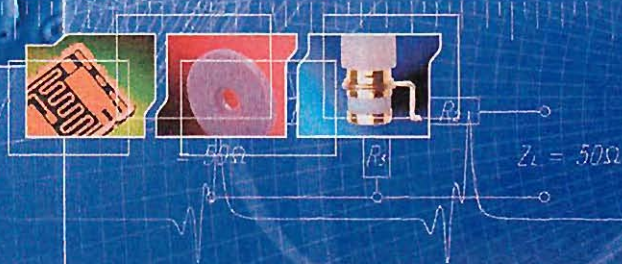


ELECTRONIC ACCURACY
THROUGH MECHANICAL PRECISION

U.024

$$Q = \frac{|C_c - X_c|}{ESR}$$



Johanson

Contents

	Applications	Series #	Page#
Caseless Couplers	Power amplifiers, broadcast, cellular, radio, radar, avionics, antennas, and more in commercial and military versions	JCC, JDC	1
Variable Inductors	Broad array of circuit tuning applications, including MRI/NMR, power amplifiers, test equip	JLC	2-4
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Sample Kits	(For all product series)	JK	40
Precision Screw Machine & Electroplating	Highest precision contact pins and other cylindrical parts	Build to Print	41

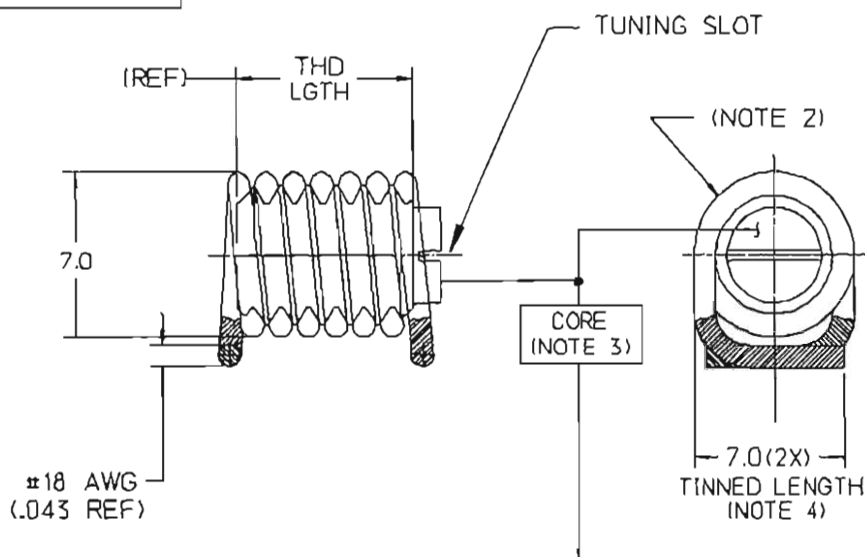
Hybrid Couplers (JCC) and Dual Directional (JDC)

Part no. (PDF file)	Frequency	Power (W)	Size LxW (inches)	Port Impedance	VSWR	Insertion Loss (dB)	Amplitude Balance (dB)	Phase Balance (degrees)	Isolation (dB)	Coupling (dB)	Directivity (dB)	Coupled Flatness (dB)
JCC-1001	0.8 - 1.0 GHz	400	1.5 x 0.6	50	< 1.15:1	< .2	+/-0.15	90 +/- 1.0	> 24	3	N/A	N/A
JCC-1001SM	0.8 - 1.0 GHz	400	1.5 x 0.6	50	< 1.15:1	< .2	+/-0.15	90 +/- 1.0	> 24	3	N/A	N/A
JCC-1002	120-230 MHz	400	2.20 x .80	50	< 1.2:1	< .15	+/-0.15	90 +/- .3	> 20	3	N/A	N/A
JCC-1002SM	120-230 MHz	400	2.20 x .80	50	< 1.2:1	< .15	+/-0.15	90 +/- .3	> 20	3	N/A	N/A
JCC-1002-2	0.5 - 2.5 GHz	300	2.20 x .80	50	< 1.30:1	< 0.50	+/- 0.65	90 +/- .5	> 18	3	N/A	N/A
JCC-1002-2SM	0.5 - 2.5 GHz	300	2.20 x .80	50	< 1.30:1	< 0.50	+/- 0.65	90 +/- .5	> 18	3	N/A	N/A
JCC-1002-3	1.0 - 4.2 GHz	300	2.20 x .80	50	< 1.30:1	< 0.50	+/- 0.50	90 +/- .5	> 18	3	N/A	N/A
JCC-1002-3SM	1.0 - 4.2 GHz	300	2.20 x .80	50	< 1.30:1	< 0.50	+/- 0.50	90 +/- .5	> 18	3	N/A	N/A
JCC-1003	.225 - 0.4 GHz	400	1.62 x .57	50	< 1.2:1	< .15	+/-0.5	90 +/- .2	> 21	3	N/A	N/A
JCC-1003SM	.225 - 0.4 GHz	400	1.62 x .57	50	< 1.2:1	< .15	+/-0.5	90 +/- .2	> 21	3	N/A	N/A
JCC-1004	301 - 500 MHz	400	1.35 x .51	50	< 1.2:1	< .2	+/-0.4	90 +/- .5	> 21	3	N/A	N/A
JCC-1004SM	301 - 500 MHz	400	1.35 x .51	50	< 1.2:1	< .2	+/-0.4	90 +/- .5	> 21	3	N/A	N/A
JCC-1004-1	0.8 - 2.1 GHz	300	1.35 x .50	50	< 1.25:1	< 0.25	+/-0.75	90 +/- .5	> 18	3	N/A	N/A
JCC-1004-1SM	0.8 - 2.1 GHz	300	1.35 x .50	50	< 1.25:1	< 0.25	+/-0.75	90 +/- .5	> 18	3	N/A	N/A
JCC-1006	470 - 860 MHz	1000	2.65 x 2.40	50	< 1.25:1	< 0.20	+/- 0.65	90 +/- .5	> 18	3	N/A	N/A
JCC-1006SM	470 - 860 MHz	1000	2.65 x 2.40	50	< 1.25:1	< 0.20	+/- 0.65	90 +/- .5	> 18	3	N/A	N/A
JCC-1006-1	470 - 860 MHz	200	2.65 x 2.65	50	< 1.25:1	< .3	+/- 0.15	90 +/- .5	> 18	3	N/A	N/A
JCC-1006-1SM	470 - 860 MHz	200	2.65 x 2.65	50	< 1.25:1	< .3	+/- 0.15	90 +/- .5	> 18	3	N/A	N/A
JCC-1006-2	30 - 88 MHz	450	2.65 x 2.65	50	< 1.30:1	< 0.25	+/- .95	90 +/- .5	> 18	3	N/A	N/A
JCC-1006-2SM	30 - 88 MHz	450	2.65 x 2.65	50	< 1.30:1	< 0.25	+/- .95	90 +/- .5	> 18	3	N/A	N/A
JCC-1007	2 - 6 GHz	200	1.30 x .25	50	< 1.30:1	< 0.3	+/- 1.0	90 +/- .5	> 18	3	N/A	N/A
JCC-1007SM	2 - 6 GHz	200	1.30 x .25	50	< 1.30:1	< 0.3	+/- 1.0	90 +/- .5	> 18	3	N/A	N/A
JCC-1008	200 - 1.0 GHz	300	3.20 x .90	50	< 1.30:1	< 0.50	+/- 0.75	90 +/- .5	> 16	3	N/A	N/A
JCC-1008SM	200 - 1.0 GHz	300	3.20 x .90	50	< 1.30:1	< 0.50	+/- 0.75	90 +/- .5	> 16	3	N/A	N/A
JCC-1009	225 - 520 MHz	450	2.00 x .50	50	< 1.25:1	< 0.25	+/- 0.70	90 +/- .5	> 20	3	N/A	N/A
JCC-1009SM	225 - 520 MHz	450	2.00 x .50	50	< 1.25:1	< 0.25	+/- 0.70	90 +/- .5	> 20	3	N/A	N/A
JCC-1010	225-400	499	1.19 x 1.09	50	< 1.20:1	< 0.15	0.5	90 +/- .5	> 21	3	N/A	N/A
JCC-1010SM	225-400	499	1.19 x 1.09	50	< 1.20:1	< 0.15	0.5	90 +/- .5	> 21	3	N/A	N/A
JDC-1000	136-174 MHz	250	2.5 x 1.5	50	< 1.25:1	< 0.25	N/A	N/A	N/A	40.0 +/- 1.0	> 20	+/- 0.25
JDC-1000SM	136-174 MHz	250	2.5 x 1.5	50	< 1.25:1	< 0.25	N/A	N/A	N/A	40.0 +/- 1.0	> 20	+/- 0.25
JDC-1000-1	136-174 MHz	550	2.5 x 1.5	50	< 1.25:1	< 0.25	N/A	N/A	N/A	40.0 +/- 1.0	> 20	+/- 0.25
JDC-1000-1SM	136-174 MHz	550	2.5 x 1.5	50	< 1.25:1	< 0.25	N/A	N/A	N/A	40.0 +/- 1.0	> 20	+/- 0.25
JDC-1000-2	500-2500 MHz	500	2.5 x 1.3	50	< 1.25:1	< 0.25	N/A	N/A	N/A	40.0 +/- 1.0	> 18	+/- .50
JDC-1000-2SM	500-2500 MHz	500	2.5 x 1.3	50	< 1.25:1	< 0.25	N/A	N/A	N/A	40.0 +/- 1.0	> 18	+/- .50
JDC - 1001	2 - 8 GHz	400	2.1 x 1.1	50	< 1.20:1	< 0.20	N/A	N/A	N/A	40.0 +/- 1.0	> 18	+/- 0.5

Surface Mount

Part No. (PDF file)	L(nH)				Q (@ 100MHz)	SRF (GHz)	TURNS	THREAD LENGTH (MM)
	MIN	NOM	MAX	NO CORE				
JLC02E030TRSM	32	33	34	39	90	1.2	2	6
JLC03E048TRSM	46	49	52	59	95	1	3	6
JLC04E065TRSM	60	64	68	78	101	0.9	4	6
JLC05E088TRSM	74	81	87	99	114	0.9	5	8
JLC06E110TRSM	94	107	119	123	119	0.7	6	8
JLC07E130TRSM	104	118	133	142	121	0.7	7	10

PATENT PENDING



JMC P/N	L(nH)				Q (@ 100 MHz)	SRF (GHz)	TURNS
	MIN	NOM	MAX	NO CORE			
JLC02E030TRSM	32	33	34	39	90	1.2	2
JLC03E048TRSM	46	49	52	59	95	1.0	3
JLC04E065TRSM	60	64	68	78	101	0.9	4
JLC05E088TRSM	74	81	87	99	114	0.9	5
JLC06E110TRSM	94	107	119	123	119	0.7	6
JLC07E130TRSM	104	118	133	142	121	0.7	7

READINGS TAKEN ON AGILENT/8358-A METER

MJ DRG. NO. JLCXXEYYYTRSM REV.

JLCXXEYYYTRSM D

VARIABLE INDUCTOR COIL
(NONMAGNETIC)

FILE AIROUT

NOTES.

- a. DIMENSIONS mm
b. DIMENSIONS (inches) FOR REFERENCE ONLY
- COIL
a. MATERIAL:
COPPER ALLOY (COATED)
b. TEMP RANGE: UP TO 200°C
- CORE
a. MATERIAL:
PTFE / COPPER ALLOY
b. SELF-RESONANT FREQUENCY (SRF) IS MEASURED WITH THE CORE FULLY ENGAGED AS DEPICTED
c. L MIN MEASURED WITH CORE ENGAGING FULL WINDINGS. L MAX MEASURED WITH CORE ENGAGING A SINGLE TURN.
- TINNING
a. MATERIAL
RoHS COMPLIANT "SAC" ALLOY

D	09/08/09	SDJ	SDJ	MAI	000787
C	06/25/09	SDJ	SDJ	MAI	000780
B	06/24/08	SDJ	SDJ	MAI	000778
LEVEL	DATE	DRN.	CHK.	APP.	ECN

REVISIONS

DRN.	CHK.	APP.	SCALE
MAI	MAI	MAI	NONE
DATE	DATE	DATE	XX ± .762 .XX ± .254
03/19/09	03/19/09	03/19/09	

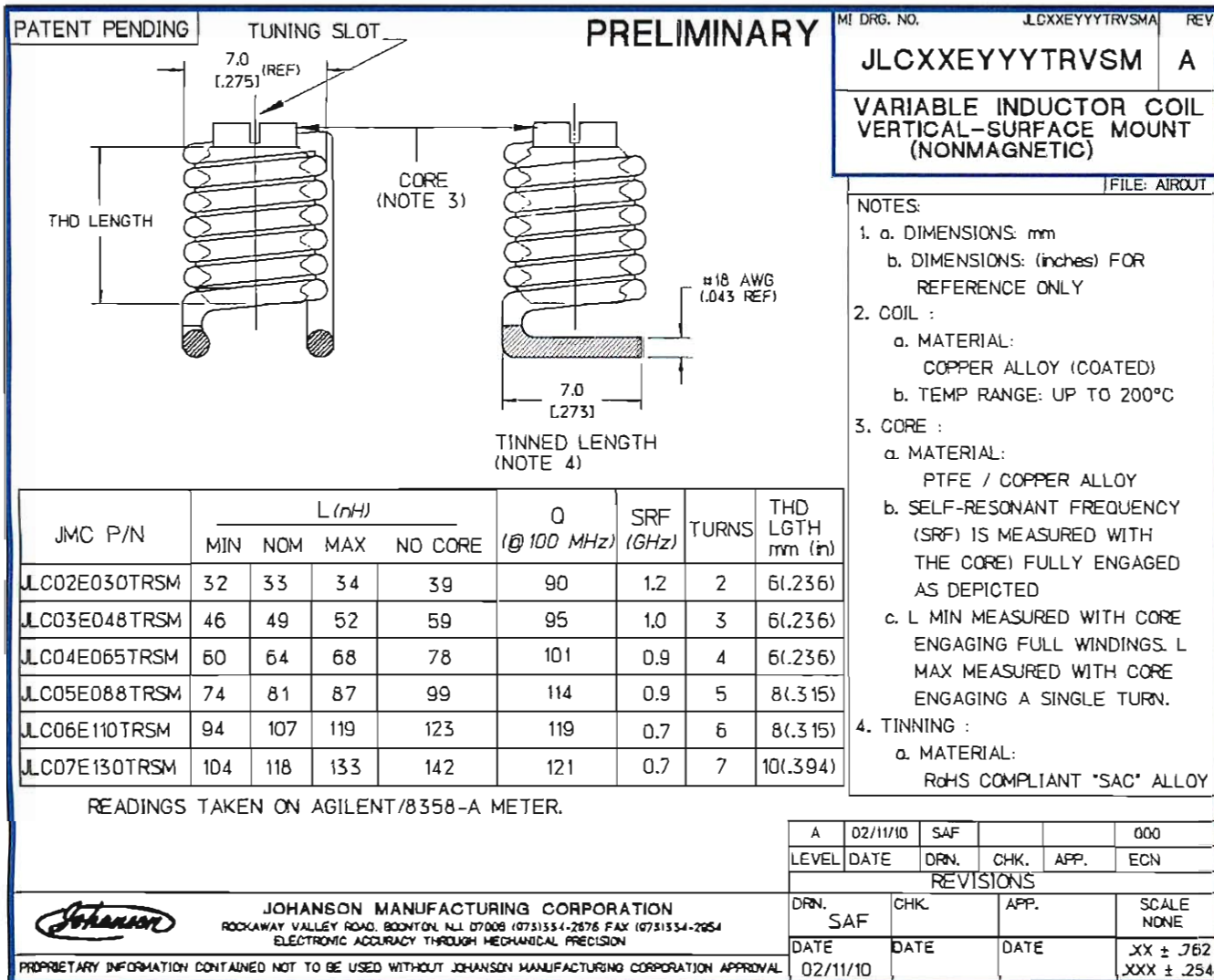


JOHANSON MANUFACTURING CORPORATION
ROCKAWAY VALLEY ROAD, BOONTON, N.J. 07005 973/354-2676 FAX 973/354-2964
ELECTRONIC ACCURACY THROUGH MECHANICAL PRECISION

PROPRIETARY INFORMATION CONTAINED NOT TO BE USED WITHOUT JOHANSON MANUFACTURING CORPORATION APPROVAL

Vertical Mount - Surface Mount

Part No. (PDF file)	L(nH)				Q (@ 100MHz)	SRF (GHz)	TURNS	THREAD LENGTH (MM)
	MIN	NOM	MAX	NO CORE				
JLC02E030TRVSM	32	33	34	39	90	1.2	2	6
JLC03E048TRVSM	46	49	52	59	95	1	3	6
JLC04E065TRVSM	60	64	68	78	101	0.9	4	6
JLC05E088TRVSM	74	81	87	99	114	0.9	5	8
JLC06E110TRVSM	94	107	119	123	119	0.7	6	8
JLC07E130TRVSM	104	118	133	142	121	0.7	7	10



Vertical Mount - PC Style								
Part No. (PDF file)	L(nH)				Q (@ 100MHz)	SRF (GHz)	TURNS	THREAD LENGTH (MM)
	MIN	NOM	MAX	NO CORE				
JLC02E030TRVPC	32	33	34	39	90	1.2	2	6
JLC03E048TRVPC	46	49	52	59	95	1	3	6
JLC04E065TRVPC	60	64	68	78	101	0.9	4	6
JLC05E088TRVPC	74	81	87	99	114	0.9	5	8
JLC06E110TRVPC	94	107	119	123	119	0.7	6	8
JLC07E130TRVPC	104	118	133	142	121	0.7	7	10

PATENT PENDING

PRELIMINARY

MI DRG. NO. JLCXXEYYYTRVPC REV. A

JLCXXEYYYTRVPC A

**VARIABLE INDUCTOR COIL
VERTICAL MOUNT PC STYLE
(NONMAGNETIC)**

FILE: AIROUT

NOTES:

- a. DIMENSIONS: mm
b. DIMENSIONS: (inches) FOR REFERENCE ONLY
- COIL :
a. MATERIAL: COPPER ALLOY (COATED)
b. TEMP RANGE: UP TO 200°C
- CORE :
a. MATERIAL: PTFE / COPPER ALLOY
b. SELF-RESONANT FREQUENCY (SRF) IS MEASURED WITH THE CORE FULLY ENGAGED AS DEPICTED
c. L MIN MEASURED WITH CORE ENGAGING FULL WINDINGS. L MAX MEASURED WITH CORE ENGAGING A SINGLE TURN.
- TINNING :
a. MATERIAL: RoHS COMPLIANT "SAC" ALLOY

JMC P/N	L (nH)				Q (@ 100 MHz)	SRF (GHz)	TURNS	THD LGTH mm (in)
	MIN	NOM	MAX	NO CORE				
JLC02E030TRSM	32	33	34	39	90	1.2	2	6(.236)
JLC03E048TRSM	46	49	52	59	95	1.0	3	6(.236)
JLC04E065TRSM	60	64	68	78	101	0.9	4	6(.236)
JLC05E088TRSM	74	81	87	99	114	0.9	5	8(.315)
JLC06E110TRSM	94	107	119	123	119	0.7	6	8(.315)
JLC07E130TRSM	104	118	133	142	121	0.7	7	10(.394)

READINGS TAKEN ON AGILENT/8358-A METER.

JOHANSON MANUFACTURING CORPORATION
ROCKAWAY VALLEY ROAD, BOONTON, NJ 07005 (973)554-2876 FAX (973)554-2854
ELECTRONIC ACCURACY THROUGH MECHANICAL PRECISION

PROPRIETARY INFORMATION CONTAINED NOT TO BE USED WITHOUT JOHANSON MANUFACTURING CORPORATION APPROVAL.

A	02/11/10	SAF			000
LEVEL	DATE	DRN.	CHK.	APP.	ECN
REVISIONS					
DRN.	SAF	CHK.	APP.		SCALE NONE
DATE	02/11/10	DATE	DATE		.XX ± .762 .XXX ± .254

Resistors

Package	Material	Power (CW)	Resistance (Ohm)	Frequency* (GHz)	Maximum Derating Temperature (max °C)
Chip CR Series	BeO	1000	5 - 1000	DC - 6.0	250
SMD RS Series	AlN	600	5 - 1000	DC - 6.0	250
	BeO	1000	5 - 1000	DC - 6.0	250
	Alumina	100	5 - 1000	DC - 6.0	250
Flangeless RL Series	AlN	600	5 - 1000	DC - 6.0	250
	BeO	1000	5 - 1000	DC - 6.0	250
Flanged RF Series	AlN	600	5 - 1000	DC - 6.0	250
	BeO	1000	5 - 1000	DC - 6.0	250

*typical

Part Number	Package	Material	Size LxW (Inches)	Power (CW)	Resistance (Ohm)	Frequency* (GHz)	Maximum Derating Temperature (max °C)
CR1X1BR5CA	Chip	BeO	1.040 X 1.000	1,000	8.33	DC - 3.0	250
RF002BB01	Flanged	BeO	.200 X .300	5	50	DC - 3.0	250
RF005BB01	Flanged	BeO	.300 X .250	5	50	DC - 3.0	250
RF010AA01	Flanged	AlN	.300 X .200	10	100	DC - 3.0	250
RF010AA02	Flanged	AlN	.500 X .200	10	100	DC - 3.0	250
RF010AB01	Flanged	AlN	.300 X .200	10	50	DC - 3.0	250
RF010AC01	Flanged	AlN	.300 X .200	10	75	DC - 3.0	250
RF010AE01	Flanged	AlN	.300 X .200	10	150	DC - 3.0	250
RF010BA01	Flanged	BeO	.300 X .200	10	100	DC - 3.0	250
RF010BA02	Flanged	BeO	.500 X .200	10	100	DC - 3.0	250
RF010BB01	Flanged	BeO	.300 X .200	10	50	DC - 3.0	250
RF010BF01	Flanged	BeO	.300 X .200	10	25	DC - 3.0	250
RF010BG01	Flanged	BeO	.300 X .200	10	150	DC - 3.0	250
RF010BJ01	Flanged	BeO	.300 X .200	10	15	DC - 3.0	250
RF010BN01	Flanged	BeO	.300 X .200	10	120	DC - 3.0	250
RF020AA01	Flanged	AlN	.300 X .200	20	100	DC - 3.0	250
RF020AA03	Flanged	AlN	.515 X .250	20	100	DC - 3.0	250
RF020AD03-040	Flanged	AlN	.515 X .250	20	200	DC - 3.0	250
RF020BA02	Flanged	BeO	.500 X .100	20	100	DC - 3.0	250
RF020BA03-010	Flanged	BeO	.515 X .250	20	100	DC - 3.0	250
RF020BA03	Flanged	BeO	.515 X .250	20	100	DC - 3.0	250
RF020BA22	Flanged	BeO	.511 X .138	20	100	DC - 3.0	250
RF020BB03	Flanged	BeO	.515 X .250	20	50	DC - 3.0	250
RF020BD01	Flanged	BeO	.300 X .200	20	200	DC - 3.0	250
RF020BF03	Flanged	BeO	.515 X .250	20	25	DC - 3.0	250
RF020BI03	Flanged	BeO	.515 X .250	20	10	DC - 3.0	250
RF020BP03	Flanged	BeO	.515 X .250	20	6.25	DC - 3.0	250
RF025AB01	Flanged	AlN	.300 X .200	25	50	DC - 3.0	250
RF030BA03	Flanged	BeO	.515 X .250	30	100	DC - 3.0	250
RF040AA04	Flanged	AlN	.800 X .225	40	100	DC - 3.0	250
RF040AA05	Flanged	AlN	.975 X .225	40	100	DC - 3.0	250
RF040BA03	Flanged	BeO	.515 X .250	40	100	DC - 3.0	250
RF040BA04-100	Flanged	BeO	.800 X .230	40	100	DC - 3.0	250
RF040BA04	Flanged	BeO	.800 X .225	40	100	DC - 3.0	250
RF040BA05	Flanged	BeO	.975 X .225	40	100	DC - 3.0	250
RF040BB03	Flanged	BeO	.515 X .250	40	50	DC - 3.0	250
RF040BB04	Flanged	BeO	.800 X .225	40	50	DC - 3.0	250
RF040BF03	Flanged	BeO	.515 X .250	40	25	DC - 3.0	250
RF040BG04	Flanged	BeO	.800 X .225	40	250	DC - 3.0	250
RF040BI03	Flanged	BeO	.515 X .250	40	10	DC - 3.0	250
RF050AA06	Flanged	AlN	.560 X .375	50	100	DC - 3.0	250
RF050BA06	Flanged	BeO	.560 X .375	50	100	DC - 3.0	250
RF050BB06-010	Flanged	BeO	.560 X .375	50	50	DC - 3.0	250
RF050BB06	Flanged	BeO	.560 X .375	50	50	DC - 3.0	250
RF060AA03	Flanged	AlN	.515 X .250	60	100	DC - 3.0	250

Resistors

Part Number	Package	Material	Size LxW (Inches)	Power (CW)	Resistance (Ohm)	Frequency* (GHz)	Maximum Derating Temperature (max °C)
RF060BE03	Flanged	BeO	.515 X .250	60	150	DC - 3.0	250
RF075AA08	Flanged	AlN	.800 X .225	75	100	DC - 3.0	250
RF075AD08	Flanged	AlN	.800 X .225	75	200	DC - 3.0	250
RF075AE08	Flanged	AlN	.800 X .225	75	150	DC - 3.0	250
RF100AB04	Flanged	AlN	.800 X .225	100	50	DC - 3.0	250
RF100BA08	Flanged	BeO	.800 X .225	100	100	DC - 3.0	250
RF100BB08	Flanged	BeO	.800 X .225	100	50	DC - 3.0	250
RF100BF08	Flanged	BeO	.800 X .225	100	25	DC - 3.0	250
RF100BL3A	Flanged	BeO	.515 X .250	100	11.3	DC - 3.0	250
RF125AA09	Flanged	AlN	.800 X .225	125	100	DC - 3.0	250
RF125AA10	Flanged	AlN	.975 X .225	125	100	DC - 3.0	250
RF125AA11	Flanged	AlN	.870 X .375	125	100	DC - 3.0	250
RF150AA11	Flanged	AlN	.870 X .375	150	100	DC - 3.0	250
RF150AB11	Flanged	AlN	.870 X .375	150	50	DC - 3.0	250
RF150BA09	Flanged	BeO	.800 X .225	150	100	DC - 3.0	250
RF150BA10	Flanged	BeO	.975 X .225	150	100	DC - 3.0	250
RF150BA11	Flanged	BeO	.870 X .375	150	100	DC - 3.0	250
RF150BB09-100	Flanged	BeO	.800 X .230	150	50	DC - 3.0	250
RF150BB09	Flanged	BeO	.800 X .225	150	50	DC - 3.0	250
RF150BD11	Flanged	BeO	.870 X .375	150	200	DC - 3.0	250
RF150BK10	Flanged	BeO	.975 X .225	150	30	DC - 3.0	250
RF150BM11	Flanged	BeO	.870 X .375	150	18.3	DC - 3.0	250
RF200AA12	Flanged	AlN	.975 X .375	200	100	DC - 3.0	250
RF200AB12	Flanged	AlN	.975 X .375	200	50	DC - 3.0	250
RF250AA12-100	Flanged	AlN	.975 X .385	250	100	DC - 3.0	250
RF250AA12	Flanged	AlN	.975 X .375	250	100	DC - 3.0	250
RF250AB12-100	Flanged	AlN	.975 X .385	250	50	DC - 3.0	250
RF250AB12	Flanged	AlN	.975 X .375	250	50	DC - 3.0	250
RF250BA12-010	Flanged	BeO	.975 X .375	250	100	DC - 2.0	250
RF250BA12	Flanged	BeO	.975 X .375	250	100	DC - 3.0	250
RF250BB12-003	Flanged	BeO	.975 X .375	250	50	DC - 3.0	250
RF250BB12-010	Flanged	BeO	.975 X .375	250	50	DC - 2.0	250
RF250BB12-013	Flanged	BeO	.975 X .375	250	50	DC - 3.0	250
RF250BB12-100	Flanged	BeO	.975 X .385	250	50	DC - 3.0	250
RF250BB12	Flanged	BeO	.975 X .375	250	50	DC - 3.0	250
RF250BF12	Flanged	BeO	.975 X .375	250	25	DC - 3.0	250
RF250BN12	Flanged	BeO	.975 X .375	250	12.5	DC - 3.0	250
RF250BU12	Flanged	BeO	.975 X .375	250	350	DC - 3.0	250
RF400AB15	Flanged	AlN	1.250 X .500	400	50	DC - 3.0	250
RF400BA13	Flanged	BeO	1.100 X .500	400	100	DC - 3.0	250
RF400BA24	Flanged	BeO	1.299 X 1.496	400	100	DC - 3.0	250
RF400BB13-010	Flanged	BeO	1.100 X .500	400	50	DC - 0.5	250
RF400BB13	Flanged	BeO	1.100 X .500	400	50	DC - 3.0	250
RF400BN13	Flanged	BeO	1.100 X .500	400	12.5	DC - 3.0	250
RF500BA15-040	Flanged	BeO	1.250 X .500	500	100	DC - 3.0	250
RF500BA15A	Flanged	BeO	1.250 X .500	500	100	DC - 3.0	250
RF500BB15-040	Flanged	BeO	1.250 X .500	500	50	DC - 3.0	250
RF800BA14-004	Flanged	BeO	1.900 X 1.040	800	100	DC - 3.0	250
RF800BA14	Flanged	BeO	1.900 X 1.040	800	100	DC - 3.0	250
RF800BA25	Flanged	BeO	2.362 X 2.362	800	100	DC - 3.0	250
RF800BB14-004	Flanged	BeO	1.900 X 1.040	800	50	DC - 3.0	250
RL005CI23	Flangeless	Al ₂ O ₃	.180 X .180	5	10	DC - 3.0	250
RL030AA16	Flangeless	AlN	.200 X .100	30	100	DC - 3.0	250
RL030AB16	Flangeless	AlN	.200 X .100	30	50	DC - 3.0	250
RL030BA16	Flangeless	BeO	.200 X .100	30	100	DC - 3.0	250
RL030BB16	Flangeless	BeO	.200 X .100	30	50	DC - 3.0	250
RL030BC16	Flangeless	BeO	.200 X .100	30	75	DC - 3.0	250
RL030BD16	Flangeless	BeO	.200 X .100	30	200	DC - 3.0	250
RL030BE16-08	Flangeless	BeO	.200 X .100	30	150	DC - 3.0	250
RL030BE16	Flangeless	BeO	.200 X .100	30	150	DC - 3.0	250
RL030BH16	Flangeless	BeO	.200 X .100	30	300	DC - 3.0	250
RL030BJ16	Flangeless	BeO	.200 X .100	30	15	DC - 3.0	250
RL030BS16	Flangeless	BeO	.200 X .100	30	430	DC - 3.0	250
RL030BT16	Flangeless	BeO	.200 X .100	30	560	DC - 3.0	250
RL040AA17	Flangeless	AlN	.250 X .250	40	100	DC - 3.0	250
RL040BA17	Flangeless	BeO	.250 X .250	40	100	DC - 3.0	250
RL040BB17	Flangeless	BeO	.250 X .250	40	50	DC - 3.0	250
RL100AA18	Flangeless	AlN	.350 X .225	100	100	DC - 3.0	250
RL125AA19	Flangeless	AlN	.375 X .250	125	100	DC - 3.0	250
RL125BA18	Flangeless	BeO	.350 X .225	125	100	DC - 3.0	250
RL150AA20	Flangeless	AlN	.350 X .225	150	100	DC - 3.0	250
RL150BA19	Flangeless	BeO	.375 X .250	150	100	DC - 3.0	250
RL200BA20	Flangeless	BeO	.350 X .225	200	100	DC - 3.0	250
RL250AA21	Flangeless	AlN	.375 X .375	250	100	DC - 3.0	250
RL250AB21	Flangeless	AlN	.375 X .375	250	50	DC - 3.0	250
RL300BA21	Flangeless	BeO	.375 X .375	300	100	DC - 3.0	250
RL300BB21	Flangeless	BeO	.375 X .375	300	50	DC - 3.0	250
RS005AA2010Y	Surface Mount	AlN	.200 X .090	5	100	DC - 3.0	250
RS010AA2010X	Surface Mount	AlN	.100 X .095	10	100	DC - 3.0	250

Power Terminations

Package	Material	Power (CW)	Capacitance (pF)	Frequency* (GHz)	VSWR Range
SMD TS Series	AlN	600	.3 to 2.0	DC - 6.0	1.01:1 - 1.25:1
	BeO	1000	.3 to 2.0	DC - 6.0	1.01:1 - 1.25:1
	Al ₂ O ₃	100	.3 to 2.0	DC - 6.0	1.01:1 - 1.25:1
Flangeless TL Series	AlN	600	.9 to 4.2	DC - 6.0	1.01:1 - 1.25:1
	BeO	1000	.25 to 3.5	DC - 6.0	1.01:1 - 1.25:1
Flanged TF Series	AlN	600	.9 to 4.2	DC - 6.0	1.01:1 - 1.25:1
	BeO	1500	.75 to 9.0	DC - 6.0	1.01:1 - 1.25:1
Chip CT Series	AlN	500	.75 to 9.0	DC - 6.0	1.07:1
	BeO	600	.75 to 9.0	DC - 6.0	1.07:1

*typical

Part Numbers	Package	Material	Size LxW (inches)	Power (CW)	Frequency*	VSWR Range
CT1206CB5C	Chip	Al ₂ O ₃	.120 X .060	10	DC - 3.5 GHz	<1.20:1
CT1X1AB5C	Chip	AlN	1.000 X 1.040	600	DC - 3.5 GHz	<1.20:1
CT1X1BB5C	Chip	BeO	1.000 X 1.040	800	DC - 3.5 GHz	<1.20:1
CT2010AB5C	Chip	AlN	.200 X .100	10	DC - 2 GHz / 2 - 3 GHz	<1.05:1 / <1.15:1
CT2335AB5C-01	Chip	AlN	.350 X .225	100	DC - 5 GHz	<1.1:1
CT2335AB5C-04	Chip	AlN	.350 X .225	150	DC - 3 GHz	<1.1:1
CT2335AB5C-34	Chip	AlN	.225 X .350	150	DC - 3 GHz	<1.1:1
CT2335AB5C	Chip	AlN	.350 X .225	100	DC - 3.5 GHz	<1.20:1
CT2525AB5C-02	Chip	AlN	.250 X .250	100	DC - 2 GHz / 2 - 4 GHz	<1.06:1 / <1.11:1
CT3725AB5C	Chip	AlN	.375 X .250	150	DC - 3.5 GHz	<1.20:1
CT3725AB5C-03	Chip	AlN	.250 X .250	150	DC - 2 GHz / 2 - 4 GHz	<1.06:1 / <1.11:1
CT3725AB5C-23	Chip	AlN	.375 X .250	150	DC - 2 GHz / 2 - 3.5 GHz	<1.1:1 / <1.25:1
CT3725AB5C-33	Chip	AlN	.375 X .250	150	DC - 2 GHz / 2 - 3.5 GHz	<1.1:1 / <1.25:1
CT3735AB5C-05	Chip	AlN	.375 X .375	250	DC - 2 GHz	<1.05:1
ST1206CB5C	Surface Mount	Al ₂ O ₃	.120 X .060	8	DC - 6 GHz	<1.25:1
ST2010CB5C	Surface Mount	Al ₂ O ₃	.200 X .100	16	DC - 6 GHz	<1.15:1
TF010AA02	Flanged	AlN	.500 X .200	10	DC - 3.5 GHz	<1.20:1
TF010AA1C	Flanged	AlN	.300 X .200	10	DC - 3.5 GHz	<1.20:1
TF010AA1L	Flanged	AlN	.300 X .200	10	DC - 3.5 GHz	<1.20:1
TF010AA1R	Flanged	AlN	.300 X .200	10	DC - 3.5 GHz	<1.20:1
TF010AB02	Flanged	AlN	.500 X .200	10	DC - 3.5 GHz	<1.20:1
TF010AB1C	Flanged	AlN	.300 X .100	10	DC - 3.5 GHz	<1.20:1
TF010AB1L	Flanged	AlN	.300 X .200	10	DC - 3.5 GHz	<1.20:1
TF010AB1R	Flanged	AlN	.300 X .200	10	DC - 3.5 GHz	<1.20:1
TF010BA02	Flanged	BeO	.500 X .200	10	DC - 3.5 GHz	<1.20:1
TF010BA1C	Flanged	BeO	.300 X .200	10	DC - 3.5 GHz	<1.20:1
TF010BA1L	Flanged	BeO	.300 X .200	10	DC - 3.5 GHz	<1.20:1
TF010BA1R	Flanged	BeO	.300 X .200	10	DC - 3.5 GHz	<1.20:1
TF010BB02	Flanged	BeO	.500 X .200	10	DC - 3.5 GHz	<1.20:1
TF010BB1C	Flanged	BeO	.300 X .200	10	DC - 3.5 GHz	<1.20:1
TF010BB1L	Flanged	BeO	.300 X .200	10	DC - 3.5 GHz	<1.20:1
TF010BB1R	Flanged	BeO	.300 X .200	10	DC - 4 GHz	<1.35:1
TF020AB3C	Flanged	AlN	.515 X .250	20	DC - 3.5 GHz	<1.20:1
TF020AB3L	Flanged	AlN	.515 X .250	20	DC - 3.5 GHz	<1.20:1
TF020AB3R	Flanged	AlN	.515 X .250	20	DC - 3.5 GHz	<1.20:1
TF020BB3C	Flanged	BeO	.515 X .250	20	DC - 3.5 GHz	<1.20:1
TF020BB3L	Flanged	BeO	.515 X .250	20	DC - 3.5 GHz	<1.20:1
TF020BB3L-040	Flanged	BeO	.515 X .250	20	DC - 6 GHz	<1.25:1
TF020BB3R	Flanged	BeO	.515 X .250	20	DC - 3.5 GHz	<1.20:1
TF030AB3C	Flanged	AlN	.515 X .250	30	DC - 3.5 GHz	<1.20:1
TF040AB04C	Flanged	AlN	.800 X .225	40	DC - 3.5 GHz	<1.20:1
TF040AB05B	Flanged	AlN	.975 X .225	40	DC - 3.5 GHz	<1.20:1
TF040BA04C	Flanged	BeO	.800 X .225	40	DC - 3.5 GHz	<1.20:1
TF040BB04	Flanged	BeO	.800 X .225	40	DC - 3.5 GHz	<1.20:1
TF040BB04-100	Flanged	BeO	.800 X .230	40	DC - 3.5 GHz	<1.20:1
TF040BB05	Flanged	BeO	.975 X .225	40	DC - 3.5 GHz	<1.20:1
TF040BB3C	Flanged	BeO	.515 X .250	40	DC - 3.5 GHz	<1.20:1
TF050AB04	Flanged	AlN	.800 X .225	50	DC - 3.5 GHz	<1.20:1
TF050AB6L	Flanged	AlN	.560 X .375	50	DC - 3.5 GHz	<1.20:1
TF050AB6R	Flanged	AlN	.560 X .375	50	DC - 3.5 GHz	<1.20:1

Power Terminations

Part Numbers	Package	Material	Size LxW (Inches)	Power (CW)	Frequency*	VSWR Range
TF050BB6L	Flanged	BeO	.560 X .375	50	DC - 3.5 GHz	<1.20:1
TF050BB6R	Flanged	BeO	.560 X .375	50	DC - 3.5 GHz	<1.20:1
TF050BF6L	Flanged	BeO	.560 X .375	50	DC - 3.5 GHz	<1.20:1
TF060AB3L	Flanged	AlN	.515 X .250	60	DC - 3.5 GHz	<1.20:1
TF060BB3C	Flanged	BeO	.515 X .250	60	DC - 3.5 GHz	<1.20:1
TF060BB3L	Flanged	BeO	.515 X .250	60	DC - 3.5 GHz	<1.20:1
TF060BB3R	Flanged	BeO	.515 X .250	60	DC - 3.5 GHz	<1.20:1
TF075AB08	Flanged	AlN	.800 X .225	75	DC - 3.5 GHz	<1.20:1
TF075AB3C	Flanged	AlN	.515 X .250	75	DC - 3.5 GHz	<1.20:1
TF075AB3C-004	Flanged	AlN	.515 X .250	75	DC - 3.5 GHz	<1.20:1
TF075AB3L	Flanged	AlN	.515 X .250	75	DC - 3.5 GHz	<1.20:1
TF075AB3L-004	Flanged	AlN	.515 X .250	75	DC - 3.5 GHz	<1.20:1
TF075AB3R	Flanged	AlN	.515 X .250	75	DC - 3.5 GHz	<1.20:1
TF075AB3R-004	Flanged	AlN	.515 X .250	75	DC - 3.5 GHz	<1.20:1
TF075BB3C	Flanged	BeO	.515 X .250	75	DC - 3.5 GHz	<1.20:1
TF075BB3L	Flanged	BeO	.515 X .250	75	DC - 3.5 GHz	<1.20:1
TF075BB3R	Flanged	BeO	.515 X .250	75	DC - 3.5 GHz	<1.20:1
TF120BB3C	Flanged	BeO	.515 X .250	120	DC - 3.5 GHz	<1.20:1
TF125AB09	Flanged	AlN	.800 X .225	125	DC - 3.5 GHz	<1.20:1
TF125AB10	Flanged	AlN	.975 X .225	125	DC - 3.5 GHz	<1.20:1
TF125AB11	Flanged	AlN	.870 X .375	125	DC - 3.5 GHz	<1.20:1
TF125AB11-040	Flanged	AlN	.870 X .375	125	DC - 3.5 GHz	<1.20:1
TF1500BB26	Flanged	BeO	4.331 X 2.362	1500	DC - 3.5 GHz	<1.20:1
TF150AB11	Flanged	AlN	.870 X .375	150	DC - 2 GHz	<1.2:1
TF150AB11-000	Flanged	AlN	.870 X .375	150	350-2,000 MHz / 2.0 - 2.3 GHz	<1.06:1 / <1.1:1
TF150AB11-006	Flanged	AlN	.870 X .375	150	350-2,000 MHz / 2.0 - 2.3 GHz	<1.06:1 / <1.1:1
TF150AB11-009	Flanged	AlN	.870 X .375	150	DC - 2 GHz	<1.2:1
TF150AB11-080	Flanged	AlN	.870 X .375	150	350-2,000 MHz / 2.0 - 2.3 GHz	<1.06:1 / <1.1:1
TF150AB11-089	Flanged	AlN	.870 X .375	150	DC - 2.0 GHz / 2.1 - 2.7 GHz	<1.1:1 / <1.2:1
TF150AB11-300	Flanged	AlN	.870 X .375	150	350-2,000 MHz	<1.06:1
TF150BB09	Flanged	BeO	.800 X .225	150	DC - 1 GHz	<1.20:1
TF150BB09-100	Flanged	BeO	.800 X .230	150	DC - 3.5 GHz	<1.20:1
TF150BB10	Flanged	BeO	.975 X .225	150	DC - 3.5 GHz	<1.20:1
TF150BB11	Flanged	BeO	.870 X .375	150	DC - 3.5 GHz	<1.20:1
TF200AB12	Flanged	AlN	.975 X .375	200	DC - 3.5 GHz	<1.20:1
TF200AB12-020	Flanged	AlN	.975 X .375	200	DC - 3.5 GHz	<1.20:1
TF250AB12	Flanged	AlN	.975 X .375	250	DC - 3.5 GHz	<1.20:1
TF250AB12-007	Flanged	AlN	.975 X .375	250	DC - 900 MHz / 1 - 2.2 GHz	<1.05:1 / <1.10:1
TF250AB12-020	Flanged	AlN	.975 X .375	250	DC - 3.5 GHz	<1.20:1
TF250AB12-027	Flanged	AlN	.975 X .375	250	DC - 900 MHz	<1.05:1
TF250AB12-040	Flanged	AlN	.975 X .375	250	DC - 3.5 GHz	<1.20:1
TF250AB12-100	Flanged	AlN	.975 X .385	250	DC - 3.5 GHz	<1.20:1
TF250AB12-481	Flanged	AlN	.975 X .375	250	DC - 2.3 GHz	<1.10:1
TF250AB12-549	Flanged	AlN	1.043 X .375	250	DC - 2 GHz	<35 dB R/L
TF250AC12	Flanged	AlN	.975 X .375	250	DC - 3.5 GHz	<1.20:1
TF250BB12	Flanged	BeO	.975 X .375	250	DC - 3.5 GHz	<1.20:1
TF250BB12-040	Flanged	BeO	.975 X .375	250	DC - 3.5 GHz	<1.20:1
TF250BB12-100	Flanged	BeO	.975 X .385	250	DC - 3.5 GHz	<1.20:1
TF300BB12-234	Flanged	BeO	.870 X .375	300	DC - 3.5 GHz	<1.20:1
TF400AB13	Flanged	AlN	1.100 X .500	400	DC - 3.5 GHz	<1.20:1
TF400AB15	Flanged	AlN	1.250 X .500	400	DC - 3.5 GHz	<1.20:1
TF400BB13	Flanged	BeO	1.100 X .500	400	DC - 3.5 GHz	<1.20:1
TF400BB13-010	Flanged	BeO	1.100 X .500	400	DC - 3.5 GHz	<1.20:1
TF500AB13	Flanged	AlN	1.100 X .500	500	DC - 3.5 GHz	<1.20:1
TF500BB13	Flanged	BeO	1.100 X .500	500	DC - 3.5 GHz	<1.20:1
TF500BB15-040	Flanged	BeO	1.250 X .500	500	DC - 3.5 GHz	<1.20:1
TF500BB15-04A	Flanged	BeO	1.250 X .500	500	DC - 3.5 GHz	<1.20:1
TF600AB14-060	Flanged	AlN	1.900 X 1.040	600	150-860 MHz	<1.1:1
TF600AB14-061	Flanged	AlN	1.900 X 1.040	600	150-860 MHz	<1.1:1
TF600AB14-065	Flanged	AlN	1.900 X 1.040	600	150-860 MHz	<1.1:1
TF800AB14	Flanged	AlN	1.900 X 1.040	800	DC - 3.5 GHz	<1.20:1
TF800AB14-004	Flanged	AlN	1.900 X 1.040	800	DC - 3.5 GHz	<1.20:1
TF800BA14	Flanged	BeO	1.900 X 1.040	800	DC - 3.5 GHz	<1.20:1
TF800BA14-061	Flanged	BeO	1.900 X 1.040	800	DC - 3.5 GHz	<1.20:1
TF800BB14	Flanged	BeO	1.900 X 1.040	800	DC - 3.5 GHz	<1.20:1
TF800BB14-061	Flanged	BeO	1.900 X 1.040	800	860-1500 MHz	<1.22:1
TF100AB04	Flanged	AlN	.800 X .225	100	DC - 3.5 GHz	<1.20:1
TF100AB04-030	Flanged	AlN	.800 X .225	100	DC - 3.5 GHz	<1.20:1
TF100AB3C-074	Flanged	AlN	.515 X .250	100	DC - 3.5 GHz	<1.20:1
TF100BB08	Flanged	BeO	.800 X .225	100	DC - 3.5 GHz	<1.20:1
TF100BB08-100	Flanged	BeO	.800 X .230	100	DC - 3.5 GHz	<1.20:1
TF100BB3C	Flanged	BeO	.515 X .250	100	DC - 3.5 GHz	<1.20:1
TF100BB3L	Flanged	BeO	.515 X .250	100	DC - 3.5 GHz	<1.20:1
TF100BB3R	Flanged	BeO	.515 X .250	100	DC - 3.5 GHz	<1.20:1
TL030AA0C	Flangeless	AlN	.200 X .100	30	DC - 3.5 GHz	<1.20:1
TL030AA16	Flangeless	AlN	.200 X .100	30	DC - 3.5 GHz	<1.20:1
TL030AB0C	Flangeless	AlN	.200 X .100	30	DC - 3.5 GHz	<1.20:1
TL030AB16	Flangeless	AlN	.200 X .100	30	DC - 3.5 GHz	<1.20:1
TL030BA0C	Flangeless	BeO	.200 X .100	30	DC - 3.5 GHz	<1.20:1
TL030BA16	Flangeless	BeO	.200 X .100	30	DC - 3.5 GHz	<1.20:1
TL030BB0C	Flangeless	BeO	.200 X .100	30	DC - 3.5 GHz	<1.20:1
TL030BB16	Flangeless	BeO	.200 X .100	30	DC - 3.5 GHz	<1.20:1
TL040AB17	Flangeless	AlN	.250 X .250	40	DC - 3.5 GHz	<1.20:1
TL040BB17	Flangeless	BeO	.250 X .250	40	DC - 3.5 GHz	<1.20:1
TL100AB17-04	Flangeless	AlN	.250 X .250	100	DC - 3.5 GHz	<1.20:1
TL100AB18	Flangeless	AlN	.350 X .225	100	DC - 3.5 GHz	<1.20:1
TL100AB18-001	Flangeless	AlN	.350 X .225	100	DC - 3 GHz	<1.1:1
TL125AB19	Flangeless	AlN	.375 X .250	125	DC - 3.5 GHz	<1.20:1
TL125BB18	Flangeless	BeO	.350 X .225	125	DC - 3.5 GHz	<1.20:1
TL150AB19	Flangeless	AlN	.375 X .250	150	DC - 3.5 GHz	<1.20:1
TL150BB19	Flangeless	BeO	.375 X .250	150	DC - 3.5 GHz	<1.20:1
TL150AB20	Flangeless	AlN	.350 X .225	150	DC - 3.5 GHz	<1.20:1
TL200BB20	Flangeless	BeO	.350 X .225	200	DC - 3.5 GHz	<1.20:1
TL250AB21	Flangeless	AlN	.375 X .375	250	DC - 3.5 GHz	<1.20:1
TL300BB21	Flangeless	BeO	.375 X .375	300	DC - 3.5 GHz	<1.20:1

Specifications provided are typical and for reference only. Specifications are subject to change, and may be discontinued without advance notice.

Attenuators

Package	Material	Power (CW)	Attenuation (dB)	Frequency* (GHz)	VSWR Range
SMD SA Series	Al ₂ O ₃	25 - 200	1 - 30	DC - 3.5	1.20:1
Chip CA Series	AlN	25 - 200	0.5 - 35	DC - 3.5	1.20:1
Flanged AF Series	AlN	25 - 200	0.5 - 30	DC - 3.5	1.20:1
	BeO	30 - 200	1 - 30	DC - 3.5	1.20:1

Typical

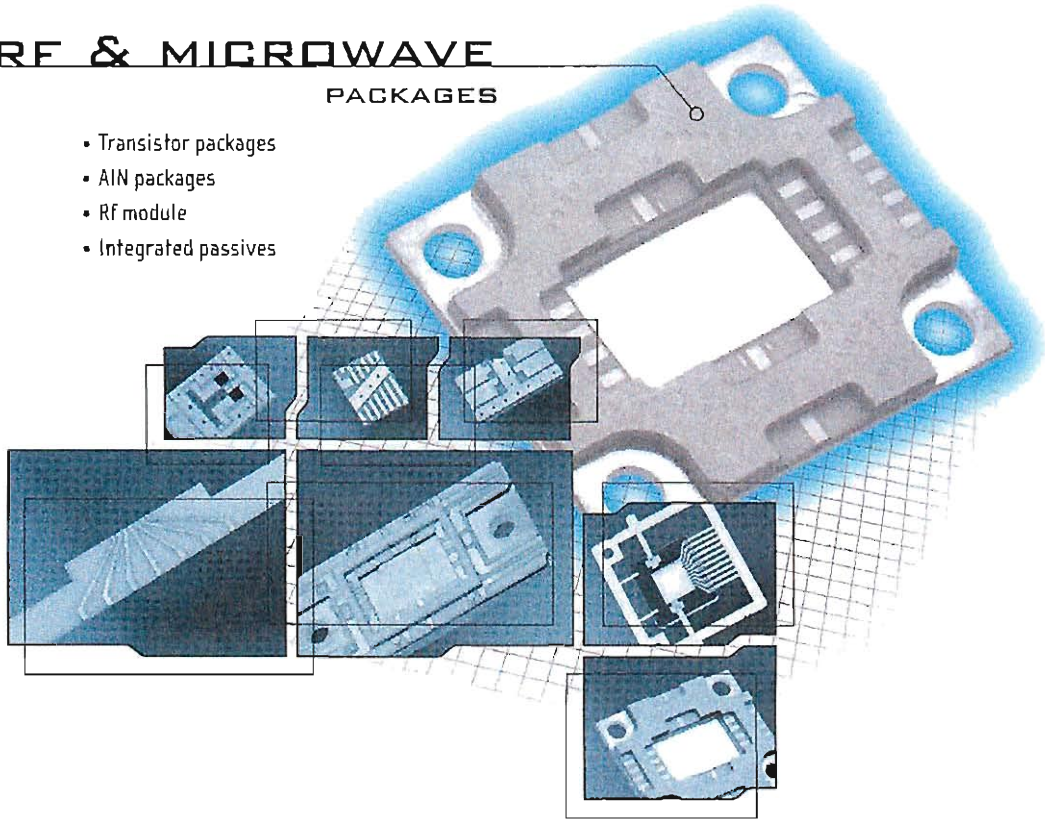
Part Number	Package	Size LxW (Inches)	Material	Power (CW)	Attenuation (dB)	Frequency* (GHz)	VSWR Range	Note
AF025A0R53A	Flanged	.515 x .250	AlN	25	0.5	DC - 3.0	<1.25:1	
AF030B0203A	Flanged	.515 x .250	BeO	30	20	DC - 3.0	<1.25:1	
AF030B0303A	Flanged	.515 x .250	BeO	30	30	DC - 3.0	<1.25:1	
AF100A00104-001	Flanged	.800 x .225	AlN	100	1	DC - 3.0	<1.25:1	
AF100A00204-001	Flanged	.800 x .225	AlN	100	2	DC - 3.0	<1.15:1	
AF100A00304-001	Flanged	.800 x .225	AlN	100	3	DC - 3.0	<1.12:1	
AF100A00504-001	Flanged	.800 x .225	AlN	100	5	DC - 3.0	<1.15:1	
AF100A00604-001	Flanged	.800 x .225	AlN	100	6	DC - 3.0	<1.11:1	
AF100A00904-001	Flanged	.800 x .225	AlN	100	9	DC - 3.0	<1.09:1	
AF100A01004-001	Flanged	.800 x .225	AlN	100	10	DC - 3.0	<1.09:1	
AF100A02004-001	Flanged	.800 x .225	AlN	100	20	DC - 2.5	<1.20:1	
AF100B00104	Flanged	.800 x .225	BeO	100	1	DC - 3.0	<1.25:1	
AF100B00204	Flanged	.800 x .225	BeO	100	2	DC - 3.0	<1.25:1	
AF100B00304	Flanged	.800 x .225	BeO	100	3	DC - 3.0	<1.25:1	
AF100B00404	Flanged	.800 x .225	BeO	100	4	DC - 3.0	<1.25:1	
AF100B00504	Flanged	.800 x .225	BeO	100	5	DC - 3.0	<1.25:1	
AF100B00604	Flanged	.800 x .225	BeO	100	6	DC - 3.0	<1.25:1	
AF100B00704	Flanged	.800 x .225	BeO	100	7	DC - 3.0	<1.25:1	
AF100B00804	Flanged	.800 x .225	BeO	100	8	DC - 3.0	<1.25:1	
AF100B00904	Flanged	.800 x .225	BeO	100	9	DC - 3.0	<1.25:1	
AF100B01004	Flanged	.800 x .225	BeO	100	10	DC - 3.0	<1.25:1	
AF100B01104	Flanged	.800 x .225	BeO	100	11	DC - 3.0	<1.25:1	
AF100B01204	Flanged	.800 x .225	BeO	100	12	DC - 3.0	<1.25:1	
AF100B01304	Flanged	.800 x .225	BeO	100	13	DC - 3.0	<1.25:1	
AF100B01404	Flanged	.800 x .225	BeO	100	14	DC - 3.0	<1.25:1	
AF100B01504	Flanged	.800 x .225	BeO	100	15	DC - 3.0	<1.25:1	
AF100B01604	Flanged	.800 x .225	BeO	100	16	DC - 3.0	<1.25:1	
AF100B01704	Flanged	.800 x .225	BeO	100	17	DC - 3.0	<1.25:1	
AF100B01804	Flanged	.800 x .225	BeO	100	18	DC - 3.0	<1.25:1	
AF100B01904	Flanged	.800 x .225	BeO	100	19	DC - 3.0	<1.25:1	
AF100B02004	Flanged	.800 x .225	BeO	100	20	DC - 3.0	<1.25:1	
AF100B02104	Flanged	.800 x .225	BeO	100	21	DC - 3.0	<1.25:1	
AF100B02204	Flanged	.800 x .225	BeO	100	22	DC - 3.0	<1.25:1	
AF100B02304	Flanged	.800 x .225	BeO	100	23	DC - 3.0	<1.25:1	
AF100B02404	Flanged	.800 x .225	BeO	100	24	DC - 3.0	<1.25:1	
AF100B02504	Flanged	.800 x .225	BeO	100	25	DC - 3.0	<1.25:1	
AF100B02604	Flanged	.800 x .225	BeO	100	26	DC - 3.0	<1.25:1	
AF100B02704	Flanged	.800 x .225	BeO	100	27	DC - 3.0	<1.25:1	
AF100B02804	Flanged	.800 x .225	BeO	100	28	DC - 3.0	<1.25:1	
AF100B02904	Flanged	.800 x .225	BeO	100	29	DC - 3.0	<1.25:1	
AF100B03004	Flanged	.800 x .225	BeO	100	30	DC - 3.0	<1.25:1	
AF100B03104	Flanged	.800 x .225	BeO	100	31	DC - 3.0	<1.25:1	
AF100B03004	Flanged	.800 x .225	AlN	100	30	DC - 2.5	<1.20:1	
AF160B00104	Flanged	.800 x .225	BeO	150	1	DC - 3.5	<1.20:1	
AF200A02012-080	Flanged	.975 x .375	AlN	200	20	DC - 2.0	<1.20:1	0.210 HI
AF200A02012-480	Flanged	.975 x .375 LP	AlN	200	20	DC - 2.0	<1.20:1	0.180 HI
CA2335A0208C-06	Chip	.350 x .225	AlN	120	20	DC - 3.5	<1.20:1	
CA2335A0208C	Chip	.350 x .225	AlN	150	20	DC - 3.5	<1.20:1	
CA2335A0308C-06	Chip	.350 x .225	AlN	120	30	DC - 3.5	<1.20:1	
CA2335A0308C	Chip	.350 x .225	AlN	150	30	DC - 3.5	<1.20:1	
CA3725A0207C	Chip	.375 x .250	AlN	100	20	DC - 3.5	<1.20:1	
SA3737C0207C	Surface Mount	.375 x .375	Al ₂ O ₃	30	20	DC - 3.5	<1.20:1	

Typical

CERAMIC PACKAGES

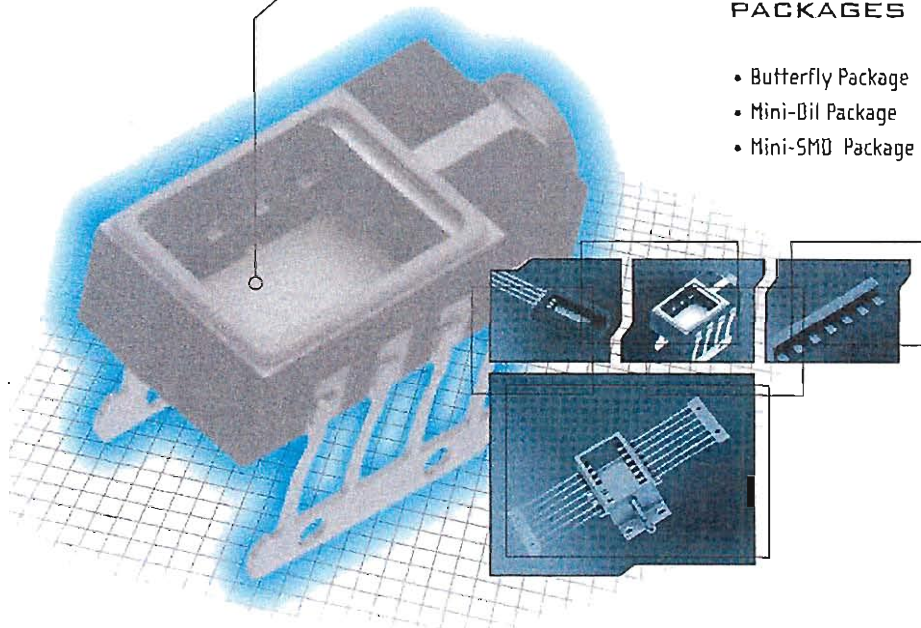
RF & MICROWAVE PACKAGES

- Transistor packages
- AlN packages
- RF module
- Integrated passives



OPTOELECTRONIC PACKAGES

- Butterfly Package
- Mini-Dip Package
- Mini-SMD Package



CERAMIC PACKAGES

Johanson offers complete design to manufacturing capabilities to provide custom solutions to meet your ceramic packaging needs.

DESIGNS

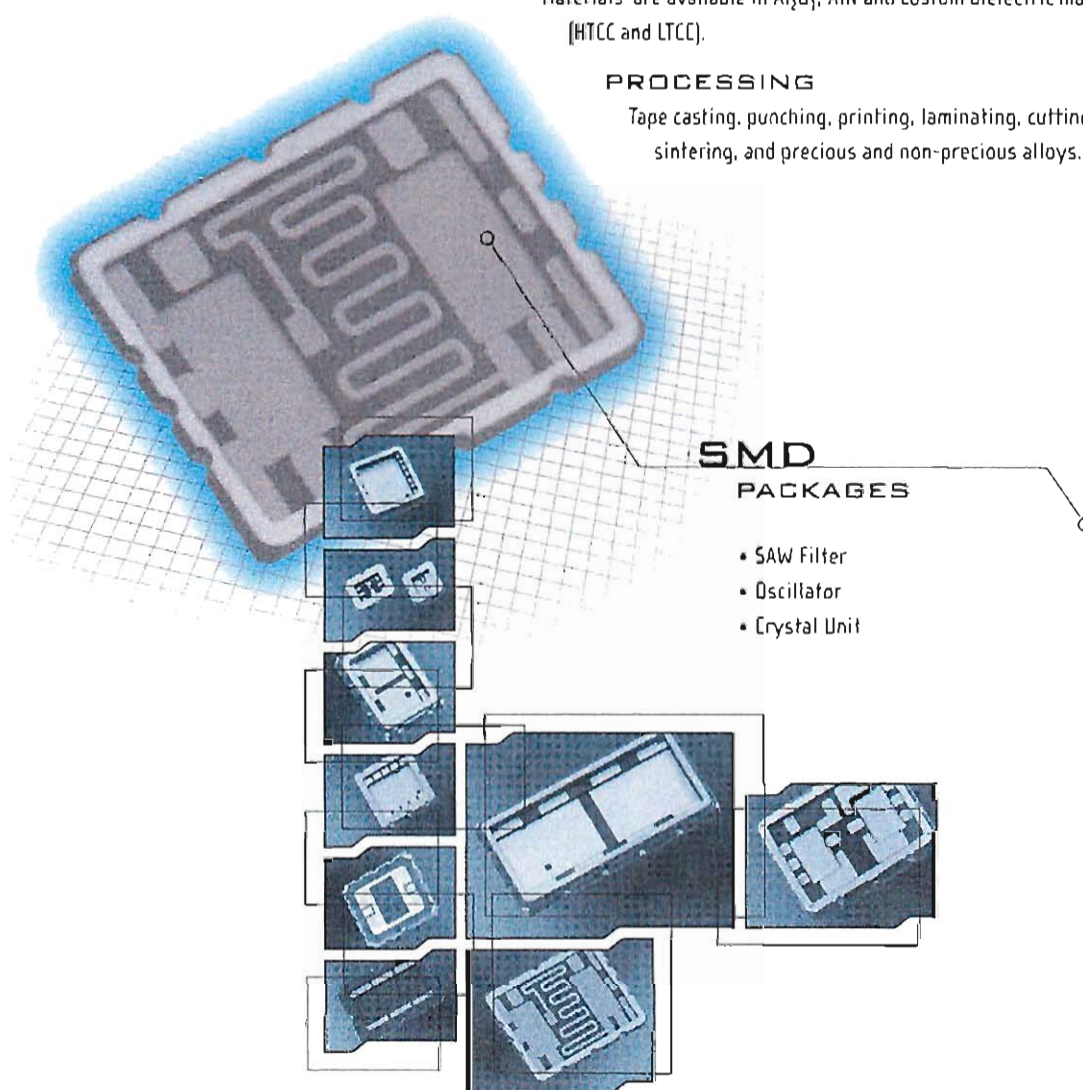
Johanson's custom solutions guarantee control from material formulations through the end product resulting in "Johanson Quality" parts.

FORMULATIONS

Materials are available in Al_2O_3 , AlN and custom dielectric materials (HTCC and LTCC).

PROCESSING

Tape casting, punching, printing, laminating, cutting/scribing, sintering, and precious and non-precious alloys.





→METALLIZATION

MJ DRG. NO.

JC1013-101D

REV.

JC1013-101

D

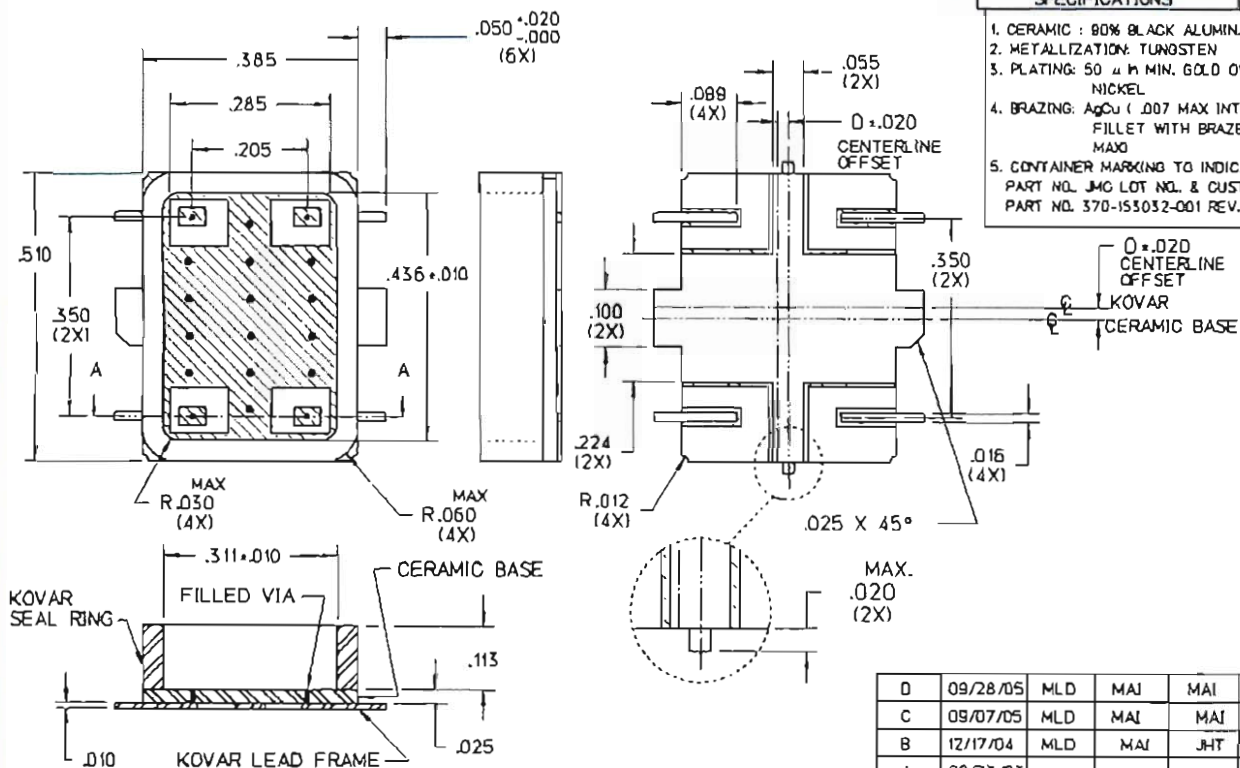
HOUSING, SMT 10 X 13

SHEET 1 OF 1

SPECIFICATIONS

FILE: JC

1. CERAMIC : 80% BLACK ALUMINA (CS-AH)
2. METALLIZATION: TUNGSTEN
3. PLATING: 50 μ IN MIN. GOLD OVER 50-350 μ IN NICKEL
4. BRAZING: AgCu (.007 MAX INTERNAL BRAZE FILLET WITH BRAZE RUNOUT .030 MAX)
5. CONTAINER MARKING TO INDICATE JMC PART NO. JMC LOT NO. & CUSTOMER PART NO. 370-153032-001 REV. C



D	09/28/05	MLD	MAI	MAI	000284
C	09/07/05	MLD	MAI	MAI	000269
B	12/17/04	MLD	MAI	JHT	000166
A	08/23/03	-	-	-	000044
LEVEL	DATE	DRN.	CHK.	APP.	ECN

REVISIONS

DRN.	CHK.	APP.	SCALE
MAI	TAM	JHT	4" = 1"
DATE	DATE	DATE	XX $\pm$.01 XXX $\pm$.005
09/23/03	09/24/03	09/25/03	



JOHANSON MANUFACTURING CORPORATION
ROCKAWAY VALLEY ROAD, BOONTON, N.J. 07005 (973)534-2678 FAX (973)534-2854
ELECTRONIC ACCURACY THROUGH MECHANICAL PRECISION

PROPRIETARY INFORMATION CONTAINED NOT TO BE USED WITHOUT JOHANSON MANUFACTURING CORPORATION APPROVAL

JOHANSON MANUFACTURING MIL/SPEC* CROSS REFERENCE INDEX TO COTS EQUIVALENTS

MIL/SPEC P/N	COTS JOHANSON P/N	MIL/SPEC P/N	COTS JOHANSON P/N
CV98F2R5	R9620	PC23J1R2	R27264
CV98F2R5SL	R9620SL	PC23J2R5	R27284
CV98H100	R9622	PC23J4R5	R27274
CV98H100SL	R9622SL	PC23K080	R27294
CV98J150	R9628	PC24J1R2	R27263
CV98J150SL	R9628SL	PC24J2R5	R27283
CV98K200	R9629	PC24J4R5	R2723
CV98K200SL	R9629SL	PC24K080	R27293
CV98Q250	R9626	PC25J060	R5700
CV98Q250SL	R9626SL	PC25J100	R5200
CV98W5R0	R9621	PC25J140	R5400
CV98W5R0SL	R9621SL	PC25J200	R5500
CV99L4R5	R9610	PC26J060	R5701
CV99L4R5SL	R9610SL	PC26J100	R5201
CV99M100	R9611	PC26J140	R5401
CV99M100SL	R9611SL	PC26J200	R5501
CV99N180	R9612	PC26J300	R5601
CV99N180SL	R9612SL	PC26T100	R5201
CV99P250	R9615	PC26T140	R5401
CV99P250SL	R9615SL	PC26T200	R5501
CV99Q350	R9613	PC27J3R5	R5800
CV99Q350SL	R9613SL	PC28J050	R5851
CV99Q400	R9614	PC28J3R5	R5801
CV99Q400SL	R9614SL	PC29J050	R5852
CV99Q500	R9616	PC29J100	R5752
CV99Q500SL	R9616SL	PC29J3R5	R5802
PC21J1R2	R27261	PC30J3R5	R8051
PC21J2R5	R27281	PC30J5R0	R5853
PC21J4R5	R27271	PC31J060	R5702
PC21K080	R27291	PC31J100	R5202
PC22J1R2	R27261SL	PC31J140	R5402
PC22J2R5	R27281SL	PC31J200	R5502
PC22J4R	R27271SL	PC32T140	R8053
PC22K080	R27291SL		

* Most parts per MIL-PRF-14409 and MIL-PRF-81 tested in accordance with MIL-STD-202

High Reliability



.....THE INDUSTRY STANDARD OF EXCELLENCE.

When required by aerospace and defense contracts, Johanson capacitors are available in high reliability configurations. Inspection and testing of high reliability capacitors are conducted in our in-house test laboratory. To order high reliability units, add an "R" prefix letter to the standard Johanson part number.

Electronic Accuracy through Mechanical Precision

COTS HI-REL TESTING OPTIONS

The following list states testing per MIL-STD 202 that is available to replace the PC and CV units listed on the MIL/SPEC REFERENCE INDEX thru Johanson Manufacturing:

Group A

- Thermal shock
- Visual and mechanical examination: Material
- Body dimensions
- Design and construction (other than body dimensions)
 - Marking, Workmanship
 - Capacitance, Change of capacitance
 - Insulation resistance (at 25°C)
 - Dielectric withstanding voltage
 - Quality factor (Q)
- Driving torque (room ambient temperature)

Group B

- Seal (sealed units only)
- Torque, bushing strength (panel-mount units only)
- Solderability (all solderable terminals)

Group C

- Insulation resistance (at high temperature)
- Temperature coefficient and capacitance drift
- Thermal shock
- Driving torque, Terminal strength
- Resistance to soldering heat
- Immersion (sealed units only)
- Salt atmosphere (corrosion)
- Moisture resistance
- Shock (specified pulse)
- Vibration, high frequency

Each Group and testing within the Group will incur charges not included in the unit cost of the COTS part. You will need to be specific as to which tests would apply to your particular application.

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* illustrated to the right. 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.

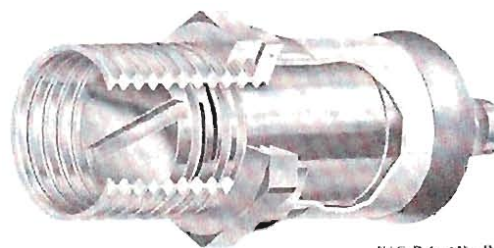
MINIATURE trimmer air capacitors offer an even further size reduction of the standard air capacitors coupled with finer tuning resolution and ultra high Q making them ideal for use in microwave circuits.

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.

Keeping pace with the growth of medical electronics, Johanson also produces **NON-MAGNETIC** air capacitors for low magnetic signature applications.

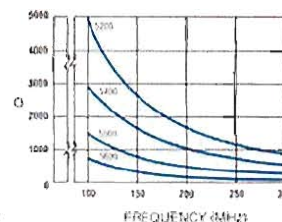
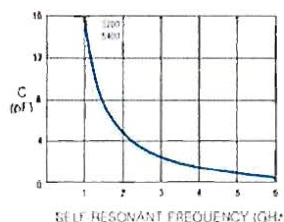
Where **HIGH VOLTAGE** is a requirement, the 5300 series air capacitors, not pictured in this catalog, are an excellent replacement for comparable range glass capacitors. Utilizing the basic design of the standard air capacitor, these units offer the same advantages plus a 500 VDC rating.

High Reliability versions are available on special order; to order add an "R" prefix letter to the standard Johanson part number.

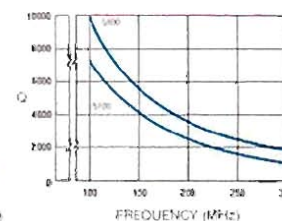
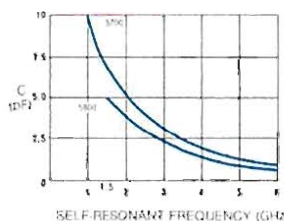


*U.S. Patent No. Re. 30,406

STANDARD AIR DATA



MINIATURE AIR DATA



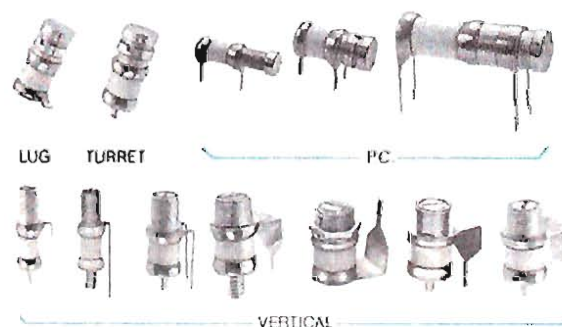
applications

- RF Amplifiers and Oscillators
- Impedance matching
- Filter tuning
- Crystal trimming
- Interstage coupling

characteristics

- Rated Voltage 250 VDC (5300 series 500 VDC)
- Torque 5200, 5400, 5500 & 5600 series 1 to 5 oz. in., 5700 series 4 to 4 oz. in., 5800 series .3 to 3 oz. in. & 5300 series 1 to 6 oz. in.
- Insulation Resistance > 10¹⁰ Meg Ω (at 500 VDC)
- Contact Resistance < .01 Ω
- Self-Resonant Frequency to > 5 GHz (5700 & 5800 series to > 6 GHz)
- Vibration 60 g, 10-2000 Hz
- Shock 1500 g, 0.5 milliseconds
- MIL-C-14409 qualified
- 574°F solder used in construction
- Operating temperature - 65°C to + 125°C

standard configurations

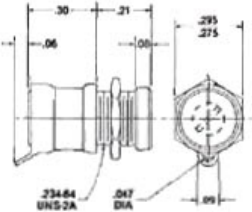
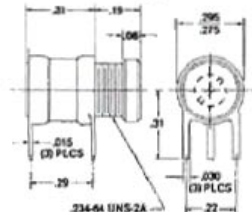
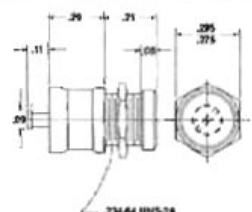


JMC Tuning Tool 8777

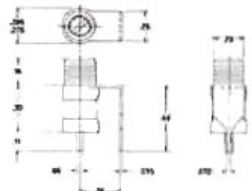
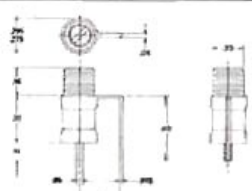
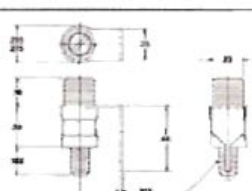
JMC Mounting Tool 4956 — for 5700 series
4958 — for 5800 series

ELECTRONIC ACCURACY THROUGH MECHANICAL PRECISION

STANDARD AIR CAPACITORS

JMC P/N MIL SPEC	RANGE pF	MIN. Q @ 100 MHz	DIMENSIONS (INCHES)
5200 PC25J100	.8 to 10 >6 TURNS	5000	
5201 *PC26I100	.8 to 10 >6 TURNS	5000	
5202 PC31J100	.8 to 10 >6 TURNS	5000	

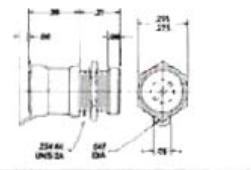
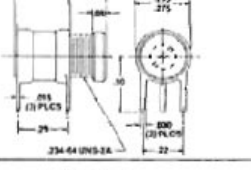
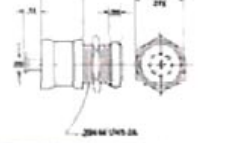
VERTICAL MOUNT AIR CAPACITORS

JMC P/N	RANGE pF	MIN. Q @ 100 MHz	DIMENSIONS (INCHES)
5243 (NON-MAGNETIC)	1.5 to 10 >6 TURNS	4000	
8052	1 to 10 >7 TURNS	5000	
8090	1 to 10 >6 TURNS	2000	

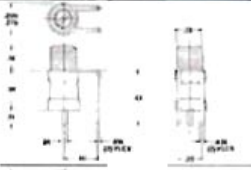
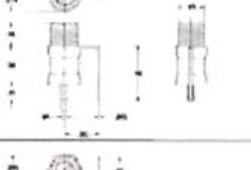
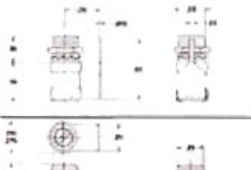
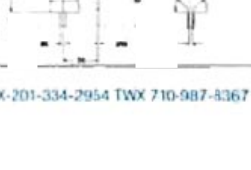
*CONSULT FACTORY FOR DETAILS

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STANDARD AIR CAPACITORS

JMC P/N MIL SPEC	RANGE pF	MIN. Q @ 100 MHz	DIMENSIONS (INCHES)
5400 PC25J140	1 to 14 >6 TURNS	3000	
5401 *PC26I140	1 to 14 >6 TURNS	3000	
5402 PC31J140	1 to 14 >6 TURNS	3000	

VERTICAL MOUNT AIR CAPACITORS

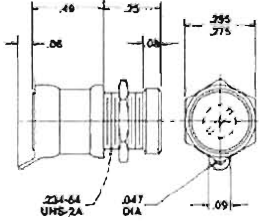
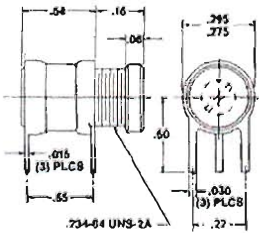
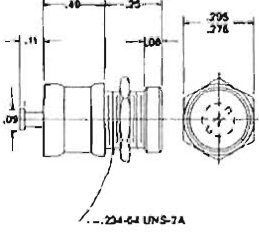
JMC P/N MIL SPEC	RANGE pF	MIN. Q @ 100 MHz	DIMENSIONS (INCHES)
5453	1.5 to 16 >7 TURNS	3000	
8053 *PC32T140	1.5 to 14 >6 TURNS	3000	
8091	1.5 to 14 >6 TURNS	2000	
8092	1.5 to 14 >6 TURNS	2000	
8093	1.5 to 14 >6 TURNS	2000	

*CONSULT FACTORY FOR DETAILS

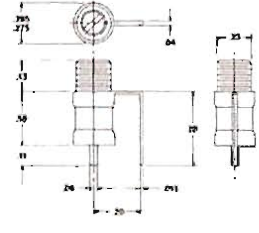
Johanson

5500 Type  1 to 20pF

STANDARD AIR CAPACITORS

JMC P/N MIL SPEC	RANGE pF	MIN. Q @ 100 MHz	DIMENSIONS (INCHES)
5500 PC257200	1 to 20 >12 TURNS	1500	
5501 PC261200	1 to 20 >12 TURNS	1500	
5502 PC112090	1 to 20 >12 TURNS	1500	

VERTICAL MOUNT

JMC P/N	RANGE pF	MIN. Q @ 100 MHz	DIMENSIONS (INCHES)
8054	1.5 to 20 >12 TURNS	1500	

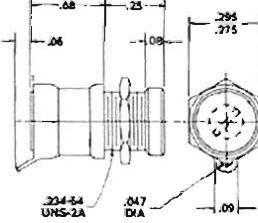
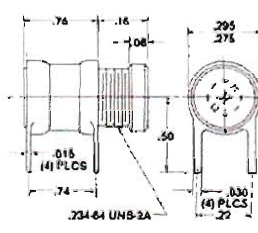
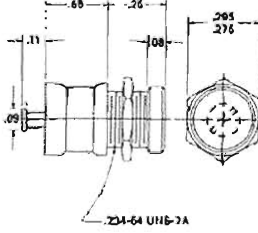
*CONSULT FACTORY FOR DETAILS

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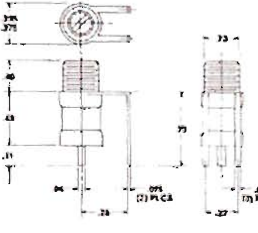
Johanson

5600 Type  1 to 30pF

STANDARD AIR CAPACITORS

JMC P/N MIL SPEC	RANGE pF	MIN. Q @ 100 MHz	DIMENSIONS (INCHES)
5600	1 to 30 >20 TURNS	800	
5601 PC261300	1 to 30 >20 TURNS	800	
5602	1 to 30 >20 TURNS	800	

VERTICAL MOUNT

JMC P/N	RANGE pF	MIN. Q @ 100 MHz	DIMENSIONS (INCHES)
8098	1.5 to 30 >20 TURNS	800	

*CONSULT FACTORY FOR DETAILS

Johanson

5700 Type 1 (14)



.6 to 6pF

Additional ranges shown

MINIATURE AIR CAPACITORS

JMC P/N MIL SPEC	RANGE pF	MIN. Q 100 MHz	DIMENSIONS (INCHES)
5700 PC25J060	.6 to 6 >8 TURNS	10000	
5701 PC25J060	.6 to 6 >8 TURNS	10000	
5702 PC31J060	.6 to 6 >8 TURNS	10000	

VERTICAL MOUNT

JMC P/N	RANGE pF	MIN. Q @ 100 MHz	DIMENSIONS (INCHES)
5753	1 to 10 > 8 TURNS	7500	
8050	.7 to 6 > 8 TURNS	10000	

EXTENDED RANGE

JMC P/N MIL SPEC	RANGE pF		MIN. Q @ 100 MHz	DIMENSIONS (INCHES)
5750	.8 to 10 > 8 TURNS		7500	Side view dimensions: .37, .29, .06, .33, .015, .190-64 UNF-2A. End view dimensions: .235, .211, .14, .07 DIA.
5761	.8 to 10 > 8 TURNS		7500	Side view dimensions: .39, .37, .06, .35, .015 PLCSB, .28, .190-64 UNF-2A. End view dimensions: .353, .311, .200, .13 PLCSB.
5762 PC99J100	.8 to 10 > 8 TURNS		7500	Side view dimensions: .37, .29, .06, .35, .015 PLCSB, .28, .190-64 UNF-2A. End view dimensions: .353, .311, .200, .13 PLCSB.

*CONSULT FACTORY FOR DETAILS

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Johanson

5800 Type 

.35 to 3.5pF

Additional ranges shown

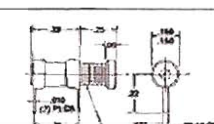
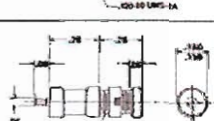
MINIATURE AIR CAPACITORS

JMC P/N MIL SPEC	RANGE pF		MIN. Q @ 100 MHz	DIMENSIONS (INCHES)
5800 PC77JARS	.35 to 3.5 >9 TURNS		10000	Technical drawing of the JMC 5800 PC77JARS capacitor. The side view shows a cylindrical component with a central screw. Dimensions include a total length of .36 inches, a central screw length of .27 inches, a base diameter of .13 inches, and a central hole diameter of .06 inches. The end view shows a diameter of .160 inches and a central hole diameter of .156 inches. A note indicates a tolerance of .005 to .010 inches for the central screw.
5801 PC78JARS	.35 to 3.5 >9 TURNS		10000	Technical drawing of the JMC 5801 PC78JARS capacitor. The side view shows a cylindrical component with a central screw. Dimensions include a total length of .36 inches, a central screw length of .27 inches, a base diameter of .13 inches, and a central hole diameter of .06 inches. The end view shows a diameter of .160 inches and a central hole diameter of .156 inches. A note indicates a tolerance of .005 to .010 inches for the central screw.
5802 PC79JARS	.35 to 3.5 >9 TURNS		10000	Technical drawing of the JMC 5802 PC79JARS capacitor. The side view shows a cylindrical component with a central screw. Dimensions include a total length of .36 inches, a central screw length of .27 inches, a base diameter of .13 inches, and a central hole diameter of .06 inches. The end view shows a diameter of .160 inches and a central hole diameter of .156 inches. A note indicates a tolerance of .005 to .010 inches for the central screw.

VERTICAL MOUNT

JMC P/N MIL SPEC	RANGE pF		MIN. Q @ 100 MHz	DIMENSIONS (INCHES)
5853 *PC49A580	.6 to 5 >9 TURNS		7500	
8051 *PC49A735	.6 to 3.5 >9 TURNS		10000	

EXTENDED RANGE

JMC P/N MIL SPEC	RANGE μF	MIN. Q ($f = 100 \text{ MHz}$)	DIMENSIONS (INCHES)
5850	.5 to .5 >9 TURNS	7500	
5851 PC79JMSO	.5 to .5 >9 TURNS	7500	
5852 PC79JMSO	.5 to .5 >9 TURNS	7500	

*CONSULT FACTORY FOR DETAILS

Giga-Trim® Trimmer Capacitors

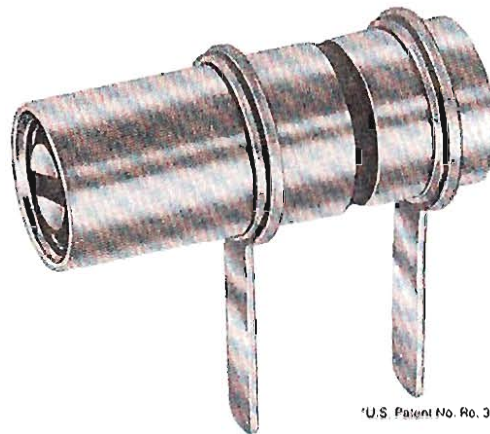


description

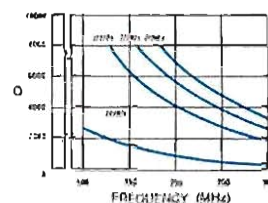
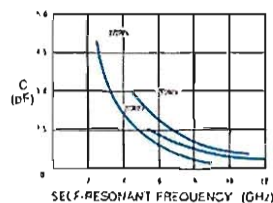
GIGA-TRIMS® (gigahertz trimmers) are tiny trimmer capacitors which provide a straight-forward technique for fine tuning RF and microwave circuits by eliminating time consuming methods of abrasive trimming, cut and try adjustment techniques, and interchange of fixed capacitors.

The design evolved from the need for a virtually indestructible miniature trimmer with superior electrical characteristics. GIGA-TRIMS® withstand the rigors of soldering heat, excessive tuning and rough handling. As a result of the excellent dielectric and insulation properties of the sapphire housing, high breakdown voltage is achieved. Incorporating the patented self-locking constant torque drive mechanism* which eliminates the need for external bushing slots, the new GIGA-TRIM® offers many improvements: a fixed length, increased Q, essentially zero tuning noise and reduced susceptibility to solder flux intrusion during installation.

A variety of mounting styles is available for vertical, printed circuit, panel, cavity and strip-line applications. All units meet the requirements of MIL-C-14409 and those identified are qualified to that specification. High Reliability versions are available on special order; to order add an "R" prefix letter to the standard Johanson part number.



*U.S. Patent No. 30,406



applications

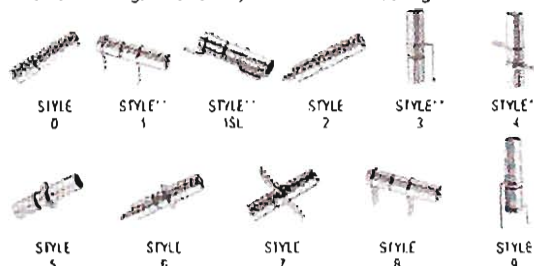
- Impedance matching
- Crystal trimming
- Interstage coupling
- Gap trimming in microstrip
- Filter tuning
- Cavity tweaking

characteristics

- Rated Voltage 500 VDC
- Insulation resistance > 10¹² Meg Ω 500 VDC
- Rotational life exceeds MIL-C-14409
- Contact resistance < .01Ω
- Operating temperature -65°C to +125°C
- Self-Resonant Frequency to >12 GHz
- Vibration 60 g 10-2000 Hz
- Shock 100 g, 6 milliseconds

terminal options

To order following, substitute style number for the last digit in JMC P/N.



**MIL-SPEC QUALIFIED. SEE PAGES 8 & 9



JMC Tuning Tool 8762 — for 27260 series



JMC Tuning Tool 8777 — for the remainder listed.

ELECTRONIC ACCURACY THROUGH MECHANICAL PRECISION

GIGA-TRIM® CAPACITORS

JMC P/N MIL SPEC	RANGE pF	MIN. Q @ 250 MHz	DIMENSIONS (INCHES)
27261SL PC22J1R2	.3 to 1.2 >5 TURNS	5000	
27261 PC21J1R2	.3 to 1.2 >5 TURNS	5000	
27263 PC24J1R2	.3 to 1.2 >5 TURNS	5000	
27264 PC24J1R2	.3 to 1.2 >5 TURNS	5000	

GIGA-TRIM® CAPACITORS

JMC P/N MIL SPEC	RANGE pF	MIN. Q @ 250 MHz	DIMENSIONS (INCHES)
27271SL PC27J4R3	.6 to 4.5 >8 TURNS	3000	
27271 PC21J4R3	.6 to 4.5 >8 TURNS	3000	
27273 PC24J4R3	.6 to 4.5 >8 TURNS	3000	
27274 PC24J4R3	.6 to 4.5 >8 TURNS	3000	

JOHANSON MANUFACTURING CORPORATION, ROCKAWAY VALLEY ROAD, BOONTON, NEW JERSEY USA 07005 201-334-2676 FAX-201-334-2954 TWX 710-987-8367

Johanson

27280 Type

.4 to 2.5pF

Johanson

27290 Type

.8 to 8pF

GIGA-TRIM® CAPACITORS

JMC P/N MIL SPEC	RANGE pF	MIN. Q @ 250 MHz	DIMENSIONS (INCHES)
27281SL PC227RS	.4 to 2.5 >4 TURNS	4000	
27281 PC217RS	.4 to 2.5 >4 TURNS	4000	
27283 PC247RS	.4 to 2.5 >4 TURNS	1000	
27284 PC237RS	.4 to 2.5 >4 TURNS	4000	

GIGA-TRIM® CAPACITORS

JMC P/N MIL SPEC	RANGE pF	MIN. Q @ 100 MHz	DIMENSIONS (INCHES)
27291SL PC27X080	.8 to 8 >16 TURNS	3000	
27291 PC21K080	.8 to 8 >16 TURNS	3000	
27293 PC24X080	.8 to 8 >16 TURNS	3000	
27294 PC23X080	.8 to 8 >16 TURNS	3000	

JOHANSON MANUFACTURING CORPORATION, ROCKAWAY VALLEY ROAD, BOONTON, NEW JERSEY USA 07005 201-334-2676 FAX-201-334-2954 TWX 710-987-8367

Cera-Trim® Trimmer Capacitors

new
surface mount
product with
solder plate
terminals



U.S. Patent No. 3,701,932



description

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

CERA-TRIM'S® rugged construction renders it resistant to penetration of solder fluxes and cleaning solvents.

CERA-TRIM'S® square drive tuning mechanism provides and assures complete compatibility with automated tuning devices for positive non-slip tamper-proof adjustments.

CERA-TRIM'S® design makes it possible to utilize tape and reel or caridge placement. The alumina housing provides incredible mechanical strength with outstanding electrical and heat resistant properties.

Recommended handling instructions outlining soldering procedures are available in Johanson specification R-360.

High Reliability versions are available on special order; to order add an "R" prefix letter to the standard Johanson part number.

applications

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

characteristics

- Rated Voltage 250 VDC
- Insulation resistance $>10^4$ Meg Ω
- Vibration 15 g, 10-2000 Hz, MIL-STD-202 Method 204, Cond. B
- Resistant to soldering heat and flux, 235°C for 30 seconds
- Solderability MIL-STD-202 Method 208
- Can withstand up to 5 minutes total immersion in typical cleaning solvents at room temperature.
- Operating temperature -55°C to $+125^{\circ}\text{C}$
- Shock 100 g, 6 milliseconds MIL-STD-202 Method 213, Cond. I
- Conforms with specification MIL-C-81
- Moisture resistance MIL-STD-202, Method 106

optional configurations

STANDARD



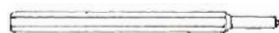
STRIP-LINE



REVERSE SURFACE MOUNT



JMC Tuning Tool 4192 — for 2320 series



Resistant
non-reductive
soldering fluxes

Johanson
2320 Type

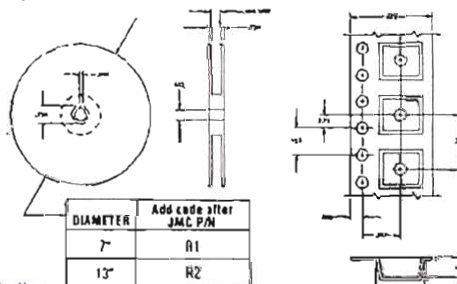
.6 to 2.5pF
1 to 5pF
2.5 to 10pF
5 to 18pF
6.5 to 25pF

JMC P/N	RANGE pF	MIN. Q @ 100 MHz	DIMENSIONS (INCHES)
2320-0	6 to 25	3000	
2320-1	1 to 5	1000	
2320-2	2.5 to 10	1000	
2320-3	5 to 18	500	
2320-4	6.5 to 25	300	

PACKAGING

Tape and Reel

- Johanson tape and reel packaging is in accordance with EIA-481 specification in 12mm width carrier tape in quantities of 500 on 7 inch reel & 2500 on 13 inch reel.



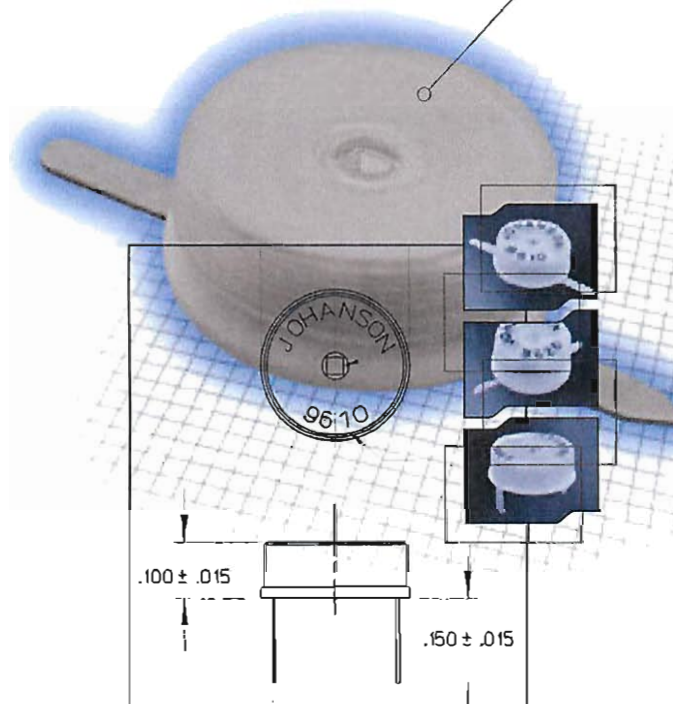
Bulk

- Johanson standard bulk packaging is in quantities of 200 in a sealed antistatic plastic bag with desiccant.

JOHANSON MANUFACTURING CORPORATION, ROCKAWAY VALLEY ROAD, BOONTON, NEW JERSEY USA 07005 201-334-2676 FAX 201-334-2954 TWX 710-987-8367

SEAL- TRIM

Our Seal-Trims are also built around the Thin-Trim capacitors. These capacitors are encased in a high performance polymer housing that is wave solderable and protects the trimmer from contamination.



APPLICATIONS

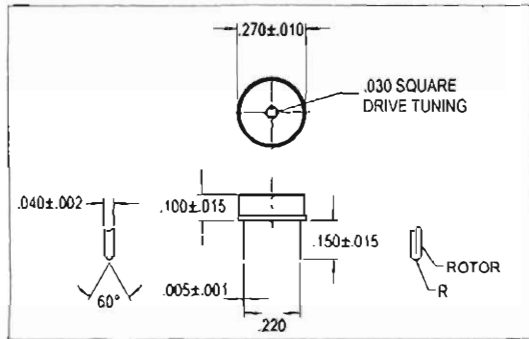
- RF amplifier
- LC Filters and Networks
- Broadband Wireless LAN
- Medical Devices
- Cordless and Cellular phones
- DR/Crystal Oscillator
- Microstrip line filters

CHARACTERISTICS

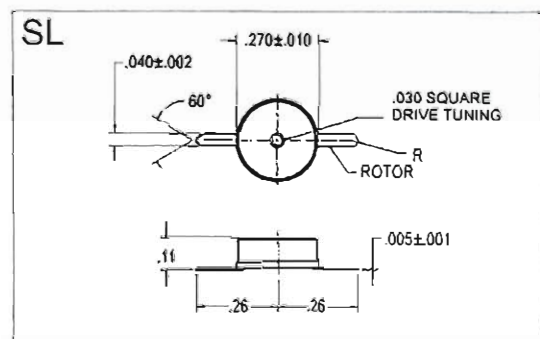
- Working Voltage: 250 VDC (500 VDC Test)
- Long Rotational life
- Insulation Resistance: > 10⁴ MΩ
- Temperature Range: -55°C to +125°C
- RoHS Compliant parts available

SERIES	DISK SIZE	CAPACITANCE AVAILABLE	TUNING RESOLUTION
9610/9810	.270" (6.86 mm)	1 TO 50 pF	180°
9620/9820	.180" (4.57 mm)	.5 TO 25 pF	180°

9610 SERIES TUNING TOOL: 4193

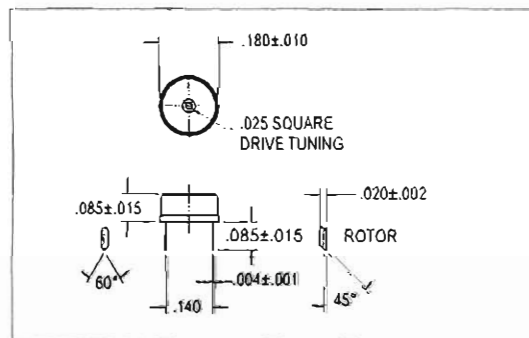


JMC P/N	RANGE PF	MIN Q @100MHZ
9610	9610SL	1.5 TO 4.5
9611	9611SL	2.5 TO 10.0
9612	9612SL	4.0 TO 18.0
9613	9613SL	6.0 TO 35.0
9614	9614SL	7.0 TO 40.0
9615	9615SL	5.0 TO 25.0
9616	9616SL	8.0 TO 50.0

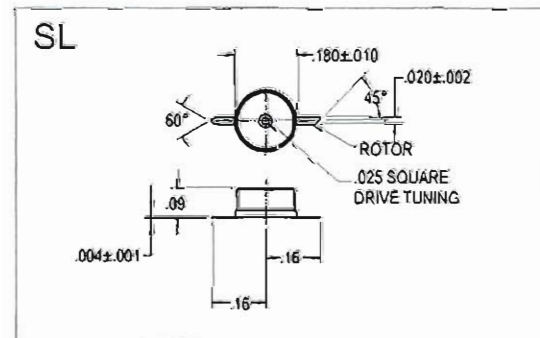


ROHS	Pb	RANGE PF	MIN Q @100MHZ
9810	9810SL	1.5 TO 4.5	>1000
9811	9811SL	2.5 TO 10.0	>1000
9812	9812SL	4.0 TO 18.0	>700
9813	9813SL	6.0 TO 35.0	>200
9814	9814SL	7.0 TO 40.0	>200
9815	9815SL	5.0 TO 25.0	>200
9816	9816SL	10.5 TO 50.0	>200

9620 SERIES TUNING TOOL: 4192



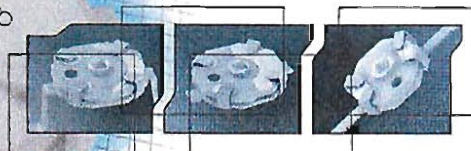
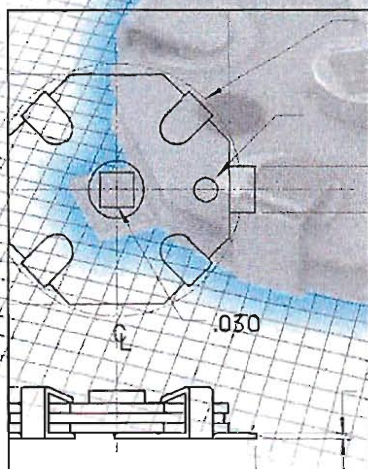
JMC P/N	RANGE PF	MIN Q @100MHZ
9620	9620SL	0.5 TO 2.5
9621	9621SL	1.0 TO 5.0
9622	9622SL	2.5 TO 10.0
9626	9626SL	8.5 TO 25.0
9628	9628SL	5.0 TO 15.0
9629	9629SL	7.5 TO 18.0



ROHS	Pb	RANGE PF	MIN Q @100MHZ
9820	9820SL	0.5 TO 2.5	>1000
9821	9821SL	1.0 TO 5.0	>1000
9822	9822SL	2.5 TO 10.0	>1000
9826	9826SL	8.5 TO 25.0	>300
9828	9828SL	5.0 TO 15.0	>750
9829	9829SL	7.5 TO 18.0	>500

THIN-TRIM

Our Thin-Trim capacitors are ideal for applications where size and performance are most critical. These single-turn capacitors exhibit remarkable electrical characteristics for their small size. Useful up to 2 GHz, these trimmers are perfect for low-profile applications.



CHARACTERISTICS

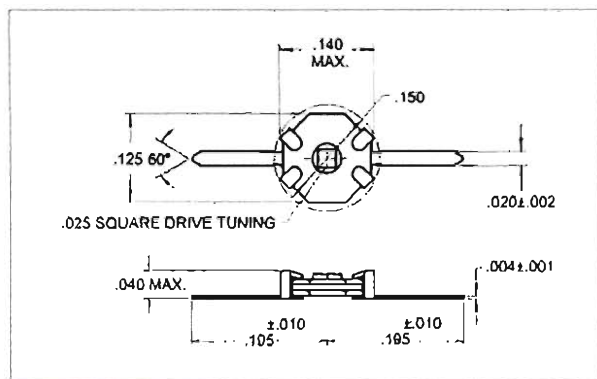
- Working Voltage: 250 VDC (500 VDC Test)
- Insulation Resistance: $> 10^4 M\Omega$
- Temperature Range: $-55^\circ C$ to $+125^\circ C$
- RoHS Compliant parts available

APPLICATIONS

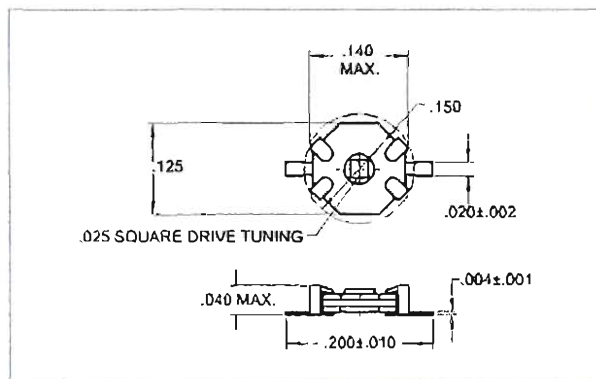
- RF amplifier
- LC Filters and Networks
- Broadband Wireless LAN
- Medical Devices
- Cordless and Cellular phones
- DR/Crystal Oscillator

SERIES	DISK SIZE	CAPACITANCE AVAILABLE	TUNING RESOLUTION
9401	.140" (3.56 MM)	.25 TO 4.0 pF	90°
9402	.125" (3.18 MM)	.5 TO 25 pF	180°
9410	.200" (5.08 MM)	1 TO 50 pF	180°

9401 SERIES Tuning Tool: 4194



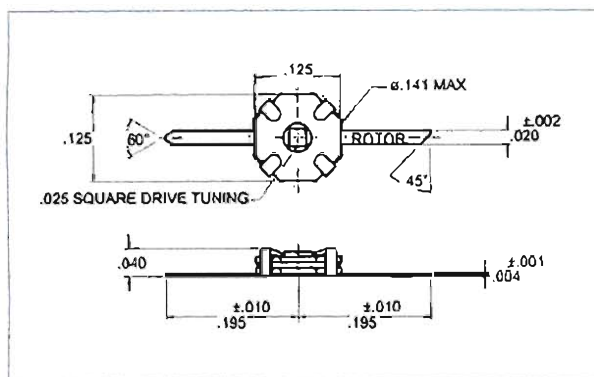
JMC P/N	JMC RoHS P/N	RANGE PF	MIN Q @ 100MHz
9401-0	9701-0	0.25 TO 0.7	>1000
9401-1	9701-1	0.5 TO 1.3	>1000
9401-2	9701-2	0.6 TO 2.0	>1000
9401-4	9701-4	1.5 TO 4.0	>500



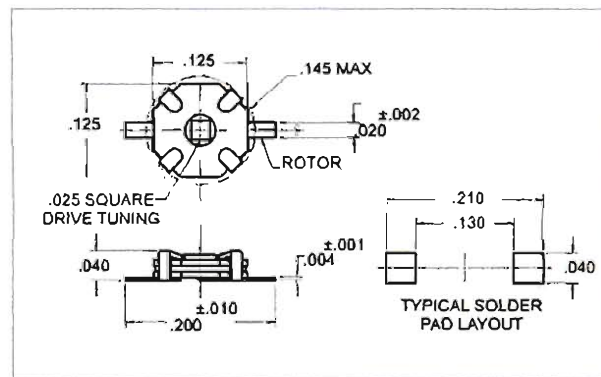
JMC P/N	JMC RoHS P/N	RANGE PF	MIN Q @ 100MHz
9401-0SL1	9701-0SL1	0.25 TO 0.7	>1000
9401-1SL1	9701-1SL1	0.5 TO 1.3	>1000
9401-2SL1	9701-2SL1	0.6 TO 2.0	>1000
9401-4SL1	9701-4SL1	1.5 TO 4.0	>500

Available in Tape/Reel: 1500 per reel, add suffix R

9402 SERIES Tuning Tool: 4194

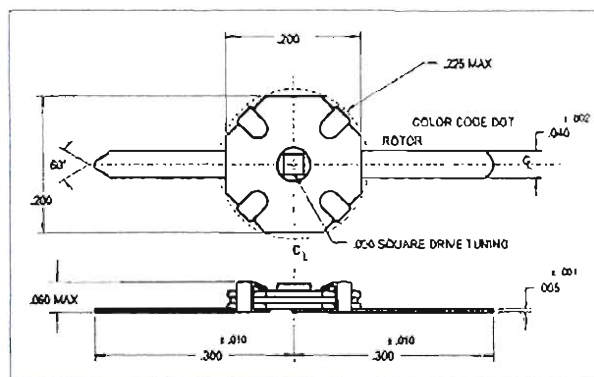


JMC P/N	JMC RoHS P/N	RANGE PF	MIN Q @ 100MHZ
9402-0	9702-0	0.5 to 2.5	>3000
9402-1	9702-1	1.0 to 5.0	>1000
9402-2	9702-2	2.5 to 10.0	>1000
9402-4	9702-4	3.0 to 12.0	>500
9402-6	9702-6	6.0 to 25.0	>300
9402-8	9702-8	5.0 to 15.0	>750
9402-9	9702-9	5.0 to 18.0	>500



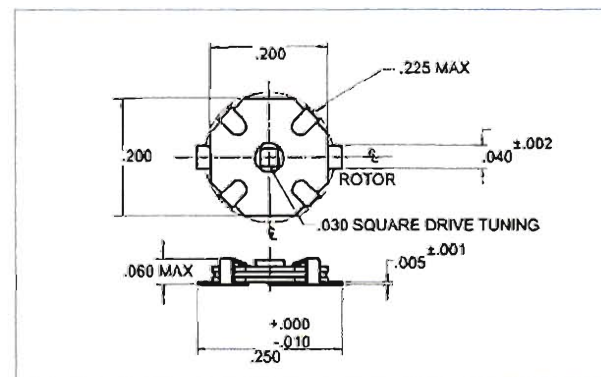
JMC P/N	JMC RoHS P/N	RANGE PF	MIN Q @ 100MHZ
9402-0SL-1	9702-0SL-1	0.5 to 2.5	>3000
9402-1SL-1	9702-1SL-1	1.0 to 5.0	>1000
9402-2SL-1	9702-2SL-1	2.5 to 10.0	>1000
9402-4SL-1	9702-4SL-1	3.0 to 12.0	>500
9402-6SL-1	9702-6SL-1	6.0 to 25.0	>300
9402-8SL-1	5L-19702-8	5.0 to 15.0	>750
9402-9SL-1	9702-9SL-1	5.0 to 18.0	>500

9410 SERIES Tuning Tool: 4193



JMC P/N	JMC RoHS P/N	RANGE PF	MIN Q @ 100MHZ
9410-0	9710-0	1.0 to 4.5	>1000
9410-1	9710-1	2.5 to 10.0	>1000
9410-2	9710-2	4.0 to 18.0	>700
9410-3	9710-3	6.0 to 35.0	>200
9410-4	9710-4	7.0 to 40.0	>200
9410-5	9710-5	8.0 to 50.0	>250
9410-25	9710-25	5.0 to 25.0	>200

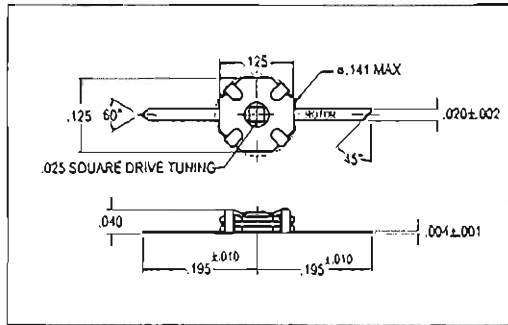
Available in Tape/Reel: 3000 per reel, add suffix R7



JMC P/N	JMC RoHS P/N	RANGE PF	MIN Q @ 100MHZ
9410-0SL-1	9710-0SL-1	1.0 to 4.5	>1000
9410-1SL-1	9710-1SL-1	2.5 to 10.0	>1000
9410-2SL-1	9710-2SL-1	4.0 to 18.0	>700
9410-3SL-1	9710-3SL-1	6.0 to 35.0	>200
9410-4SL-1	9710-4SL-1	7.0 to 40.0	>200
9410-5SL-1	9710-5SL-1	8.0 to 50.0	>250
9410-25SL-1	9710-25SL-1	5.0 to 25.0	>200

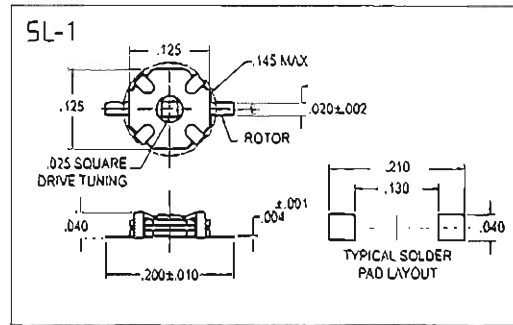
Available in Tape/Reel: 3000 per reel, add suffix R7

9402/9702 SERIES TUNING TOOL: 4194



JMC P/N	RANGE PF	MIN Q @ 100MHZ
9402-0	0.5 TO 2.5	>3000
9402-1	1.0 TO 5.0	>1000
9402-2	2.5 TO 10.0	>1000
9402-4	3.0 TO 12.0	>500
9402-6	6.0 TO 25.0	>300
9402-8	5.0 TO 15.0	>750
9402-9	5.0 TO 18.0	>500

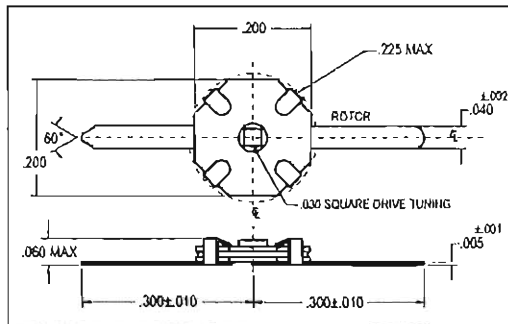
SL-1 AVAILABLE IN TAPE/REEL: 1500 PER REEL, ADD SUFFIX R3



JMC P/N	RANGE PF	MIN Q @ 100MHZ
9702-0	0.5 TO 2.5	>3000
9702-1	1.0 TO 5.0	>1000
9702-2	2.5 TO 10.0	>1000
9702-4	3.0 TO 12.0	>500
9702-6	8.0 TO 25.0	>300
9702-8	5.0 TO 15.0	>750
9702-9	7.0 TO 18.0	>500

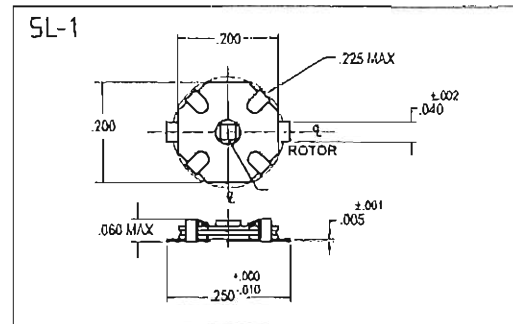
SL-1 AVAILABLE IN TAPE/REEL: 1500 PER REEL, ADD SUFFIX R3

9410/9710 SERIES TUNING TOOL: 4193



JMC P/N	RANGE PF	MIN Q @ 100MHZ
9410-0	1.0 TO 4.5	>1000
9410-1	2.5 TO 10.0	>1000
9410-2	4.0 TO 18.0	>700
9410-3	6.0 TO 35.0	>200
9410-4	7.0 TO 40.0	>200
9410-5	8.0 TO 50.0	>250
9410-25	5.0 TO 25.0	>200

AVAILABLE IN TAPE/REEL: 3000 PER REEL, ADD SUFFIX R7



JMC P/N	RANGE PF	MIN Q @ 100MHZ
9710-0	1.0 TO 4.5	>1000
9710-1	2.5 TO 10.0	>1000
9710-2	4.0 TO 18.0	>700
9710-3	6.0 TO 35.0	>200
9710-4	7.0 TO 40.0	>200
9710-5	10.0 TO 50.0	>250
9710-25	5.0 TO 25.0	>200

AVAILABLE IN TAPE/REEL: 3000 PER REEL, ADD SUFFIX R7



Johanson Manufacturing Corporation • 301 Rockaway Valley Road, Boonton, New Jersey 07005 • Phone 973.334.2676 • Fax 973.334.2954
STAY TUNED • ELECTRONIC ACCURACY THROUGH MECHANICAL PRECISION • WWW.JOHANSONMFG.COM

Ceramic Trimmer Capacitors

description

These ceramic trimmer capacitors are designed for broadband applications, from audio to 500 MHz, and afford an ideal low cost means of trimming circuitry.

High Reliability versions are available on special order; to order add an "R" prefix letter to the standard Johanson part number.

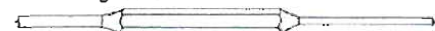
applications

- All varieties of communication and test equipment
- LC Filter
- Crystal oscillators
- Impedance matching
- CATV amplifiers

characteristics

- Operating temp. -55°C to +85°C
- Rated voltage 250 VDC
- Insulation resistance $>10^4$ Meg Ω @ 250 VDC

JMC Tuning Tool 8777



TOP TUNING

250 MILES / 2.0K 100 PPF
TUNING SLUG

ACTUAL SIZE	JMC P/N	RANGE pF	MIN. Q @ 10 MHz	TORQUE OZ. IN.	COLOR CODE
	9300	2 to 8	300	.56 to 5.6	RED
	9301	2 to 12	300	.56 to 5.6	NONE
	9302	2.5 to 23	300	.56 to 5.6	BLUE
	9303	4 to 34	300	.55 to 5.6	ORANGE
	9304	5.5 to 45	200	.56 to 5.6	BROWN
	9305	6 to 55	200	.56 to 5.6	GREEN
	9314	6 to 60	200	.56 to 5.6	PINK
	9315	6 to 70	200	.56 to 5.6	GRAY
	9328	12 to 100	200 @ 1 MHz	.56 to 5.6	WHITE

TOP TUNING

ACTUAL SIZE	JMC P/N	RANGE pF	MIN. Q @ 10 MHz	TORQUE OZ. IN.	COLOR CODE
	9306	2 to 8	300	.56 to .5.6	RED
	9307	2 to 12	300	.56 to .5.6	NONE
	9308	2.5 to 23	300	.56 to .5.6	BLUE
	9309	4 to 34	300	.56 to .5.6	ORANGE
	9310	5.5 to 45	200	.56 to .5.6	BROWN
	9311	6 to 55	200	.56 to .5.6	GREEN
	9338	6 to 70	200	.56 to .5.6	GRAY
	9339	12 to 100	200 @ 1 MHz	.56 to .5.6	WHITE

Johanson 9300 Type

2 to 12 pF	3.5 to 20 pF	6 to 55 pF
2.5 to 23 pF	4 to 34 pF	6 to 60 pF
1.8 to 5 pF	2.8 to 12.5 pF	5 to 25 pF
1.8 to 6 pF	3 to 10 pF	5 to 30 pF
2 to 6 pF	3.5 to 16 pF	5.5 to 45 pF
		9 to 60 pF
		12 to 100 pF

TOP TUNING

ACTUAL SIZE	JMC P/N	RANGE pF	MIN. Q @ 10 MHz	TORQUE OZ. IN.	COLOR CODE
	9371	1.8 to 5	300	3 to 3	BLACK
	9372	3 to 10	300	3 to 3	NONE
	9373	3.5 to 18	300	3 to 3	BLUE
	9374	5 to 25	200	3 to 3	PURPLE
	9376	9 to 50	200 @ 1 MHz	3 to 3	GREEN

TOP & BOTTOM TUNING

Technical drawings of the trimmer capacitor showing top and bottom views with dimensions:

- Top View:** Dimensions include 200 X .001 STEP TUNING SLIT EACH END, .004 GA .0006, .010, .004, .00

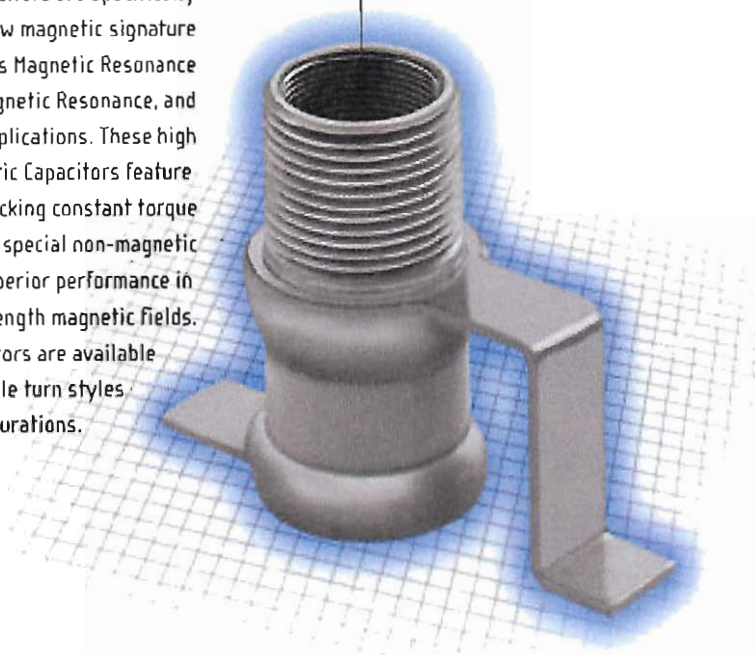
SIDE TUNING

ACTUAL SIZE	JMC P/N	RANGE pF	MIN. Q @ 10 MHz	TORQUE OZ. IN.	COLOR CODE
	9380	1.8 to 6	300	5 to 3	RED
	9381	2.8 to 12.5	300	5 to 3	NONE
	9382	3.5 to 20	300	5 to 3	BLUE
	9383	5 to 30	200	5 to 3	ORANGE
	9384	9 to 50	200 @ 1 MHz	5 to 3	BROWN

JOHANSON MANUFACTURING CORPORATION, ROCKAWAY VALLEY ROAD, BOONTON, NEW JERSEY USA 07005 201-334-2676 FAX 201-334-2954 TWX 710-987-6367

NON-MAGNETIC CAPACITORS

Non-magnetic Capacitors are specifically designed for low magnetic signature applications such as Magnetic Resonance Imaging, Nuclear Magnetic Resonance, and other medical applications. These high stability Non-magnetic Capacitors feature the one piece self locking constant torque mechanism along with special non-magnetic construction for superior performance in very high strength magnetic fields. Non-magnetic Capacitors are available in multi-turn and single turn styles and various configurations.



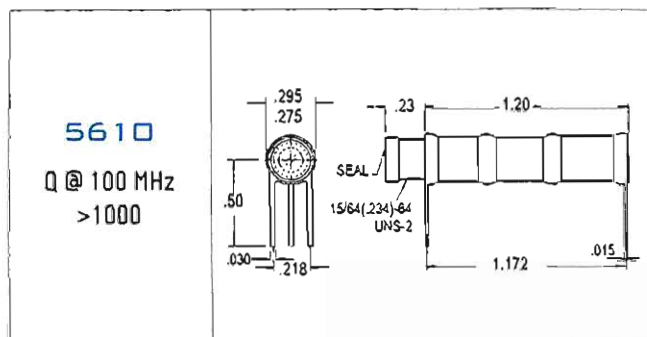
CHARACTERISTICS

- Working Voltage: From 250 VDC to 5000 VDC
- Long Rotational life
- Insulation Resistance: $> 10^8 M\Omega$
- Temperature range: $-65^{\circ}C$ to $+125^{\circ}C$
- RoHS Compliant

WORKING VOLTAGE	CAPACITANCE RANGE	SERIES	Q	PAGE
5000 VDC	1 TO 7.5 pF	5610	> 1000 @ 100MHz	2
1250 VDC	1.5 TO 10 pF	52H	> 1400 @ 100MHz	2
1000 VDC	1.5 TO 19 pF	55H	> 1000 @ 175MHz	2
	1 TO 25 pF	59H	> 1000 @ 175MHz	2,3
	2 TO 30 pF	56H	> 1000 @ 175MHz	3
250 VDC	.4 TO 3.5 pF	5860	> 10000 @ 100MHz	3
	.6 TO 6.0 pF	5760	> 10000 @ 100MHz	3,4
	.8 TO 10 pF	5240	> 4000 @ 100MHz	4
	1 TO 30 pF	5640	> 800 @ 100MHz	4
250 VDC (90° TO 180° RESOLUTION)	UP TO 50 pF	THIN-TRIM	SEE DATASHEET	THIN-TRIM
	UP TO 22 pF	CERA-TRIM	SEE DATASHEET	CERA-TRIM
	UP TO 50 pF	SEAL-TRIM	SEE DATASHEET	SEAL-TRIM

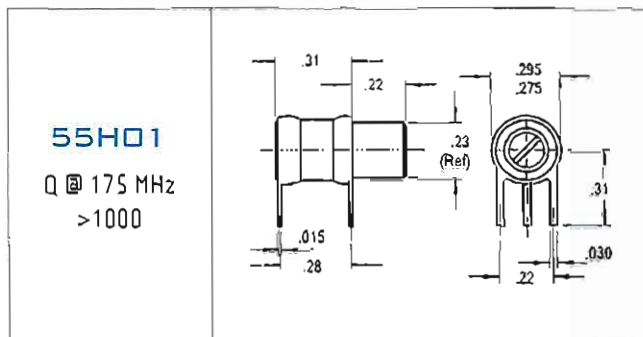
5000 VDC - 1 TO 7.5 pF

- Capacitance Range: 1 to 7.5 pF (>26 turns)
- Working Voltage: 5000 VDC (9000 VDC Test)
- Torque: 1 to 5.0 oz. In.
- Tuning Tool: 8764
- Gold, Silver, Chromate Finish
- RoHS Compliant



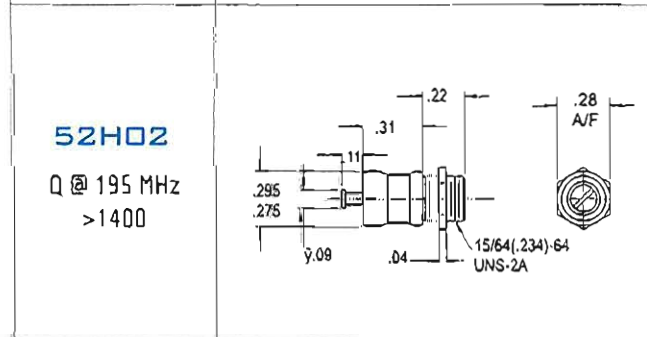
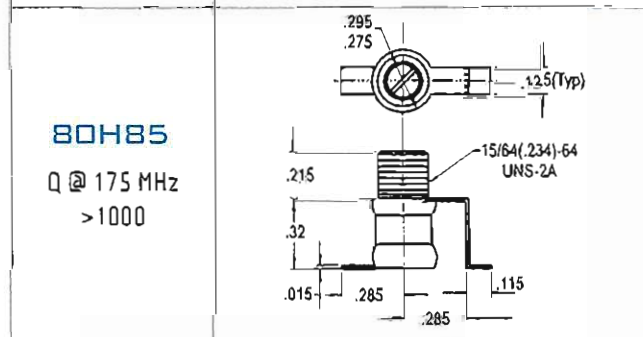
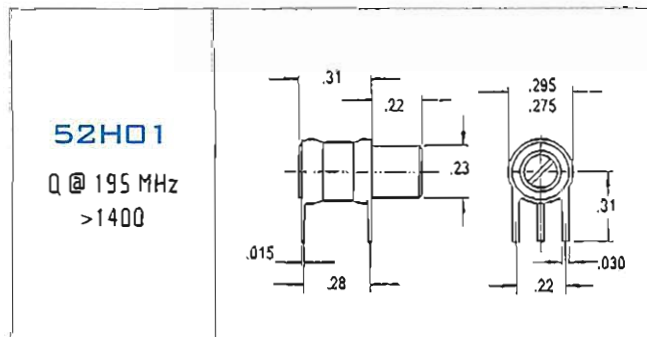
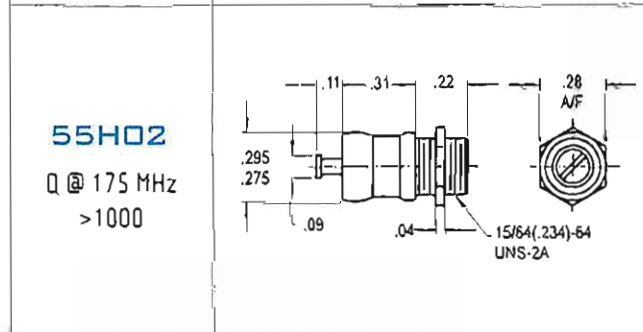
1000 VDC - 1 TO 19 pF

- Capacitance Range: 1.5 to 19 pF (>18 turns)
- Working Voltage: 1000 VDC (2000 VDC Test)
- Torque: 1 to 5.0 oz. In.
- Tuning Tool: 8764
- Gold, Silver, Chromate Finish
- RoHS Compliant



1250 VDC - 1 TO 10 pF

- Capacitance Range: 1.5 to 10 pF (>18 turns)
- Working Voltage: 1250 VDC (2500 VDC Test)
- Torque: 1 to 5.0 oz. In.
- Tuning Tool: 8764
- Gold, Silver, Chromate Finish
- RoHS Compliant



1000 VDC - 1 TO 25 pF

- Capacitance Range: 1 to 25 pF (>23 turns)
- Working Voltage: 1000 VDC (2000 VDC Test)
- Torque: 1 to 5.0 oz. In.
- Tuning Tool: 8764
- Gold, Silver, Chromate Finish
- RoHS Compliant

1000 VDC - 1 TO 25 pF

59H01 Q @ 175 MHz >1000	
59H18 Q @ 175 MHz >1000	

1000 VDC - 2 TO 30 pF

- Capacitance Range: 2 to 30 pF (>25 turns)
- Working Voltage: 1000 VDC (2000 VDC Test)
- Torque: 1 to 5.0 oz. In.
- Tuning Tool: 8764
- Gold, Silver, Chromate Finish
- RoHS Compliant

56H01 Q @ 175 MHz >1000	
56H02 Q @ 175 MHz >1000	

250 VDC - 0.4 TO 3.5 pF

- Capacitance Range: .4 to 3.5 pF (>9 turns)
- Working Voltage: 250 VDC (500 VDC Test)
- Torque: .3 to 3.0 oz. In.
- Tuning Tool: 8766
- Gold, Silver, Chromate Finish
- RoHS Compliant

5862 Q @ 100 MHz >10000	
--------------------------------------	--

250 VDC - 0.6 TO 6.0 pF

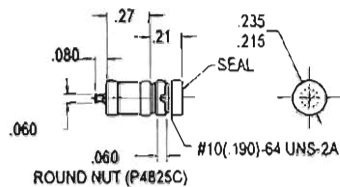
- Capacitance Range: .6 to 6 pF (>8 turns)
- Working Voltage: 250 VDC (500 VDC Test)
- Torque: .4 to 4.0 oz. In.
- Tuning Tool: 8764
- Gold, Silver, Chromate Finish
- RoHS Compliant

5760 Q @ 100 MHz >10000	
5761 Q @ 100 MHz >10000	

250 VDC - 0.6 TO 6 pF

5762

Q @ 100 MHz
>10000

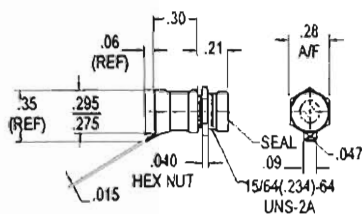


250 VDC - 0.8 TO 10 pF

- Capacitance Range: .8 to 10 pF (>6 turns)
- Working Voltage: 250 VDC (500 VDC Test)
- Torque: 1 to 5.0 oz. In.
- Tuning Tool: 8764
- Gold, Silver, Chromate Finish
- RoHS Compliant

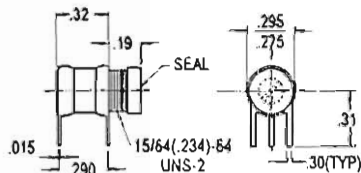
5240

Q @ 100 MHz
>4000



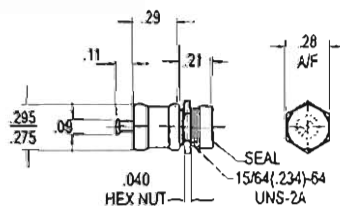
5241

Q @ 100 MHz
>4000



5242

Q @ 100 MHz
>4000

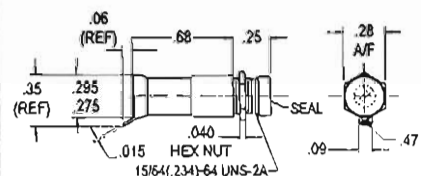


250 VDC - 1 TO 30 pF

- Capacitance Range: 1 to 30 pF (>23 turns)
- Working Voltage: 250 VDC (500 VDC Test)
- Torque: 1 to 5.0 oz. In.
- Tuning Tool: 8764
- Gold, Silver, Chromate Finish
- RoHS Compliant

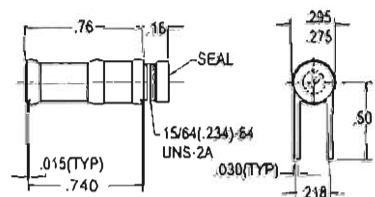
5640

Q @ 100 MHz
>800



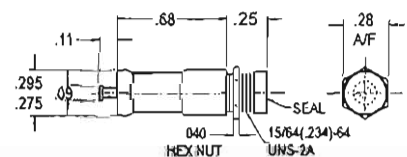
5641

Q @ 100 MHz
>800

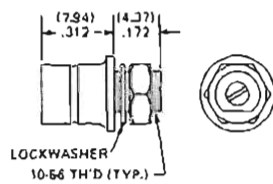


5642

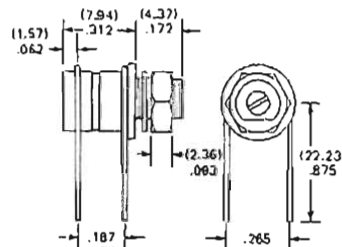
Q @ 100 MHz
>800



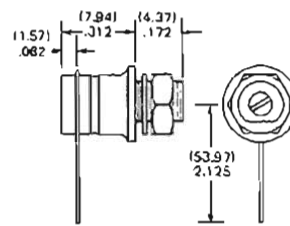
GLASS PISTON CAPACITORS



7330



7331



7334

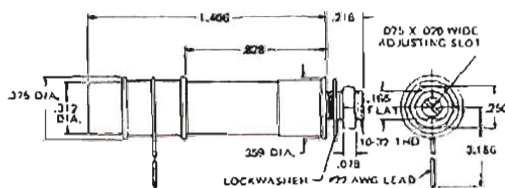
The Johanson 7330 series of variable capacitors is ideally suited for both commercial and military applications. The unique solid metal band design assures electrical and mechanical reliability in excess of conventional trimmers. The three mounting configurations available in this series give the circuit designer wide latitude in mechanical layout.

JMC PART NO.	Q FACTOR @ 100 MHz	CAPACITY RANGE pF
7330	>1000	1.0- 10
7331	>1000	1.5- 10
7334	>1000	1.0- 10

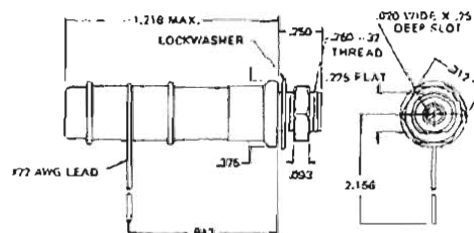
SPECIFICATIONS

Dielectric Withstanding Voltage:	Rating 500 VDC, Breakdown 1,000 VDC Max. C.	Measured @
Operating Temperature Range:	-65°C To +125°C	
Torque:	1 To 5 In. Oz. (72 To 360 g. cm.)	Average 2 In. Oz. (144 g. cm.)
Rotational Life:	>800 Revolutions	MIL-C-14409C
Insulation Resistance:	>10 ⁶ Megohms @ 500 VDC	Measured @ 25°C & 50% R.H.
Vibration:	15 g's 10-2000 Hz	MIL-STD-202E, Method 204C
Shock:	100 g's 6 Milli-seconds	MIL-STD-202E, Method 213B

HIGH RF VOLTAGE CAPACITORS



7168



7585

The Johanson 7168 and 7585 quartz trimmer capacitors feature a working voltage of 2500 VDC and 2500 volt peak RF at 30 MHz with a dielectric strength of 10,000 VDC. This series bridges the gap between the low power handling capabilities of conventional piston trimmer capacitors and the extremely high power capabilities of vacuum capacitors.

SPECIFICATIONS

Capacitance Rating:	7168 0.5 pf - 5.0 pf 7585 0.8 pf - 10.0 pf
Q Factor @ 1 MHz:	>2000
Voltage Rating:	2500 VDC & 2500v peak RF @ 30 MHz applied simultaneously.
Dielectric Strength:	10,000 VDC
Insulation Resistance @ 25°C:	>10 ⁶ megohms

Johanson Dyna-Trim™ DR Tuners



description

The Johanson DYNA-TRIM™ is a precision device designed exclusively for tuning dielectric resonator devices such as filters and oscillators. Available in 3 basic configurations, DYNA-TRIM™ is compatible to a wide variety of puck diameters and mounting configurations.

The hermetic version consists of a mounting bushing with an integral hermetically sealed dielectric window inside which a tuning rotor intercepts the puck's magnetic field.

The commercial DYNA-TRIM™ features a mounting bushing with a process seal cap and internal tuning rotor. Both the hermetic and process seal unit employ the patented slotted rotor torque mechanism.

The consumer DYNA-TRIM™ consists of a fine pitch threaded rod with a tuning slot and locking hex nut.

High Reliability versions are available on special order; to order add an "R" prefix letter to the standard Johanson part number.

applications

- Dielectric resonator oscillators
- Dielectric resonator filters

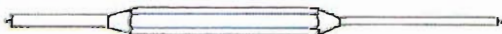
characteristics

- Contact resistance < .01Ω
- Operating temperature - 65°C to +125°C

standard configurations



JMC Tuning Tool 8777

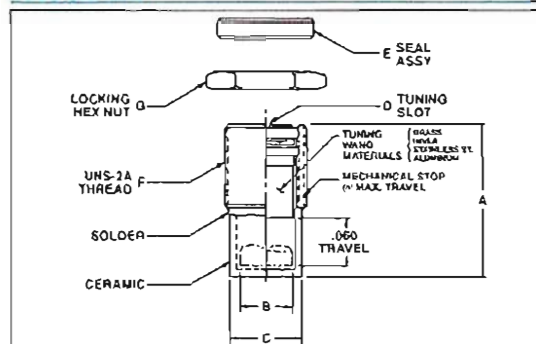


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Johanson
4000 Type

4000 SERIES

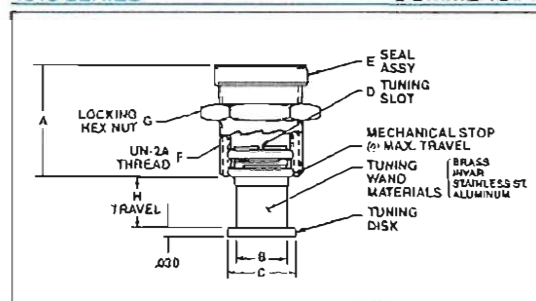
HERMETIC



JMC P/N	DIMENSIONS (INCHES)							NOM. FREQ. GHz
	A	B	C	D	E	F	G	
4003-1	.360	.245	.320	.02W x .23	.08 x .41	.375-64	.06 x .44	6
4005-1	.315	.152	.210	.02W x .14	.08 x .28	.250-64	.06 x .31	10
4007-1	.270	.084	.135	.015W x .09	.06 x .22	.190-64	.04 x .22	18

4010 SERIES

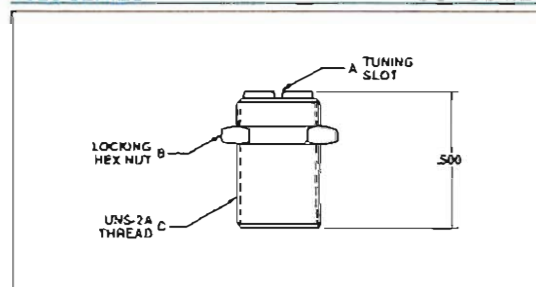
COMMERCIAL



JMC P/N	DIMENSIONS (INCHES)							NOM. FREQ. GHz
	A	B	C	D	E	F	G	
4010-1	.60	.335	.375	.03W x .32	.11 x .50	.460-32	.08 x .56	.39 2
4011-1	.47	.175	.25	.03W x .32	.11 x .50	.460-32	.08 x .56	.26 3
4012-1	.45	.19	.25	.02W x .20	.11 x .34	.312-64	.06 x .375	.28 4
4014-1								.28 9
4015-1								.11 11

4020 SERIES

CONSUMER



JMC P/N	DIMENSIONS (INCHES)			NOM. FREQ. GHz
	A	B	C	
4022-1	.03W x .32	.06 x .44	.375-64	6
4024-1	.02W x .17	.06 x .31	.250-64	8

Adjustable Microwave Diode Holders

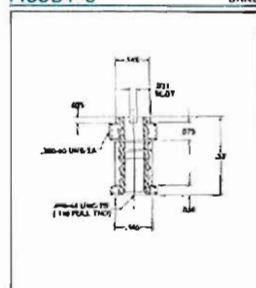
Johanson
H6900 Type

description

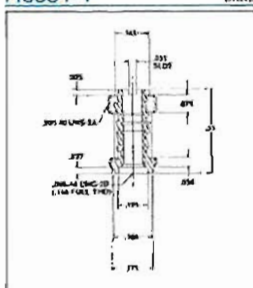
Johanson Microwave Diode Holders are an efficient and inexpensive means of securing and tuning microwave diodes into precise attitudes for optimum circuit performance. The self-locking, constant torque drive mechanism (U.S. Patent No. Re. 30,406) results in very low dynamic noise and high Q throughout the full travel excursion of the diode holder. The center access hole in the H6951 series will accept a torque screwdriver so that the diode can be mounted without danger of physical damage. Advantages include: relaxation of costly mechanical tolerances, one-hand tuning in cramped quarters, ultra precise adjustment and excellent diode to holder thermal conductivity. The type illustrated is designed for use with G.E. case styles FTC, FTG and Varian N33, N34, N57 or equivalents. For special applications contact factory.

High Reliability versions are available on special order; to order add an "R" prefix letter to the standard Johanson part number.

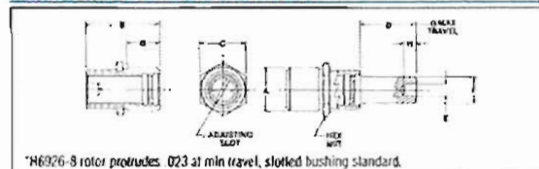
H6951-0



H6951-1



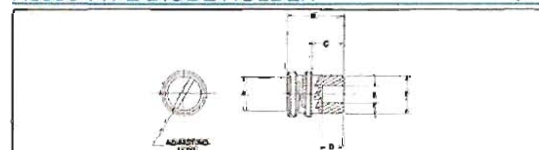
H6900 TYPE DIODE HOLDER



*H6926-8 rotor protrudes .023 at min travel, slotted bushing standard.

JMC P/N	DIMENSIONS (INCHES)								MOUNTING THREAD UNS-2A
	A	B	C	D	E	F	G	H	
H6926-8	.267	.187	.760	.106	.067	.160	.031	.090	234-64
H6928-1	.267	.450	.760	.345	.069	.160	.240	.100	234-64
H6928-5	.267	.450	.760	.345	.102	.160	.240	.100	234-64
H6928-7	.267	.450	.760	.345	.069	.160	.240	.100	234-64
H6929-1	HELX	.550	.781	.078	.057	.125	.050	.075	190-64
H6933-7	.335	.240	.160	.030	.062	.072	.075	.047	120-80
H6935-13	.267	.368	.209	.030	.152	.162	.144	.055	234-64

H6900 TYPE DIODE HOLDER



JMC P/N	DIMENSIONS (INCHES)						THREAD UNS-2A
	A	B	C	D	E	F	
H6996-10	.120	.180	.076	.075	.067	.125	156-64
H6997-7	.145	.450	.346	.100	.069	.160	190-64
H6997-8	.145	.210	.106	.090	.067	.160	190-64
H6997-11	.145	.450	.346	.100	.102	.160	190-64

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Johanson Phase-Trim®

Johanson
3050 Type

description

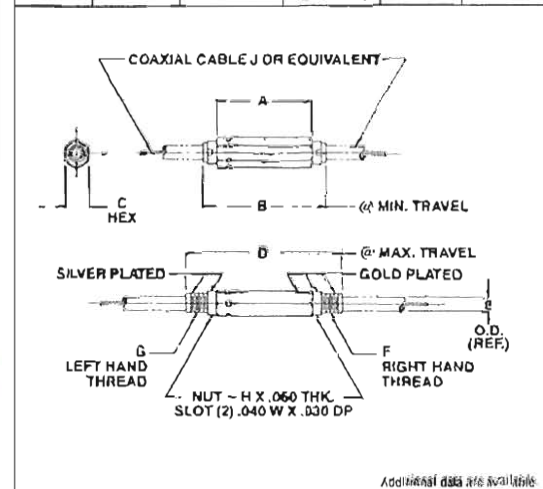
The JOHANSON PHASE-TRIM® is a low noise, high resolution mechanical line stretcher which permits adjustments of cable phase length under actual operating conditions.

When installed in a microwave transmission line the JOHANSON PHASE-TRIM® will control the line length and therefore the relative phase angle of the wave energy transmitted. Unlike the cut-and-try method, PHASE-TRIM® can be easily reset in the factory or the field.

The 3050 series is designed specifically for .141 and .085 diameter semi-rigid cable. Installation is similar to that of an SMA connector and permits .20" of cable assembly phase length adjustment. The self-locking, constant torque drive mechanism (U.S. Patent No. Re. 30,406) provides virtually noise free adjustment with micrometer accuracy over the operating frequency range of the cable. Spanner locking nuts are provided to prevent unintentional adjustments.

High Reliability versions are available on special order; to order add an "R" prefix letter to the standard Johanson part number.

JMC P/N	IMPEDANCE	MECHANICAL ADJUSTMENT	PHASE ADJUSTMENT RANGE	TORQUE OZ. IN.	MATERIAL
3050-0	50 Ω	>6 TURNS	0° to 30° @ 8.2 GHz	1.0 to 5.0	BRASS, BeCu
3050-1		>7 TURNS	0° to 50° @ 12.4 GHz	0.5 to 3.0	



Additional data are available.

JMC P/N	DIMENSIONS (INCHES)									
	A	B	C	D	E	F	G	H	J	
3050-0	.78	.58	.219	1.08	.14	.190-64 UNS-2A	.190-64 (UNS-2A-LH)	.218	111- 141	
3050-1	.53	.81	.156	1.02	.087	.120-80 UNS-2A	.120-80 (UNS-2A-LH)	.156	UT- 85	

Spanner Locking Wrench
JMC 4953



Microwave Tuning Elements



description

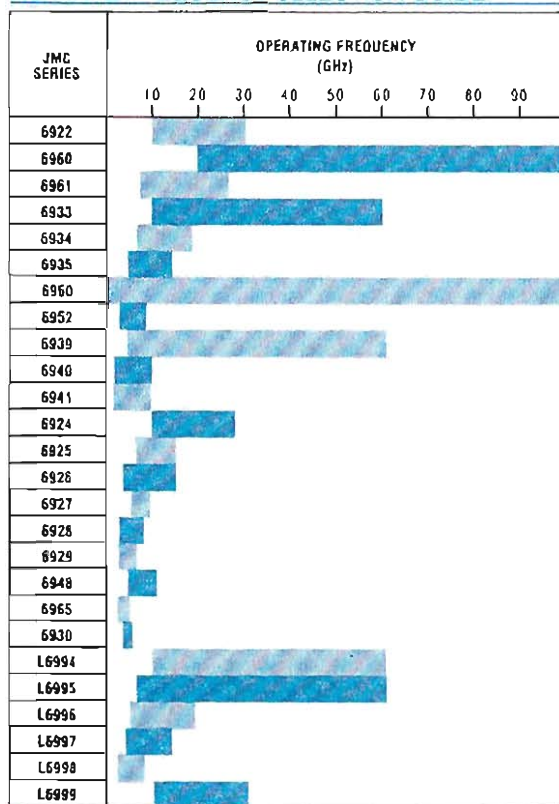
Microwave tuning elements are an economical means of introducing a variable reactance to waveguides, cavities and other microwave structures. They are excellent for applications requiring precision, low loss high resolution tuning. The self-locking, constant torque drive mechanism (U.S. Patent No. Re. 30,406) eliminates the need for locking nuts and assures stable, noise free adjustment in application from DC to W band. A microwave tuning element consists of a mounting bushing with an integral tuning rotor.

High Reliability versions are available on special order; to order add an "R" prefix letter to the standard Johanson part number.

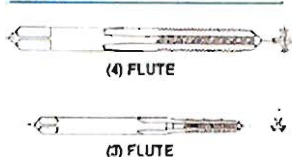
applications

- Combine filters
- Interdigital filters
- Impedance transformers
- Input and Gunn oscillators
- Microstrip and strip-line circuits
- Attenuators
- Coaxial structures
- Waveguide circuitry

NOMINAL FREQUENCY SELECTION GUIDE

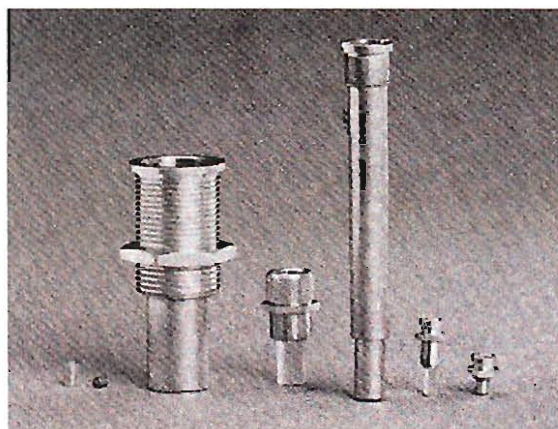


TAPS

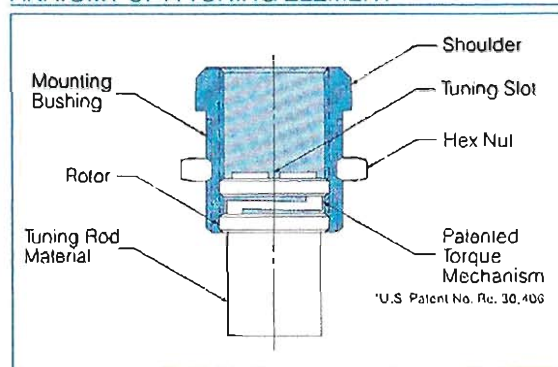


JMC P/N	THREAD SIZE	RECOMMENDED TAP DRILL
7859	156-64	9/64 (1406)
7860	120-80	7/64 (1094)
7861	190-64	#17 (173)
7862	234-64	7/32 (2187)
7863	250-64	15/64 (2344)

JMC P/N	THREAD SIZE	RECOMMENDED TAP DRILL
7864	094-80	#45 (627)



ANATOMY OF A TUNING ELEMENT



OPTIONAL CONFIGURATIONS

Bushing Options	STANDARD	SLOTTED	UNDERCUT	MIN/MAX STOP
Bushing External Mounting Threads	80 threads/in. 094-80 UNS 120-80 UNS	64 threads/in. .156-64 UNS 190-64 UNS 234-64 UNS	32 threads/in. 250-64 UNS 312-64 UNS 375-64 UNS	469-32 UNS
Other thread sizes available upon request				
Rotor Options TIR 1% nominal	STANDARD	TWO PIECE ROD MAT'L Aluminum Stainless Quartz Inconel	HIGH RESOLUTION PISTON	SEALED CONSTRUCTION
Rotor Threads	103 threads/in. 060-108 UNS	80 threads/in. 060-80 UNS 094-80 UNS 120-80 UNS 200-80 UNS	64 threads/in. .156-64 UNS 190-64 UNS 234-64 UNS 375-64 UNS	
Other thread sizes available upon request				
Surface Finishes	GOLD	CHROMATE	SILVER	TIN
Hardware	HEX NUT	ROUND NUT	LOCK-WASHER	SEAL CAP SLOTTED SEAL CAP

ELECTRONIC ACCURACY THROUGH MECHANICAL PRECISION

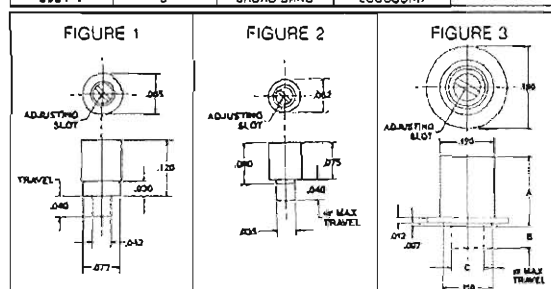


mmWAVE
DIELECTRICRESISTIVE
INDUCTIVE/CAPACITIVE

mmWAVE

The millimeter wave tuning elements are higher frequency versions of both the metallic and dielectric tuning elements described in this catalog.

JMC P/N	FIGURE #	NOMINAL FREQ. BAND	ROD MATERIAL	EXTERNAL MOUNTING
6922	1	X and K	METALLIC	SOLDER, EPOXY OR PRESS-FIT
6960-0	2	K and up	SAPPHIRE	
6960-1	2	K and up	QUARTZ	
6960-3	2	K and up	METALLIC	
6961-0	3	X and K	METALLIC	
6961-1	3	BROAD BAND	ECCOSORB	

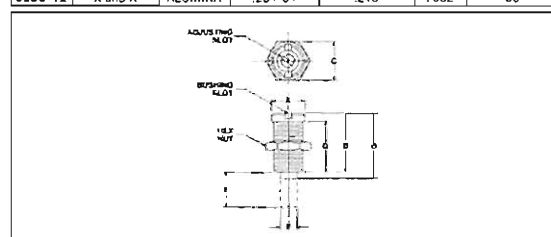


JMC P/N	DIMENSIONS (INCHES)		
	A	B	C
6961-0	.150	.048	.072
6961-1	.177	.055	.062

DIELECTRIC

The use of dielectric tuning elements is suggested whenever the lowest loss tuning for high frequency applications is required. In addition to low loss properties, dielectric tuning elements increase the net effective tuning resolution beyond that of their metallic counterparts.

JMC P/N	NOMINAL FREQ. BAND	ROD MATERIAL	EXTERNAL THREAD UNS-2	RECOMMENDED TAP DRILL	JMC TAP #	MOUNTING TORQUE OZ. IN.
6933-3	K	QUARTZ	.120-80	.109	7060	10
6933-4	X and K	SAPPHIRE	.120-80	.109	7060	10
6933-6	C, X and K	SAPPHIRE	.234-64	.219	7062	50
6935-10	X and K	SAPPHIRE	.234-64	.219	7062	50
6935-12	X and K	ALUMINA	.234-64	.219	7062	50



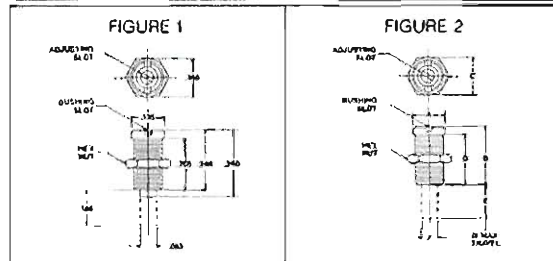
JMC P/N	DIMENSIONS (INCHES)						
	A	B	C	D	E	F	G
6933-3	.135	.260	-	.240	.168	.052	.205
6933-4	.135	.260	.160	.240	.168	.052	.205
6933-6	.267	.219	.280	.210	.115	.152	.175
6935-10	.267	.369	.280	.359	.265	.152	.215
6935-12	.267	.629	.280	.359	.525	.152	.215

ROD MATERIAL	APPROXIMATE $A_c @ 10 \text{ GHz}$	APPROXIMATE DF @ 10 GHz
SAPPHIRE	9.9	.0001
QUARTZ	3.8	.0001
ALUMINA 99.5%	9.7	.0002

RESISTIVE

The 6950 series tuning elements provide a method of attenuating varying amounts of microwave energy when mounted properly in microwave amplifiers, oscillators and other microwave circuitry. The magnetically loaded epoxide rod was chosen for its broad band lossy properties.

JMC P/N	FIG. #	NOMINAL FREQ. BAND	ROD MATERIAL	EXTERNAL PIEZO UNS-2	RECOMMENDED TAP DRILL	JMC TAP #	MOUREN TORQUE OZ. IN.
6950-2	1	BROAD BAND	ECCOSORB	.120-.80	.109	7065	10
6950-3	2			.120-.80	.109	7060	10
6952-1	2			.234-.64	.219	7062	50

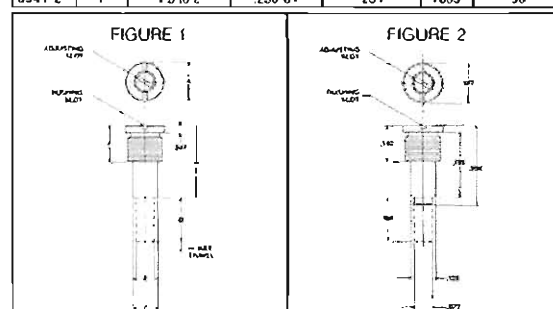


JMC P/N	DIMENSIONS (INCHES)					
	A	B	C	D	E	F
6950-3	.135	.240	.160	.205	.130	.078
6952-1	.267	.350	.280	.215	.250	.152

INDUCTIVE/CAPACITIVE

Designed specifically for filter applications, the LC tuning elements are variations of the standard metallic units. When used in filter sections of approximately 76 ohms impedance, LC tuning elements offer optimum resonator Q for high selectivity. Combine, interdigital and coaxial cavity filters are among the suggested applications for LC tuning elements.

JNC P/N	FIG. #	NOMINAL FREQ. GHz	EXTERNAL THREAD UNITS	RECOMMENDED TAP DRILL	JNC TAP #	MOUNTING TORQUE OZ. IN
6939-1	1	6 to 10	.156-.64	.141	7059	20
6939-2	1	6 to 10	.156-.64	.141	7059	20
6939-9	1	5 to 6.5	.156-.64	.141	7059	20
6939-23	2	20 to 60	.156-.64	.141	7059	20
6940-1	1	4 to 7	.234-.64	.218	7062	50
6941-1	1	2 to 3	.250-.64	.234	7063	90
6941-2	1	1.5 to 2	.250-.64	.234	7062	90

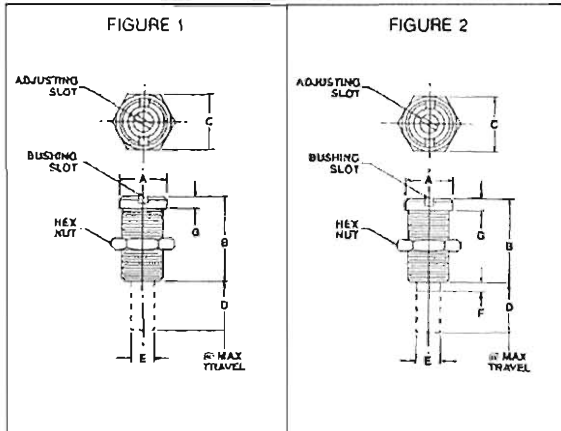


JMC P/N	DIMENSIONS (INCHES)					
	A	B	C	D	E	F
6939-1	.187	.355	.120	.148	.072	.232
6939-2	.187	.482	.120	.148	.072	.232
6939-9	.187	.602	.120	.148	.072	.152
6940-1	.265	.557	.170	.450	.125	.232
6941-1	.281	1.232	.210	.346	.160	.232
6941-2	.281	1.582	.210	.346	.160	.212

METALLIC

Metallic tuning elements consist of a mounting bushing with an integral tuning rotor. The rotor's patented low noise, self-locking torque mechanism provides smooth, high resolution tuning over its entire travel without need of locknuts or jam screws.

JMC P/N	FIG. #	NOMINAL FREQ. BAND	EXTERNAL THREAD UNS-2	RECOMMENDED TAP DRILL	JMC TAP #	MOUNTING TORQUE OZ. IN.
6924-9	1	X and K	.120-80	.109	7060	10
6924-10	2	X and K	.120-80	.109	7060	10
6924-11	1	X and K	.120-80	.109	7060	10
6924-12	2	X and K	.120-80	.109	7060	10
6925-4	1	C and X	.190-64	.173	7061	30
6925-5	1	C and X	.190-64	.173	7061	30
6926-13	1	C and X	.234-64	.219	7062	50
6926-14	1	C and X	.234-64	.219	7062	50
6926-16	2	C and X	.234-64	.219	7062	50
6926-17	2	C and X	.234-64	.219	7062	50
6927-3	1	C and X	.234-64	.219	7062	50
6928-3	1	C	.234-64	.219	7062	50
6928-6	1	C	.234-64	.219	7062	50
6929-2	1	C	.190-64	.173	7061	30
6934-2	2	C, X and K	.234-64	.219	7062	50
6948-1	1	C and X	.312-64	.297	-	120
6965-1	1	L and S	.469-32	.438	-	240

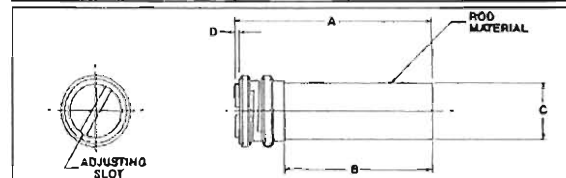


JMC P/N	FIG. #	DIMENSIONS (INCHES)							
		A	B	C	D	E	F	G	
6924-9	1	.135	.240	.156	.148	.072	-	.035	
6924-10	2	.135	.170	.156	.075	.072	.047	.035	
6924-11	1	.135	.240	.156	.075	.072	-	.035	
6924-12	2	.135	.170	.156	.030	.072	.002	.035	
6925-4	1	.210	.250	.220	.148	.125	-	.037	
6925-5	1	.210	.125	.220	.023	.125	-	.037	
6926-13	1	.267	.210	.280	.106	.160	-	.035	
6926-14	1	.267	.130	.280	.025	.160	-	.035	
6926-16	2	.267	.187	.280	.106	.160	.023	.031	
6926-17	2	.267	.210	.280	.080	.160	.074	.035	
6927-3	1	.267	.360	.280	.255	.160	-	.145	
6928-3	1	.267	.450	.280	.340	.160	-	.240	
6928-6	1	.267	.450	.280	.345	.160	-	.240	
6929-2	1	.210	.552	.220	.450	.125	-	.042	
6934-2	2	.267	.352	.280	.265	.152	.010	.144	
6948-1	1	.375	.363	.380	.234	.210	-	.040	
6965-1	1	.531	.720	.560	.560	.345	-	.040	

TUNING ROTORS

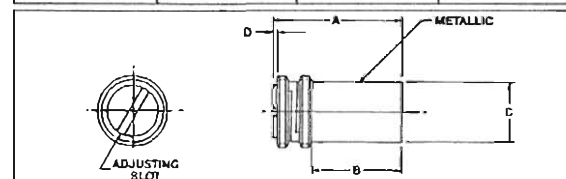
Extended range high Q dielectric and metallic rotors are used where direct insertion of the tuning element is desired. Taps designed specifically to insure proper fit are available from the factory and are listed below.

JMC P/N	ROD MATERIAL	THREAD UNS-2A	RECOMMENDED TAP DRILL	JMC TAP #
6930-0	QUARTZ	.375-64	.359	-
6930-3	ALUMINA	.190-64	.173	7061
6930-5	ALUMINA	.190-64	.173	7061
6930-7	ALUMINA	.190-64	.173	7061
6930-9	SAPPHIRE	.094-80	.082	7064
6930-15	ALUMINA	.190-64	.173	7061
6930-17	ALUMINA	.190-64	.173	7061



JMC P/N	DIMENSIONS (INCHES)				
	A	B	C	D	ADJUSTING SLOT W x L
6930-0	.652	.372	.320	.030	.060 x .320
6930-3	.475	.345	.152	.010	.020 x .145
6930-5	.625	.495	.152	.010	.020 x .145
6930-7	.684	.750	.152	.010	.020 x .145
6930-9	.300	.178	.062	.020	.015 x .060
6930-15	.430	.300	.152	.010	.020 x .145
6930-17	.674	.490	.062	.020	.020 x .145

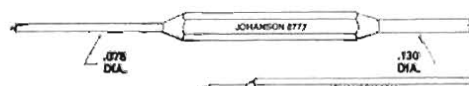
JMC P/N	THREAD 2A	RECOMMENDED TAP DRILL	JMC TAP #
L6994-0	.096-56 UNC	.067	-
L6995-0	.094-80 UNS	.082	7064
L6996-1	.156-64 UNS	.141	7059
L6997-0	.190-64 UNS	.173	7061
L6998-0	.375-64 UNS	.359	-
L6999-0	.060-80 UNF	.047	-



JMC P/N	DIMENSIONS (INCHES)				
	A	B	C	D	ADJUSTING SLOT W x L
L6994-0	.215	.100	.060	.020	.015 x .060
L6995-0	.122	.030	.072	.020	.015 x .060
L6996-1	.250	.148	.125	.010	.020 x .120
L6997-0	.554	.450	.160	.010	.020 x .145
L6998-0	.370	.150	.345	.030	.060 x .320
L6999-0	.500	.385	.040	.020	.010 x .040

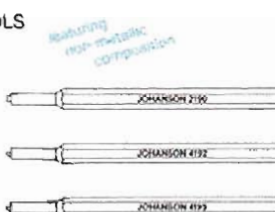
Tuning Tools

SLOT TUNING TOOLS



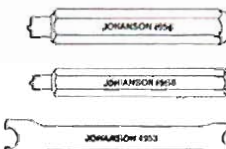
JMC P/N	APPLICATION
8777	.130 DIA. { 5200 5400 5500 5600 STANDARD AIR SERIES 5700 MINIATURE AIR SERIES 9300 CERAMIC TRIMMER SERIES } .078 DIA. { 27270 27280 27290 } GIGA-TRIM® SERIES 5800 MINIATURE AIR SERIES
8762	27260 GIGA-TRIM® SERIES 6922 TUNING ELEMENT

SQUARE DRIVE TUNING TOOLS



JMC P/N	APPLICATION
2190	9690 SEAL-TRIM® SERIES 9910 THIN-TRIM® SERIES
4192	9401 THIN-TRIM® SERIES 9402 THIN-TRIM® SERIES 9620 SEAL-TRIM® SERIES 9630 SEAL-TRIM® SERIES
4193	9410 THIN-TRIM® SERIES 9610 SEAL-TRIM® SERIES

ROUND NUT WRENCHES



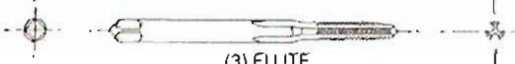
JMC P/N	APPLICATION
4956	5700 MINIATURE AIR SERIES
4958	5800 MINIATURE AIR SERIES
4953	3050 PHASE-TRIM® SERIES

Taps



(4) FLUTE

JMC P/N	THREAD SIZE UNS-2	RECOMMENDED TAP DRILL
7057	.200-80	3/16 (.1875)
7059	.156-64	9/64 (.1406)
7060	.120-80	7/64 (.1094)
7061	.190-64	# 17 (.173)
7062	.234-64	7/32 (.2187)
7063	.250-64	15/64 (.2344)



(3) FLUTE

JMC P/N	THREAD SIZE UNS-2	RECOMMENDED TAP DRILL
7084	.094-60	#45 (.082)

JOHANSON MANUFACTURING CORPORATION, ROCKAWAY VALLEY ROAD, BOONTON, NEW JERSEY USA 07005 201-334-2676 FAX 201-334-2954 TWX 710 987-8367

Hardware

		JMC P/N		
		MOUNTING THREAD UNS-2		
		.234-64	.190-64	.120-80
	STANDARD SEAL ASS'Y	3978	4674	6775
	NON-MAGNETIC TYPE	8877	8876	8875
	SLOTTED SEAL ASS'Y	4613	6486	6487
	MIN. STOP SEAL ASS'Y	3237	3236	3235
	NON-MAGNETIC TYPE	8877-1	8876-1	8875-1
	HEX NUT	3469	4537	6389
	NON-MAGNETIC TYPE	8882	8881	-
	ROUND NUT	6545	4825	4680
	NON-MAGNETIC TYPE	-	8879	8880
	LOCKWASHER (NON-MAGNETIC)	1999	1994	1993
	INSULATED ADAPTERS	6515	6516	6517
		8705	8702	8701

Care and Handling

MOUNTING: Recommended mounting torque for bushing mounted capacitors:

BUSHING THREAD	TORQUE OZ. IN.
.234-64	50
.190-64	30
.120-80	10

SOLDERING: Use low temperature solder. Use a temperature controlled 40 watt iron for most applications. Solder joint should be made in 3 seconds or less. Suggested tip temperature 500°F. Do not solder directly to bushing or stator.

CLEANING: Capacitors should be protected from penetration of cleaning solvents as they tend to wash in flux and wash out lubricant.

AIR CAPACITORS

Clean with seal caps securely in place.

GIGA-TRIM® CAPACITORS & MINI-TRIM® CAPACITORS

Install after circuit boards are cleaned. If not possible, use a small plastic cap to prevent solvent from washing out rotor lubricant.

SEAL-TRIM® CAPACITORS & CERA-TRIM® CAPACITORS

Withstand solvent cleaning and are well suited to water cleaning.

THIN-TRIM® CAPACITORS

Withstand solvent cleaning. Rough torque or binding of the rotor can be caused by dirty solvents. If this occurs, reclean the capacitor in fresh solvent and dry thoroughly.

ADJUSTING: Always use the recommended tuning tool.

Johanson tuning tools are designed specifically for tuning Johanson products; use of other tools may damage the internal bushing thread causing the rotor to bind.

Prototyping Kits

Johanson
JK-Type



For prototyping specify:

AIR DIELECTRIC

JK-500 CAPACITOR KIT

QTY.	UNIT	RANGE pF
3	5201	.8 to 10
3	5202	.8 to 10
3	5701	0 to 6
3	5702	.6 to 6
3	5801	.35 to 3.5
3	5802	.35 to 3.5
1	8777	TUNING TOOL

GIGA-TRIM®

JK-272 CAPACITOR KIT

QTY.	UNIT	RANGE pF
3	27261	.3 to 1.2
3	27263	.3 to 1.2
3	27271	.6 to 4.5
3	27284	.4 to 2.5
3	27285	.4 to 2.5
3	27291	.8 to 8
1	8762	TUNING TOOL
1	8777	TUNING TOOL

CERA-TRIM®

JK-023 SURFACE MOUNT CAPACITOR KIT

QTY.	UNIT	RANGE pF
4	2320-0	.6 to 2.5
4	2320-1	1 to 5
4	2320-2	2.5 to 10
4	2320-3	5 to 18
4	2320-4	6.5 to 25
1	4192	TUNING TOOL
1		SAMPLE 12mm TAP

THIN-TRIM®

JK-940 CAPACITOR KIT

QTY.	UNIT	RANGE pF
5	9410-0	1 to 4.5
5	9410-1	2.5 to 10
5	9410-2	4 to 18
5	9410-3	6 to 35
1	4193	TUNING TOOL

JK-941 CAPACITOR KIT

QTY.	UNIT	RANGE pF
5	9401-0	.25 to .7
5	9401-1	.5 to 1.3
5	9401-2	.6 to 2
5	9401-4	1.5 to 4
1	4192	TUNING TOOL

JK-942 CAPACITOR KIT

QTY.	UNIT	RANGE pF
4	9402-0	.6 to 2.5
4	9402-1	1 to 5
4	9402-2	2.5 to 10
4	9402-6	.6 to 25
4	9402-8	5 to 15
4	9402-9	5 to 18
1	4192	TUNING TOOL

SEAL-TRIM®

JK-960 CAPACITOR KIT

QTY.	UNIT	RANGE pF
3	9610	1 to 4.5
3	9611	2.5 to 10
3	9612	4 to 18
3	9613	6 to 35
3	9614	7 to 40
3	9615	5 to 25
1	4193	TUNING TOOL

JK-962 CAPACITOR KIT

QTY.	UNIT	RANGE pF
4	9620	.6 to 2.5
4	9621	1 to 5
4	9622	2.5 to 10
4	9629	5 to 18
1	4192	TUNING TOOL

JK-963 CAPACITOR KIT

QTY.	UNIT	RANGE pF
4	9692	6 to 25
4	9694	7.5 to 50
4	9697	20 to 100
1	2190	TUNING TOOL

CERAMIC TRIMMER

JK-930 CAPACITOR KIT

QTY.	UNIT	RANGE pF
5	9308	2.5 to 23
5	9309	4 to 34
5	9310	5.5 to 45
10	9372	3 to 10
10	9374	5 to 25
3	9382	3.5 to 20
1	8777	TUNING TOOL

MICROWAVE TUNING ELEMENT

JK-890 TUNING ELEMENT KIT

QTY.	UNIT	MAX TRAVEL	ROD DIA.
5	6924-9	.148	.072
5	6925-4	.148	.125
5	6926-13	.106	.160
5	6927-3	.255	.160
3	6928-3	.340	.160
4	6933-3	.168	.062
1	7050		.120-80 TAP
1	7051		.190-64 TAP
1	7062		.234-64 TAP

JOHANSON PHASE-TRIM®

JK-350 JOHANSON PHASE-TRIM® KIT

QTY.	UNIT	REF. COAXIAL CABLE DIA.
3	3050-0	.141
1	4953	LOCKING WRENCH

JK-351 JOHANSON PHASE-TRIM® KIT

QTY.	UNIT	REF. COAXIAL CABLE DIA.
3	3050-1	.085
1	4953	LOCKING WRENCH

JOHANSON MANUFACTURING CORPORATION, ROCKAWAY VALLEY ROAD, BOONTON, NEW JERSEY USA 07005 201-334-2676 FAX: 201-334-2954 TWX 710-987-8367
Johanson Manufacturing Corporation reserves the right to make design and price changes without notice.



Precision Screw Machining and Electroplating

Equipment

32 Tornos cam machines 3/32"-3/8"
(2.4mm-10mm)
15 with Iemca automatic barloaders
12 Star CNC machines 3/32"-1 1/4" (2.4mm-
32mm)
All with Iemca automatic barloaders

Common Materials

Brass 360 Half hard
Phosphor Bronze
Teflon
Delrin
ABS Plastic
Titanium
Invar 36
303 , 416 , 440 Stainless steels
Copper alloy C1100
Aluminum 6061-T6 and 2011-T3

Tolerances:

+.0002/- .0002 on diameters
+.0005/- .0005 on lengths in brass,
phosphor bronze and aluminum
+.0005/- .0005 on diameters and
lengths in stainless and tool steels

- ☐ ISO 9001:2000
Certified
- ☐ Plating Meets Military
and ASTM
Certifications
- ☐ X-Ray measurement
- ☐ In-house chemical
control laboratory to
maintain chemistry of
plating solutions
- ☐ Zero Discharge
System

Plating Finishes

Gold
Silver
Nickel
Copper
Bright Tin
60/40 Tin Lead
Electroless Nickel

Surface Finishes

Passivation
Chromate
Anodizing