

SPECIFICATION

M50 Connectors

Materials

Mouldings: High Temperature Plastic UL94V-0
 Contacts: Copper Alloy
 Finish: M50-3XX: Gold on contact area,
 Tin on tails
 M50-4XX: Gold

Electrical

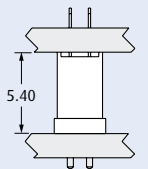
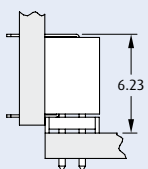
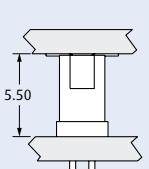
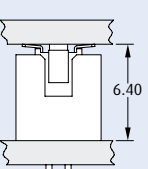
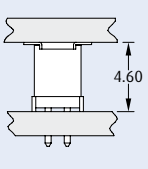
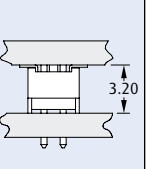
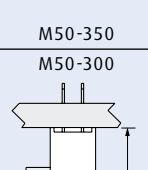
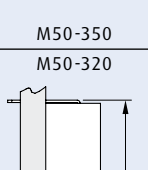
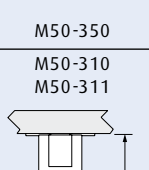
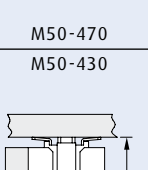
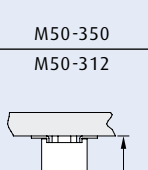
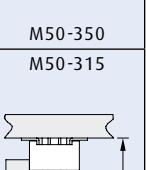
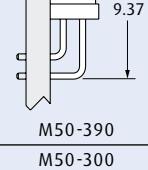
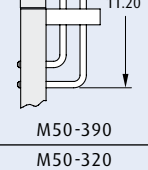
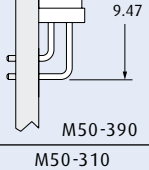
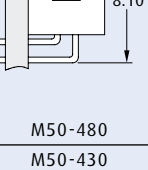
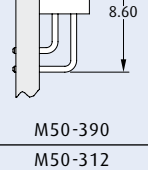
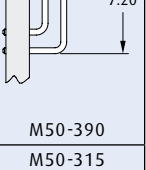
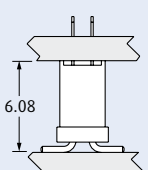
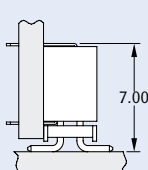
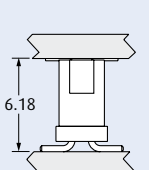
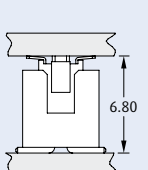
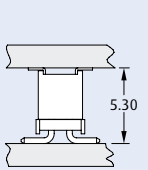
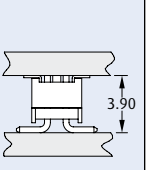

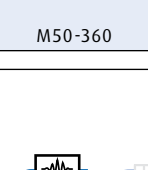
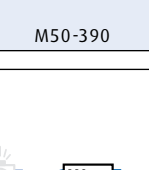
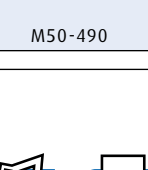
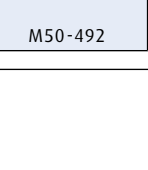
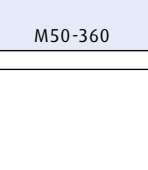
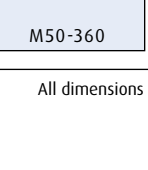







Current rating: 1A per contact
 Voltage rating: 150V AC
 Voltage proof: 500V AC
 Contact resistance: 40 milliohms max
 Insulation resistance: 1000 Megohms min

Environmental

Operating temperature: -40°C to +105°C
 Solderability: 260°C for 3 seconds
 Soldering heat resistance: 260°C for 5 seconds

Mechanical

Durability: M50-315: 25 operations
 M50-300, 311: 50 operations
 M50-4XX: 300 operations
 M50-3XX male: 600 operations
 Insertion force (max): M50-3XX: 2.0N per contact
 M50-4XX: 0.6N per contact
 Withdrawal force (min): M50-3XX: 0.3N per contact
 M50-4XX: 0.1N per contact
 Vibration sensitivity: 10 – 55Hz, 1.5mm,
 6 hours duration
 Shock severity: 490m/s² (50G) for 11 ms

		FEMALE					
MALE	VERTICAL PC TAIL	HORIZONTAL PC TAIL	VERTICAL SMT	VERTICAL SMT Single polarised	VERTICAL SMT Double polarised	VERTICAL SMT Low Profile	
	DIL	DIL	DIL	DIL	DIL	DIL	DIL
VERTICAL PC TAIL	M50-300  5.40	M50-320  6.23	M50-310 M50-311  5.50	M50-430  6.40	Contact technical@harwin.com	M50-312  4.60	M50-315  3.20
	M50-350 	M50-350 	M50-350 	M50-470 		M50-350 	M50-350 
HORIZONTAL PC TAIL	M50-300  9.37	M50-320  11.20	M50-310 M50-311  9.47	M50-430  8.10	Contact technical@harwin.com	M50-312  8.60	M50-315  7.20
	M50-390 	M50-390 	M50-390 	M50-480 		M50-390 	M50-390 
VERTICAL SMT	M50-300  6.08	M50-320  7.00	M50-310 M50-311  6.18	M50-430  6.80	M50-432  6.45	M50-312  5.30	M50-315  3.90
	M50-360 	M50-360 	M50-390 	M50-490 	M50-492 	M50-360 	M50-360 

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All dimensions in mm.

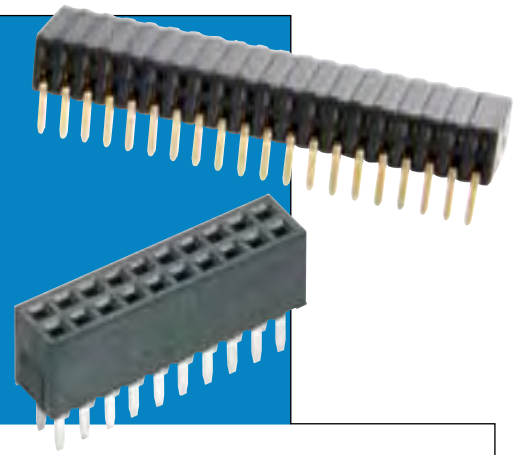
1.27mm (.050") PITCH



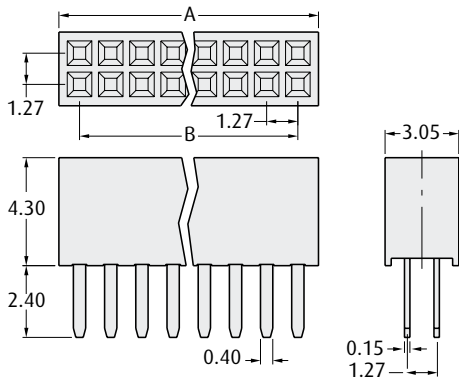
M50 Connectors

Female PC Tail Connectors

- ❖ A range of 1.27mm pitch male and female connectors, for vertical and horizontal board-to-board applications.
- ❖ Suitable for use with male connectors on pages 77 & 78.
- ❖ Horizontal connector has two point solder fixing for connector rigidity.

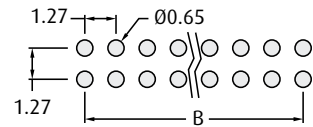


VERTICAL



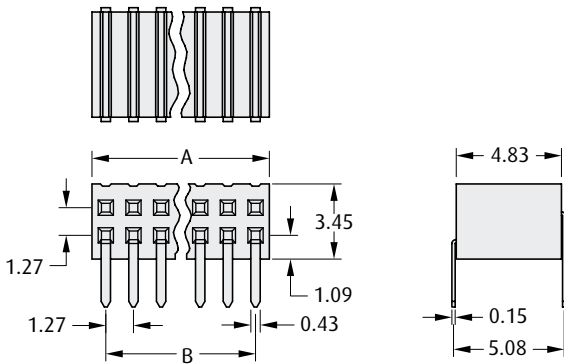
CALCULATION

A	$B + 1.67$
B	$1.27 \times (\text{No. of ways per row} - 1)$



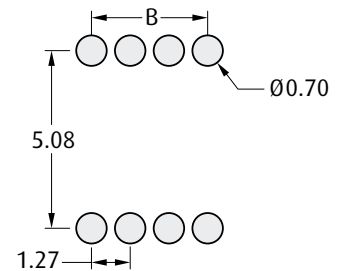
Recommended PC Board Pattern

HORIZONTAL



CALCULATION

A	$B + 1.73$
B	$1.27 \times (\text{No. of ways per row} - 1)$



Recommended PC Board Pattern

HOW TO ORDER

M50 - 3 X 0 XX 45

SERIES CODE

TYPE

0	Vertical
2	Horizontal

NO. OF WAYS PER ROW

05 to 12, 15, 20, 25, 30, 35, 40, 45, 50	M50-300
03 to 40	M50-320

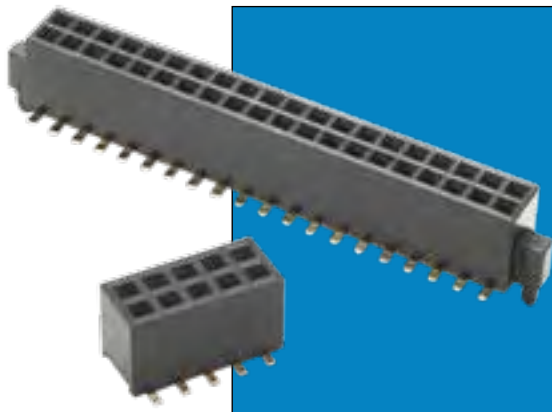
FINISH

45	Gold	
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All dimensions in mm.

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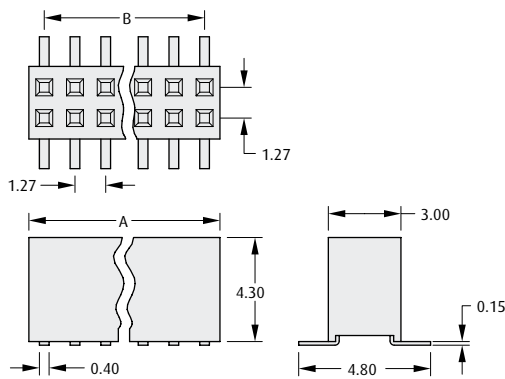
M50 Connectors

Vertical SMT Female Connectors

- ❖ Locating pegs (posts) available to ensure correct positioning on the board.
- ❖ Suitable for use with male connectors on pages 77 & 78.
- ❖ Alternative height connectors available on page 76.

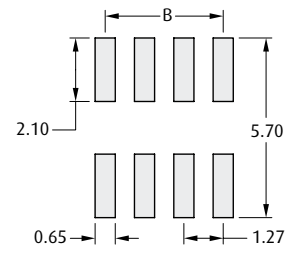
1.27mm (.050") PITCH

WITHOUT POST



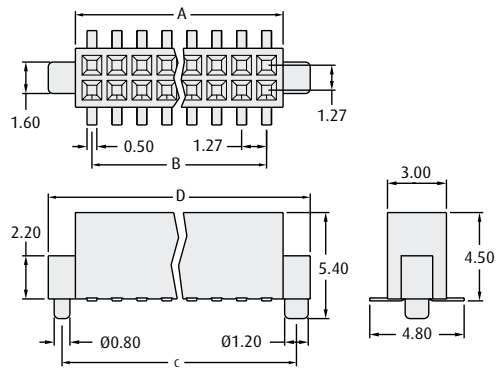
CALCULATION

A	$B + 1.73$
B	$1.27 \times (\text{No. of ways per row} - 1)$



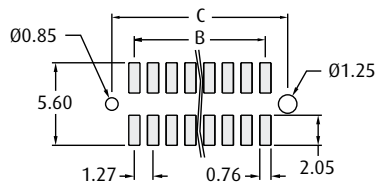
Recommended PC Board Pattern

WITH POST



CALCULATION

A	$B + 1.67$
B	$1.27 \times (\text{No. of ways per row} - 1)$
C	$B + 3.04$
D	$B + 4.43$



Recommended PC Board Pattern

HOW TO ORDER

M50 - 31 X XX XX

SERIES CODE

TYPE	
0	Without Posts
1	With Posts

NO OF WAYS PER ROW

03 to 50	M50-310
05 to 12, 15, 20, 25, 30, 35, 40, 45, 50	M50-311

FINISH

42	Gold + Tin (M50-311)	PG
45	Gold (M50-310)	PG

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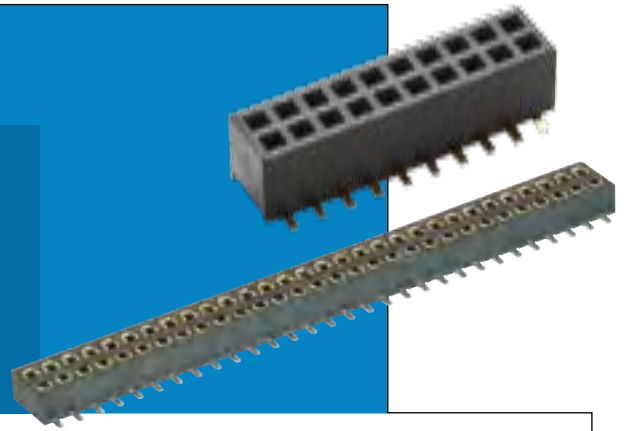
All dimensions in mm.



M50 Connectors

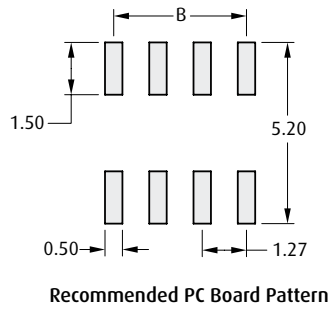
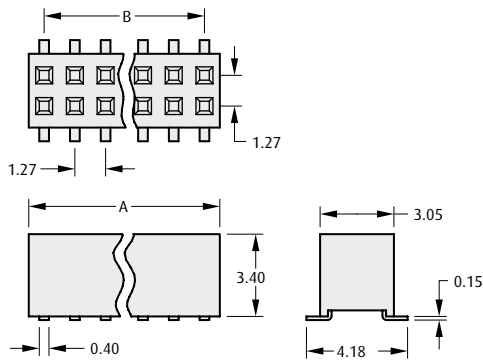
Low Profile Female SMT Connectors

- ❖ Suitable for use with male connectors on pages 77 & 78.
- ❖ Locating pegs (posts) available to ensure correct positioning on the board.
- ❖ Dual entry connector can be used as either top or bottom entry.



1.27mm (.050") PITCH

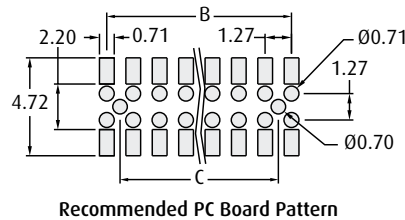
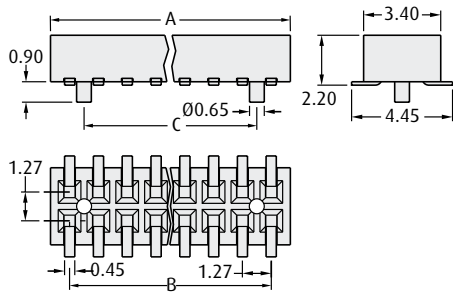
3.6mm HIGH WITHOUT POSTS



CALCULATION

A	$B + 1.73$
B	$1.27 \times (\text{No. of ways per row} - 1)$

2.2mm HIGH WITH POSTS, DUAL ENTRY



CALCULATION

A	$B + 1.67$
B	$1.27 \times (\text{No. of ways per row} - 1)$
C	$B - 1.27$

HOW TO ORDER

M50 - 31 X XX XX

SERIES CODE

TYPE

2	3.6mm High without posts
5	2.2mm high with posts, dual entry

FINISH

42	Gold + Tin (M50-315)	
45	Gold (M50-312)	

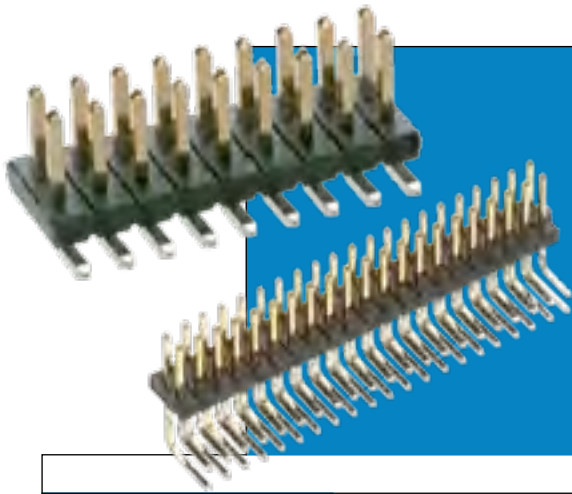
NO OF WAYS PER ROW

03 to 50	M50-312
05 to 12, 15, 20, 25, 30, 35, 40, 45, 50	M50-315

All dimensions in mm.

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M50 Connectors

Vertical & Horizontal Male Connectors

- ❖ Suitable for use with female connectors on pages 74 to 76.
- ❖ Also available with variable dimensions, see page 78.
- ❖ Additional number of ways available on request.

1.27mm (.050") PITCH

VERTICAL PC TAIL	HORIZONTAL PC TAIL						
<p>Recommended PC Board Pattern</p>	<p>Recommended PC Board Pattern</p>						
<table border="1"> <thead> <tr> <th colspan="2" style="background-color: #0070C0; color: white;">CALCULATION</th> </tr> </thead> <tbody> <tr> <td style="background-color: #0070C0; color: white;">A</td> <td>1.27 x No. of ways per row</td> </tr> <tr> <td style="background-color: #0070C0; color: white;">B</td> <td>1.27 x (No. of ways per row - 1)</td> </tr> </tbody> </table>		CALCULATION		A	1.27 x No. of ways per row	B	1.27 x (No. of ways per row - 1)
CALCULATION							
A	1.27 x No. of ways per row						
B	1.27 x (No. of ways per row - 1)						

VERTICAL SMT
<p>Recommended PC Board Pattern</p>

HOW TO ORDER

SERIES CODE

M50 - 3 X 0 XX 42

FINISH

42 Gold + Tin

TYPE	
5	Vertical PC Tail
6	Vertical SMT
9	Horizontal PC Tail

NO OF WAYS PER ROW

05 to 12, 15, 20, 25, 30, 35, 40, 45, 50

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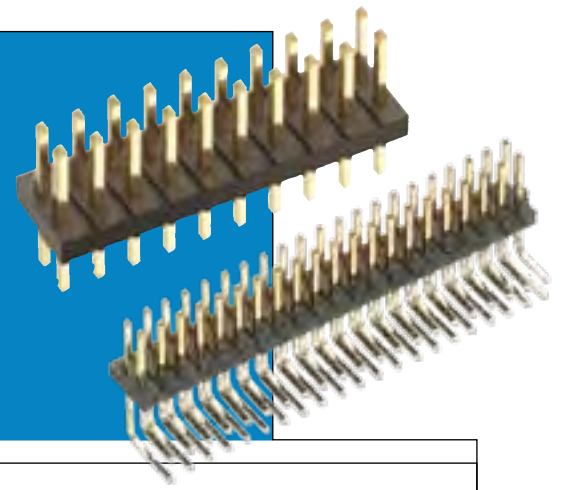
All dimensions in mm.



M50 Connectors

Pin Header Variants

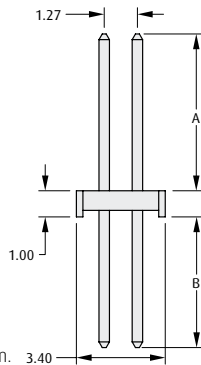
- Harwin offers the ultimate flexibility 'Standard Variant Pin Headers'. Use the order code below to create application-specific connectors.
- Contact technical@harwin.com for further information.
- Suitable for use with female connectors on pages 74 to 76.



TERMINATION STYLES

Vertical PC Tail

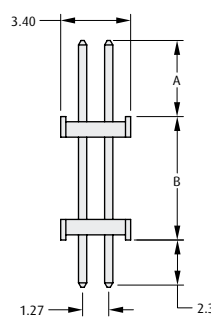
W SERIES



Pin section is 0.40mm sq,
PCB mounting hole is $\varnothing 0.7$ mm.

Extended PC Tail

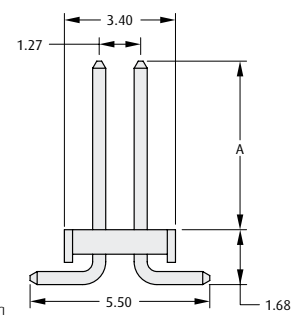
F SERIES



Pin section is 0.40mm sq,
PCB mounting hole is $\varnothing 0.7$ mm.

Vertical SMT

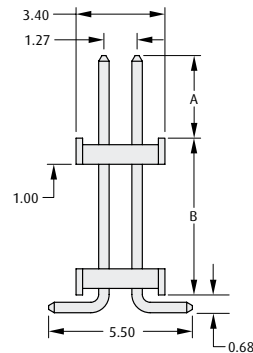
S SERIES



Pin section is 0.40mm sq.
For PCB pad layout see page 77.
B dimension is '0'

Extended SMT

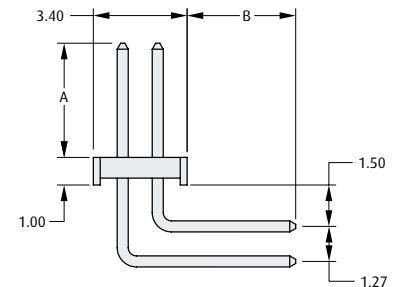
T SERIES



Pin section is 0.40mm sq.
For PCB pad layout see page 77.

Horizontal PC Tail

J SERIES



Pin section is 0.40mm sq,
PCB mounting hole is $\varnothing 0.7$ mm.

HOW TO ORDER

M50 - XXX XXX X XX 45

SERIES CODE

DIMENSION A

Eg. 7.8mm = 078

DIMENSION B

Eg. 5.0mm = 050

FINISH

45

Gold



NO. OF WAYS PER ROW

02 to 40

DOUBLE ROW	
W	Vertical PC Tail
F	Extended PC Tail
S	Vertical SMT
T	Extended SMT
J	Horizontal PC Tail

All dimensions in mm.

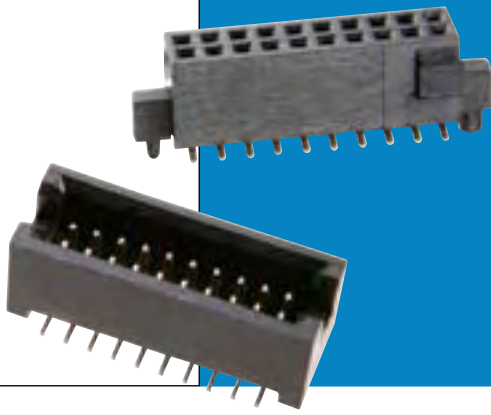
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1.27mm (.050") PITCH



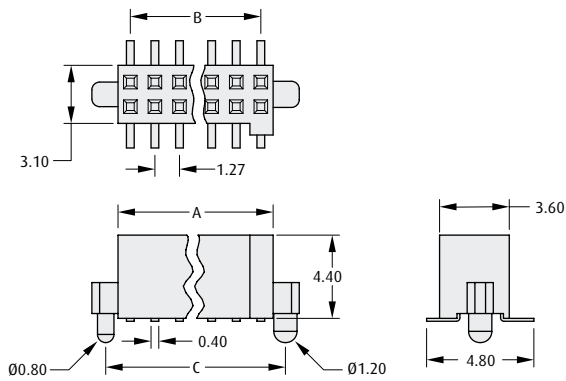
M50 Connectors

Vertical SMT Polarised Connectors



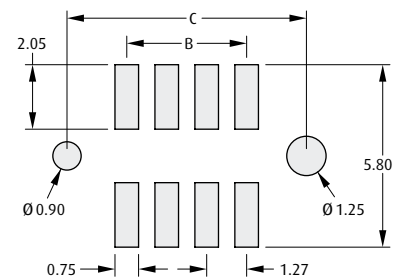
- ❖ Mating connectors in Surface Mount format.
- ❖ Female connector is also suitable for use with male connectors on page 80.
- ❖ Single Polarisation to prevent mis-mating.
- ❖ Female connector has locating pegs to ensure correct positioning on the board.
- ❖ Shrouded for additional pin protection.

FEMALE



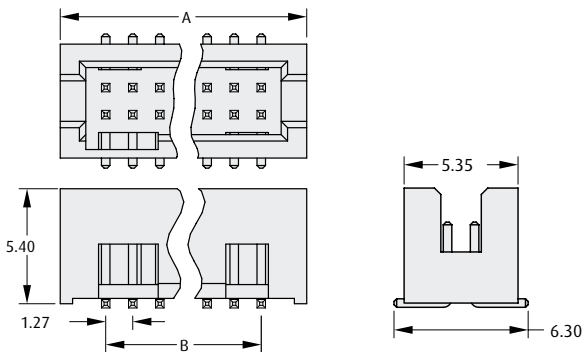
CALCULATION

A	$B + 1.73$
B	$1.27 \times (\text{No. of ways per row} - 1)$
C	$B + 2.54$



Recommended PC Board Pattern

MALE

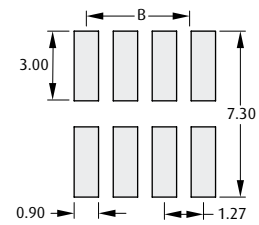


NO OF WAYS PER ROW

M50-430	03 to 50
M50-490	05 to 40

CALCULATION

A	$B + 4.27$
B	$1.27 \times (\text{No. of ways per row} - 1)$



Recommended PC Board Pattern

HOW TO ORDER

M50 - 4 X 0 XX 45

SERIES CODE

TYPE

3	Female
9	Male

FINISH

45	Gold	
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NO OF WAYS PER ROW

03 to 50	M50-430
05 to 40	M50-490

www.harwin.com

All dimensions in mm.



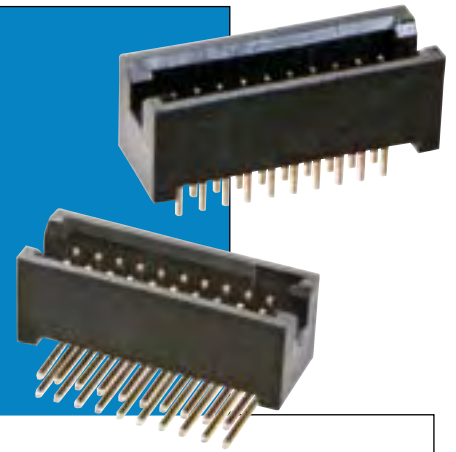
HARWIN

1.27mm (.050") PITCH

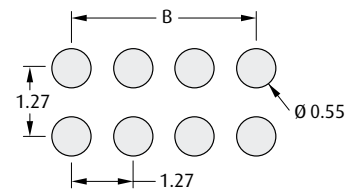
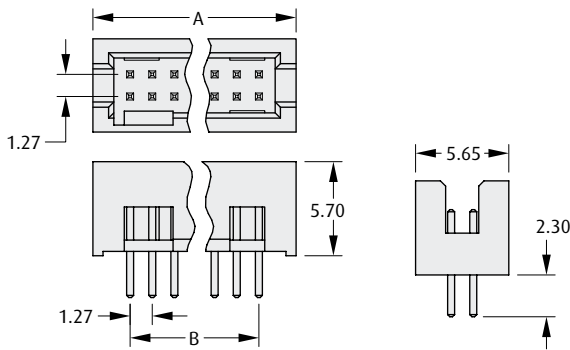
M50 Connectors

Polarised Male Connectors

- ❖ PC Tail male connectors suitable for use with female connector M50-430 (page 79).
- ❖ Single polarisation to prevent mis-mating.
- ❖ Shrouded for additional pin protection.



VERTICAL

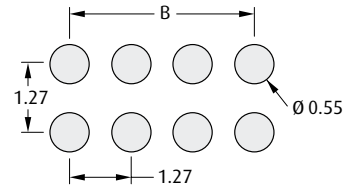
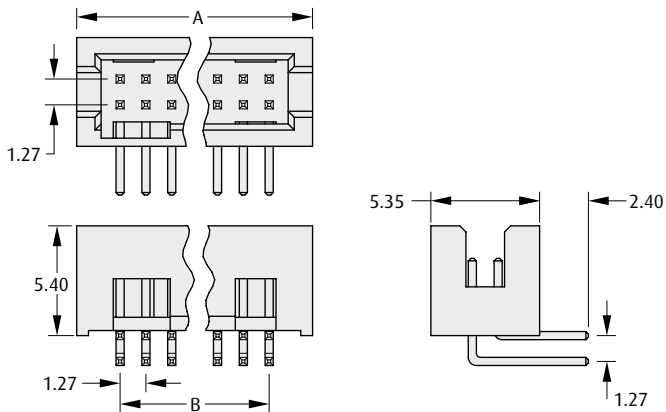


Recommended PC Board Pattern

CALCULATION

A	$B + 4.27$
B	$1.27 \times (\text{No. of ways per row} - 1)$

HORIZONTAL



Recommended PC Board Pattern

HOW TO ORDER

M50 - 4 X 0 XX 45

SERIES CODE

TYPE

7	Vertical
8	Horizontal

FINISH

45 Gold

NO OF WAYS PER ROW

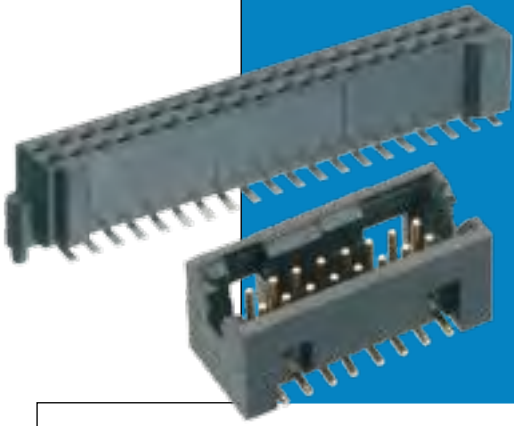
05 to 40

All dimensions in mm.

www.harwin.com

1.27mm (.050") PITCH





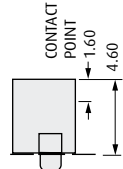
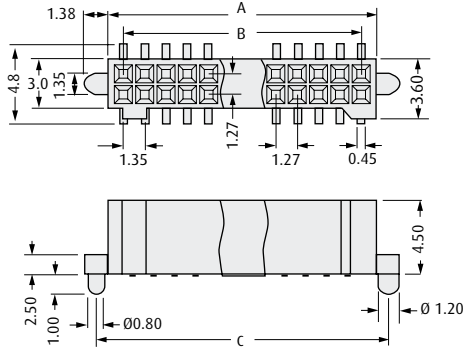
M50 Connectors

Vertical SMT Polarised Connectors

- ❖ Mating connectors in Surface Mount format.
- ❖ Dual Polarisation to prevent mis-mating.
- ❖ Locating pegs to ensure correct positioning on the board.
- ❖ Shrouded for additional pin protection.

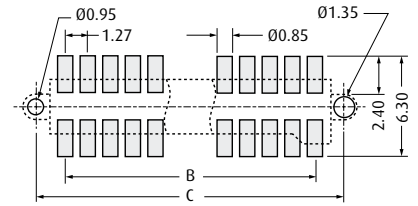
1.27mm (.050") PITCH

FEMALE



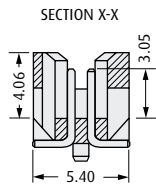
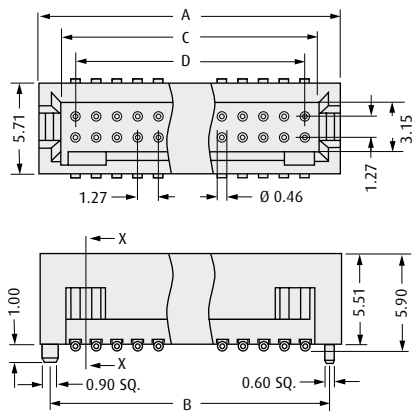
CALCULATION

A	$B + 1.67$
B	$1.27 \times (\text{No. of ways per row} - 1)$
C	$B + 3.05$



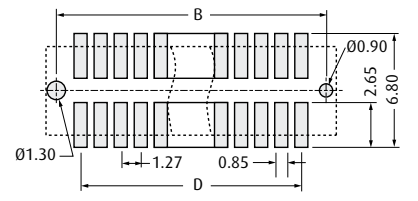
Recommended PC Board Pattern

MALE



CALCULATION

A	$D + 4.37$
B	$D + 2.95$
C	$D + 2.61$
D	$1.27 \times (\text{No. of ways per row} - 1)$



Recommended PC Board Pattern

HOW TO ORDER

M50 - 4 X 2 XX 05

SERIES CODE

TYPE	
3	Female
9	Male

FINISH

05	Gold	
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NO OF WAYS PER ROW
08, 10, 15, 20, 25, 30, 35, 40, 50

www.harwin.com

All dimensions in mm.

