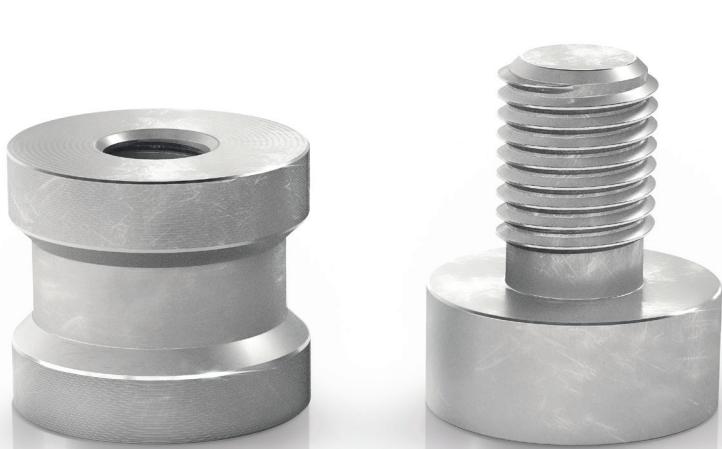




PowerElements



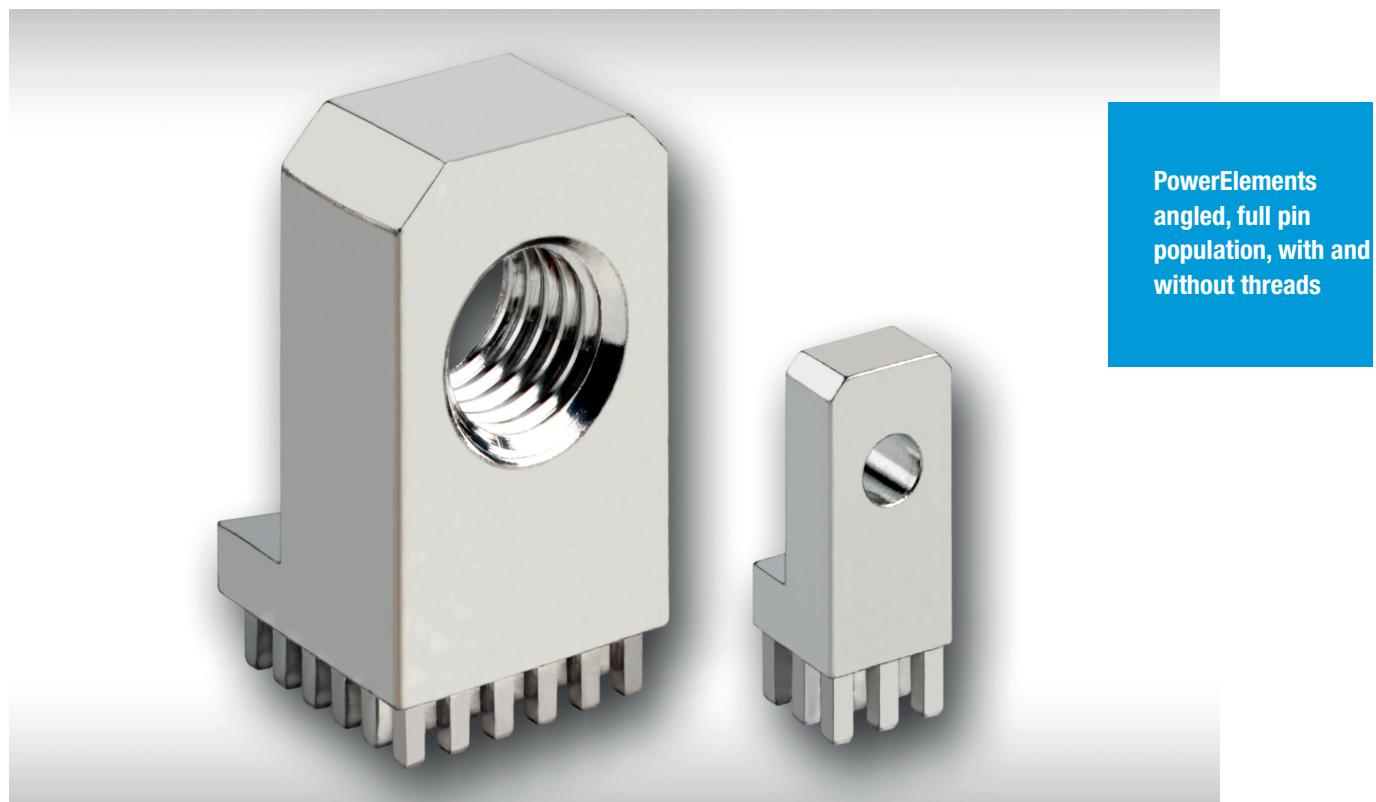
Original size PowerElement male thread M5

ED. 05 | 07.2019
Catalog E 074634

PowerElements

CHARACTERISTICS —

GENERAL



PowerElements
angled, full pin
population, with and
without threads

As stated in its name, PowerElements can be used anywhere where you are dealing with "power" sourcing capabilities, namely high current on the PCB.

Be it "wire-to-board" sourcing and distribution in PCB based high current applications, or assembly, component connection and fixation such as screw locking (e.g. midi or mega fuses), relays with screw connection, conductor rail etc. on the PCBs.

For this we also provide additional insulation bodies e.g. twist protection, to avoid shorts and contact on the cable side of the connections such as cable lugs. Also mechanical challenges, such as the PCB connection inside a housing, in the interior or even with a second PCB can be realised using PowerElements.

The two piece PowerElement offers a special feature

– it is press fitted from both sides of the PCB. The bearing surface on either side provide protection to the PCB against mechanical stress during assembly in the installation space.

Here, there are no limits to the variety of PowerElements connection options.

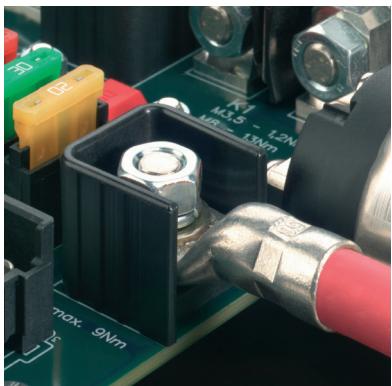
Whether it's the headless screw, the thread nut as well as through holes or blind holes, whether perpendicular or angled, even the installation height, connection surface and thread or drill dimension can be selected and combined without restriction.

PowerElements in press-fit technology and SMD solder technology are available for processing. SMD PowerElements are delivered blister packed for fully automated assembly.

PowerElements

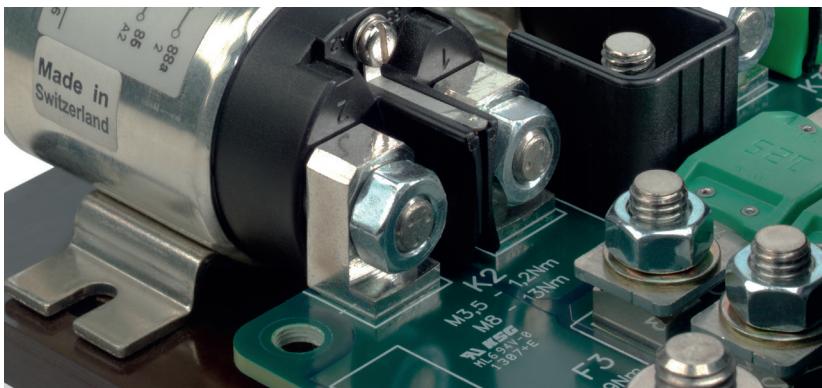
CHARACTERISTICS —

APPLICATION EXAMPLES



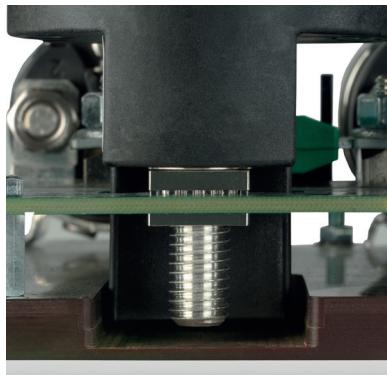
Attaching a cable to a M8 male thread PowerElement with twist protection (top left)

Attaching a megafuse on two M8 male thread PowerElements (top right)



Attaching a high-current relay onto an angled PowerElement (centre)

Attaching a battery disconnecting switch on two piece PowerElements (bottom centre)



Attaching a midifuse onto two M5 male thread PowerElements (below right)



PowerElements

CHARACTERISTICS —

FITTING INSTRUCTIONS

The BLUEcontact PowerElements are REACH conform and with a lead content under 4 percentage by weight, they are also RoHS conform.

The PowerElements can be press fitted from a PCB thickness of 1.6 mm upwards. Immersion tin and HAL lead free are the most preferable PCB surfaces here. PowerElements for SMD solder technology should not be stored for longer than six months, as the sol-

derability can otherwise not be guaranteed.

- Retention force according to IEC 60352-5
- Press fit force: max. 250 N per pin
- Temperature range: -40°C to + 135°C

TECHNICAL DATA

Material base body	CuZn39Pb3
Surface	tin plated
Retention force	according to IEC 352-5
Press fit force	Max. 250 N per pin Min. 40 N per pin
Press out force	Min. 30 N per pin
PCB thickness	Min. 1.6 mm

PowerElements

MASSIVE PRESSFIT ZONE / CHARACTERISTICS —

GENERAL TECHNICAL DATA

Current carrying capability per PowerElement

Approx. 10 A per pin

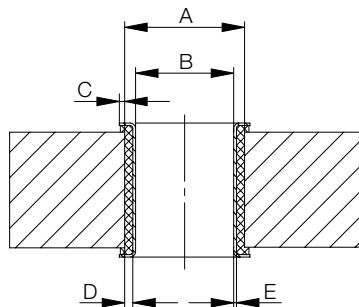
Tightening torque M3/M4/M5/M6/M8/M10/M12

0.5 Nm / 1.2 Nm / 2.2 Nm / 3.9 Nm / 9.0 Nm /
17.0 Nm / 35.0 Nm

Operating temperature

-40°C to +135°C

DRILL HOLE SPECIFICATIONS



	Surface	A	B	C	D	E
Massive pressfit zone	Immersion tin	ø 1.6 -0.03	ø 1.475 ±0.05	0.1 min.	Cu 25 µm min. Cu 60 µm max.	Sn 15 µm max.
	HAL lead free	ø 1.6 -0.03	ø 1.45 ±0.05	0.1 min.	Cu 25 µm min. Cu 60 µm max.	Sn 15 µm max.

CAUTION:

It is essential that both the drill diameter and final diameter are complied with in order to guarantee the specified characteristics.

PowerElements

FOR SMD SOLDER TECHNOLOGY

GENERAL TECHNICAL DATA

Current carrying capability per PowerElement	Up to 200 A*
Tightening torque M3/M4/M5/M6/M8/M10	0.5 Nm / 1.2 Nm / 2.2 Nm / 3.9 Nm / 9.0 Nm / 17.0 Nm
Operating temperature	-40°C to +155°C
Solder paste thickness	150 µm

* current carrying capability is subject to PCB thickness, cable cross section, the soldering tin used as well as ambient temperature

PRODUCT GROUPS

The PowerElements for SMD-Solder technology are usually categorised into three main groups

- SMD pin (with or without peg)
- SMD socket (with or without peg)
- SMD socket with through-hole thread

LAYOUT SPECIFICATIONS

The SMD PowerElements have a round base body that is rotationally symmetrical. The diameter of the SMD Pad should be at least 0.5 mm greater than the diameter of the base body of the selected PowerElement. In the case of elements with a spigot, an additional non-plated through hole with a drilled diameter of 1.2 mm must be provided in the center. In the case of elements with a through hole, additional non-plated through holes must also be provided, depending on the diameter of the base body:

- PowerElement with diameter 7 mm: NPT hole with 5.2 mm
- PowerElement with diameter 9 mm: NPT hole with 6.2 mm
- PowerElement with diameter 13 mm: NPT hole with 9.2 mm
- PowerElement with diameter 16 mm: NPT hole with 12.2 mm

If you have detailed questions about the layout or ideal soldering paste, please contact the ERNI team directly.

PowerElements

OVERVIEW —

PRODUCT MATRIX PRESSFIT TECHNOLOGY

PowerElements

OVERVIEW —

PRODUCT MATRIX PRESSFIT TECHNOLOGY

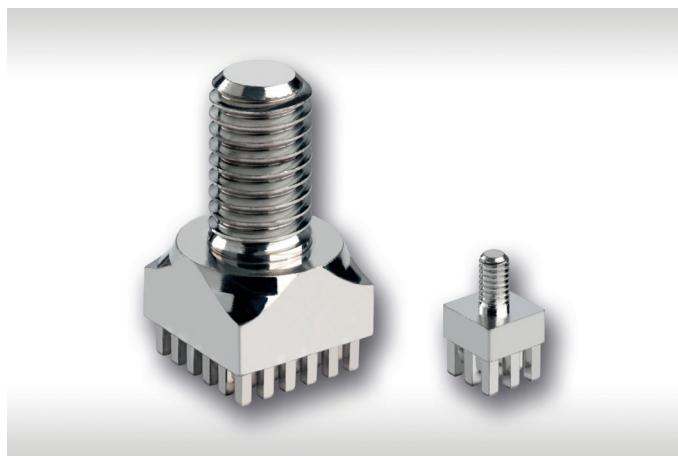
	Number of pins	8	10	12	16	20
	Two-part, base-part, two row pin population	M3, M4 ø3.2, ø4.2	M4, M5, M6 ø4.2, ø5.2, ø6.2	M8 ø8.2		
	Two-part, base-part, circular pin population			M3, M4, M5 ø4.2, ø5.2	M4, M5, M6 ø4.2, ø5.2, ø6.2	M8, M10 ø6.2, ø8.2

PRODUCT MATRIX SMD-SOLDER TECHNOLOGY

	Diameter	7	9	13	16
	SMD pin	M3	M4, M5	M6, M8	M10
	SMD pin with spigot	M3	M4, M5	M6, M8	M10
	SMD socket	M3	M4, M5	M6, M8	M10
	SMD socket with spigot	M3	M4, M5	M6, M8	M10
	SMD socket with through-hole thread	M3	M4, M5	M6, M8	M10

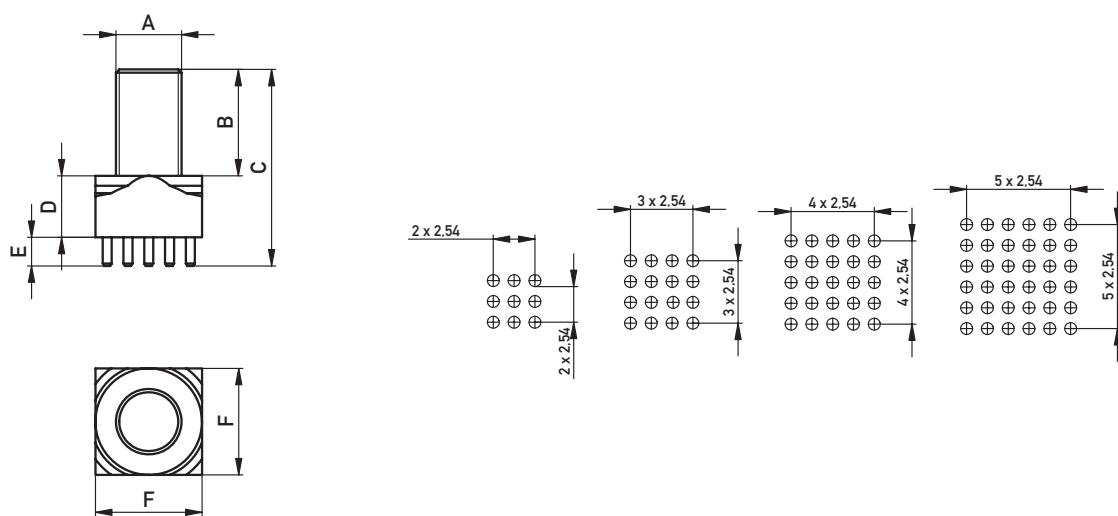
MASSIVE PRESSFIT ZONE, MALE THREAD AND FULL PIN POPULATION

PRODUCT SPECIFICATION



- PCB connection for fixing cable lugs
- Fixing midi or mega fuses on the PCB
- UNC thread or customer specific modifications on demand

DIMENSIONAL DRAWINGS



MASSIVE PRESSFIT ZONE, MALE THREAD AND FULL PIN POPULATION

ORDERING INFORMATION

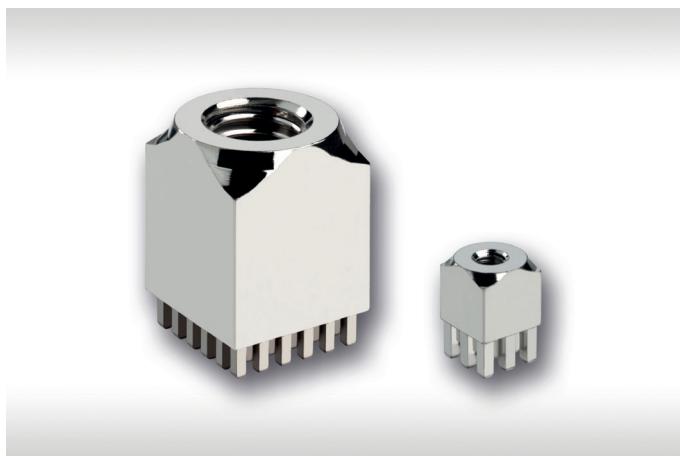
A	B	C	D	E	F	No. of Pins	Weight	Part Number
M3	5	11	3	3.5	7	9	2.1	225675
M4	6	13	3.5	3.5	9	16	3.6	225676
M4	6	12.5	3	3.5	7	9	3.6	225804
M5	8	15.5	4	3.5	7	9	4.3	225777
M5	8	16	4.5	3.5	9	16	4.9	225677
M6	10	19	5.5	3.5	13	25	10.5	225678
M8	13	24	7.5	3.5	13	25	15.9	225679
M10	16	27.5	8	3.5	16	36	27.2	225680
M12	30	41.5	8	3.5	18	36	46.6	225898

Dimension B - F in mm, Weight in g

PowerElements

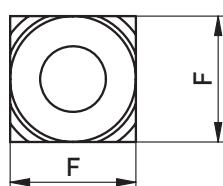
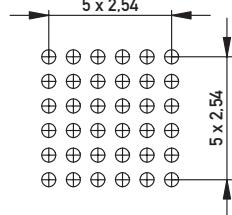
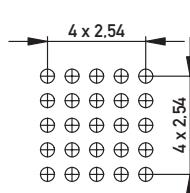
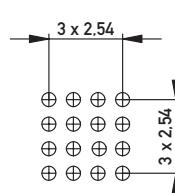
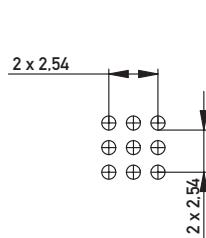
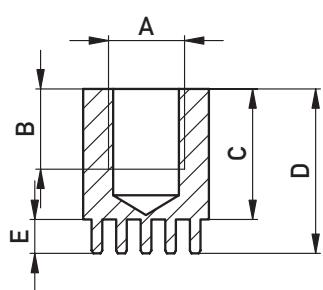
FEMALE THREAD AND FULL PIN POPULATION —

PRODUCT SPECIFICATION



- PCB connection for fixing cable lugs
- Fixing midi or mega fuses on the PCB
- UNC thread or customer specific modifications on demand

DIMENSIONAL DRAWINGS



PowerElements

FEMALE THREAD AND FULL PIN POPULATION —

ORDERING INFORMATION

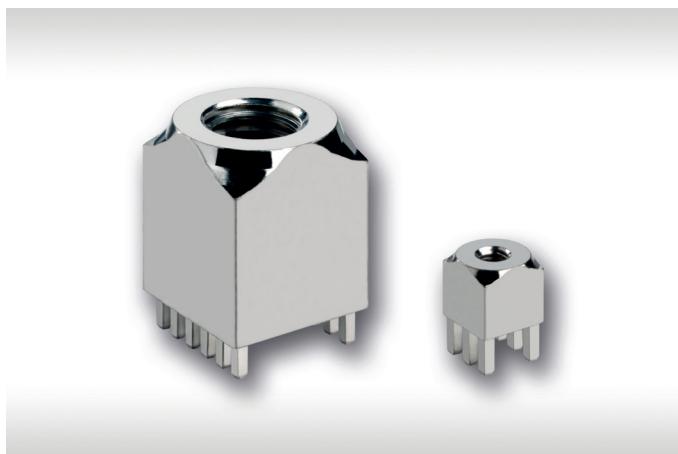
A	B	C	D	E	F	No. of Pins	Weight	Part Number
M3	3.5	6	9.5	3.5	7	9	2.5	225681
M4	4	7	10.5	3.5	9	16	4.6	225682
M5	4	7	10.5	3.5	9	16	4.4	225683
M6	6.5	10.5	14	3.5	10	16	7	225684
M8	8	13.5	17	3.5	13	25	14.2	225685
M10	11	17.5	21	3.5	16	36	26.2	225686

Dimension B - F in mm, Weight in g

PowerElements

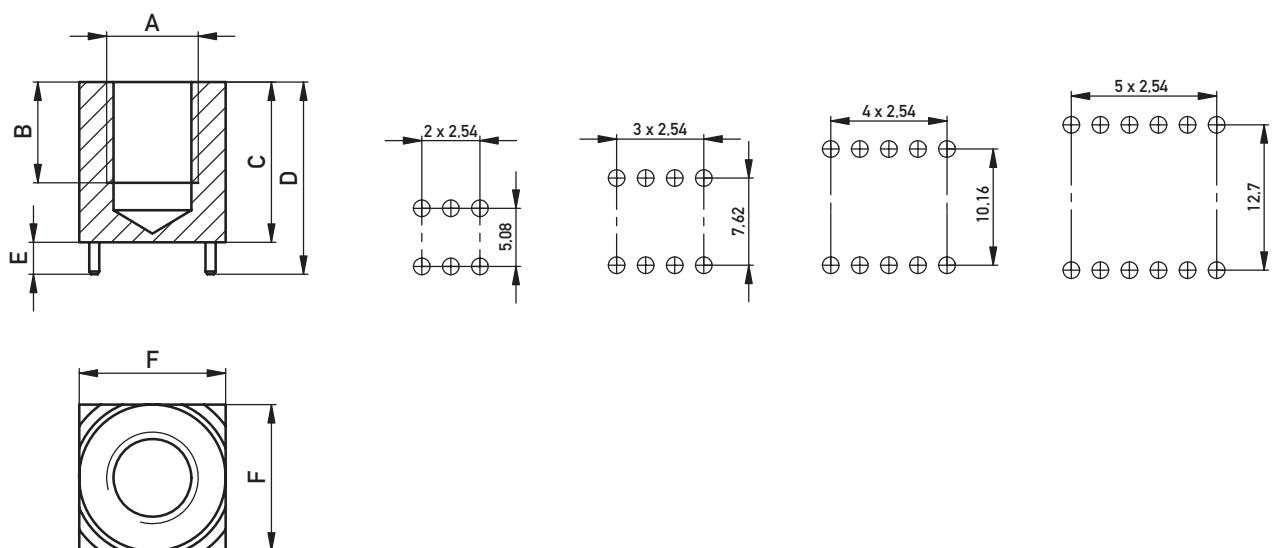
FEMALE THREAD AND TWO ROWS PIN POPULATION —

PRODUCT SPECIFICATION



- PCB connection for fixing cable lugs
- Available with continuous thread
- Fixing midi or mega fuses on the PCB
- When smaller pressfit forces are required
- When the layout does not permit full pin population
- UNC thread or customer specific modifications on demand

DIMENSIONAL DRAWINGS



PowerElements

FEMALE THREAD AND TWO ROWS PIN POPULATION —

ORDERING INFORMATION

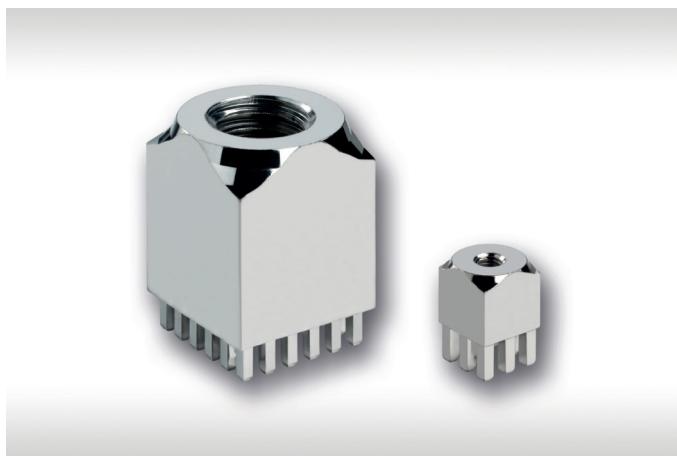
A	B	C	D	E	F	No. of Pins	Weight	Part Number
M3	5	6	9.5	3.5	7	6	2.3	225693
M4	6	7	10.5	3.5	9	8	4.2	225694
M5	6	7	10.5	3.5	9	8	3.8	225695
M6	9	13.5	17	3.5	10	8	8.2	225696
M8	10	13.5	17	3.5	13	10	12.2	225697
M10	11	17.5	21	3.5	16	12	25.3	225698

Dimension B - F in mm, Weight in g

PowerElements

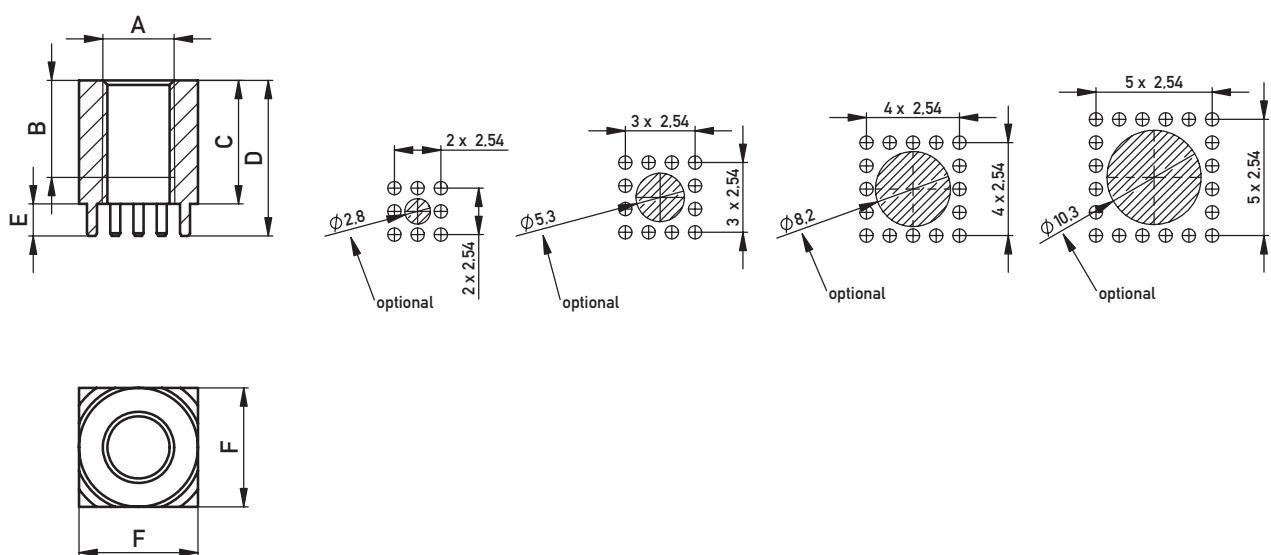
FEMALE THREAD AND CIRCULAR PIN POPULATION —

PRODUCT SPECIFICATION



- PCB connection for fixing cable lugs
- Available with continuous thread
- Fixing midi or mega fuses on the PCB
- When smaller pressfit forces are required
- When the layout does not permit full pin population
- UNC thread or customer specific modifications on demand

DIMENSIONAL DRAWINGS



PowerElements

FEMALE THREAD AND CIRCULAR PIN POPULATION —

ORDERING INFORMATION

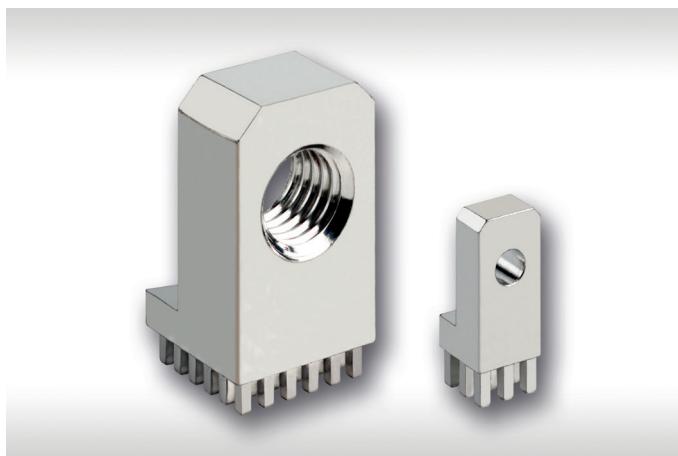
A	B	C	D	E	F	No. of Pins	Weight	Part Number
M2.5	5	6	9.5	3.5	7	8	2.5	225687
M4	5.2	6	9.5	3.5	9	12	3.8	225688
M5	—	6	9.5	3.5	9	12	3.6	225689
M6	—	13.5	17	3.5	13	16	14.6	225690
M8	—	13.5	17	3.5	13	16	12.4	225691
M10	—	17.5	21	3.5	16	20	22.6	225692

Dimension B - F in mm, Weight in g

PowerElements

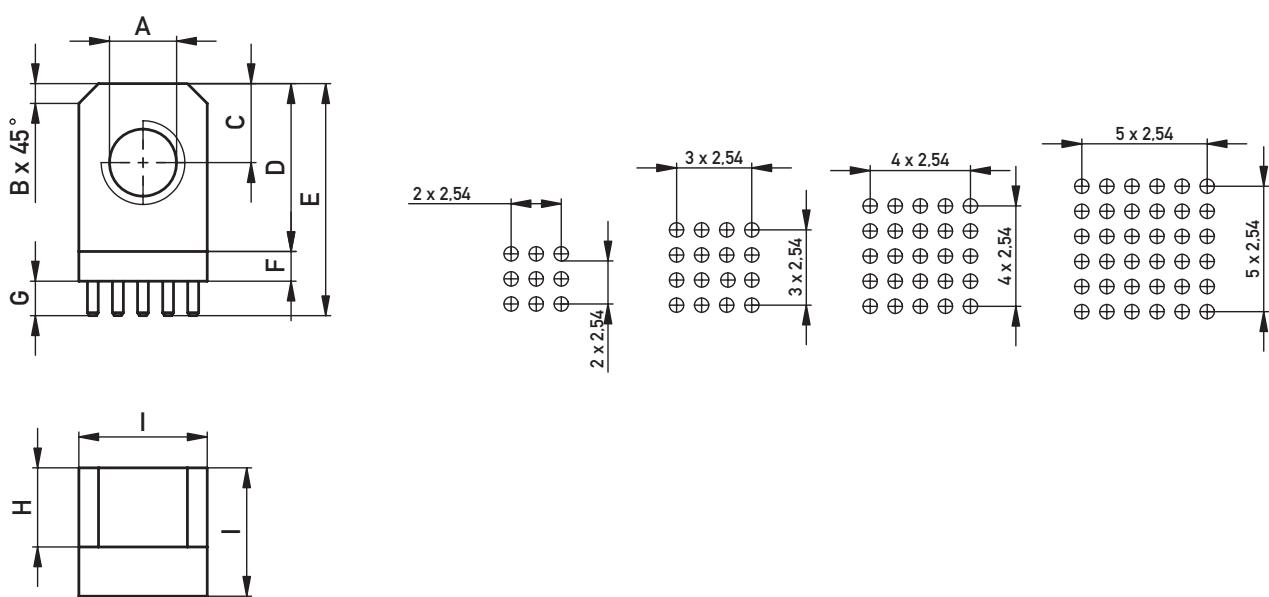
ANGLED, FULL PIN POPULATION —

PRODUCT SPECIFICATION



- PCB connection for fixing cable lugs
- Connection 90°
- Available with thread or through hole
- UNC thread or customer specific modifications on demand
- As a fixing element for assembly onto housing etc.
- E.g. for the connection of high current relays

DIMENSIONAL DRAWINGS



PowerElements

ANGLED, FULL PIN POPULATION —

ORDERING INFORMATION

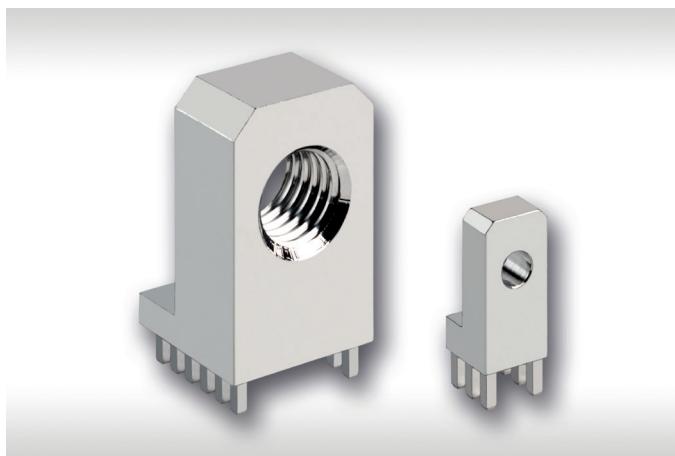
A	B	C	D	E	F	G	H	I	No. of Pins	Weight	Part Num- ber
M3	1	5	11	17.5	3	3.5	4	7	9	4.2	225699
M4	1.5	5	11	17.5	3	3.5	5	9	16	6.6	225700
M5	1.5	5	11	17.5	3	3.5	5	9	16	6.4	225701
M6	2	8	17	23.5	3	3.5	8	13	25	19	225702
M8	2	8	17	23.5	3	3.5	8	13	25	17.7	225703
M10	2.5	10	22	28.5	3	3.5	10	16	36	22.6	225704
Ø 3.2	1	5	11	17.5	3	3.5	4	7	9	4	225705
Ø 4.2	1.5	5	11	17.5	3	3.5	5	9	16	6.3	225706
Ø 5.2	1.5	5	11	17.5	3	3.5	5	9	16	6	225707
Ø 6.2	2	8	17	23.5	3	3.5	8	13	25	18.3	225708
Ø 8.2	2	8	17	23.5	3	3.5	8	13	25	16.7	225709
Ø 10.2	2.5	10	22	28.5	3	3.5	10	16	36	30.9	225710
Ø 10.2	2.5	10	22	28.5	3	3.5	5	16	36	30.9	225784

Dimension B - I in mm, Weight in g

PowerElements

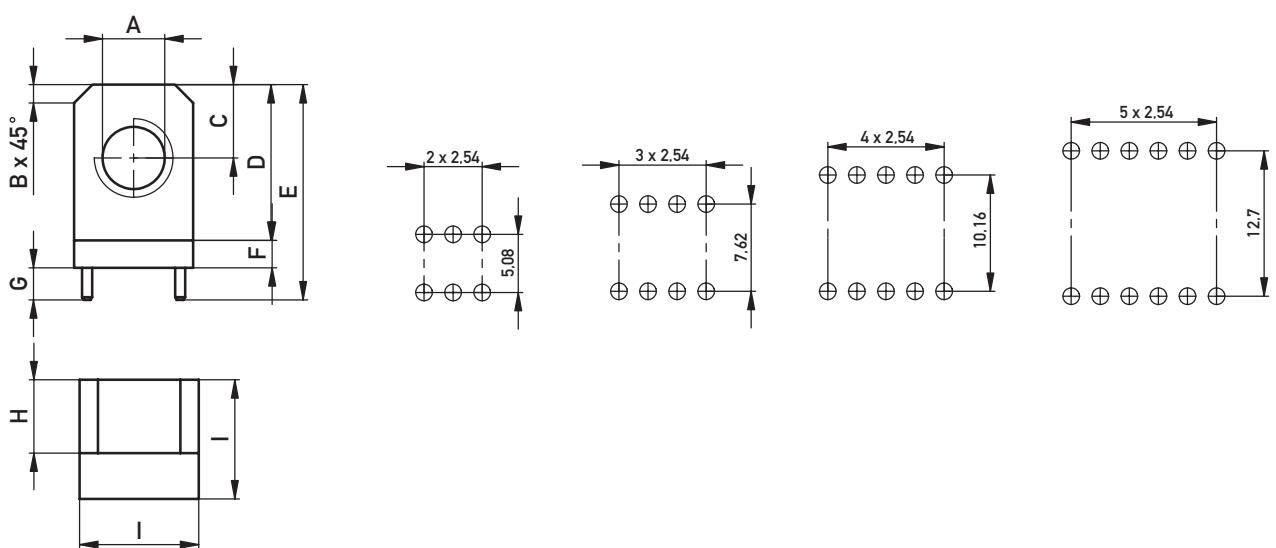
ANGLED, TWO ROW PIN POPULATION —

PRODUCT SPECIFICATION



- PCB connection for fixing cable lugs
- Connection 90°
- Available with thread or through hole
- UNC thread or customer specific modifications on demand
- When smaller pressfit forces are required
- When the layout does not permit full pin population
- E.g. for the connection of high current relays

DIMENSIONAL DRAWINGS



PowerElements

ANGLED, TWO ROW PIN POPULATION —

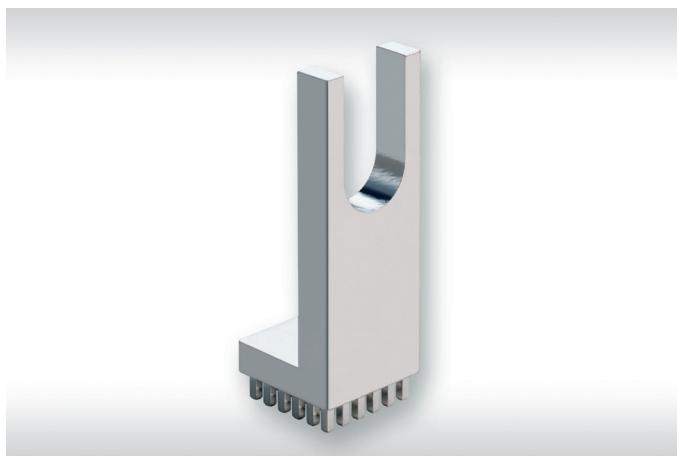
ORDERING INFORMATION

A	B	C	D	E	F	G	H	I	No. of Pins	Weight	Part Number
M3	1	5	11	17.5	3	3.5	4	7	6	4	225711
M4	1.5	5	11	17.5	3	3.5	5	9	8	6.3	225712
M5	1.5	5	11	17.5	3	3.5	5	9	8	6.1	225713
M6	2	8	17	23.5	3	3.5	8	13	10	18.4	225714
M8	2	8	17	23.5	3	3.5	8	13	10	17.2	225715
M10	2.5	10	22	28.5	3	3.5	10	16	12	31.5	225716
Ø 3.2	1	5	11	17.5	3	3.5	4	7	6	3.9	225717
Ø 4.2	1.5	5	11	17.5	3	3.5	5	9	8	6	225718
Ø 5.2	1.5	5	11	17.5	3	3.5	5	9	8	5.7	225719
Ø 6.2	2	8	17	23.5	3	3.5	8	13	10	17.7	225720
Ø 8.2	2	8	17	23.5	3	3.5	8	13	10	16.2	225721
Ø 10.2	2.5	10	22	28.5	3	3.5	10	16	12	30	225722

Dimension B - I in mm, Weight in g

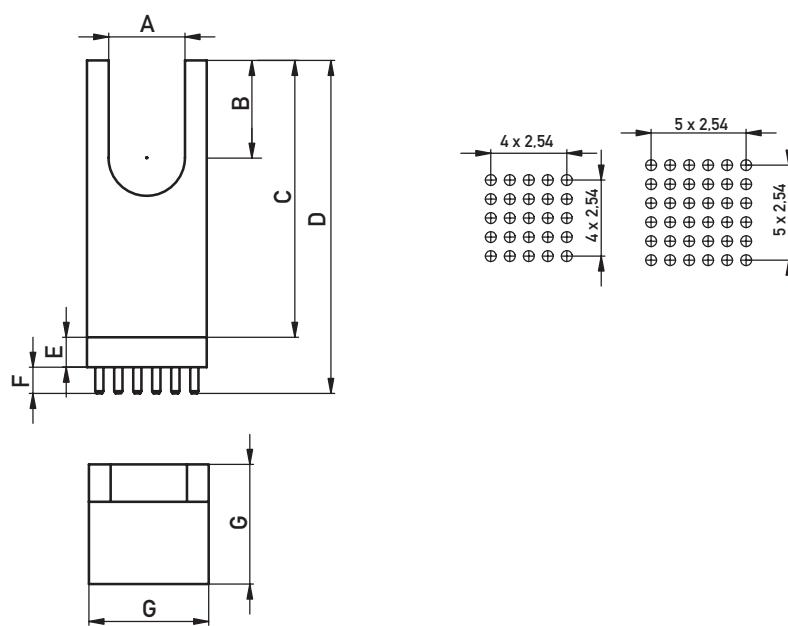
ANGLED, U-PROFILE, FULL PIN POPULATION —

PRODUCT SPECIFICATION



- PCB connection for fixing cable lugs
- Connection 90°
- Due to the u-profile ensures a simple processing of the mounting bolt
- Compensation of greater height tolerances possible
- As a fixing element for assembly onto housing etc.
- E.g. for the connection of high current relays

DIMENSIONAL DRAWINGS



PowerElements

ANGLED, U-PROFILE, FULL PIN POPULATION —

ORDERING INFORMATION

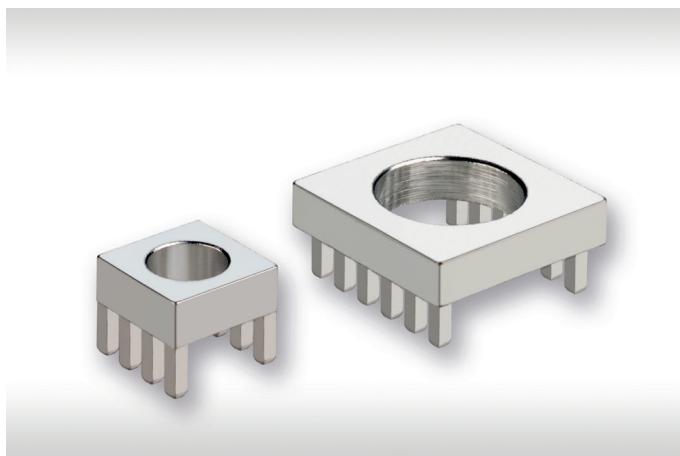
A	B	C	D	E	F	G	H	No. of Pins	Weight	Part Number
ø 5.2	10	32	39.5	4	3.5	5	13	25	21.4	225899
ø 8.2	10	35	42.5	4	3.5	5	16	36	28.94	225888
ø 10.2	13	37	44.5	4	3.5	5	16	36	28.9	225887

Dimension B - H in mm, Weight in g

PowerElements

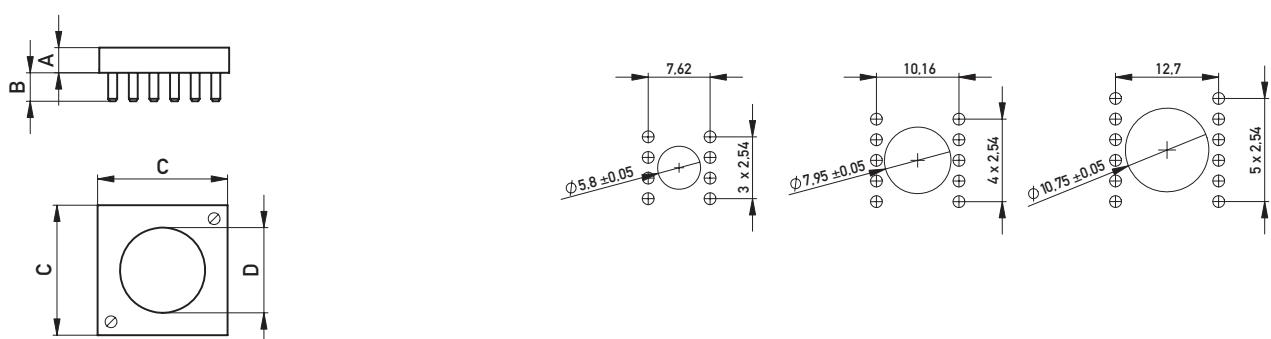
TWO-PART, BASE-PART, TWO ROW PIN POPULATION

PRODUCT SPECIFICATION



- PCB connection for fixing cable lugs
- Fixing of large heavy components (e.g. battery disconnection switch)
- Protecting PCB from mechanical stress
- Pitch 2.54 mm

DIMENSIONAL DRAWINGS



PowerElements

TWO-PART, BASE-PART, TWO ROW PIN POPULATION

ORDERING INFORMATION

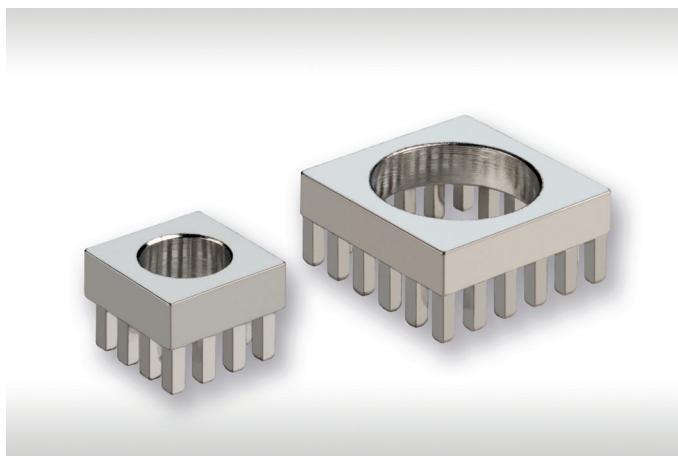
A	B	C	D	No. of Pins	Weight	Part Number
3.1	3.5	9	5.5	8	1.8	225726
3.1	3.5	13	7.3	10	3.7	225727
3.1	3.5	16	10.5	12	4.89	225728
3.1	3.5	16	9.8	12	5.18	225729

Dimension A - D in mm, Weight in g

PowerElements

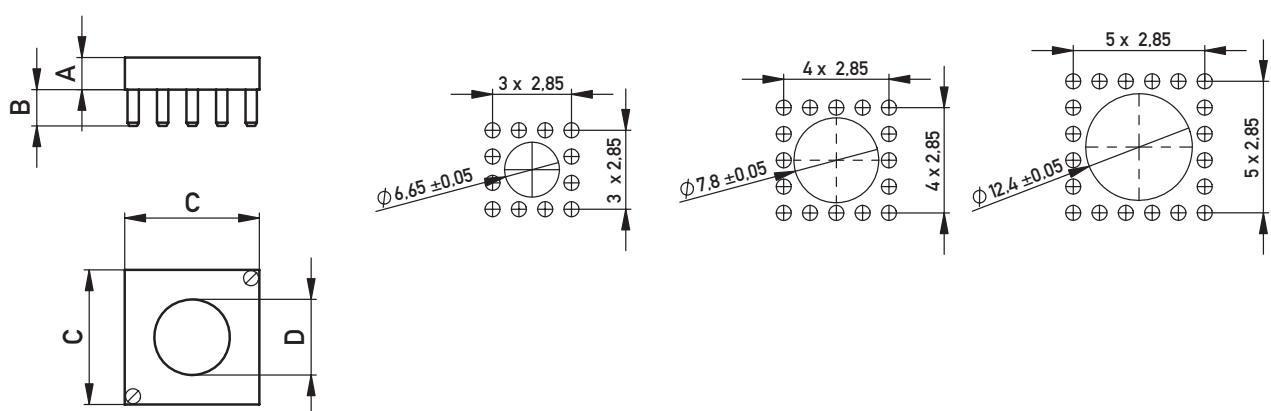
TWO-PART, BASE-PART, CIRCULAR PIN POPULATION

PRODUCT SPECIFICATION



- PCB connection for fixing cable lugs
- Fixing of large heavy components (e.g. battery disconnection switch)
- Protecting PCB from mechanical stress
- Pitch 2,85 mm

DIMENSIONAL DRAWINGS



TWO-PART, BASE-PART, CIRCULAR PIN POPULATION

—

 ORDERING INFORMATION

A	B	C	D	No. of Pins	Weight	Part Number
3.1	3.5	10	6.2	12	2.27	225723
3.1	3.5	13	7.3	16	3.93	225724
3.1	3.5	16	12	20	4.49	225725

Dimension A - D in mm, Weight in g

PowerElements

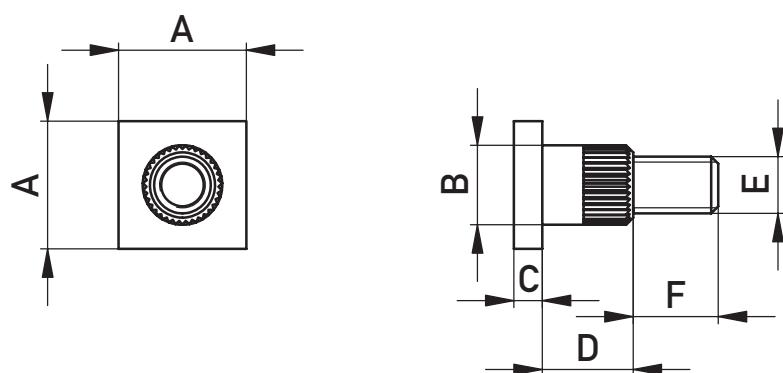
TWO-PART, MALE THREAD

PRODUCT SPECIFICATION



- For pressing in base body
- PCB connection for fixing cable lugs
- Fixing of large heavy components
- UNC thread or customer specific modifications on demand

DIMENSIONAL DRAWINGS



PowerElements

TWO-PART, MALE THREAD

ORDERING INFORMATION

A	B	C	D	E	F	Used Base Plate	Weight	Part Number
9	5.6	2	6.4	M3	5	225726	2.91	225730
10	6.35	2	6.4	M3	6	225723	3.67	225731
9	5.6	2	6.4	M4	6	225726	3.25	225732
10	6.35	2	6.4	M4	6	225723	3.95	225733
13	7.45	2	6.4	M5	8	225724, 225727	6.43	225734
10	6.35	2	6.4	M5	9	225723	4.8	225735
13	7.45	2	6.4	M6	10	225724, 225727	7.49	225736
16	12.15	2	6.4	M8	13	225725	15.95	225737
16	10.65	2	6.4	M8	13	225728	14.51	225738
13	7.45	2	6.4	M4	8	225724, 225727	5.96	225763
16	12.15	2	6.4	M10	13	225725	19.05	225764
16	10	2	6.4	M8	13	225729	13.95	225767

Dimension A - D and F in mm, Weight in g

PowerElements

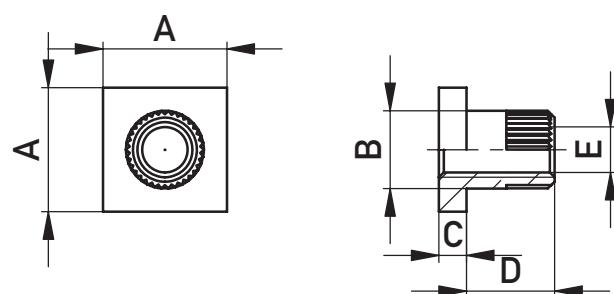
TWO-PART, FEMALE THREAD

PRODUCT SPECIFICATION



- For pressing in base body
- PCB connection for fixing cable lugs
- Fixing of large heavy components
- UNC thread or customer specific modifications on demand

DIMENSIONAL DRAWINGS



PowerElements

TWO-PART, FEMALE THREAD

ORDERING INFORMATION

A	B	C	D	E	Used Base Plate	Weight	Part Number
9	5.65	2	6.4	M3	225726	2.31	225739
10	6.35	2	6.4	M3	225723	2.98	225740
9	5.65	2	6.4	M4	225726	2.03	225741
10	6.35	2	6.4	M4	225723	2.7	225742
13	7.45	2	6.4	M4	225724, 225727	4.5	225743
10	6.35	2	6.4	M5	225723	2.32	225744
13	7.45	2	6.4	M5	225724, 225727	4.11	225745
13	7.45	2	6.4	M6	225724, 225727	3.66	225746
16	10.65	2	6.4	M8	225728	6.38	225747
16	12.15	2	6.4	M8	225725	7.79	225748
16	12.15	2	6.4	M10	225725	6.28	225750
16	10	2	6.4	M8	225729	5.82	225765

Dimension A - D in mm, Weight in g

PowerElements

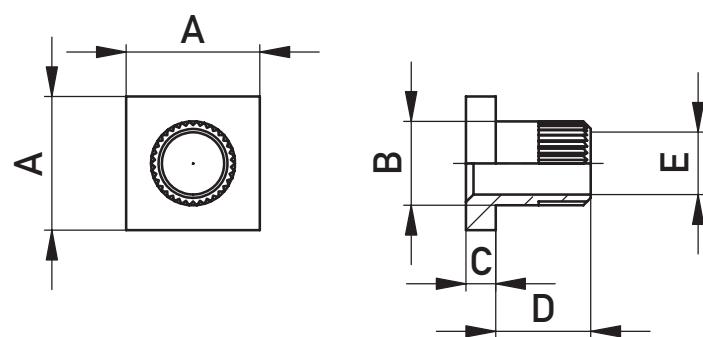
TWO-PART, FEMALE THROUGH-HOLE

PRODUCT SPECIFICATION



- For pressing in base body
- PCB connection for fixing cable lugs
- Fixing of large heavy components
- UNC thread or customer specific modifications on demand

DIMENSIONAL DRAWINGS



PowerElements

TWO-PART, FEMALE THROUGH-HOLE

ORDERING INFORMATION

A	B	C	D	E	Used Base Plate	Weight	Part Number
9	5.65	2	6.4	ø 3.2	225726	2.07	225751
10	6.35	2	6.4	ø 4.2	225723	2.32	225752
13	7.45	2	6.4	ø 4.2	225724, 225727	4.12	225753
9	5.65	2	6.4	ø 4.2	225726	1.65	225754
10	6.35	2	6.4	ø 5.2	225723	1.79	225755
13	7.45	2	6.4	ø 5.2	225724, 225727	3.59	225756
13	7.45	2	6.4	ø 6.2	225724, 225727	2.95	225757
16	10.65	2	6.4	ø 8.2	225728	5.23	225758
16	10	2	6.4	ø 8.2	225729	4.67	225759
16	12.15	2	6.4	ø 10.2	225725	4.6	225760
16	12.15	2	6.4	ø 8.2	225725	6.66	225761
16	10.65	2	6.4	ø 6.2	225728	6.84	225762
10	6.35	2	6.4	ø 3.2	225723	2.74	225766

Dimension A - D in mm, Weight in g

PowerElements

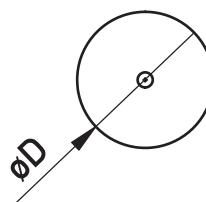
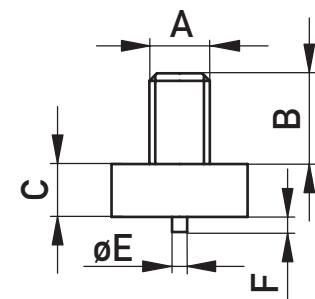
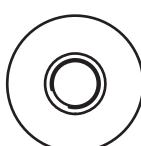
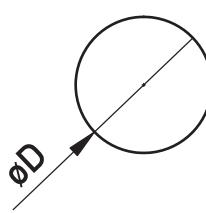
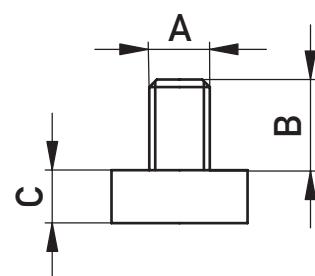
SMD, MALE THREAD

PRODUCT SPECIFICATION



- For soldering in SMT
- Available with and without peg
- Blistered for fully automated assembly
- PCB connection for fixing cable lugs
- UNC thread or customer specific modifications on demand

DIMENSIONAL DRAWINGS



PowerElements

SMD, MALE THREAD

ORDERING INFORMATION

A	B	C	D	E	F	Mounting Peg	Part Number
M3	5	3	7	–	–	0	225850
M4	6	3.5	9	–	–	0	225851
M5	8	4.5	9	–	–	0	225852
M6	10	5.5	13	–	–	0	225853
M8	13	7.5	13	–	–	0	225854
M10	16	8	16	–	–	0	225855
M3	5	3	7	1	1	1	225862
M4	6	3.5	9	1	1	1	225863
M5	8	4.5	9	1	1	1	225864
M6	10	5.5	13	1	1	1	225865
M8	13	7.5	13	1	1	1	225866
M10	16	8	16	1	1	1	225867

Dimension B - F in mm

PowerElements

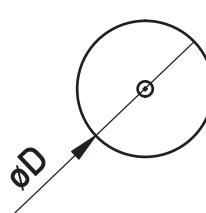
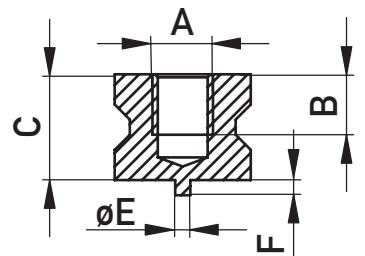
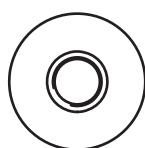
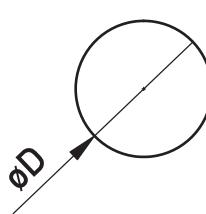
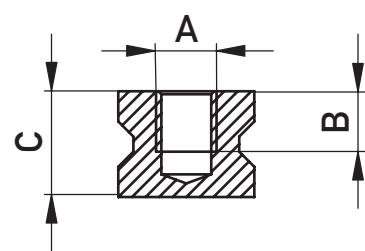
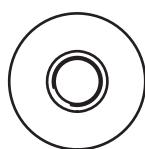
SMD, FEMALE THREAD

PRODUCT SPECIFICATION



- For soldering in SMT
- Available with and without peg
- Partially blistered for fully automated assembly
- PCB connection for fixing cable lugs
- UNC thread or customer specific modifications on demand

DIMENSIONAL DRAWINGS



PowerElements

SMD, FEMALE THREAD

ORDERING INFORMATION

A	B	C	D	E	F	Mounting Peg	Part Number
M3	3.5	6	7	–	–	0	225856
M4	4	7	9	–	–	0	225857
M5	4	7	9	–	–	0	225858
M6	6.5	10.5	10	–	–	0	225859
M8	8	13.5	13	–	–	0	225860
M10	11	17.5	16	–	–	0	225861
M3	3.5	6	7	1	1	1	225868
M4	4	7	9	1	1	1	225869
M5	4	7	9	1	1	1	225870
M6	6.5	10.5	10	1	1	1	225871
M8	8	13.5	13	1	1	1	225872
M10	11	17.5	16	1	1	1	225873

Dimension B - F in mm

PowerElements

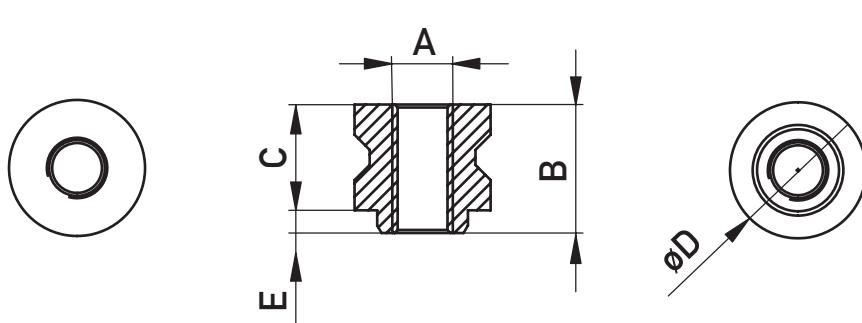
SMD, FEMALE THREAD THROUGHOUT

PRODUCT SPECIFICATION



- For soldering in SMT
- Available with and without peg
- Blistered for fully automated assembly
- PCB connection for fixing cable lugs
- UNC thread or customer specific modifications on demand

DIMENSIONAL DRAWINGS



PowerElements

SMD, FEMALE THREAD THROUGHOUT —

ORDERING INFORMATION

A	B	C	D	E	Mounting Peg	Part Number
M3	7.5	6	7	1.5		225874
M4	8.5	7	9	1.5		225875
M5	8.5	7	9	1.5		225876
M6	13	11.5	13	1.5		225877
M8	15	13.5	13	1.5		225878
M10	19	17.5	16	1.5		225879

Dimension B - E in mm

PowerElements

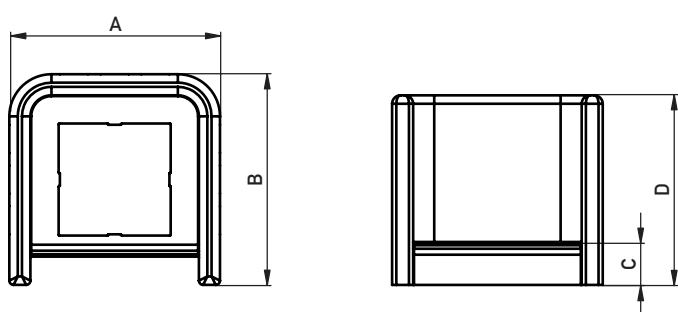
TWISTED AND CONTACT PROTECTION FOR MALE POWER ELEMENTS

PRODUCT SPECIFICATION



- For placement particularly on the PowerElement pins
- To prevent short circuits to nearby components
- As protection against contact
- Smaller distances between two power elements in layout is feasible

DIMENSIONAL DRAWINGS



TWISTED AND CONTACT PROTECTION FOR MALE POWER ELEMENTS

ORDERING INFORMATION

A	B	C	D	Usage	Part Number
16	16	2	9.5	with Power Element 225675	225794
18	18	2.5	14.5	with Power Element 225676 and 225677	225795
25	25	5	22.5	with Power Element 225678 and 225679	225796
30	30	7	26	with Power Element 225680	225797

Dimension A - D in mm



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