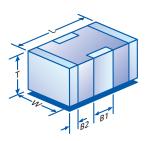
X2Y

Type Chip size			E03										
		0603	0805	1206	1410	1812	2220						
Rated Dielectric		Minimum and maximum capacitance values											
	COG/NP0	150pF	-	-	-	-	-						
16Vdc	X7R	15nF	-	-	-	-	-						
	COG/NP0	120pF	560pF-820pF	1.8nF-3.3nF	6.8nF-8.2nF	12nF-15nF	22nF-33nF						
25Vdc	X7R	12nF	56nF-68nF	-	470nF	820nF	1.2µF						
FOVA	COG/NP0	10pF-100pF	390pF-470pF	1.2nF-1.5nF	4.7nF-5.6nF	8.2nF-10nF	18nF						
50Vdc	X7R	150pF-10nF	18nF-47nF	56nF-220nF	180nF-400nF	390nF-680nF	560nF-1.0µF						
100Vdc	COG/NPO -		10pF-330pF	22pF-1.0nF	100pF-3.9nF	820pF-6.8nF	1.0nF-15nF						
100400	X7R	-	470pF-15nF	1.5nF-47nF	4.7nF-150nF	8.2nF-330nF	10nF-470nF						

Note: For some lower capacitance parts, higher voltage rated parts may be supplied.



The Syfer X2Y Integrated Passive
Component is a 3 terminal EMI chip device.

When used in balanced line applications, the revolutionary design provides simultaneous line-to-line and line-toground filtering, using a single ceramic chip. In this way, differential and common mode filtering are provided in one device.

For unbalanced applications, it provides ultra low ESL (equivalent series inductance). Capable of replacing 2 or more conventional devices, it is ideal for balanced and unbalanced lines, twisted pairs and dc motors, in automotive, audio, sensor and other applications.

Available in sizes from 0603 to 2220, these filters can prove invaluable in meeting stringent EMC demands.

Manufactured in the UK by Syfer Technology Limited under licence from X2Y attenuators LLC.

Recommended solder lands

в

0603		0603	0805	1206	1410	1812	2220	
	L	1.6±0.2 (0.063±0.008)	2.0±0.3 (0.08±0.012)	3.2±0.3 (0.126±0.012)	3.6±0.3 (0.14±0.012)	4.5±0.35 (0.18±0.014)	5.7±0.4 (0.22±0.016)	
	w	0.8±0.2 (0.03±0.008)	1.25±0.2 (0.05±0.008)	1.60±0.2 (0.063±0.008)	2.5±0.3 (0.1±0.012)	3.2±0.3 (0.126±0.012)	5.0±0.4 (0.2±0.016)	
	т	0.5±0.15 (0.02±0.006)	1.0±0.15 (0.04±0.006)	1.1±0.2 (0.043±0.008)	2 max. (0.08 max.)	2 max. (0.08 max.)	2.5 max. (0.1 max.)	
	B1	0.4±0.15 (0.016±0.006)	0.5±0.25 (0.02±0.01)	0.95±0.3 (0.037±0.012)	1.20±0.3 (0.047±0.012)	1.4±0.35 (0.06±0.014)	2.25±0.4 (0.09±0.016)	
1	B2	0.25±0.15 (0.010±0.006)	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 (0.03±0.01)	0.75±0.25 (0.03±0.01)	
	- 4		(in al. a.)	(0.08 ± 0.012) (0.12 ± 0.012) (0.14 ± 0.012) (0.18 ± 0.014) (0.22 ± 0.016) 1.25 ± 0.2 (0.05 ± 0.008) 1.60 ± 0.2 (0.063 ± 0.008) 2.5 ± 0.3 (0.1 ± 0.012) 3.2 ± 0.3 (0.126 ± 0.012) 5.0 ± 0.4 (0.2 ± 0.016) 1.0 ± 0.15 (0.04 ± 0.006) 1.1 ± 0.2 (0.04 ± 0.008) 2 max. $(0.08 max.)$ 2 max. $(0.08 max.)$ 2.5 max. $(0.08 max.)$ 0.5 ± 0.25 (0.02 ± 0.01) 0.95 ± 0.3 (0.037 ± 0.012) 1.20 ± 0.3 (0.047 ± 0.012) 1.4 ± 0.35 (0.06 ± 0.014) 2.25 ± 0.4 (0.09 ± 0.016) 0.3 ± 0.15 0.5 ± 0.25 (0.02 ± 0.01) 0.5 ± 0.25 (0.02 ± 0.01) 0.75 ± 0.25 (0.03 ± 0.01) 0.75 ± 0.25 (0.03 ± 0.01)				

Note 1: All dimensions mm (inches).

Note 2: Pad widths less than chip width gives improved mechanical performance. Note 3: Insulating the earth track underneath the filters is acceptable and can help avoid displacement of filter during soldering.

Advantages

- Replaces 2 or 3 capacitors with one device
- Ultra low inductance due to cancellation effect
- For balanced lines: Matched capacitance line to ground on both lines
- Differential and common mode attenuation
- Effects of temperature and voltage variation eliminated
- Effect of ageing equal on both lines
- High current capability

Applications

- Single ended/unbalanced lines
- Balanced lines and twisted pairs
- EMI Suppression on dc motors
- Sensor/transducer applications
- Wireless communications
- Audio amplifiers
- CANBUS systems

Dielectric X7R or C0G/NP0

Electrical configuration Multiple capacitance

Capacitance measurement At 1000hr point

Typical capacitance matching Better than 5%

Temperature rating -55°C to 125°C

Dielectric withstand voltage

2.5 x Rated Volts for 5 secs. Charging current limited to 50mA Max.

Insulation resistance

100Gohms or 1000s (whichever is the less) $% \left({{\left({{{{\rm{s}}}} \right)}} \right)$

		0603	0805	1206	1410	1812	2220	
	Α	0.6 (0.024)	0.95 (0.037)	1.2 (0.047)	2.05 (0.08)	2.65 (0.104)	4.15 (0.163)	
	В	0.6 (0.024)	0.9 (0.035)	0.9 (0.035)	1.0 (0.04)	1.4 (0.055)	1.4 (0.055)	
	С	0.4 (0.016)	0.3 (0.012)	0.6 (0.024)	0.7 (0.028)	0.8 (0.03)	1.2 (0.047)	
	D	0.2 (0.008)	0.4 (0.016)	0.8 (0.03)	0.9 (0.035)	1.4 (0.055)	1.8 (0.071)	

filtsmx2y.ver7

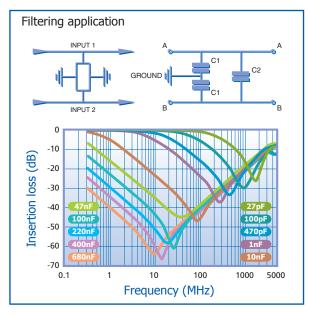
Surface mount EMI filters - X2Y Integrated Passive Components

The internal structure furnishes a reduced inductance when compared to that of a conventional capacitor. This is a result of the novel internal electrode structure which inherently reduces the inductance by the cancellation effect of opposing currents in close proximity. The capacitance line to ground (common mode) is closely matched due to the symmetry within the design. As the device includes line to ground capacitance for both lines, any temperature, ageing and voltage effects will have an equal influence on both lines therefore maintaining balanced decoupling. limitations of a standard 3 terminal chip do not apply. The single line 3 terminal feedthrough chip carries the signal current through the very thin feedthrough electrodes within the device which have limited dc resistance and so can cause excessive heating, hence the maximum permissible current is often limited to around 300mA for a 1206 device. The Integrated Passive Component is in by-pass across two lines and so is unaffected by high signal currents.

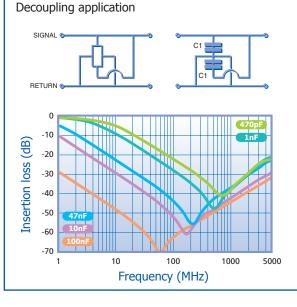
The table below offers a comparison of de-coupling devices and demonstrates how the Integrated Passive Component extends the options for EMC circuit protection.

Because the part acts as a de-coupling device, the current

Component	Advantages	Disadvantages	Applications
Chip capacitor	Industry standard	Requires 1 per line High inductance Capacitance matching problems	By-pass Low frequency
3 terminal feedthrough	Feedthrough Lower inductance	Current limited	Feedthrough Unbalanced lines High frequency
Syfer X2Y Integrated Passive Component	Very low inductance Replaces 2 (or 3) components Negates the effects of temperature, voltage and ageing Provides both common mode and differential mode attenuation Can be used on balanced & unbalanced lines	Care must be taken to optimise circuit design	By-pass Balanced lines High frequency dc electric motors Unbalanced lines Audio amplifiers CANBUS



Ordering information



	1812		Υ	1	.00		0334				Μ	М		т			E03		
	Chip Size	Те	rmination	Vo	ltage	Capac	Capacitance in picofarads (pF) C ₁				Toleran	ice	Dielectric	ielectric Packaging			Туре		
	0603 0805 1206 1410 1812 2220	Y = A = H =	I = Nickel barrier = FlexiCap™ = (Tin/lead) = FlexiCap™ Tin/lead)	25 = 50 =	= 16Vdc = 25Vdc = 50Vdc = 100Vdc	are si				M = ±20)%	C = COG/ NPO X = X7R	R=330mm (13")			Syfer X2Y Integrated Passive Component			
	Reeled quantities		178mm (7") reel	0603 4000	0805	1206 2500	1410 2000	1812 1000	2220 1000		330mm (13") reel	06		1206 10000	1410 8000	181 400	_	2220 4000	