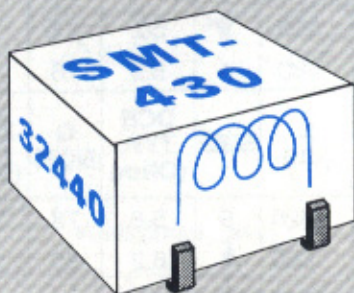


# EC<sup>2</sup>



## TOROIDAL INDUCTORS

*Miniature  
Low Silhouette*

**SURFACE MOUNT**

**RF/LOW POWER**

- Fully encapsulated Surface Mount design
- High Q
- Low external magnetic field
- Stable powdered iron cores
- High Self-resonant frequency

## design notes

Toroidal inductors described in this brochure are manufactured of the highest quality raw materials utilizing powdered iron core material; they are provided as square low silhouette units with surface mount leads to realize maximum inductance per unit volume.

These toroidal inductors are designed to provide the utmost in versatility for RF/low power applications in computers, filters, instruments, missiles, aircraft, business machines, communications equipment and similar type applications. They are designed for printed circuit board surface mount applications; lead design provides positive standoff to allow flush cleaning of solder-flux residue from under the component after the soldering operation.

These inductors are designed and manufactured to obtain minimum distributed capacity, maximum Q, and the highest self resonant frequency in the smallest possible package size. Phosphor-bronze or beryllium copper surface mount leads are attached and the entire unit is encapsulated in the housing with epoxy resin. Leads are tin-

plated per MIL-P-81728, semi-bright. Housing material is Vectra<sup>®</sup>, a liquid crystal polymer plastic meeting the requirements of MIL-M-24519C. Vectra<sup>®</sup> can be used continuously at 254°C (489°F), has a melt point of 280°C (538°F), is inherently flame retardant and meets the flammability requirements of UL 94V-0.

These toroidal inductors are designed to meet the applicable portions of Specification MIL-C-15305, Grade I, Class B. Temperature coefficient of inductance is less than 400ppm/°C over the operating temperature range of -55 to +125°C. Inductors are capable of withstanding 500 V DC @ 50 microamps applied between inductor to case.

Standard inductance tolerance is  $\pm 5\%$  for values 2.0uH and above and  $\pm 10\%$  for inductances less than 2.0uH; however, units can be supplied to closer tolerances on special order. All measurements of inductance and Q are obtained at frequencies as specified in Specification MIL-C-15305. Standard apparent inductance values are shown in the following tables. Since apparent inductance varies with AC/DC current values, each end application should be evaluated to ensure proper specification of inductance value. To assist in selecting optimal inductance during prototyping and breadboarding, toroid inductor kits are available. Inductance is measured on HP 4262A and 4284A/42841A LCR Meters; Q is measured utilizing HP 4342A Q Meter; and self resonant frequency is obtained utilizing a HP 4195A Network Analyzer. Tabulated current ratings are those calculated to cause a 25°C rise in case temperature.

Marking consists of manufacturer's logo (EC<sup>2</sup>), part number, terminal identification and date code of manufacture. All marking is applied by silkscreen process using blue epoxy paint in accordance with MIL-STD-130, to meet the permanency of identification required by MIL-STD-202, Method 215.

Vectra<sup>®</sup> is a registered trademark of Hoechst Celanese Corporation.

# EC<sup>2</sup>

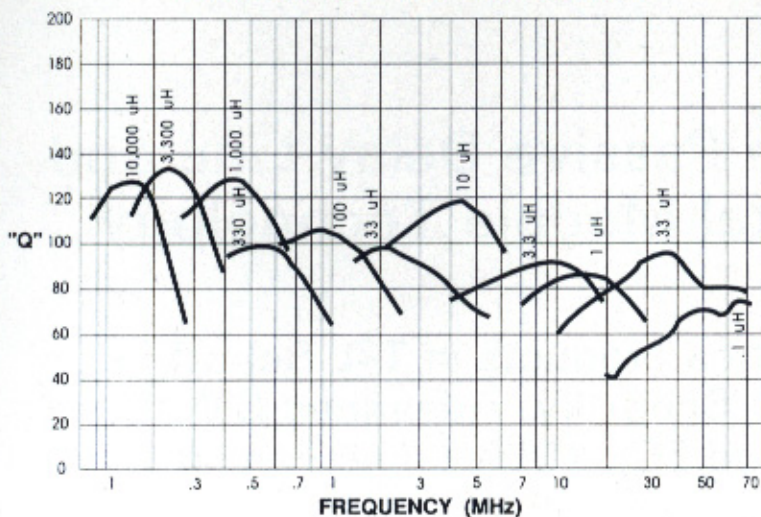
**engineered components company**

3580 Sacramento Drive, P.O. Box 8121, San Luis Obispo, CA 93403-8121

Phone: (805) 544-3800



# TYPICAL "Q" VS FREQUENCY

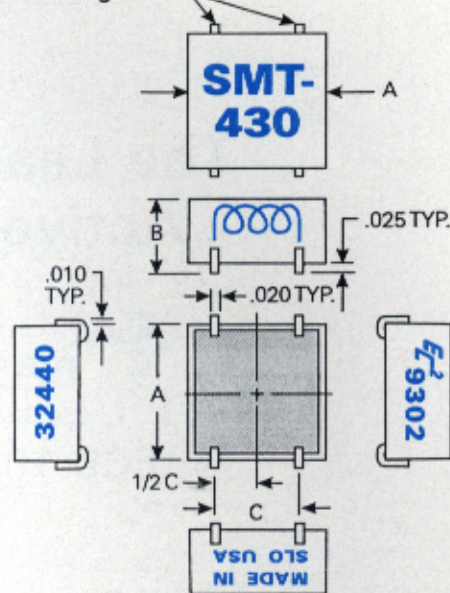


L (IN uH)	L AND Q TEST FREQUENCY
.10 to 1.0	25 MHz
1.0 to 10.0	7.9 MHz
10.0 to 100.0	2.5 MHz
100.0 to 1,000.0	790 KHz
1,000.0 and above	250 KHz

## PART NUMBER TABLE

PART NUMBER	L (uH)	SIZE	DCR TYP. (Ohm)	Q NOM	SRF TYP. (Mhz)	RATED I <sub>dc</sub> (mA)
SMT-0.10	.10	1	0.16	55	550	1580
SMT-0.11	.11	↑	0.13	55	540	1750
SMT-0.12	.12	↑	0.14	55	530	1690
SMT-0.13	.13	↑	0.14	57	510	1690
SMT-0.15	.15	↑	0.18	58	490	1490
SMT-0.16	.16	↑	0.18	57	480	1490
SMT-0.18	.18	↑	0.18	57	470	1490
SMT-0.20	.20	↑	0.19	60	450	1450
SMT-0.22	.22	↑	0.19	58	420	1450
SMT-0.24	.24	↑	0.20	60	410	1410
SMT-0.27	.27	↑	0.22	60	390	1350
SMT-0.30	.30	↑	0.23	62	360	1320
SMT-0.33	.33	↑	0.23	64	340	1320
SMT-0.36	.36	↑	0.24	63	320	1290
SMT-0.39	.39	↑	0.25	63	310	1260
SMT-0.43	.43	↑	0.26	65	290	1240
SMT-0.47	.47	↑	0.27	65	270	1220
SMT-0.51	.51	↑	0.30	65	260	1150
SMT-0.56	.56	↑	0.30	65	240	1150
SMT-0.62	.62	↑	0.31	62	230	1140
SMT-0.68	.68	↑	0.32	65	210	1120
SMT-0.75	.75	↑	0.35	67	200	1070
SMT-0.82	.82	↓	0.36	65	190	1050
SMT-0.91	.91	1	0.37	65	180	1040

## Dummy Mounting Pins



A = WIDTH AND LENGTH B = HEIGHT C = LEAD SPACING

SIZE	A	B	C
1	.250	.200	.150
2	.300	.200	.200
3	.350	.275	.250
4	.400	.275	.300
5	.500	.275	.400
6	.600	.325	.500

PART NUMBER	L (uH)	SIZE	DCR TYP. (Ohm)	Q NOM	SRF TYP. (Mhz)	RATED I <sub>dc</sub> (mA)
SMT-1.0	1.0	1	0.26	73	170	1240
SMT-1.1	1.1	↑	0.30	73	160	1150
SMT-1.2	1.2	↑	0.30	75	150	1150
SMT-1.3	1.3	↑	0.30	75	140	1150
SMT-1.5	1.5	↑	0.30	76	130	1150
SMT-1.6	1.6	↑	0.30	82	120	1150
SMT-1.8	1.8	↑	0.40	82	115	1000
SMT-2.0	2.0	↑	0.40	90	110	1000
SMT-2.2	2.2	↑	0.40	87	105	1000
SMT-2.4	2.4	↑	0.50	92	100	890
SMT-2.7	2.7	↑	0.50	92	91	890
SMT-3.0	3.0	↑	0.50	92	85	890
SMT-3.3	3.3	↑	0.50	85	80	890
SMT-3.6	3.6	↑	0.50	90	75	890
SMT-3.9	3.9	↑	0.60	85	70	820
SMT-4.3	4.3	↑	0.60	85	66	820
SMT-4.7	4.7	↑	0.60	80	64	820
SMT-5.1	5.1	↑	0.60	76	60	820
SMT-5.6	5.6	↑	0.60	73	57	820
SMT-6.2	6.2	↓	0.60	78	54	820
SMT-6.8	6.8	1	0.60	75	51	760



PART NUMBER	L (uh)	SIZE	DCR TYP. (Ohm)	Q NOM	SRF TYP. (Mhz)	RATED I <sub>dc</sub> (mA)
SMT-7.5	7.5	2	0.8	84	48	750
SMT-8.2	8.2	↑	0.9	85	45	710
SMT-9.1	9.1	↑	0.9	80	42	710
SMT-10	10	↑	0.9	90	40	710
SMT-11	11	↑	1.0	94	38	670
SMT-12	12	↑	1.1	96	35	640
SMT-13	13	↑	1.1	94	34	640
SMT-15	15	↑	1.2	96	32	610
SMT-16	16	↑	1.2	96	30	610
SMT-18	18	↑	1.3	96	28	590
SMT-20	20	↑	1.4	96	26	570
SMT-22	22	↑	1.5	93	24	550
SMT-24	24	↑	1.5	90	23	550
SMT-27	27	↑	1.6	98	21	530
SMT-30	30	↑	1.7	92	20	510
SMT-33	33	↑	1.8	86	19	500
SMT-36	36	↑	1.9	84	18	490
SMT-39	39	↑	2.0	81	17	470
SMT-43	43	↓	2.0	78	16	470
SMT-47	47	2	2.2	75	15	450

PART NUMBER	L (uh)	SIZE	DCR TYP. (Ohm)	Q NOM	SRF TYP. (Mhz)	RATED I <sub>dc</sub> (mA)
SMT-51	51	3	2.5	110	14	450
SMT-56	56	↑	2.4	102	13	460
SMT-62	62	↑	2.6	104	12	440
SMT-68	68	↑	2.9	98	12	420
SMT-75	75	↑	3.0	95	11	410
SMT-82	82	↑	3.1	95	10	400
SMT-91	91	↑	3.2	92	10	400
SMT-100	100	↑	3.3	102	9	390
SMT-110	110	↑	3.8	105	9	360
SMT-120	120	↑	3.8	105	8	360
SMT-130	130	↑	3.9	100	8	360
SMT-150	150	↑	4.3	103	7	340
SMT-160	160	↓	4.4	105	7	340
SMT-180	180	3	4.9	103	6	320

PART NUMBER	L (uh)	SIZE	DCR TYP. (Ohm)	Q NOM	SRF TYP. (Mhz)	RATED I <sub>dc</sub> (mA)
SMT-200	200	4	5.0	100	6	350
SMT-220	220	↑	5.4	100	5	330
SMT-240	240	↑	5.7	100	5	320
SMT-270	270	↑	3.7	110	5	400
SMT-300	300	↓	4.0	88	4	390
SMT-330	330	4	4.1	105	4	380

PART NUMBER	L (uh)	SIZE	DCR TYP. (Ohm)	Q NOM	SRF TYP. (Mhz)	RATED I <sub>dc</sub> (mA)
SMT-360	360	4	4.3	110	4	370
SMT-390	390	↑	4.6	83	3	360
SMT-430	430	↑	4.8	100	3	350
SMT-470	470	↑	5.0	90	3	350
SMT-510	510	↓	5.2	105	3	340
SMT-560	560	4	5.5	76	3	330

PART NUMBER	L (uh)	SIZE	DCR TYP. (Ohm)	Q NOM	SRF TYP. (Mhz)	RATED I <sub>dc</sub> (mA)
SMT-620	620	5	5.8	78	2.8	350
SMT-680	680	↑	6.2	80	2.6	340
SMT-750	750	↑	6.4	75	2.5	330
SMT-820	820	↑	6.8	65	2.3	320
SMT-910	910	↑	7.0	65	2.2	320
SMT-1000	1000	↑	7.4	110	2.1	310
SMT-1100	1100	↑	7.8	115	2.0	300
SMT-1200	1200	↑	8.3	115	1.8	290
SMT-1300	1300	↑	8.6	120	1.7	290
SMT-1500	1500	↑	9.3	120	1.6	270
SMT-1600	1600	↑	9.5	125	1.5	270
SMT-1800	1800	↑	10.2	125	1.4	260
SMT-2000	2000	↑	10.8	123	1.3	250
SMT-2200	2200	↑	11.6	120	1.2	250
SMT-2400	2400	↑	12.2	123	1.1	240
SMT-2700	2700	↑	13.1	118	1.0	230
SMT-3000	3000	↑	14.0	118	1.0	220
SMT-3300	3300	↑	14.8	103	0.9	220
SMT-3600	3600	↓	15.6	108	0.8	210
SMT-3900	3900	5	16.6	130	0.8	210

PART NUMBER	L (uh)	SIZE	DCR TYP. (Ohm)	Q NOM	SRF TYP. (Mhz)	RATED I <sub>dc</sub> (mA)
SMT-4300	4300	6	15.4	88	0.7	240
SMT-4700	4700	↑	16.1	80	0.7	240
SMT-5100	5100	↑	17.1	75	0.6	230
SMT-5600	5600	↑	18.2	76	0.6	220
SMT-6200	6200	↑	19.4	65	0.5	220
SMT-6800	6800	↑	20.8	65	0.5	210
SMT-7500	7500	↑	21.2	59	0.4	210
SMT-8200	8200	↑	22.8	92	0.4	200
SMT-9100	9100	↓	24.1	86	0.4	190
SMT-10000	10000	6	26.4	58	0.4	180