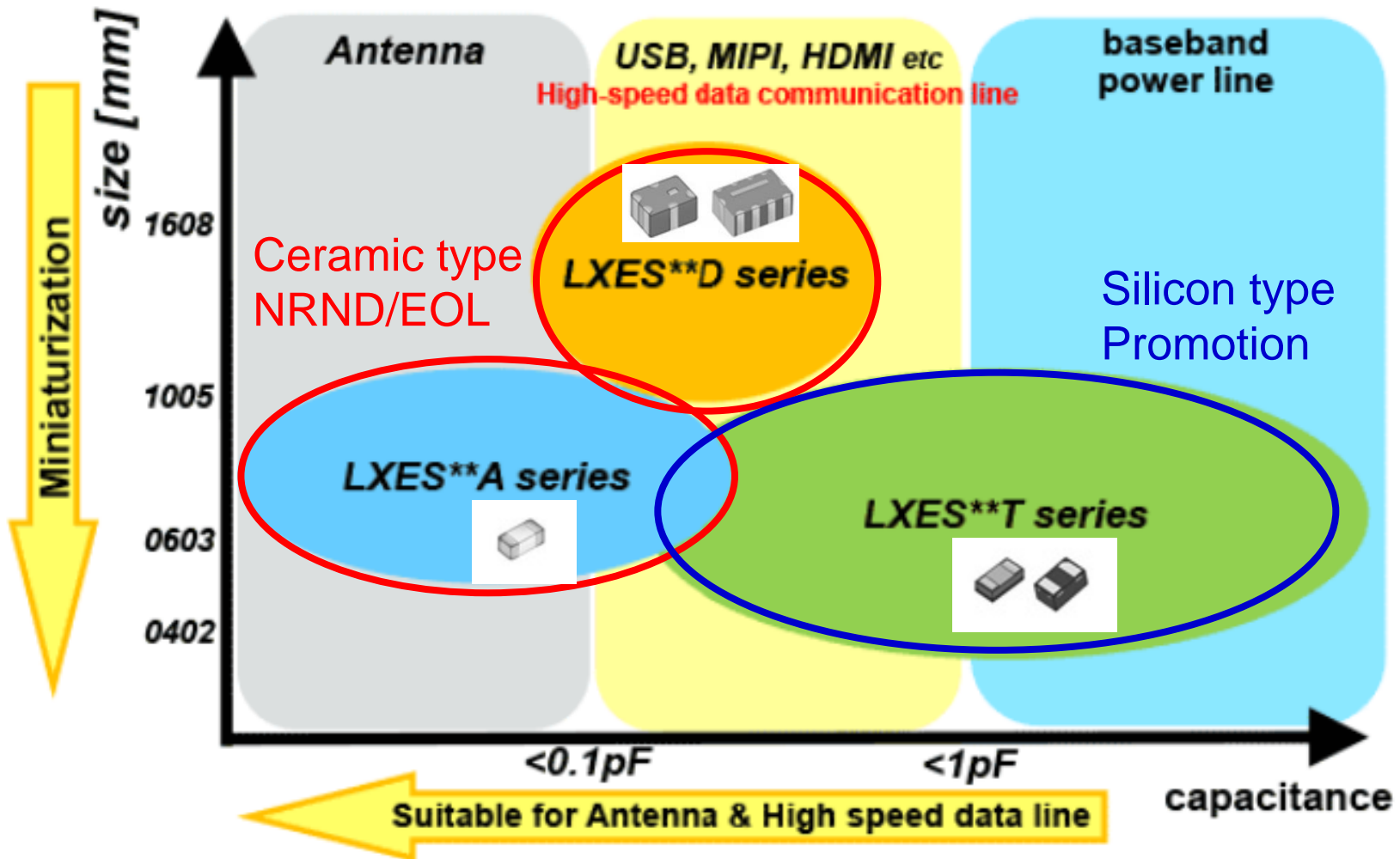


ESD LXES**A/**D series
Reference for replacement items

Murata Manufacturing Co., Ltd.



Product Map (NRND/EOL · Promotion category) *muRata* INNOVATOR IN ELECTRONICS



Ceramic ESD

~LXES**A series~

Introduction of alternatives to 0603 Ceramic ESD

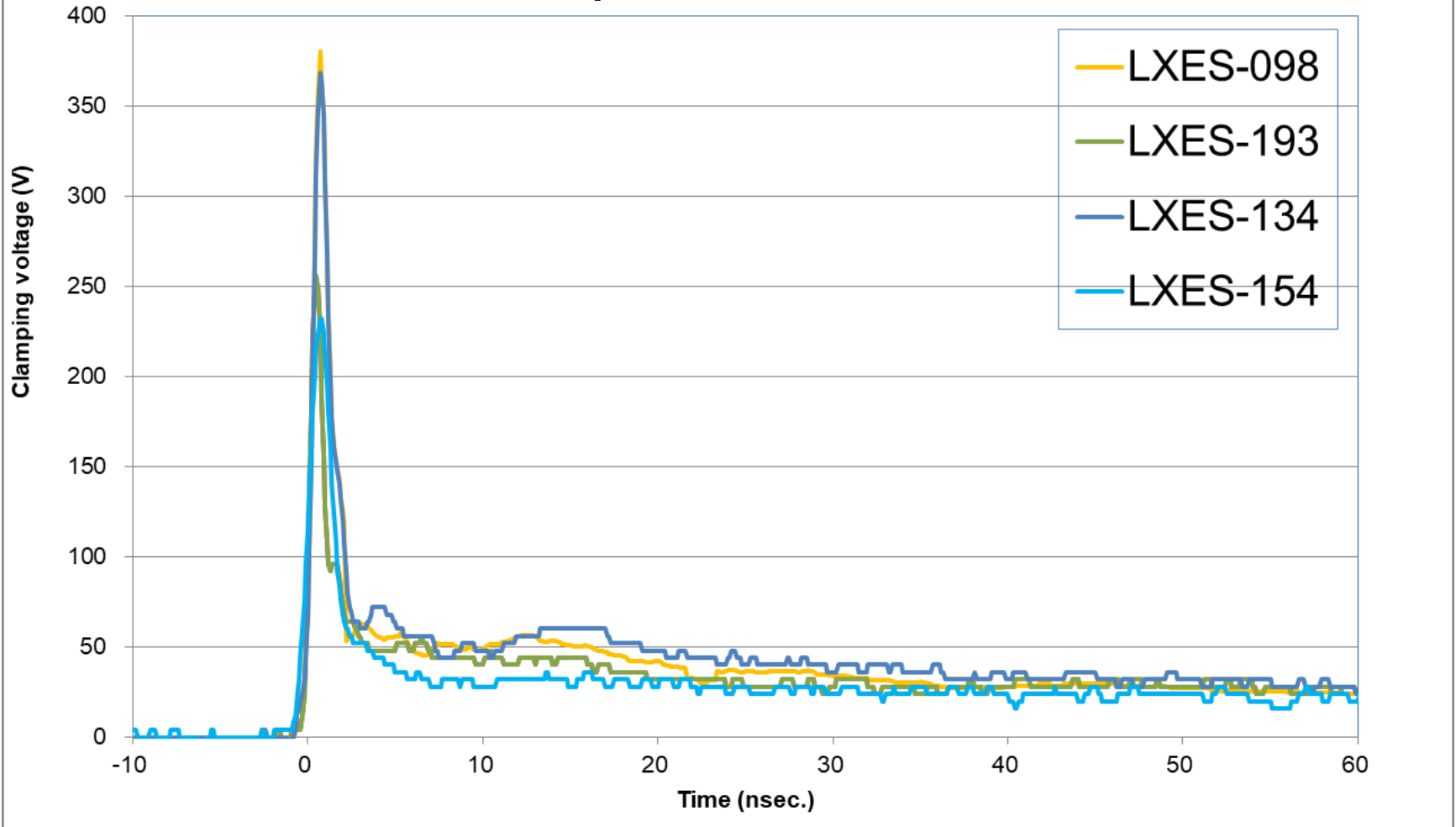
INNOVATOR IN ELECTRONICS

Murata PN	LXES03AAA 1-098	LXES03AAA 1-134	LXES03AAA 1-154	LXES03AAA 1-193	LXES03TBB 1-141	LXES03TAA 1-142	LXES03TAA 1-199
Size	0.6×0.3× 0.33max	0.6×0.3× 0.33max	0.6×0.3× 0.33max	0.6×0.3× 0.33max	0.6×0.3× 0.23max	0.6×0.3× 0.23max	0.6×0.3× 0.23max
Type	Ceramic ESD	Ceramic ESD	Ceramic ESD	Ceramic ESD	Si ESD	Si ESD	Si ESD
Rated voltage ※Reverse Working Voltage	15V	6.3V	4V	6.3V	±5.5V※	±5.5V※	±5.5V※
Capacitance	0.05pF	0.035pF	0.05pF	0.05pF	0.45pF	5pF	1.0pF
ESD per IEC 61000 4-2(air)	±15kV	±15kV	±15kV	±15kV	±25kV	±15kV	±30kV
ESD per IEC 61000 4- 2(contact)	±15kV	±15kV	±15kV	±15kV	±8kV	±8kV	±30kV

※We can suggest only Si ESD as Murata products. Please evaluate Si ESD if this device would be options to replace.

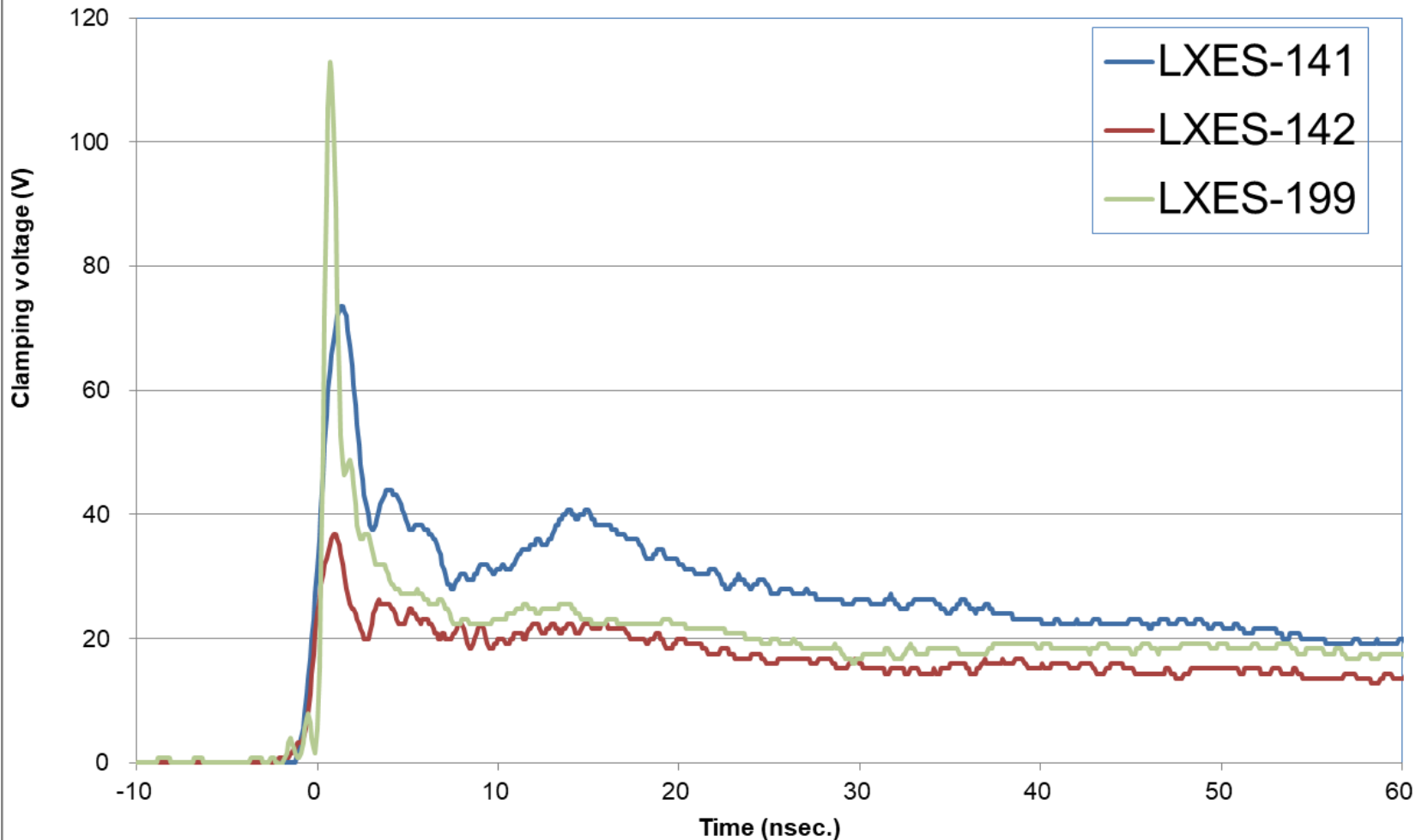
ESD Waveform Comparison (Ceramic)

ESD waveform (IEC61000-4-2 +8kV contact)
Representative data



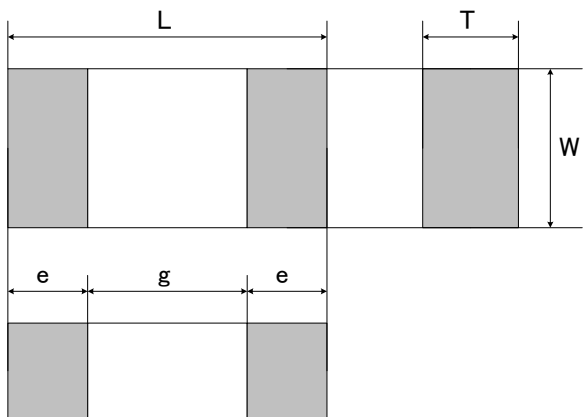
ESD Waveform Comparison (Si ESD)

ESD waveform (IEC61000-4-2 +8kV contact)
Representative data



Dimensions

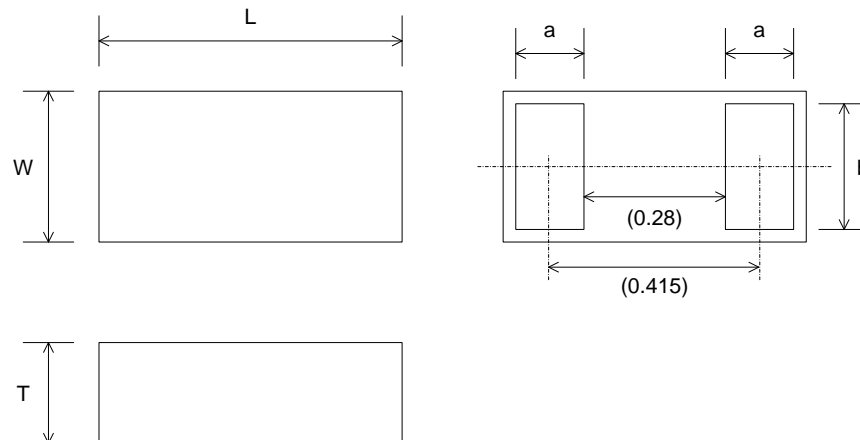
LXES03AAA1-098/134/154/193



(In mm)

Mark	Dimensions
L	0.60 ± 0.03
W	0.30 ± 0.03
T	0.33 max
e	0.15 ± 0.05
g	0.20 min

LXES03TBB1-141/LXES03TAA1-142 LXES03TAA1-199



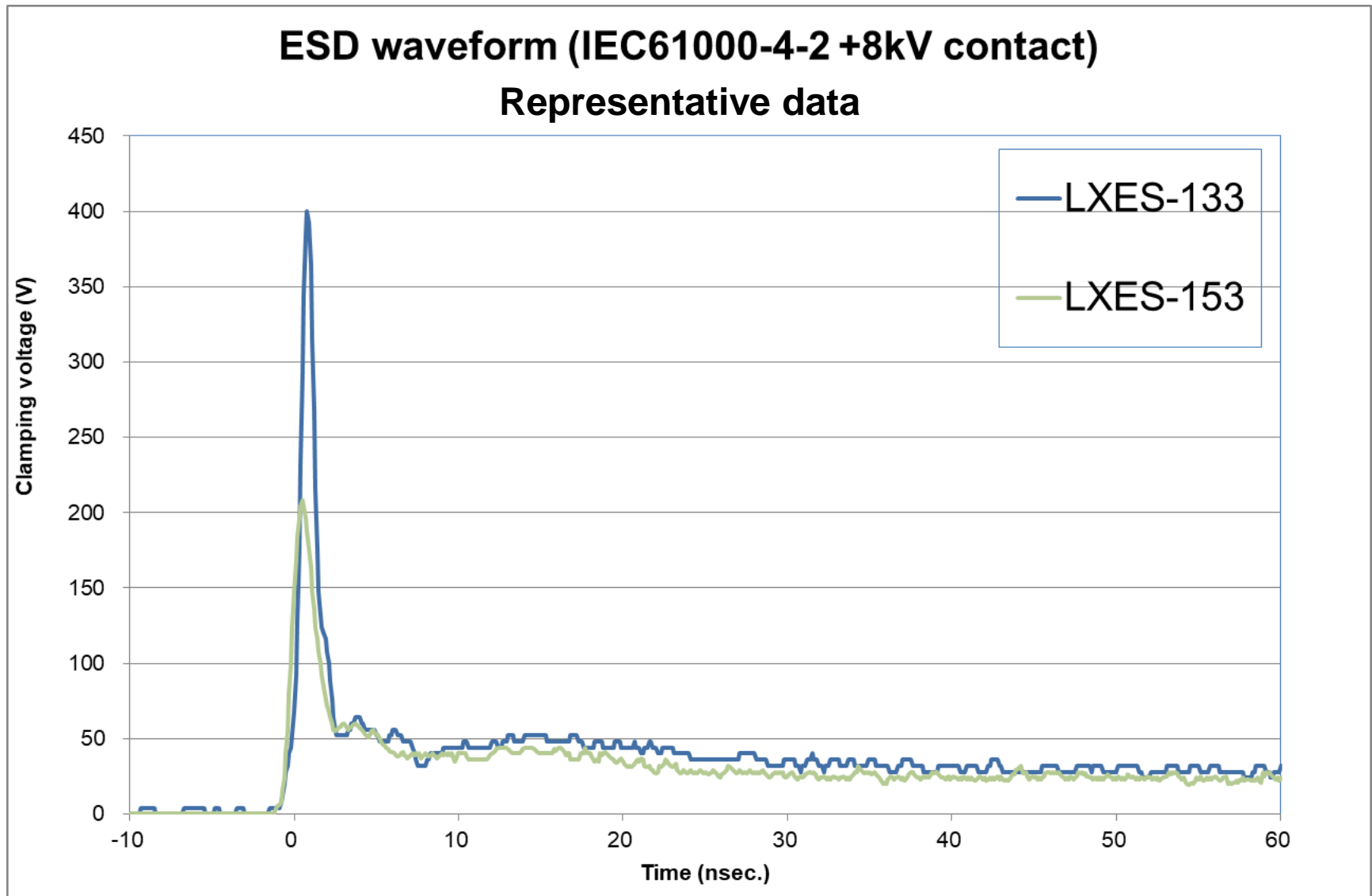
Mark	Size	Mark	Size
L	0.60 ± 0.03	a	0.135 ± 0.02
W	0.30 ± 0.03	b	0.250 ± 0.02
T	0.20 ± 0.03		

Introduction of alternatives to 1005 Ceramic ESD

Murata PN	LXES15AAA1-153	LXES15AAA1-133	LXES1UTAA1-157
Size	1.0×0.5×0.33max	1.0×0.5×0.33max	1.0×0.6×0.4max
Type	Ceramic ESD	Ceramic ESD	Si ESD
Rated voltage ※Reverse Working Voltage	4.0V	15V	±6.0V※
Capacitance (typ.)	0.05pF	0.05pF	0.5pF
ESD per IEC 61000 4-2(air)	±15kV	±15kV	±15kV
ESD per IEC 61000 4-2(contact)	±15kV	±15kV	±8kV

※We can suggest only Si ESD as Murata products. Please evaluate Si ESD if this device would be options to replace.

ESD Waveform Comparison (Ceramic)

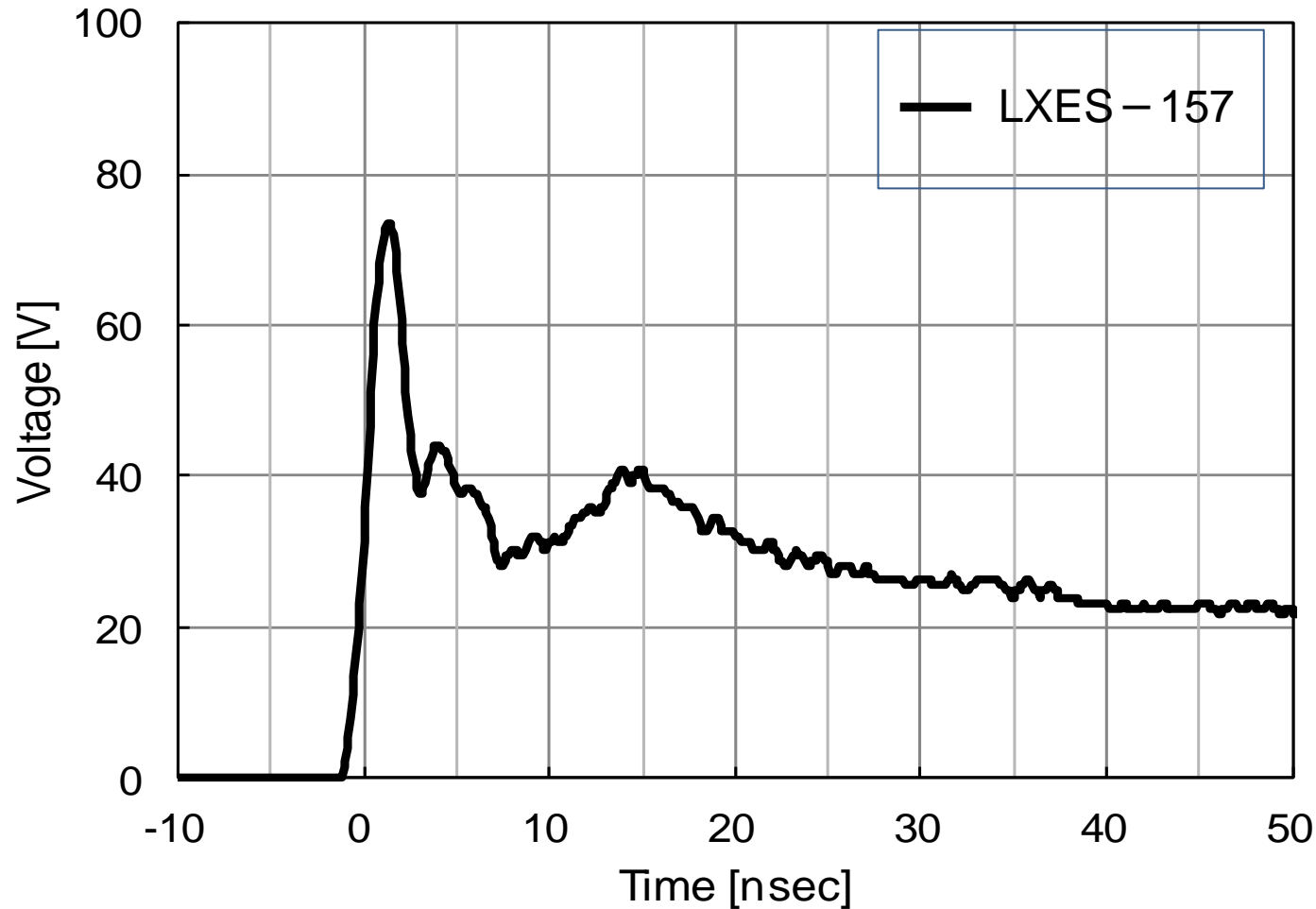


ESD Waveform Comparison (Si type)



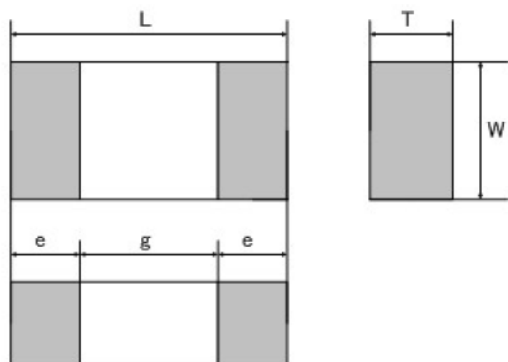
ESD Waveform(IEC61000-4-2: +8kV Contact)

Representative data



Dimensions

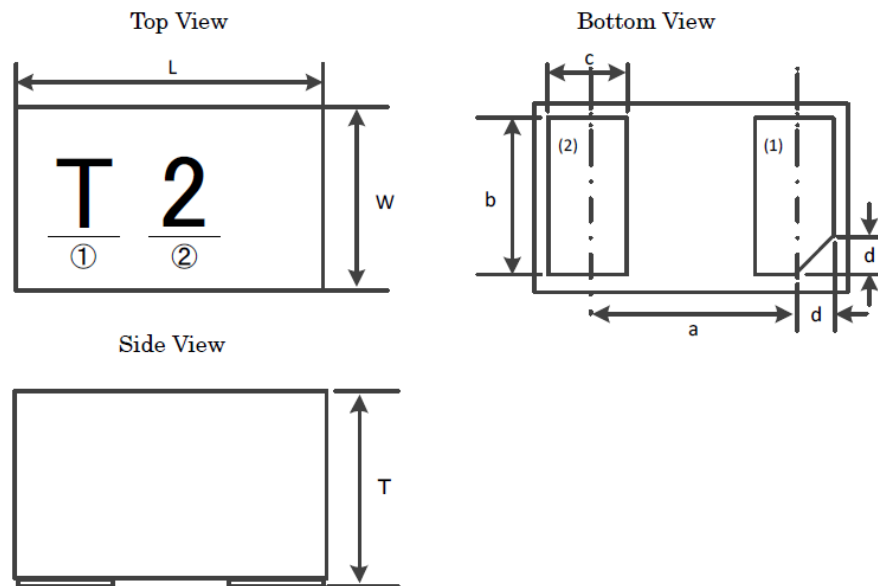
LXES15AAA1-133/153



Unit : mm

Size	L	W	T	e	g
1005	1.00±0.05	0.50±0.05	0.33 max	0.20±0.10	0.40 min

LXES1UTAA1-157



Unit : mm

symbol	size	symbol	size
L	1.0+/-0.05	b	0.5+/-0.05
W	0.6+/-0.05	c	0.25+/-0.05
T	0.4 max	d	(0.125)
a	(0.65)		

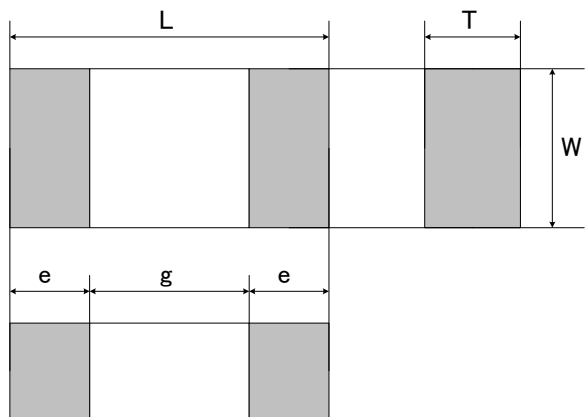
Introduction of competitor's 0603 size (Just reference)

PN	LXES03AAA1-098	LXES03AAA1-134	LXES03AAA1-154	LXES03AAA1-193	EZAEG1N50AC (Panasonic)
Size	0.6×0.3×0.33max	0.6×0.3×0.33max	0.6×0.3×0.33max	0.6×0.3×0.33max	0.6×0.3×0.26max
Type	Ceramic ESD	Ceramic ESD	Ceramic ESD	Ceramic ESD	Ceramic ESD
Rated voltage	15V	6.3V	4V	6.3V	30V
Capacitance	0.05pF	0.035pF	0.05pF	0.05pF	0.04pF
ESD per IEC 61000 4-2(air)	±15kV	±15kV	±15kV	±15kV	±15kV
ESD per IEC 61000 4-2(contact)	±15kV	±15kV	±15kV	±15kV	±15kV

※We pick up products that are closer to the size and performance from a datasheet, and do not guarantee the supply or performance. Please evaluate the replacement parts by yourself.

<https://industrial.panasonic.com/jp/products/emc-circuit-protection/circuit-protection/esd-suppressor/esd-suppressor-15kv-type/EZAEG1N50AC>

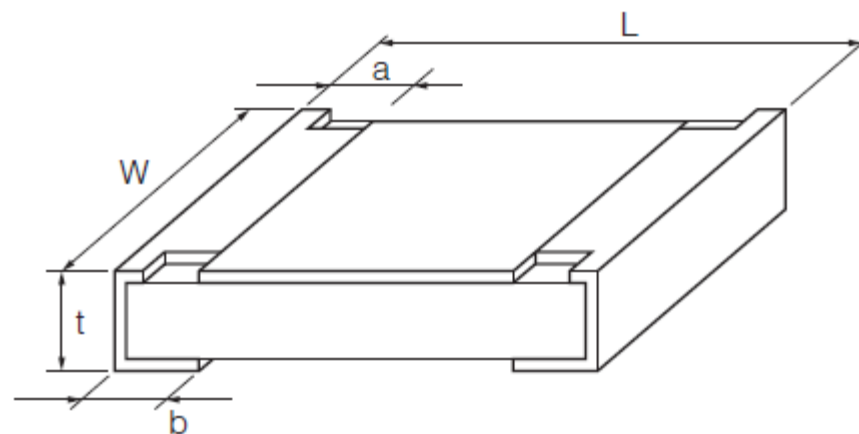
LXES03AAA1-098/134/154/193



(In mm)

Mark	Dimensions
L	0.60 ± 0.03
W	0.30 ± 0.03
T	0.33 max
e	0.15 ± 0.05
g	0.20 min

EZAEG1N50AC



Parts Number	Dimension(mm)				
	L	W	a	b	t
EZAEG1N	0.60 ± 0.03	0.30 ± 0.03	0.15 ± 0.10	0.15 ± 0.10	0.23 ± 0.03

Introduction of competitor's 1005 size (Just reference)

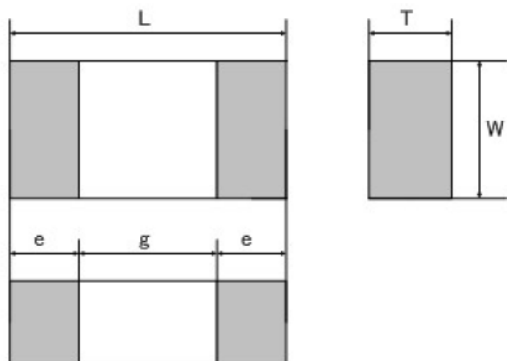
PN	LXES15AAA1-153	LXES15AAA1-133	EZAEG2N50AX (Panasonic)
Size	1.0×0.5×0.33 max	1.0×0.5×0.33 max	1.0×0.5×0.43 max
Type	Ceramic ESD	Ceramic ESD	Ceramic ESD
Rated voltage	4.0V	15V	30V
Capacitance (typ.)	0.05pF	0.05pF	0.05pF
ESD per IEC 61000 4-2(air)	±15kV	±15kV	±15kV
ESD per IEC 61000 4-2(contact)	±15kV	±15kV	±15kV

※We pick up products that are closer to the size and performance from a datasheet, and do not guarantee the supply or performance.
 Please evaluate the replacement parts by yourself.

<https://industrial.panasonic.com/jp/products/emc-circuit-protection/circuit-protection/esd-suppressor/esd-suppressor-15kv-type/EZAEG2N50AX>

Dimensions

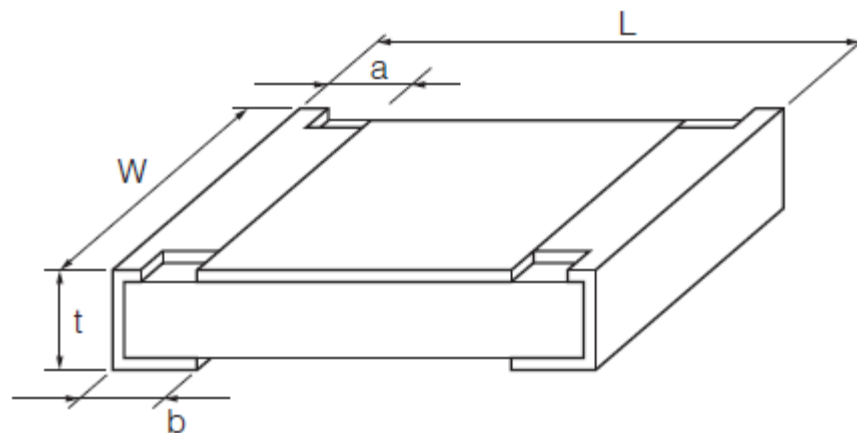
LXES15AAA1-133/153



Unit : mm

Size	L	W	T	e	g
1005	1.00±0.05	0.50±0.05	0.33 max	0.20±0.10	0.40 min

EZAEG2N50AX





Parts Number	Dimension(mm)				
	L	W	a	b	t
EZAEG2N	1.00±0.10	0.50±0.05	0.20±0.10	0.27±0.10	0.38±0.05

Ceramic ESD

~LXES**D series~

Introduction of competitor's ESD+CMCC (Just reference)

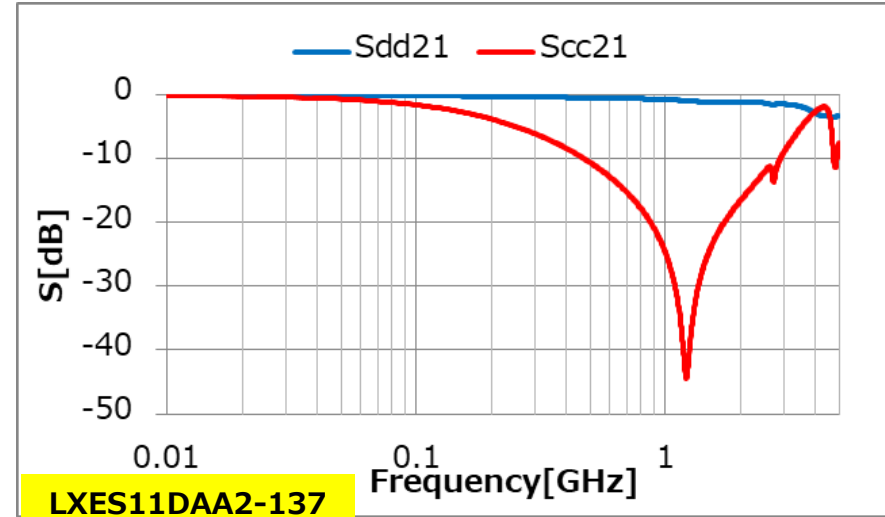
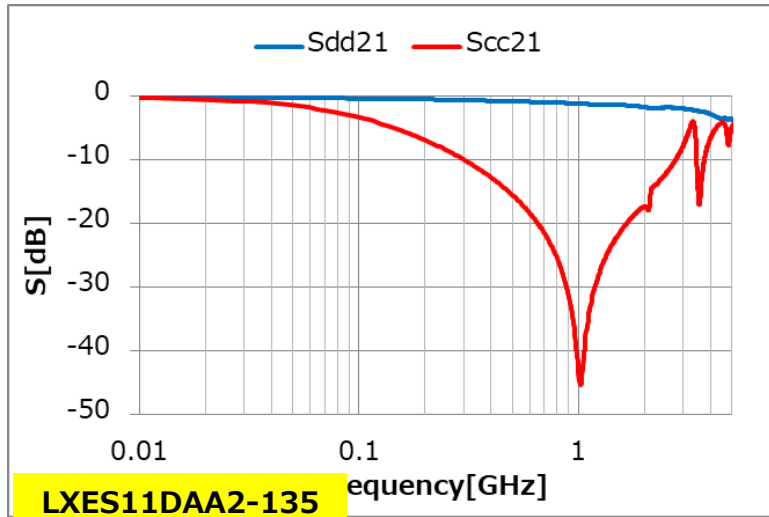
Murata PN	LXES11DAA2-135 	LXES11DAA2-137 	LCFE121002H900 TG (Littlefuse)	LCFE121002A500 TG (Littlefuse)	LCFE121002A650 TG (littlefuse)
Size	1.25×1.00×0.85 max	1.25×1.00×0.85 max	1.27×1.0×0.65 max	1.27×1.0×0.65 max	1.27×1.0×0.65 max
Type	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic
Rated voltage	5V	5V	5V	5V	5V
Common mode impedance @100MHz	60 ohm	35 ohm	90 ohm	50 ohm	65 ohm
DC resistance	3 ohm(typ)	2ohm(typ)	6 ohm(max)	4 ohm(max)	4 ohm(max)
ESD per IEC 61000 4-2(air)	±15kV	±15kV	±15kV	±15kV	±15kV
ESD per IEC 61000 4-2(contact)	±15kV	±15kV	±8kV	±8kV	±8kV

※We pick up products that are closer to the size, performance and line-up from a datasheet, and do not guarantee supply or performance. Please evaluate the replacement parts by yourself.

https://www.littelfuse.com/~media/electronics/datasheets/emc_components/littelfuse_emi_filter_lcfce_datasheet.pdf

S parameter from web datasheet

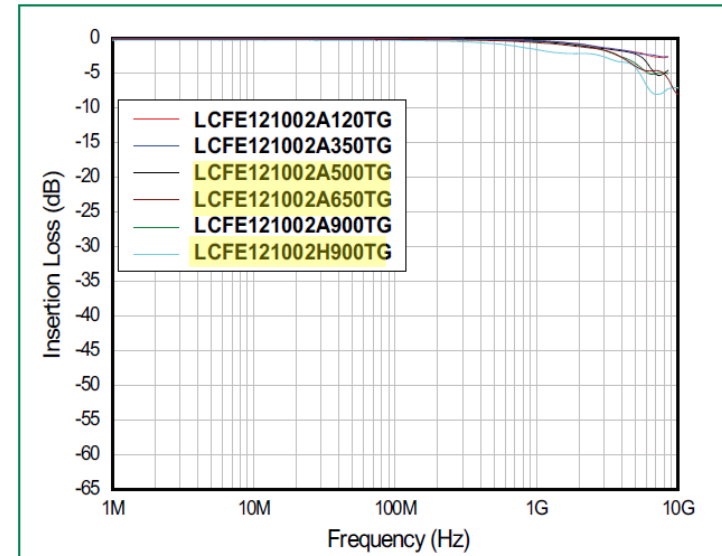
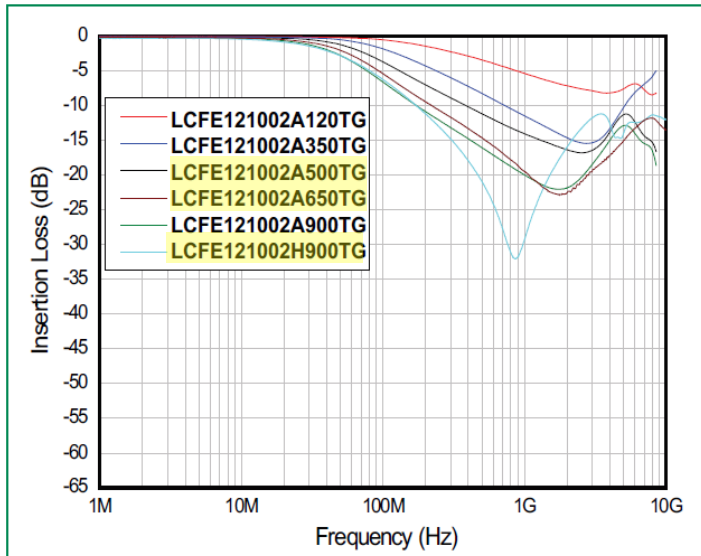
Murata



Transmission Characteristics (S-parameter)
Common Mode S21

Differential Mode S21

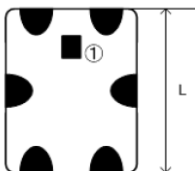
Littlefuse



LXES11DAA2-135/137

LXES11D series

Top View



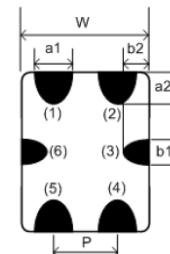
Side View 1



Side View 2



Bottom View



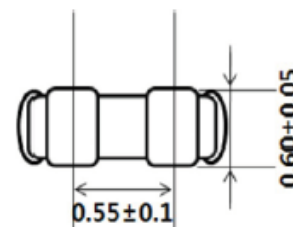
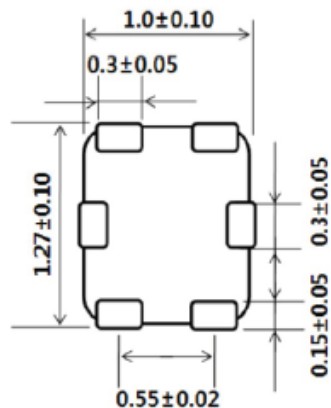
Unit : mm

Mark	Dimension
L	1.25 +/-0.1
W	1.0 +/-0.1
T	0.75 +/-0.1
a1	0.3 +/-0.1



Mark	Dimension
a2	0.25 +/-0.15
b1	0.2 +/-0.1
b2	0.2 +/-0.15
p	0.55 +/-0.05

LCFE121002H900TG/LCFE121002A500TG/LCFE121002A650TG

1210mm Size



Introduction of competitor's ESD+CMCC (Just reference)

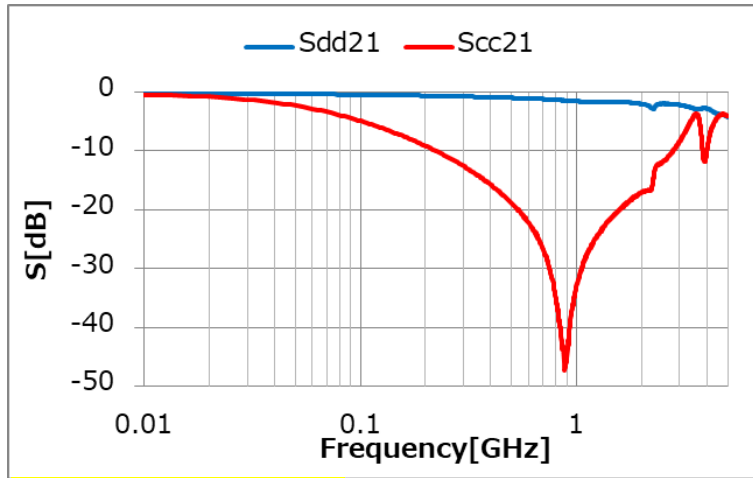
Murata PN	LXES0NDAA2-172 	LXES0NDAA2-185 	LCFE080602G900TG (Littlefuse)	LCFE080602A750TG (Littlefuse)
Size	0.87×0.67×0.52 max	0.87×0.67×0.52 max	0.87×0.67×0.55 max	0.87×0.67×0.55 max
Type	Ceramic	Ceramic	Ceramic	Ceramic
Rated voltage	5V	5V	5V	5V
Common mode impedance @100MHz	75 ohm	50 ohm	90 ohm	75 ohm
DC resistance	5 ohm(typ)	5ohm(typ)	8 ohm(max)	6 ohm(max)
ESD per IEC 61000 4-2(air)	±15kV	±15kV	±15kV	±15kV
ESD per IEC 61000 4-2(contact)	±15kV	±15kV	±8kV	±8kV

※We pick up products that are closer to the size, performance and line-up from a datasheet, and do not guarantee supply or performance. Please evaluate the replacement parts by yourself.

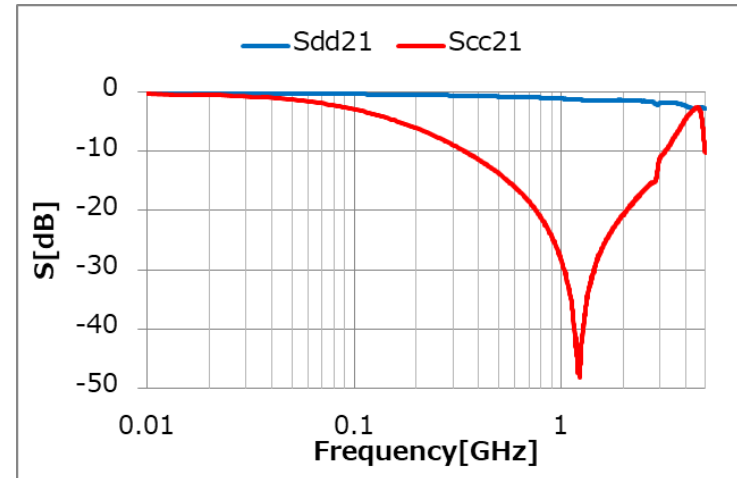
https://www.littelfuse.com/~media/electronics/datasheets/emc_components/littelfuse_emi_filter_lcf_e_datasheet.pdf

S parameter from web datasheet

Murata

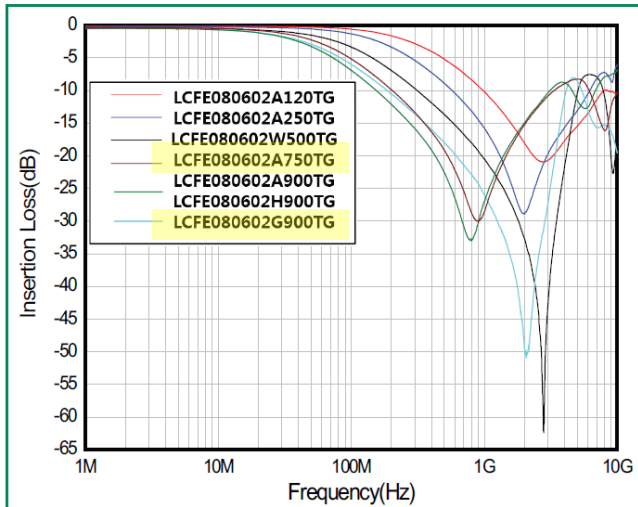


LXES0NDAA2-172

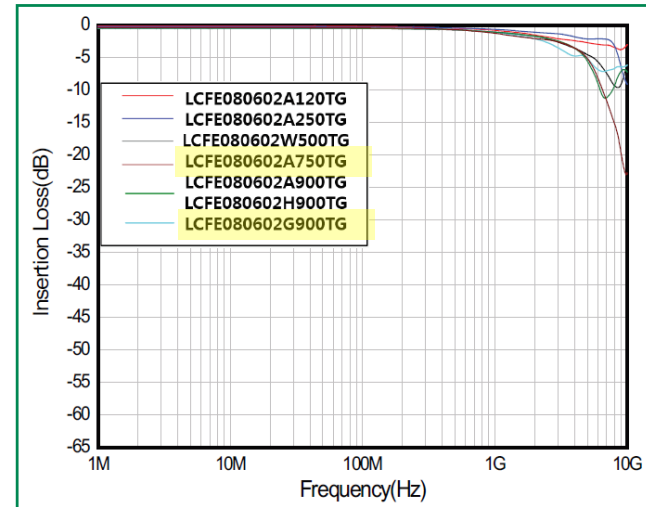


LXES0NDAA2-185

**Transmission Characteristics (S-parameter)
Common Mode S21**





Differential Mode S21



Littlefuse

Introduction of competitor's ESD+CMCC (Just reference)

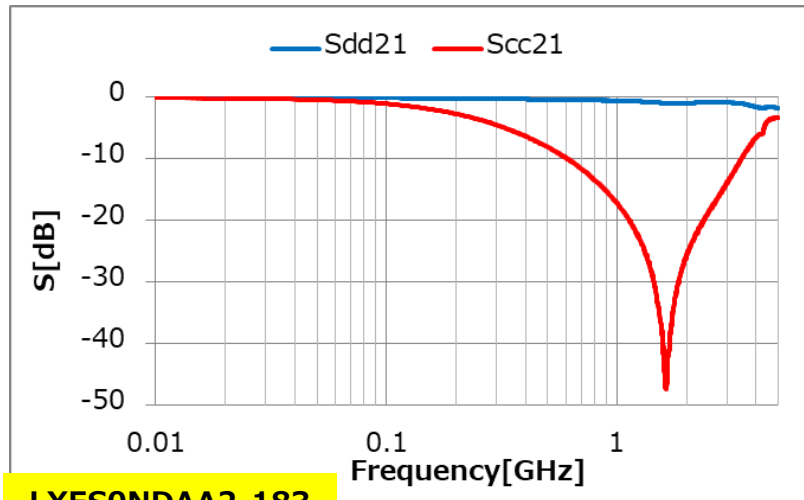
PN	LXES0NDAA2-183 	LXES0NDAA2-196 	LCFE080602A250 TG (Littlefuse)	LCFE080602W50 0TG (Littlefuse)	LCFE080602G900 TG (Littlefuse)
Size	0.87×0.67×0.52 max	0.87×0.67×0.52 max	0.87×0.67×0.55 max	0.87×0.67×0.55 max	0.87×0.67×0.55 max
Type	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic
Rated voltage	5V	5V	5V	5V	5V
Common mode impedance @100MHz	25ohm	9.5ohm	25 ohm	50 ohm	90 ohm
DC resistance	4 ohm (typ)	3 ohm (typ)	5 ohm (max)	7 ohm (max)	8 ohm(max)
ESD per IEC 61000 4-2(air)	±15kV	±15kV	±15kV	±15kV	±15kV
ESD per IEC 61000 4-2(contact)	±15kV	±15kV	±8kV	±8kV	±8kV

※We pick up products that are closer to the size, performance and line-up from a datasheet, and do not guarantee supply or performance. Please evaluate the replacement parts by yourself.

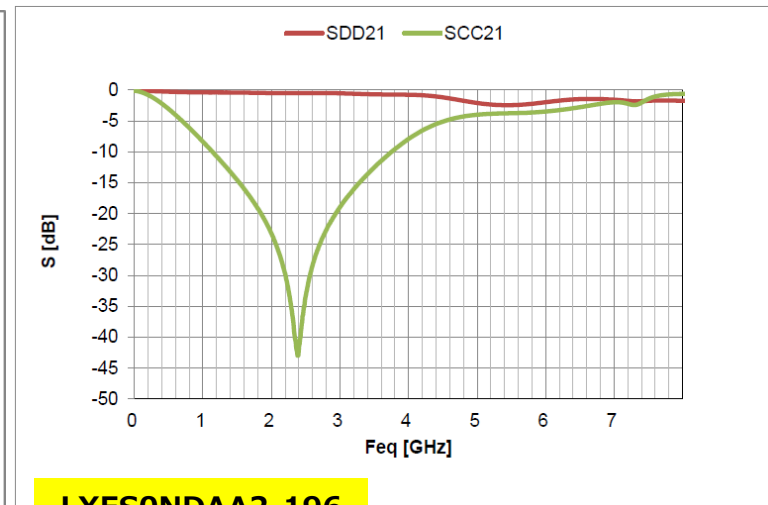
https://www.littelfuse.com/~media/electronics/datasheets/emc_components/littelfuse_emi_filter_lcf_e_datasheet.pdf

S parameter from web datasheet

Murata



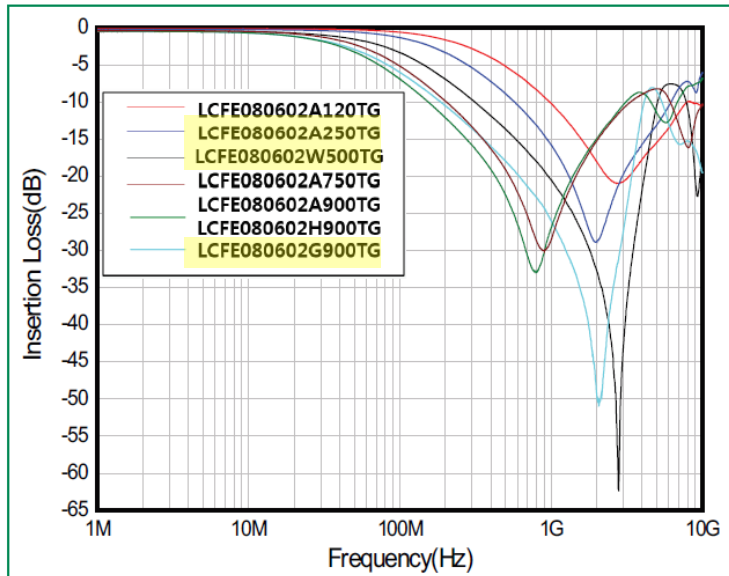
LXES0NDAA2-183



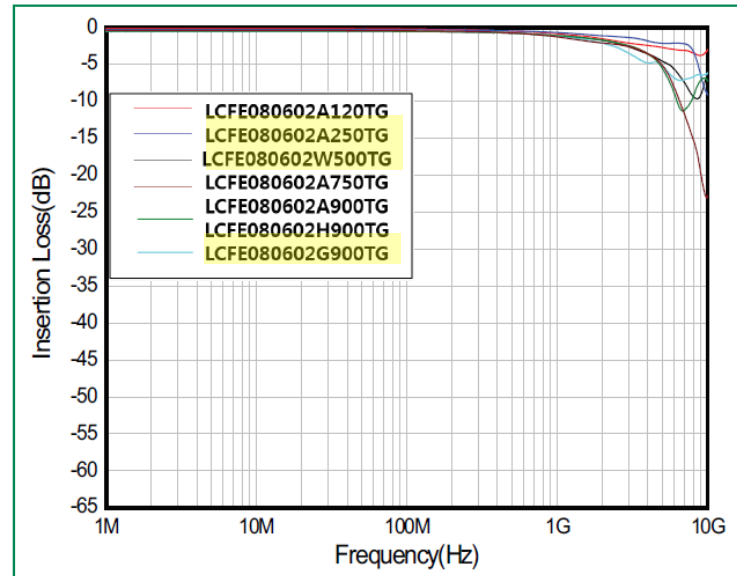
LXES0NDAA2-196

Transmission Characteristics (S-parameter)

Common Mode S21



Differential Mode S21

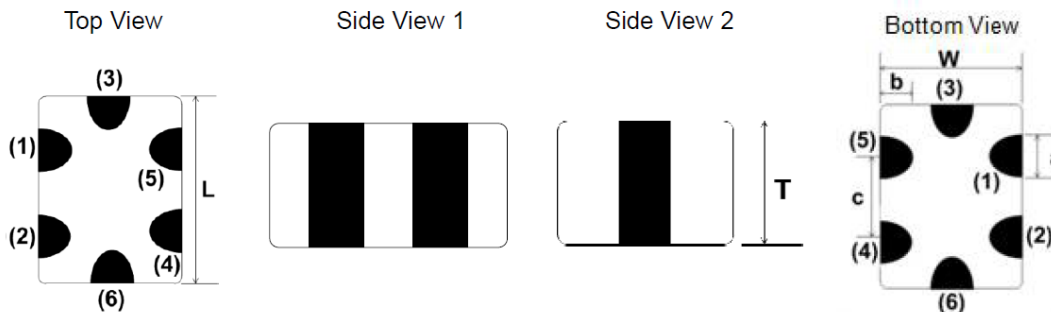


Littlefuse

Dimensions

LXES0NDAA2-172/185/183/196

LXES0NDseries



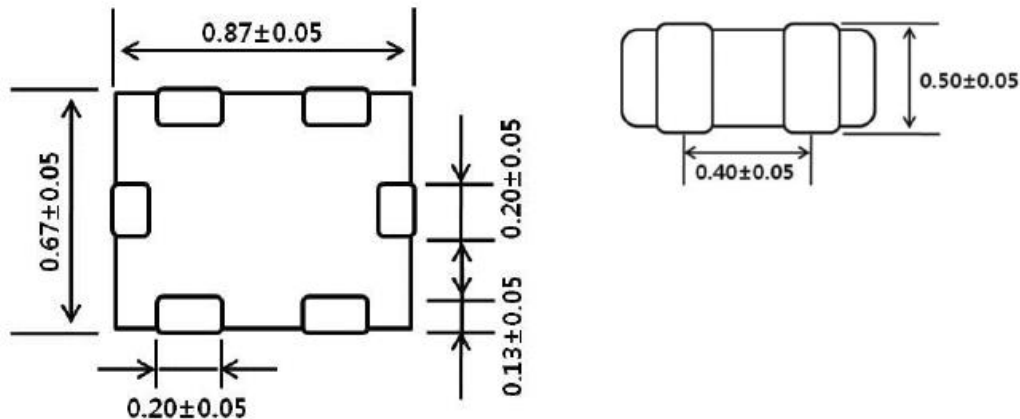
Unit : mm

Mark	Dimension
L	0.87 ± 0.05
W	0.67 ± 0.05
T	0.47 ± 0.05




Mark	Dimension
a	0.20 ± 0.05
b	0.15 ± 0.05
c	0.40 ± 0.05

LCFE080602A250TG/LCFE080602W500TG/LCFE080602G900TG

0806mm Size



Introduction of competitor's ESD+CMCC (Just reference)

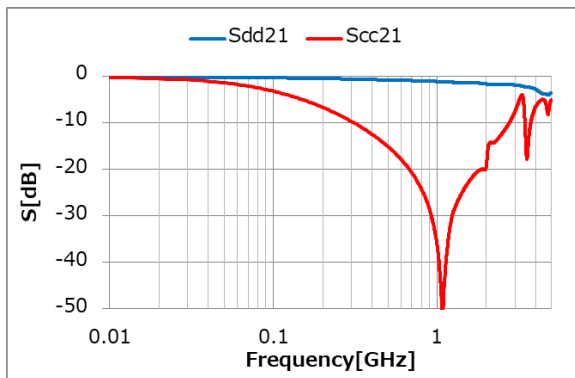
PN	LXES21DAA4-136 	LXES21DAA4-138 	LXES21DAA4-140 	LCFE201204A101 TG (Littlefuse)
Size	2.0×1.25×0.90 max	2.0×1.25×0.90 max	2.0×1.25×0.90 max	2.0×1.2×0.85 max
Type	Ceramic	Ceramic	Ceramic	Ceramic
Rated voltage	5V	5V	5V	5V
Common mode impedance @100MHz	60ohm	35ohm	90 ohm	100 ohm
DC resistance	3 ohm (typ)	2 ohm (typ)	4 ohm (typ)	4 ohm (max)
ESD per IEC 61000 4-2(air)	±15kV	±15kV	±15kV	±15kV
ESD per IEC 61000 4-2(contact)	±15kV	±15kV	±15kV	±8kV

※We pick up products that are closer to the size, performance and line-up from a datasheet, and do not guarantee supply or performance. Please evaluate the replacement parts by yourself.

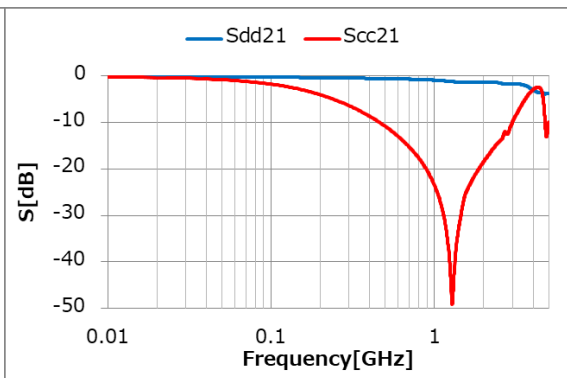
https://www.littelfuse.com/~media/electronics/datasheets/emc_components/littelfuse_emi_filter_lcfе_datasheet.pdf

S parameter from web datasheet

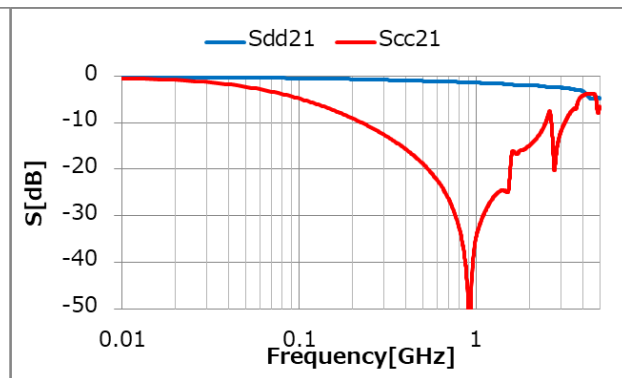
Murata



LXES21DAA4-136



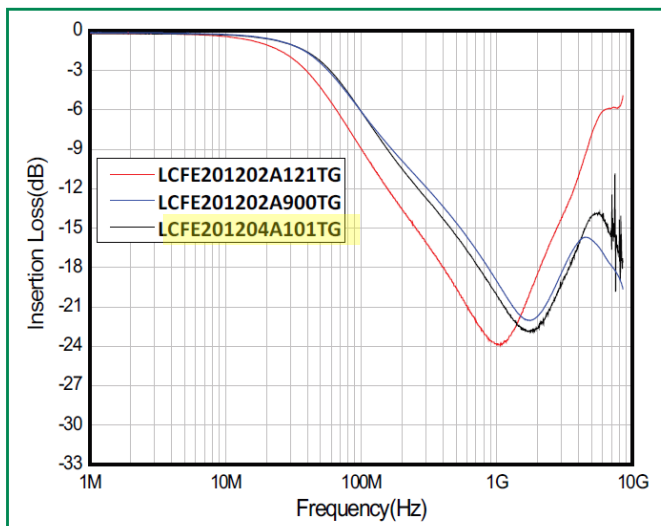
LXES21DAA4-138



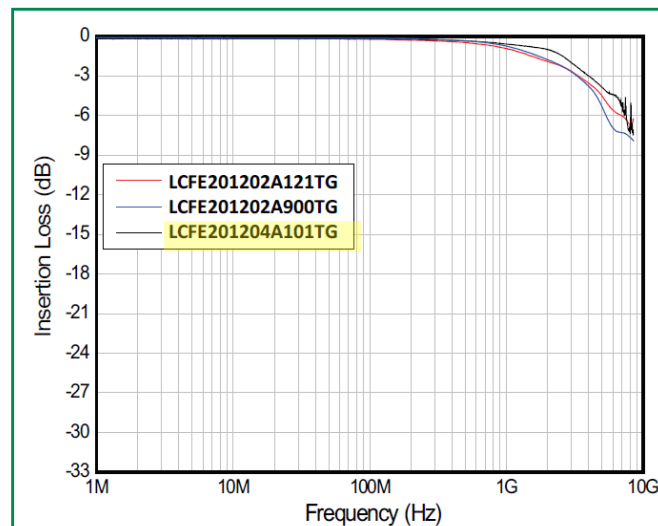
LXES21DAA4-140

Transmission Characteristics (S-parameter)

Common Mode S21



Differential Mode S21



Littlefuse

LXES21DAA4-136/138/140

LXES21Dseries

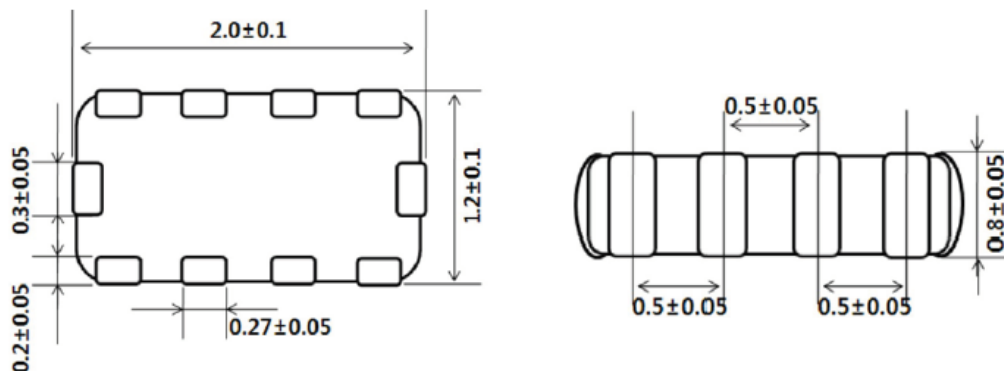


Unit : mm




Mark	Dimension	Mark	Dimension
L	2.0 +/-0.1	a2	0.2 +/-0.15
W	1.25 +/-0.1	b1	0.25 +/-0.1
T	0.80 +/-0.1/-0.05	b2	0.2 +/-0.15
a1	0.25 +/-0.1	p	0.5 +/-0.05

LCFE201204A101TG

2012mm Size (LCFE201204A101TG)



Introduction of competitor's ESD+CMCC (Just reference)

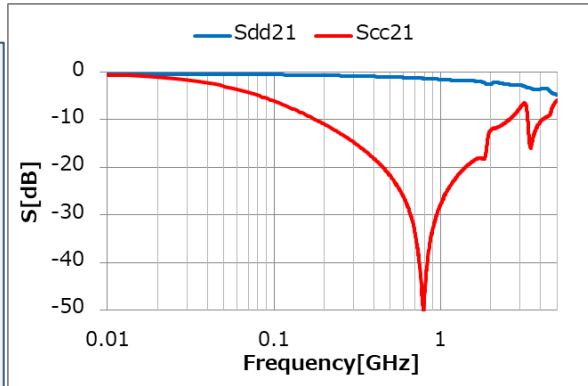
PN	LXES18DAA4 -167 	LXES18DAA4 -182 	LXES18DAA4 -184 	LCFE160804 H101TG (Littlefuse)	LCFE160804 A/350/550T G (Littlefuse)	LCFE160804 A750TG (Littlefuse)
Size	1.6×0.8×0.55 max	1.6×0.8×0.55 max	1.6×0.8×0.55 max	1.6×0.8×0.55 max	1.6×0.8×0.55 max	1.6×0.8×0.55 max
Type	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic
Rated voltage	5V	5V	5V	5V	5V	5V
Common mode impedance @100MHz	90ohm	25ohm	50 ohm	100 ohm	35/55 ohm	75 ohm
DC resistance	5 ohm (typ)	4 ohm (typ)	5 ohm (typ)	8 ohm (max)	6 ohm (max)	6 ohm (max)
ESD per IEC 61000 4-2(air)	±15kV	±15kV	±15kV	±15kV	±15kV	±15kV
ESD per IEC 61000 4-2(contact)	±15kV	±15kV	±15kV	±8kV	±8kV	±8kV

※We pick up products that are closer to the size, performance and line-up from a datasheet, and do not guarantee supply or performance. Please evaluate the replacement parts by yourself.

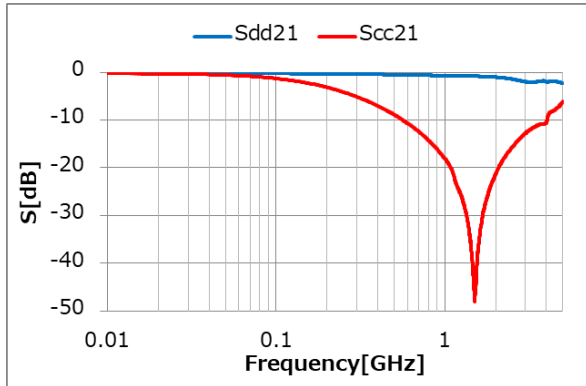
https://www.littelfuse.com/~media/electronics/datasheets/emc_components/littelfuse_emi_filter_lcf_e_datasheet.pdf

S parameter from web datasheet

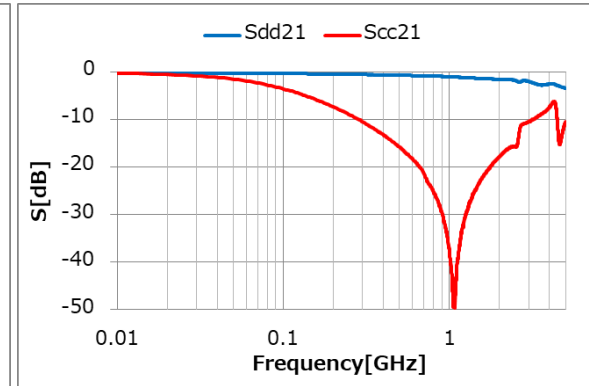
Murata



LXES18DAA4-167

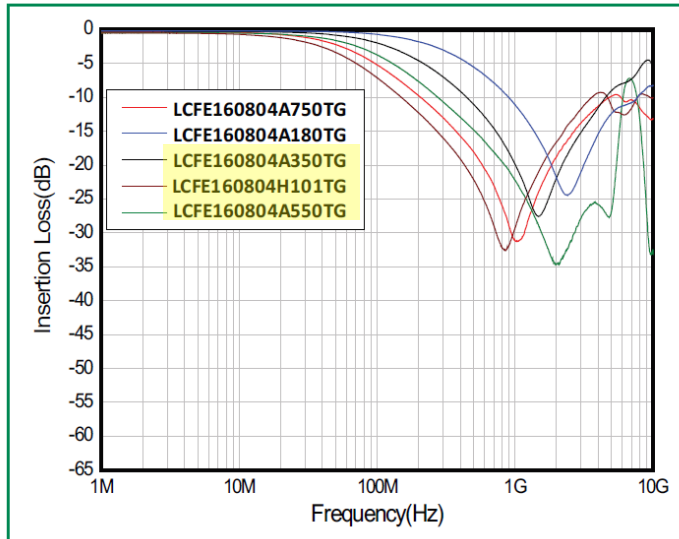


LXES18DAA4-182

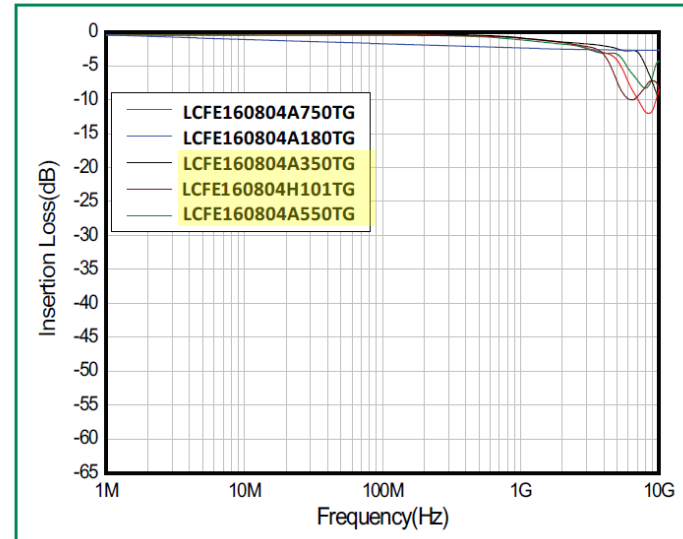


LXES18DAA4-184

Transmission Characteristics (S-parameter) Common Mode S21



Differential Mode S21

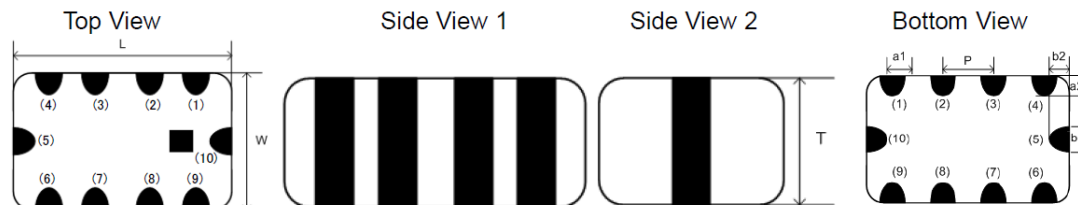


Littlefuse

Dimensions

LXES18DAA4-167/182/184

LXES18Dseries

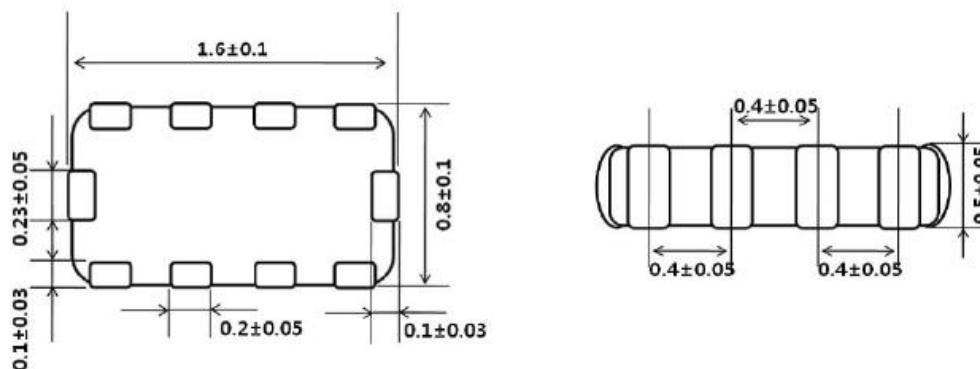


Unit : mm

Mark	Dimension	Mark	Dimension
L	1.6 +/-0.1	a2	0.15 +/-0.1
W	0.8 +/-0.1	b1	0.2 +/-0.1
T	0.5 +/-0.05	b2	0.15 +/-0.1
a1	0.2 +/-0.1	p	0.4 +/-0.05

LCFE160804H101TG/LCFE160804A350/550TG/LCFE160804A750TG

1608mm Size



***Thank you very much
for your attention!***

