Surface Mount EMI Filters - E01 & E07 Feedthrough Capacitors

The Syfer E01 and E07 ranges of feedthrough MLCC chip 'C' filters are 3 terminal chip devices designed to offer reduced inductance compared to conventional MLCCs when used in signal line filtering.

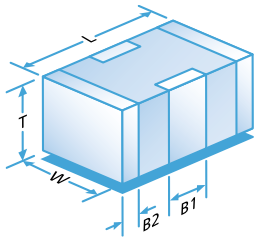
The filtered signal passes through the chip internal electrodes and the noise is filtered to the grounded side contacts, resulting in reduced length noise transmission paths.

Available in C0G/NP0 and X7R dielectrics, with current ratings of 300mA, 1A, 2A, 3A and voltage ratings of 25Vdc to 200Vdc. Also available with FlexiCap™ termination which is strongly recommended for new designs.

Commonly used in automotive applications, a range qualified to AECQ-200 is also available.

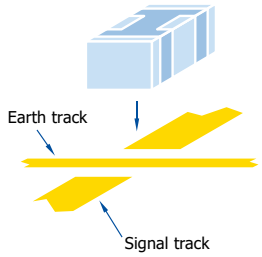


E01 300mA, E07 1A/2A/3A

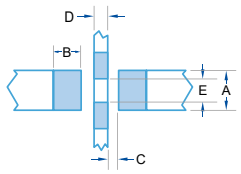




E01/E07



Recommended solder lands



Dimensions

	0805	1206	1806	1812
L	2.0 ± 0.3 (0.079 ± 0.012)	3.2 ± 0.3 (0.126 ± 0.012)	4.5 ± 0.35 (0.177 ± 0.014)	4.5 ± 0.35 (0.177 ± 0.014)
W	1.25 ± 0.2 (0.049 ± 0.008)	1.6 ± 0.2 (0.063 ± 0.008)	1.6 ± 0.2 (0.063 ± 0.008)	3.2 ± 0.3 (0.126 ± 0.012)
T	1.0 ± 0.15 (0.039 ± 0.006)	1.1 ± 0.2 (0.043 ± 0.008)	1.1 ± 0.2 (0.043 ± 0.008)	2.0 ± 0.3 (0.079 ± 0.012)
B1	0.60 ± 0.2 (0.024 ± 0.008)	0.95 ± 0.3 (0.037 ± 0.012)	1.4 ± 0.3 (0.055 ± 0.012)	1.45 ± 0.35 (0.055 ± 0.012)
B2	0.3 ± 0.15 (0.012 ± 0.006)	0.5 ± 0.25 (0.02 ± 0.01)	0.5 ± 0.25 (0.02 ± 0.01)	0.75 ± 0.25 (0.02 ± 0.01)

	0805	1206	1806	1812
A	0.95 (0.037)	1.20 (0.047)	1.2 (0.047)	2.65 (0.104)
B	0.90 (0.035)	0.90 (0.035)	1.40 (0.055)	1.40 (0.055)
C	0.30 (0.012)	0.60 (0.024)	0.80 (0.031)	0.80 (0.031)
D	0.40 (0.016)	0.80 (0.031)	1.40 (0.055)	1.40 (0.055)
E	0.75 (0.030)	1.0 (0.039)	1.0 (0.039)	2.05 (0.080)

Notes: 1) All dimensions mm (inches).
2) Pad widths less than chip width gives improved mechanical performance.
3) The solder stencil should place 4 discrete solder pads. The unprinted distance between ground pads is shown as dim E.
4) Insulating the earth track underneath the filters is acceptable and can help avoid displacement of filter during soldering but can result in residue entrapment under the chip.

Standard Range - E01 & E07 Feedthrough Capacitors

Type		E01			E07			
Chip Size		0805	1206	1806	0805	1206	1806	1812
Max Current		300mA	300mA	300mA	1A	2A	2A	3A
Rated Voltage	Dielectric	Minimum and maximum capacitance values						
25Vdc	C0G/NP0	180pF-1.5nF	560pF-3.9nF	820pF-4.7nF	180pF-1.5nF	560pF-3.9nF	820pF-4.7nF	-
	X7R	470pF-100nF	5.6nF-330nF	3.9nF-560nF	820pF-100nF	10nF-330nF	22nF-560nF	560nF-1.8µF
50Vdc	C0G/NP0	22pF-820pF	22pF-3.3nF	22pF-3.9nF	10pF-220pF	22pF-1nF	100pF-1.5nF	-
	X7R	560pF-68nF	4.7nF-220nF	3.3nF-330nF	1nF-68nF	10nF-220nF	22nF-330nF	330nF-1.5µF
100Vdc	C0G/NP0	22pF-560pF	22pF-2.2nF	22pF-3.3nF	10pF-120pF	22pF-560pF	100pF-680pF	-
	X7R	560pF-27nF	1.8nF-100nF	3.3nF-180nF	1nF-27nF	10nF-100nF	22nF-180nF	180nF-820nF
200Vdc	C0G/NP0	-	560pF-1.2nF	56pF-1nF	-	15pF-180pF	56pF-470pF	-
	X7R	-	2.7nF-56nF	3.9nF-100nF	-	12nF-56nF	22nF-100nF	100nF-270nF

Note: E07 25Vdc C0G/NP0 1206 and 1806 ranges in green, have maximum current of 1A.

AEC-Q200 Qualified Range - E01 & E07 Feedthrough Capacitors - maximum capacitance values

Type		E01			E07		
Chip Size		0805	1206	1806	0805	1206	1806
50V	C0G/NP0	820pF	1nF	2.2nF	220pF	1nF	1.5nF
	X7R	47nF	100nF	200nF	47nF	100nF	200nF
100V	C0G/NP0	560pF	1nF	2.2nF	120pF	560pF	680pF
	X7R	15nF	15nF	68nF	15nF	15nF	68nF

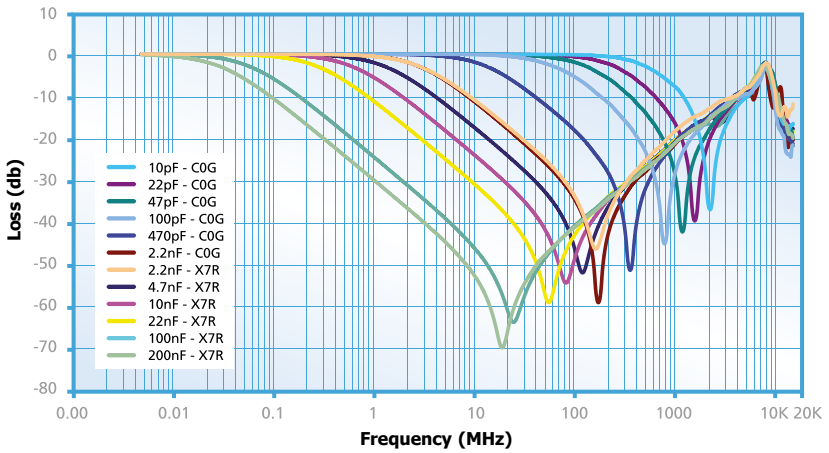
Note: For some lower capacitance parts, higher voltage rated parts may be supplied. Please refer to the table on page 16.

Surface Mount EMI Filters - E01 & E07 feedthrough capacitors

Open board insertion loss performance in 50Ω system

Open Board Performance						
Capacitance	0.1MHz	1MHz	10MHz	100MHz	1GHz	Resonance Freq (MHz) approx.
10pF	0	0	0	0	7.5	2200
22pF	0	0	0	0	16	1600
33pF	0	0	0	1	22	1350
47pF	0	0	0	2	28	1150
68pF	0	0	0	3	41	900
100pF	0	0	0	5	28	800
150pF	0	0	0	8	24	700
220pF	0	0	0	12	20	600
330pF	0	0	1	15	20	500
470pF	0	0	2	18	20	425
560pF	0	0	3	20	20	350
680pF	0	0	4	22	20	300
820pF	0	0	5	24	20	260
1nF	0	0	7	27	20	220
1.5nF	0	0	9	31	20	200
2.2nF	0	0	12	34	20	170
3.3nF	0	1	14	39	20	135
4.7nF	0	2	18	46	20	110
6.8nF	0	3	21	50	20	90
10nF	0	5	24	48	20	80
15nF	0	8	27	45	20	65
22nF	0	12	31	43	20	56
33nF	1	14	34	40	20	40
47nF	2	17	38	40	20	34
68nF	4	20	41	40	20	30
100nF	6	24	45	40	20	28
150nF	8	26	48	40	20	24
220nF	10	30	52	40	20	17
330nF	13	33	55	40	20	15.5
470nF	16	36	60	40	20	14
560nF	18	39	65	40	20	12

Note: For Insertion Loss graph see page 14.



Ordering Information - E01 & E07 feedthrough capacitors

1206	Y	100	0103	M	X	T	E07
Chip size	Termination	Voltage	Capacitance in picofarads (pF)	Tolerance	Dielectric	Packaging	Type
0805 **1206** **1806** **1812**	**J** = Nickel Barrier (Tin) *__Y__ = FlexiCap™ (Tin - X7R only) **A** = (Tin/Lead) Not RoHS compliant. *__H__ = FlexiCap™ (Tin/Lead) Not RoHS compliant.	**025** = 25V **050** = 50V **100** = 100V **200** = 200V	First digit is 0. Second and third digits are significant figures of capacitance code. The fourth digit is number of zeros following Example: **0103** = 10000pF.	**M** = ±20%	**A** = C0G/NP0 AEC-Q200 **C** = C0G/NP0 **E** = X7R AEC-Q200 **X** = X7R	**T** = 178mm (7″) reel **R** = 330mm (13″) reel **B** = Bulk	**E01** **E07**

Note: *FlexiCap™ termination only available in X7R material. Please contact our Sales Office for any special requirements.

Reeled quantities

178mm (7″) reel	0805	1206	1806	1812
	3000	2500	2500	500

330mm (13″) reel	0805	1206	1806	1812
	12000	10000	10000	2000