

SURFACE MOUNT TRIMMER CAPACITORS

Selection guide

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Selection Guide

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NEW!



SURFACE MOUNT TRIMMER CAPACITORS

SMD hermetic ceramic trimmers

SMD HERMETIC CERAMIC TRIMMER CAPACITORS AT2320 SERIES

Description

SMD hermetic ceramic trimmer is a high performance surface mount trimmer capacitor. Designed specifically to withstand harsh environments, SMD hermetic ceramic trimmer delivers exceptional performance through microwave frequencies at operating temperatures of -55°C to $+125^{\circ}\text{C}$.

- **SMD hermetic ceramic trimmer** rugged construction renders it resistant to penetration of solder fluxes and cleaning solvents.
- **SMD hermetic ceramic trimmer** square drive tuning mechanism provides and assures complete compatibility with automated tuning devices for positive non-slip tamper-proof adjustments.
- **SMD hermetic ceramic trimmer** design makes it possible to utilize tape and reel. The alumina housing provides mechanical strength with outstanding electrical and heat resistant properties.

Recommended handling instructions outlining soldering procedures are available upon request.

Features

- Working voltage 250VDC, test 500VDC
- Resistance to soldering heat and flux, 235°C for 30s
- Can withstand up to 5 minutes total immersion in typical cleaning solvents at room temperature
- Solderability and moisture resistance meet MIL-STD-202
- Conform with specification MIL-C-81

Applications

- VCOs - Microprocessor
- Filter networks - Crystal trimming
- Avionics equipment - Disc drives
- Impedance matching - Telemetry



SMD THIN CERAMIC TRIMMER CAPACITORS **AT9401, AT9402 & AT9410 SERIES**

Description

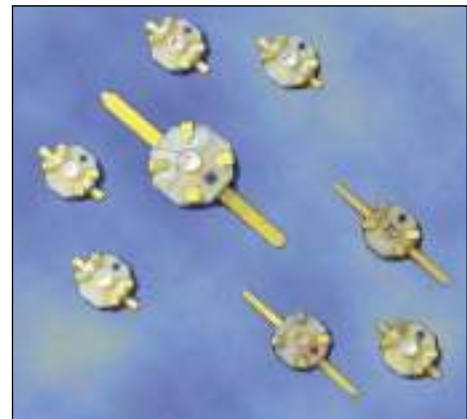
- SMD thin trimmer capacitors are an advanced development in miniaturized trimmer capacitors for applications in circuits where size and performance are critical.
- The SMD thin trimmer capacitors embodies a radical reduction in size and weight over standard ceramic capacitors, with a proportional improvement in electrical characteristics. The capacitor consists of a metallic rotor suspended under spring pressure between two metallized dielectric disks. In addition to physically securing the assembly, the springs serve as both the internal electrical connection and the external terminal, simplifying the construction and further reducing size. The incorporation of the square drive tuning mechanism insures captive, non-slip, tamper-proof adjustments which are not subject to backlash problems associated with screwdriver type adjustment slots.
- SMD thin trimmer capacitors (**AT9401 series**) feature high Q performance up to 2 GHz and beyond. AT9401 series construction incorporates a butterfly electrode pattern which provides a series parallel capacitor with extremely low ESR and ESL.

Features

- Working voltage 250VDC, test 500VDC
- Resistance to cleaning solvents and soldering heat, moisture resistance, solderability meet MIL-STD-202
- Conform with specification MIL-C-81

Applications

- Microprocessor clock - Interstage coupling
- Filter networks - Impedance matching
- Crystal trimming - Antenna tuning
- Electronic watches -Telemetry
- Avionics equipment
- WLAN

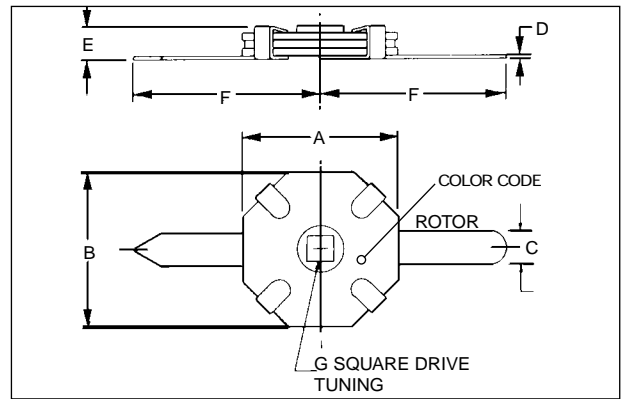


SURFACE MOUNT TRIMMER CAPACITORS

SMD thin trimmers

Characteristics (AT94XX series)

Range	See table
Voltage	Rated 250VDC Test 500VDC
Q at 100 MHz	See table
Operating temp.	-55° C to +125° C
Temp. coeff.	See table
Torque	See table
Insulation resistance	> 10 ⁹ MΩ at 500VDC
Vibration	15g 10-2000Hz
Shock	100g 6ms
Capacitance drift	< 1%



Gold finish terminals

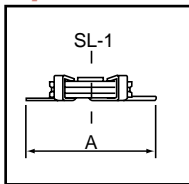
Technical data

Temex Part N°	Capacitance range (pF)	Temperature coefficient (ppm/°C)	Min Q at 100 MHz	Torque g.cm
AT9401-0	0.25 - 0.7	50 ± 50	1000	4 - 70
AT9401-1	0.5 - 1.3	NPO ± 100	1000	4 - 70
AT9401-2	0.6 - 2	- 400 ± 200	1000	4 - 70
AT9401-4	1.5 - 4	- 1100 ± 300	500	4 - 70
AT9402-0	0.6 - 2.5	100 ± 100	3000	4 - 70
AT9402-1	1 - 5	100 ± 200	1000	4 - 70
AT9402-2	2.5 - 10	- 50 ± 100	1000	4 - 70
AT9402-4	3 - 12	- 1100 ± 300	500	4 - 70
AT9402-6	6 - 25	- 1100 ± 300	300	4 - 70
AT9402-8	5 - 15	- 300 ± 300	750	4 - 70
AT9402-9	5 - 18	- 450 ± 300	500	4 - 70
AT9410-0	1 - 4.5	50 ± 50	1000	14 - 140
AT9410-1	2.5 - 10	- 100 ± 200	1000	14 - 140
AT9410-2	4 - 18	- 400 ± 200	700	14 - 140
AT9410-3	6 - 35	- 1100 ± 300	200	14 - 140
AT9410-4	7 - 40	- 1100 ± 300	200	14 - 140
AT9410-5	8 - 50	- 1500 ± 500	200	14 - 140
AT9410-25	5 - 25	NPO ± 150	200	14 - 140

Dimensions (mm)

Color Code	A	B	C	D	E	F	G
Red Black Blue Brown	3.6 max	3.2	0.5	0.1	1.0 max	5.0	0.6
Red Black Blue Brown Yellow None Grey	3.2	3.2	0.5	0.1	1.0	5.0	0.6
Red Black Blue Orange Brown Green Yellow	5.1	5.1	1.0	0.1	1.5 max	7.6	0.8

Optional configuration



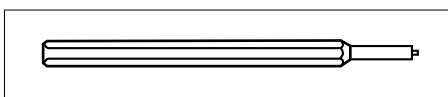
Temex P/Nb	SL
AT9401 Series	5.1
AT9402 Series	5.1
AT9410 Series	6.4 Max

Packaging

- **BULK:** TEMEX standard bulk packaging in a sealed antistatic plastic bag
- **TAPE AND REEL:** TEMEX standard tape and reel packaging is available in quantities of 1500 or 6000 pieces per reel on carrier tape 12 mm width for AT9401 SL and AT9402 SL products, and in quantities of 3000 pieces per reel on carrier tape 24 mm width for AT9410 products

How to order?

- Standardex: AT9402-2
- For optional configuration add code after TEMEX P/Nbex: AT9402-2 SL1



TEMEX Tuning Tool:

AT4192: For 9401 and 9402 series
AT4193: For 9410 series

SURFACE MOUNT TRIMMER CAPACITORS ATO300 & AT1300 SERIES

Description

ATO300 and AT1300 series are **surface mount ceramic dielectric chip size trimmer capacitors**. They are specially designed for reflow soldering process and commercial applications like handy radio communication equipment, wireless LAN or crystal oscillators. Dust proof and preserved from solvent and washable, they are available on tape and reel. Full ring around the rotor facilitates its use with automatic pick and place machine.

Features

- Very good Q and high resonant frequency
- Low capacitance drift
- Very stable over time
- Low temperature coefficient

Applications

- Crystal and resonator trimming
- Paging system
- WLAN
- CATV amplifiers
- All varieties of communication and test equipment



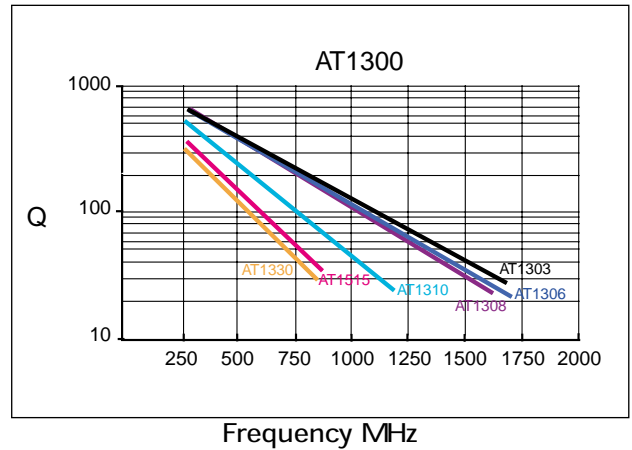
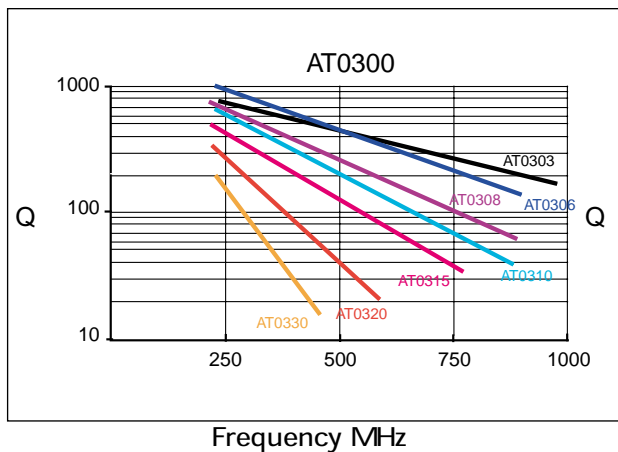
SURFACE MOUNT TRIMMER CAPACITORS

ATO300 & AT1300 Series

Characteristics

	ATO303 AT1303	ATO306 AT1306	ATO308 AT1308	ATO310 AT1310	ATO315 AT1315	ATO320 AT1320	ATO330 AT1330	ATO340 AT1340
Maximum capacitance pF & tolerance	+ 50% 30 - 0%	+ 50% 60 - 0%	+ 50% 80 - 0%	+ 100% 100 - 0%	+ 100% 150 - 0%	+ 100% 200 - 0%	+ 100% 300 - 0%	+ 100% 400 - 0%
Minimum capacitance pF	1.5 max	2 max	3 max	2 max	3 max	4.5 max	5.5 max	8.0 max
Rated voltage VDC	100							
Voltage proof	220VDC							
Working temperature range	- 40° C to 85° C							
Temperature coefficient ppm/°C	0 ± 200	0 ± 300	-750 ± 500	0 ± 300	0 ± 300	0 ± 500	-750 ± 500	-750 ± 500
Capacitance drift pF	0.1 max		0.2 max	0.3 max	0.4 max	0.5 max	1.0 max	1.2 max
Setting drift	< 1 %							
Typical self-resonant frequency at max. rated cap GHz (*AT1300series)	2 2.3*	1.4 1.6*	1.2 1.4*	1.1 1.2*	0.9 1.0*	0.8 0.9*	0.6 0.7*	0.4 0.5*
Insulation resistance MΩ	10000 min							
Color code	Black	Blue	Violet	White	Pink	Red	Orange	Yellow
Tensile strength of terminal	250g min							
Torque	10 to 70g. cm							
Resistance to axial loading	500g min							
Packaging	All parts delivered on 12 mm tape and reel (1000 pieces per reel)							

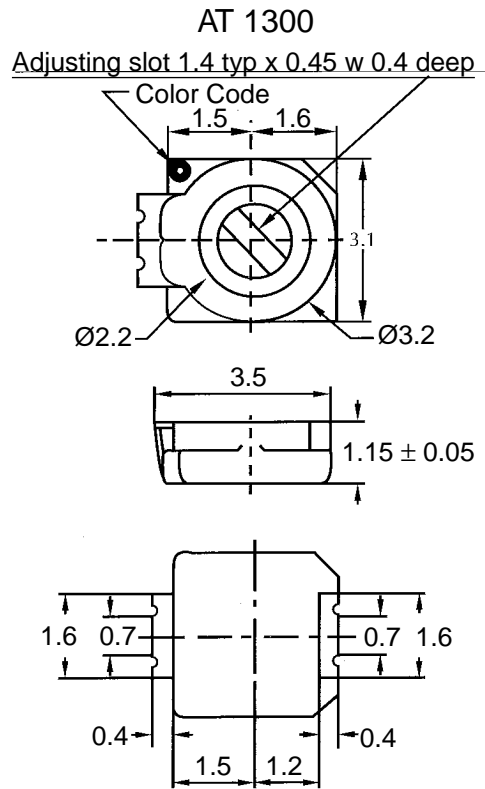
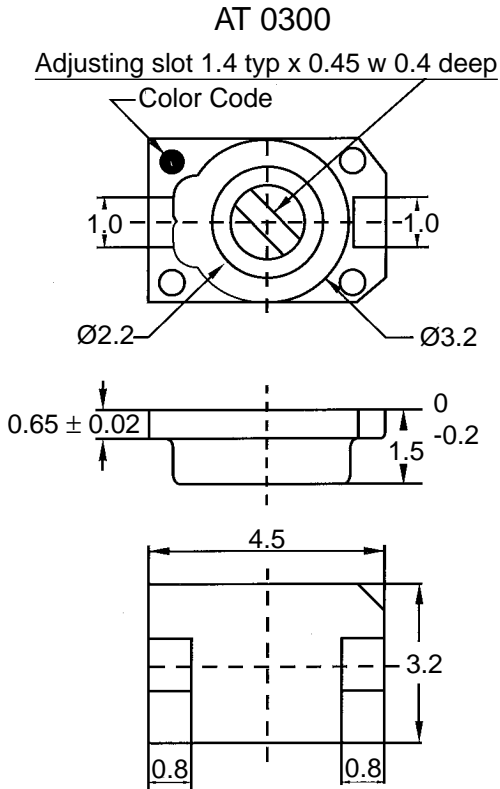
Quality factor



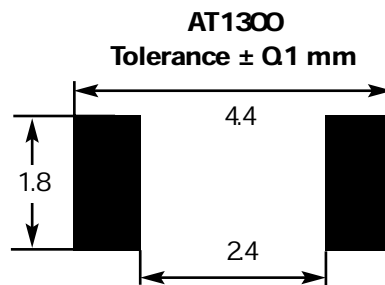
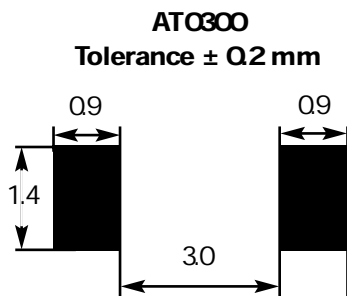
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ATO300 & AT1300 Series

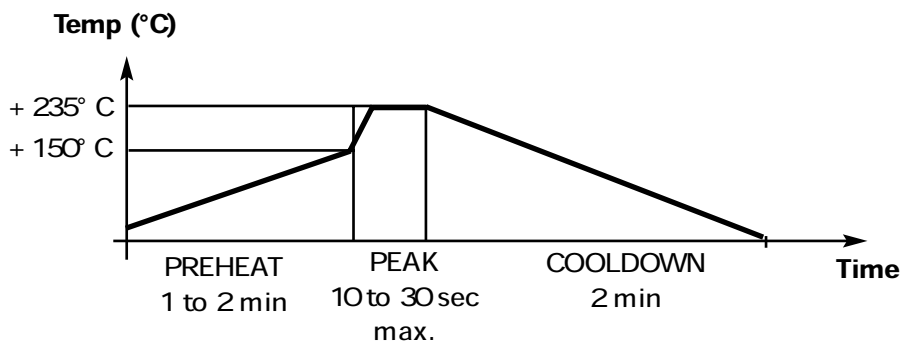
Outline drawings



Typical solder Pad layout



Recommended reflow solder temperature profile



TEMEX reserves the right to modify herein specifications and information at any time when necessary to provide optimum performance and cost.

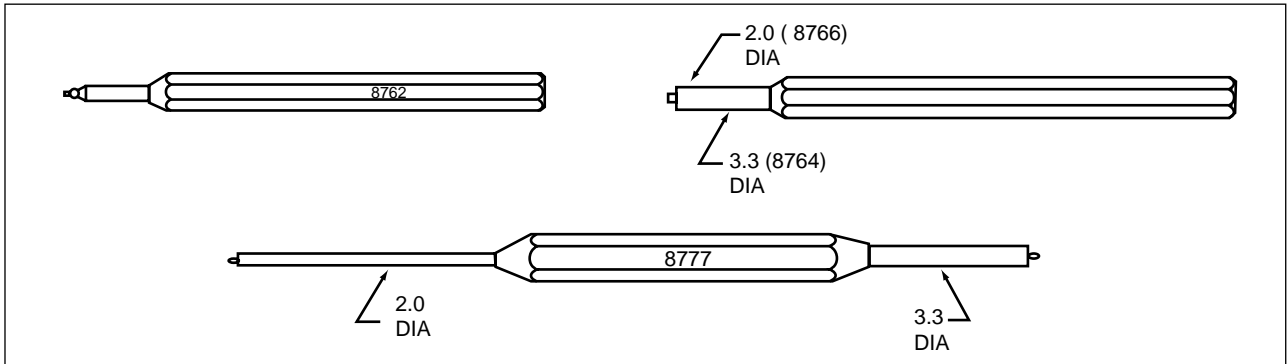
FREQUENCY TUNING COMPONENTS

Tuning tools, taps

TUNING TOOLS, TAPS

TUNING TOOLS

- Slot tuning tools



Temex Part N°	APPLICATION	
AT8762	AT(x) 7260 Gigahertz trimmers Series AT6922 Tuning elements	
AT8764	3.3 DIA Standard Air Series AT5700 Miniature Series	
AT8766	2.0 DIA AT(x) 7270 8090 Gigahertz trimmers Series AT5800 Miniature Air Series	
AT8777	3.3 DIA Standard Air Series AT5700 Miniature Series	2.0 DIA AT(x) 7270 8090 Gigahertz trimmers Series AT5800 Miniature Air Series

- Square drive tuning tools

Temex Part N°	APPLICATION	
AT4192	AT9401 } Thin trimmers Series	
	AT9402 } Ceramic trimmers	
AT4193	AT9410 Thin trimmers Series	