PPI®

VARIABLE TRIMMER CAPACITORS

- AIR PLATE
- SAPPHIRE
- TUBULAR
- FILMTRIM
- 3MM

Variable Capacitors

Air Tubular Trimmers

Part Attributes

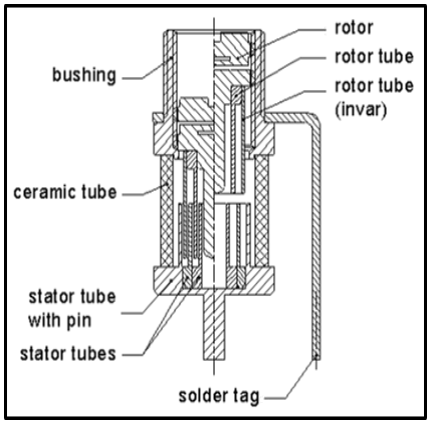
- Finer Tuning/ Multi-Turn
- High Q
- Medium Size
- Lower Voltage
- Medium Capacitance Range

Product Applications

- L – C Filters
- Radio Transmitters & Receivers
- Quartz Oscillators Insulation Resistance
- Coils for NMR – Systems
- Impedance Matching

Product Specifications

• Capacitance Range	0.3pF – 30pF
• Q-Factor	>5000 @ 200 MHz
• DC Working Voltage	1.75kV
• DC Withstanding Voltage	3.5kV
• Operating Temperature Range	-65°C to +125°C
• TCC (ppm/°C)	0 ± 50 to 65 ± 30 (model dependent)
• Insulation Resistance	>10^6 Mohm @ VDC
• Vibration	60g, 10-2000Hz
• Shock	100g, 6msec.
• Resolution	High Resolution
• Non-Magnetic	For MRI/NMR
• Custom Designs Available	
• PPI SERIES	PPI-60



RoHS

Variable Capacitors

Sapphire Trimmers

Part Attributes

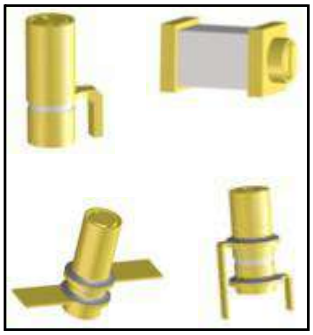
- Smallest Size
- Finer Tuning/Multi-Turn
- High Q
- Lower Voltage
- Lower Capacitance Range

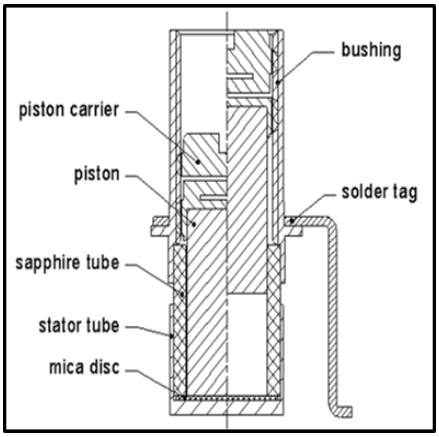
Product Applications

- L – C Filters
- Radio Transmitters & Receivers
- Quartz Oscillators Insulation Resistance
- Coils for NMR – Systems
- Low Noise Amplifiers

Product Specifications

• Capacitance Range	1.0pF – 18.5pF
• Q-Factor	>5000 @ 200 MHz
• DC Working Voltage	500V
• DC Withstanding Voltage	1kV
• Operating Temperature Range	-65°C to +125°C
• TCC (ppm/°C)	0 ± 75 to 350 ± 75 (model dependent)
• Insulation Resistance	>10^6 Mohm @ VDC
• Vibration	60g, 10-2000Hz
• Shock	100g, 6msec.
• Resolution	High Resolution
• Non-Magnetic	For MRI/NMR
• Custom Designs Available	
• PPI SERIES	PPI-66





RoHS

Variable Capacitors

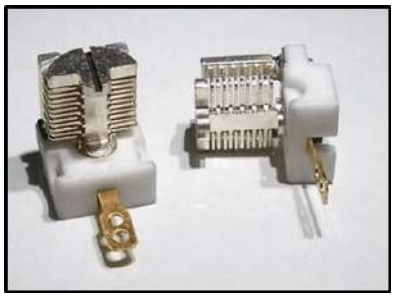
Air Plate Trimmers

Part Attributes

- Wide Capacitance Range
- Highest Q
- Higher Voltage
- Large Size
- Open Construction

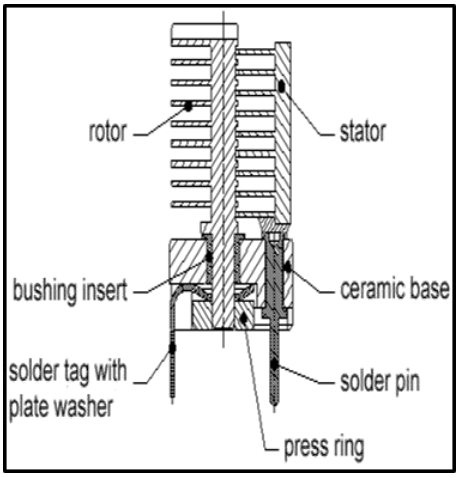
Product Applications

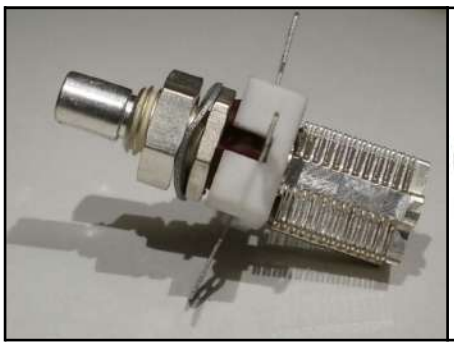
- L – C Filters
- Radio Transmitters & Receivers
- Quartz Oscillators Insulation Resistance
- Coils for NMR – Systems
- Low Noise Amplifiers

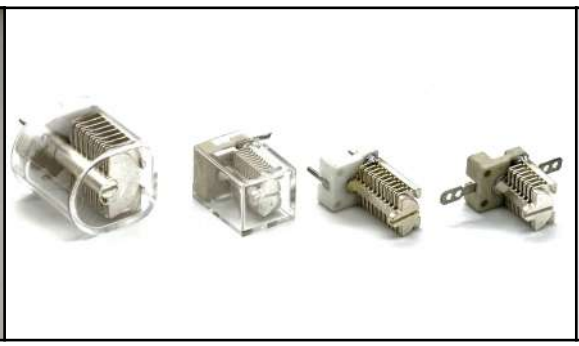


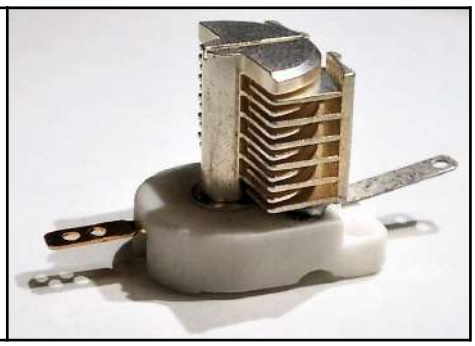
Product Specifications

• Capacitance Range	1pF – 146pF (select models up to 200pF)
• Q-Factor	>1500 @ 200 MHz/800 @ 1MHz
• DC Working Voltage	3.25kV
• DC Withstanding Voltage	6.5kV
• Operating Temperature Range	-65°C to +125°C
• TCC (ppm/°C)	30 ± 20 to 90 ± 40 (model dependent)
• Insulation Resistance	>10^6 Mohm @ VDC
• Vibration	60g, 10-2000Hz
• Shock	100g, 6msec.
• Resolution	180°Resolution
• Non-Magnetic	For MRI/NMR
• Custom Designs Available	
• PPI SERIES	PPI-10









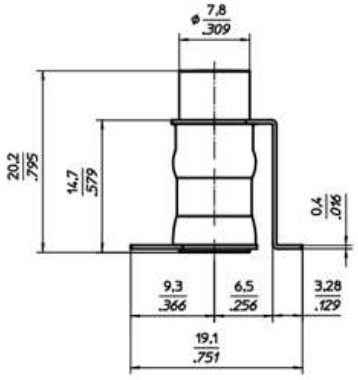
PTFE Tubular Trimmer

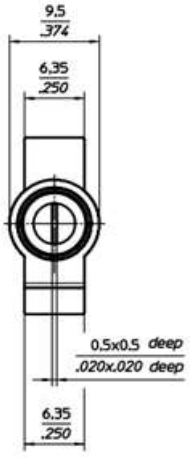
PPI-63-1001-00030-600

PART SPECIFICATIONS

TUNING TORQUE	1.0 - 8.0 in. Oz
STOP TORQUE	11.1 in. oz
ROTATIONAL LIFE	≥ 75 cycles, IEC 418
VIBRATION	60 g / 10-2000Hz
SHOCK	1500g / 0.5ms
OPERATING TEMPERATURE	-65°C….+125°C
ADJUSTMENT ACCURACY	≤ 1 x 10^{-3} of adjusted value
CONTACT RESISTANCE	< 0.001 Ω
DIELECTRIC	PTFE

Part Number	Cmin (pF)	Cmax (pF)	Working Voltage (VDC)	Q-Factor (@200MHz)	IR (MΩ)	TC (ppm/°C)	Dim. A (mm)	Dim. B (mm)	Weight (g)
PPI-63-1001-00030-600	3.5	28.0	1250	➢ 2000	$>10^6$	0±100	---	---	6.1





Dimensions are in mm / inches

PTFE Tubular Trimmer

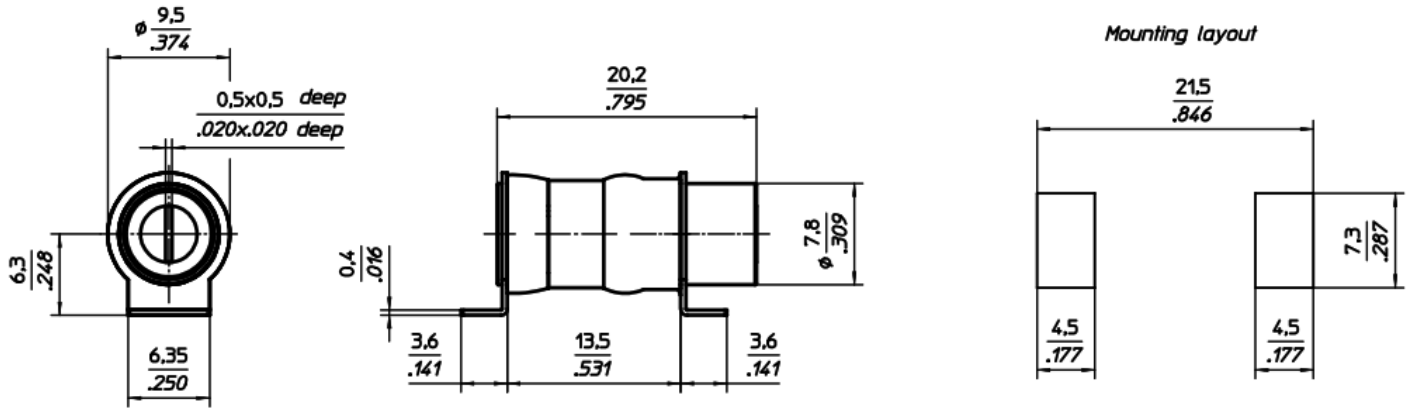
PPI-63-1001-00030-600

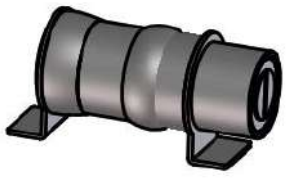
PART SPECIFICATIONS

TUNING TORQUE	1.0 - 8.0 in. oz
STOP TORQUE	11.1 in. oz
ROTATIONAL LIFE	≥ 75 cycles, IEC 418
VIBRATION	60 g / 10-2000Hz
SHOCK	1500g / 0.5ms
OPERATING TEMPERATURE	-65°C….+125°C
ADJUSTMENT ACCURACY	≤ 1 x 10^{-3} of adjusted value
CONTACT RESISTANCE	< 0.001 Ω
DIELECTRIC	PTFE

Part Number	Cmin (pF)	Cmax (pF)	Working Voltage (VDC)	Q-Factor (@200MHz)	IR (MΩ)	TC (ppm/°C)	Dim. A (mm)	Dim. B (mm)	Weight (g)
PPI-63-1002-00030-600	3.5	28.0	1250	>2000	$>10^6$	0±100	---	---	5.5

RoHS





Dimensions are in mm / inches

FilmTrim Variable Capacitors

Product Line Overview

Product Features

- Four Dielectrics:
  - Standard PTFE
  - Polyproplyene
  - 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 MHz
- PPM/°C: +150±250
- Compact size

Product Applications

Typical Applications:

- Antennas
- RF Equipment
- Transmitters
- Instruments

Modifications & Variations:

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

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.

FilmTrim Variable Capacitors

Product Line Overview

Part Numbering

See charts below for details

PP	Z	B	3R0	00
PPI	Dielectric	Style	Capacitance	Options

RoHS

Dielectrics

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

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

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

** Extended Temperature range: -40 to +125°C*

For other modifications such as high temperature base material or special lead plating, contact PPI.

FilmTrim Variable Capacitors

5mm Top Adjust

Product Features

- Dielectrics:
  Standard PTFE
  Polyimide
- SMD and lead-through-hole mounting
- Top Mount models
- Wide capacitance ranges
- Low cost
- Linear capacitance change vs. rotation
- Compact size

Product Applications

Typical Applications:

- Antennas • Transmitters
- RF Equipment
- Test Equipment

Modifications & Variations:

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

Part Numbering

PP	Z	L	4R0	00
PP = Passive Plus	Dielectric Code *See Table*	Style *L = 5mm Top Adjust*	Capacitor Code *100=10x10⁰=10pF, 4R0=4.0pF*	Options

RoHS

For special requests, please contact PPI directly.

Dielectrics

Dielectrics	
Code	**Description**
X	PTFE (Polytetrafluoroethylene)
Z	PC (Polycarbonate) or PI (Polyimide)

Style

Style	
Code	**Description**
L	5mm Top Adjust

Capacitance

Capacitance Code
2R0 = 2.0pF
270 = 27pF

Special Options

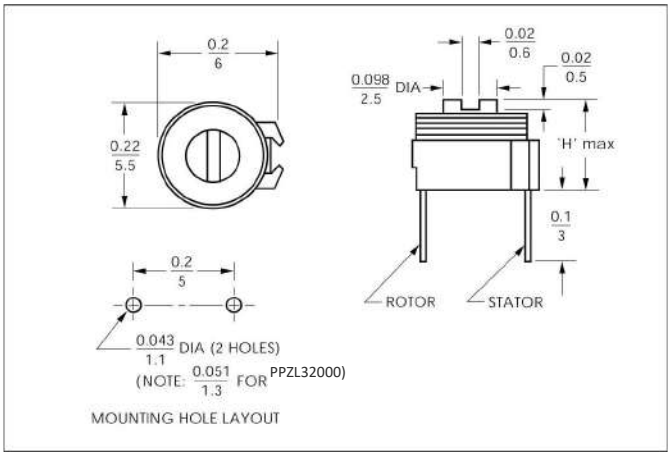
Special Options (Top Adjust Models)	
Code	**Description**
00	Standard

FilmTrim Variable Capacitors

5mm Top Adjust

Electrical Specifications

Dielectrics	• High Temperature PTFE • Polyimide (PI)
Voltage Rating	150 VDC
Dielectric Withstanding Voltage	300 VDC
Contact Resistance	≤0.010mΩ
Insulation Resistance	≥10.000MΩ
Rotation Torque	Cmax <20pF 0.10…1.5Ncm Cmax >20pF 0.15…2.5Ncm



All dimensions are in/mm.

General Specifications

Dielectric	Capacitance (pF) min	Capacitance (pF) max	Q min (1MHz)	TCC (ppm/°C)	Operating Temperature (°C)	H max in/mm	Color Code	Model Number
	0.8	3.0		-100±250		0.20/5.0	Brown	PPXL3R000
	0.9	4.0		-100±250		0.20/5.0	Brown	PPXL4R000
	1.0	5.0		-100±250		0.20/5.0	Brown	PPXL5R000
PTFE*	1.3	8.0	1500	-100±200	-40 to +125	0.23/5.8	Black	PPXL8R000
	1.8	10		-100±200		0.23/5.8	Black	PPXL10000
	2.0	15		-100±200		0.24/6.0	White	PPXL15000
	2.3	18		-100±200		0.24/6.0	Green	PPXL18000
	1.0	5.0	300			0.20/5.0	Brown	PPZL5R000
	1.2	8.0	300			0.20/5.0	Brown	PPZL8R000
	1.3	10	300			0.20/5.0	Black	PPZL10000
PI	2.0	15	300	-100±250	-40 to +85	0.23/5.8	White	PPZL15000
	2.7	20	300			0.23/5.8	Green	PPZL20000
	2.8	25	300			0.23/5.8	Green	PPZL25000
	3.6	32	150			0.25/6.3	None	PPZL32000

**High Temperature PTFE available upon request*

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.

FilmTrim Variable Capacitors

5mm Top Adjust

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.

FilmTrim Variable Capacitors

7.5mm FilmTrim

Product Features

- Dielectrics:
  Standard PTFE/ High Temp PTFE
  Polyproplyene
  Polycarbonate
- SMD and lead-through-hole mounting
- Top, Bottom and Side Mount models
- Wide capacitance ranges
- Low cost
- Linear capacitance change vs. rotation
- Compact size

Product Applications

Typical Applications:

- Antennas • Transmitters
- RF Equipment
- Test Equipment

Modifications & Variations:

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

Part Numbering

PP	Z	A	5R0	00
PP = Passive Plus	Dielectric Code *See Table*	Style *A = 7.5mm Top Adjust*	Capacitor Code *100=10x10⁰=10pF 5R0=5.0pF*	Options

RoHS

For special requests, please contact PPI directly.

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
E*	7.5mm Top/Bottom Adjust
R*	7.5mm Side Adjust

** Extended Temperature range: -40 to +125°C*

Capacitance

Capacitance Code
2R0 = 2.0pF
270 = 27pF

Special Options

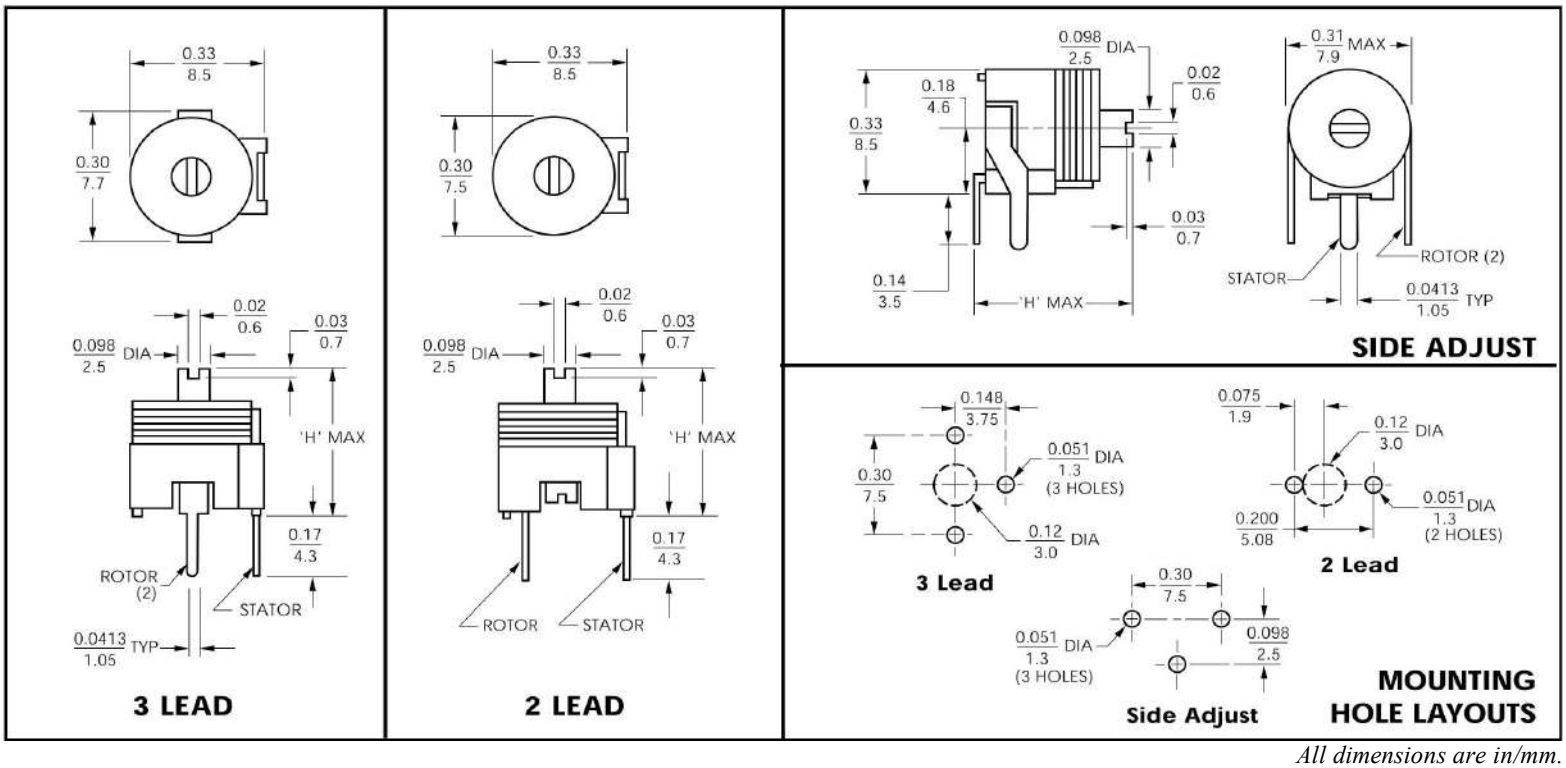
Special Options (Top Adjust Models)	
Code	**Description**
00	Standard
02	7.5mm, 2 leads

FilmTrim Variable Capacitors

7.5mm FilmTrim

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	0.15….3.5Ncm



All dimensions are in/mm.

General Specifications

Dielectric	Capacitance (pF) min	Capacitance (pF) max	Q min (1MHz)	TCC (ppm/°C)	Operating Temperature (°C)	H max in/mm	Color Code	Model Number Top/Bottom 3 Lead	Model Number Top/Bottom 2 Lead	Model Number Side Adjust	Model Number Non Magnetic 3 Lead
PTFE	1.3	5.0	1500	-100±250	-40 to +85	0.40/10.2	Grey	PPXA5R000	PPXA5R002	PPXB5R000	
	1.5	9.0		-100±250	-40 to +85	0.40/10.2	Yellow	PPXA9R000	PPXA9R002	PPXB9R000	
	2.0	18		-100±200	-40 to +125	0.40/10.2	Green	PPXA18000	PPXA18002	PPXB18000	
	3.9	27		-100±200	-40 to +125	0.40/10.2	Red	PPXA27000	PPXA27002	PPXB27000	
	4.5	36		-100±200	-40 to +125	0.45/11.4	Violet	PPXA36000	PPXA36002	PPXB36000	
	5.0	45		-100±200	-40 to +125	0.45/11.4	Orange	PPXA45000	PPXA45002	PPXB45000	
PTFE High Temp	1.3	5.0	1500	-100±150	-40 to +125	0.40/10.2	Grey	PPXE5R000	PPXE5R002	PPXR5R000	PPXE5R000NM
	1.5	9.0				0.40/10.2	Yellow	PPXE9R000	PPXE9R002	PPXR9R000	PPXE9R000NM
	2.6	18				0.40/10.2	Green	PPXE18000	PPXE18002	PPXR18000	PPXE18000NM
	3.5	27				0.40/10.2	Red	PPXE27000	PPXE27002	PPXR27000	PPXE27000NM
	4.5	36				0.45/11.4	Violet	PPXE36000	PPXE36002	PPXR36000	PPXE36000NM
	5.0	45				0.45/11.4	Orange	PPXE45000	PPXE45002	PPXR45000	PPXE45000NM
PP	1.3	5.0	1000	0±300	-40 to +70	0.40/10.2	Grey	PPYA5R000	PPYA5R002	PPYB5R000	
	1.5	10		0±300		0.40/10.2	Yellow	PPYA10000	PPYA10002	PPYB10000	
	2.0	15		-100±300		0.40/10.2	Blue	PPYA15000	PPYA15002	PPYB15000	
	2.2	22		-100±300		0.40/10.2	Green	PPYA22000	PPYA22002	PPYB22000	
	2.3	27		-100±250		0.40/10.2	Red	PPYA27000	PPYA27002	PPYB27000	
	3.0	36		-100±250		0.40/10.2	Violet	PPYA36000	PPYA36002		
PC	2.5	30	200	+150±250	-40 to +85	0.40/10.2	Red	PPZA30000	PPZA30002	PPZB30000	
	4.0	40		+150±250		0.40/10.2	Violet	PPZA40000	PPZA40002	PPZB40000	

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

Production Qualification

- FilmTrim Capacitors are in accordance with DIN IEC 418-1 and 4-former DIN 44261 part 3.
- Solderability or heat resistance for the FilmTrim Capacitors comply with DIN IEC 68-2-20 part 2, Test Ta and Tb.
- Testing methods for manufacturing quality are in accordance with MIL- STD-105D and IEC410 (former DIN44260).
- Each FilmTrim Capacitor is tested for minimum and maximum capacitance value and is also subjected to full test voltage.

7.5mm FilmTrim

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.

FilmTrim Variable Capacitors

9.5mm FilmTrim

Product Features

- Dielectrics:
  Standard PTFE/ High Temp PTFE
  Polypropylene
  Polycarbonate
- SMD and lead-through-hole mounting
- Top, Bottom and Side Mount models
- Wide capacitance ranges
- Low cost
- Linear capacitance change vs. rotation
- Compact size

Product Applications

Typical Applications:

- Antennas • Transmitters
- RF Equipment
- Test Equipment

Modifications & Variations:

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

Part Numbering

PP	Z	C	130	00
PP = Passive Plus	Dielectric Code *See Table*	Style *C = 9.5mm Top Adjust*	Capacitor Code *100=10x10⁰=10pF 130=13pF*	Options

RoHS

For special requests, please contact PPI directly.

Dielectrics

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

Style

Style	
Code	**Description**
C	9.5mm Top/Bottom Adjust
D	9.5mm Side Adjust
F*	9.5mm Top/Bottom Adjust
T*	9.5mm Side Adjust

** Extended Temperature range: -40 to +125°C*

Capacitance

Capacitance Code
2R0 = 2.0pF
400 = 40pF
151 = 150pF

Special Options

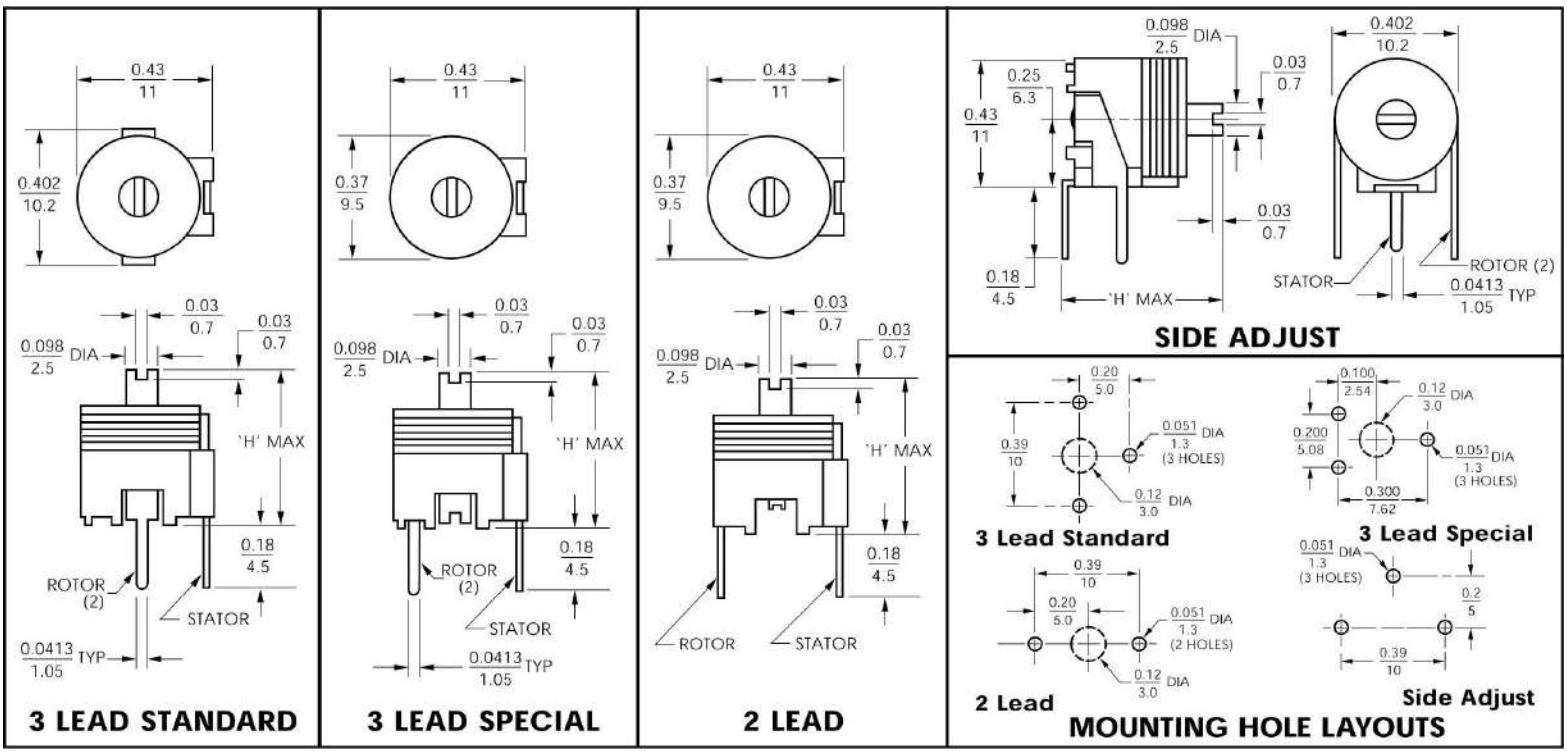
Special Options (Top Adjust Models)	
Code	**Description**
00	Standard
03	9.5mm, 3 lead special
04	9.5mm, 2 leads

FilmTrim Variable Capacitors

9.5mm FilmTrim

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	0.15….3.5Ncm



All dimensions are in/mm.

FilmTrim Variable Capacitors

9.5mm FilmTrim

General Specifications

Dielectric	Capacitance (pF) min	Capacitance (pF) max	Q min (1MHz)	TCC (ppm/°C)	Operating Temperature (°C)	H max in/mm	Color Code	Model Number Top/Bottom 3 Lead	Model Number Top/Bottom 3 Lead Special	Model Number Top/Bottom 2 Lead	Side Adjust
PTFE	2.0	13	1500	-100±300	-40 to +85	0.40/10.2	Blue	PPXC13000	PPXC13003	PPXC13004	PPXD13000
	3.0	26		-100±250		0.40/10.2	Green	PPXC26000	PPXC26003	PPXC26004	PPXD26000
	3.5	38		-100±200		0.40/10.2	Grey	PPXC38000	PPXC38003	PPXC38004	PPXD38000
	5.5	60		-100±200		0.45/11.4	Yellow	PPXC60000	PPXC60003	PPXC60004	PPXD60000
	6.0	75		-100±200		0.45/11.4	Red	PPXC75000	PPXC75003	PPXC75004	PPXD75000
	8.0	90		-100±200		0.49/12.0	Violet	PPXC90000	PPXC90003	PPXC90004	PPXD90000
	10	150		-100±200		0.49/12.0	Orange	PPXC15100	PPXC15103	PPXC15104	PPXD15100
PTFE High Temp	2.2	9.0	1500	-100±150	-40 to +125	0.40/10.2	Green	PPXF9R000	PPXF9R003	PPXF9R004	PPXT9R000
	2.5	15		-100±150		0.40/10.2	Red	PPXF15000	PPXF15003	PPXF15004	PPXT15000
	3.0	25		-100±150		0.40/10.2	Grey	PPXF25000	PPXF25003	PPXF25004	PPXT25000
	4.0	40		-100±150		0.40/10.2	Yellow	PPXF40000	PPXF40003	PPXF40004	PPXT40000
	5.5	60		-100±150		0.45/11.4	Blue	PPXF60000	PPXF60003	PPXF60004	PPXT60000
	6.0	75		-100±150		0.45/11.4	Violet	PPXF75000	PPXF75003	PPXF75004	PPXT75000
	8.0	90		-100±150		0.49/12.4	Orange	PPXF90000	PPXF90003	PPXF90004	PPXT90000
PP	2.0	15	1000	0±400	-40 to +70	0.40/10.2	Blue	PPYC15000	PPYC15003	PPYC15004	PPYD15000
	3.0	20		0±300		0.40/10.2	Green	PPYC20000	PPYC20003	PPYC20004	PPYD20000
	3.5	40		-50±150		0.40/10.2	Grey	PPYC40000	PPYC40003	PPYC40004	PPYD40000
	4.5	60		-50±300		0.40/10.2	Yellow	PPYC60000	PPYC60003	PPYC60004	PPYD60000
PC	7.0	80	500	0±200	-40 to +85	0.40/10.2	Red	PPZC80000	PPZC80003	PPZC80004	PPZD80000
	8.0	100		+100±300		0.45/11.4	Violet	PPZC10100	PPZC10103	PPZC10104	PPZD10100
	9.0	120		+100±250		0.45/11.4	Orange	PPZC12100	PPZC12103	PPZC12104	PPZD12100
	10	150		+100±250		0.47/12.0	Orange	PPZC15100	PPZC15103	PPZC15104	PPZD15100
	12	180		+100±250		0.47/12.0	Orange	PPZC18100	PPZC18103	PPZC18104	PPZD18100

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.

9.5mm FilmTrim

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.

FilmTrim Variable Capacitors

16mm FilmTrim

Product Features

- Dielectrics:
  Polycarbonate
  Polymide
- SMD and lead-through-hole mounting
- Top, Bottom and Side Mount models
- Wide capacitance ranges
- Low cost
- Linear capacitance change vs. rotation
- Compact size

Product Applications

Typical Applications:

- Antennas • Transmitters
- RF Equipment
- Test Equipment

Modifications & Variations:

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

Part Numbering

PP	Z	N	201	00
PP = Passive Plus	Dielectric Code *See Table*	Style *N = 16mm Top Adjust*	Capacitor Code *100=10x10⁰=10pF 201=201pF*	Options

RoHS

For special requests, please contact PPI directly.

Dielectrics

Dielectrics	
Code	**Description**
Z	PC (Polycarbonate) or PI (Polyimide)

Style

Style	
Code	**Description**
N	16mm Top Adjust
P	16mm Side Adjust

Capacitance

Capacitance Code
201 = 200pF

Special Options

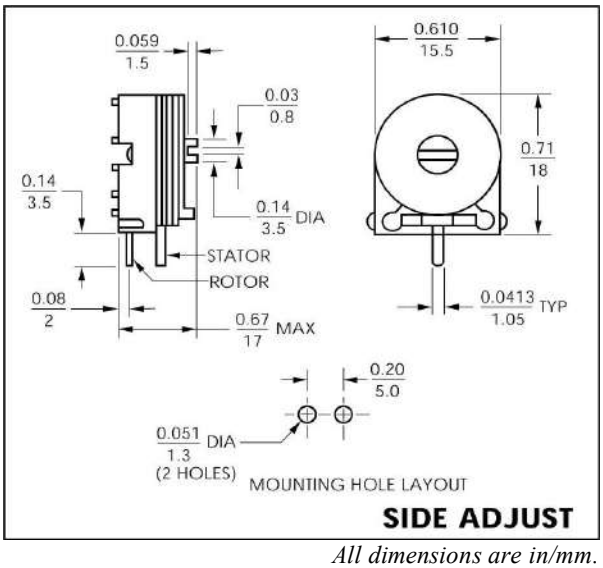
Special Options (Top Adjust Models)	
Code	**Description**
00	Standard

FilmTrim Variable Capacitors

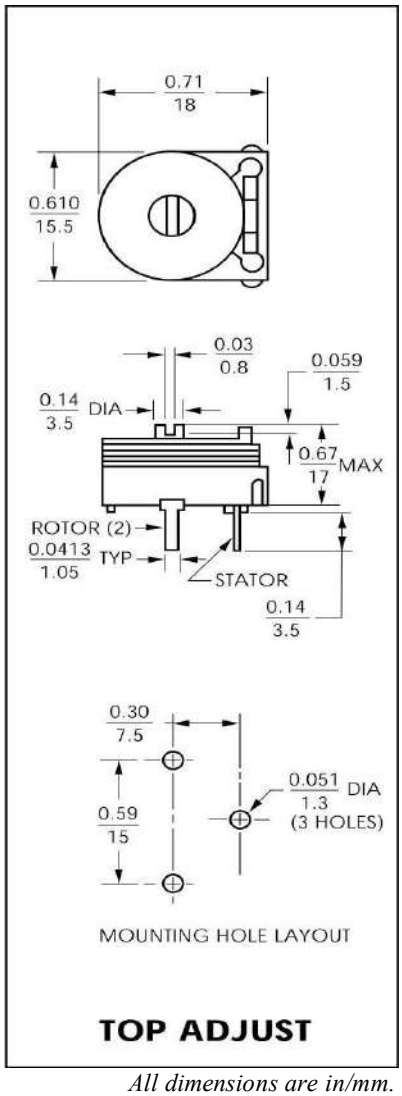
16mm FilmTrim

Electrical Specifications

Dielectrics	• 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) min	Capacitance (pF) max	Q min (1MHz)	TCC (ppm/°C)	Operating Temperature (°C)	H max in/mm	Color Code	Model Number Top Adjust	Model Number Side Adjust
PC	8.0	120	200	0±300	-40 to +85	0.66/16.8	Red	PPZN12100	PPZP12100
	9.0	160	200	0±300		0.66/16.8	Violet	PPZN16100	PPZP16100
	9.0	200	200	0±300		0.66/16.8	Orange	PPZN20100	PPZP20100
	18	300	200	0±300		0.66/16.8	Red	PPZN30100	PPZP30100
	23	350	100	0±350		0.66/16.8	Red	PPZN35100	PPZP35100
	23	380	100	0±350		0.66/16.8	Red	PPZN38100	PPZP38100
	25	430	100	0±350		0.66/16.8	Violet	PPZN43100	PPZP43100
	26	600	100	0±350		0.66/16.8	Grey	PPZN60100	PPZP60100
	40	770	100	0±350		0.66/16.8	Grey	PPZN77100	PPZP77100
PTFE	16	250	1000	-100±200	-40 to +85	0.66/16.8	None	PPXN25100	PPXP25100

FilmTrim Variable Capacitors

16mm FilmTrim

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.

3mm Surface Mount Trimmer Capacitors

36 Series

Product Features

- Low Cost Applications
- Low Temperature Drift
- Designed for reflow soldering
- Low Magnetics
- Surface Mount Design
- Half Turn Adjustment
- Tape & Reel Packaging
- RoHS Compliant

Product Applications

- NMR/ MRI Applications/Pre-Amplifiers
- Commercial Instrumentation
- RFID
- Tunable Filter Circuits

Specifications

- Capacitance Range: 1.5pF to 30pF
- DC Working Voltage: 100V
- DC Withstanding Voltage: 220V

Part Numbering

PPI **3R0** **36**

- PPI
- Maximum Capacitance
- Series

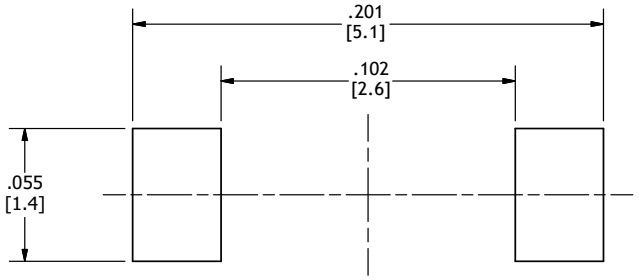
RoHS

Part Number		PPI3R036	PPI6R036	PPI10036	PPI20036	PPI30036
Capacitance (pF)	Minimum	1.5	2.0	3.0	5.8	8.0
	Maximum	3.0 +50% -0%	6.0 +50% -0%	10.0 +50% -0%	20.0 +50% -0%	30.0 +50% -0%
Marking Color		Black	Blue	Ivory	Pink	Green
DC Working Voltage		100	100	100	100	100
DC Withstanding Voltage		220	220	220	220	220
Temperature Coefficient (ppm/°C)		0 ± 300	0 ± 200	750 ± 400	1300 ± 400	1300 ± 400
Q (min.) at 1 MHz		300	500	600	250	250
Self Resonant Frequency at Maximum Rated Capacitance		1.4 GHz	1.07 GHz	0.86 GHz	0.59 GHz	0.46 GHz
Insulation Resistance		10^4 megaohms				
Operating Temperature		-25°C to +85°C				
Torque		15 to 72 gf.cm max. | 0.21 to 1.0 in-oz max.				
Packaging		All parts furnished on 12mm tape and reel; 1,000 pcs per reel				

3mm Surface Mount Trimmer Capacitors

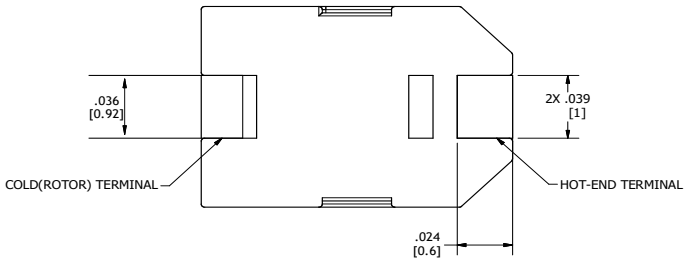
36 Series

Land Pattern Dimensions (inches/mm)

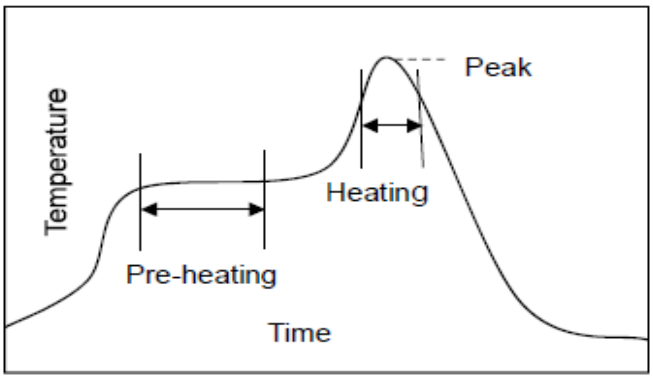


SUGGESTED FOOTPRINT
SOLDER PASTE THICKNESS OF 0.15 [mm] RECOMMENDED

Dimensions (inches/mm)

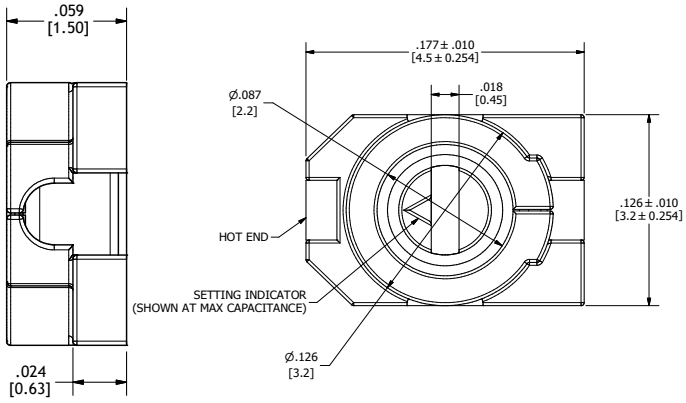


Suggested Soldering Profile



Stage	SAC305 Solder	Eutectic Solder
Pre-Heating	Temp: 150°C - 180°C Time: 60 - 120 Seconds	Temp: 120°C - 150°C Time: 60 - 120 Seconds
Heating	Temp: 220°C Min Time: 30 - 60 Seconds	Temp: 183°C Min Time: 30 - 60 Seconds
Peak Heat	Temp: 265°C Time: 3 Seconds Max	Temp: 265°C Time: 3 Seconds Max
Reflow Cycles	2 Times Max	2 Times Max
Soldering Iron		
Spec	Temperature: 400°C Max Time: 3 Seconds Max	

While PPI makes every effort to provide up to date and complete industry standard information, individual reflow equipment and applications vary. No guarantee is given that the suggested profile is suitable for any application or use.

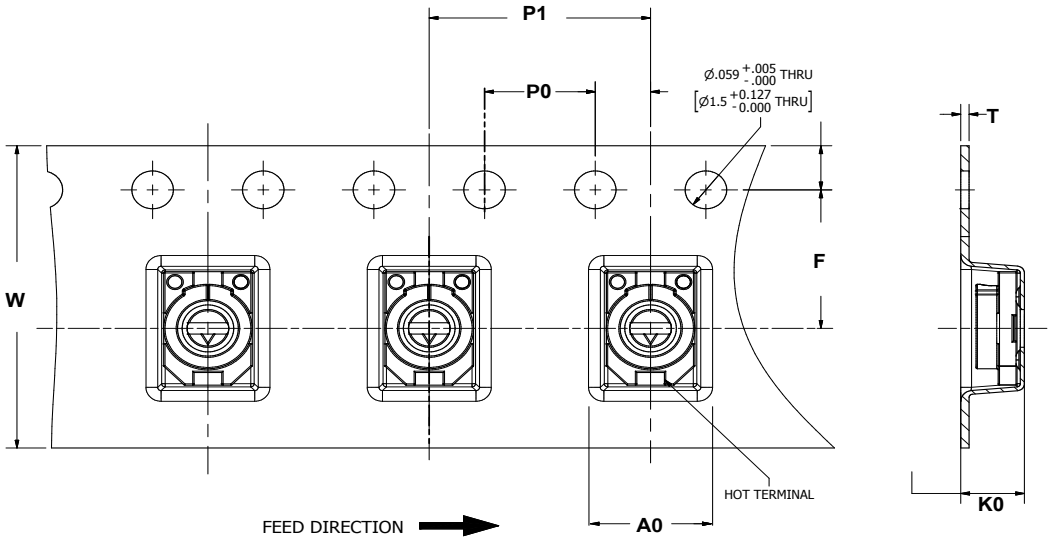


Tape & Reel Specifications

Series	Measurement Unit	W	P0	P1	T	F	Minimum Qty per Reel	Tape Material
36	in.	0.472	0.157	0.315	0.012	0.217	1000	Plastic
	mm	12.0	4.0	8.0	0.3	5.5		

A_0K_0

- Determined by component size. Typical clearance between the cavity and the component is: .50 (.002) min to .65 (.026) max for 12mm tape.
- The component cannot rotate more than 20° within the determined cavity.



3mm Surface Mount Trimmer Capacitors

46 Series

Product Features

- Low Cost Applications
- Low Temperature Drift
- Designed for reflow soldering
- Low Magnetics
- Surface Mount Design
- Half Turn Adjustment
- Tape & Reel Packaging
- RoHS Compliant

Product Applications

- NMR/ MRI Applications/Pre-Amplifiers
- Commercial Instrumentation
- RFID
- Tunable Filter Circuits

Specifications

- Capacitance Range: 1.5pF to 40pF
- DC Working Voltage: 125V
- DC Withstanding Voltage: 220V

Part Numbering

PPI 3R0 46

- PPI
- Maximum Capacitance
- Series

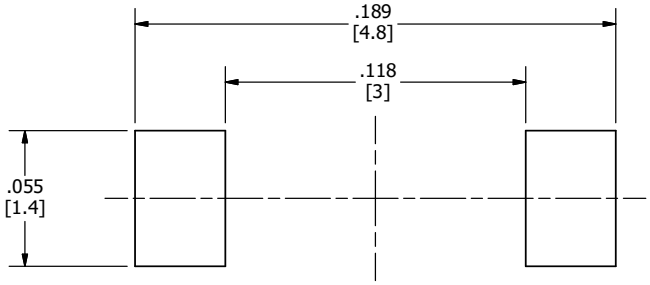
RoHS

Part Number		PPI3R046	PPI6R046	PPI10046	PPI15046	PPI20046	PPI30046	PPI40046
Capacitance (pF)	Minimum	1.5	2.0	2.0	3.0	4.5	5.5	8.0
	Maximum	3.0 +50% -0%	6.0 +50% -0%	10.0 +100% -0%	15.0 +100% -0%	20.0 +100% -0%	30.0 +100% -0%	40.0 +100% -0%
Marking Color		Black	Blue	White	Pink	Red	Orange	Yellow
DC Working Voltage		125	125	125	125	125	125	125
DC Withstanding Voltage		220	220	220	220	220	220	220
Temperature Coefficient (ppm/°C)		0 ± 200	0 ± 300	0 ± 300	0 ± 500	0 ± 500	-1500 ± 1000	-1500 ± 1000
Q (min.) at 1 MHz		500	500	500	500	500	200	200
Self Resonant Frequency at Maximum Rated Capacitance		2.1 GHz	1.5 GHz	1.16 GHz	0.92 GHz	0.81 GHz	0.70 GHz	0.60 GHz
Insulation Resistance		10^4 megaohms						
Operating Temperature		-40°C to +85°C						
Torque		11 to 72 gf.cm max. | 0.14 to 1.0 in-oz max.						
Packaging		All parts furnished on 12mm tape and reel; 1,000 pcs per reel						

3mm Surface Mount Trimmer Capacitors

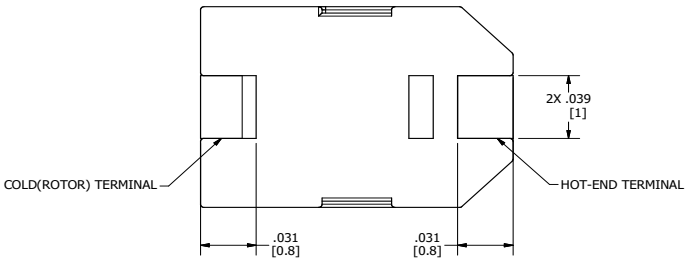
46 Series

Land Pattern Dimensions (inches/mm)

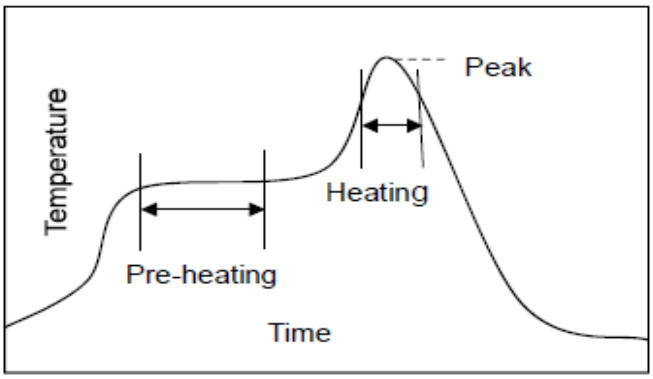


SUGGESTED FOOTPRINT
SOLDER PASTE THICKNESS OF 0.15 [mm] RECOMMENDED

Dimensions (inches/mm)

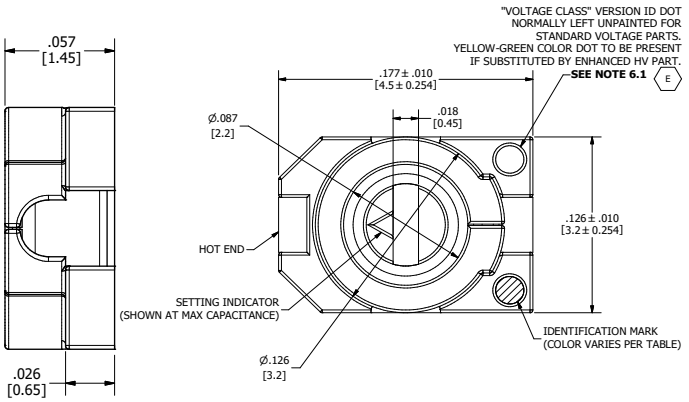


Suggested Soldering Profile



Stage	SAC305 Solder	Eutectic Solder
Pre-Heating	Temp: 150°C - 180°C Time: 60 - 120 Seconds	Temp: 120°C - 150°C Time: 60 - 120 Seconds
Heating	Temp: 220°C Min Time: 30 - 60 Seconds	Temp: 183°C Min Time: 30 - 60 Seconds
Peak Heat	Temp: 265°C Time: 3 Seconds Max	Temp: 265°C Time: 3 Seconds Max
Reflow Cycles	2 Times Max	2 Times Max
Soldering Iron		
Spec	Temperature: 400°C Max Time: 3 Seconds Max	

While PPI makes every effort to provide up to date and complete industry standard information, individual reflow equipment and applications vary. No guarantee is given that the suggested profile is suitable for any application or use.

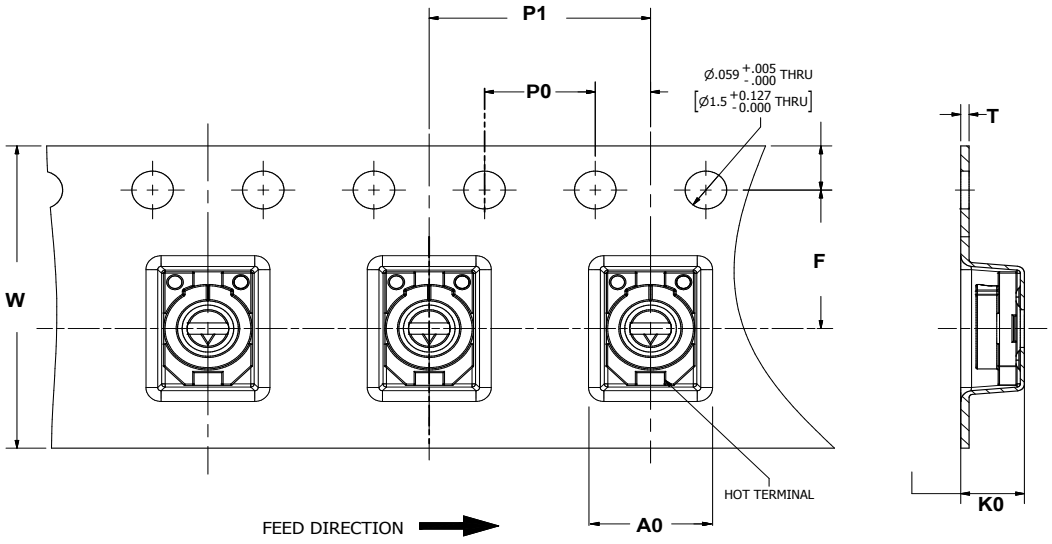


Tape & Reel Specifications

Series	Measurement Unit	W	P0	P1	T	F	Minimum Qty per Reel	Tape Material
46	in.	0.472	0.157	0.315	0.012	0.217	1000	Plastic
	mm	12.0	4.0	8.0	0.3	5.5		

A_0K_0

- Determined by component size. Typical clearance between the cavity and the component is: .50 (.002) min to .65 (.026) max for 12mm tape.
- The component cannot rotate more than 20° within the determined cavity.



3mm Surface Mount Trimmer Capacitors

46 HV Series

Product Features

- High Voltage
- Low Cost Applications
- Low Temperature Drift
- Designed for reflow soldering
- Low Magnetics
- Surface Mount Design
- Half Turn Adjustment
- Tape & Reel Packaging
- RoHS Compliant

Product Applications

- NMR/ MRI Applications/Pre-Amplifiers
- Commercial Instrumentation
- RFID
- Tunable Filter Circuits

Specifications

- Capacitance Range: 1.5pF to 40pF
- DC Working Voltage: 350V
- DC Withstanding Voltage: 770V

Part Numbering

PPI **3R0** **46** **HV**

- PPI
- Maximum Capacitance
- Series
- High Voltage

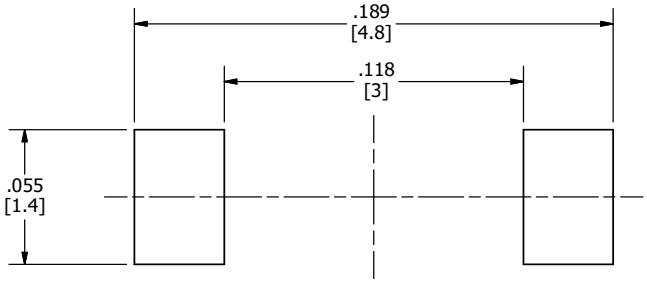
RoHS

Part Number	PPI3R046HV	PPI6R046HV	PPI10046HV	PPI15046HV	PPI20046HV	PPI30046HV	PPI40046HV
Capacitance (pF) Minimum	1.5	2.0	2.0	3.0	4.5	5.5	8.0
Capacitance (pF) Maximum	3.0 +50% -0%	6.0 +50% -0%	10.0 +100% -0%	15.0 +100% -0%	20.0 +100% -0%	30.0 +100% -0%	40.0 +100% -0%
Marking Color	Black & Green	Blue & Green	White & Green	Pink & Green	Red & Green	Orange & Green	Yellow & Green
DC Working Voltage	350	350	350	350	350	350	350
DC Withstanding Voltage	770	770	770	770	770	770	770
Temperature Coefficient (ppm/°C)	0 ± 200	0 ± 300	0 ± 300	0 ± 500	0 ± 500	-1500 ± 1000	-1500 ± 1000
Q (min.) at 1 MHz	500	500	500	500	500	200	200
Self Resonant Frequency at Maximum Rated Capacitance	2.1 GHz	1.5 GHz	1.16 GHz	0.92 GHz	0.81 GHz	0.70 GHz	0.60 GHz
Insulation Resistance	10^4 megaohms						
Operating Temperature	-40°C to +85°C						
Torque	11 to 72 gf.cm max. | 0.14 to 1.0 in-oz max.						
Packaging	All parts furnished on 12mm tape and reel; 1,000 pcs per reel						

3mm Surface Mount Trimmer Capacitors

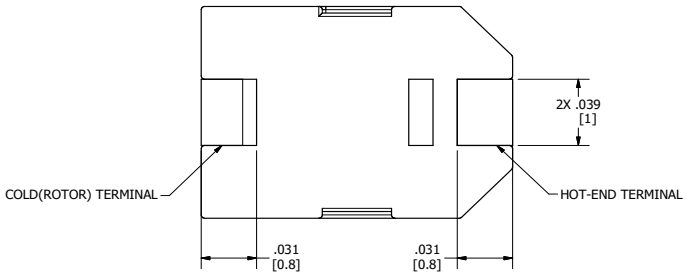
46 HV Series

Land Pattern Dimensions (inches/mm)

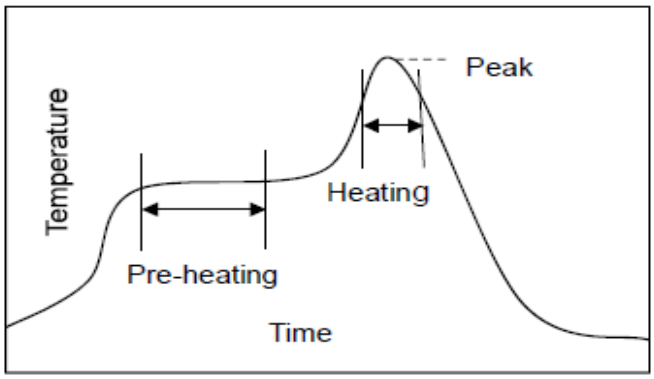


SUGGESTED FOOTPRINT
SOLDER PASTE THICKNESS OF 0.15 [mm] RECOMMENDED

Dimensions (inches/mm)

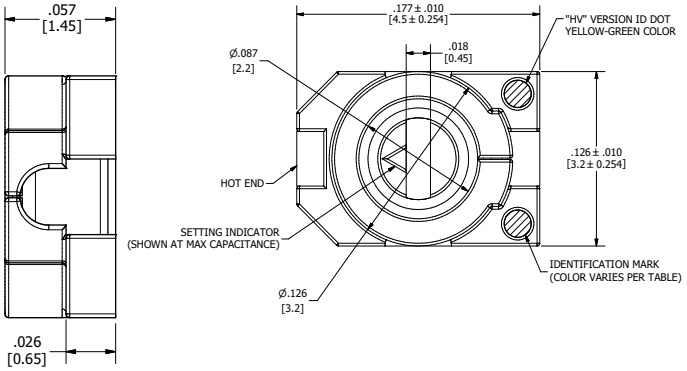


Suggested Soldering Profile



Stage	SAC305 Solder	Eutectic Solder
Pre-Heating	Temp: 150°C - 180°C Time: 60 - 120 Seconds	Temp: 120°C - 150°C Time: 60 - 120 Seconds
Heating	Temp: 220°C Min Time: 30 - 60 Seconds	Temp: 183°C Min Time: 30 - 60 Seconds
Peak Heat	Temp: 265°C Time: 3 Seconds Max	Temp: 265°C Time: 3 Seconds Max
Reflow Cycles	2 Times Max	2 Times Max
Soldering Iron		
Spec	Temperature: 400°C Max Time: 3 Seconds Max	

While PPI makes every effort to provide up to date and complete industry standard information, individual reflow equipment and applications vary. No guarantee is given that the suggested profile is suitable for any application or use.

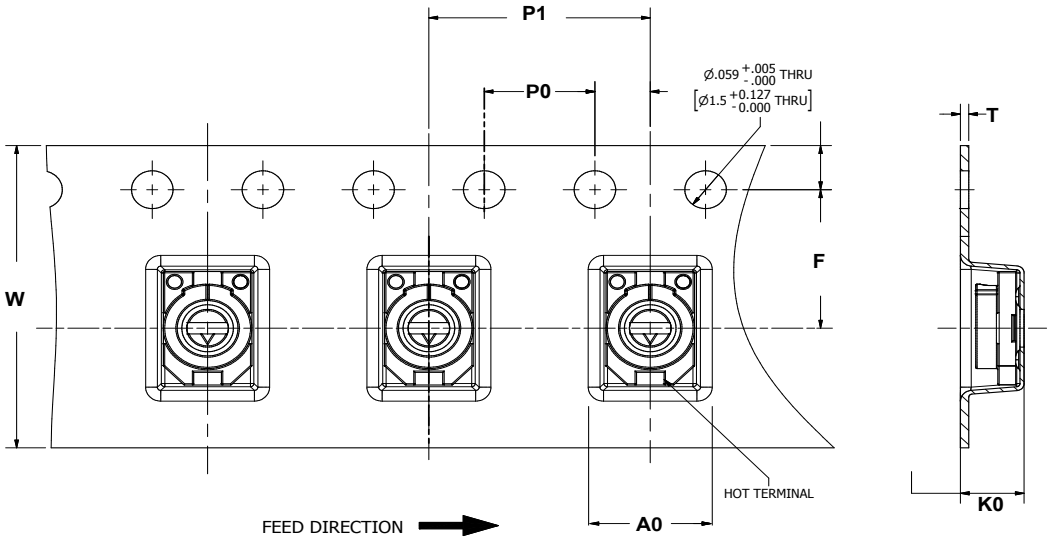


Tape & Reel Specifications

Series	Measurement Unit	W	P0	P1	T	F	Minimum Qty per Reel	Tape Material
46HV	in.	0.472	0.157	0.315	0.012	0.217	1000	Plastic
	mm	12.0	4.0	8.0	0.3	5.5		

A_0K_0

- Determined by component size. Typical clearance between the cavity and the component is: .50 (.002) min to .65 (.026) max for 12mm tape.
- The component cannot rotate more than 20° within the determined cavity.



3mm Surface Mount Trimmer Capacitors

56 Series

Product Features

- Low Cost Applications
- Low Temperature Drift
- Designed for reflow soldering
- Low Magnetics
- Surface Mount Design
- Half Turn Adjustment
- Tape & Reel Packaging
- RoHS Compliant

Product Applications

- NMR/ MRI Applications/Pre-Amplifiers
- Commercial Instrumentation
- RFID
- Tunable Filter Circuits

Specifications

- Capacitance Range: 1.5pF to 40pF
- DC Working Voltage: 125V
- DC Withstanding Voltage: 220V

Part Numbering

PPI 3R0 56

- PPI
- Maximum Capacitance
- Series

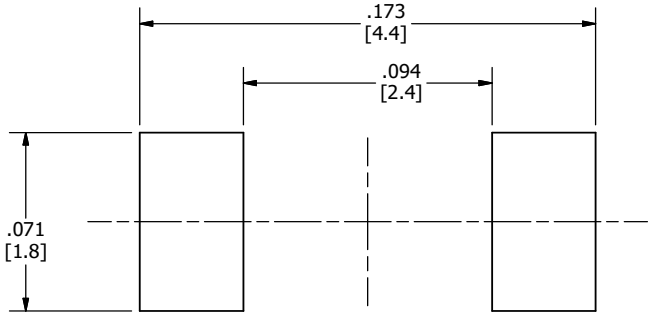
RoHS

Part Number		PPI3R056	PPI6R056	PPI10056	PPI15056	PPI20056	PPI30056	PPI40056
Capacitance (pF)	Minimum	1.5	2.0	2.0	3.0	4.5	5.5	8.0
	Maximum	3.0 +50% -0%	6.0 +50% -0%	10.0 +100% -0%	15.0 +100% -0%	20.0 +100% -0%	30.0 +100% -0%	40.0 +100% -0%
Marking Color		Black	Blue	White	Pink	Red	Orange	Yellow
DC Working Voltage		125	125	125	125	125	125	125
DC Withstanding Voltage		220	220	220	220	220	220	220
Temperature Coefficient (ppm/°C)		0 ± 200	0 ± 300	0 ± 300	0 ± 500	0 ± 500	-1500 ± 1000	-1500 ± 1000
Q (min.) at 1 MHz		500	500	500	500	500	200	200
Self Resonant Frequency at Maximum Rated Capacitance		2.9 GHz	2.05 GHz	1.6 GHz	1.3 GHz	1.15 GHz	0.92 GHz	0.84 GHz
Insulation Resistance		10^4 megaohms						
Operating Temperature		-40°C to +85°C						
Torque		11 to 72 gf.cm max. | 0.14 to 1.0 in-oz max.						
Packaging		All parts furnished on 12mm tape and reel; 1,000 pcs per reel						

3mm Surface Mount Trimmer Capacitors

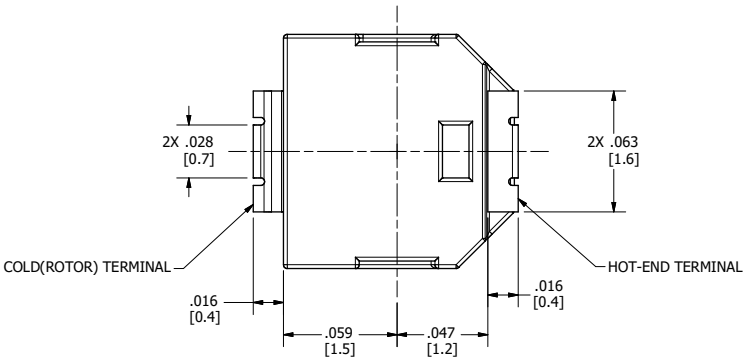
56 Series

Land Pattern Dimensions (inches/mm)

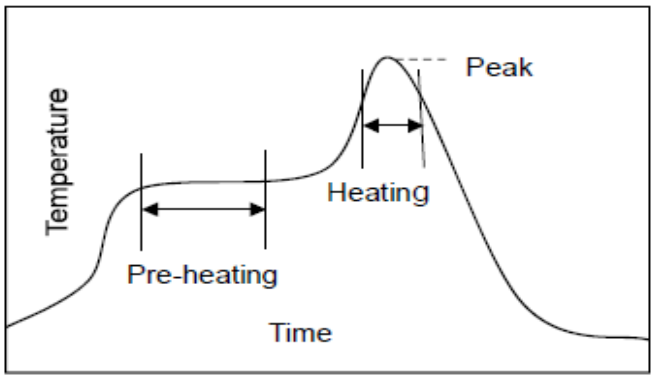


SUGGESTED FOOTPRINT
SOLDER PASTE THICKNESS OF 0.15 [mm] RECOMMENDED

Dimensions (inches/mm)



Suggested Soldering Profile



Stage	SAC305 Solder	Eutectic Solder
Pre-Heating	Temp: 150°C - 180°C Time: 60 - 120 Seconds	Temp: 120°C - 150°C Time: 60 - 120 Seconds
Heating	Temp: 220°C Min Time: 30 - 60 Seconds	Temp: 183°C Min Time: 30 - 60 Seconds
Peak Heat	Temp: 265°C Time: 3 Seconds Max	Temp: 265°C Time: 3 Seconds Max
Reflow Cycles	2 Times Max	2 Times Max
Soldering Iron		
Spec	Temperature: 400°C Max Time: 3 Seconds Max	

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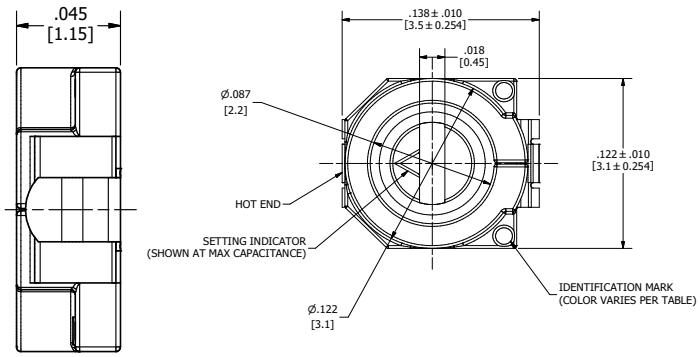
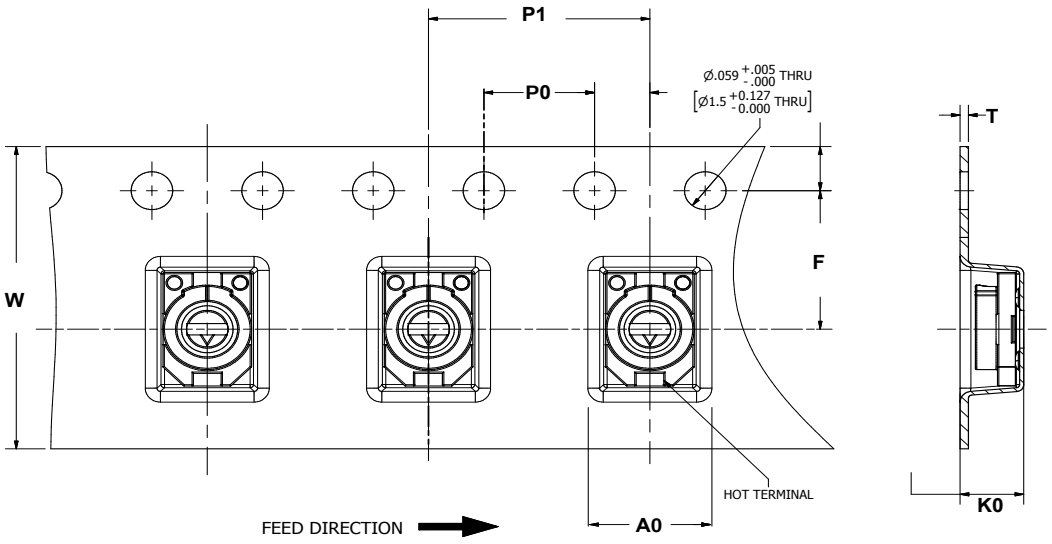


Tape & Reel Specifications

Series	Measurement Unit	W	P0	P1	T	F	Minimum Qty per Reel	Tape Material
56	in.	0.472	0.157	0.315	0.012	0.217	1000	Plastic
	mm	12.0	4.0	8.0	0.3	5.5		

A_0K_0

- Determined by component size. Typical clearance between the cavity and the component is: .50 (.002) min to .65 (.026) max for 12mm tape.
- The component cannot rotate more than 20° within the determined cavity.



Tape & Reel Specifications

3mm Trimmer Capacitors

3mm Trimmer Capacitor Tape & Reel Specifications

Series	Measurement Unit	W	P0	P1	T	F	Minimum Qty per Reel	Tape Material
36	in.	0.472	0.157	0.315	0.012	0.217	1000	Plastic
	mm	12.0	4.0	8.0	0.3	5.5		
46	in.	0.472	0.157	0.315	0.012	0.217	1000	Plastic
	mm	12.0	4.0	8.0	0.3	5.5		
46HV	in.	0.472	0.157	0.315	0.012	0.217	1000	Plastic
	mm	12.0	4.0	8.0	0.3	5.5		
56	in.	0.472	0.157	0.315	0.012	0.217	1000	Plastic
	mm	12.0	4.0	8.0	0.3	5.5		

A_0K_0

- Determined by component size. Typical clearance between the cavity and the component is: .50 (.002) min to .65 (.026) max for 12mm tape.
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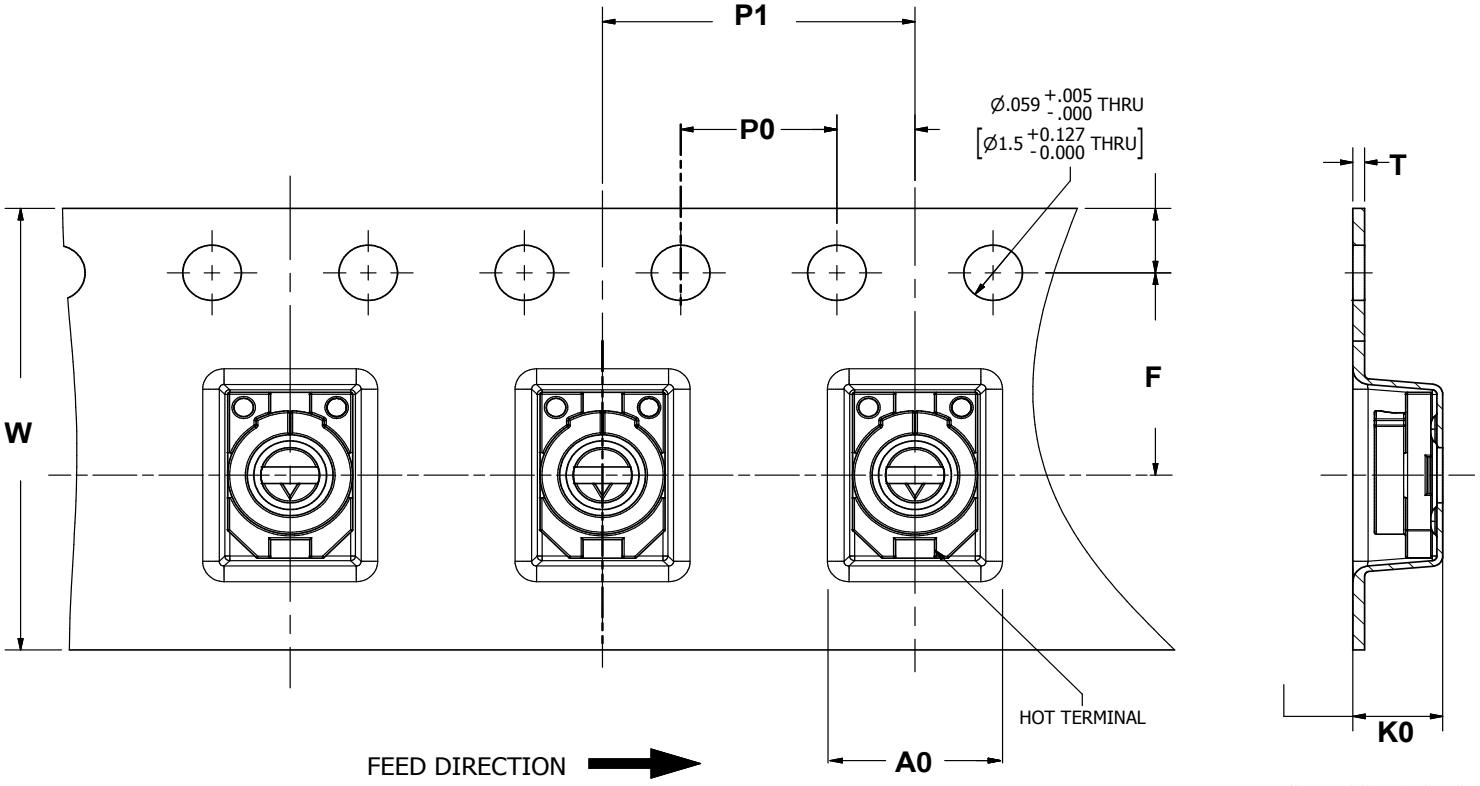

PPI Passive Plus
RF & Microwave Components

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