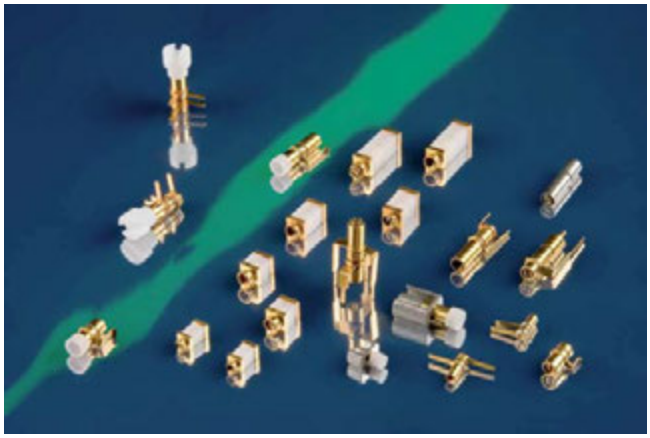
GIGAHERTZ SAPPHIRE TRIMMER CAPACITORS

RoHS COMPLIANT

Description



Sapphire dielectric
High self resonance frequency and very good Q
Rated voltage 500 VDC
Multi-turn, very fine resolution
Low temperature coefficient
Low capacitance drift and very stable over time
Self-locking constant torque drive mechanism
Surface mount models available on tape and reel
Meet MIL-C-144409
Compliant to ESA/SCC 3010
Terminations are **gold plated**
Non magnetic model
ROHS compliant
High Reliability versions available on special order
Custom design upon request
Maximum Soldering Temperature 260°C, 3 s Max

Applications

RF power amplifier	Impedance matching
Filter tuning	Low power amplifiers
Crystal trimming	Medical applications

Dielectric constant of sapphire does not change with frequency and temperature. Sapphire is inert crystal, moisture resistant and mechanically strong.

I. Electrical specifications

P/N	AT 2726X ROHS AT SM260 ROHS	AT 2727X ROHS AT SM270 ROHS	AT 2728X ROHS AT SM280 ROHS	AT 2729X ROHS AT SM290 ROHS
Capacitance range Standard models AT 272X8 models	0.3 to 1.2 pF 0.35 to 1.2 pF > 4 turns	0.6 to 4.5 pF 0.65 to 4.5 pF > 8 turns	0.4 to 2.5 pF 0.45 to 2.5 pF > 4 turns	0.8 to 8.0 pF 0.85 to 8.0 pF > 16 turns
Working Voltage	500 VDC			
Test Voltage	1000 VDC			
Working Temp. range	-55°C to + 125°C			
Temp. Coeff. Standard models AT 272X8 models	0+/-50 ppm/°C -50+/-75 ppm/°C	0+/-50 ppm/°C -50+/-75 ppm/°C	0+/-50 ppm/°C -50+/-75 ppm/°C	0+/-75 ppm/°C -50+/-75 ppm/°C
Q factor @ Max Capacitance	>5000 @250 MHz	>3000 @250 MHz	>4000 @250 MHz	>3000 @100 MHz
Insulation Resistance	>10000 MΩ min @ 500 VDC			

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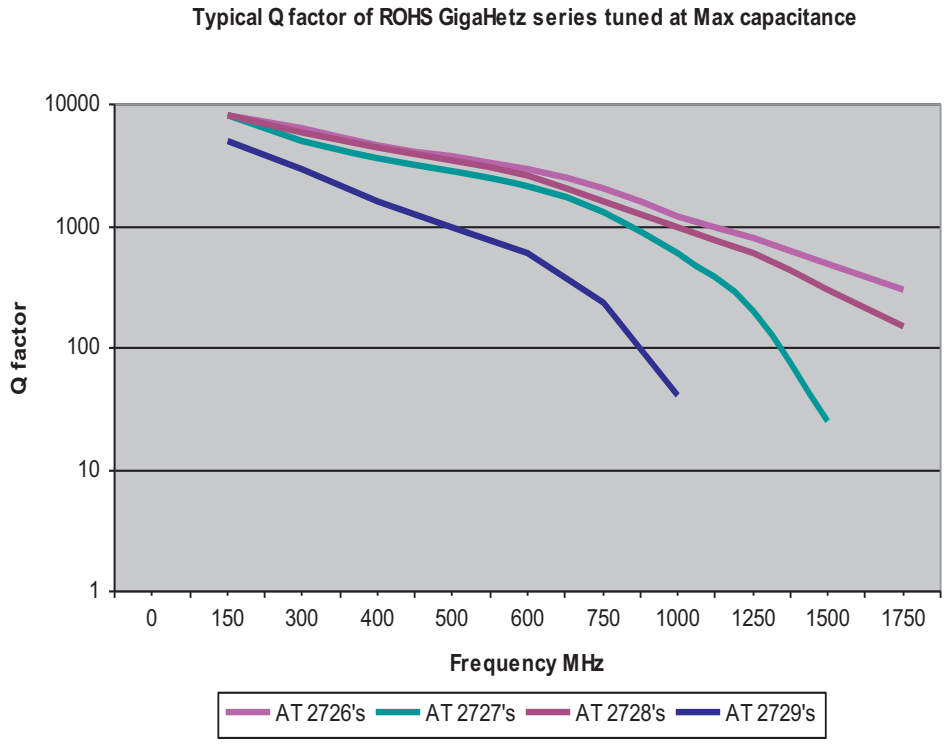
II. Quality factor



III. Mechanical and general specifications

P/N	AT 2726X ROHS AT SM260 ROHS	AT 2727X ROHS AT SM270 ROHS	AT 2728X ROHS AT SM280 ROHS	AT 2729X ROHS AT SM290 ROHS
Rotating Torque	7 to 60 g.cm	10 to 100 g.cm	10 to 100 g.cm	10 to 100 g.cm
Max Torque on rotor stop	80 g.cm	150 g.cm	120 g.cm	150 g.cm
Rotational life	> 800 revolutions			
Vibration	60g, 10-2000 Hz			
Shock	100g, 6ms			

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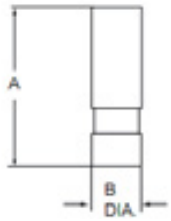
IV. Self resonant frequency

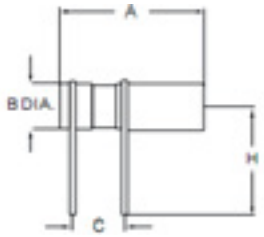
For surface mount version, self resonant frequency is improving when width of terminal is increasing. With more width terminal, Equivalent Serial Resistance (ESR) is lower.As example for the same capacity range, self resonant frequency of model 8 is higher than for model 3.

V. Models

Model 0

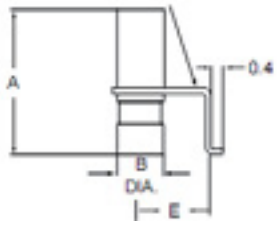


Model 1



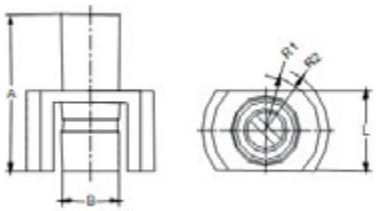
Terminal 1.0 mm width x 0.2 mm thickness

Model 3

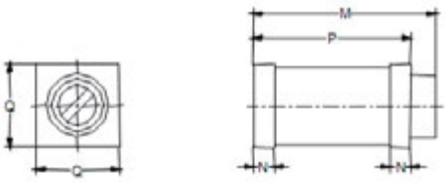


Terminal 1.0 mm width x 0.2 mm thickness

Model 8



AT SM series



Terminals are gold plated

Others models available upon request. Custom designs available upon request

VI. Dimensions in mm

X is the model

P/N	A	B	C	E	H	L	R1	R2
AT 2726X ROHS	5.8	1.9	2.0	1.9	5.9	3.1	2.3	2;8
AT 2727X ROHS	8.0	3.0	3.2	2.8	5.9	4.1	2.8	3.3
AT 2728X ROHS	5.8	3.0	2.0	2.8	5.9	4.1	2.8	3.3
AT 2729X ROHS	12.3	3.0	6.4	2.8	5.9	4.1	2.8	3.3

P/N	M	N	P	Q
AT SM260 ROHS	6.4	0.8	5.1	3.0
AT SM270 ROHS	8.8	1.0	7.6	4.0
AT SM280 ROHS	6.6	1.0	5.1	4.0
AT SM290 ROHS	13.1	1.0	11.4	4.0

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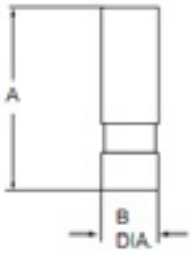
VII. Non magnetic model

AT 57290 ROHS is a Non Magnetic RoHS GigaHertz trimmer capacitor with a very low magnetic signature, made of non magnetic alloy and silver plated, specially designed for medical applications such as MRI, NMR and spectroscopy.

Outline Drawing, Electrical Characteristics, Mechanical Specifications and Dimensions

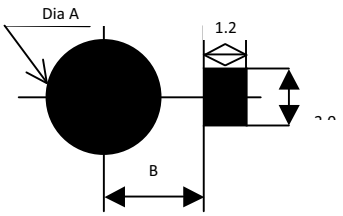


Capacitance range (pF)	0.8 to 8.0
Working Voltage (VDC)	500
Withstanding Voltage (VDC)	1000
Working Temp. range	-55°C to + 125°C
Temp. Coeff. (ppm/°C)	375+/-75
Q factor @ Max Capacitance	>3000 @100 MHz
Insulation Resistance (MΩ)	10000 min @ 500 VDC
Rotating Torque g.cm	10 to 100
Max Torque on rotor stop g.cm	150
A in mm	12.3
B in mm	3.0

VIII. Soldering

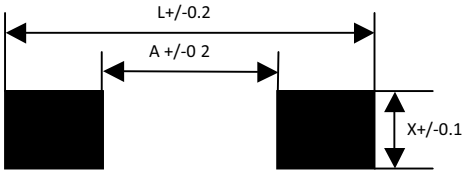
Typical solder pad layout

AT 27263 ROHS, AT 27273 ROHS, AT 27283 ROHS, AT 27293 ROHS models



Dim in mm	AT 27263 ROHS	AT 27273 ROHS AT 27283 ROHS AT 27293 ROHS
Dia A	2.4	3.6
B	1.7	2.3

AT SM Models



Dim in mm	AT SM 260 ROHS	AT SM 270 ROHS	AT SM 280 ROHS	AT SM 290 ROHS
L	6.2	8.7	6.2	12.5
A	3.2	5.2	2.8	9.0
X	3.4	4.4	4.4	4.4

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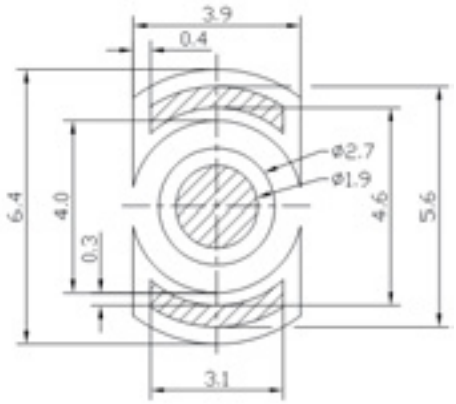
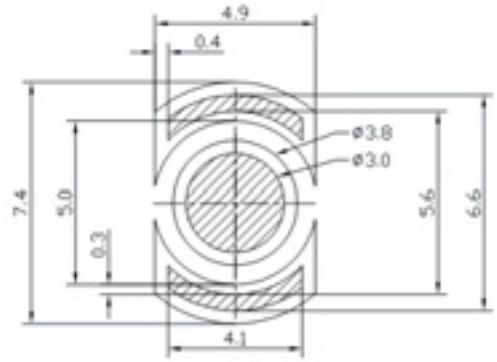
AT 27268 ROHS

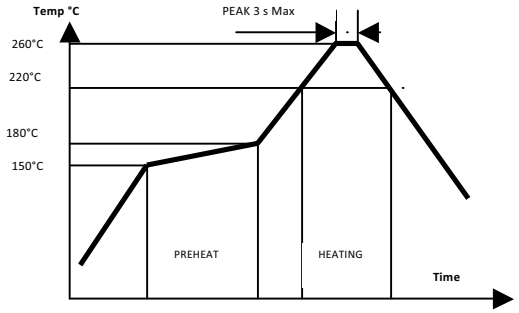


AT 27278 ROHS, AT 27288 ROHS, AT 27298 ROHS



Recommended reflow solder temperature profile

Maximum Soldering Temperature 260°C MAX



Hand soldering : Use a temperature controlled 40 Watts iron set at 260°C maximum. The solder joint should be made on 3 seconds or less.

IX. Recommendations for cleaning

GigaHertz Trimmer capacitors are compatible with a wide variety of cleaning process including those that utilize aqueous or semi-aqueous solutions, alcohol solutions, de-ionized water and numerous other cleaners. However, due to the large variety of such processes, the customer through cleaning process evaluation in conjunction with TEMEX-CERAMICS product purchased must determine actual compatibility. Capacitors without sealing caps should be protected from intrusion of cleaning solutions in the internal bushing thread. It is recommended these units be installed after circuit boards have been cleaned. Units with seal caps may be immersed in liquid, vapour and ultrasonic system.

X. Packaging

Parts are delivered in bulk for quantity lower than 500 p.
GigaHertz trimmers AT 27263 ROHS, AT 27273 ROHS, AT 27283 ROHS, AT 27268 ROHS, AT 27278 ROHS, AT 27288 ROHS, AT SM 270 ROHS and AT SM 280 ROHS are available on tape and reel, quantity per reel 500p.
Models 0 and 1, trimmers AT 27293 ROHS, AT 27298 ROHS and AT SM 290 ROHS are not available on tape.

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When delivered on tape, GigaHertz trimmers include a permanent sealing cap which is moisture proof and resists intrusion of dirt, dust, solder flux and cleaning agents, and allows easy access, accurate tuning after assembly and cleaning. References of sealing caps are AT 69600 for AT 2726X ROHS family and AT 69700 for AT 2727X ROHS, AT 2728X ROHS and AT 2729X ROHS families. For sealing caps of AT SM series, contact TEMEX-CERAMICS.
Use of permanent sealing cap increases total length of the GigaHertz trimmer by 0.2 mm.

XI. How to order

Parts in quantity < 500 p and for models 0 and 1, trimmers AT 27293 ROHS, AT 27298 ROHS and AT SM 290 ROHS

	Reference	RoHS
Examples	**AT 27293**	**ROHS**
	AT SM 270	**ROHS**
	AT 27261	**ROHS**
	AT 57290	**ROHS**

Parts with sealing cap, in quantity < 500 p

	Reference	+ CAP	ROHS
Example	**AT 27273**	**+ CAP**	**ROHS**

	Reference	R1	ROHS
Parts on tape and reel : (500p/reel) Examples	**AT 27283**	**R1**	**ROHS**
	AT SM 260	**R1**	**ROHS**

XII. Tuning tools

Recommended Tuning Tools references:

AT 8762 for AT 2726X ROHS part numbers and AT SM 260 ROHS

AT 8777 for AT 2727X ROHS, AT 2728X ROHS and AT 2729X ROHS part numbers and AT SM 270 ROHS, AT SM 280 ROHS and AT SM 290 ROHS as well for AT 57290 ROHS.

Improper screwdriver may damage the internal bushing thread causing rotor binding.

XIII. Adjusting

Sealing caps, available on GigaHertz trimmers delivered on tape and reel, are designed so that after assembly is complete they may be penetrated by the Temex-Ceramics tuning tool and left in place.
The maximum torque on rotor stop value should not be exceeded or damage to the capacitor may result.
Always use the recommended tuning tool