



Product Features

- Four Dielectrics:
 - Standard PTFE
 - Polypropylene
 - Polyimide
 - Polycarbonate
 - Four Different Sizes:
 - 5mm, 7.5mm, 9.5mm, 16mm
 - SMD and lead-through-hole mounting
 - Top, bottom and Side Mount models
 - Wide capacitance ranges
 - Low cost
 - Linear capacitance change vs. rotation
- $Q = 200 @ 1 \text{ MHz}$
 - $\text{PPM}/^\circ\text{C}: +150 \pm 250$
 - Compact size



Product Applications

Typical Applications:

- Antennas • Transmitters
- RF Equipment • Instruments

Modifications & Variations:

- Special capacitance ranges • Special terminal sizes & shapes •
- Extended Adjust shafts • High temperature versions for PTFE • Silver and/or Gold Plating

For requests for options such as special adjustments, pin configurations, dielectrics, etc., please contact PPI directly.



Production Qualification

FilmTrim Capacitors are in accordance with DIN IEC 418-1 and 4-former DIN 44261 part 3.

Testing methods for manufacturing quality are in accordance with MIL-STD-105D and IEC410 (former DIN44260).

Solderability or heat resistance for the FilmTrim Capacitors comply with DIN IEC 68-2-20 part 2, Test Ta and Tb.

Each FilmTrim Capacitor is tested for minimum and maximum capacitance value and is also subjected to full test voltage.

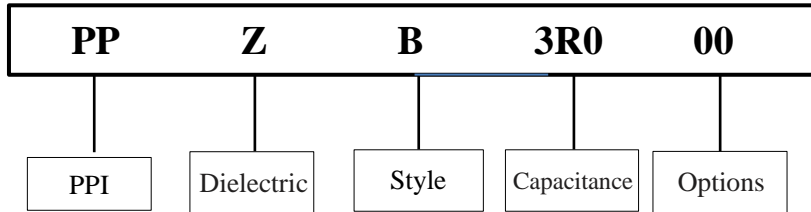




Product Features

Series	Size (mm)	Heights (mm)		Dielectric	Qmin	Capacitance Range		Voltage Rating (VDC)	Test Voltage (VDC)
		From	To			Min	Max		
XL	5.0	5.0	6.0	PTFE	1500	0.9pF	18pF	150	300
ZL	5.0	5.0	6.3	Polyimide	300	1.0pF	32pF	150	300
XA	7.5	10.2	11.4	PTFE	1500	1.3pF	45pF	200	300
XB	7.5	10.2	11.4	PTFE	1500	1.3pF	45pF	200	300
XE	7.5	10.2	11.4	PTFE High Temp	1500	1.3pF	45pF	200	300
XE NM	7.5	10.2	11.4	PTFE High Temp	1500	1.3pF	45pF	200	300
XR	7.5	10.2	11.4	PTFE High Temp	1500	1.3pF	45pF	200	300
YA	7.5	10.2	10.2	Polypropylene	1000	1.3pF	36pF	200	300
YB	7.5	10.2	10.2	Polypropylene	1000	1.3pF	27pF	200	300
ZA	7.5	10.2	10.2	Polycarbonate	200	2.5pF	40pF	200	300
ZB	7.5	10.2	10.2	Polycarbonate	200	2.5pF	40pF	200	300
XC	9.5	10.2	12.0	PTFE	1500	2.0pF	150pF	200	300
XD	9.5	10.2	12.0	PTFE	1500	2.0pF	150pF	200	300
XF	9.5	10.2	12.4	PTFE High Temp	1500	2.2pF	90pF	200	300
XF NM	9.5	10.2	12.4	PTFE High Temp	1500	2.2pF	90pF	200	300
XT	9.5	10.2	12.4	PTFE High Temp	1500	2.2pF	90pF	200	300
YC	9.5	10.2	10.2	Polypropylene	1000	2.0pF	60pF	200	300
YD	9.5	10.2	10.2	Polypropylene	1000	2.0pF	60pF	200	300
ZC	9.5	10.2	12.0	Polycarbonate	500	7.0pF	180pF	200	300
ZD	9.5	10.2	12.0	Polycarbonate	500	7.0pF	180pF	200	300
ZN	16.0	13.8	16.8	Polycarbonate #1	200	8.0pF	300pF	150	300
ZN	16.0	16.8	16.8	Polycarbonate #2	100	23pF	600pF	150	300
ZP	16.0	13.8	16.8	Polycarbonate #1	200	8.0pF	300pF	150	300
ZP	16.0	16.8	16.8	Polycarbonate #2	100	23pF	600pF	150	300

≠ **Part Numbering** *See charts below for details*



≠ **Dielectrics**

Dielectrics	
Code	Description
X	PTFE (Polytetrafluoroethylene)
Y	PP (Polypropylene)
Z	PC (Polycarbonate) or PI (Polyimide)

≠ **Style**

Style	
Code	Description
A	7.5mm Top/Bottom Adjust
B	7.5mm Side Adjust
C	9.5mm Top/Bottom Adjust
D	9.5mm Side Adjust
E*	7.5mm Top/Bottom Adjust
F*	9.5mm Top/Bottom Adjust
L	5mm Top Adjust
N	16mm Top Adjust
P	16mm Side Adjust
R*	7.5mm Side Adjust
T*	9.5mm Side Adjust

≠ **Capacitance**

Capacitance Code
1R6 = 1.6pF
400 = 40pF
301 = 300pF

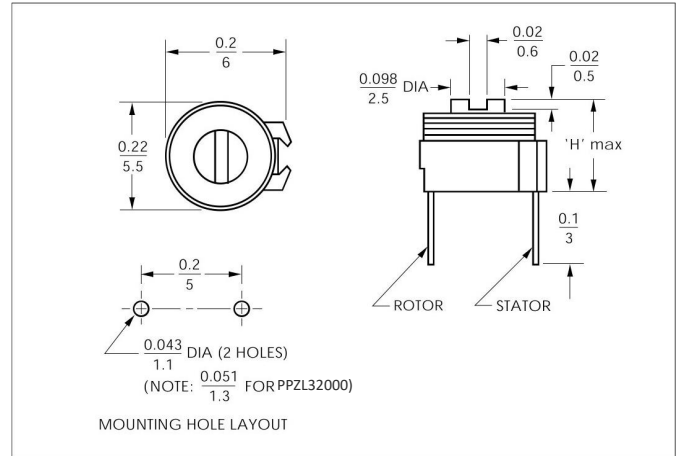
≠ **Special Options**

Special Options (Top Adjust Models)	
Code	Description
00	Standard
02	7.5mm, 2 leads
03	9.5mm, 3 lead special
04	9.5mm, 2 leads

** Extended Temperature range: -40 to +125°C
For other modifications such as high temperature base material or special lead plating, contact PPI.*

Electrical Specifications

Dielectrics	<ul style="list-style-type: none"> High Temperature PTFE Polyimide (PI)
Voltage Rating	150 VDC
Dielectric Withstanding Voltage	300 VDC
Contact Resistance	$\leq 0.010\text{m}\Omega$
Insulation Resistance	$\geq 10.000\text{M}\Omega$
Rotation Torque	$C_{\text{max}} < 20\text{pF}$ 0.10...1.5Ncm $C_{\text{max}} > 20\text{pF}$ 0.15...2.5Ncm



All dimensions are in/mm.

General Specifications

Dielectric	Capacitance (pF)		Q min (1MHz)	TCC (ppm/°C)	Operating Temperature (°C)	H max in/mm	Color Code	Model Number
	min	max						
PTFE High Temp	1.2	4.0	1500	0±350	-40 to +125	0.20/5.0	Brown	PPXL4R000
	1.8	10		0±300		0.23/5.8	Black	PPXL10000
	2.0	15		0±300		0.24/6.0	White	PPXL15000
	2.3	18		0±300		0.24/6.0	Green	PPXL18000
PI	1.2	5.0	150	0±350	-40 to +85	0.20/5.0	Brown	PPZL5R000
	1.4	10		0±350		0.20/5.0	Black	PPZL10000
	2.0	15		0±250		0.23/5.8	White	PPZL15000
	2.7	20		0±250		0.23/5.8	Green	PPZL20000
	3.6	32		0±250		0.25/6.3	None	PPZL32000

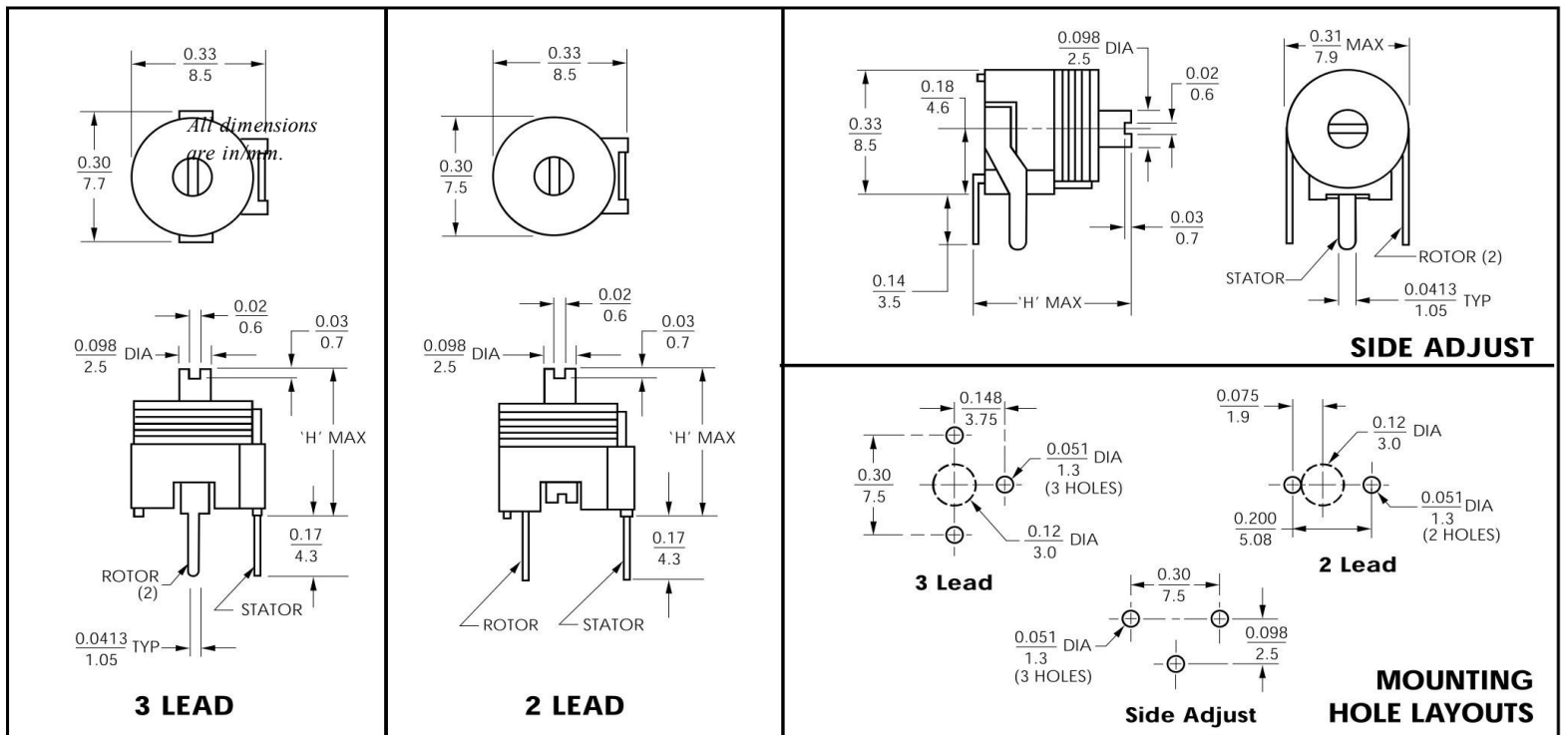


Electrical Specifications

Dielectrics

- High Temperature PTFE
- Standard PTFE
- Polypropylene (PP)
- Polycarbonate (PC)

Voltage Rating	200V High Temp PTFE 100V all other Dielectrics
Dielectric Withstanding Voltage	300V High Temp PTFE 200V all other Dielectrics
Contact Resistance	≤ 0.010mΩ
Insulation Resistance	≥10,000MΩ
Rotation Torque	C _{max} <35pF 0.10...1.5Ncm C _{max} >35pF 0.15...2.5Ncm



All dimensions are in/mm.

General Specifications

Dielectric	Capacitance (pF)		Q min (1MHz)	TCC (ppm/°C)	Operating Temperature (°C)	H max in/mm	Color Code	Model Number		
	min	max						Top/Bottom 3 Lead	Top/Bottom 2 Lead	Side Adjust
PTFE	1.6	5.0	1500	0±350	-40 to +85	0.40/10.2	Clear	PPXA5R000	PPXA5R002	PPXB5R000
	2.0	9.0		0±350		0.40/10.2	Yellow	PPXA9R000	PPXA9R002	PPXB9R000
	2.0	18		0±300		0.40/10.2	Green	PPXA18000	PPXA18002	PPXB18000
	3.9	27		0±300		0.40/10.2	Red	PPXA27000	PPXA27002	PPXB27000
	4.5	36		0±300		0.45/11.4	Violet	PPXA36000	PPXA36002	PPXB36000
	5.0	45		0±300		0.45/11.4	Orange	PPXA45000	PPXA45002	PPXB45000
PTFE High Temp	1.5	5.0	1500	0±250	-40 to +125	0.40/10.2	Clear	PPXE5R000	PPXE5R002	PPXR5R000
	1.8	9.0		0±250		0.40/10.2	Yellow	PPXE9R000	PPXE9R002	PPXR9R000
	2.6	18		0±250		0.40/10.2	Green	PPXE18000	PPXE18002	PPXR18000
	3.5	27		0±250		0.40/10.2	Red	PPXE27000	PPXE27002	PPXR27000
	4.5	36		0±250		0.45/11.4	Violet	PPXE36000	PPXE36002	PPXR36000
	5.0	45		0±250		0.45/11.4	Orange	PPXE45000	PPXE45002	PPXR45000
PP	1.6	5.0	1000	0±300	-40 to +70	0.40/10.2	Clear	PPYA5R000	PPYA5R002	PPYB5R000
	2.0	10		0±300		0.40/10.2	Yellow	PPYA10000	PPYA10002	PPYB10000
	2.0	15		0±400		0.40/10.2	Blue	PPYA15000	PPYA15002	PPYB15000
	2.2	22		0±400		0.40/10.2	Green	PPYA22000	PPYA22002	PPYB22000
	2.3	27		0±350		0.40/10.2	Red	PPYA27000	PPYA27002	PPYB27000
	3.0	36		0±350		0.40/10.2	Violet	PPYA36000	PPYA36002	
PC	2.5	30	200	100±300	-40 to +85	0.40/10.2	Red	PPZA30000	PPZA30002	PPZB30000
	4.0	40		100±300		0.40/10.2	Violet	PPZA40000	PPZA40002	PPZB40000

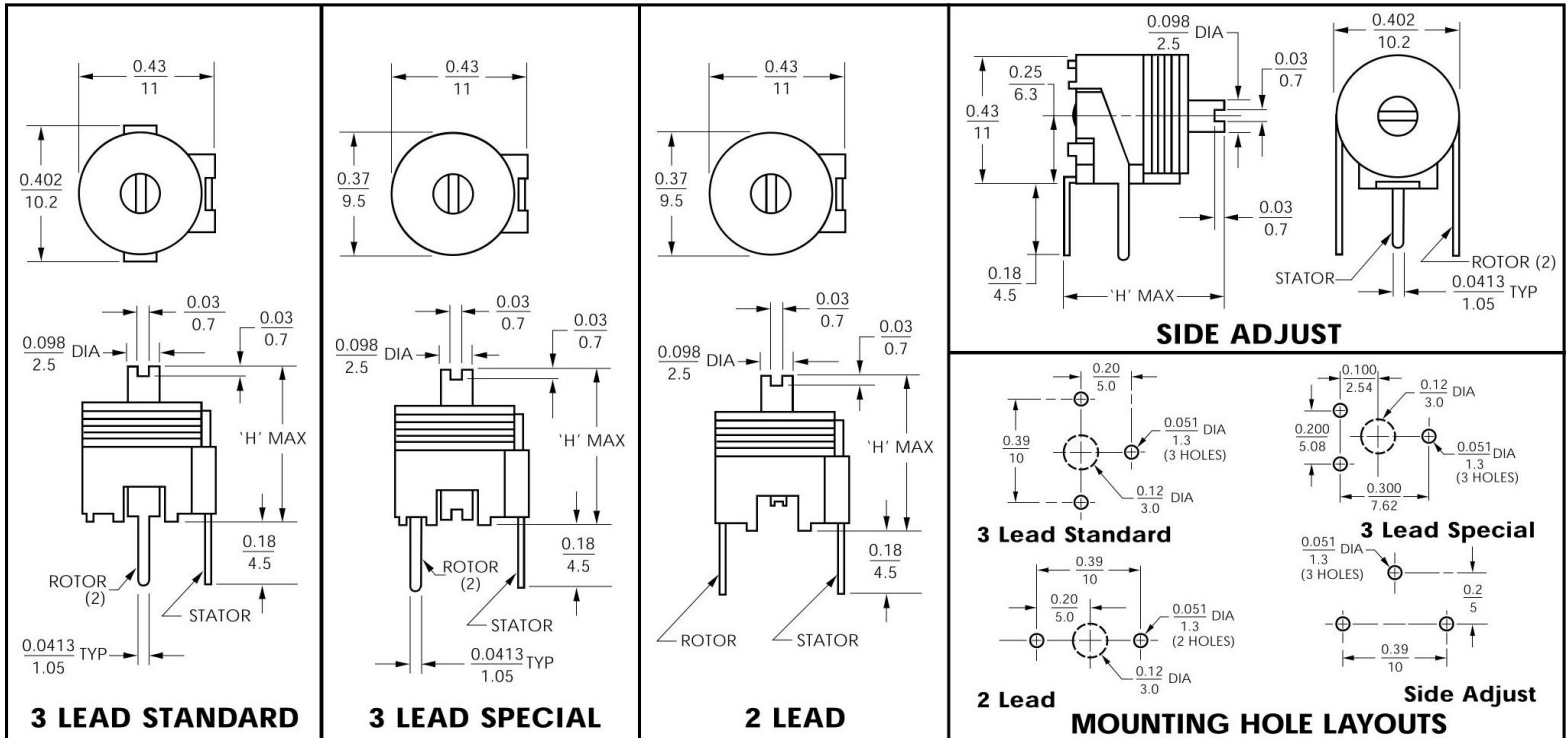
*Gold plated metal parts are standard on PPXE and PPXR models above.





Electrical Specifications

Dielectrics	<ul style="list-style-type: none"> • High Temperature PTFE • Standard PTFE • Polypropylene (PP) • Polycarbonate (PC)
Voltage Rating	200V High Temp PTFE 100V all other Dielectrics
Dielectric Withstanding Voltage	300V High Temp PTFE 200V all other Dielectrics
Contact Resistance	≤ 0.010mΩ
Insulation Resistance	≥10,000MΩ
Rotation Torque	0.15....3.5Ncm



All dimensions are in/mm.

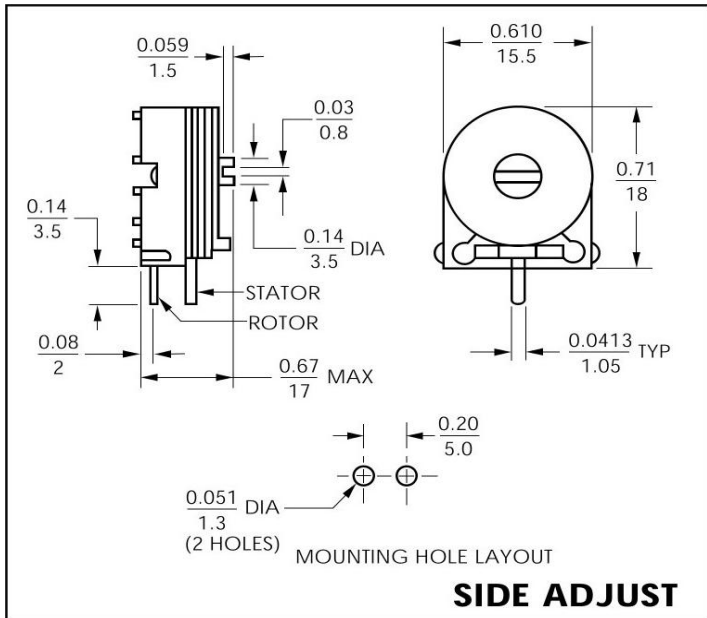
≠ General Specifications

Dielectric	Capacitance (pF)		Q min (1MHz)	TCC (ppm/°C)	Operating Temperature (°C)	H max in/mm	Color Code	Model Number			Side Adjust
	min	max						Top/Bottom 3 Lead	Top/Bottom 3 Lead Special	Top/Bottom 2 Lead	
PTFE	2.0	13		0±400		0.40/10.2	Blue	PPXC13000	PPXC13003	PPXC13004	PPXD13000
	3.0	26		0±350		0.40/10.2	Green	PPXC26000	PPXC26003	PPXC26004	PPXD26000
	3.5	38		0±300		0.40/10.2	Clear	PPXC38000	PPXC38003	PPXC38004	PPXD38000
	6.0	60	1500	0±300	-40 to +85	0.45/11.4	Yellow	PPXC60000	PPXC60003	PPXC60004	PPXD60000
	7.0	75		0±300		0.45/11.4	Red	PPXC75000	PPXC75003	PPXC75004	PPXD75000
	8.0	90		0±300		0.49/12.0	Violet	PPXC90000	PPXC90003	PPXC90004	PPXD90000
	10	150		0±300		0.49/12.0	Orange	PPXC15100	PPXC15103	PPXC15104	
PTFE High Temp	2.5	15		0±250		0.40/10.2	Red	PPXF15000	PPXF15003	PPXF15004	PPXT15000
	3.0	25		0±250		0.40/10.2	Clear	PPXF25000	PPXF25003	PPXF25004	PPXT25000
	4.0	40	1500	0±250	-40 to +125	0.40/10.2	Yellow	PPXF40000	PPXF40003	PPXF40004	PPXT40000
	5.5	60		0±250		0.45/11.4	Blue	PPXF60000	PPXF60003	PPXF60004	PPXT60000
	6.0	75		0±250		0.45/11.4	Violet	PPXF75000	PPXF75003	PPXF75004	PPXT75000
	8.0	90		0±250		0.49/12.4	Orange	PPXF90000	PPXF90003	PPXF90004	PPXT90000
PP	2.0	15		0±400		0.40/10.2	Blue	PPYC15000	PPYC15003	PPYC15004	PPYD15000
	3.0	20	1000	0±400	-40 to +70	0.40/10.2	Green	PPYC20000	PPYC20003	PPYC20004	PPYD20000
	3.5	40		0±350		0.40/10.2	Clear	PPYC40000	PPYC40003	PPYC40004	PPYD40000
	4.5	65		0±350		0.40/10.2	Yellow	PPYC65000	PPYC65003	PPYC65004	PPYD65000
PC	8.0	80		0±200		0.40/10.2	Red	PPZC80000	PPZC80003	PPZC80004	PPZD80000
	9.0	100		0±400		0.45/11.4	Violet	PPZC10100	PPZC10103	PPZC10104	PPZD10100
	9.0	120	200	0±350	-40 to +85	0.45/11.4	Orange	PPZC12100	PPZC12103	PPZC12104	PPZD12100
	10	150		0±350		0.47/12.0	Orange	PPZC15100	PPZC15103	PPZC15104	PPZD15100
	12	180		0±350		0.47/12.0	Orange	PPZC18100	PPZC18103	PPZC18104	PPZD18100

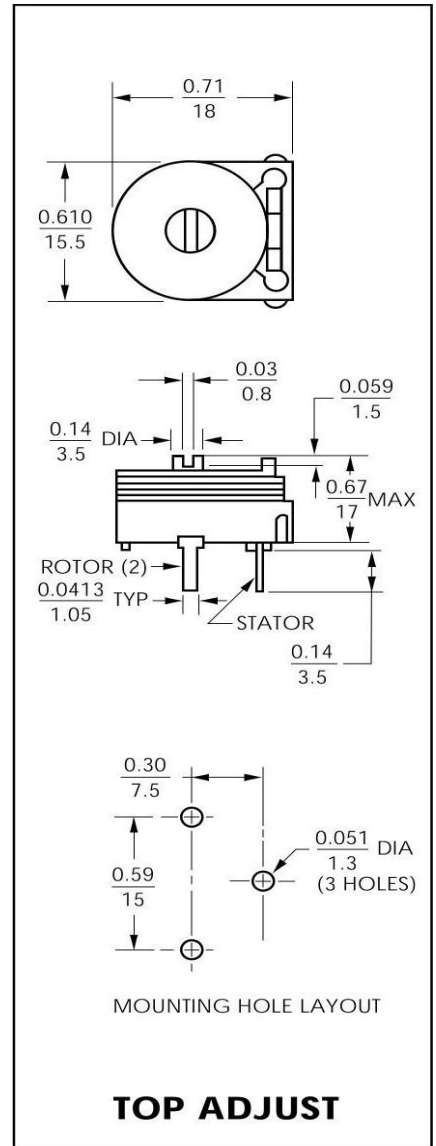


Electrical Specifications

Dielectrics	<ul style="list-style-type: none"> • Polypropylene (PP) • Polycarbonate (PC)
Voltage Rating	150 VDC
Dielectric Withstanding Voltage	300 VDC
Contact Resistance	≤ 0.010mΩ
Insulation Resistance	≥ 10,000MΩ
Rotation Torque	0.15....3.5Ncm



All dimensions are in/mm.



All dimensions are in/mm.

General Specifications

Dielectric	Capacitance (pF)		Q min (1MHz)	TCC (ppm/°C)	Operating Temperature (°C)	H max in/mm	Color Code	Model Number	
	min	max						Top Adjust	Side Adjust
PC	9	200	200	0±300	-40 to +85	0.54/13.8	Orange	PPZN20100	PPZP20100
	18	300	200	0±300				PPZN30100	PPZP30100
PI	25	600	100	0±350	-40 to +85	0.66/16.8	None	PPZN60100	PPZP60100

≠ Specifications Notes

- 1 Parts are 100% tested for capacitance range and dielectric withstanding voltage.
- 2 Capacitance range specified is that which is guaranteed and is measured at 1 MHz at room temperature.
- 3 Q factor is measured at maximum rated capacitance and at room temperature.
- 4 Dielectric strength is measured at maximum rated capacitance and room temperature, with test voltage (as listed for each model) applied for 60 seconds.
- 5 Insulation resistance is measured at maximum rated capacitance and room temperature and at rated voltage, unless otherwise specified.
- 6 Temperature coefficient of capacitance (TCC) is measured at 1 MHz over the operating temperature range, with capacitor set at maximum rated capacitance.
- 7 Axial load during tuning should not exceed 200 grams force. At maximum axial load, capacitance change is no more than 15%.
- 8 Capacitors should not be operated outside of rated capacitance range and working voltage.

≠ Soldering FilmTrim Capacitors

Dip soldering:

260°C ± 10°C for 7 seconds maximum.

Hand Soldering

(for lead-through-hole models):

Tip temperature 350°C ± 10°C for 3 to 4 seconds



≠ Cleaning FilmTrim Capacitors

- 1 Water soluble fluxes and detergents with a water flush after soldering of the boards can be used for all parts.

- 2 Do not immerse FilmTrim models in chlorinated or fluorinated hydrocarbon solvents as this would adversely affect the plastic dielectrics and base materials. Some customers have successfully used X models in scrubbers or sprayers where only bottom of the printed circuit boards is exposed to solvents.

If the process requires immersion in solvents for cleaning boards, the FilmTrim capacitors should be hand soldered to board after the boards have been cleaned.