



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



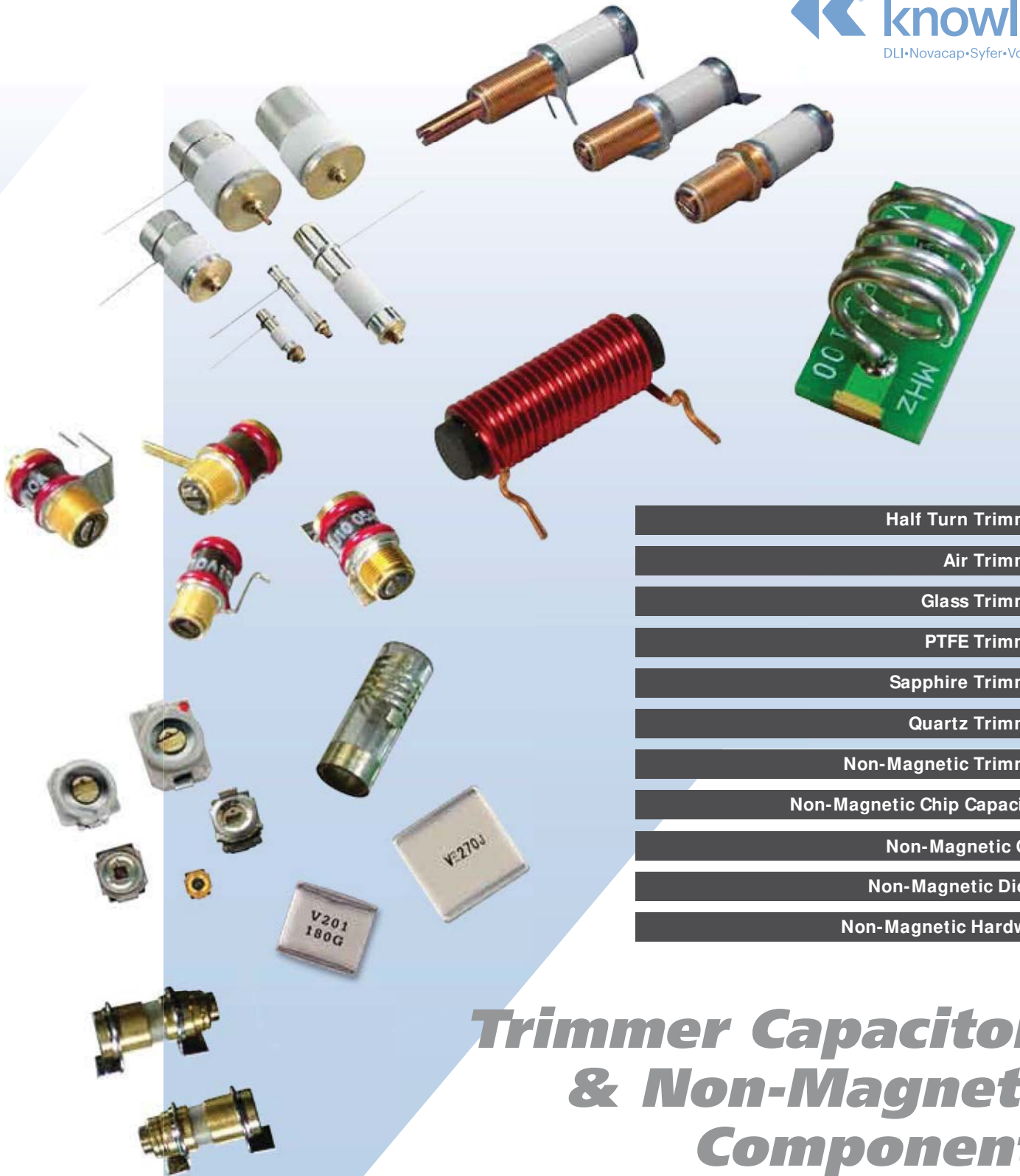
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- Half Turn Trimmers
- Air Trimmers
- Glass Trimmers
- PTFE Trimmers
- Sapphire Trimmers
- Quartz Trimmers
- Non-Magnetic Trimmers
- Non-Magnetic Chip Capacitors
- Non-Magnetic Coils
- Non-Magnetic Diodes
- Non-Magnetic Hardware

Trimmer Capacitors & Non-Magnetic Components



Introduction to Voltronics Corporation

Voltronics has been supplying high performance multi-turn trimmers since 1963. Our range of trimmers are suitable for applications that require high precision, mechanically stable with a high tolerance to vibration and shock. Our success is based on a unique sealed, non-rotating piston design that has become one of the designers preferred choices for demanding applications.

As well as our extensive range of standard products we are able to design and manufacture customized products for our specialty customers. In addition we are able to offer a range of half turn trimmers suitable for less stringent applications, but still providing good stability and voltage handling capabilities.

For more than 30 years Voltronics has been partnered with leading MRI manufacturers, supporting them with the highest quality non-magnetic components. This has grown from just supplying trimmer capacitors to now include a broad offering of non-magnetic components focussed on MRI applications.



Contents

Half Turn Ceramic SM Chip Trimmers

Product Guide	2
JZ & JZ_HV Series	3
JR & JR_HV Series.....	4
JV Series	5
JQ & JN Series	6
Q Data Charts & Engineering Kits	7

Precision Air/ PTFE/ Sapphire Trimmers

Product Guide	8
A & E Series Standard Air Trimmers	9
K & KE Series Air Trimmers	10
A1 & A3 Series Low Cost PTFE Trimmers.....	11
A2 & A4 Series Low Cost Miniature Trimmers	12
A_HV & E_HV Series High Voltage PTFE Trimmers	13
K_HV & KE_HV Series High Voltage PTFE Trimmers	14
A Series Very High Voltage PTFE Trimmers	15
NT Series Ultra High Voltage PTFE Trimmers	15
Air/PTFE Trimmers Lead Styles	16
P series High Q Sealed Sapphire Trimmers	17

Glass and Quartz Trimmers

General Specifications.....	18
S Series - Smallest Sealed Glass Trimmers.....	19
H Series - Extended Range Glass Trimmers	20
TF Series - Vertical P.C. Mount Glass Trimmers	21
TM & QM Series - Panel Mount Glass & Quartz Trimmers.....	22-23
TP & QP Series - Horizontal P.C. Mount Glass & Quartz Trimmers	24-25
Differential Glass Trimmers	26
Split Stator Glass Trimmers	26
Engineering Prototype Kits - Air/PTFE/Sapphire & Glass Trimmer Capacitors	27

Precision Microwave Tuners

DRO - Microwave Tuners for Dielectric Resonator.....	28
Precision Microwave Cavity Tuners.....	29

Non-Magnetic Components & Hardware

Trimmers - Product Guide	30
PTFE Trimmers - NT Series Ultra High Voltage	31
Sapphire Trimmer - V9000 Sub-miniature.....	32
Multilayer Capacitors - Product Guide.....	33
Multilayer Capacitors - General Specifications	34
High Q Multilayer Capacitors - 5 Series	35
High Q Multilayer Capacitors - 11 Series.....	36
High Q Multilayer Capacitors - 25 Series.....	37
High Q Multilayer Capacitors - 38 Series.....	38
Coils - Product Guide	39
Diodes - RF Actuated Diode Switch.....	40
Hardware - Screws/Nuts/Washers.....	41

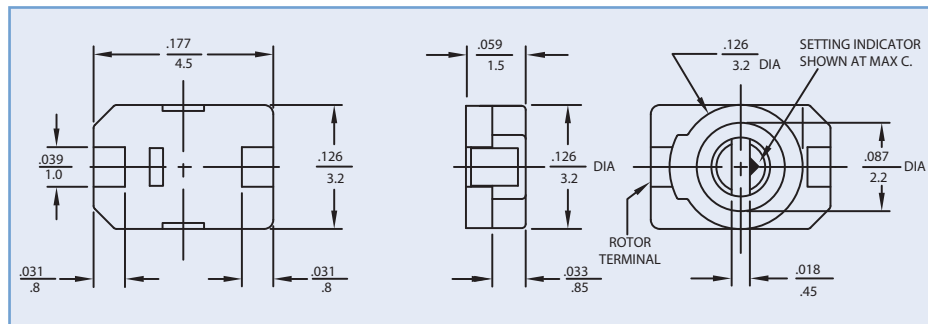
Product Guide - Half Turn Ceramic Chip Trimmers

Product Line	Actual Size Length x Width x Height	Part Number	Cap. Range Min. - Max. pF	Temperature Coefficient	SRF GHz	Mounting	Page
JZ & JZ_HV*	0.177 x 0.126 x 0.059 in 4.5 x 3.2 x 1.5 mm	JZ030	1.5 - 3.0	0±200	2.1	Surface	3
		JZ060	2.0 - 6.0	0±300	1.5		
		JZ080	3.0 - 8.0	-750±500	1.25		
		JZ100	2.0 - 10.0	0±300	1.16		
		JZ150	3.0 - 15.0	0±300	0.92		
		JZ200	4.5 - 20.0	0±500	0.81		
		JZ300	5.5 - 30.0	-1500±1000	0.7		
		JZ400	8.0 - 40.0	-1500±1000	0.6		
* Note: We now offer the series in a HIGH VOLTAGE VERSION. The JZ_HV series specifications are identical to the specifications listed above with this important exception: DC Working Voltage 350DC, Withstanding Voltage 750.							
JR & JR_HV*	0.138 x 0.122 x 0.045 in 3.5 x 3.1 x 1.15 mm	JR030	1.5 - 3.0	0±200	2.9	Surface	4
		JR060	2.0 - 6.0	0±300	2.05		
		JR080	3.0 - 8.0	-750±500	1.8		
		JR100	2.0 - 10.0	0±300	1.6		
		JR150	3.0 - 15.0	0±300	1.3		
		JR200	4.5 - 20.0	0±500	1.15		
		JR300	5.5 - 30.0	-1500±1000	0.92		
		JR400	8.0 - 40.0	-1500±1000	0.84		
JV	0.126 x 0.098 x 0.049 in 3.2 x 2.5 x 1.25 mm	JV010	0.5 - 1.0	0±300	4.6	Surface	5
		JV025	0.65 - 2.5	0±300	2.9		
		JV030	1.5 - 3.0	0±300	2.6		
		JV060	2.5 - 6.0	0±300	1.9		
		JV100	3.0 - 10.0	0±300	1.4		
		JV200	4.5 - 20.0	-750±500	1.0		
		JV250	5.5 - 25.0	-750±500	0.9		
		JV450	8.0 - 45.0	-1000±500	0.6		
JQ	0.106 x 0.087 x 0.04 in 2.7 x 2.2 x 1.0 mm	JQ060	3.0 - 6.0	0±300	1.6	Surface	6
		JQ100	3.5 - 10.0	0±300	1.2		
		JQ200	7.0 - 20.0	-750±500	0.9		
JN	0.067 x 0.059 x 0.035 in 1.7 x 1.5 x 0.9 mm	JN010 JN015	0.55 - 1.0	0±300	6.0	Surface	6
		JN040	0.7 - 1.5	0±300	4.8		
		JN080	1.5 - 4.0	0±300	2.7		
			3.0 - 8.0	-750±500	1.8		
Engineering Kits and Q Data Charts							7

JZ & JZ_HV - Ceramic Chip Trimmer Capacitors



Dimensions - Drawing tolerances where not specified $\pm 0.008"/0.2\text{mm}$



General Specifications

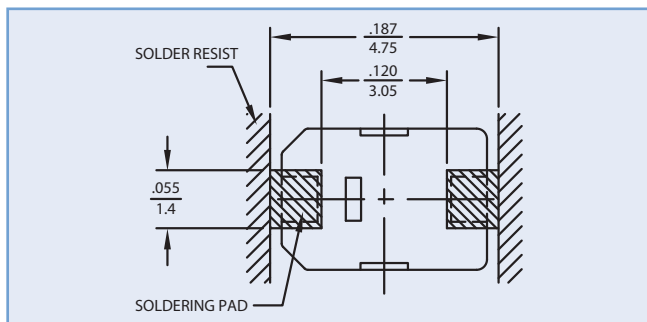
Part Number - JZ series	JZ030	JZ060	JZ080	JZ100	JZ150	JZ200	JZ300	JZ400	JZ500
DC Working Voltage	125	125	125	125	125	125	125	125	125
DC Withstanding Voltage	250	250	250	250	250	250	250	250	250

Part Number - JZ_HV	JZ030HV	JZ060HV	JZ080HV	JZ100HV	JZ150HV	JZ200HV	JZ300HV	JZ400HV
DC Working Voltage	350	350	350	350	350	350	350	350
DC Withstanding Voltage	700	700	700	700	700	700	700	700

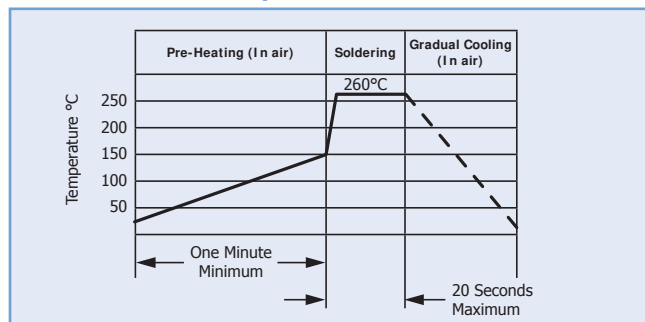
Capacitance (pF)	Minimum Maximum	1.5	2.0	3.0	2.0	3.0	4.5	5.5	8.0	8.0
		3.0	6.0	8.0	10.0	15.0	20.0	30.0	40.0	50.0
		+50% -0%	+50% -0%	+50% -0%	+100% -0%	+100% -0%	+100% -0%	+100% -0%	+100% -0%	+100% -0%
Marking Color		Black	Blue	Violet	White	Pink	Red	Orange	Yellow	Green
Temperature Coefficient (ppm/°C)		0 ± 200	0 ± 300	-750 ± 500	0 ± 300	0 ± 300	0 ± 500	-1500 ± 1000	-1500 ± 1000	-1500 ± 1000
Q (min.) at 1 Mhz		500	1000	1500	1500	1500	1500	1500	1500	1500
Self Resonant Frequency at Maximum Rated Capacitance		2.1 GHz	1.5 GHz	1.25 GHz	1.16 GHz	0.92 GHz	0.81 GHz	0.70 GHz	0.60 GHz	0.53 GHz
Insulation Resistance		10 ⁴ megohms								
Operating Temperature		-40°C to +85°C								
Torque		0.14 to 1.0 in-oz								
Packaging		All parts furnished on 12mm tape and reel. 1,000 pcs. per reel.								

Solder Pad Layout

Recommended thickness of solder paste 0.15mm

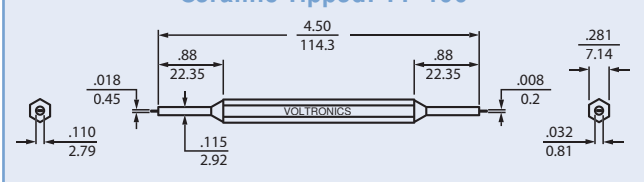


Recommended Reflow Solder Temperature Profile

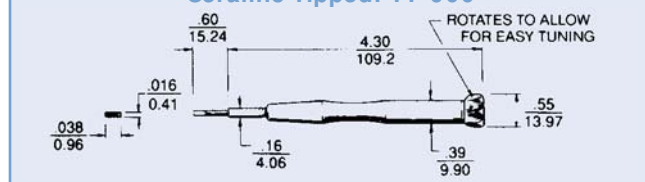


Recommended Tuning Tools

Ceramic Tipped: TT-400



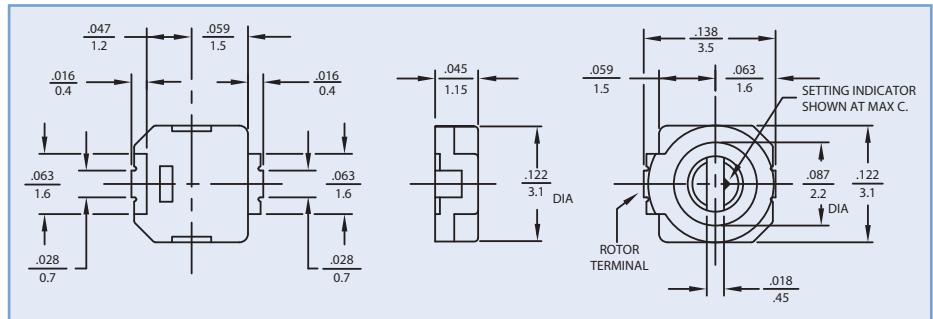
Ceramic Tipped: TT-900



JR & JR_HV - Ceramic Chip Trimmer Capacitors



Dimensions - Drawing tolerances where not specified $\pm 0.008"/0.2\text{mm}$



General Specifications

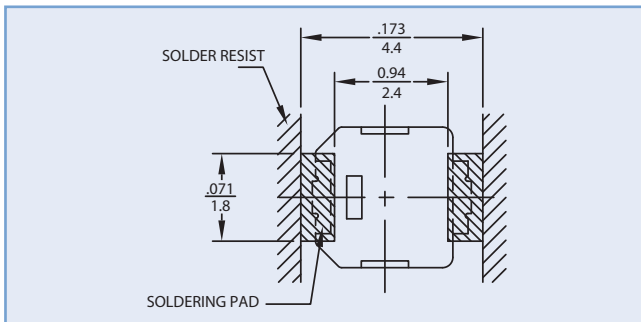
Part Number - JR series	JR030	JR060	JR080	JR100	JR150	JR200	JR300	JR400
DC Working Voltage	125	125	125	125	125	125	125	125
DC Withstanding Voltage	250	250	250	250	250	250	250	250

Part Number - JR_HV	JR030HV	JR060HV	JR080HV	JR100HV	JR150HV	JR200HV	JR300HV	JR400HV
DC Working Voltage	350	350	350	350	350	350	350	350
DC Withstanding Voltage	700	700	700	700	700	700	700	700

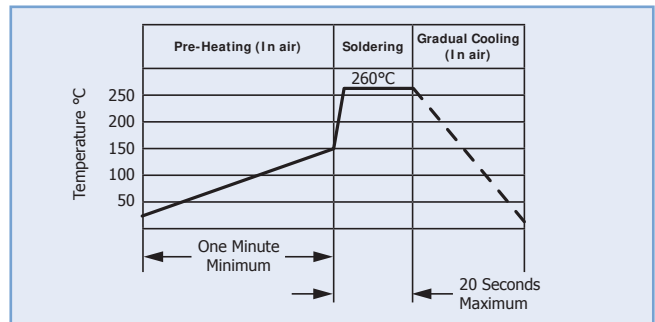
Capacitance (pF)	Minimum	1.5	2.0	3.0	2.0	3.0	4.5	5.5	8.0
	Maximum	3.0	6.0	8.0	10.0	15.0	20.0	30.0	40.0
		+50%	+50%	+50%	+100%	+100%	+100%	+100%	+100%
		-0%	-0%	-0%	-0%	-0%	-0%	-0%	-0%
Marking Color		Black	Blue	Violet	None	Pink	Red	Orange	Yellow
Temperature Coefficient (ppm/°C)		0 ± 200	0 ± 300	-750 ± 500	0 ± 300	0 ± 500	0 ± 500	-1500 ± 1000	-1500 ± 1000
Q (min.) at 1 Mhz		500	1000	1500	1500	1500	1500	1500	1500
Self Resonant Frequency at Maximum Rated Capacitance		2.9 GHz	2.05 GHz	1.8 GHz	1.6 GHz	1.3 GHz	1.15 GHz	0.92 GHz	0.84GHz
Insulation Resistance		10 ⁴ megohms							
Operating Temperature		-40°C to +85°C							
Torque		0.6 in-oz max.							
Packaging		All parts furnished on 12mm tape and reel. 1,000 pcs. per reel.							

Solder Pad Layout

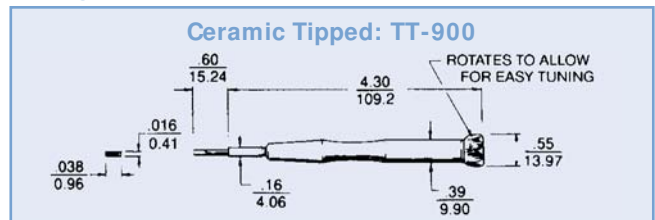
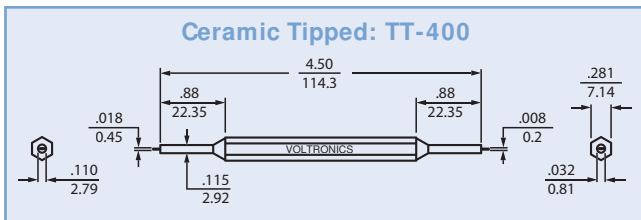
Recommended thickness of solder paste 0.15mm



Recommended Reflow Solder Temperature Profile



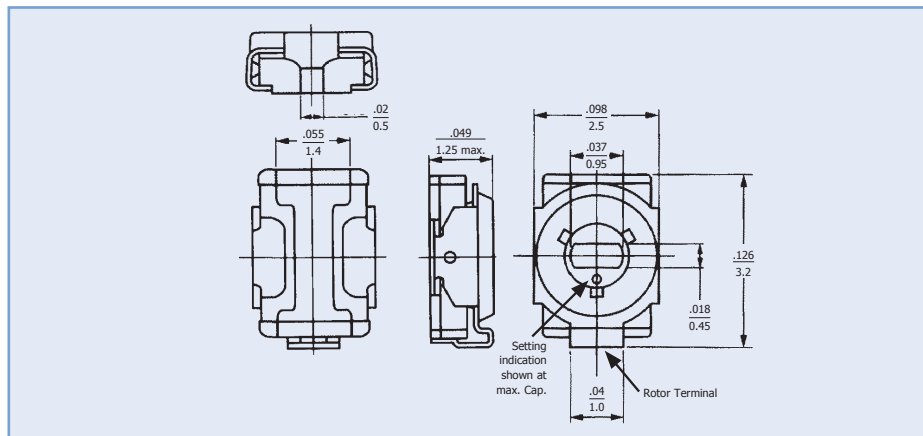
Recommended Tuning Tools



JV - Ceramic Chip Trimmer Capacitors



Dimensions - Drawing tolerances where not specified $\pm 0.020"/0.5\text{mm}$



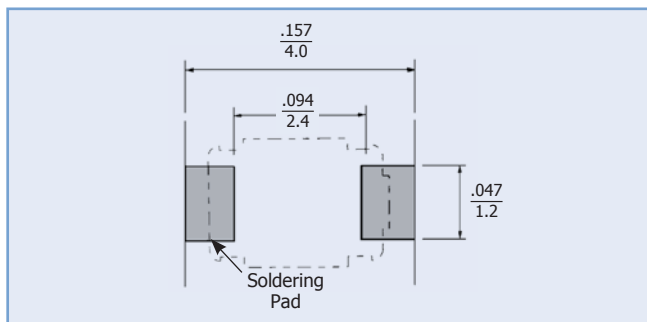
General Specifications

Part Number - JV Series	JV010	JV025	JV030	JV060	JV100	JV200	JV250	JV450
DC Working Voltage	25	25	25	25	25	25	25	25
DC Withstanding Voltage	55	55	55	55	55	55	55	55

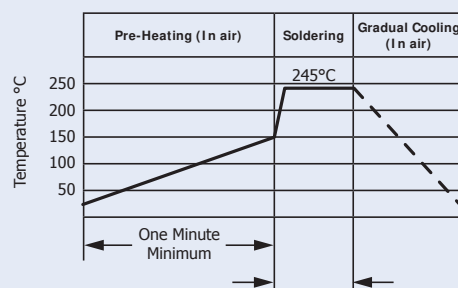
Capacitance (pF)	Minimum Maximum	+100% -0%	0.5 1.0	0.65 2.5	1.5 3.0	2.5 6.0	3.0 10.0	4.5 20.0	5.5 25.0	8.0 45.0
Marking Color	None									
Temperature Coefficient (ppm/°C)	0 ± 300									
Q (min.) at 1 Mhz	500									
Self Resonant Frequency at Maximum Rated Capacitance	4.6 GHz									
Insulation Resistance	10 ⁴ megohms									
Operating Temperature	-25°C to +85°C									
Torque	0.6 in-oz max.									
Packaging - 8mm tape and reel	2,000 pcs. per reel.									

Solder Pad Layout

Recommended thickness of solder paste 0.15mm

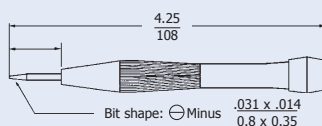


Recommended Reflow Solder Temperature Profile

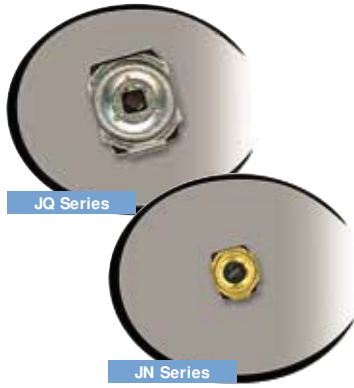


Recommended Tuning Tools

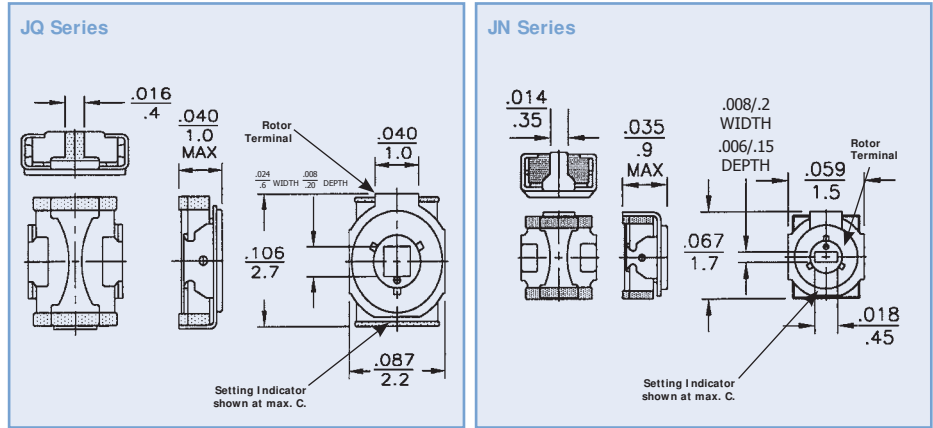
Ceramic Tipped: TT-930



JQ & JN SERIES - Ceramic Chip Trimmer Capacitors



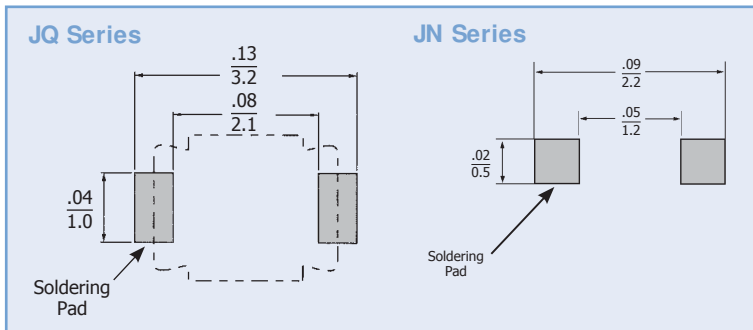
Dimensions - Drawing tolerances where not specified $\pm 0.020"/0.5\text{mm}$



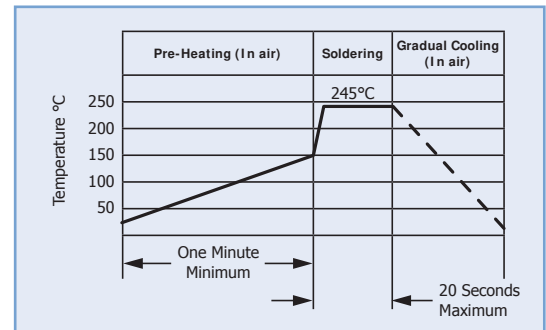
General Specifications

Part Number	JQ060	JQ100	JQ200	JN010	JN015	JN040	JN080	
DC Working Voltage	25	25	25	25	25	25	25	
DC Withstanding Voltage	$+100\%$ -0% 55	55	55	55	55	55	55	
Capacitance (pF)	Minimum Maximum	3.0 6.0	3.5 10.0	7.0 20.0	0.55 1.0	0.7 1.5	1.5 4.0	3.0 8.0
Marking Color	None	None	None	None	None	None	None	
Temperature Coefficient (ppm/°C)	0 ± 300	0 ± 300	-750 ± 500	0 ± 300	0 ± 300	0 ± 500	-750 ± 500	
Q (min.) at 1 Mhz	500	500	500	500	500	300	300	
Self Resonant Frequency at Maximum Rated Capacitance	1.6 GHz	1.2 GHz	0.9 GHz	6.0 GHz	4.8 GHz	2.7 GHz	1.8 GHz	
Insulation Resistance	10^4 megohms			10^4 megohms				
Operating Temperature	-25°C to $+85^\circ\text{C}$			-25°C to $+85^\circ\text{C}$				
Torque	.07 to 7.0 in-oz			.014 to .14 in-oz				
Packaging - 8mm tape and reel	3,000 pcs. per reel.			3,000 pcs. per reel.				

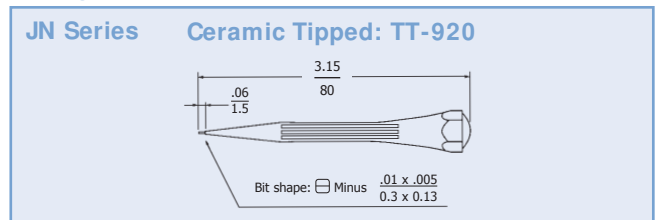
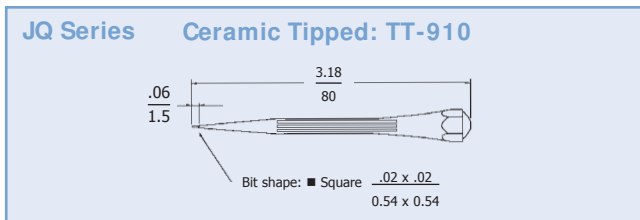
Solder Pad Layout
Recommended thickness of solder paste 0.15mm



Recommended Reflow Solder Temperature Profile

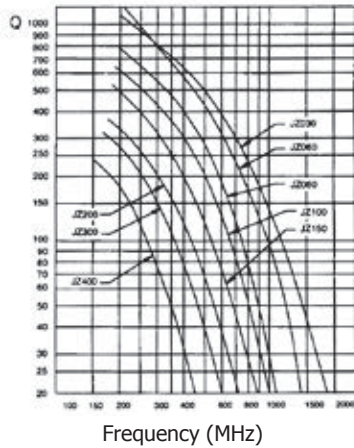


Recommended Tuning Tools

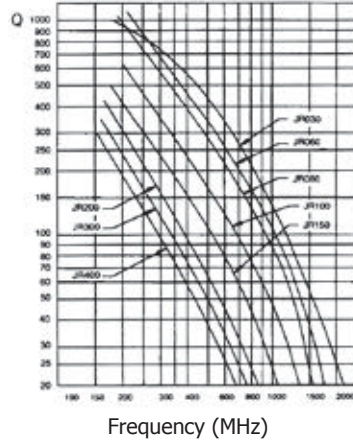


Q Data Charts & Engineering Kits

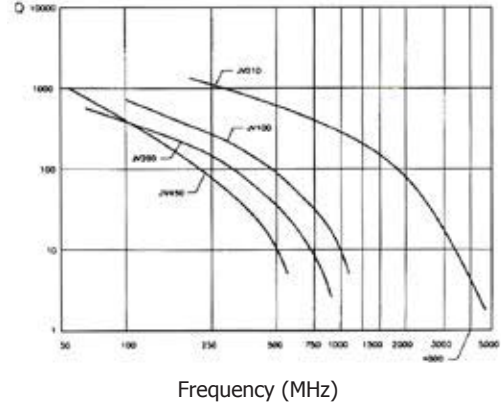
Quality Factor (Q) of "JZ" Series Capacitors



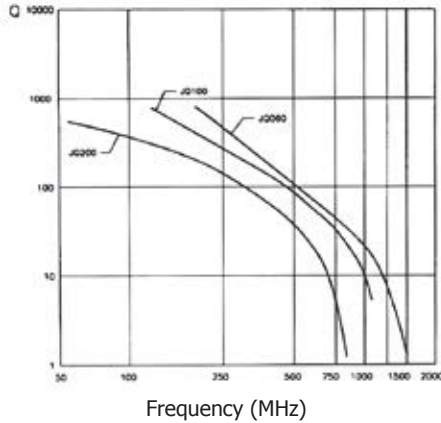
Quality Factor (Q) of "JR" Series Capacitors



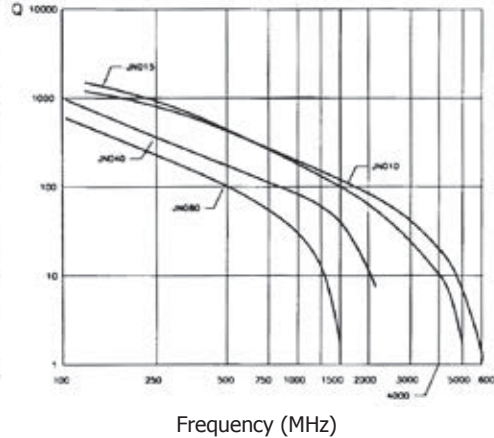
Quality Factor (Q) of "JV" Series Capacitors



Quality Factor (Q) of "JQ" Series Capacitors



Quality Factor (Q) of "JN" Series Capacitors



Engineering Kits

Kit #	Quantity	Description
JZ Kit*	4	Each Capacitance Range
JZ-HV Kit*		
JR Kit*	4	
JR-HV Kit*	4	
JV Kit**	5	
JQ Kit**	5	
JN Kit**	5	

J-Series engineering kits are a great way to become familiar with our products. Each kit contains 4 or 5 units of every value. Please be sure to inquire about tuning tools when ordering.

* Tuning tools are included with this kit.

**Tuning tools are not included with this kit.

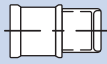
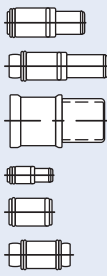
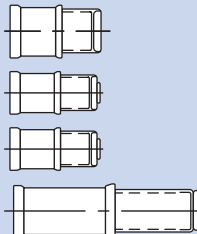
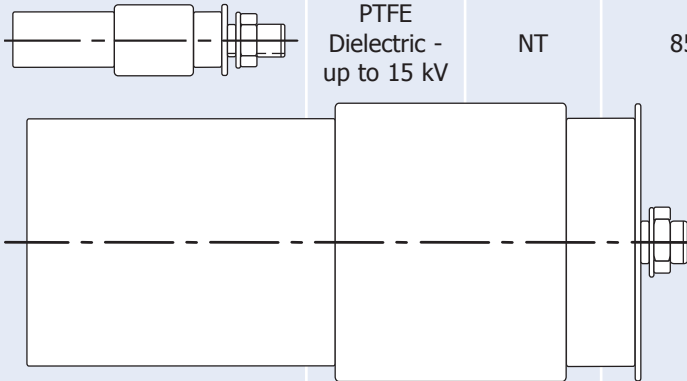
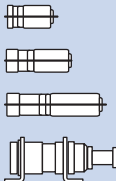
Washing Instructions:

The J-Series trimmer capacitors can withstand cleaning cycles up to 10 PSI and have been used by customers for more than a decade in many diverse environmental conditions. Without knowing your particular washing or cleaning environment, we recommend these basic guidelines:

- 1) Water wash or isopropyl alcohol cleaning agents are acceptable providing that baths are clean and uncontaminated. For maximum effectiveness, the cleaning process should occur immediately after soldering.
- 2) Either brush or spray methods are acceptable.
- 3) * Drying out components with forced hot air is highly recommended.
- 4) Also, we do recommend turning the tuning screw 3 or 4 complete revolutions prior to arriving at the final "set."

* If a water wash process is used and water does get inside, we recommend that the parts be heated above 100C for a minimum of 15 minutes, so that the water evaporates. After this, the rotor should be turned 1-2 times to redistribute the internal grease.

Product Guide - Air/ PTFE/ Sapphire Trimmer Capacitors

Product Line	Actual Size	Description	Series	Maximum Capacitance (pF)	Typical Self-Resonant Frequency (Max)	Surface Mount	Page
A E K		Air Dielectric	A E K & KE	14 10 10	1.5 GHz 1.3 GHz 1.3 GHz	yes yes yes	9 9 10
A1_4/8 A1_12 A3 A2 A4_3 A4_5		Low Cost PTFE Dielectric	A1 A1 A3 A2 A4 A4	12 12 10 1.2 5 5	2.3 GHz 2.3 GHz 2.3 GHz 5.0 GHz 4.3 GHz 4.3 GHz	yes yes yes yes yes yes	11 11 11 12 12 12
A_HV E_HV K_HV A_HV Ext. Range		High Voltage PTFE Dielectric	A_HV E_HV K & KE_HV A_HV	30 9 9 55	1.5 GHz 1.3 GHz 1.3 GHz .90 GHz	yes yes yes yes	13 13 14 15
NT Min. NT Max.		PTFE Dielectric - up to 15 kV	NT	85	500 MHz	no	15
P3 P5 P8 V9000		Sapphire Dielectric	P3 P5 P8 V9000	2.5 4.5 8 12	7.5 GHz 4.0 GHz 1.5 GHz	yes yes yes yes	17 17 17 32

N.B. Most of the above trimmer capacitors can be ordered as non-magnetic - see non-magnetic section.

A & E - Standard Air Trimmer Capacitors



The Only Internally-Sealed Air Trimmer

Voltronics' concentric ring air trimmer capacitors are designed for use at frequencies up to 1.5 GHz. They are ideal for applications such as mobile radios, aerospace communication, crystal oscillators and filters, radar, cable TV and innumerable other commercial and military programs. The unique internal O-ring seal make wave soldering and vapor degreasing possible without the need to attach a separate cap.

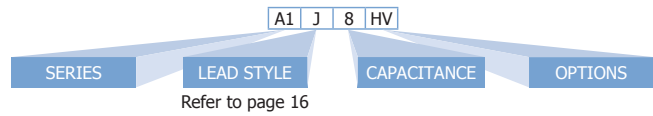
Available in two styles:

"A" Series - Solder sealed and qualified to MIL-C-14409.

"E" Series - Epoxy sealed for economical commercial applications.

Other features include:

- Ten full linear turns
- Internal stops
- Extreme stability under shock & vibration
- Screw head does not move in and out
- Extended shaft option of metal or plastic
- Long life with no dynamic tuning noise

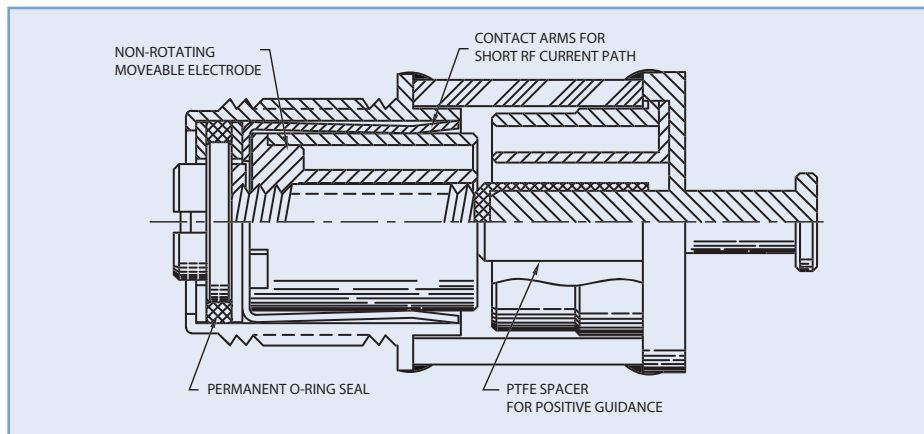


Note:

All parts shown here can be ordered as non-magnetic: Add "NM" to Part Number, i.e., NMAP10

General Specifications	A_5 E_5	A_10 E_10HV	A_14 E_14
Capacitance Range	1-5 pF / 1.0-10 pF	1-10 pF / 1.0-10 pF	1-14 pF / 1.0-14 pF
Q (min) at 100MHz @ Max. C*	5,000	5,000	3,000
DC Working Voltage	250	250	125
DC Withstanding Voltage	500	500	250
Temperature Coefficient	50±50 ppm/°C / -50±50 ppm/°C	50±50 ppm/°C / -50±50 ppm/°C	50±50 ppm/°C / -50±50 ppm/°C
Insulation Resistance @ 25°C	10 ⁶ megohms	10 ⁶ megohms	10 ⁶ megohms
Seal	40 pounds/in ²	40 pounds/in ²	40 pounds/in ²
Operating Temperature	- 65°C to +125°C	- 65°C to +125°C	- 65°C to +125°C
Rotational Life	10000 Turns	10000 Turns	10000 Turns
Tuning Torque	.05 to 5.0 in-oz	.05 to 5.0 in-oz	.05 to 5.0 in-oz
Shock	1,500g, 0.5 millisecs.	1,500g, 0.5 millisecs.	1,500g, 0.5 millisecs.
Vibration	50g at 10-2000 Hz	50g at 10-2000 Hz	50g at 10-2000 Hz

* Self-resonant frequency and Q are assured with no terminals on parts.



K & KE - Air Trimmer Capacitors

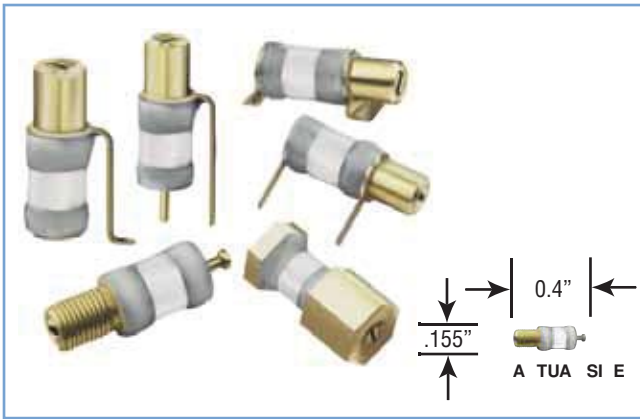
	Part Number		Capacitance (pF)	
	"K" Series	"KE" Series	From Below	To Above
FIG. 1 	KP8	KEP8	0.6	8.0
	KP10	KEP10	0.6	10.0
FIG. 2 	KF8	KEF8	0.6	8.0
	KF10	KEF10	0.6	10.0
FIG. 3 	KT8	KET8	0.6	8.0
	KT10	KET10	0.6	10.0
FIG. 4 	KJ8	KEJ8	0.6	8.0
	KJ10	KEJ10	0.6	10.0
FIG. 5 	KT8L	KET8L	0.6	8.0
	KT10L	KET10L	0.6	10.0
FIG. 6 	KG8	KEG8	0.6	8.0
	KG10	KEG10	0.6	10.0
FIG. 7 	KM8	KEM8	0.6	8.0
	KM10	KEM10	0.6	10.0

Note: All bushing threads are .190"-64

IN	MM	IN	MM	IN	MM	IN	MM
0.015	0.38	0.067	1.70	0.160	4.06	0.260	6.60
0.030	0.76	0.070	1.78	0.180	4.57	0.270	6.86
0.036	0.91	0.080	2.03	0.190	4.83	0.280	7.11
0.040	1.02	0.093	2.36	0.200	5.08	0.300	7.62
0.045	1.14	0.110	2.79	0.230	5.84	0.590	14.99
0.060	1.52	0.140	3.56	0.240	6.10		
0.065	1.65	0.150	3.81	0.250	6.35		

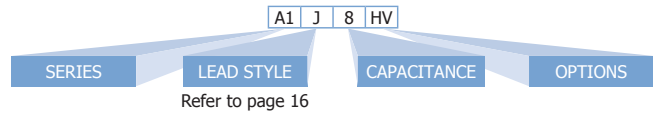
Recommended Tuning Tool: TT-100 or TT-500

A1 & A3 - Low Cost PTFE Trimmer Capacitors



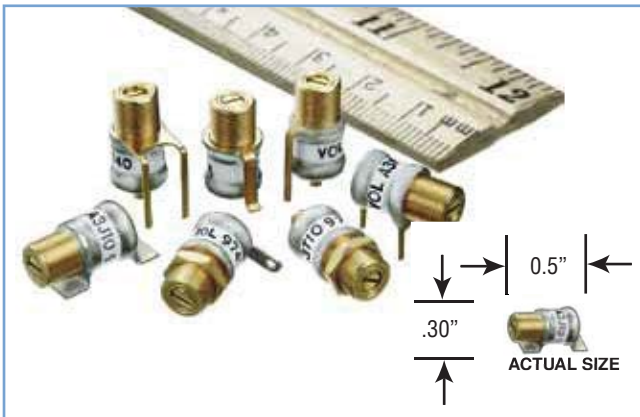
The Voltronics A1 & A3 Series of high reliability solid dielectric trimmer capacitors is an ideal economical replacement for conventional miniature air and sapphire dielectric trimmers and assures no intermittent noiseless performance.

High reliability solid dielectric, positive tuning stops and up to 13 full turns of linear tuning make the A1 Series an outstanding performer: 40 psi sealed, high voltage and non-magnetic versions are readily available.



General Specifications	A1_4	A1_8	A1_12
Capacitance Range	0.45-4pF	0.5-8pF	0.6-11pF
DC Working Voltage	250	125	125
DC Withstanding Voltage	500	250	250
Self-Resonant Frequency*	2.3 GHz at 4pF	1.7 GHz at 8pF	1.2 GHz at 11pF
Number of Turns	7	7	13
Q (min) at 100 MHz @ Max. C*	4000	3000	2000
Temperature Coefficient	0±50 ppm/°C	0±100 ppm/°C	0±150 ppm/°C
Insulation Resistance @ 25° C	10 ⁶ megohms		
Operating Temperature	-65°C to +125°C		
Tuning Torque	0.3 to 1.0 in-oz		
Shock	1,500g, 0.5 millisees.		
Vibration	50g at 10-2000 Hz		

* Self-resonant frequency and Q are assured with no terminals on parts.



Options

The "HV" Option - high voltage applications: Add "HV" to the part number, i.e., A1T4HV.

Specifications are as follows:

Capacitance	DC Volts Working	DC Volts Withstanding
4pF	1,000	2,000
8pF	500	1,000
11pF	500	1,000

Non-Magnetic Option:

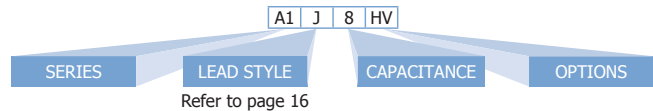
Most parts shown can be ordered as non-magnetic. Add "NM" to the part number, i.e., NMA1J8.

Sealed Option:

All parts shown can be ordered as 40 psi sealed. Add "S" to the part number, i.e., A1M4S.

Tape & Reel Options:

Consult Factory - M & J style only
Recommended Tuning Tool: TT-400



General Specifications	A3_10
Capacitance Range	1.0-10.0pF
DC Working Voltage	250
DC Withstanding Voltage	500
Self-Resonant Frequency*	2.3 GHz
Number of Turns	7
Q (min) at 100 MHz @ Max. C*	2000
Temperature Coefficient	0±50 ppm/°C
Insulation Resistance @ 25° C	10 ⁶ megohms
Operating Temperature	-65°C to +125°C
Tuning Torque	0.5 to 2.0 in-oz
Shock	1,500g, 0.5 millisees.
Vibration	50g at 10-2000 Hz

* Self-resonant frequency and Q are assured with no terminals on parts.

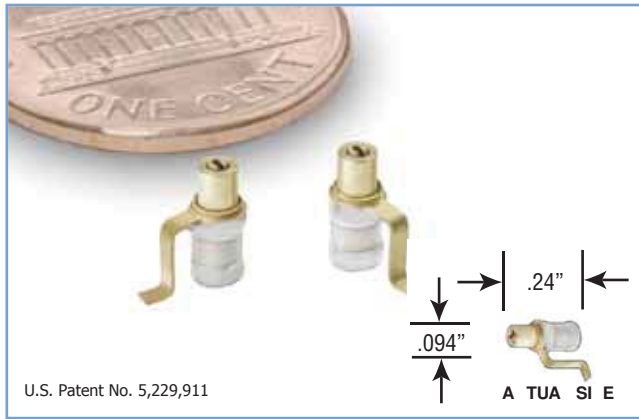
Options

The "HV" Option - high voltage applications: Add "HV" to the part number, i.e., A3T10HV.

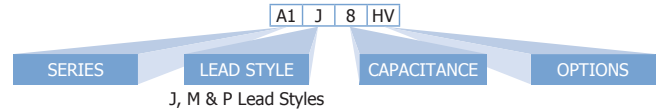
Specifications are as follows:

DC Volts Working	DC Volts Withstanding
1,000	2,000

A2 & A4 - Low Cost Miniature PTFE Trimmer Capacitors



The Voltronics A2 Series is among the smallest multi-turn piston trimmer capacitors in the industry. Utilizing a high reliability solid dielectric, positive tuning stops and 3 standard mounting configurations this trimmer capacitor is an ideal replacement for expensive sapphire dielectric trimmers. Applications include tuning and impedance matching of high frequency, and high power amplifiers especially where small size and high performance are critical requirements.



Options

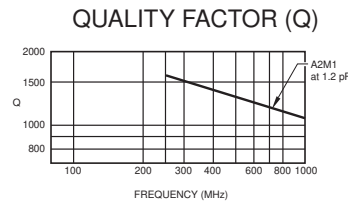
The "HV" Option - High Voltage Options:
Add "HV" to the part number, i.e., A2M1HV.

Specifications are as follows:

DC Volts Working	DC Volts Withstanding
1,250	2,500

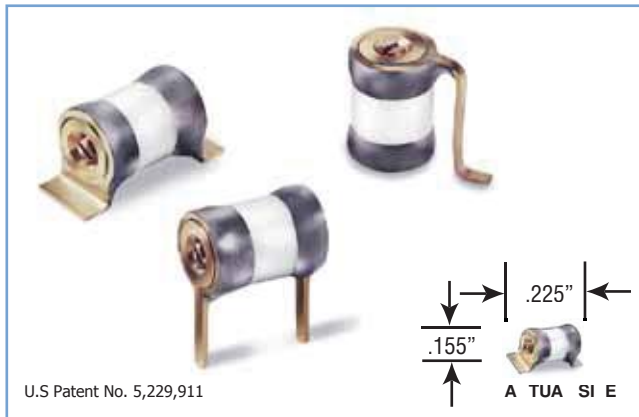
Tape & Reel Options:

Consult Factory - M & J style only

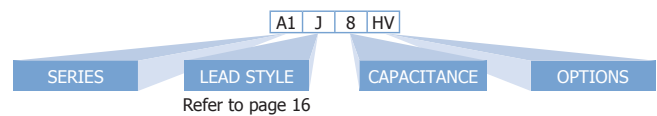


General Specifications	A2_1
Capacitance Range	0.3–1.2pF
DC Working Voltage	250
DC Withstanding Voltage	500
Self-Resonant Frequency*	5 GHz at 1.2pF
Number of Turns	7
Q (min) at 100 MHz @ Max. C*	2000
Temperature Coefficient	0±150 ppm/°C
Insulation Resistance @ 25 °C	10 ⁶ megohms
Operating Temperature	-65 °C to +125 °C
Tuning Torque	0.1 to 1.0 in-oz
Shock	1,500g, 0.5 milliseconds.
Vibration	50g at 10-2000 Hz

* Self-resonant frequency and Q are assured with no terminals on parts.



The Voltronics A4 Series unique design using minimal parts simplifies the manufacturing process to effect one of the most economical high performance trimmer capacitors available in the industry. The Voltronics A4 Series also features a high reliability solid dielectric, positive tuning stops and up to 5 full turns of linear tuning in the shortest length of any similar trimmer capacitor. The Voltronics A4 is an ideal choice for tuning and impedance matching, high frequency and high power amplifier circuits.



Options

The "HV" Option - high voltage applications:
Add "HV" to the part number, i.e., A1T4HV.

Specifications are as follows:

Part No.	DC Volts Working	DC Volts Withstanding
A4_3 HV	500	1,000
A4_5 HV	500	1,000

Non-Magnetic Option: All parts can be ordered as non-magnetic. Add "NM" to the part number, i.e. NMA4J3

Tape & Reel Options: Consult Factory - M style only

SD Option -
for applications requiring high reliability but lower voltage

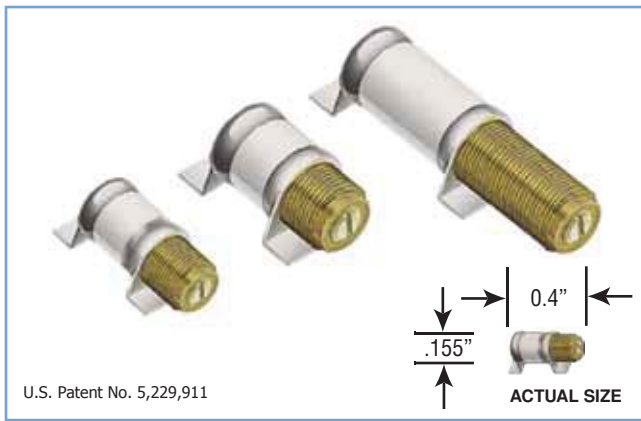
Part No.	Working Voltage	Withstanding Voltage
K_1SD	250	500
A or K_4SD	250	500
A_25SD	125	250
A_30*	250	500
A_40SD	250	500
A_55SD	125	250

General Specifications	A4_3	A4_5
Capacitance	0.45–3pF	0.6–5pF
DC Working Voltage	125	125
DC Withstanding Voltage	250	250
Self-Resonant Frequency*	3 GHz at 3pF	1.8 GHz at 5pF
Number of Turns	4	5
Q (min) at 100 MHz @ Max. C*	3000	2000
Temperature Coefficient	0±100 ppm/°C	0±300 ppm/°C
Insulation Resistance @ 25 °C	10 ⁶ megohms	
Operating Temperature	-65 °C to +125 °C	
Tuning Torque	0.3 to 1.0 in-oz	
Shock	1,500g, 0.5 milliseconds.	
Vibration	50g at 10-2000 Hz	

* Self-resonant frequency and Q are assured with no terminals on parts.

Note: A_30 not available in high voltage configuration

A_HV & E_HV - High Voltage PTFE Trimmer Capacitors

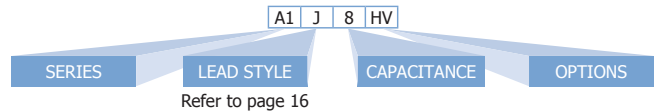


The Only Internally-Sealed HV PTFE Trimmers

Voltronics' concentric ring PTFE dielectric trimmer capacitors are designed for use at frequencies up to 1.5 GHz. They are ideal for HIGH VOLTAGE applications. The solid internal PTFE dielectric prevents ionization, a major advantage in space, high altitude and high voltage applications. The unique internal O-ring seal makes wave soldering and vapor degreasing possible without the need to attach a separate cap.

Available in two styles:

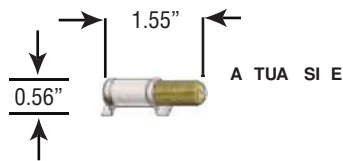
"A_HV" Series - Solder sealed ceramic body. "E_HV" Series - Epoxy sealed plastic body.



General Specifications	A_4HV / E_4HV	A_10 HV / E_10HV	A_15 HV / E_15HV	A_25 HV / E_25HV
Capacitance Range	1-4pF	1-10pF	1-16pF	1-23pF
DC Working	1000	1000	1000	750
DC Withstanding	2000	2000	2000	1500
Q (min) at 100MHz @ Max. C*	2000	2000	2000	2000
Temperature Coefficient - 0±100ppm/°C	-50±50 ppm/°C	-50±50 ppm/°C	50±50 ppm/°C	-50±50 ppm/°C
Insulation Resistance @ 25°C	10 ⁶ megohms	10 ⁶ megohms	10 ⁶ megohms	10 ⁶ megohms
Seal	40 pounds/in2	40 pounds/in2	40 pounds/in2	40 pounds/in2
Operating Temperature	-65°C to +125°C	-65°C to +125°C	-65°C to +125°C	-65°C to +125°C
Rotational Life	600 Turns	600 Turns	600 Turns	600 Turns
Tuning Torque	.05 to 5.0 in-oz	.05 to 5.0 in-oz	.05 to 5.0 in-oz	.05 to 5.0 in-oz
Shock	1,500g, 0.5 millisecs.	1,500g, 0.5 millisecs.	1,500g, 0.5 millisecs.	1,500g, 0.5 millisecs.
Vibration	50g at 10-2000 Hz	50g at 10-2000 Hz	50g at 10-2000 Hz	50g at 10-2000 Hz

* Self-resonant frequency and Q are assured with no terminals on parts.

Extended Range



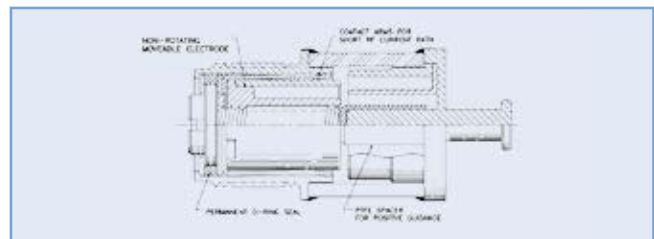
General Specifications	A_40HV	A_55HV
Capacitance Range	1.5-40pF	1.5-55pF
Q (min) at 100MHz @ Max. C*	2000	
Q (min) at 75 MHz@ Max. C*		780
Temperature Coefficient	0±100 ppm/°C	0±100 ppm/°C
Insulation Resistance @ 25°C	10 ⁶ megohms	10 ⁶ megohms
Seal	40 pounds/in2	40 pounds/in2
Operating Temperature	-65°C to +125°C	-65°C to +125°C
Rotational Life	600 Turns	600 Turns
Tuning Torque	.05 to 5.0 in-oz	.05 to 5.0 in-oz
Shock	1,500g, 0.5 mil-lisecs.	1,500g, 0.5 mil-lisecs.
Vibration	50g at 10-2000 Hz	50g at 10-2000 Hz
DC Working Voltage	1000	600
DC Withstanding Voltage	2000	1200

* Self-resonant frequency and Q are assured with no terminals on parts.

Extended Metal Shaft Option: Add "E" to Part Number, i.e., AT40SE

Other features include:

- Ten or 29 linear turns
- Internal stops
- Extreme stability under shock & vibration
- Screw head does not move in and out
- Extended shaft option of metal or plastic
- Long life with no dynamic tuning noise



Options

Non-Magnetic Option: All parts can be ordered as non-magnetic. Add "NM" to the part number, i.e. NMAT25HV, NMKP10HV

Extended Shaft Options:

Add "E" to the part number, i.e. AT10HE

Extended Plastic Shaft Options:

Add "EI" to the part number, i.e. EF10HVEI

SD Option -

for applications requiring high reliability but lower voltage

Part No.	Working Voltage	Withstanding Voltage
K_1SD	250	500
A or K_4SD	250	500
A_25SD	125	250
A_30*	250	500
A_40SD	250	500
A_55SD	125	250

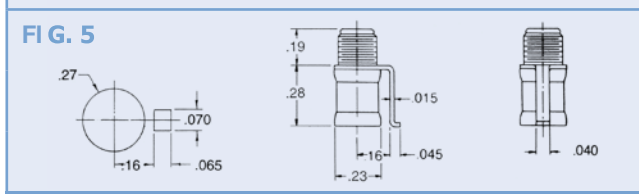
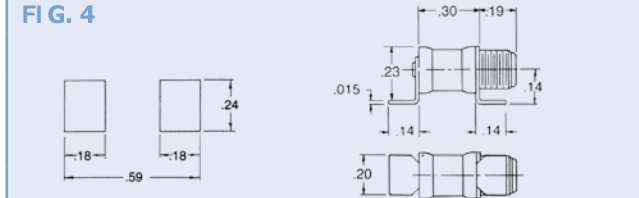
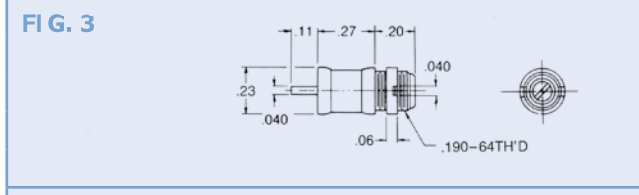
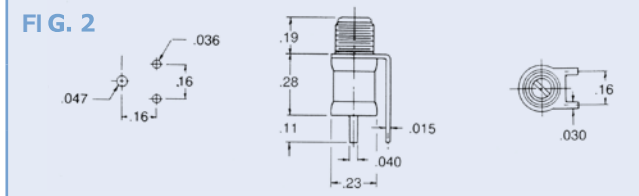
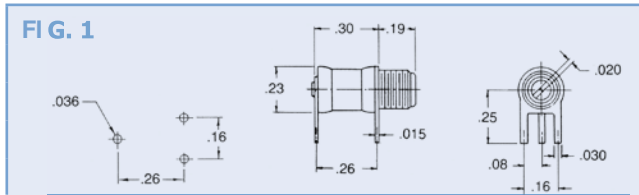
Note: A_30 not available in high voltage configuration

K_HV & KE_HV - PTFE Trimmer Capacitors

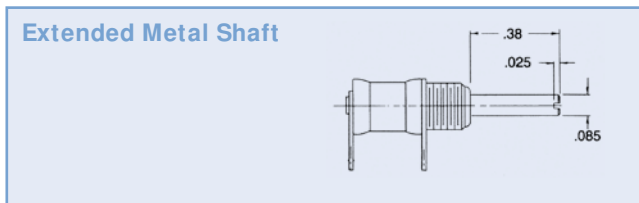


General Specifications	K_HV	KE_HV
Q at 1GHz at maximum rated C*	780 (1pF)	
Q at 100MHz at maximum rated C*	2000 (4 & 9pF)	2000 (4 & 9pF)
Temperature Coefficient	50±50ppm/°C	-50±50ppm/°C
Insulation Resistance	10 ⁶ megohms	10 ⁶ megohms
Seal	40 pounds/in2	40 pounds/in2
Operating Temperature	-65°C to +125°C	-65°C to +125°C
Rotational Life	600 turns	600 turns
Torque	0.5-5.0 in-oz	0.5-5.0 in-oz
Vibration	50g, 10-2000 Hz	50g, 10-2000 Hz
Shock	1500g, 0.5 milliseconds.	1500g, 0.5 milliseconds.
Drawing tolerances where not specified	XXX ± .005 XX ± .016	XXX ± .005 XX ± .016

* Self-resonant frequency and Q are measured with no terminals on parts.



Note: All bushing threads are .190"-64



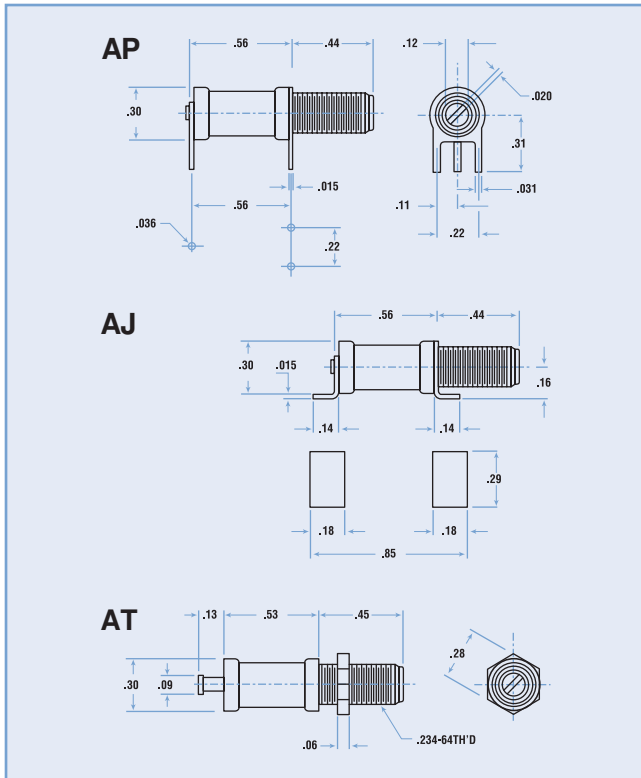
Add "E" to Part Number, i.e., KP10HVE.

Part Number		DC Working Voltage	DC Withstanding Voltage	Capacitance (pF)	
"K" Series	"KE" Series			From Below	To Above
KP1HV		1000	2000	0.2	1
KP1SD		250	500	0.2	1
KP4HV	KEP4HV	1000	2000	0.5	4
KP4SD	KEP4SD	250	500	0.5	4
KP10HV	KEP10HV	1000	2000	0.5	9
KF4HV	KEF4HV	1000	2000	0.5	4
KF4SD	KEF4SD	250	500	0.5	4
KF10HV	KEF10HV	1000	2000	0.5	9
KT1HV		1000	2000	0.2	1
KT1SD		250	500	0.2	1
KT4HV	KET4HV	1000	2000	0.5	4
KT4SD	KET4SD	250	500	0.5	4
KT10HV	KET10HV	1000	2000	0.5	9
KJ1HV		1000	2000	0.2	1
KJ1SD		250	500	0.2	1
KJ4HV	KEJ4HV	1000	2000	0.5	4
KJ4SD	KEJ4SD	250	500	0.5	4
KJ10HV	KEJ10HV	1000	2000	0.5	9
KM4HV	KEM4HV	1000	2000	0.5	4
KM4SD	KEM4SD	250	500	0.5	4
KM10HV	KEM10HV	1000	2000	0.5	9

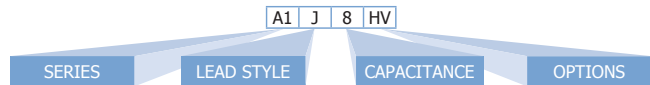
IN	MM	IN	MM	IN	MM	IN	MM
0.015	0.38	0.067	1.70	0.160	4.06	0.280	7.11
0.025	0.63	0.080	2.03	0.190	4.83	0.290	7.37
0.030	0.76	0.085	2.16	0.200	5.08	0.300	7.62
0.036	0.91	0.093	2.36	0.230	5.84	0.380	9.65
0.040	1.02	0.110	2.79	0.240	6.10	0.470	11.94
0.045	1.14	0.140	3.56	0.264	6.71		
0.060	1.52	0.150	3.81	0.270	6.86		

Recommended Tuning Tool: TT-100 or TT-500

A Series - Very High Voltage PTFE Trimmer Capacitors

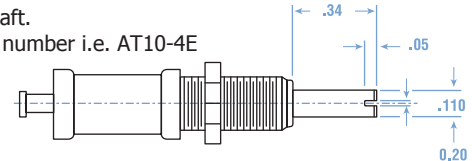


General Specifications	A_10-4	A_20-4
Capacitance Range	0.8-10pF	0.8-20pF
DC Working Voltage	2000	2000
DC Withstanding Voltage	4000	4000
Self-Resonant Frequency*	4.25 GHz at 2pF	3 GHz at 3pF
Q (min) at 100 MHz @ Max. C*	3000	3000
Temperature Coefficient	0±100 ppm/°C	0±100 ppm/°C
Insulation Resistance @ 25°C	10 ⁶ megohms	10 ⁶ megohms
Operating Temperature	-65°C to +125°C	-65°C to +125°C
Tuning Torque	0.5 to 5.0 in-oz	0.5 to 5.0 in-oz
Shock	1500g, 0.5 millisecs.	1500g, 0.5 millisecs.
Vibration	50g at 10-2000 Hz	50g at 10-2000 Hz
Drawing Tolerances where not specified	XXX ± .005 XX ± .016	XXX ± .005 XX ± .016



Options:

Extended metal shaft.
Add 'E' to the part number i.e. AT10-4E



For Non-Magnetic parts add 'NM' to part number, i.e. NMAT10-4

NT Series Ultra High Voltage PTFE Trimmer Capacitors



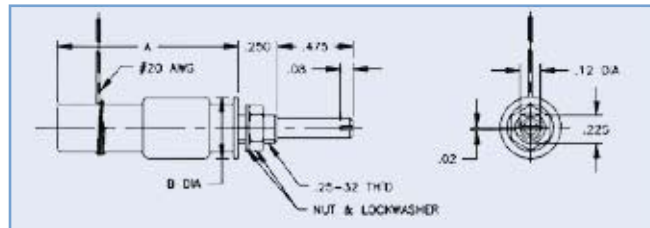
Extended Shaft Options:
Add "E" to the part number
e.g. NT10-5E

4kV to 20kV

Voltronics new "NT" series of PTFE trimmers are designed for applications requiring greater capacitance and voltage ratings than the popular smaller trimmers but without the large size and expense of vacuum capacitors.

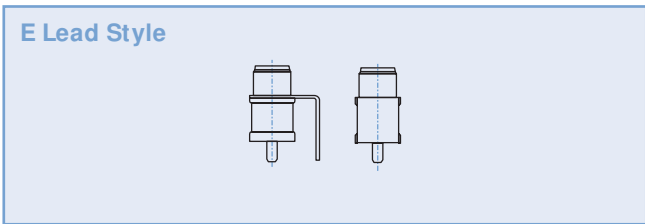
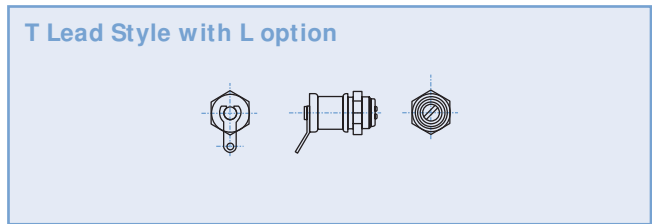
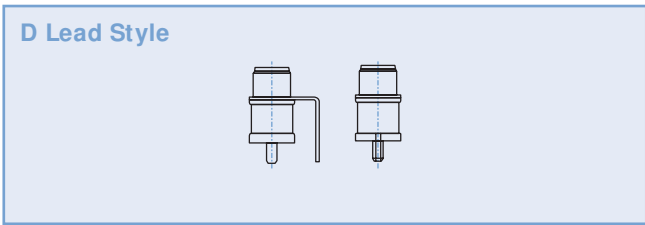
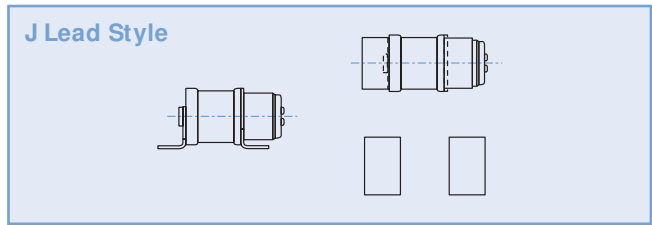
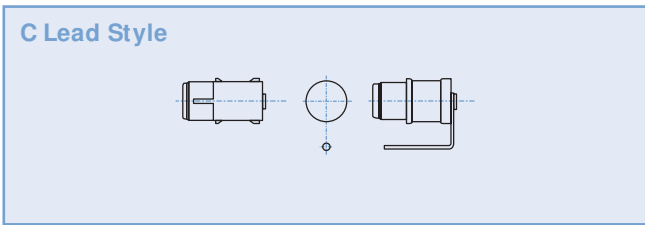
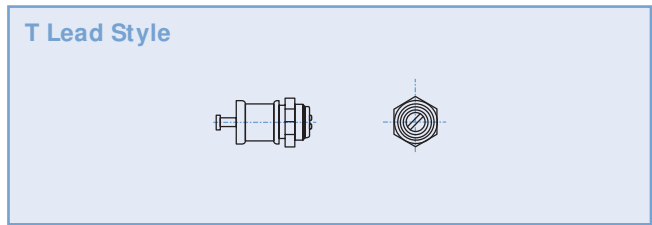
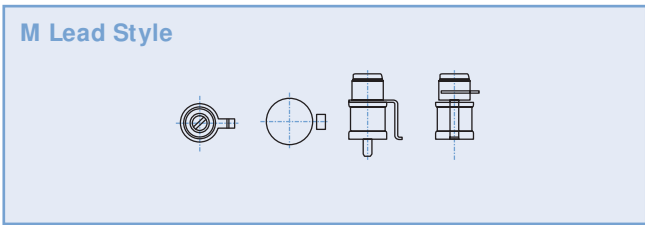
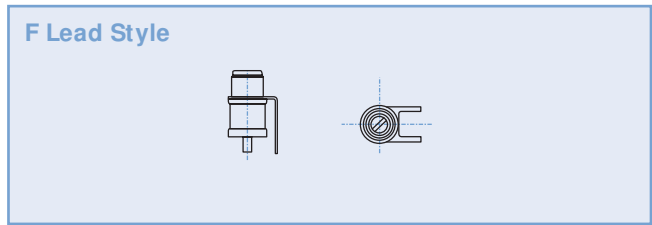
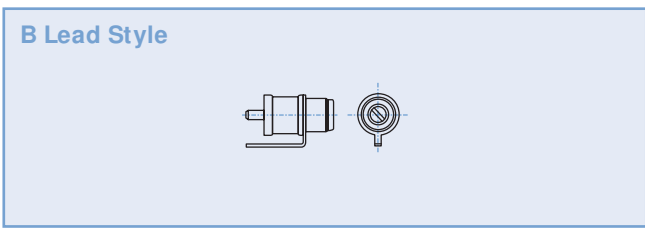
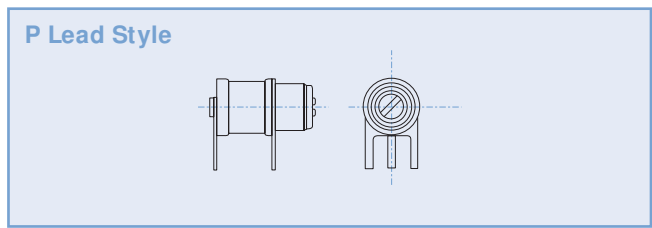
The "NT" Line Offers:

- High voltage
- Non-rotating piston, long life & no tuning noise
- Extremely stable under shock & vibration
- Screw head does not move in & out

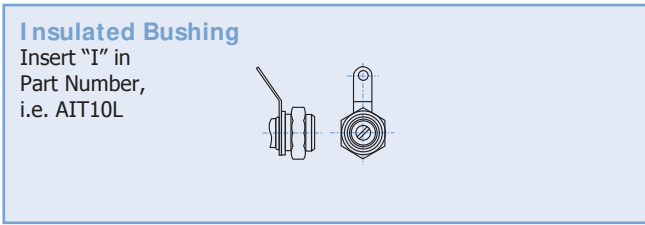
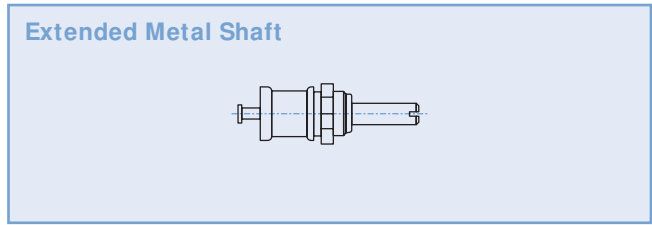


Part Number	DC Working Voltage	DC Withstanding Voltage	Capacitance (pF) <	Capacitance (pF) >	"A" Dim ± .06	"B" Dim ± .06
NT2-20	20000	10000	1.0	2.0	1.205	1.125
NT5-18	8750	17500	1.0	5.0	2.0	0.75
NT10-6	3000	6000	1.0	10.0	1.15	0.38
NT10-12	6000	12000	2.0	10.0	1.83	.063
NT15	2000	4000	1.0	15.0	1.69	0.31
NT25-6	3000	6000	5.0	25.0	1.62	.063
NT25-15	7500	15000	7.0	25.0	1.77	1.13
NT30	3000	6000	4.0	30.0	2.25	1.50
NT50	4500	9000	5.0	50.0	2.25	1.50
NT70-6	3000	6000	2.5	70.0	3.00	0.70
NT70-15	7500	15000	6.5	70.0	3.25	1.63
NT85	3000	6000	5.0	85.0	3.25	1.50
NT100-4	2500	3600	2.0	95.0	4.25	0.31

AI R/ PTFE Trimmer Capacitors - Lead Styles



Note: All bushing threads are .234" -64



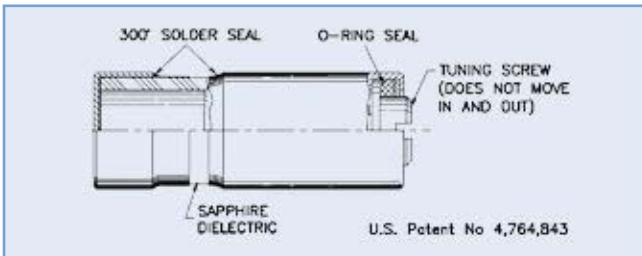
P Series - High Q Sealed Sapphire Trimmer Capacitors



Voltronics "P" line of sapphire subminiature trimmer capacitors is unique in design. The trimmers have a high Q, zero temperature coefficient, and are internally O-ring sealed to keep out flux and cleaning fluid. Yet, sizes are the same as the MIL unsealed styles. The tuning screw does not move in and out, and RF current does not run along it. Sapphire is ideal for precision trimmer capacitors. Its dielectric constant is extremely stable and the dielectric loss is below 0.0003 over frequencies up to 10GHz. Sapphire is chemically inert, totally moisture resistant, and mechanically strong.

Other features include:

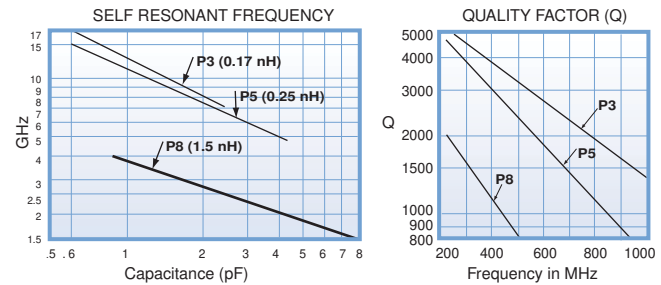
- High Q, low temperature coefficient, and internal seal
- Low self-inductance for use to 10 GHz
- Interchangeability with unsealed designs
- Long life, no measurable tuning noise



General Specifications	P Series
Capacitance	0.6-2.5/0.6-4.5/0.8-8.0pF
DC Working Voltage	500
DC Withstanding Voltage	1000
Seal	Internal O-ring
Temperature Coefficient	0 ± 50 ppm/°C
Insulation Resistance @ 25°C	10 ⁴ megohms
Operating Temperature	- 55°C to +125°C
Tuning Torque	0.2 to 2.0 in-oz
Shock	100g, 6 milliseconds.
Vibration	60g at 10-2000 Hz

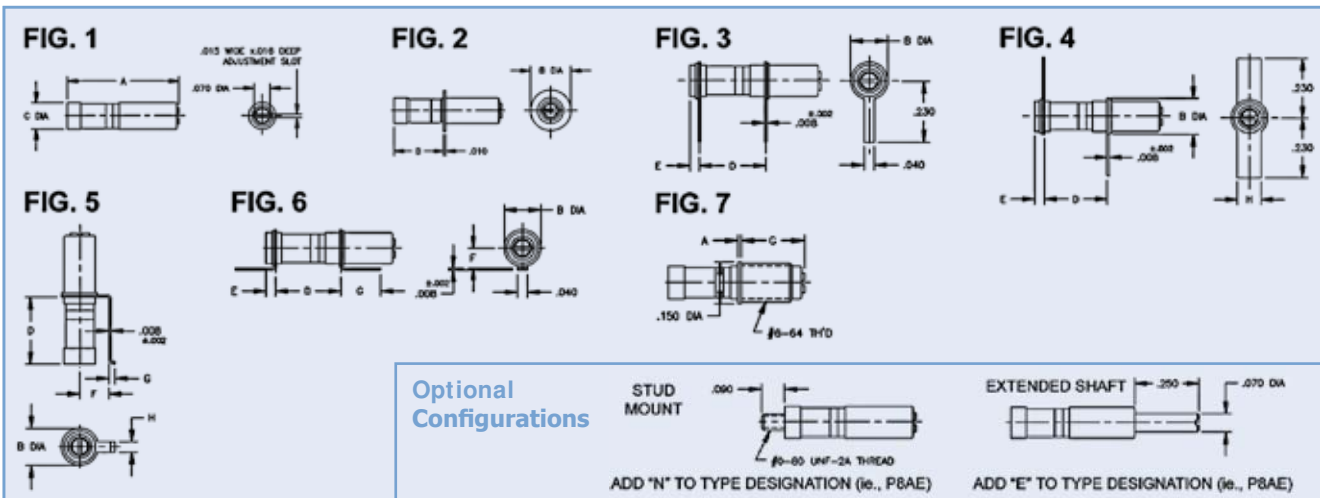
Capacitance Range (pF)				Tolerances (where not specified) ± .016								
Type	Fig.	From Below	To Above	Q (Min.)	A (max)	B Dia.	C ± .005	D ± .010	E ± .010	F	G	H ± .005
P3A	1	0.6	2.5	4,000	.240	-	.118	-	-	-	-	-
P5A	1	0.6	4.5	3,000	.329	-	.118	-	-	-	-	-
P8A	1	0.8	8.0	1,500	.495	-	.118	-	-	-	-	-
P3D	2	0.6	2.5	4,000	.240	.190	.118	.100	-	-	-	-
P5D	2	0.6	4.5	3,000	.329	.190	.118	.150	-	-	-	-
P8D	2	0.8	8.0	1,500	.495	.190	.118	.230	-	-	-	-
P3B	3	0.6	2.5	4,000	.240	.140	.118	.082	.014	-	-	-
P5B	3	0.6	4.5	3,000	.329	.140	.118	.130	.034	-	-	-
P8B	3	0.8	8.0	1,500	.495	.140	.118	.250	.036	-	-	-
P3C	4	0.6	2.5	4,000	.240	.140	.118	.056	.018	-	-	.093
P5C	4	0.6	4.5	3,000	.329	.140	.118	.100	.060	-	-	.093
P8C	4	0.8	8.0	1,500	.495	.140	.118	.150	.148	-	-	.093
P3F	5	0.6	2.5	4,000	.240	.140	.118	.090	-	.110	.025	.04
P5F	5	.06	4.5	3,000	.329	.140	.118	.160	-	.110	.025	.04
P8F	5	.08	8.0	1,500	.495	.140	.118	.250	-	.110	.025	.04
P3J	6	.06	2.5	4,000	.240	.140	.118	.082	.014	0.70	.160	-
P5J	6	.06	4.5	3,000	.329	.140	.118	.130	0.34	.070	.160	-
P8J	6	.08	8.0	1,500	.495	.140	.118	.250	0.36	.070	.160	-
P3M	7	.06	2.5	4,000	.240	-	.118	-	-	-	.160	-
P5M	7	.06	4.5	3,000	.329	-	.118	-	-	-	.230	-
P8M	7	.08	8.0	1,500	.495	-	.118	.160	-	-	.230	-

High Frequency Data



*This high frequency data was taken on a Boonton Model 34A Resonant Coaxial-line with the parts set at their maximum rated capacitance values. Connections to the parts were made directly on the body of the capacitors.

NOTE: For diameter and length dimensions on Figures 2-7, see figure 1.



Glass and Quartz Trimmer Capacitors

Design Features

The unique Voltronics non-rotating precision trimmer capacitor design offers the following advantages over conventional rotating types:

- Linear tuning with no reversals
- A true high frequency device with high Q's, low RF losses, low constant inductance and high self-resonant frequencies
- A superior seal because the screw head and O-ring do not move in and out
- Greater life -10,000 cycles minimum
- Much smaller sealed MIL sizes
- Ability to provide extended metal or plastic shafts

Dielectric

The dielectric is a tube which has been precision drawn in a vacuum so that its inner diameter is held within $\pm 0.0002''$. The choices are:

- 1. Annular Band Glass:** A solid tube of a specially selected formulation of glass which is metallized on the outside.
- 2. Embedded Band Glass:** Two tubes of glass fired together with a metallized silver band embedded between them. The inner tube is only 0.005" thick to provide much higher capacitance values.
- 3. Quartz:** A pure-grade silicon oxide offering higher Q and voltage ratings in each size with the trade-off of lower capacitance and higher cost.

General Specifications

(where not specified on detail pages)

Piston Action

Non-rotating

Blind Hole Tuning

Screw head does not move in and out

Linearity

$\pm 1\%$ with no capacitance reversals

Resolution

#2-72 tuning screw for fine tuning—approximate pico-farads per turn in active tuning range:

- | | |
|--------------------------------|------------|
| 1. Annular band glass | .6 to .8 |
| 2. Embedded band glass | 2.3 to 3.0 |
| 3. Quartz | .3 to .36 |
| 4. "H" Series high range glass | 3.9 to 4.2 |

Insulation Resistance

Annular band glass and quartz:
 10^6 Megohms at 25°C to 125°C
 Embedded band glass:
 10^6 Megohms at 25°C
 10^5 Megohms at 125°C

Tuning Torque

1 to 8 inch ounces

Life

Over 10,000 cycles

Temperature Coefficient

Annular Band Glass: ± 50 ppm/°C
 Embedded Band Glass: ± 150 ppm/°C
 Quartz: 0 to +50 ppm/°C

Dielectric Withstanding Voltage

Twice DC working voltage (listed with each part)

Capacitance Tuning Range

From below minimum to above maximum value listed for each part. Capacitance measured at 1 MHz on Boonton Electronics 7600 bridge using Voltronics V1265 guarded test jig. AM measurements taken with leads perpendicular to unit regardless of final configuration.

Temperature Range

All glass dielectrics: -55°C to 125°C
 Quartz dielectric: -55°C to 150°C

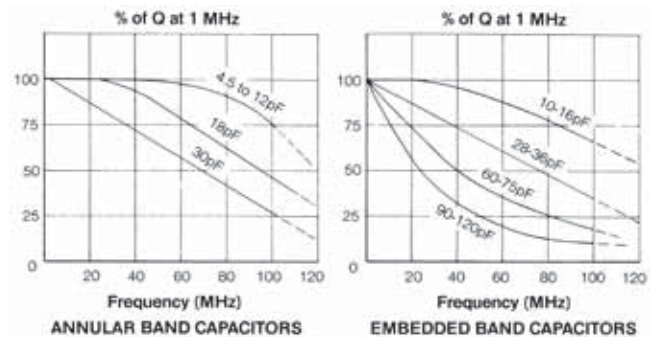
Other Specifications

All other specifications including vibration, shock, moisture and seal (where applicable) per MIL-C-14409D

Drawing Tolerances (where not specified)

Decimal: XXX $\pm .016''$
 XX $\pm .03''$

Quality Factor



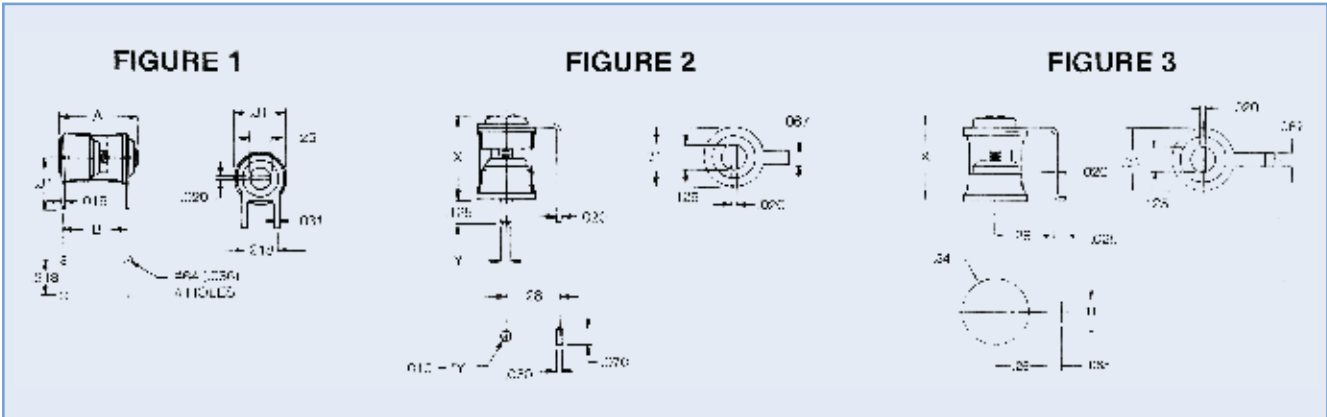
Recommended Tuning Tool: TT-100 or TT-600

S Series - Smallest Sealed Glass Trimmer Capacitors



The PC17 styles are the only vertically mounted glass trimmers in MIL-C-14409D.

Voltronics "S" Series are up to 40% shorter with 25% more range than any other sealed standard glass RC. trimmers. The use of Voltronics' unique non-rotating piston design provides linear tuning, high "Q", long life, and high self-resonant frequencies. The O-ring seal assures protection up to 40 p.s.i. against dust, moisture, flux, solder, and cleaning solvents.



Dielectric	Capacitance Range (pF)		Q (Min.) at 1 MHz	Horizontal Mount Figure 1			Vertical Mount* Figure 2		Surface Mount Figure 3	
	From Below	To Above		Type	A ± .06	B ± .03	Type	X ± .03	Type	X ± .03
EMBEDDED BAND GLASS	1.5	10	800	SP10	.370	.300	SF10A	.340	SM10	.340
	1.5	20	800	SP20	.440	.370	SF20A	.410	SM20	.410
	1.5	30	800	SP30	.520	.450	SF30A	.490	SM30	.490
	1.5	40	800	SP40	.630	.560	SF40A	.600	SM40	.600

"Y" dimension-standard - .040". For non-standard, change "A" in type number to "B" for .063" or "C" for .093".

*SF styles available with dual leads from top similar to AF styles on page 14.

General specifications on page 18 apply except:

1. DC Working Voltage: 250
2. Tuning torque: 0.5 to 5 inch ounces
3. Tolerance: XXX ± .005

H Series - Extended Range Glass Trimmer Capacitors

The "H" Series increases the standard maximum capacitance values of Voltronics' glass trimmer capacitors by almost 100%. This is achieved by a new and unique technique which makes the wall of the inner glass tube thinner than was previously possible. General specifications for the "H" Series are the same as those of standard embedded band glass trimmers (see Page 18) with the following exceptions:

DC Working Voltage: 125
 Temperature Coefficient: -150 ± 150 ppm/°C

Type	Capacitance Range (pF)		Q (Min.) at 1 MHz	Fig.	A ± .06	B ± .03
	From Below	To Above				
Horizontal Printed Circuit						
HSP19	2	19	1000	1	0.37	0.3
HSP34	2	34	900		0.44	0.37
HSP46	2	46	800		0.52	0.45
HSP64	2	64	700		0.63	0.56
HTP96C	2	96	600	2	0.91	0.88
HTP130C	2	130	500		1.16	1.13
HTP210C	2	210	350		1.75	1.73
HTP250C	2	250	250		1.98	1.95
Vertical Printed Circuit						
					A ± .03	
HSF19	2	19	1000	3	0.34	
HSF34	2	34	900		0.41	
HSF46	2	46	800		0.49	
HSF64	2	64	700		0.6	
Surface Mount						
HSM19	2	19	1000	4	0.34	
HSM34	2	34	900		0.41	
HSM46	2	46	800		0.49	
HSM64	2	64	700		0.6	
Panel Mount						
HTM19C	2	19	1000	5	0.37	
HTM34C	2	34	900		0.45	
HTM46C	2	46	800		0.52	
HTM64C	2	64	700		0.63	
HTM96C	2	96	600		0.92	
HTM130C	2	130	500		1.17	
HTM210C	2	210	350		1.77	
HTM250C	2	250	250		2	

FIG. 1

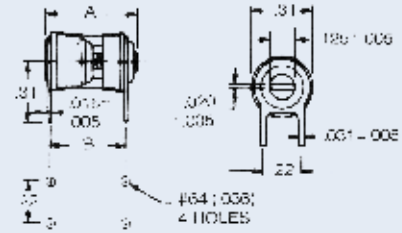


FIG. 2

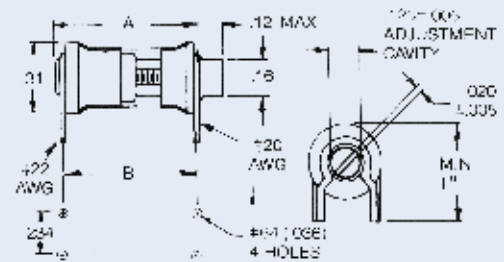


FIG. 3

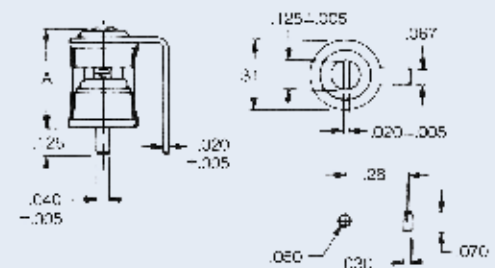


FIG. 4

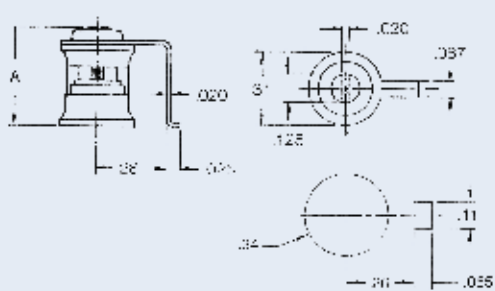
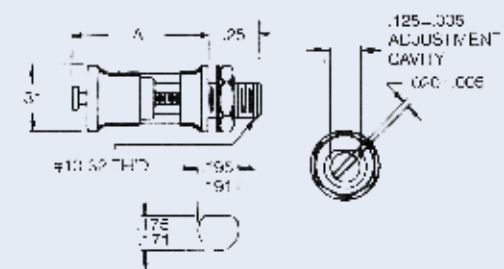
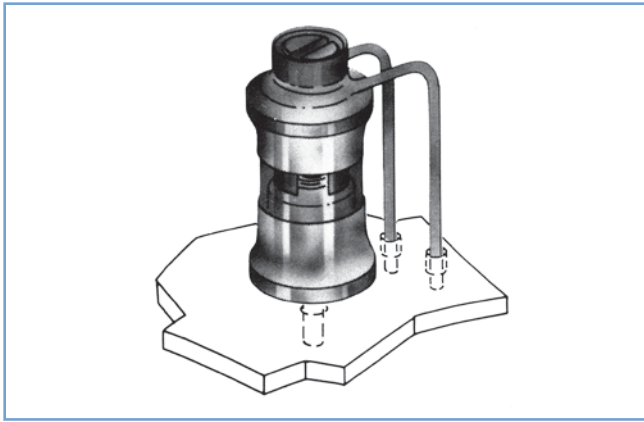


FIG. 5

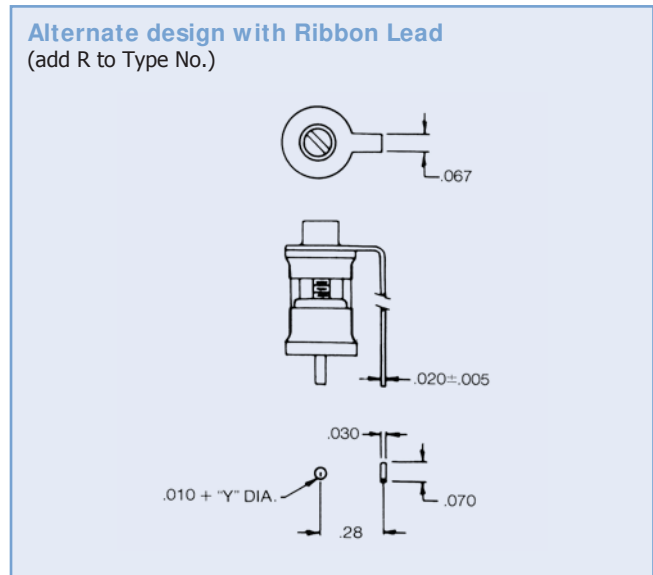
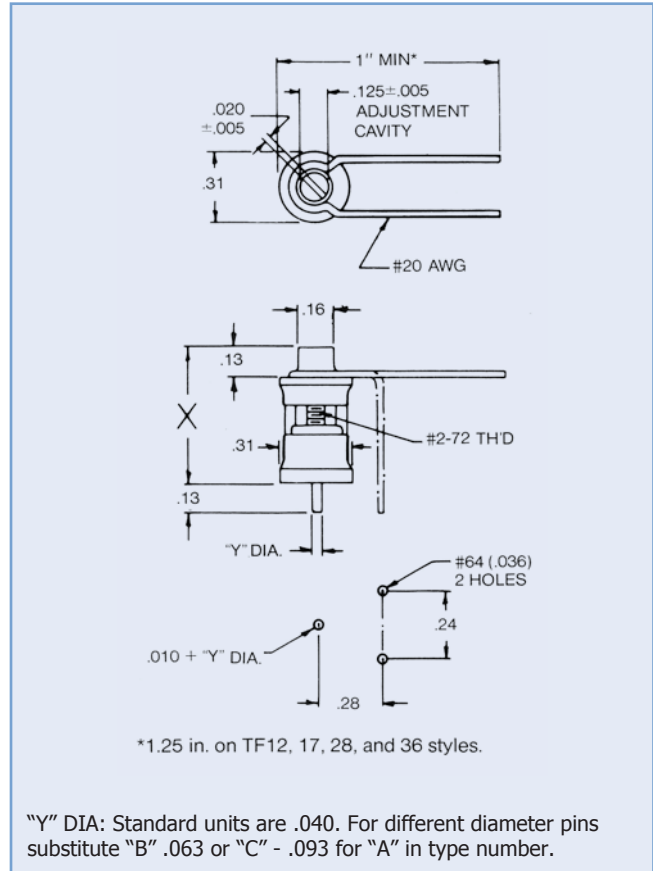


TF Series - Vertical P.C. Mount Glass Trimmer Capacitors



Type	Capacitance Range (pF)		X ± .03	Q (Min.) at 1 MHz	DCVV
	From Below	To Above			
Annular Band					
TF5A	0.8	4.5	0.47	650	750
TF6A	0.8	5.5	0.47	700	750
TF8A	1	8.5	0.62	700	750
TF9A	0.8	8.5	0.7	650	750
TF11A	1	11	0.7	700	750
TF12A	0.8	12	0.9	650	750
TF17A	0.8	16	0.9	700	750
Embedded Band					
TF10A	1.2	10	0.43	800	500
TF14A	1.5	14	0.53	700	1000
TF15A	1.2	16	0.48	800	500
TF16A	1	16	0.53	800	1000
TF22A	2	22	0.58	800	500
TF25A	2	25	0.58	800	500
TF28A	1	28	0.77	700	1000
TF36A	1	36	0.77	800	1000

General Specifications on Page 18



TM & QM Series - Panel Mount Glass and Quartz Trimmer Capacitors



Fig. 1

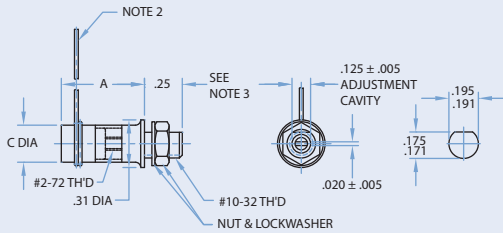


Fig. 2



Fig. 3

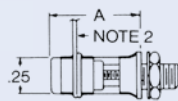
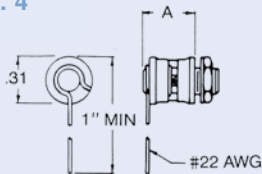


Fig. 4



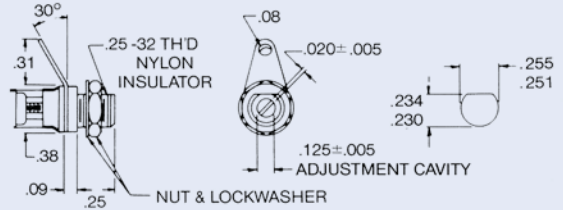
Notes:

1. Fig. 2,3 and 4 parts have same end view as Fig. 1.
2. All leads #22 AWG and 2" Min. long except for all TM5-, TM6-, TM10- and QM2- parts which are #24 AWG.
3. Mounting bushing #10-32 x .25 long except for all TM10- and TM15- parts which are #10-32 x .16 long.
4. C diameter of Fig. 1 parts .27 on embedded band units and .25 on all other parts.

Detailed General Specifications on Page 18

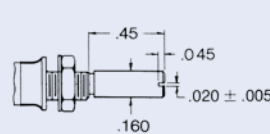
Optional Configuration

INSULATED BUSHING



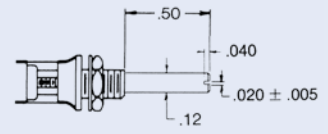
Insert "I" Between "T" and "M" in Type Number (ex. TIM9C)

EXTENDED PLASTIC SHAFT



Add "EI" to End of Type Number (ie., TM9EI)

EXTENDED METAL SHAFT



Add "E" to End of Type Number (ie., TM9CE)

TM & QM Series - Panel Mount Glass and Quartz Trimmer Capacitors

Glass Annular Band

Capacitance Range (pF)		Q (Min.) 1 MHz	UNSEALED 750 DCWV (Fig. 1)			SEALED, METAL CAP, TURRET TERMINAL 750 DCWV (Fig. 2)		SEALED, GLASS END 1,250 DCWV (Fig. 3)		
From Below	To Above		A± .03	Type	MIL Designation	A± .03	Type	A± .03	Type	MIL Designation
0.8	4.5	650	.31	TM5	PC40J4R5**	.41	TM5C	.36	TM5G	PC38J4R5**
0.8	5.5	700	.31	TM6	P050J5R5	.41	TM6C	.36	TM6G	PC48J5R5
0.8	8.5	650	.55	TM9	PC40J8R5**	.63	TM9C	.59	TM9G	PC38J8R5**
1.0	11.0	700	.55	TM11	PC50J110	.63	TM11C	.59	TM11G	PC48J110
0.8	12.0	650	.75	TM12	PC40H120**	.83	TM12C	.81	TM12G	PC38H120**
0.8	16.0	700	.75	TM17	PC50H160	.83	TM17C	.81	TM17G	PC48H160
0.8	18.0	650	1.00	TM18	PC40H180**	1.09	TM18C	1.06	TM18G	PC38H180**
0.8	21.0	700	1.13	TM21	—	1.22	TM21C	—	—	—
0.8	23.0	700	1.00	TM23	PC50H230	1.09	TM23C	1.06	TM23G	PC48H230
0.8	30.0	650	1.59	TM30	PC40H300**	1.69	TM30C	1.66	1M30G	PC38H300**
0.8	38.0	700	1.59	TM38	PC50H380	1.69	TM38C	1.66	TM38G	PC48H380

Glass Embedded Band

Capacitance Range (pF)		Q (Min.) 1 MHz	UNSEALED 1,000 DCWV (Fig. 1)		SEALED, METAL CAP, TURRET TERMINAL 1,000 DCWV (Fig. 2)			SEALED, METAL CAP, 1,000 DCWV (Fig. 4)	
From Below	To Above		A± .016	Type	A± .03	Type	MIL Designation	A± .03	Type
2.0	10.0	800	.28	TM10*	.37	TM10C*	—	.35	TM10M*
1.5	14.0	700	.38	TM14	.47	TM14C	—	.45	TM14M
1.2	16.0	800	.33	TM15*	.42	TM15C*	—	.40	TM15M*
1.0	16.0	800	.38	TM16	.47	TM16C	PC39G160	.45	TM16M
2.0	25.0	800	.42	TM25	.52	TM25C	—	.50	TM25M
1.0	28.0	700	.61	TM28	.70	TM28C	—	.69	TM28M
1.0	36.0	800	.61	TM36	.70	TM36C	PC39G360	.69	TM36M
1.0	42.0	700	.83	TM42	.92	TM42C	—	.91	TM42M
1.0	52.0	800	.83	TM52	.92	TM52C	PC39G520	.91	TM52M
1.0	60.0	650	1.08	TM60	1.17	TM60C	—	1.16	TM60M
1.0	75.0	700	1.08	TM75	1.17	TM75C	PC39G750	1.16	TM75M
1.0	90.0	600	1.67	TM90	1.77	TM90C	—	1.75	TM90M
1.0	120.0	600	1.67	TM120	1.77	TM120C	P039G121	1.75	TM120M
2.0	180.0	500	1.91	TM180*	2.00	TM180C*	—	1.98	TM180M*

Quartz

Capacitance Range (pF)		Q (Min.) 1 MHz	UNSEALED 750 DCWV (Fig. 1)			SEALED, QUARTZ END 1,250 DCWV (Fig. 3)		
From Below	To Above		A± .03	Type	MIL Designation	A± .03	Type	MIL Designation
0.6	1.8	2000	.30	QM2	PC40Q1R8	.36	QM2G	PC38Q1R8
0.8	5.5	2000	.55	QM6	P040Q5R5	.63	QM6G	PC38Q5R5
0.6	9.5	2000	.98	QM10	PC40Q9R5	1.06	QM10G	PC38Q9R5
0.8	16.0	2000	1.59	QM16	PC40Q160	1.66	QM16G	PC38Q160

*Parts Rated 500 DCWV

**MIL-C-14409B parts not listed in MIL-C-14409D