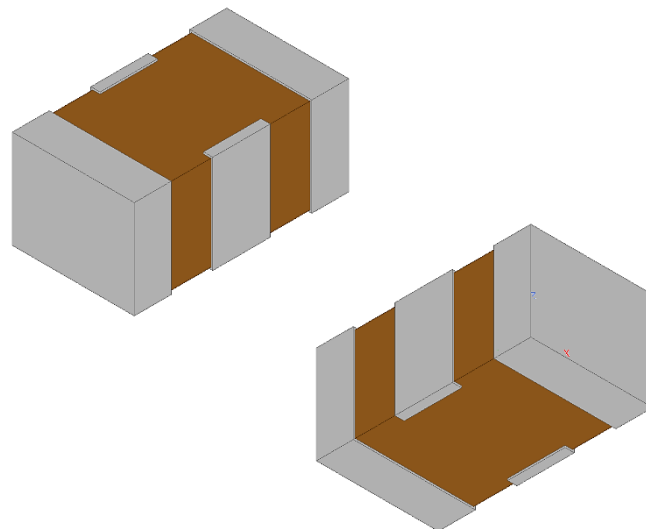




EFCP Series (EIA 0603) Multi-Function EMI Filter

- Voltage rating: 100/16/10V
- In differential configuration¹ this component will behave as a:
 - Common Mode Choke/Filter
 - EMI suppression filter
 - Differential noise filter
 - DC-DC switch noise filter
- In single ended configuration² this component will behave as a:
 - Power bypass filter
 - DC rail EMI/EMC filter
 - Decoupling filter
 - Jitter suppression filter
 - Transient suppression filter
 - Noise suppression filter
- RoHS compliant



General Specifications³

Part Number	Voltage (Maximum)	Differential Configuration						Single Ended Configuration					
		20dB Attenuation Frequency (MHz)		30dB Attenuation Frequency (MHz)		Attenuation (Maximum)		20dB Attenuation Frequency (MHz)		30dB Attenuation Frequency (MHz)		Attenuation (Maximum)	
		From	To	From	To	MHz	dB	From	To	From	To	MHz	dB
EFCP101G57991GV001T	100	5200	6300	5500	6500	5700	40.9	7000	On Request*	On Request*	On Request*	On Request*	On Request*
EFCP101G42731GV001T	100	3800	4900	4000	4300	4200	43.4	4900	On Request*	6200	8400	7300	49.3
EFCP101G32391GV001T	100	2500	3850	3000	3350	3200	38.0	2300	6200	3400	4600	3950	44.0
EFCP101G17281GV001T	100	1200	2400	1500	1900	1700	48.7	1000	7800	2000	4100	2800	53.0
EFCP101G08151GV001T	100	470	1700	710	1100	880	56.8	310	7000	760	2900	1500	60.8
EFCP101W05061GV001T	100	130	1900	300	800	500	36.8	67	7000	200	2300	690	42.9
EFCP101W03031GV001T	100	75	1200	185	530	300	38.5	38	3100	120	1150	390	45.0
EFCP101W02021GV001T	100	33	1600	95	500	230	45.0	18	4000	55	1300	280	51.0
EFCP101W01021GV001T	100	14	1800	40	610	160	49.7	7	6800	21	2200	220	55.7
EFCP101W01011GV001T	100	7	1800	20	600	110	52.4	3	6800	10	2200	140	58.3
EFCP160WD4D61GV001T	16	1.5	2100	5.0	550	47	56.0	0.78	6700	2.5	2200	64	63.0
EFCP100WD3D31GV001T	10	0.8	1600	2.5	450	31	56.5	0.40	4200	1.3	1600	39	63.5
EFCP100WD2D21GV001T	10	0.35	1700	1.0	500	20	61.0	0.20	5050	0.60	1900	27	68.5

¹ Go to page 4 for Differential Configuration layout details and pages 6-7 for electrical performance.

² Go to page 4 for Single Ended Configuration layout details and pages 7-8 for electrical performance.

³ Attenuation values are conservatively simulated. Typical measured values (available s-parameters upon request) are measured at 25°C.

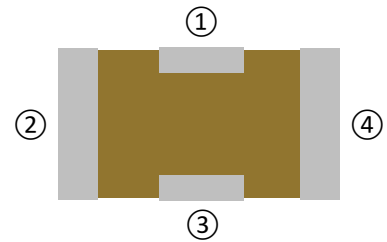
* On Request: Johanson can perform s-parameter measurements to obtain these higher-frequency attenuation values.

Maximum Ratings

Operating Temperature (°C)	-55 to +125
Recommended Storage Conditions post-installation (°C)	-40 to +85
Recommended Storage Conditions and Period for Unused T&R Product	45% - 75% RH +5 to +35 °C 18 Months Max.

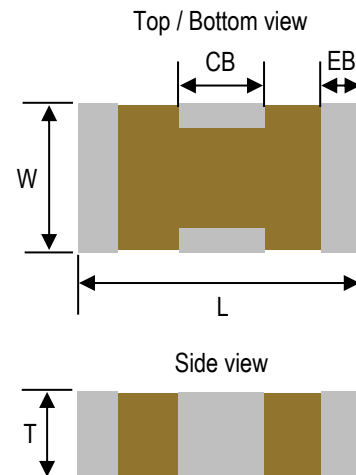
Terminal Configuration

Pin Number	Differential Config.		Single Ended Config.
	Option A ⁴	Option B ⁵	Option A ⁶
1	GND	Internal GND	Input / Output
2	Input / Output+	Internal GND / External GND Rtn	GND
3	GND	Internal GND	Input / Output
4	Input / Output-	External Pwr / Internal Pwr	GND



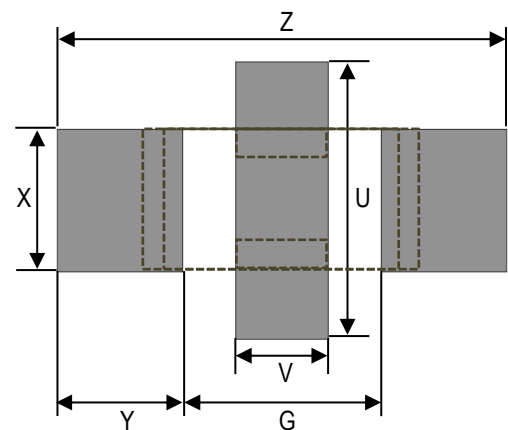
Mechanical Dimensions

	Inches			Millimeters		
L	0.064	±	0.005	1.63	±	0.13
W	0.035	±	0.005	0.89	±	0.13
T	0.026		Max.	0.66		Max.
EB	0.010	±	0.006	0.25	±	0.15
CB	0.018	±	0.004	0.46	±	0.10



PCB Footprint

	In	mm
X	0.035	0.89
Y	0.025	0.64
G	0.040	1.02
V	0.020	0.51
U	0.060	1.52
Z	0.090	2.29



⁴ Pins 2,4 connected to differential signals.

⁵ Pins 2,4 connected to separate signals.

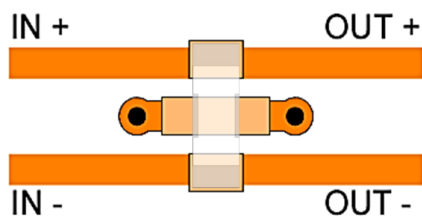
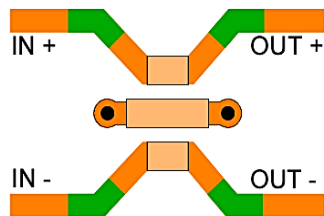
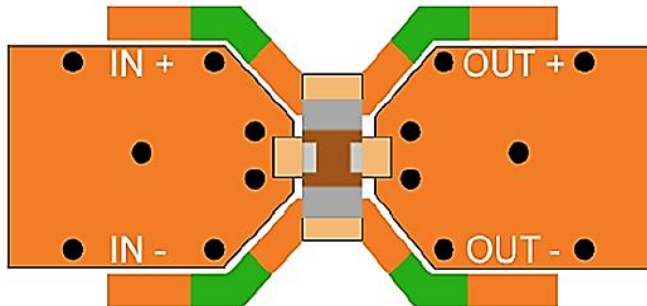
⁶ Pins 1,3 connected to common signal trace. Pins 2,4 connected to common GND.



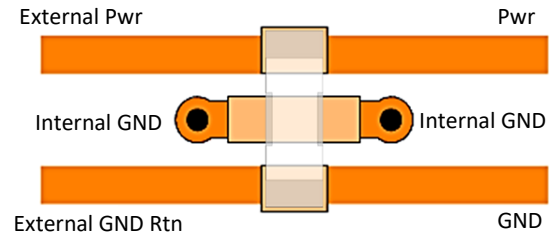
Layout and Mounting Considerations

Differential Configuration

Option A

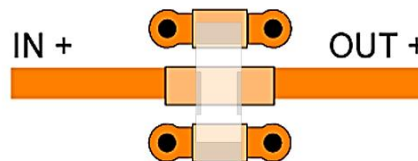
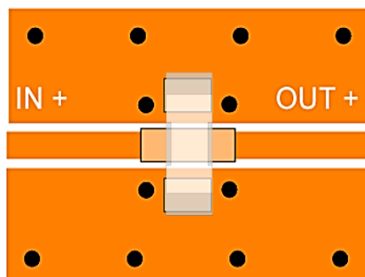


Option B



Single Ended Configuration

Option A

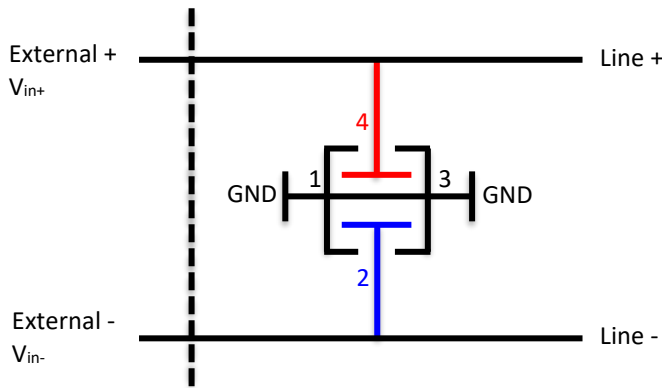


If you'd like the PCB layout or CAD file or have any questions,
contact our applications engineers at <https://www.johansontechnology.com/ask-a-question>

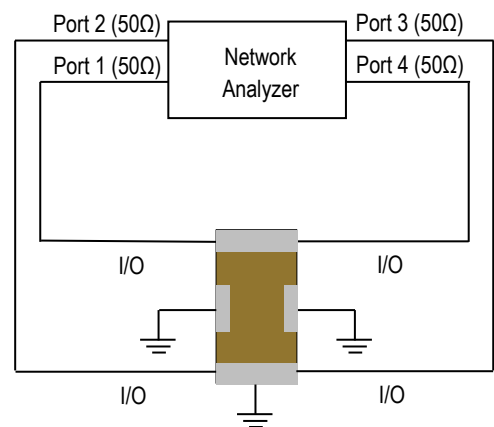
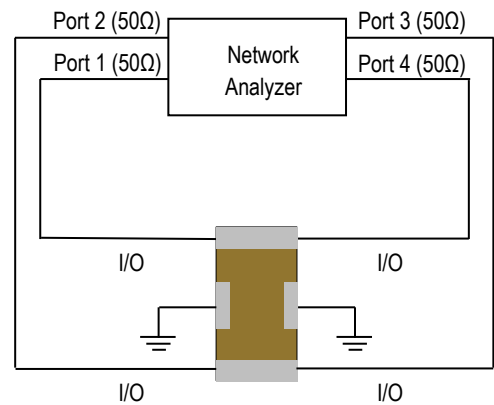
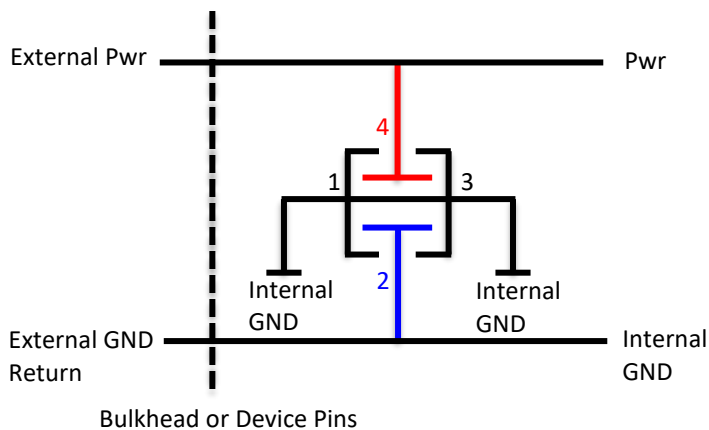
Measuring Diagram and Schematic

Differential Configuration

Option A

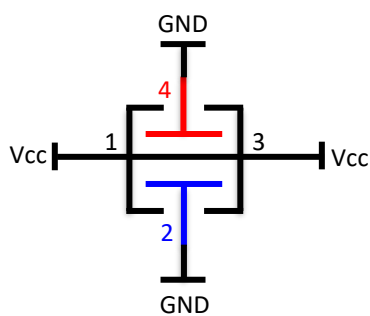


Option B



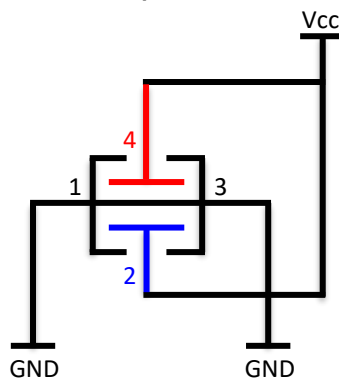
Single Ended Configuration

Option A



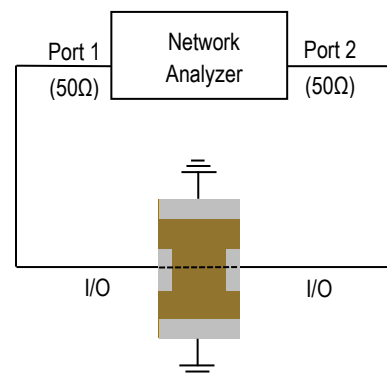
Often used when filtering a bypassing surface power trace

Option B



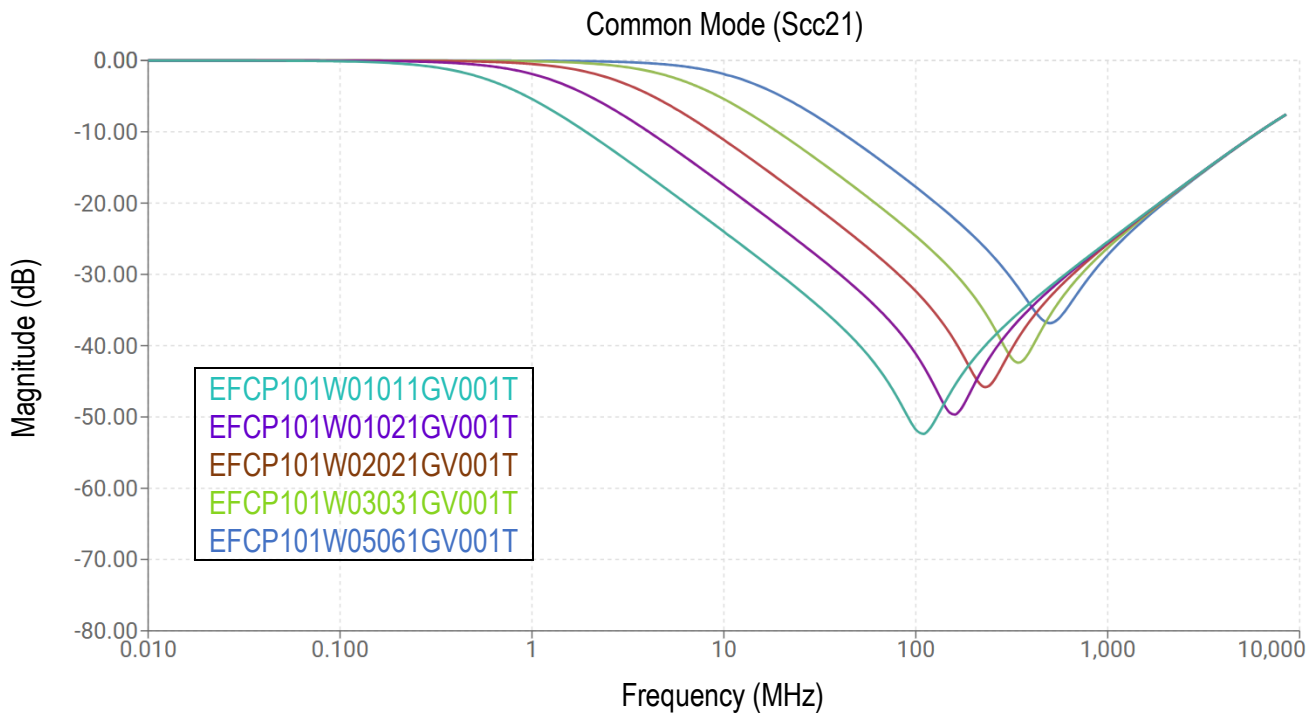
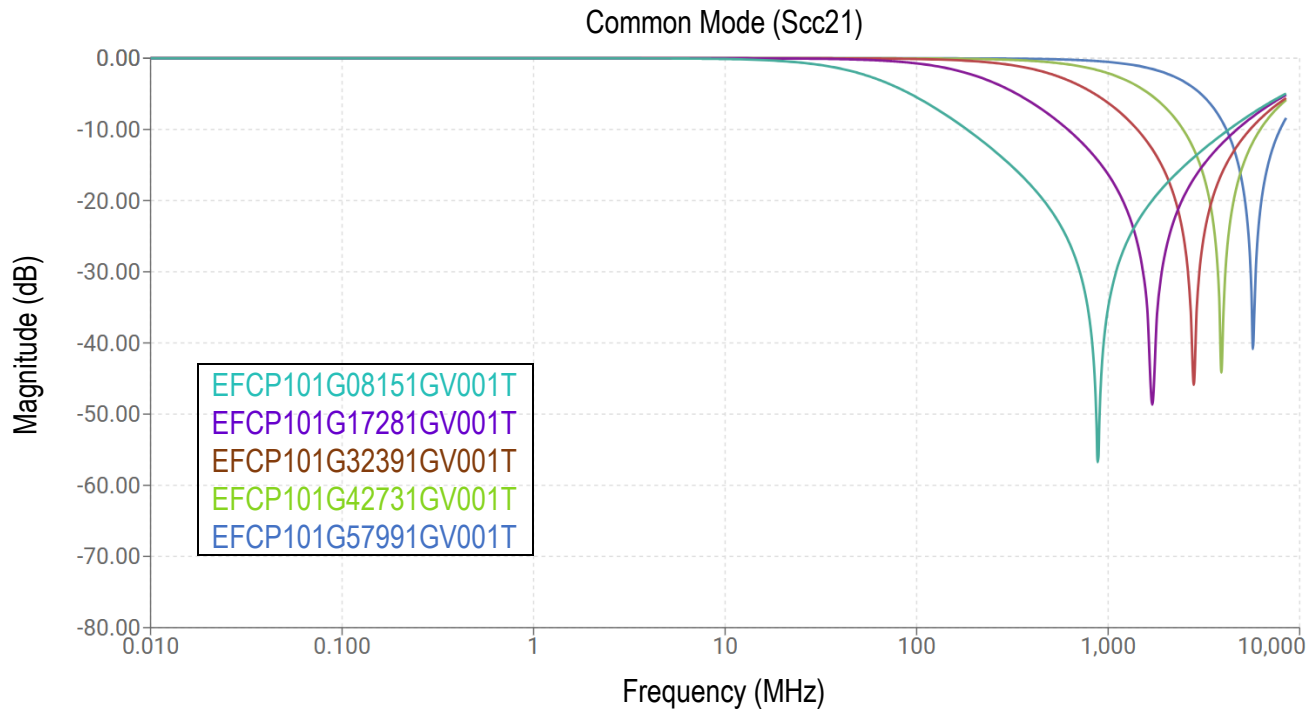
Seldom used for inner-plane bypassing

Option A

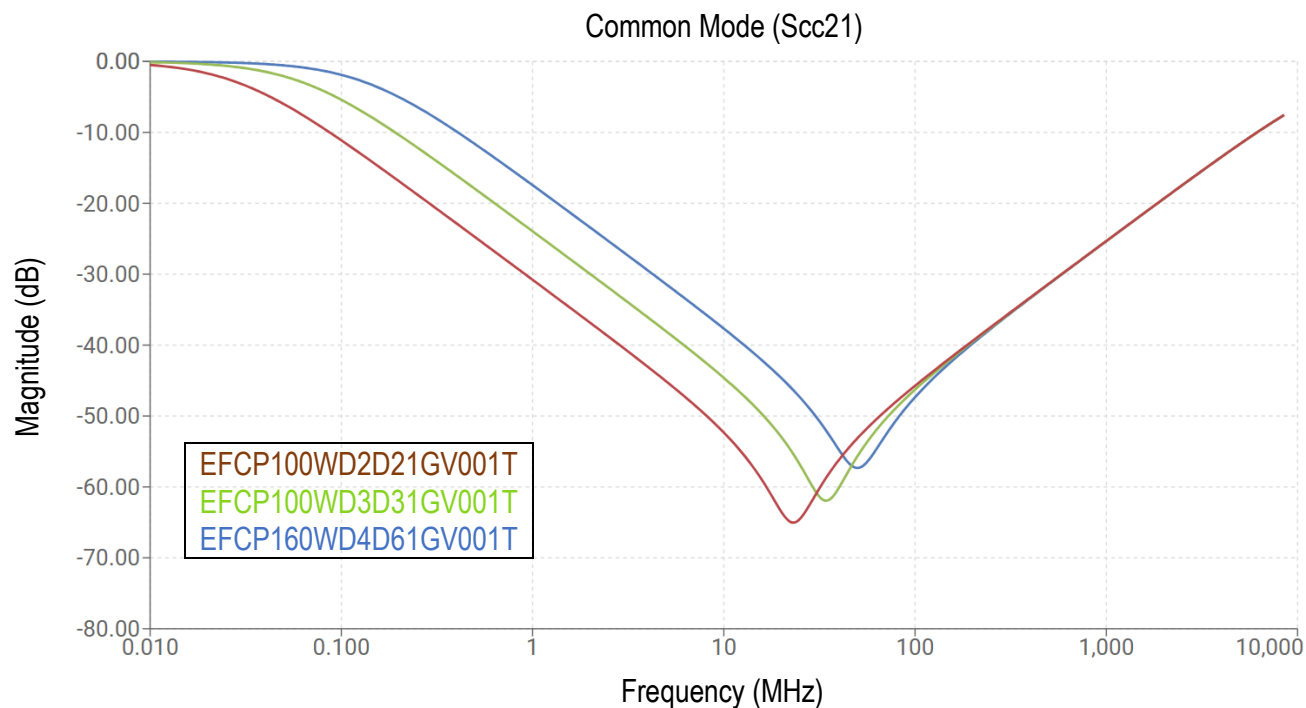


RF Plots Response

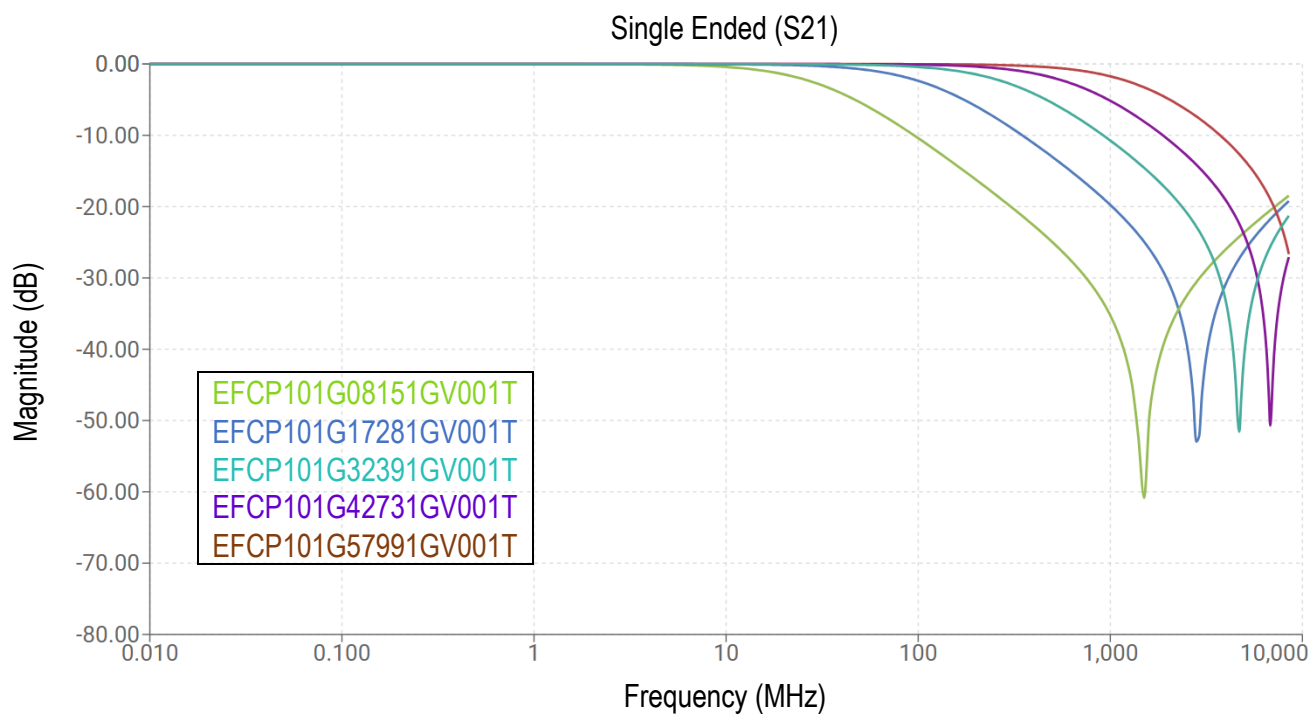
Differential Configuration (Common mode filter)



RF Plots Response

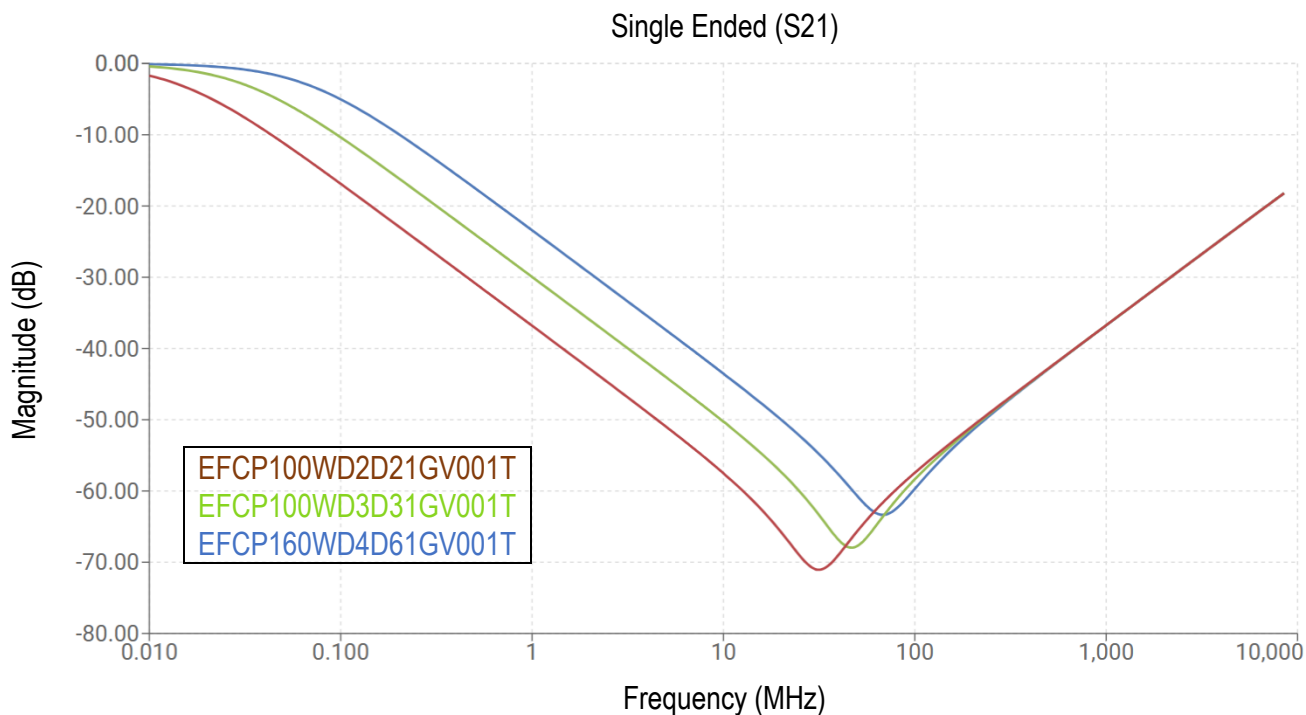
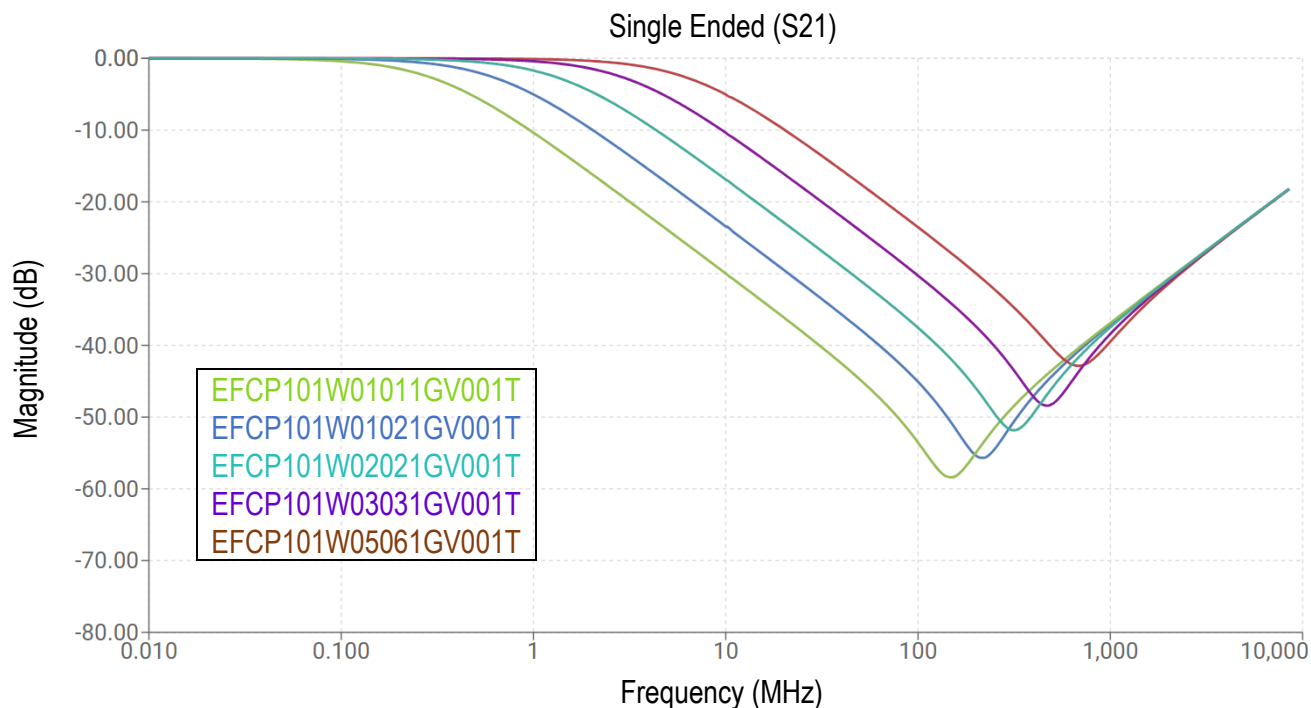


Single Ended Configuration





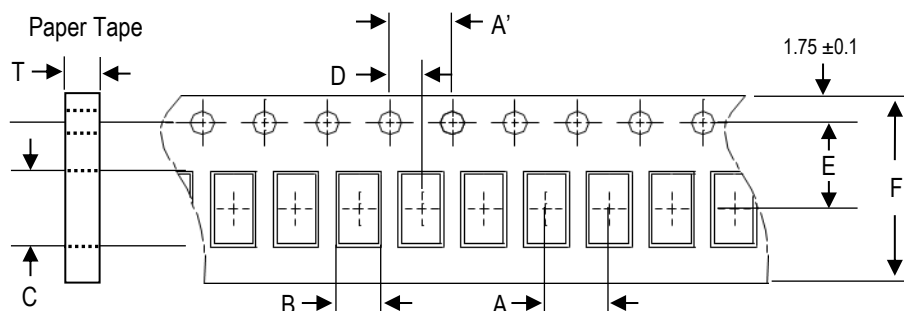
RF Plots Response



Please see our S21 plotter to see our expected filter response
<https://s21plotter.johansondielectrics.com/>

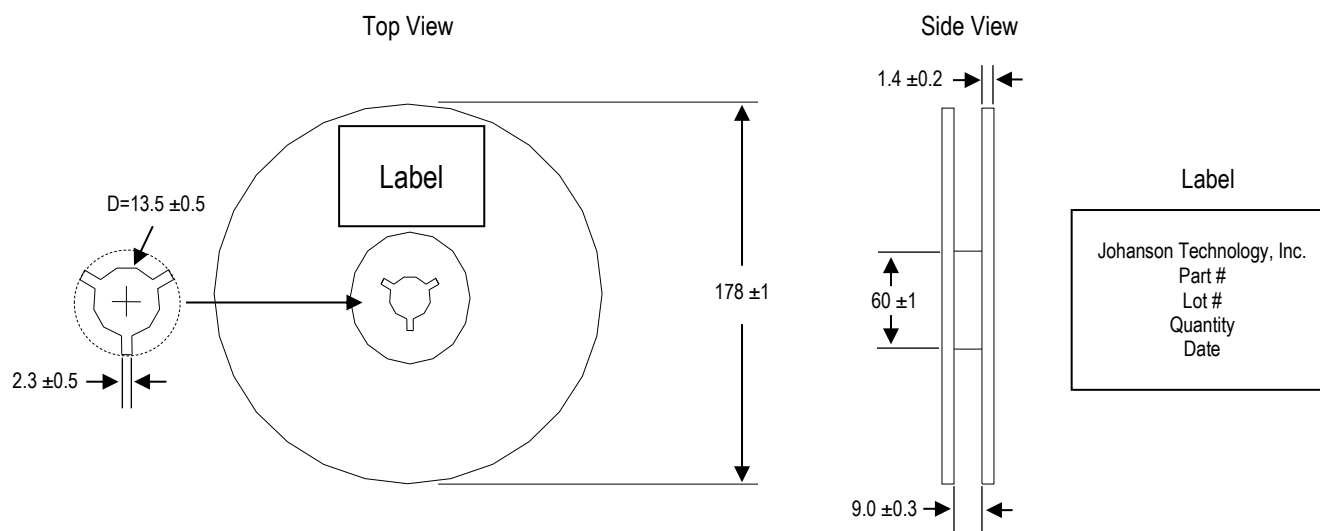
Tape and Reel Specification (Units in mm)

Tape Dimensions

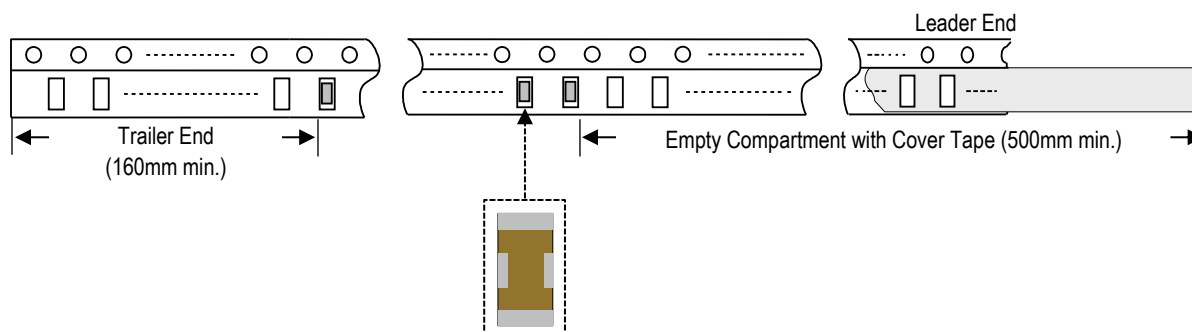


A	A'	B	C	D	E	F	T	Quantity/reel	Tape material
4.0 ± 0.1	4.0 ± 0.1	1.1 ± 0.1	1.92 ± 0.1	2.0 ± 0.1	3.5 ± 0.1	8.0 ± 0.2	0.85 Max.	4,000pcs	Paper

Reel Dimensions



Leader and Trailer Dimensions





Orderable Part Number Construction and Explanation

Part Number		Description	Configuration & Options			
EF	=	Family Code	EF	=	<i>Multi-Function EMI Filters</i>	
CP	=	Case Size	CF	=	0402	DF = 1210
			CP	=	0603	DK = 1410
			CT	=	0805	DR = 1812
			DD	=	1206	
101	=	Voltage	6R3	=	6.3V	500 = 50V
			100	=	10V	101 = 100V
			160	=	16V	501 = 500V
			250	=	25V	
G	=	Dielectric	G	=	NP0	
			W	=	X7R	
			X	=	X5R	
4273	=	Frequency Code	The first 2 digits represent the approximate frequency of the maximum attenuation in differential configuration .			
			The second 2 digits represent the approximate frequency of the maximum attenuation in single-ended configuration .			
			G1-G9 = 10,000 - 90,000 MHz 10-99 = 1,000 - 9,900 MHz 01-09 = 100 - 900 MHz D1-D9 = 10 - 99 MHz Example: G2 = 20,000 MHz 23 = 2,300 MHz 02 = 200 - 299 MHz D8 = 80 - 89 MHz			
1	=	Marking	1	=	No Mark	
GV	=	Termination	GV	=	NiSn (RoHs)	
			GF	=	Polyterm Sn (RoHs)	
			NT	=	Ni/SnPb	
001	=	Special Code	001	=	Default Commercial	
			002	=	Automotive AEC Q200	
T	=	Packing	T	=	7" Reel Paper Tape (0402-0603)	
			E	=	Embossed 7" (0805-1812)	
			U	=	Embossed 13"	
			R	=	Punched 13"	

Important Links

[EF Series EMI Filter Product Page](#)

[More Multifunction EMI Filters](#)

[S21 Plotter Tool](#)

[Spike Eliminator Tool](#)

[Antenna Tuning, Optimization, and Validation Services](#)

[Soldering Information](#)

[MSL Information](#)

[Packaging Information](#)

[Recommended Storage Condition and Max Shelf Life](#)

[RoHS Compliance](#)

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