5 [3.642]	12,3
35	107,7 [4.240]	114,1 [4.492]	101,8 [4.008]	97,00 [3.819]	102,40 [4.031]	96,80 [3.811]	107,7 [4.240]	14,2
41	122,9 [4.839]	129,3 [5.091]	117,0 [4.606]	112,25 [4.419]	117,60 [4.630]	112,05 [4.411]	122,9 [4.839]	16
47	138,2 [5.441]	144,6 [5.693]	132,3 [5.209]	127,50 [5.020]	132,90 [5.232]	127,30 [5.012]	138,2 [5.441]	17,8

All dimensions are given for information only and are in mm [inch], except as otherwise specified

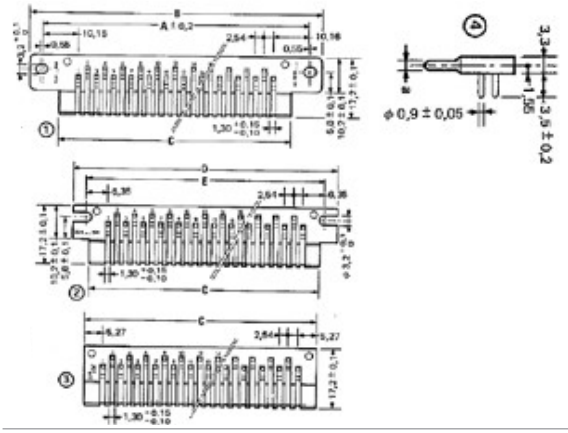
254 / HE701 >>> TYPICAL ARRANGEMENTS



MALE PLUGS TYPE A, B OR C

Equipped with right angle PC tails

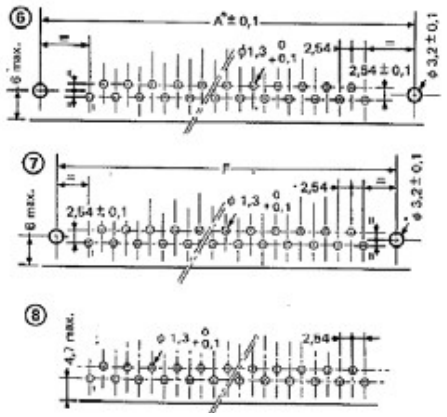
External dimensions



- **: number of contacts
- **(1)**: Plug type A
- **(2)**: Plug type B
- **(3)**: Plug type C
- **(4)**: Plug type A, B or C
  - **(a)**: 1.9 [.075] over the moulding
    1,6 ± 0,15 [.063 ± .006] over the contacts

Part number	254 ** AM HE701 F ** Y 254 ** BM 254 ** CM

Daughter board layout



- **: number of contacts
- **(6)**: Plug type A
  - **(dimension A)**: fixing hole centres as per NF C/UTE 93-421
  - *As connector has oblong mounting holes, the fixing centres can be increased to A + 0,55 [.022] to make the centres of the mounting holes and board holes coincide*
- **(7)**: Plug type B
- **(8)**: Plug type C
- The positional tolerance of the holes is 0,1 [.004] from the theoretical position
- The board is shown from the connector side. Contact #1 is given for reference

Part number	254 ** AM HE701 F ** Y 254 ** BM 254 ** CM

Daughter board offset

- Offset between the axis of the receptacle and the daughterboard
- **b** = 1,55 +e/2

b: offset between axes
e: board thickness

Number of contacts	A	B ± 0.3 [± .012]	C $^{-0}_{-0.3}$	D ± 0.3 [± .012]	E ± 0.2 [± .008]	F ± 0.1 [± .004]	Weight (g)	
							A or B	C
11	45,7 [1.799]	53,1 [2.091]	35,95 [1.415]	45,5 [1.791]	38,1 [1.500]	38,6 [1.520]	4	3
17	61 [2.402]	68,4 [2.693]	51,20 [2.016]	60,7 [2.390]	53,3 [2.098]	53,8 [2.118]	5	4
23	76,2 [3.000]	83,6 [3.291]	55,45 [2.183]	76 [2.992]	68,6 [2.701]	69,1 [2.720]	6	5
25	81,3 [3.201]	88,7 [3.492]	71,50 [2.815]	81,1 [3.193]	73,7 [2.902]	74,2 [2.921]	7	6
29	91,5 [3.602]	98,9 [3.894]	81,70 [3.216]	91,2 [3.591]	83,8 [3.299]	84,3 [3.319]	8	7
35	106,7 [4.201]	114,1 [4.492]	96,90 [3.815]	106,5 [4.193]	99,1 [3.902]	99,6 [3.921]	9	8
41	121,9 [4.799]	129,3 [5.091]	112,15 [4.415]	121,7 [4.791]	114,3 [4.500]	114,8 [4.520]	10	9
47	137,2 [5.402]	144,6 [5.693]	127,40 [5.016]	136,9 [5.390]	129,5 [5.098]	130 [5.118]	12	11

All dimensions are given for information only and are in mm [inch], except as otherwise specified

254 / HE701 >>> POLARIZATION

FOR DIRECT CONNECTION

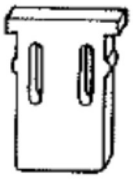
Direct connection is made by a female receptacle directly mated with a 1,6 ± 0,2 [.063 ± .008] printed circuit board

Polarizing key for female receptacle type A

- A contact is replaced by a metal key with a corresponding cut out of the printed board
- Width of key: 0,6 ± 0,03 [.024 ± .001]

Part number	038366

Polarizing key for female receptacle type B



- A contact is replaced by a metal key with a corresponding cut out of the printed board
- Width of key: $0,7\ ^{+0.15}_{-0.1}$ [$.028\ ^{+.002}_{-.008}$]

Part number	042572

FOR INDIRECT CONNECTION

Indirect connection is made by a female receptacle mated with a male plug -two-part connectors)

Polarizing key for male plug / short contact*

- The polarizing keys are fitted to the male connector
  1. Remove a contact and replace it by the polarizing key
  2. Check that the polarizing key is correctly positioned and pinch it to retain it
  3. Remove the corresponding female contact from the receptacle
- Black colour

Part number	037742

Polarizing key for male plug / short contact*

- The polarizing keys are fitted to the male connector
  1. Remove a contact and replace it by the polarizing key
  2. Check that the polarizing key is correctly positioned and pinch it to retain it
  3. Remove the corresponding female contact from the receptacle
- White colour

Part number	041235

*** Never mount a long polarizing key in place of a short contact and vice versa**

All dimensions are given for information only and are in mm [inch], except as otherwise specified

254 / HE701 >>> 508 SERIES

508 SERIES

Connectors are made from the same mouldings and contacts as 254 series.
Only odd-numbered contacts are mounted

508 SERIES – 254 SERIES CORRESPONDING CONNECTOR

Number of contacts series 508 connector		Number of contacts in the correcponding connector of series 254
Odd contact mounted	Even contacts mounted	
6*	5*	11*
9	8	17
13	12	25
15	14	29
18	17	35
21	20	41
24	23	47

**: number of contacts
*: type of contacts (Z or Y)

Part number	508 ** AF* 508 ** BF* 508 ** AM 508 ** BM 508 ** CM

* These connectors cannot be supplied in BF version

254 / HE701 >>> TOOLING

REMOVAL TOOLS

Contact removal tool for receptacle type B

Part number	641

All dimensions are given for information only and are in mm [inch], except as otherwise specified