

AIR DIELECTRIC TRIMMER CAPACITORS

Description

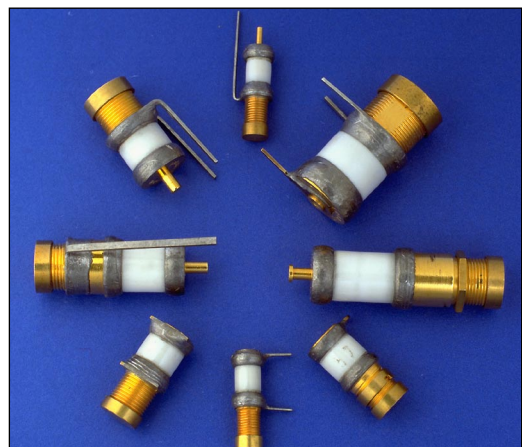
- **Standard** trimmer air capacitors are designed specifically for RF applications, VHF through microwave, and have become the industry standard of excellence. High Q and temperature stability are a result of proper attention to geometry and choice of optimum materials. The heart of this trimmer is the one piece self-locking constant torque drive mechanism. This mechanism utilizes transverse slots to create a spring effect between two threaded sections resulting in substantial contact areas which insure uniform torque, high Q and low dynamic tuning noise.
- **Miniature** trimmer air capacitors offer an even further size reduction of the standard air capacitors coupled with finer tuning resolution and ultra high Q, making them ideal for use in microwave circuits.
- Both standard and miniature capacitors are available in vertical mounting configurations which save board space and allow top tuning. **Vertical mount** capacitors are available in single dual and low inductance leads with upright or inverted tuning.
- Where **High voltage** is a requirement, the AT5300 series air capacitors are an excellent replacement for comparable range glass capacitors.

Features

- Q's previously unavailable in trimmer capacitors
- Excellent tuning stability and very low dynamic noise
- Approximately zero temperature coefficient
- Working voltage 250 VDC, test 500 VDC
- 306° C solder used in assembly
- Removable hermetic seal
- Meets MIL-C-14 409D
- French military QPL
- ESA-SCC 3010 qualified and NFC 93.171 approved

Applications

- RF amplifiers and oscillators
- Impedance matching
- Crystal trimming
- Interstage coupling
- Filter tuning



AIR DIELECTRIC TRIMMER CAPACITORS

High voltage



Characteristics

Range	1 to 10 pF	
Δ Cvs Rotation		Linear over wide range
Voltage	Rated 500 VDC Test 1000 VDC	Typical breakdown @ sea level > 1200 VDC
Min. Q @ 100MHz	> 2000	Measured at max. capacitance
Operating temperature	-55° C to +125° C	Stable over full range
Thermal shock	-55° C to +125° C	MIL-C-14409D
Temperature coefficient	0 ± 20 ppM/° C	Measured at 75% max. capacitance

Torque	70 to 420 cN.cm	
Rotational life	> 800 revolutions	Equivalent to MIL-C-14409D
Insulation resistance	>10 ⁶ MΩ @ 500 VDC	Measured at 25° C and 50% RH
Contact resistance	< 0.01 Ω	Low noise while tuning
Vibration	60 g 10 - 2000 Hz	MIL-STD-202 E Method 204 C
Shock	1500 g 0.5 ms	MIL-STD-202 E Method 213 B

Technical data

Temex Part N°	Q factor at 100 MHz	Capacitance range (pF)	Temperature coefficient (ppM/°C)
AT5300	> 2000	1 - 10	0 ± 20
AT5301	> 2000	1 - 10	0 ± 20
AT5302	> 2000	1 - 10	0 ± 20

Dimensions (mm)

Fig.	A	B	C	Thread
1	10.7	7.8	9.8	5/16-64
2	11.1	8.3	9.8	5/16-64
3	10.7	7.8	9.8	5/16-64

Figure 1

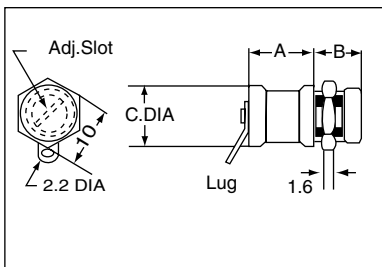


Figure 2

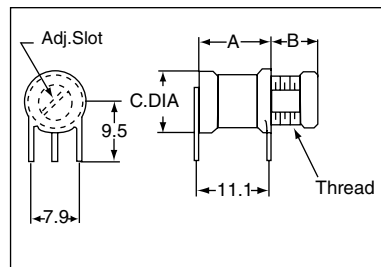
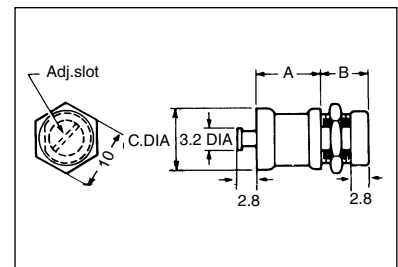
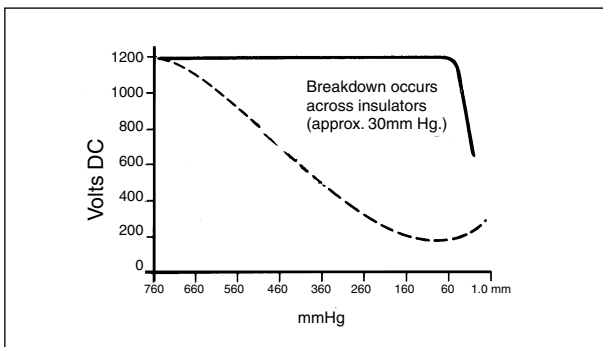


Figure 3

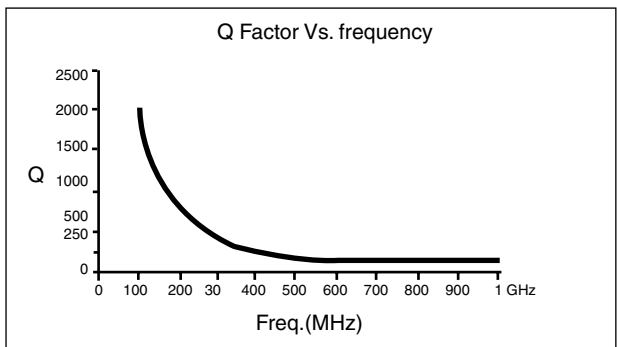


- Note 1 :** For fixing hole layout tolerances and dimensions, consult [page 8-38](#)
Note 2 : For Tap sizes and ref. numbers, see [page 8-34](#)
Note 3 : For special and custom design models, consult [page 8-33](#)
Note 4 : For panel mounting version (with nut) minimum circuit thickness: 0.8 mm

Breakdown voltage versus altitude



Q factor versus frequency



Characteristics

Range	See table	See graph
Δ Cvs Rotation	See graph	Linear over wide range
Voltage	Rated 250 VDC Test 500 VDC	Typical breakdown @ sea level > 800 VDC
Min. Q @ 100 MHz	To > 5000 See table	Measured at max. capacitance
Operating temperature	-55° C to +125° C	Stable over full range
Thermal shock	-55° C to +125° C	MIL-C-14409D
Temperature coefficient	See table	Measured at 75% max. capacitance

Torque	70 to 360 cN.cm	Average 150 cN.cm
Rotational life	> 800 revolutions	Equivalent to MIL-C-14409D
Insulation resistance	>10 ⁶ MΩ @ 500 VDC	Measured at 25° C and 50% RH
Contact resistance	< 0.01 Ω	Low dynamic noise
Self resonant frequency	to > 5 GHz See graph	Suitable to «C» band applications
Vibration	60 g 10 - 2000 Hz	MIL-STD-202 E Method 204 C
Shock	1500 g 0.5 ms	MIL-STD-202 E Method 213 B

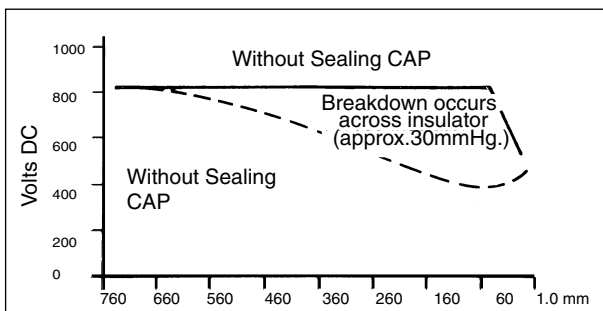
Technical data

Temex Part N°	Q factor at 100 MHz	Capacitance range (pF)	Temperature coefficient (ppM/°C)
AT5200 AT5201 AT5202 AT5205	> 5000	0.8 - 10	0 ± 15
AT5400 AT5401 AT5402 AT5405	> 3000	1 - 14	0 ± 25
AT5450 AT5451 AT5452 AT5455	> 3000	1 - 16	0 ± 50
AT5500 AT5501 AT5502	> 1500	1 - 20	0 ± 30
AT5550 AT5551 AT5552	> 1000	1.5 - 25	0 ± 50
AT5600 AT5601 AT5602	> 800	1 - 30	0 ± 30

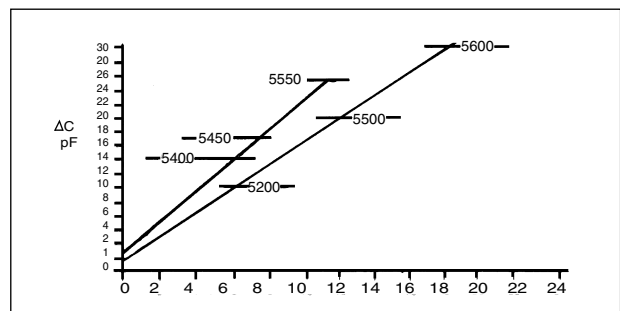
Dimensions (mm)

Fig.	A	B	C	D	E	Thread
1	7.7	5.8		7.6		15/64-64
2b	8.0	5.4	7.2	7.6	7.9	15/64-64
3	7.2	5.8		7.6		15/64-64
4	8.0	5.4	7.2	7.6	3.9	15/64-64
1	7.7	5.8		7.6		15/64-64
2b	8.0	5.4	7.2	7.6	12.0	15/64-64
3	7.2	5.8		7.6		15/64-64
4	8.0	5.4	7.2	7.6	3.9	15/64-64
1	7.7	5.8		7.6		15/64-64
2b	8.0	5.4	7.2	7.6	12.0	15/64-64
3	7.2	5.8		7.6		15/64-64
4	8.0	5.4	7.2	7.6	3.9	15/64-64
1	12.5	6.7		8.0		15/64-64
2b	14.7	4.3	14.2	8.0	12.0	15/64-64
3	12.4	6.7		8.0		15/64-64
1	12.5	6.7		8.0		15/64-64
2b	14.7	4.3	14.2	8.0	12.0	15/64-64
3	12.4	6.7		8.0		15/64-64
1	17.3	6.6		8.0		15/64-64
2a	19.4	4.4	18.8	8.0	12.0	15/64-64
3	17.3	6.6		8.0		15/64-64

Breakdown voltage versus altitude



Δ VS rotation



AIR DIELECTRIC TRIMMER CAPACITORS

Standard



Figure 1

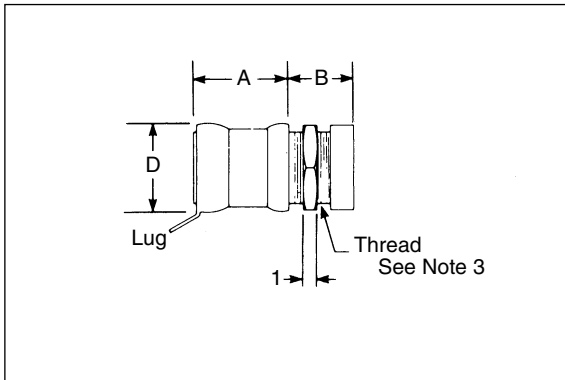


Figure 2

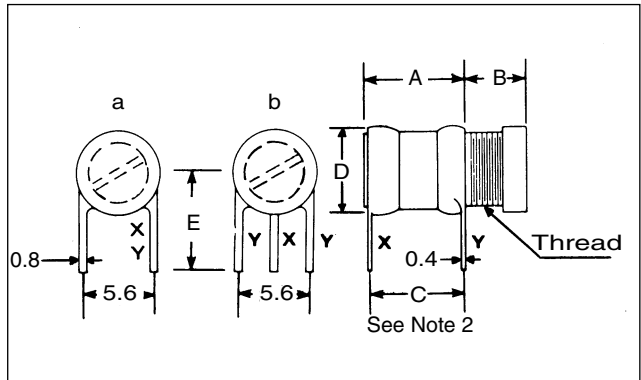


Figure 3

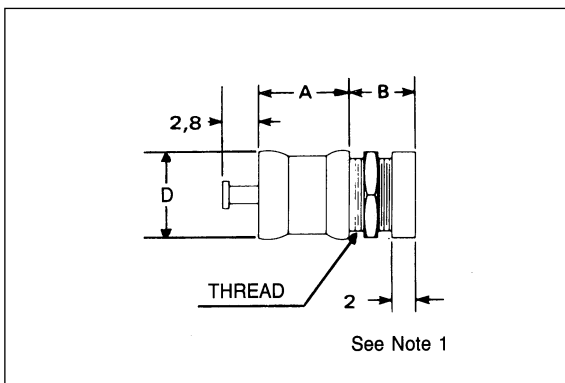
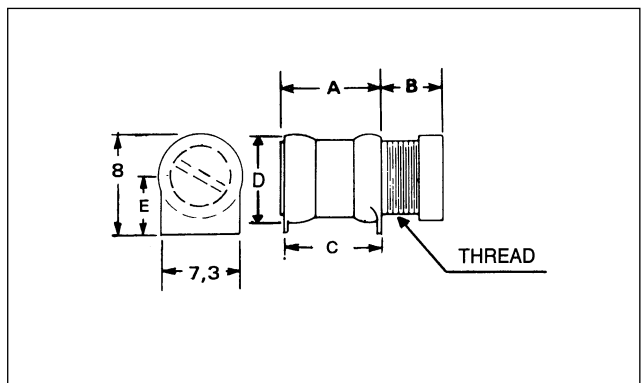


Figure 4

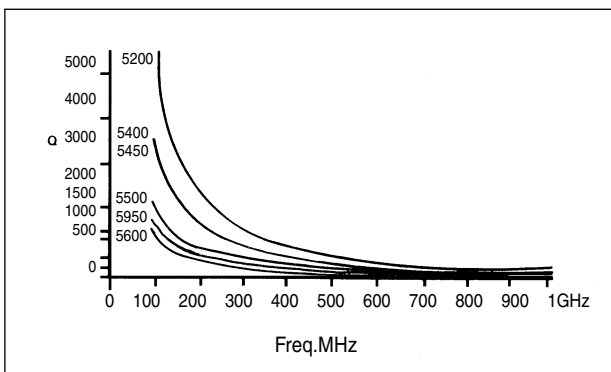


- Note 1:** B. Dimension is increased by 0.8 mm with slotted seal cap.
- Note 2:** For fixing hole layout tolerances and dimensions consult [page 8-38](#)
- Note 3:** For Tap sizes and reference numbers see [page 8-34](#)
- Note 4:** For special and custom design models consult [page 8-33](#)
- Note 5:** For panel mounting version (with nut) minimum circuit thickness: 0.8 mm

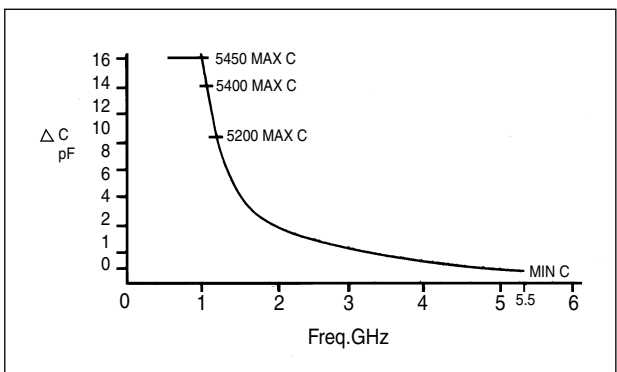
How to order?

- With standard seal cap ex: AT5202
- With slotted seal cap add suffix S ex: AT5202 S

Q versus frequency



Δ C versus self-resonant frequency



Characteristics

Range	See table	See graph
Δ Cvs Rotation	See graph	Linear over wide range
Voltage	Rated 250 VDC Test 500 VDC	Typical breakdown @ sea level > 800 VDC
Min. Q @ 100 MHz	To > 10000 See table	Measured at max. capacitance
Operating temperature	-55° C to +125° C	Stable over full range
Thermal shock	-55° C to +125° C	MIL-C-14409D
Temperature coefficient	See table	Measured at 75% max. capacitance

Torque AT5700's AT5800's	30 to 290 cN.cm 22 to 220 cN.cm	
Rotational life	> 800 revolutions	Equivalent to MIL-C-14409D
Insulation resistance	>10 ⁶ MΩ @ 500 VDC	Measured at 25° C and 50% RH
Contact resistance	< 0.01 Ω	Low dynamic noise
Self resonant frequency	to > 6 GHz See graph	Suitable to «C» band applications
Vibration	60 g 10 - 2000 Hz	MIL-STD-202 E Method 204 C
Shock	1500 g 0.5 ms	MIL-STD-202 E Method 213 B

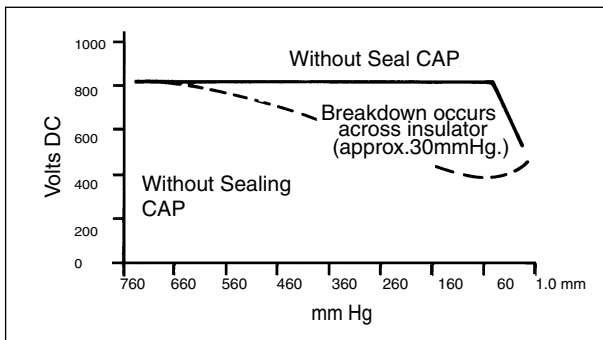
Technical data

Temex Part N°	Q factor at 100 MHz	Capacitance range (pF)	Temperature coefficient (ppM/°C)
AT5700 AT5701 AT5702 AT5705	> 10000	0.8 - 6	0 ± 15
AT5750 AT5751 AT5752 AT5755	> 7500	0.8 - 10	0 ± 50
AT5800 AT5801 AT5802 AT5805	> 10000	0.35 - 3.5	0 ± 50
AT5850 AT5851 AT5852 AT5855	> 7500	0.5 - 5	0 ± 50

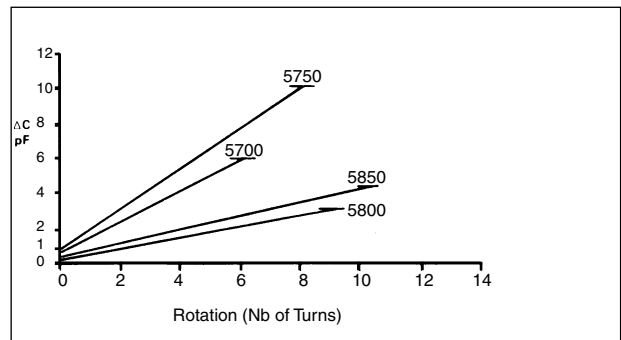
Dimensions (mm)

Fig.	A	B	C	D	E	F	G	Thread
1	7.0	5.6		6.2				10-64
2b	7.3	5.1	6.7	6.2	6.3		0.4	10-64
3	6.9	5.6		6.2				10-64
5	7.3	5.1	6.7	6.2	6.4	5.6	0.4	10-64
1	7.0	6.3		6.2				10-64
2b	7.3	5.8	6.7	6.2	6.3		0.4	10-64
3	6.9	6.3		6.2				10-64
5	7.3	5.8	6.7	6.2	6.4	5.6	0.4	10-64
4	6.7	5.9		4.6				.120-80
2a	7.0	5.7	6.5	4.6	5.4		0.25	.120-80
3	6.7	5.9		4.6				.120-80
5	7.2	5.5	6.7	4.6	4.6	3.8	0.4	.120-80
4	6.7	6.8		4.6				.120-80
2a	7.0	6.6	6.5	4.6	5.4		0.25	.120-80
3	6.7	6.8		4.6				.120-80
5	7.2	6.4	6.7	4.6	4.6	3.8	0.4	.120-80

Breakdown voltage versus altitude



Δ VS rotation



AIR DIELECTRIC TRIMMER CAPACITORS

Miniature



Figure 1

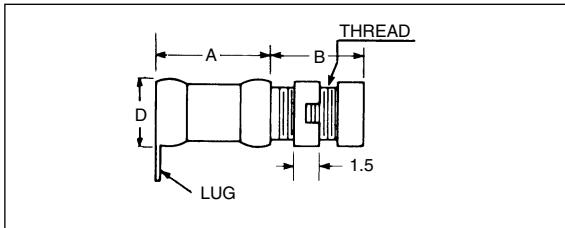


Figure 2

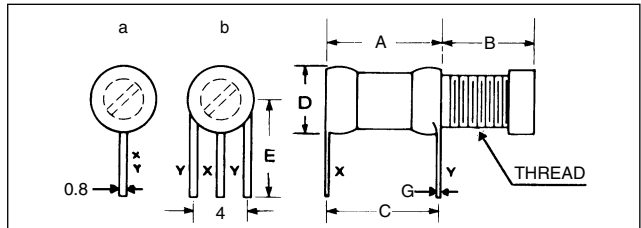


Figure 3

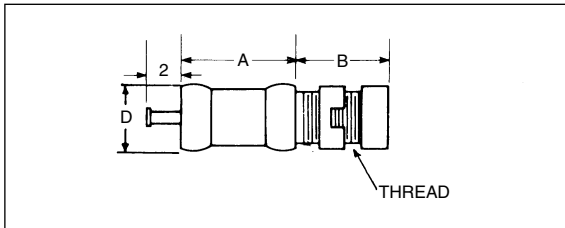


Figure 4

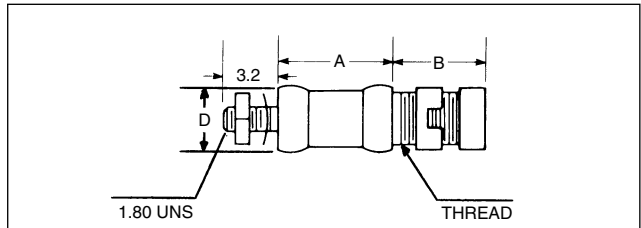
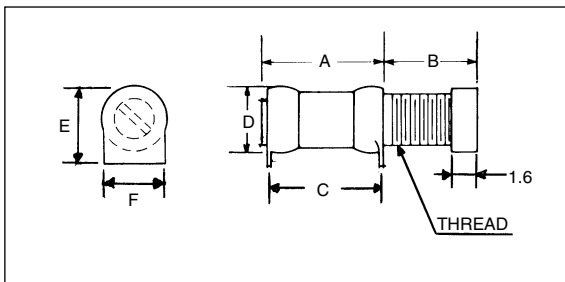


Figure 5

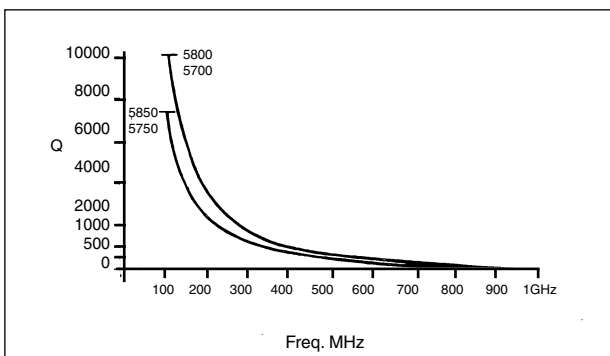


- Note 1:** B. Dimension is increased by 0.8 mm with slotted seal cap.
- Note 2:** For fixing hole layout tolerances and dimensions consult [page 8-38](#)
- Note 3:** For Tap sizes and reference numbers see [page 8-34](#)
- Note 4:** For special and custom design models consult [page 8-33](#)
- Note 5:** For panel mounting version (with nut) minimum circuit thickness: 0.8 mm

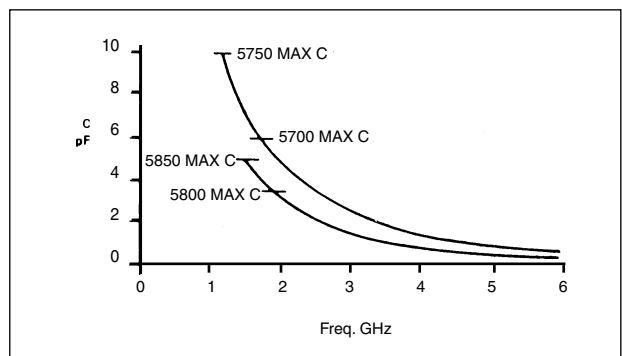
How to order?

- With standard seal cap ex: AT5701
- With slotted seal cap add suffix S ex: AT5701 S

Q factor versus frequency



Self-resonant frequency



Characteristics

Range	See table	
Δ Cvs Rotation	See graph page 8-18	
Voltage	Rated 250 VDC Test 500 VDC	Typical breakdown @ sea level > 800 VDC
Min. Q @ 100 MHz	To > 10000, see graph p. 10/21-23	Measured at max. capacitance
Operating temperature	-55° C to +125° C	Stable over full range
Thermal shock	-55° C to +125° C	MIL-C-14409D
Temperature coefficient	See table	Measured at 75% max. capacitance

Torque	T ₁ 70 to 360 cN.cm T ₂ 22 to 220 cN.cm T ₃ 30 to 290 cN.cm	
Rotational life	> 800 revolutions	Equivalent to MIL-C-14409D
Insulation resistance	>10 ⁶ MΩ @ 500 VDC	Measured at 25° C and 50% RH
Contact resistance	< 0.01 Ω	Low dynamic noise
Self-resonant frequency	To > 5 GHz See graph p. 8-18	Suitable to «S» band applications
Vibration	60 g 10 - 2000 Hz	MIL-STD-202 E Method 204 C
Shock	1500 g 0.5 ms	MIL-STD-202 E Method 213 B

Figure 1

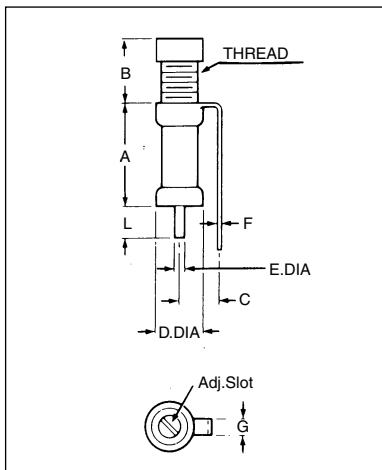


Figure 2

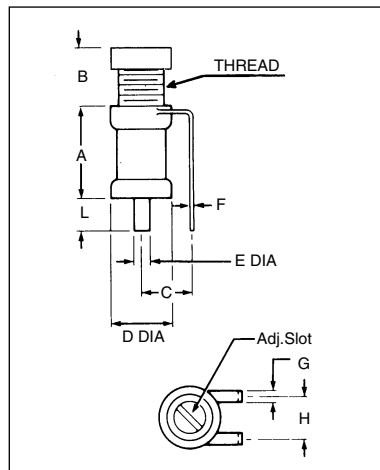


Figure 3

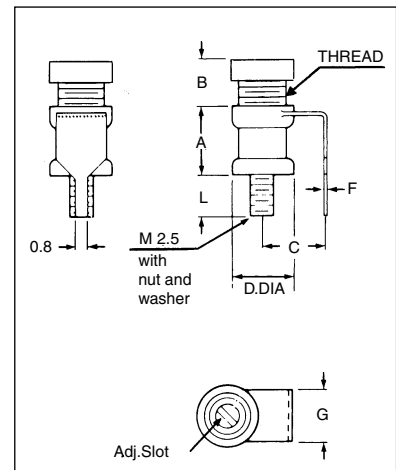


Figure 4

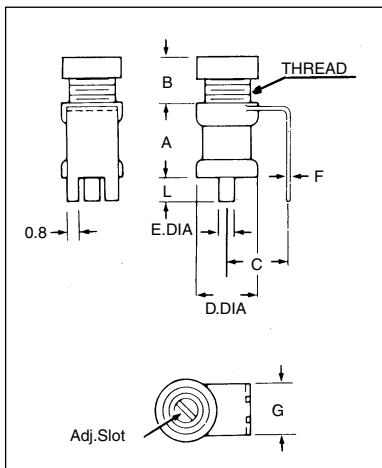


Figure 5

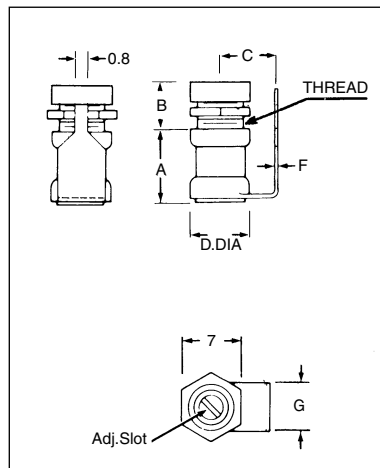
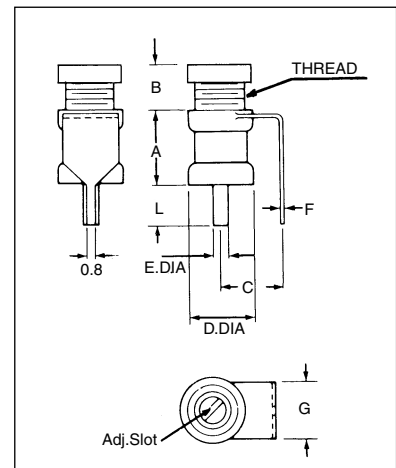


Figure 6



AIR DIELECTRIC TRIMMER CAPACITORS



Vertical mount

Vertical mount, Standard & Extended range Dimensions (mm)

Temex Part N°	Q factor at 100 MHz	Capacitance range (pF)	Temperature coefficient (ppM/°C)	Torque
AT8052	> 5000	1.5 - 10	0 ± 15	T ₁
AT5276	> 5000	1.5 - 10	0 ± 15	T ₁
AT8053	> 3000	1.5 - 14	0 ± 25	T ₁
AT5476	> 3000	1.5 - 14	0 ± 30	T ₁
AT5453	> 3000	1.5 - 16	0 ± 50	T ₁
AT8054	> 1500	1.5 - 20	0 ± 30	T ₁
AT5553	> 1000	1.5 - 25	0 ± 50	T ₁

Fig.	A	B	C	D	E	F	G	H	L	Thread
1	7.5	5.6	5.2	7.6	1.6	0.4	1		2.8	15/64-4
2	7.5	5.6	5.2	7.6	1.6	0.4	1	5.6	2.8	15/64-4
1	7.5	5.6	5.2	7.6	1.6	0.4	1		2.8	15/64-4
2	7.5	5.6	5.2	7.6	1.6	0.4	1	5.6	2.8	15/64-4
2	7.5	5.6	5.2	7.6	1.6	0.4	1	5.6	2.8	15/64-4
1	14.7	4.4	5.2	8.0	1.6	0.4	1		2.8	15/64-4
1	14.7	4.4	5.2	8.0	1.6	0.4	1		2.8	15/64-4

Vertical mount, Miniature

Temex Part N°	Q factor at 100 MHz	Capacitance range (pF)	Temperature coefficient (ppM/°C)	Torque
AT8051	> 10000	0.6 - 3.5	0 ± 50	T ₂
AT5853	> 7500	0.7 - 5	0 ± 50	T ₂
AT8050	> 10000	0.8 - 6	0 ± 15	T ₃
AT5753	> 7500	1.2 - 10	0 ± 50	T ₃

Dimensions (mm)

Fig.	A	B	C	D	E	F	G	H	L	Thread
1	7.0	5.6	3.2	4.6	0.8	0.25	0.5		2.8	.120 - 80
1	7.0	6.6	3.2	4.6	0.8	0.25	0.5		2.8	.120 - 80
1	7.3	5.1	4	6.2	1.1	0.4	0.8		3	10-64
2	7.3	5.8	4	6.2	1.1	0.4	0.8	4	3	10-64

Vertical mount, Low inductance

Temex Part N°	Q factor at 100 MHz	Capacitance range (pF)	Temperature coefficient (ppM/°C)	Torque
AT8090	> 2000	1.5 - 10	0 ± 20	T ₁
AT8091	> 2000	1.5 - 14	0 ± 25	T ₁
AT8092	> 2000	1.5 - 14	0 ± 25	T ₁
AT8093	> 2000	1.5 - 14	0 ± 30	T ₁

Dimensions (mm)

Fig.	A	B	C	D	E	F	G	H	L	Thread
3	7.5	5.6	7.2	7.6		0.4	6.4		4.8	15/64-64
5	7.7	4.7	7.2	7.6		0.4	6.4			15/64-64
4	7.5	5.6	7.2	7.6	1.6	0.4	6.4	5.5	2.8	15/64-64
6	7.5	5.6	7.2	7.6	1.6	0.4	6.4		2.8	15/64-64

- Note 1** : All models supplied with sealing cap.
- Note 2** : B. Dimension is increased by 0.8 mm with slotted seal cap.
- Note 3** : For Tap sizes and ref. numbers, consult [page 8-34](#)
- Note 4** : For special and custom design models, consult [page 8-33](#)
- Note 5** : For fixing hole layout tolerances and dimensions, consult [page 8-38](#)

How to order?

- With standard seal cap Ex.: AT5853
- With slotted seal cap add suffix S Ex.: AT5853 S