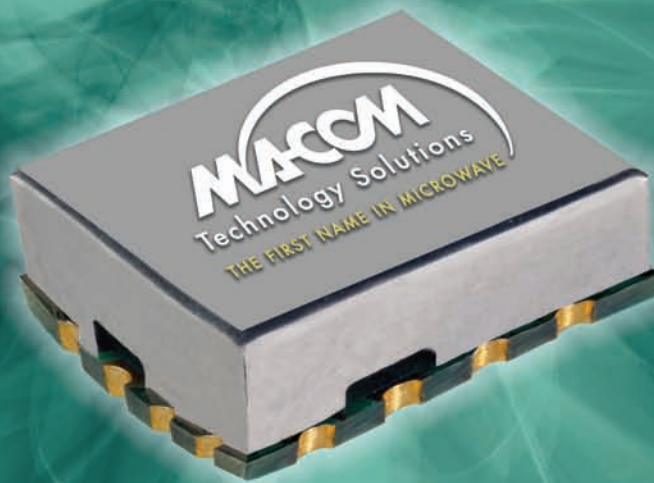


Signal Sources and Passives

M/A-COM Technology Solutions

Signal Sources and Passive Products



macomtech.com

Signal Sources and Passive Products



Delivering comprehensive solutions for demanding applications

Introduction

This Signal Sources and Passives Products Selection Guide contains information about our standard products. It is intended to assist in the selection of products to ensure availability, ease of use, and optimal performance.

Parts can be found quickly on our website at macomtech.com by typing the part number into the Search by Part Number box. We provide product samples, test boards and applications support. The products listed in this brochure include:

- Voltage controlled oscillators (VCOs)
- Mixers
- Couplers
- Power splitters/combiners
- TInductors

As a result of our experience in the communications industry, we have accumulated an extensive RF design library. In addition to supporting our standard products, our design and prototype assembly teams stand ready to quickly transform your custom application ideas from simulation to reality.

For more information about our product offerings, and to view data sheets, go to macomtech.com

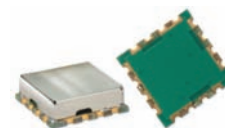
Quality and Reliability

The goal of M/A-COM Technology Solutions is to continually deliver effective, high quality products and services that meet our customers' and internal operations' needs in terms of delivery, performance, safety and value.

Process controls are implemented such that the tasks are performed properly the first time, so that products and services meet established, agreed-to requirements.

It is the personal responsibility of every employee to ensure quality, customer satisfaction, continual improvement, maintenance of our quality management system and compliance with customer and regulatory requirements.

Signal Sources: Voltage Controlled Oscillators (VCOs)



Frequency (MHz)	Part Number	Power Output Max (dBm)	Tune Voltage Min-Max (V)	Phase Noise (dBc/Hz) SSB @ Offset Freq (Max)		Tuning Sensitivity Typ (MHz/V)	Power Supply Current Max (mA)
				10 kHz	100 kHz		
42.5 - 47.5	MAVC-010000-000046	6	0.5 - 4.5	-118	-138	2.8	25
77.5 - 82.5	MAVC-010000-000080	6	0.5 - 4.5	-115	-135	2.5	25
119 - 125	MAVC-010000-000122	10	0.5 - 4.5	-87	-110	18	—
179 - 256	MAVC-010000-000217	3	0.5 - 4.5	-100	-121	26	15
405 - 440	MAVC-010000-000425	3	0.5 - 4.5	-105	-127	10	2
485 - 520	MAVC-010000-000505	3	0.5 - 4.5	-115	-135	12	15
470 - 554	MAVC-010000-000512	3	1.0 - 10.0	-108	-128	10	25
550 - 580	MAVC-010000-000565	3	0.5 - 4.5	-110	-130	10	20
583.6 - 628.6	MAVC-010000-000606	3	0.5 - 4.5	-113	—	—	20
704 - 806	MAVC-010000-000755	3	1.0 - 10.0	-107	-127	11.3	25
793 - 828	MAVC-010000-000810	5	1.0 - 4.0	—	-129	25	20
777.8 - 880	MAVC-010000-000829	0	0.5 - 4.5	-103	—	35	7
886 - 906	MAVC-010000-000896	3	0.5 - 4.5	-113	-133	10	20
925 - 960	MAVC-010000-000942	3	0.5 - 4.5	-110	-150	20	11
1070 - 1115	MAVC-010000-001093	3	0.4 - 4.5	-100	-122	17	15
1270 - 1315	MAVC-010000-001293	3	0.5 - 11.0	-110	-130	20	—
1260 - 1350	MAVC-010000-001305	8	1.0 - 12.0	-103	-125	11	40
1350 - 1450	MAVC-010000-001400	3	0.5 - 11.0	-104	-124	20	—
1450 - 1580	MAVC-010000-001515	3	0.5 - 11.0	-105	-125	17	30
1544 - 1585	MAVC-010000-001564	8	1.0 - 12.0	-80	-105	6	40
1610 - 1640	MAVC-010000-001625	3	0.5 - 11.0	-100	-107	20	50
1600 - 1780	MAVC-010000-001690	3	0.5 - 4.5	-95	-115	60	30
1640 - 1740	MAVC-010000-001691	3	0.5 - 11.0	-105	—	17	50
1725 - 1880	MAVC-010000-001802	3	0.5 - 11.0	-96	-118	20	—
1780 - 1950	MAVC-010000-001865	3	0.5 - 11.0	-100	-120	20	—
1850 - 1910	MAVC-010000-001880	3	0.5 - 4.5	-93	-114	44	15
1844 - 2042	MAVC-010000-001943	8	1.0 - 10.0	-90	-110	30	40
1875 - 2055	MAVC-010000-001965	3	0.5 - 11.0	-96	-118	20	—
1970 - 2130	MAVC-010000-002040	3	0.5 - 11.0	-100	-118	20	—
2023 - 2073	MAVC-010000-002048	—	0.5 - 5.0	-107	-128	21	45
2000 - 2200	MAVC-010000-002100	3	0.5 - 4.5	-95	—	—	30
2112 - 2112	MAVC-010000-002112	6	0.5 - 4.5	-107	-127	20	45
2110 - 2170	MAVC-010000-002140	4	1.0 - 4.0	-95	-117	30	20
2100 - 2400	MAVC-010000-002250	9	0.5 - 12.0	-90	-110	42.5	45
2200 - 2400	MAVC-010000-002300	7	1.0 - 18.0	-98	-118	15	47
2304 - 2304	MAVC-010000-002304	6	0.5 - 4.5	-102	-122	20	45
2200 - 2700	MAVC-010000-002450	7.5	1.0 - 18.0	-94	-115	30	50
2496 - 2690	MAVC-010000-002593	5	1.0 - 18.0	-98	-120	16	47
2650 - 2750	MAVC-010000-002700	5	1.0 - 19.0	-96	-116	17.5	35
2748 - 2986	MAVC-010000-002850	8	1.0 - 12.0	-88	-110	30	40
2800 - 3100	MAVC-010000-002950	8.5	0.5 - 12.0	-90	-110	38	40
3110 - 3305	MAVC-010000-003208	8	1.0 - 10.0	-88	-110	30	40
3400 - 3600	MAVC-010000-003500	7	1.0 - 18.0	-96	-116	16	47
3960 - 4160	MAVC-010000-004060	5	1.0 - 19.0	-93	-113	32.5	35

All packages are LSM1

Signal Sources: Low Phase Noise VCOs



M/A-COM Technology Solutions surface mount hybrid VCOs support applications from 45 MHz to 4 GHz. Whether in hand-held or vehicle-mounted radios, or base stations, our VCOs deliver leading edge solutions to challenging communications needs. In addition to these state-of-the-art VCOs, we also offer a broad range of hybrid frequency synthesizers, modules, MMIC VCOs, diodes, transistors, and passive products—a comprehensive solutions set for communications applications.

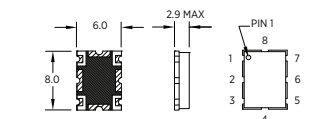
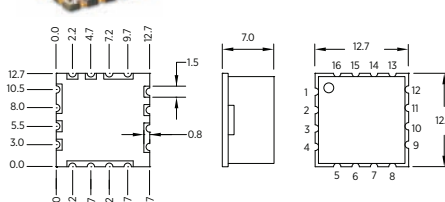
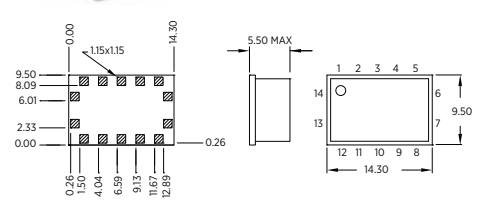
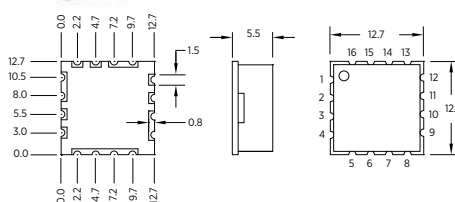
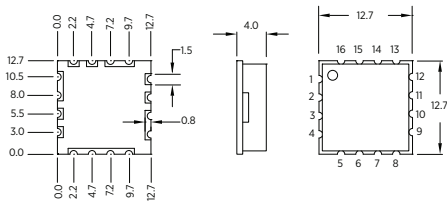
Our VCOs feature:

- Low phase noise—Our specialty
- 100% factory tested
- Cost—Extremely competitive
- Custom designs—From your specifications

For more details, contact your M/A-COM Tech sales office or visit macomtech.com/VCOs

A selection of our latest design releases is shown below.

Part Number	Frequency (MHz)	Power Output (dBm)		Tune Voltage (V)		Phase Noise SSB (dBc/Hz) @			Tuning Sensitivity (MHz/V)	Power Supply		Temp Range (°C)		VCO Type (band)	Package Style
		Min	Max	Min	Max	10 kHz	25 kHz	1 MHz		Vcc (V) Nom	Ic (mA) Max	Min	Max		
MAVC-010000-000458	433 - 484	3	7	0.5	10	-126	-134	-164	6	5	30	-30	85	Single	LSM1
MAVC-130000-000534	490 - 580	-4	0	2.5	10.5	-124	-133	-161	6	5	30	-30	85	Dual	LSM13
MAVC-110000-000626	536 - 716	0	3	0.5	11.5	-115	-124	-156	9.5	4.8	17	-30	85	Dual	LSM11
MAVC-130000-000986	896 - 1076	-4	2	2.5	10.5	-114	-124.5	-156	11	4.8	13	-40	85	Dual	LSM13
MAVC-170000-001404	1399 - 1410	-4.5	1.5	0.5	2.5	-102	-110	-142	12	2.5	10	-40	85	Single	LSM17
MAVC-110000-001632	1445 - 1820	-3	3	2	15	-112	-121	-155	17	5	30	-30	85	Single	LSM11
MAVC-110000-001802	1516 - 2088	-3	3	0.5	15	-109	-119	-151	22	4.8	20	-30	85	Dual	LSM11
MAVC-170000-001620	1520 - 1720	-5	3	0.7	4.3	-100	-108	-140	65	2.5	20	-25	70	Single	LSM17
MAVC-170000-001946	1845 - 2045	-5	3	0.7	4.4	-99	-108	-140	65	2.5	20	-25	70	Single	LSM17
MAVC-140000-002304	2304	4	9	0.5	5	-116	-126	-153	9	5	50	0	85	Single	LSM14



Mixers

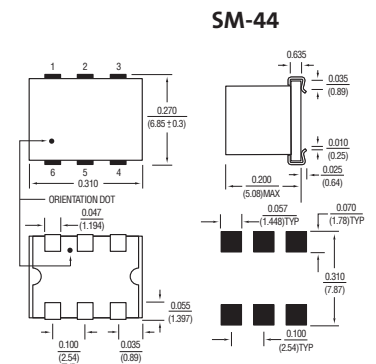
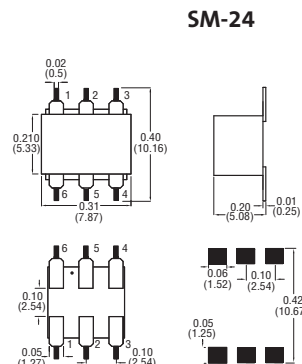
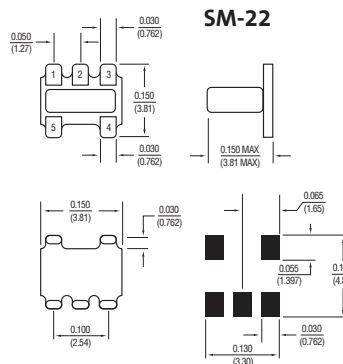
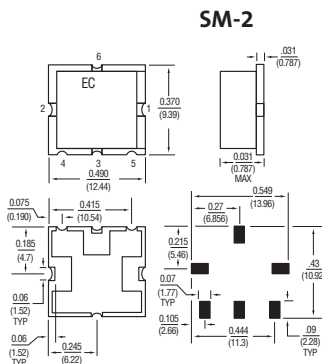
M/A-COM Tech mixers can be used in a wide variety of applications such as modulators, phase detectors, frequency synthesizers, and converters. They are ideal for use in CATV head end systems and up converter applications. Our low cost, passive mixers are constructed using broadband ferrite balun transformers and matched silicon Schottky diodes.



Frequency (RF/LO) (MHz)	Frequency (IF) (MHz)	Part Number	LO Drive (dBm)	Conversion Loss (dB)	Isol. (LO/RF) (dB)	IP3 Typ (dBm)	Input P1dB (dBm)	Package
DC - 960	820 - 915	MAMXES0072	7	7	40	16	5	SM-89
0.5 - 500	0 - 500	ELCM-1	7	6.2	27	16	1	SM-89
0.5 - 500	0 - 500	ELCM-1H	17	7.2	35	23	14	SM-87
0.5 - 500	0 - 500	EMRS-1	7	6.2	27	16	1	SM-1
0.5 - 500	0.5 - 500	MAMXES0108	5	6.5	50	16	1	SM-89
1 - 1000	0 - 1000	ESMD-C1	7	7.5	45	17	1	SM-2
2 - 500	0 - 500	ELCM-1MH	13	6	30	16	9	SM-89
2 - 2200	2 - 2200	MAMX-009646-230BML	17-23	6	47	34	23	SM-194
5 - 1000	0 - 1000	ELCM-2	7	7	25	20	1	SM-89
5 - 1000	0 - 1000	MAMXES0115	7	7	25	20	1	SM-89
5 - 1000	0 - 1000	EMRS-2	7	7	25	20	1	SM-1
5 - 1500	0 - 1000	ELCM-5	7	7.5	30	20	1	SM-87
5 - 1500	0 - 1000	EMRS-5MH	13	9	30	24	7.5	SM-1
5 - 1900	5 - 1000	ELCM-11X	7	7.4	27	17	1	SM-87
5 - 2500	5 - 1500	MAMX-007238-CM25MH	13	6.5	36	26	30	SM-87
10 - 2000	10 - 800	ESMD-C15	10	6.5	30	14	5	SM-2
10 - 2500	10 - 2500	MAMX-009239-001500	17	7.6	35	26	13	SM-87
50 - 2000	0 - 400	EMRS-11F	7	6.8	25	17	1	SM-1
80 - 2500	0 - 1000	ESMD-C50H	17	7.3	28.9	27	14	SM-2
80 - 2500	0 - 1000	MAMXES0117	17	7.3	29	27	14	SM-2
80 - 2500	0 - 1000	ESMD-C50L	10	7.7	30	21	5	SM-2
80 - 2500	0 - 1000	ESMD-C50M	13	7.4	29.1	22	8	SM-2
100 - 1100	100 - 1100	MAMX-010458-000001	15-22	6	40	25-30	17	SM-87
234 - 245	10 - 20	MAMX-007242-ES0103	17-21	6	36	32	22	SM-2
880 - 915	150 - 170	EMRS-6HX1	17	5.5	30	27	13	SM-1
880 - 915	150 - 170	MAMX-008786-ES0120	17	5.5	30	27	17	SM-1
925 - 1880	45 - 95	MAMX-008782-ES0118	7	9.5	35	17	7	SM-1
2110 - 2170	134 - 246	MAMXES0050	7	10	22	15	1	SM-87

Part numbers are RoHS compliant

Blue listings indicate standard stock items widely available from our franchised distribution partners.



Passive Products

Couplers

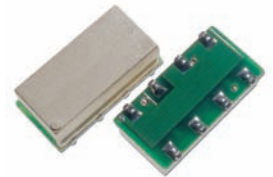
M/A-COM Tech's low cost couplers operate from 5 MHz – 1000 MHz, and are four port devices. The isolated port is not terminated internally in the unit, allowing the coupler to be used in applications where dual directional coupling is required.



Frequency (MHz)	Part Number	Impedance (Ohms)	Coupling (dB)	Insertion Loss (dB)	Maximum Power (W)	Isolation (dB)	Package
5 - 1000	EMDC-10-1TR	50	10	1.2	0.25	15	SM-22
5 - 1200	MACP-009467-105T12	50	10	0.5	0.25	15	SM-22
6 - 600	EMDC-16-1TR	50	16	0.6	0.25	21	SM-22
136 - 174	MACP-010121-B8189X	50	20	0.2	7	35	SM-55B
50 - 450	EMDC-20-1TR	50	20	0.3	0.25	15	SM-22
50 - 450	MACP-007984-MDC201	50	0	0.3	0.25	15	SM-22

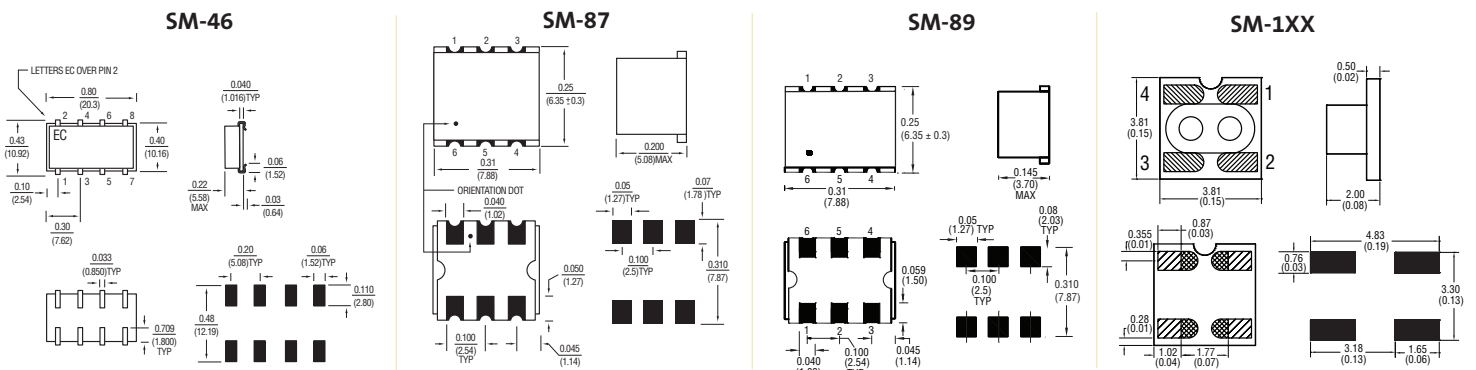
Power Splitters/Combiners

M/A-COM Tech's broadband power splitters/combiners are reciprocal devices which can be used to either divide or sum multiple signals. Through the use of ferrite core technology, our splitters/combiners offer an excellent combination of features such as small size, low cost, low loss, and excellent phase and amplitude balance.



Frequency (MHz)	Part Number	Impedance (Ohms)	Channels	Isolation (dB)	Phase Balance (degrees)	Amplitude Balance (dB)	Package
1 - 2700	MAPD-008957-CT0012	50	2	20	2	1.5	SM-156
2 - 1000	MAPD-007246-ES4700	50	4	23	10	0.5	SM-46
5 - 500	ESSM-2-16TR	50	2	30	1	0.3	SM-1
5 - 500	ESML-2-1TR ♦	50	2	30	5	0.6	SM-24
5 - 500	MAPD-007249-ESML21	50	2	30	3	0.3	SM-24
5 - 900	ESSM-2-6TR ♦	50	2	28	3	0.3	SM-1
5 - 900	MAPD-008072-ESSM26	50	2	28	3	0.3	SM-1
5 - 1000	MAPD-009278-ST1000	50	2	20	4	0.6	SM-156
5 - 1000	MAPD-008812-0003HW	50	3	28	1.5	0.1	SM-4
10 - 1000	ESML-2-4TR ♦	50	2	15	5	0.7	SM-24
50 - 70	MAPD-010320-5070HR	50	2	32	0.3	0.5	SM-89
112 - 168	MAPD-009850-HW1268	50	2	23	1	1	SM-89
220 - 470	MAPD-009851-HW2247	50	2	23	1	1	SM-89
800 - 2200	MAPD-010201-8022CG	50	2	19	1	1.5	SM-156

Part numbers are RoHS compliant ♦ indicates non-RoHS compliant
 Blue listings indicate standard stock items widely available from our franchised distribution partners.



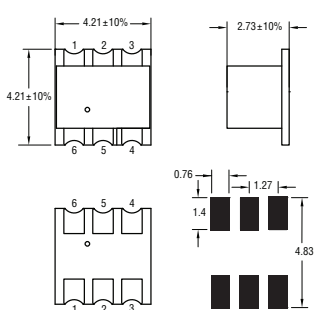
Transformers

M/A-COM Tech designs a wide range of transmission line transformers to suit today's most advanced telecommunications applications. Our transformer design team will also work closely with system design engineers to meet custom specifications. Since we combine proven technological expertise with innovative high quality and low cost manufacturing capabilities, M/A-COM Tech is already the partner of choice for some of the world's leading infrastructure companies.

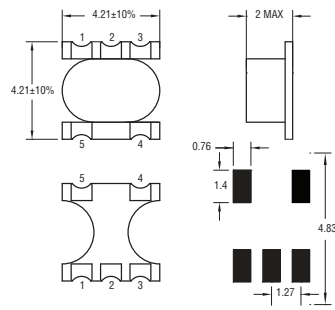


Frequency (MHz)	Part Number	Impedance (Ohms)	Impedance Ratio	Insertion Loss (dB)	RF Power (W)	Package
0.05 - 200	ETC1-1T-2TR	50	1:1	0.1	0.25	SM-22
0.3 - 500	MABA-009180-500MHz	50	1:1	0.5	0.25	SM-22
0.07 - 200	ETC2-1TTR	50	2:1	2	0.25	SM-22
0.15 - 110	MABA-008570-ETC414	50	4:1	1	0.25	SM-22
0.3 - 200	MABAES0060	50	1:1	1.5	0.25	SM-22
0.4 - 500	MABA-009487-60HWCA	50	1:1	0.4	0.25	SM-195
1 - 350	ETC4-1TR ♦	50	4:1	3	0.25	SM-22
1 - 350	MABA-007237-ETC410	50	4:1	1	0.25	SM-22
1 - 350	MABAES0040 ♦	50	2:1	2.6	0.25	SM-138
1 - 600	MABA-010079-420T60	50	4:1	1.0	0.25	SM-195
1 - 1600	MABA-010247-2R1250	50	2:1	1.0	0.25	SM-197
2 - 500	MABA-010143-FLUX18	50	8:1	0.5	0.25	SM-22
2 - 500	MABA-008937-TC11T5	50	1:1	1	0.25	SM-22
2 - 500	MABA-009484-CT068	50	3:1	0.6	0.25	SM-22
2 - 800	ETC4-1-2TR ♦	50	4:1	3	0.25	SM-22
2 - 800	MABAES0061	50	4:1	3	0.25	SM-22
2 - 1000	ETK4-2TTR	50	4:1	3	0.25	SM-22
2 - 1000	MABA-007569-ETK42T	50	4:1	3	0.25	SM-22
2 - 1000	MABA-009711-ETK2MM	50	4:1	1	0.25	SM-164B
2 - 1000	MABA-008752-TC1P57	50	1.5:1	0.5	0.25	SM-22
2 - 1000	ETC1.5-7TR	50	1.5:1	1	0.25	SM-22
3 - 400	MABA-009126-ET1ISM	50	1:1	1	0.5	SM-1
3 - 800	MABA-009488-61HWCA	50	4:1	0.6	0.25	SM-195
4.5 - 2000	MABA-010179-3WTTCl	50	1:1	0.8	3.0	SM-22
4.5 - 3000	MABA-010125-TC1113	50	1:1	0.3	0.25	SM-22
4.5 - 3000	ETC1-1-13TR	50	1:1	2	0.25	SM-22
4.5 - 3000	MABA-007159-000000	50	1:1	2	0.25	SM-22
5 - 400	ETC36-1T-2TR	50	36:1	12	0.25	SM-22
5 - 800	ETC3-1-1	50	3:1	2	0.25	SM-22
10 - 2300	MABA-010273-ES1330	75	1.33:1	1.0	0.25	SM22
30 - 2500	MABA-010012-ES4302	50	4:1	1.0	0.25	SM-22
500 - 2500	ETC1.6-4-2-3TR	50	4:1	3	0.25	SM-22
500 - 3000	MABA-007236-C16423	50	4:1	3	0.25	SM-22
760 - 960	ETC1-1-6TR	50	1:1	2	0.25	SM-22
1710 - 1910	ETC1-1-10TR	50	1:1	2	0.5	SM-22

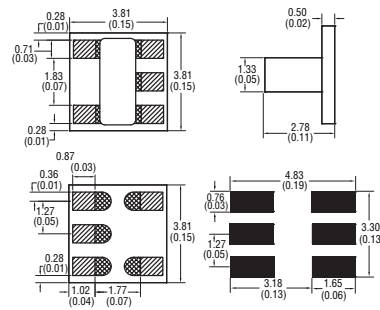
SM-156



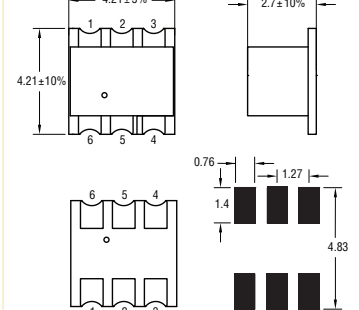
SM-164B



SM-195



SM-197



Passive Products

Inductors

M/A-COM Tech's inductors provide an unmatched balance of low cost, high Q, and small size. Our inductors utilize a high permeability ferrite core which offers the advantage of containing stray magnetic fields. This is a feature that is not available with other suppliers' air and ceramic core solutions.



Self Resonant Frequency (MHz)	Part Number	Inductance (nH)	Qmin	Package
30 - 90	MALX-010136-80NHIN	80	80	SM-199
30 - 512	MABA-010371-051837	30	-	SM-200

Designer's Kit

MABA-000001-50KIT1 (electrical specifications of each model)

Frequency (MHz)	Part Number	Ω ratio	Insertion Loss			Configuration
			3 dB MHz	2 dB MHz	1 dB MHz	
3 - 500	MABA-009180-500MHZ	1:1	0.40-500	0.50-300	1-100	D
760 - 960	ETCI-1-6TR	1:1	-	760-960	-	C
1710 - 1910	ETCI-1-10TR	1:1	-	1710-1910	-	B
5 - 1200	MABA-009602-ES2922	1:1	-	600-1200	5-600	C
4.5 - 3000	MABA-007159-000000	1:1	2000-2800	1000-2000	4.5-1000	A
4.5 - 3000	MABA-010125-TC1113	1:1	2000-3000	1000-2000	4.5-1000	A
1 - 350	MABA-009250-CT0068	1:2	-	-	3-300	D
2 - 500	MABA-009484-ETC31T	1:3	-	-	2-500	D
2 - 1000	MABA-009711-ETK2MM	1:4	700-1000	500-700	3-500	E
6 - 1000	MABA-008639-TC41T7	1:4	600-1000	6-600	-	E
500 - 2500	MABA-007236-CI6423	1:4	500-3000	-	750-1200	E
2 - 500	MABA-010143-FLUX18	1:8	-	2-500	-	D
0 - 75	ETC9-1T-5TR	1:9	-	10-75	-	D
5 - 40	ETCI6-1T-2TR	1:16	-	-	5-40	D

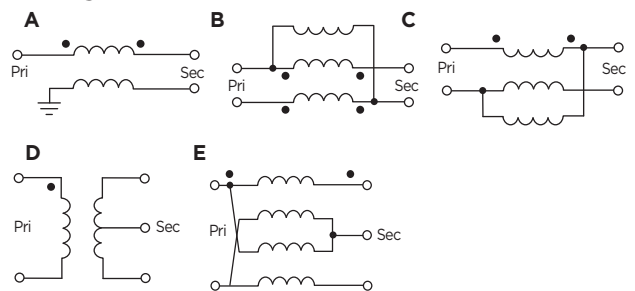
Transformers ranging from 1 to 3000 MHz

- Very wide bandwidth
- Termination finish, both gold over nickel-plated and tin-plated
- Various surface mount parts
- RoHS compliant

Each kit contains: 15 models x 10 of each = 150 total



Configurations



Note: Part numbers are RoHS compliant ♦ indicates non-RoHS compliant

Detailed specifications for our standard parts can be found quickly on our web site at macomtech.com by typing the part number into the search box. All specifications are subject to change.

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