

Ceramic Filters (CERAFIL®) / Ceramic Discriminators for Communications Equipment



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*Innovator
in Electronics*

Murata
Manufacturing Co., Ltd.

for EU RoHS Compliant

- All the products in this catalog comply with EU RoHS.
- EU RoHS is "the European Directive 2002/95/EC on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment".
- For more details, please refer to our website 'Murata's Approach for EU RoHS' (<http://www.murata.com/info/rohs.html>).

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● Part Numbering

Ceramic Filters (CERAFIL®) for IF

(Part Number)

SF	P	KA	455K	D4A		-R0
SF	E	CF	10M7	DF00	S0	-R0
①	②	③	④	⑤	⑥	⑦

① Product ID

② Oscillating/Element

Product ID	Oscillating/Element
CF	U 4 Elements Area Expansion mode
	W 6 Elements Area Expansion mode
SF	P 4 Elements Area Expansion mode
	E 2 Elements Thickness Expansion mode
	S 2 Elements Thickness Shear mode

③ Structure/Size

Code	Structure/Size
C□/K□	Chip Type
L□	Lead Type

□ is "A" or subsequent code, which indicates the size. It varies depending on vibration mode and number of elements.
 Chip type is only applied for SF series.

④ Nominal Center Frequency

Expressed by four-digit alphanumerics. The unit is hertz (Hz). If the unit is "kHz", it is expressed by three figures plus "K". If the unit is "MHz", a decimal point is expressed by the capital letter "M".

⑤ Product Specification

Code	Product Specification
D4A	Three-digit alphanumerics express pass band width, center frequency tolerance and design type.

SFE/SJ series are expressed by four-digit alphanumerics.

⑥ Individual Specification

Code	Individual Specification Code
001	Expressed by three-digit alphanumerics.

SFE/SJ series are expressed by two-digit alphanumerics.
 With standard type, ⑥ is omitted.

⑦ Packaging

Code	Packaging
-B0	Bulk
-R0	Embossed Taping ø=180mm
-R1	Embossed Taping ø=330mm
-M0	Magazine

Magazine cassette is applied to lead type and embossed taping to chip type.

Ceramic Discriminators for IF (kHz)

(Part Number)

CD	B	LB	450K	C	A	X	16	-B0
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Product ID

Product ID	
CD	Ceramic Discriminators

② Oscillating

Code	Oscillating
B	Area Expansion mode

③ Structure/Size

Code	Structure/Size
C□/K□	Chip Type
L□	Lead Type

□ is "A" or subsequent code, which indicates the size. It varies depending on vibration mode and number of elements.

④ Nominal Center Frequency

Expressed by four-digit alphanumerics. The unit is in hertz (Hz). Capital letter "K" following three figures expresses the unit of "kHz".

⑤ Detection

Code	Detection
C	Quadrature Detection

⑥ Application

Code	Application
A	Standard
L	Application with coil

⑦ Element Type

Code	Element Type
X	Low-capacitance
Y	High-capacitance

⑧ IC

Code	IC
16	Applicable IC Control code

⑨ Packaging

Code	Packaging
-B0	Bulk
-R0	Embossed Taping ø=180mm
-R1	Embossed Taping ø=330mm
-M0	Magazine

Magazine cassette is applied to lead type and embossed taping to chip type. With non-standard products, one letter indicating "Individual Specification" is added between "⑧Applicable IC" and "⑨Package Specification code".

Ceramic Discriminators for IF (MHz)

(Part Number)

CD	S	CB	10M7	GF	001	-R0
①	②	③	④	⑤	⑥	⑦

① Product ID

Product ID	
CD	Discriminators

② Oscillation

Code	Oscillation
S	Thickness Shear mode

③ Structure/Size

Code	Structure/Size
C□	Chip Type

□ is expressed "A" or subsequent code, which indicates the size.

④ Nominal Center Frequency

Expressed by four-digit alphanumerics. The unit is in hertz (MHz). Decimal point is expressed by capital letter "M".

⑤ Product Specification

Code	Product Specification
GF	Two-digit alphanumerics express type, center frequency, rank, others

⑥ IC

Code	IC
001	Applicable IC Control Code

⑦ Packaging

Code	Packaging
-R0	Embossed Taping ø=180mm

With non-standard products, an alphanumerics indicating "Individual Specification" is added between "⑥IC" and "⑦Packaging".

● SMD Type (kHz)

Type	Applications	General Use											Attenuation (dB) min.
	Series	6dB Bandwidth (kHz) min.											
		A	B	C	D	E	F	G	H	J	K	L	
		±17.5	±15	±12.5	±10	±7.5	±6	±4.5	±3	±2	±1.5	±1	
High Selectivity Series (Plastic Case Type)	SFPKA455K□ (4 Elements)	—	—	—	●	●	●	●	●	—	—	—	27 (G to H ; 25)
	CFUKG455K□ (4 Elements)	—	—	—	●	●	●	●	—	—	—	—	27 (G ; 25)
Narrow Bandwidth GDT Flat Type Miniature Series (Plastic Case Type)	CFUKG455K□X (4 Elements)	—	—	—	—	●	●	●	●	—	—	—	27 (G to H ; 25)
GDT Flat Type Miniature Series (Plastic Case Type)	CFUKF455K□ (4 Elements)	●	●	●	●	●	—	—	—	—	—	—	25 (D to E ; 23)
GDT Flat Type High Selectivity SMD Series (Plastic Case Type)	CFWKA450KBFY (6 Elements)	—	●	—	—	—	—	—	—	—	—	—	45
High Selectivity SMD Series (Plastic Case Type)	CFWKA450K□ (6 Elements)	—	—	—	●	●	●	●	—	—	—	—	50

Type	Applications	General Use											Attenuation (dB) min.
	Series	6dB Bandwidth (kHz) min.											
		A	B	C	D	E	F	G	H	J	K	L	
		±17.5	±15	±12.5	±10	±7.5	±6	±4.5	±3	±2	±1.5	±1	
High Selectivity Low Profile Series	CFULA455K□ (4 Elements)	–	●	●	●	●	●	●	●	–	–	–	27 ^(G ; 25) (H ; 35)
	CFWLA455K□ (6 Elements)	–	●	●	●	●	●	●	●	●	–	–	35 (H, J ; 60)
High Selectivity Miniature Series	CFULB455K□ (4 Elements)	–	●	●	●	●	●	●	●	●	–	–	27 ^(G ; 25) (H, J ; 35)
	CFWL B455K□ (6 Elements)	–	●	●	●	●	●	●	●	●	–	–	35 (H, J ; 55)
GDT Flat Type Series	CFULA455K□Y (4 Elements)	–	●	●	●	●	●	●	–	–	–	–	25 (D to G ; 23)
	CFWLA455K□Y (6 Elements)	●	●	●	●	●	●	●	–	–	–	–	40
GDT Flat Type Miniature Series	CFULB455K□Y (4 Elements)	–	●	●	●	●	●	●	–	–	–	–	25 (D to G ; 23)
	CFWL B455K□Y (6 Elements)	●	●	●	●	●	●	●	–	–	–	–	40 (F ; 35)

Ceramic Filters (CERAFIL®) for Communications Equipment

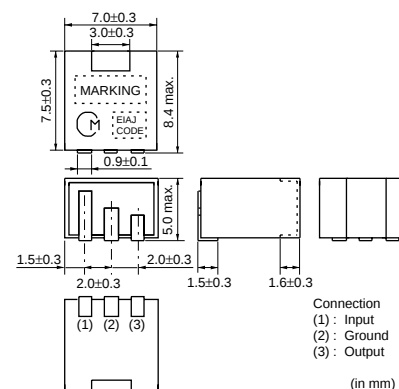
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1

CERAFIL® kHz SMD Type SFPKA Series

The SFPKA series is comprised of small, high performance, economical, thin (5.0mm) filters consisting of 4 ceramic elements.

Their innovative construction is perfect for shrinking mobile communication products such as cordless phones, pagers and transceivers.



■ Features

1. The filters are mountable by automatic placers.
2. The filters can be reflow soldered and withstand washing.
3. They are slim, at only 5.0mm maximum thickness.
4. The bandwidth ranges from D to H.
5. Operating temperature range: -20 to +80 (degrees C)
Storage temperature range: -40 to +85 (degrees C)

Part Number	Center Frequency (fo) (kHz)	6dB Bandwidth (kHz)	Stop Bandwidth (kHz)	Stop Band Attenuation (dB)	Insertion Loss (dB)	Ripple (dB)	Input/Output Impedance (ohm)
SFPKA455KD4A-R1	455 ±1.5kHz	fn±10.0 min.	fn±20.0 max. [within 40dB]	27 min. [within fn±100kHz]	4.0 max. [at minimum loss point]	2.0 max. [within fn±7kHz]	1500
SFPKA455KE4A-R1	455 ±1.5kHz	fn±7.5 min.	fn±15.0 max. [within 40dB]	27 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	1.5 max. [within fn±5kHz]	1500
SFPKA455KF4A-R1	455 ±1.5kHz	fn±6.0 min.	fn±12.5 max. [within 40dB]	27 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	1.5 max. [within fn±4kHz]	1500
SFPKA455KG1A-R1	455 ±1.0kHz	fn±4.5 min.	fn±10.0 max. [within 40dB]	25 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	1.5 max. [within fn±3kHz]	1500
SFPKA455KH1A-R1	455 ±1.0kHz	fn±3.0 min.	fn±9.0 max. [within 40dB]	35 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	1.5 max. [within fn±2kHz]	2000

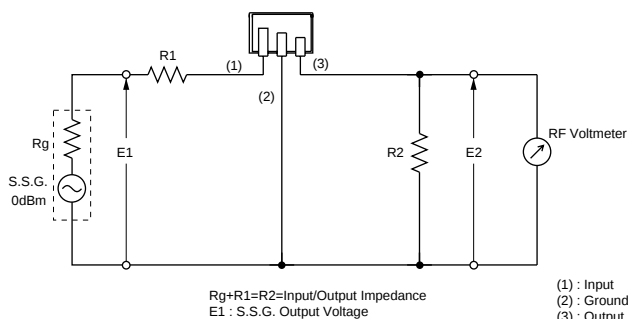
Center frequency (fo) defined by the center of 6dB bandwidth.

(fn) means nominal center frequency 455kHz.

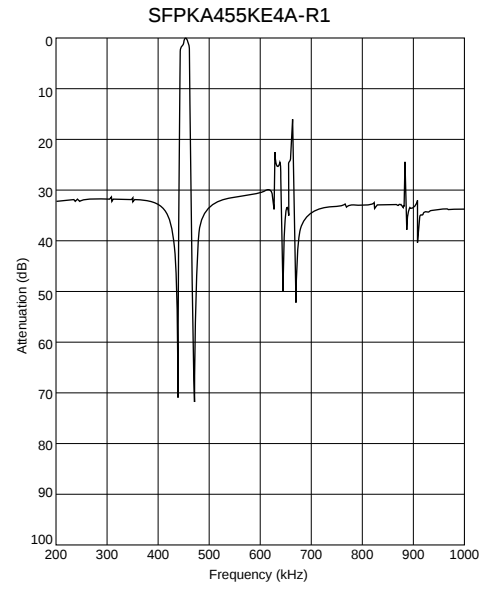
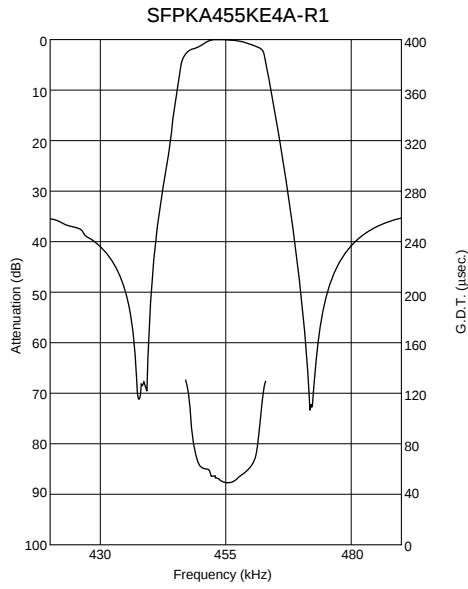
For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.

The order quantity should be an integral multiple of the "Minimum Quantity" shown in package page in this catalog.

■ Test Circuit

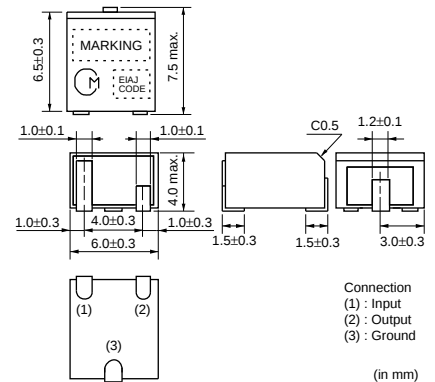


Frequency Characteristics



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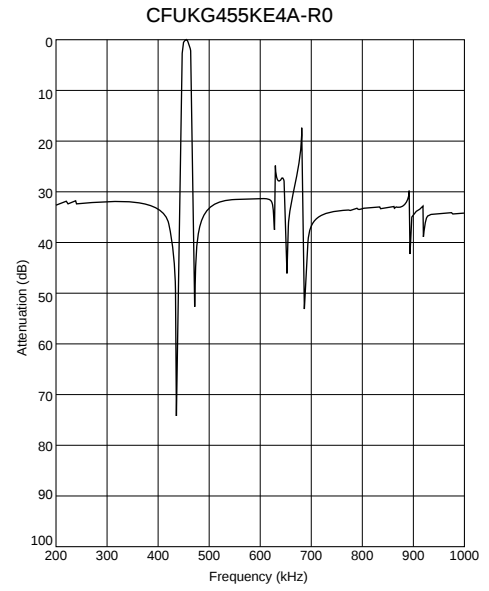
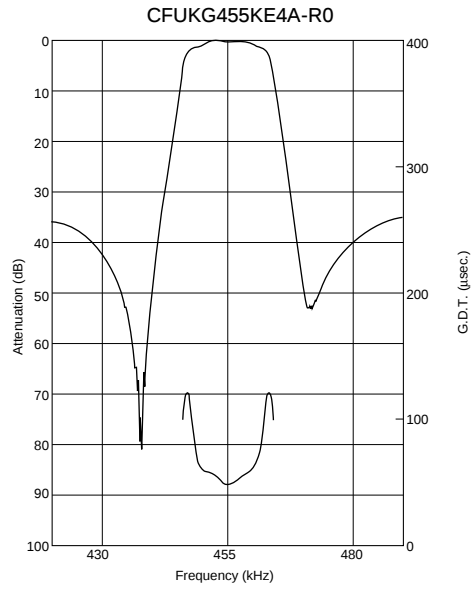


1. The filters are mountable by automatic placers.
2. The filters can be reflow soldered and withstand washing.
3. They are slim, at only 4.0mm maximum thickness, and have a small mounting area (7.5x6.0mm) enabling flexible PCB design.
4. The bandwidth ranges from D to G.
5. Operating temperature range: -20 to +80 (degrees C)
Storage temperature range: -40 to +85 (degrees C)

For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters. The order quantity should be an integral multiple of the "Minimum Quantity" shown in package page in this catalog.

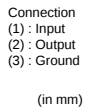
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Frequency Characteristics



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1. The filters are mountable by automatic placers.
2. The filters can be reflow soldered and withstand washing.
3. They are slim, at only 4.0mm maximum thickness, and have a small mounting area (7.5x6.0mm) enabling flexible PCB design.
4. The bandwidth ranges from E to H.
5. Operating temperature range: -20 to +80 (degrees C)
Storage temperature range: -40 to +85 (degrees C)

For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters. The order quantity should be an integral multiple of the "Minimum Quantity" shown in package page in this catalog.

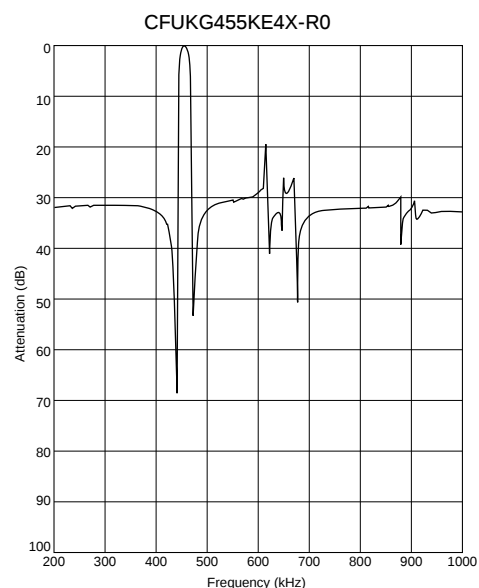
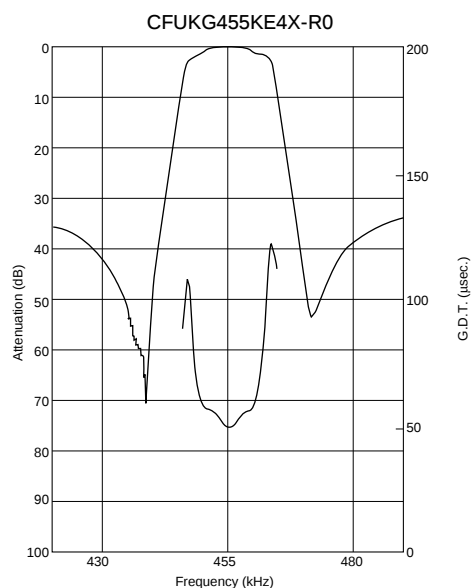
Diagram illustrating a 1-port network setup for S-parameter measurement. The circuit includes a signal source (S.S.G. 0dBm) connected to a resistor R_g . The output of R_g is connected to a resistor R_1 , which is then connected to the input of the 1-port network. The output of the 1-port network is connected to a resistor R_2 , which is then connected to an RF Voltmeter. The ground reference is labeled (3). The input and output ports are labeled (1) and (2) respectively. The voltage across R_1 is labeled E_1 , and the voltage across R_2 is labeled E_2 .

Legend:

- (1) : Input
- (2) : Output
- (3) : Ground

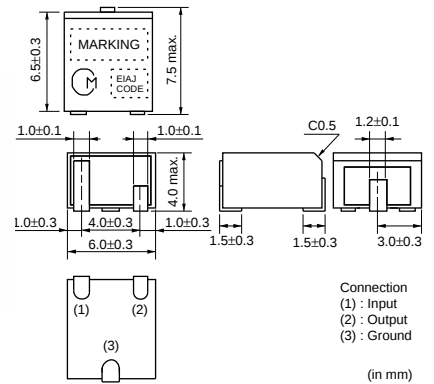
Formula: $R_o + R_1 = R_2 = \text{Input/Output Impedance}$

Frequency Characteristics



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1. The filters are mountable by automatic placers.
2. The filters can be reflow soldered and withstand washing.
3. They are slim, at only 4.0mm maximum thickness, and have a small mounting area (7.5x6.0mm) enabling flexible PCB design.
4. The bandwidth ranges from A to E.
5. Operating temperature range: -20 to +80 (degrees C)
Storage temperature range: -40 to +85 (degrees C)

Part Number	Center Frequency (fo) (kHz)	6dB Bandwidth (kHz)	Stop Bandwidth (kHz)	Stop Band Attenuation (dB)	Insertion Loss (dB)	Ripple (dB)	GDT Deviation (μs)	Input/Output Impedance (ohm)
CFUKF455KA2X-R0	455 ±2.0kHz	fn±17.5 min.	fn±40.0 max. [within 40dB]	25 min. [within fn±100kHz]	4.0 max. [at minimum loss point]	1.0 max. [within fn±12kHz]	15.0 max. [within fn±12kHz]	1000
CFUKF455KB4X-R0	455 ±1.5kHz	fn±15.0 min.	fn±35.0 max. [within 40dB]	25 min. [within fn±100kHz]	5.0 max. [at minimum loss point]	1.0 max. [within fn±10kHz]	15.0 max. [within fn±10kHz]	1000
CFUKF455KC4X-R0	455 ±1.5kHz	fn±12.5 min.	fn±30.0 max. [within 40dB]	25 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	1.0 max. [within fn±8kHz]	15.0 max. [within fn±8kHz]	1000
CFUKF455KD1X-R0	455 ±1.0kHz	fn±10.0 min.	fn±25.0 max. [within 40dB]	23 min. [within fn±100kHz]	7.0 max. [at minimum loss point]	1.0 max. [within fn±7kHz]	20.0 max. [within fn±7kHz]	1500
CFUKF455KE1X-R0	455 ±1.0kHz	fn±7.5 min.	fn±20.0 max. [within 40dB]	23 min. [within fn±100kHz]	8.0 max. [at minimum loss point]	1.0 max. [within fn±5kHz]	20.0 max. [within fn±5kHz]	1500

The order quantity should be an integral multiple of the "Minimum Quantity" shown in package page in this catalog.

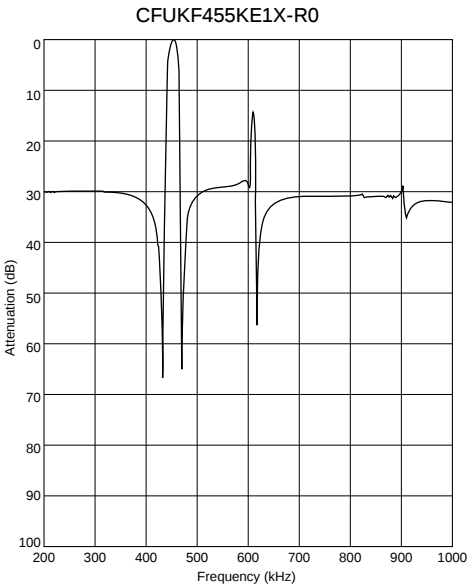
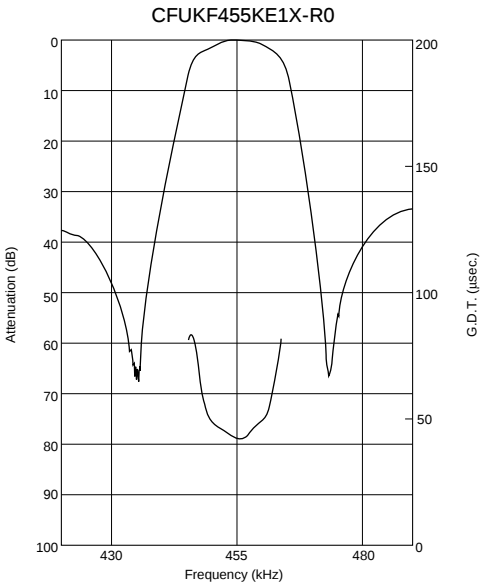
Diagram illustrating a 1-port network setup for S-parameter measurement. The circuit includes a signal source (S.S.G. 0dBm) connected to a resistor R_g . The output of R_g is connected to a resistor R_1 , which is then connected to the input of the 1-port network (labeled (1)). The output of the 1-port network is connected to a resistor R_2 , which is then connected to an RF Voltmeter. The ground reference is common to all components.

Legend:

- (1) : Input
- (2) : Output
- (3) : Ground

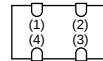
Equation: $R_g + R_1 = R_2 = \text{Input/Output Impedance}$

Frequency Characteristics



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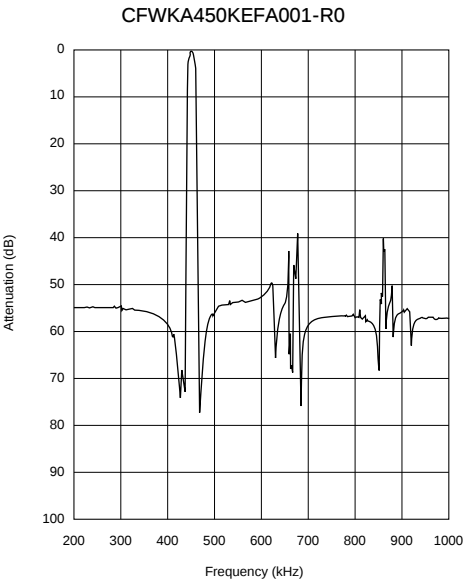
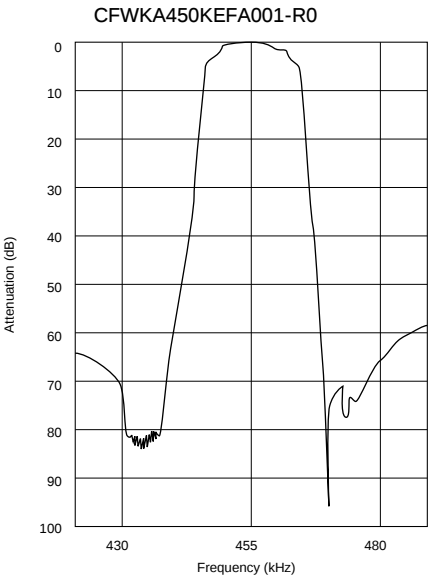
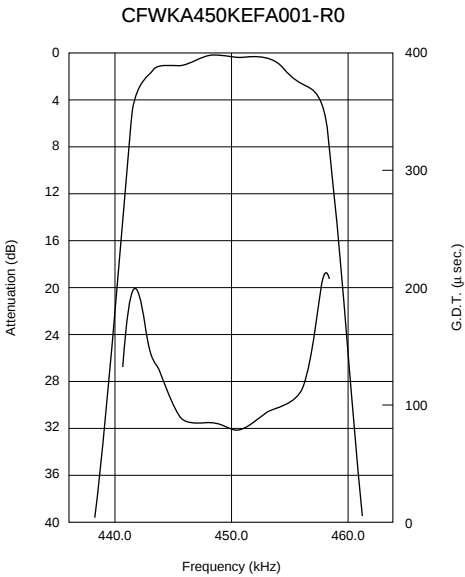
1. The filters are mountable by automatic placers.
2. The filters can be reflow soldered.
3. They are slim, at only 3.0mm maximum thickness.
4. The filters are wide bandwidth, flat GDT within pass band.
5. Operating temperature range: -20 to +80 (degrees C)
Storage temperature range: -40 to +85 (degrees C)

For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters. The order quantity should be an integral multiple of the "Minimum Quantity" shown in package page in this catalog.

(1) : Input
(2) : Output
(3)(4) : Ground

$R_g + R_1 = R_2 = \text{Input/Output Impedance}$

Frequency Characteristics



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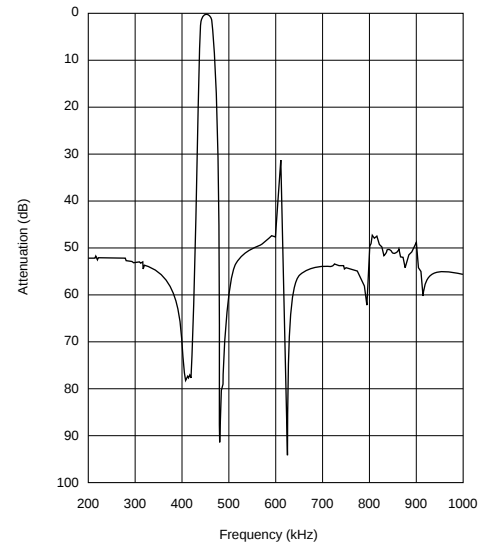
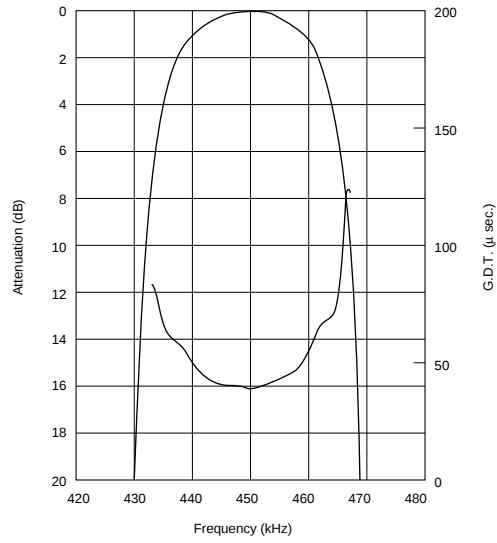


Part Number	Nominal Center Frequency (fn) (kHz)	3dB Bandwidth (kHz)	6dB Bandwidth (kHz)	Stop Bandwidth (kHz)	Stop Band Attenuation (dB)	Insertion Loss (dB)	Spurious Response (dB)	GDT Deviation (μs)	Input/Output Impedance (ohm)
CFWKA450KBFY001-R0	450.0	fn±11.5 min.	fn±13.0 min.	fn±30.0 max. [within 50dB]	45 min. [within fn±100kHz]	4.0 max. [at minimum loss point]	20 min. [within 0.1 to 1.0MHz]	30.0 max. [within fn±10kHz]	1000

(1) : Input
(2) : Output
(3)(4) : Ground

$$R_g + R_1 = R_2 = \text{Input/Output Impedance}$$

Frequency Characteristics



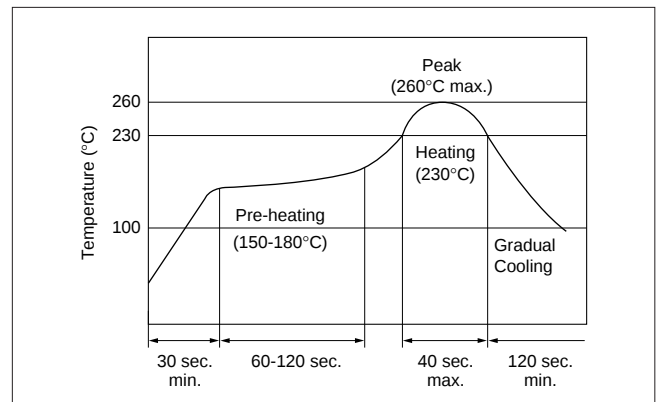
kHz SMD Type CERAFIL® Notice

■ SFPKA/CFUKG/CFUKF Series Notice (Soldering and Mounting)

1. Standard Reflow Soldering Conditions

(1) Reflow

Filter is soldered twice within the following temperature conditions.



(2) Soldering Iron

Electrode is directly soldered with the tip of soldering iron at $+350 \pm 5^\circ\text{C}$ for 3.0 ± 0.5 seconds.

2. Wash

(1) Cleaning Solvent

CFC alternatives (HCFC Series), Isopropyl Alcohol (IPA), Water (Demineralized Water), Cleaning Water Solution (Cleanthrough-750H, Pine Alpha 100S), Silicon (Technocare FRW)

(2) Cleaning Conditions

- Immersion Wash
2 minutes max. in above solvent at $+60^\circ\text{C}$ max.
- Shower or Rinse Wash
2 minutes max. in above solvent at $+60^\circ\text{C}$ max.

(3) Notice

- When components are immersed in solvent, be sure to maintain the temperature of components below the temperature of solvent.
- Please do not use ultrasonic cleaning.
- Total washing time should be within 4 minutes.
- Please ensure the component is thoroughly evaluated in your application circuit.
- Please do not use chlorine, petroleum and alkaline cleaning solvents.
- If you plan to use any other type of solvents, please consult with Murata or Murata representative prior to using.

Continued on the following page.

kHz SMD Type CERAFIL® Notice

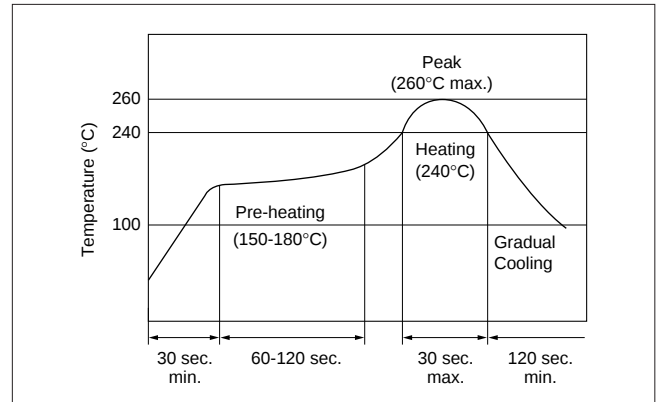
Continued from the preceding page.

■ CFWKA Series Notice (Soldering and Mounting)

1. Standard Reflow Soldering Conditions

(1) Reflow

Filter is soldered twice within the following temperature conditions.



(2) Soldering Iron

Electrode is directly soldered with the tip of soldering iron at $+350\pm5^{\circ}\text{C}$ for 3.0 ± 0.5 seconds.

2. Wash

The component cannot withstand washing.

■ SFPKA/CFUKG/CFUKF Series Notice (Handling)

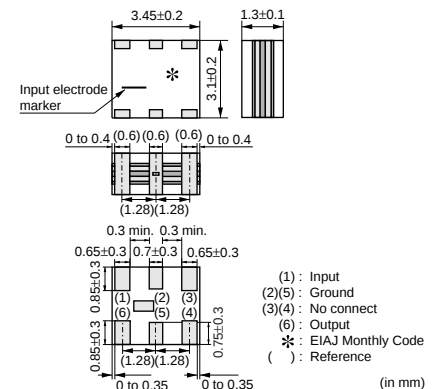
1. The component will be damaged when an excessive stress is applied.
2. In the case that the component is cleaned, confirm that no reliability degradation is created.
3. In case of covering filter with over coat, conditions such as material of resin, cure temperature, and so on should be evaluated carefully.
4. Do not use strong acidity flux, more than 0.2wt% chlorine content, in re-flow soldering.

5. The product, packed in the moisture-proof bag (dry pack), is sensitive to moisture. The following treatment is required before applying re-flow soldering, to avoid package cracks or reliability degradation caused by thermal stress. When unpacked, store the component in an atmosphere of below 25 degree C and below 65%R.H., and solder within 48 hours.
6. For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.

■ CFWKA Series Notice (Handling)

1. The component will be damaged when an excessive stress is applied.
2. For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.
3. Do not clean or wash the component as it's not hermetically sealed.
4. Do not apply conformal coating onto the component as it's not hermetically sealed.
5. Do not use strong acidity flux, more than 0.2wt% chlorine content, in re-flow soldering.

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High-reliability Type

Part Number	Center Frequency (fo) (MHz)	Nominal Center Frequency (fn) (MHz)	3dB Bandwidth (kHz)	Attenuation (kHz)	Insertion Loss (dB)	Ripple (dB)	Spurious Attenuation (1) (dB)	Spurious Attenuation (2) (dB)	Input/Output Impedance (ohm)
SFECF10M7HA00S0-R0	10.700 ±30kHz	-	180 ±40kHz	470 max.	4.0 ±2.0dB	1.0 max.	30 min. [within 9MHz to fo]	30 min. [within fo to 12MHz]	330
SFECF10M7HF00S0-R0	-	10.700	fn±25 min.	510 max.	8.0 max. [at fn]	1.0 max.	30 min. [within 9MHz to fn]	25 min. [within fn to 12MHz]	330
SFECF10M7GA00S0-R0	10.700 ±30kHz	-	230 ±50kHz	510 max.	3.5 ±2.0dB	1.0 max.	30 min. [within 9MHz to fo]	30 min. [within fo to 12MHz]	330
SFECF10M7GF00S0-R0	-	10.700	fn±45 min.	560 max.	8.0 max. [at fn]	1.0 max.	30 min. [within 9MHz to fn]	25 min. [within fn to 12MHz]	330
SFECF10M7FA00S0-R0	10.700 ±30kHz	-	280 ±50kHz	590 max.	3.0 ±2.0dB	1.0 max.	30 min. [within 9MHz to fo]	30 min. [within fo to 12MHz]	330
SFECF10M7FF00S0-R0	-	10.700	fn±65 min.	630 max.	7.0 max. [at fn]	1.0 max.	30 min. [within 9MHz to fn]	25 min. [within fn to 12MHz]	330
SFECF10M7EA00S0-R0	10.700 ±30kHz	-	330 ±50kHz	700 max.	3.0 ±2.0dB	1.0 max.	30 min. [within 9MHz to fo]	30 min. [within fo to 12MHz]	330
SFECF10M7DF00S0-R0	-	10.700	fn±145 min.	990 max.	6.0 max. [at fn]	3.0 max.	20 min. [within 9MHz to fn]	20 min. [within fn to 12MHz]	330

Area of Attenuation: [within 20dB]

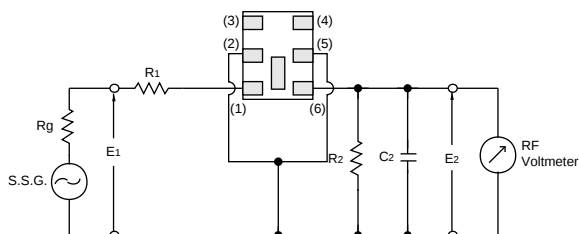
Area of Insertion Loss: at minimum loss point Area of Ripple: within 3dB B.W.

Center frequency (fo) defined by center of 3dB bandwidth.

For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.

The order quantity should be an integral multiple of the "Minimum Quantity" shown in package page in this catalog.

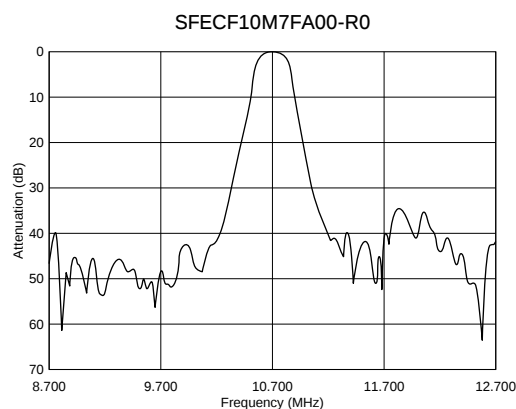
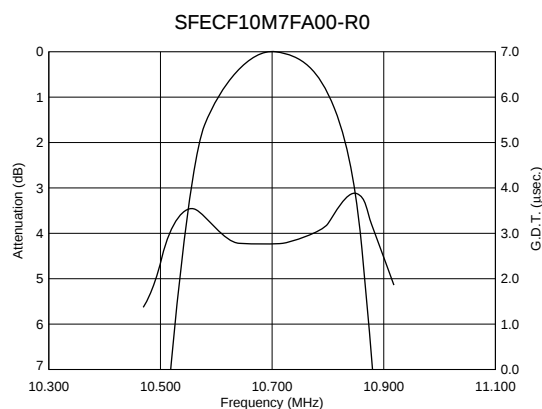
Test Circuit



Rg = 50Ω R1 = 280Ω ±5% R2 = 330Ω ±5%
 C2 = 10 ± 2 pF (Including stray capacitance and Input capacitance of RF Volt Meter)
 E1 : S.S.G. Output Voltage

(1) : Input
 (2)(5) : Ground
 (3)(4) : No connect
 (6) : Output

Frequency Characteristics



Ceramic Filters (CERAFIL®) for Communications Equipment

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CERAFIL® MHz SMD Type SFSCE10M7 Series

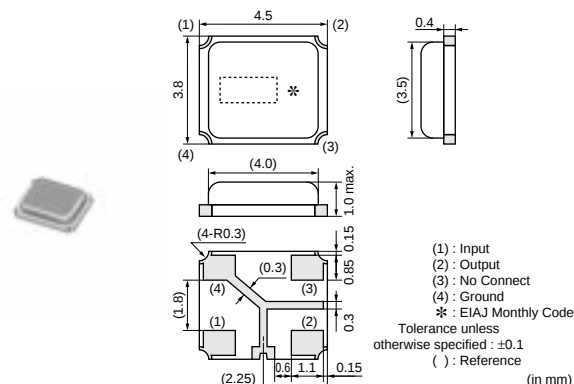
SFSCE series are chip surface mount filter and available for 3dB bandwidth at 700kHz to 1.3MHz. (more than twice width compared with current types) They have 1.0mm max. thickness and small mounting area. (4.5x3.8mm)

■ Features

1. The filters are mountable by automatic placers.
2. They are slim, at only 1.0mm max. thickness, and have a small mounting area (4.5x3.8mm) enabling flexible PCB design.
3. Available lead (Pb) free solder reflow.
4. Operating temperature range:
-20 to +80 (degrees C)
Storage temperature range:
-40 to +85 (degrees C)

■ Applications

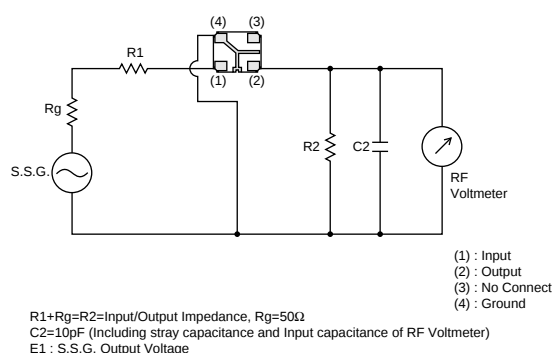
1. SS digital communication system
2. Digital wireless audio
3. PHS Evolution system
4. RFID Reader Writer
5. RKE



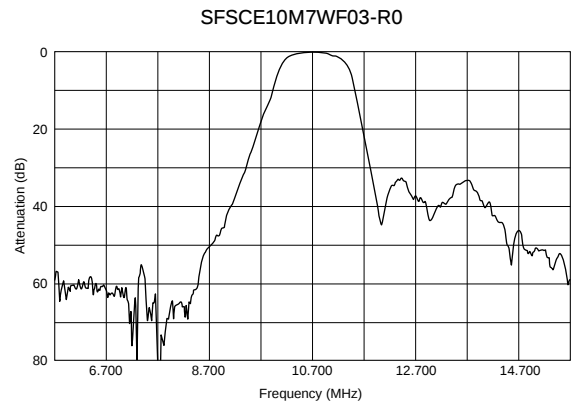
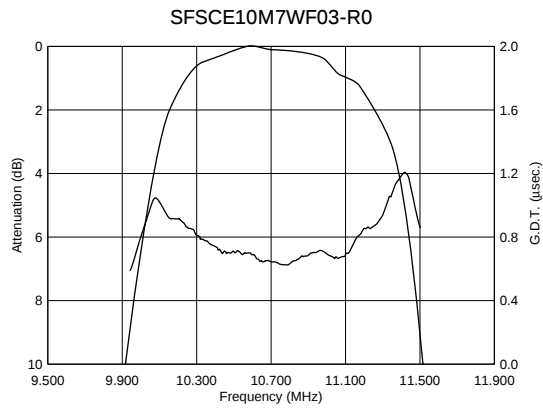
Part Number	Nominal Center Frequency (fn) (MHz)	3dB Bandwidth (kHz)	Stop Bandwidth (MHz)	Insertion Loss (dB)	Ripple (dB)	Spurious Response (dB)	GDT Deviation (μs)	Input/Output Impedance (ohm)
SFSCE10M7WF03-R0	10.700	fn±500.0 min.	2.2 max. (Total) [within 20dB]	6.0 max. [at minimum loss point]	2.0 max. [within 3dB Bandwidth]	30/25 min. [within 5.7MHz to fn / fn to 15.7MHz]	0.6 max. [within fn±400kHz]	470
SFSCE10M7WF04-R0	10.700	fn±400.0 min.	1.8 max. (Total) [within 20dB]	6.0 max. [at minimum loss point]	1.5 max. [within 3dB Bandwidth]	35/25 min. [within 5.7MHz to fn / fn to 15.7MHz]	0.6 max. [within fn±325kHz]	470
SFSCE10M7WF05-R0	10.700	fn±325.0 min.	1.7 max. (Total) [within 20dB]	6.0 max. [at minimum loss point]	1.5 max. [within 3dB Bandwidth]	40/30 min. [within 5.7MHz to fn / fn to 15.7MHz]	0.6 max. [within fn±250kHz]	470

For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters. The order quantity should be an integral multiple of the "Minimum Quantity" shown in package page in this catalog.

■ Test Circuit



■ Frequency Characteristics



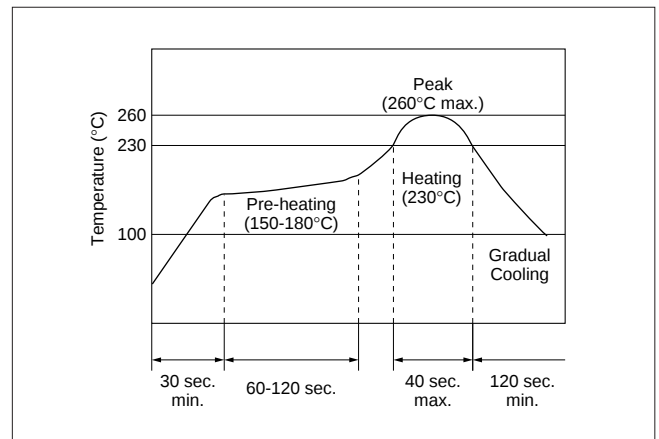
MHz SMD Type CeraFIL[®] Notice

■ SFECF10M7 Series Notice (Soldering and Mounting)

1. Standard Reflow Soldering Conditions

(1) Reflow

Filter is soldered twice within the following temperature conditions.



(2) Soldering Iron

Filter is soldered at $+350 \pm 5^\circ\text{C}$ for 3.0 ± 0.5 seconds. The soldering iron should not touch the filter while soldering.

2. Wash

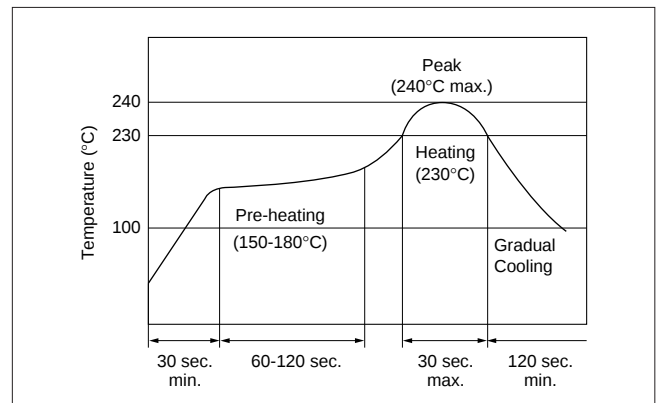
The component cannot withstand washing.

■ SFSCE10M7WF03-R0 Notice (Soldering and Mounting)

1. Standard Reflow Soldering Conditions

(1) Reflow

Filter is soldered twice within the following temperature conditions.



(2) Soldering Iron

Filter is soldered at $+320 \pm 5^\circ\text{C}$ for 3.0 ± 0.5 seconds. The soldering iron should not touch the filter while soldering.

2. Wash

The component cannot withstand washing.

Continued on the following page.

MHz SMD Type CERAFIL® Notice

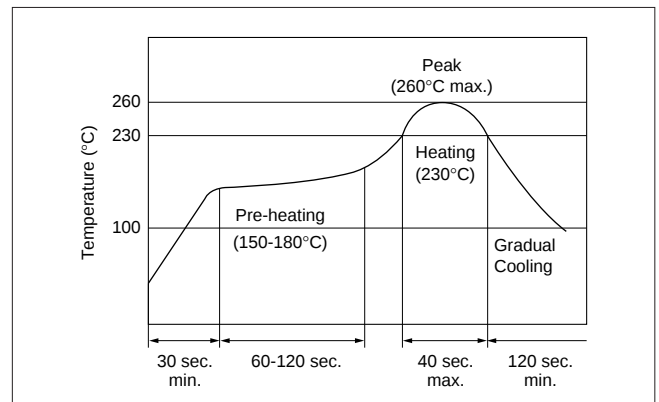
Continued from the preceding page.

■ SFSCE10M7WF04/05-R0 Notice (Soldering and Mounting)

1. Standard Reflow Soldering Conditions

(1) Reflow

Filter is soldered twice within the following temperature conditions.



(2) Soldering Iron

Filter is soldered at $+320 \pm 5^{\circ}\text{C}$ for 3.0 ± 0.5 seconds. The soldering iron should not touch the filter while soldering.

2. Wash

The component cannot withstand washing.

Continued on the following page.

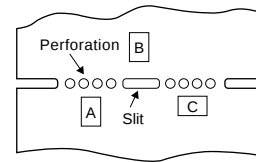
MHz SMD Type CERAFIL® Notice

Continued from the preceding page.

■ SFECF10M7 Series Notice (Handling)

1. The component will be damaged when an excessive stress is applied.
2. The component may be damaged if excess mechanical stress is applied to it mounted on the printed circuit board.
3. Design layout of components on the PC board to minimize the stress imposed on the warp or flexure of the board.
4. After installing chips, if solder is excessively applied to the circuit board, mechanical stress will cause destruction resistance characteristics to lower. To prevent this, be extremely careful in determining shape and dimension before designing the circuit board diagram.
5. The component may be damaged during mounting process if some part of mounter such as positioning claws or nozzle are worn down. The regular maintenance recommended for mounters should be done to prevent trouble.
6. The component is recommended with placement machines which employ optical placement capabilities. The component might be damaged by excessive mechanical force. Please make sure that you have evaluated by using placement machines before going into mass production. Do not use placement machines which utilize mechanical positioning. Please contact Murata for details beforehand.
7. When correcting chips with a soldering iron, the tip of the soldering iron should not directly touch the chip component. Depending on the soldering conditions, the effective area of terminations may be reduced. The use of solder containing Ag should be done to prevent the electrode erosion.
8. Do not clean or wash the component as it is not hermetically sealed.
9. In case of covering filter with over coat, conditions such as material of resin, cure temperature, and so on should be evaluated carefully.
10. Do not use strong acidity flux, more than 0.2wt% chlorine content, in re-flow soldering.
11. Accurate test circuit values are required to measure electrical characteristics.
It may be a cause of miscorrelation if there is any deviation, especially stray capacitance, from the test circuit in the specification.
12. The components, packed in the moisture proof bag (dry pack), are sensitive to moisture. The following treatment is required before applying re-flow soldering. To avoid reliability degradation caused by thermal stress, when unpacked, store the component in an atmosphere at 30°C and below 60%R.H., and solder within 1 week.
13. For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.

[Component Layout Close to Board]



Susceptibility to stress is in the order of : A>C>B

Continued on the following page. ↗

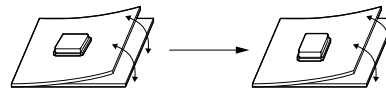
MHz SMD Type CERAFIL® Notice

 Continued from the preceding page.

■ SFSCE10M7 Series Notice (Handling)

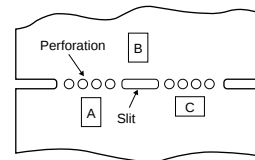
1. The component will be damaged when an excessive stress is applied.
2. The component mounted on the PCB may be damaged if excess mechanical stress is applied.
3. Layout the components on the PCB to minimize the stress imposed on the warp or flexure of the board.
4. After installing chips, if solder is excessively applied to the circuit board, mechanical stress will cause destruction resistance characteristics to lower. To prevent this, be extremely careful in determining shape and dimension before designing the circuit board diagram.
5. The component may be damaged during mounting process if some part of mounter such as positioning claws, nozzle are worn down. The regular maintenance recommended for mounters should be done to prevent the trouble.
6. When correcting component's position with a soldering iron, the tip of the soldering iron should not directly touch the chip component.
7. Do not clean or wash the component as it is not hermetically sealed.
8. In case of overcoating the part, coating conditions such as material of resin, curing temperature, and so on should be evaluated carefully.
9. Do not use strong acidity flux, more than 0.2wt% chlorine content, in re-flow soldering.
10. Accurate test circuit values are required to measure electrical characteristics. It may be a cause of mis-correlation if there is any deviation, especially stray capacitance, from the test circuit in the specification.
11. The component is recommended with placement machines which employ optical placement capabilities. The component might be damaged by excessive mechanical force. Please make sure that you have evaluated by using placement machines before going into mass production. Do not use placement machines which utilize mechanical positioning. Please contact Murata for details beforehand.
12. For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.

[Component direction]



Put the component laterally to the direction in which stress acts.

[Component layout close to board]



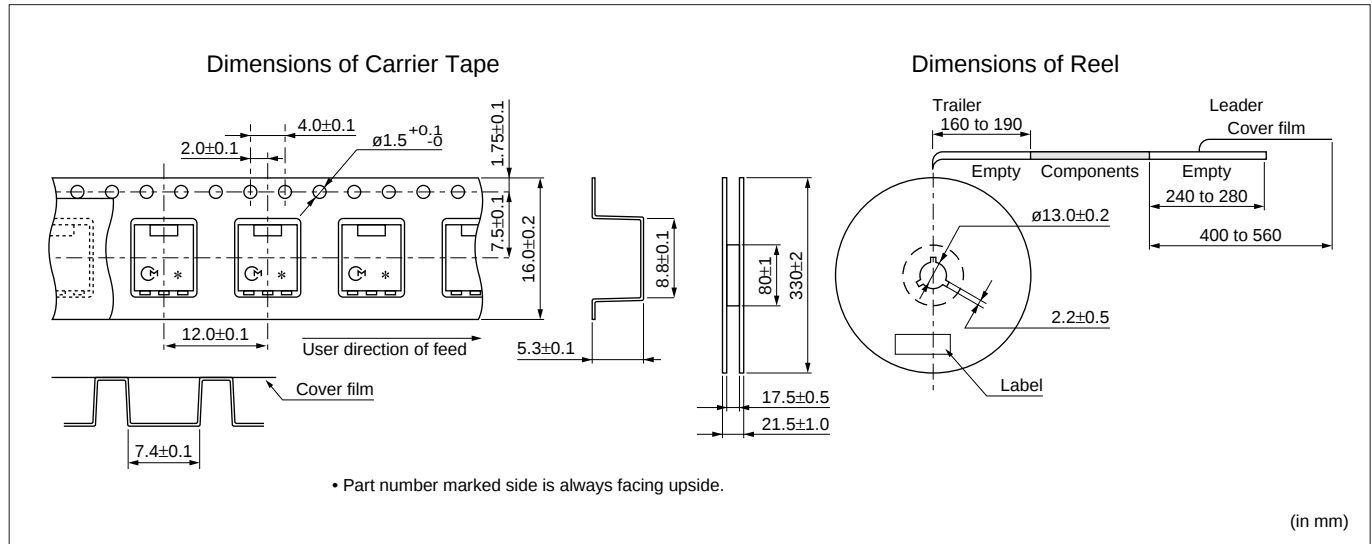
Susceptibility to stress is in the order of : A>C>B

kHz SMD Type CERAFIL® Packaging

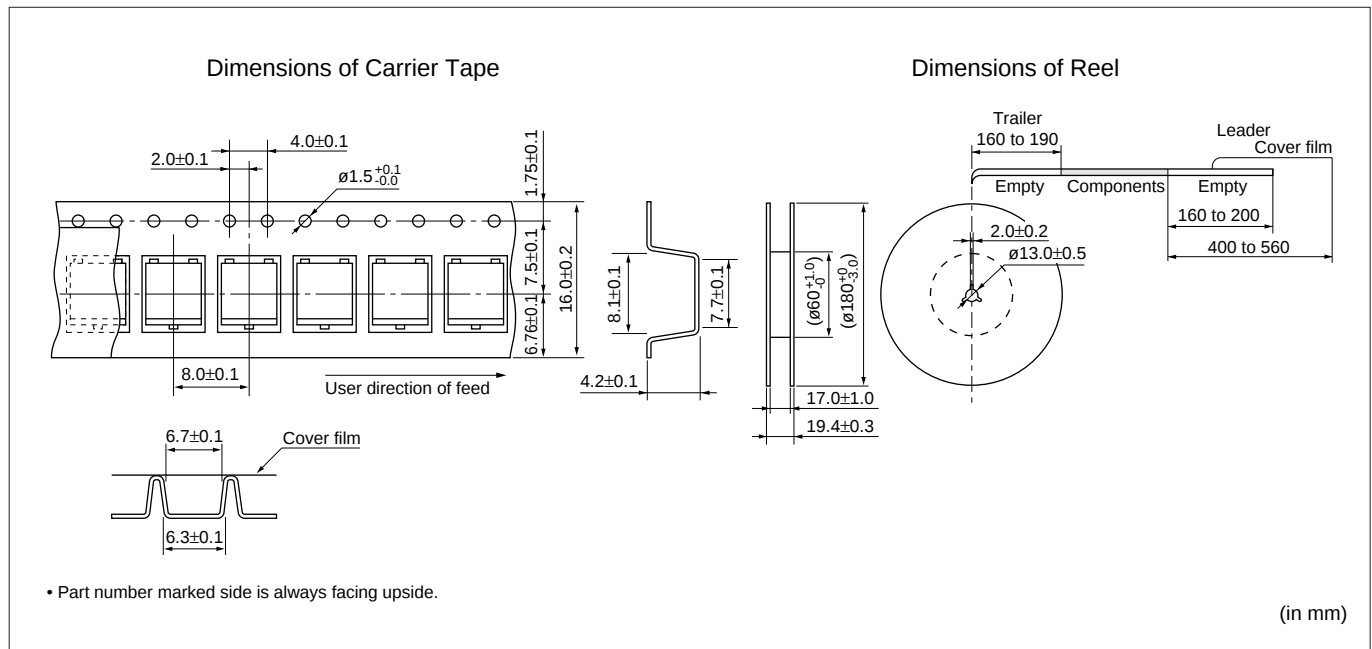
■ Minimum Quantity

Part Number	ø180mm	ø330mm
SFPKA		1,000
CFUKG	450	
CFUKF	450	
CFWKA	350	

■ SFPKA Series



■ CFUKG/CFUKF Series

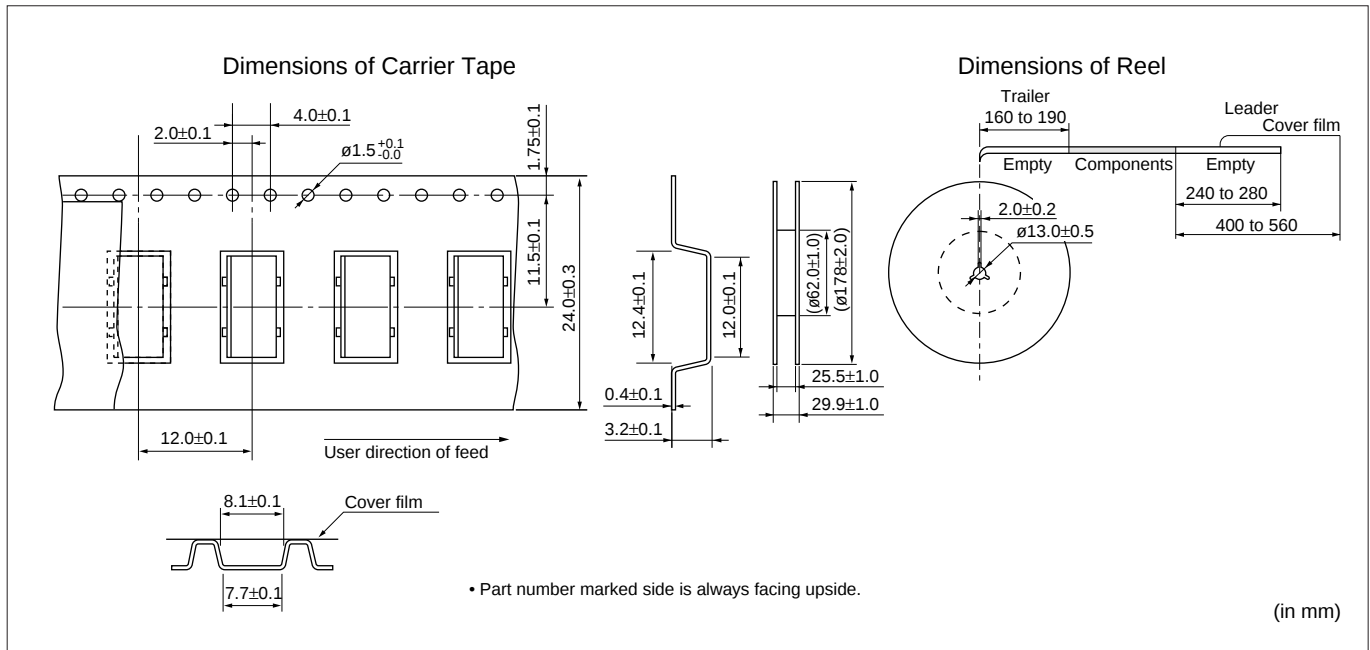


Continued on the following page.

kHz SMD Type CeraFIL[®] Packaging

Continued from the preceding page.

CFWKA Series



■ Minimum Quantity

Part Number	ø180mm	ø330mm
SFECE	2,000	
SFSCE	1,500	

[illegible]

Dimensions of Carrier Tape

The carrier tape dimensions are as follows:

- Overall width: 12.0 ± 0.2
- Carrier width: 1.75 ± 0.1
- Carrier pitch: 4.0 ± 0.1
- Carrier width: 2.0 ± 0.05
- Carrier pitch: $\phi 1.55 \pm 0.05$
- Carrier width: 0.3 ± 0.05
- Carrier width: 5.0 ± 0.1
- Carrier width: 1.1 ± 0.1
- Carrier width: $\phi 1.55 \pm 0.05$
- Carrier width: 8.0 ± 0.1
- Carrier width: 0.05
- Carrier width: 0.3 ± 0.05
- Carrier width: 10° max.
- Carrier width: 4.3 ± 0.1
- Carrier width: 17.0 ± 1.0
- Carrier width: $13.0^{+1.0}_{-0}$

Dimensions of Reel

The reel dimensions are as follows:

- Trailer: $160 \text{ to } 190$
- Leader: $240 \text{ to } 280$
- Cover film: $400 \text{ to } 560$
- Empty: 130.0 ± 0.5
- Components: 2.0 ± 0.5
- Empty: 17.0 ± 1.0
- Components: $13.0^{+1.0}_{-0}$

• Part Number marked side is always facing upside.

(in mm)

Ceramic Filters (CERAFIL®) for Communications Equipment

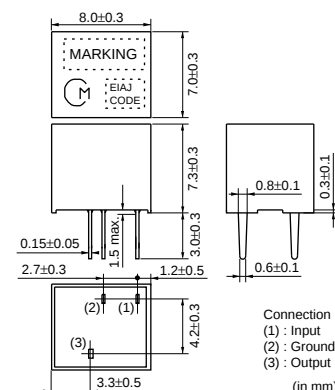
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CERAFIL® Plastic Case General Use CFULA Series

CFULA series are high selectivity ceramic filters, which consist of 4 ceramic elements connected in a ladder form.
Most suitable for digital communications and cellular phones because of their improved GDT characteristics.

■ Features

1. High selectivity
2. A variety of bandwidths available
3. Excellent GDT characteristics are available within pass bandwidth.
4. Easily mounted on a printed circuit board
5. Operating temperature range: -20 to +80 (degrees C)
Storage temperature range: -40 to +85 (degrees C)



Part Number	Center Frequency (fo) (kHz)	6dB Bandwidth (kHz)	Stop Bandwidth (kHz)	Stop Band Attenuation (dB)	Insertion Loss (dB)	Input/Output Impedance (ohm)
CFULA455KB2A-B0	455 ±2.0kHz	fn±15.0 min.	fn±30.0 max. [within 40dB]	27 min. [within fn±100kHz]	4.0 max. [at minimum loss point]	1500
CFULA455KC2A-B0	455 ±2.0kHz	fn±12.5 min.	fn±24.0 max. [within 40dB]	27 min. [within fn±100kHz]	4.0 max. [at minimum loss point]	1500
CFULA455KD4A-B0	455 ±1.5kHz	fn±10.0 min.	fn±20.0 max. [within 40dB]	27 min. [within fn±100kHz]	4.0 max. [at minimum loss point]	1500
CFULA455KE4A-B0	455 ±1.5kHz	fn±7.5 min.	fn±15.0 max. [within 40dB]	27 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	1500
CFULA455KF4A-B0	455 ±1.5kHz	fn±6.0 min.	fn±12.5 max. [within 40dB]	27 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	2000
CFULA455KG1A-B0	455 ±1.0kHz	fn±4.5 min.	fn±10.0 max. [within 40dB]	25 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	2000
CFULA455KH1A-B0	455 ±1.0kHz	fn±3.0 min.	fn±9.0 max. [within 40dB]	35 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	2000

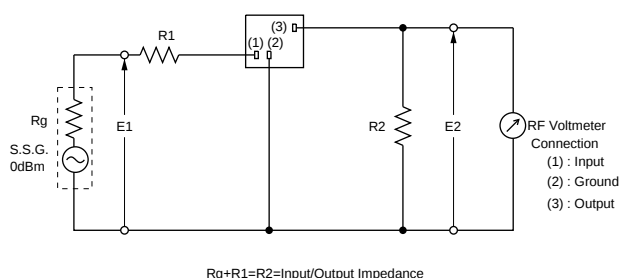
Center frequency (fo) defined by the center of 6dB bandwidth.

(fn) means nominal center frequency 455kHz.

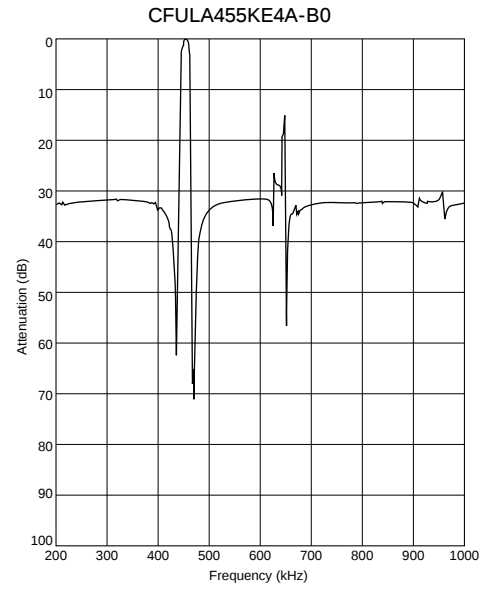
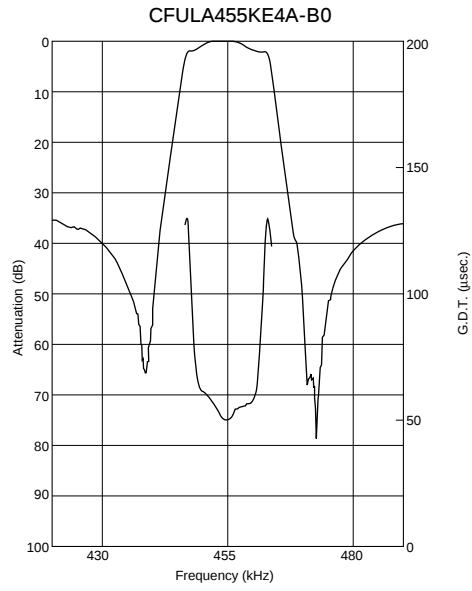
For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.

The order quantity should be an integral multiple of the "Minimum Quantity" shown in package page in this catalog.

■ Test Circuit



Frequency Characteristics



Ceramic Filters (CERAFIL®) for Communications Equipment

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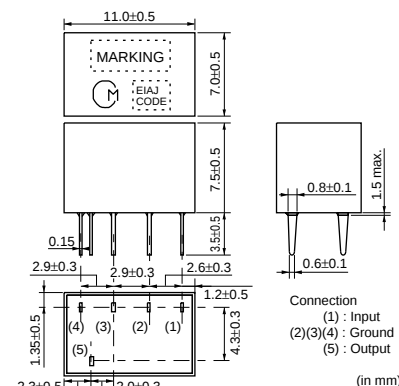
CERAFIL® Plastic Case General Use CFWLA Series

Ceramic filter CFWLA series are low profile high selectivity ceramic filters which use 6 elements in ladder form.

They are best suitable to high-class transceivers, cordless telephones and amateur radios.

■ Features

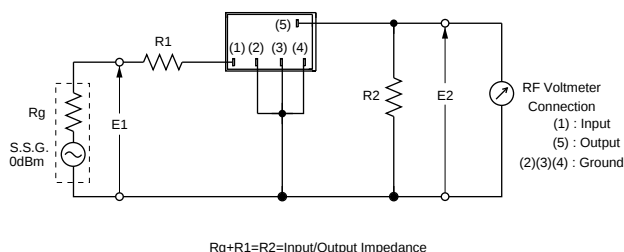
1. Low profile, high selectivity
2. Available bandwidths are B to J as standard
3. Easily mountable on any PC board
4. Operating temperature range: -20 to +80 (degrees C)
Storage temperature range: -40 to +85 (degrees C)



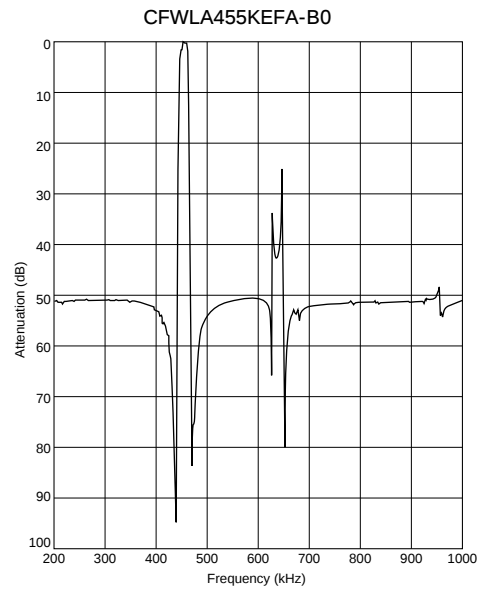
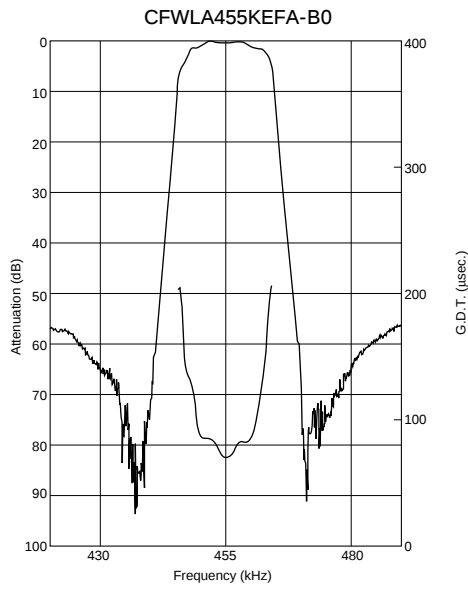
Part Number	Nominal Center Frequency (fn) (kHz)	6dB Bandwidth (kHz)	Stop Bandwidth (kHz)	Stop Band Attenuation (dB)	Insertion Loss (dB)	Ripple (dB)	Input/Output Impedance (ohm)
CFWLA455KBFA-B0	455.0	fn±15.0 min.	fn±30.0 max. [within 50dB]	35 min. [within fn±100kHz]	4.0 max. [at minimum loss point]	3.0 max. [within fn±10kHz]	1500
CFWLA455KCFA-B0	455.0	fn±12.5 min.	fn±24.0 max. [within 50dB]	35 min. [within fn±100kHz]	4.0 max. [at minimum loss point]	3.0 max. [within fn±8kHz]	1500
CFWLA455KDFA-B0	455.0	fn±10.0 min.	fn±20.0 max. [within 50dB]	35 min. [within fn±100kHz]	4.0 max. [at minimum loss point]	3.0 max. [within fn±7kHz]	1500
CFWLA455KEFA-B0	455.0	fn±7.5 min.	fn±15.0 max. [within 50dB]	35 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	3.0 max. [within fn±5kHz]	1500
CFWLA455KFFA-B0	455.0	fn±6.0 min.	fn±12.5 max. [within 50dB]	35 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	3.0 max. [within fn±4kHz]	2000
CFWLA455KGFA-B0	455.0	fn±4.5 min.	fn±10.0 max. [within 50dB]	35 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	2.0 max. [within fn±3kHz]	2000
CFWLA455KHFA-B0	455.0	fn±3.0 min.	fn±9.0 max. [within 50dB]	60 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	2.0 max. [within fn±2kHz]	2000
CFWLA455KJFA-B0	455.0	fn±2.0 min.	fn±7.5 max. [within 50dB]	60 min. [within fn±100kHz]	7.0 max. [at minimum loss point]	2.0 max. [within fn±1.5kHz]	2000

For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in package page in this catalog.

■ Test Circuit



Frequency Characteristics



Ceramic Filters (CERAFIL®) for Communications Equipment

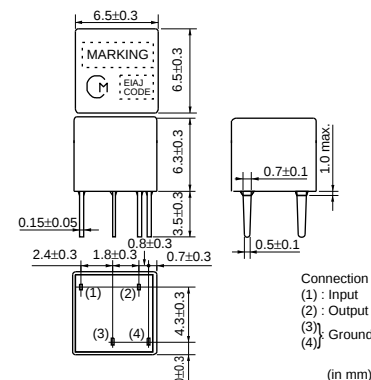
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CERAFIL® Plastic Case Miniaturized Type CFULB Series

CFULB series ceramic filters are miniature, high performance ceramic filters composed of piezoelectric elements connected in a ladder form.

These filters, only 6.3mm high, are 65% the volume of conventional types.

They are well suited for miniaturizing various kinds of communications equipment, pocket pagers, car radios, cordless telephones and mobile telephones.



■ Features

1. Miniature and high selectivity
2. A variety of bandwidths are available
3. Operating temperature range: -20 to +80 (degrees C)
Storage temperature range: -40 to +85 (degrees C)

Part Number	Center Frequency (fo) (kHz)	6dB Bandwidth (kHz)	Stop Bandwidth (kHz)	Stop Band Attenuation (dB)	Insertion Loss (dB)	Input/Output Impedance (ohm)
CFULB455KB2A-B0	455 ±2.0kHz	fn±15.0 min.	fn±30.0 max. [within 40dB]	27 min. [within fn±100kHz]	4.0 max. [at minimum loss point]	1500
CFULB455KC2A-B0	455 ±2.0kHz	fn±12.5 min.	fn±24.0 max. [within 40dB]	27 min. [within fn±100kHz]	4.0 max. [at minimum loss point]	1500
CFULB455KD4A-B0	455 ±1.5kHz	fn±10.0 min.	fn±20.0 max. [within 40dB]	27 min. [within fn±100kHz]	4.0 max. [at minimum loss point]	1500
CFULB455KE4A-B0	455 ±1.5kHz	fn±7.5 min.	fn±15.0 max. [within 40dB]	27 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	1500
CFULB455KF4A-B0	455 ±1.5kHz	fn±6.0 min.	fn±12.5 max. [within 40dB]	27 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	2000
CFULB455KG1A-B0	455 ±1.0kHz	fn±4.5 min.	fn±10.0 max. [within 40dB]	25 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	2000
CFULB455KH1A-B0	455 ±1.0kHz	fn±3.0 min.	fn±9.0 max. [within 40dB]	35 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	2000
CFULB455KJ1A-B0	455 ±1.0kHz	fn±2.0 min.	fn±7.5 max. [within 40dB]	35 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	2000

Center frequency (fo) defined by the center of 6dB bandwidth.

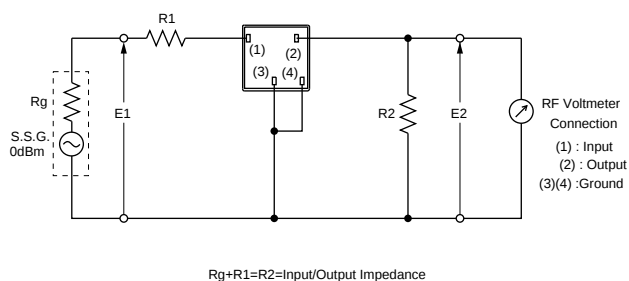
(fn) means nominal center frequency 455kHz.

CFULB455K_series filters are 4-element ceramic filters and miniature versions of CFULA455K_series.

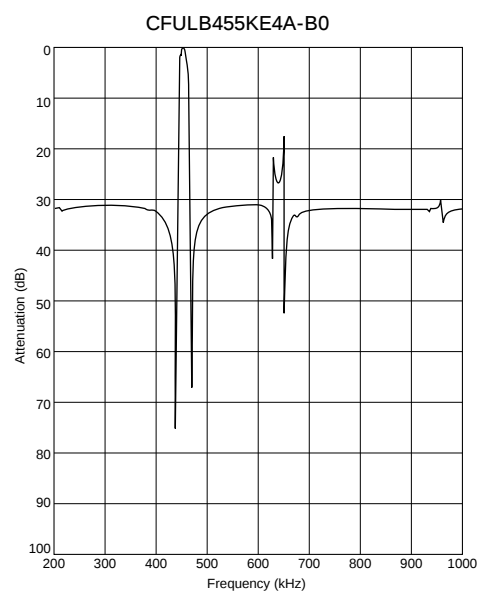
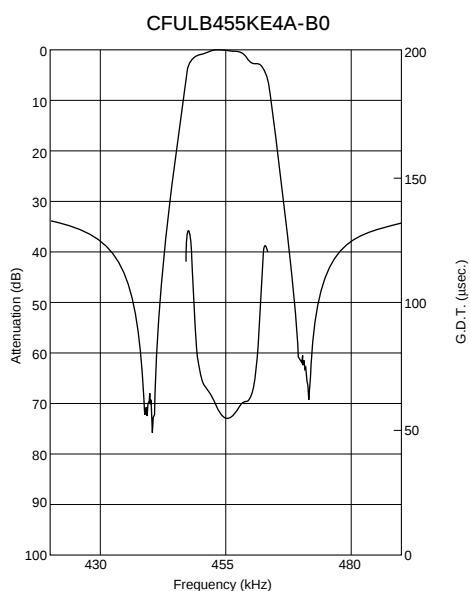
For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.

The order quantity should be an integral multiple of the "Minimum Quantity" shown in package page in this catalog.

Test Circuit



Frequency Characteristics

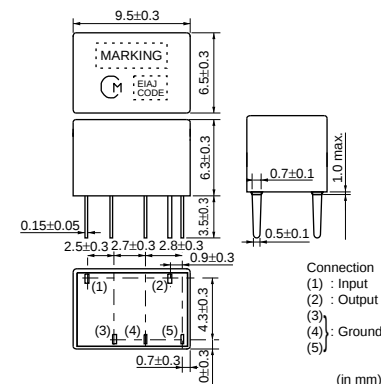


Ceramic Filters (CERAFIL®) for Communications Equipment



CERAFIL® Plastic Case Miniaturized Type CFWLB Series

CFWLB series ceramic filters are miniature, high performance ceramic filters composed of piezoelectric elements connected in a ladder form. These filters, only 6.3mm high, are 67% the volume of conventional types. They are well suited for miniaturizing various kinds of communications equipment, pocket pagers, pagers, car radios, cordless telephones and mobile telephones.



■ Features

1. Miniature and high selectivity
2. A variety of bandwidths are available.
3. Operating temperature range: -20 to +80 (degrees C)
Storage temperature range: -40 to +85 (degrees C)

Part Number	Nominal Center Frequency (fn) (kHz)	6dB Bandwidth (kHz)	Stop Bandwidth (kHz)	Stop Band Attenuation (dB)	Insertion Loss (dB)	Input/Output Impedance (ohm)
CFWLB455KBFA-B0	455.0	fn±15.0 min.	fn±30.0 max. [within 50dB]	35 min. [within fn±100kHz]	4.0 max. [at minimum loss point]	1500
CFWLB455KCFA-B0	455.0	fn±12.5 min.	fn±24.0 max. [within 50dB]	35 min. [within fn±100kHz]	4.0 max. [at minimum loss point]	1500
CFWLB455KDFA-B0	455.0	fn±10.0 min.	fn±20.0 max. [within 50dB]	35 min. [within fn±100kHz]	4.0 max. [at minimum loss point]	1500
CFWLB455KEFA-B0	455.0	fn±7.5 min.	fn±15.0 max. [within 50dB]	35 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	1500
CFWLB455KEFA004-B0	455.0	fn±7.5 min.	fn±15.0 max. [within 60dB]	60 min. [within fn±15kHz to 30kHz]	5.0 max. [at fn]	1500
CFWLB455KFFA-B0	455.0	fn±6.0 min.	fn±12.5 max. [within 50dB]	35 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	2000
CFWLB455KGFA-B0	455.0	fn±4.5 min.	fn±10.0 max. [within 50dB]	35 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	2000
CFWLB455KHFA-B0	455.0	fn±3.0 min.	fn±9.0 max. [within 50dB]	55 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	2000
CFWLB455KJFA-B0	455.0	fn±2.0 min.	fn±7.0 max. [within 50dB]	55 min. [within fn±100kHz]	7.0 max. [at minimum loss point]	2000

CFWLB455K_series filters are 4-element ceramic filters and miniature versions of CFWLA455K_series.

For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.

The order quantity should be an integral multiple of the "Minimum Quantity" shown in package page in this catalog.

Ceramic Filters (CERAFIL®) for Communications Equipment

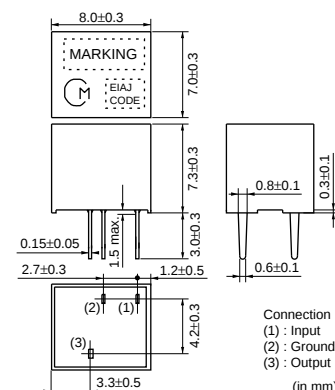
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CERAFIL® Plastic Case Group Delay Flat Type CFULA_Y Series

CFULA_Y series are high selectivity ceramic filters, which consist of 4 ceramic elements connected in a ladder form.
 Most suitable for digital communications and cellular phones because of their improved GDT characteristics.

■ Features

1. High selectivity
2. A variety of bandwidths are available.
3. Excellent GDT characteristics are available within pass bandwidth.
4. Easily mounted on a printed circuit board
5. Operating temperature range: -20 to +80 (degrees C)
 Storage temperature range: -40 to +85 (degrees C)



Part Number	Center Frequency (fo) (kHz)	6dB Bandwidth (kHz)	Stop Bandwidth (kHz)	Stop Band Attenuation (dB)	Insertion Loss (dB)	GDT Deviation (μs)	Input/Output Impedance (ohm)
CFULA455KB4Y-B0	455 ±1.5kHz	fn±15.0 min.	fn±35.0 max. [within 40dB]	25 min. [within fn±100kHz]	5.0 max. [at minimum loss point]	15.0 max. [within fn±10kHz]	1500
CFULA455KC4Y-B0	455 ±1.5kHz	fn±12.5 min.	fn±30.0 max. [within 40dB]	25 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	15.0 max. [within fn±8kHz]	1500
CFULA455KD1Y-B0	455 ±1.0kHz	fn±10.0 min.	fn±25.0 max. [within 40dB]	23 min. [within fn±100kHz]	7.0 max. [at minimum loss point]	20.0 max. [within fn±7kHz]	1500
CFULA455KE1Y-B0	455 ±1.0kHz	fn±7.5 min.	fn±20.0 max. [within 40dB]	23 min. [within fn±100kHz]	8.0 max. [at minimum loss point]	20.0 max. [within fn±5kHz]	1500
CFULA455KF1Y-B0	455 ±1.0kHz	fn±6.0 min.	fn±17.5 max. [within 40dB]	23 min. [within fn±100kHz]	9.0 max. [at minimum loss point]	20.0 max. [within fn±4kHz]	2000
CFULA455KG1Y-B0	455 ±1.0kHz	fn±4.5 min.	fn±15.0 max. [within 40dB]	23 min. [within fn±100kHz]	10.0 max. [at minimum loss point]	20.0 max. [within fn±3kHz]	2000

Center frequency (fo) defined by the center of 6dB bandwidth.

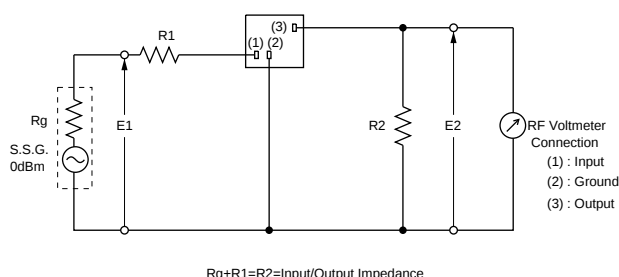
(fn) means nominal center frequency 455kHz.

For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.

The order quantity should be an integral multiple of the "Minimum Quantity" shown in package page in this catalog.

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■ Test Circuit



Ceramic Filters (CERAFIL®) for Communications Equipment

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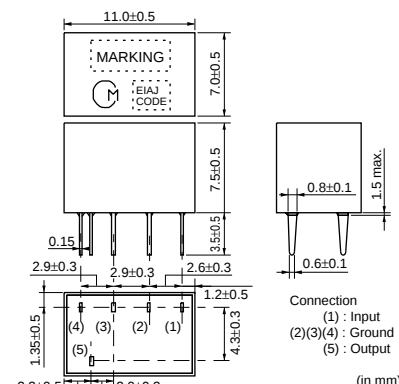
CERAFIL® Plastic Case Group Delay Flat Type CFWLA_Y Series

CFWLA_Y series are high selectivity ceramic filters, which consist of 6 ceramic elements connected in a ladder form.

Most suitable for digital communications and mobile telephones because of their improved GDT characteristics.

■ Features

1. High selectivity
2. A variety of bandwidths are available
3. Excellent GDT characteristics are available within pass bandwidth.
4. Easily mounted on a printed circuit board
5. Operating temperature range: -20 to +80 (degrees C)
Storage temperature range: -40 to +85 (degrees C)



Part Number	Center Frequency (fo) (kHz)	6dB Bandwidth (kHz)	Stop Bandwidth (kHz)	Stop Band Attenuation (dB)	Insertion Loss (dB)	GDT Deviation (μs)	Input/Output Impedance (ohm)
CFWLA455KB4Y-B0	455 ±1.5kHz	fn±15.0 min.	fn±30.0 max. [within 50dB]	40 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	30.0 max. [within fn±10kHz]	1500
CFWLA455KC4Y-B0	455 ±1.5kHz	fn±12.5 min.	fn±27.5 max. [within 50dB]	40 min. [within fn±100kHz]	7.0 max. [at minimum loss point]	30.0 max. [within fn±8kHz]	1500
CFWLA455KD1Y-B0	455 ±1.0kHz	fn±10.0 min.	fn±25.0 max. [within 50dB]	40 min. [within fn±100kHz]	8.0 max. [at minimum loss point]	30.0 max. [within fn±7kHz]	1500
CFWLA455KE1Y-B0	455 ±1.0kHz	fn±7.5 min.	fn±20.0 max. [within 50dB]	40 min. [within fn±100kHz]	9.0 max. [at minimum loss point]	30.0 max. [within fn±5kHz]	1500
CFWLA455KF1Y-B0	455 ±1.0kHz	fn±6.0 min.	fn±17.5 max. [within 50dB]	40 min. [within fn±100kHz]	10.0 max. [at minimum loss point]	40.0 max. [within fn±4kHz]	2000
CFWLA455KG1Y-B0	455 ±1.0kHz	fn±4.5 min.	fn±15.0 max. [within 50dB]	40 min. [within fn±100kHz]	11.0 max. [at minimum loss point]	40.0 max. [within fn±3kHz]	2000

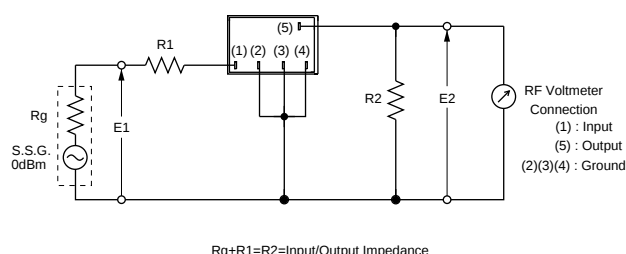
Center frequency (fo) defined by the center of 6dB bandwidth.

(fn) means nominal center frequency 455kHz.

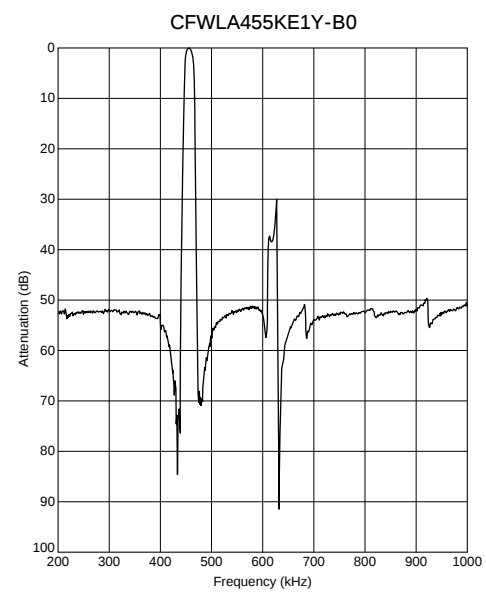
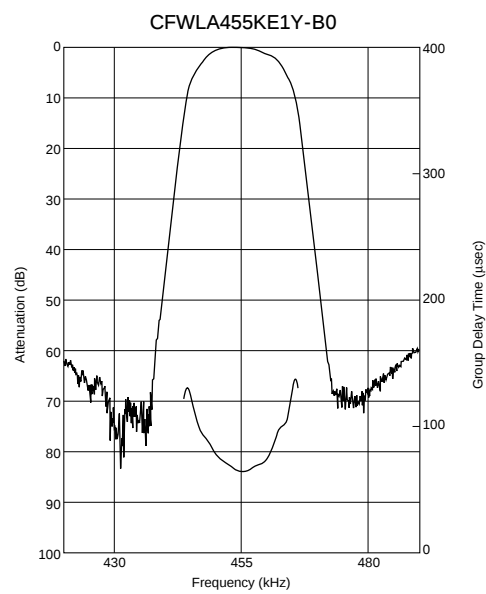
For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.

The order quantity should be an integral multiple of the "Minimum Quantity" shown in package page in this catalog.

■ Test Circuit



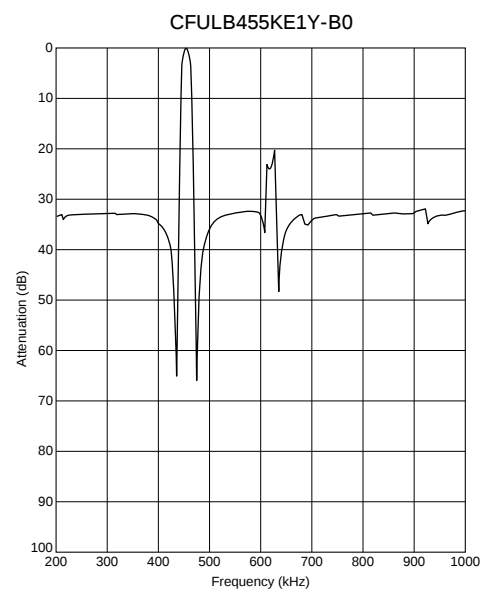
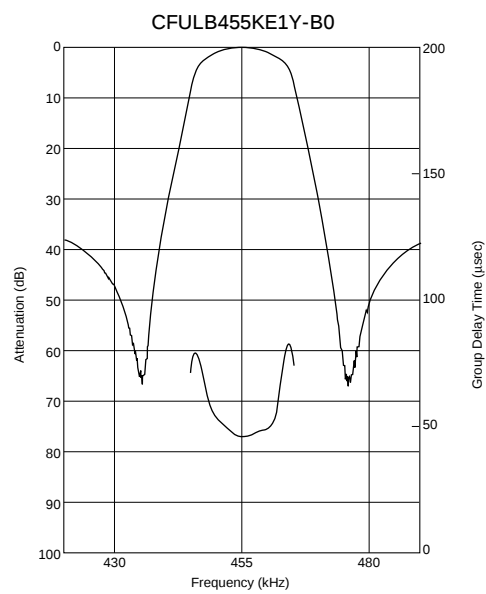
Frequency Characteristics



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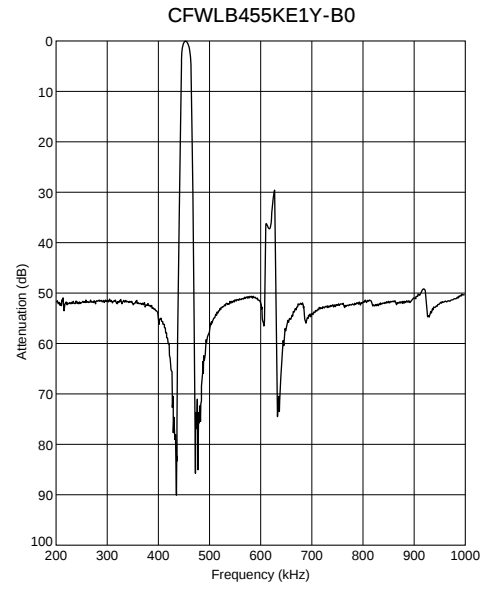
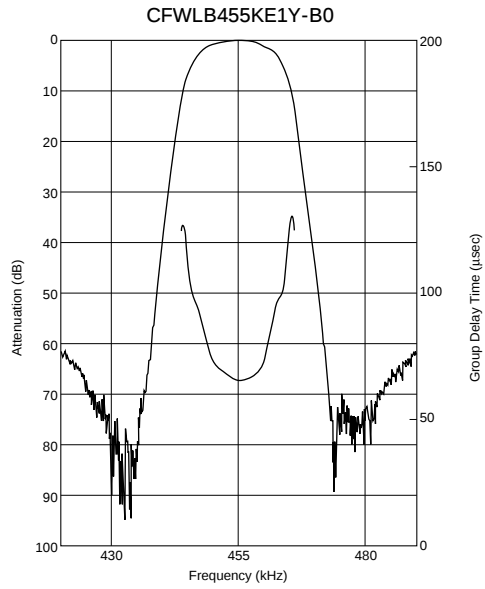
Frequency Characteristics



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Frequency Characteristics



Plastic Case Type CERAFIL® Minimum Quantity/Notice

■ Minimum Quantity

Part Number	Bulk	Magazine
CFULA Series	200	
CFULB Series	250	80
CFWLA Series	150	50
CFWLB Series	150	55

(pcs.)

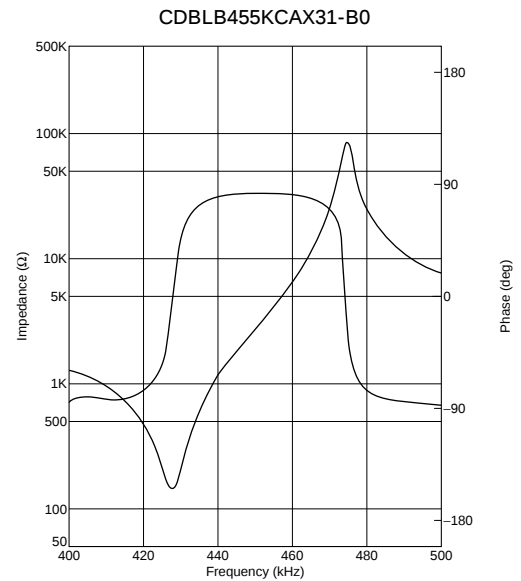
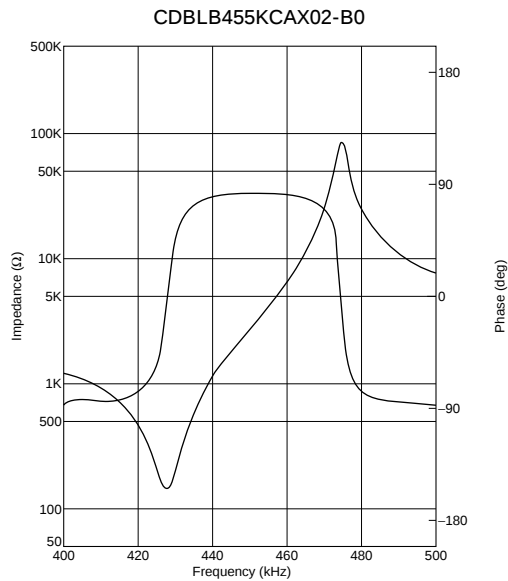
■ Notice (Handling)

1. Do not use this product with bend. The component may be damaged if excessive mechanical stress is applied to it mounted on the printed circuit board.
2. The component will be damaged when an excessive stress is applied.
3. All kinds of re-flow soldering must not be applied on the component.
4. Do not clean or wash the component as it is not hermetically sealed.
5. Do not use strong acidity flux, more than 0.2wt% chlorine content, in flow soldering.
6. In case of covering filter with over coat, conditions such as material of resin, cure temperature, and so on should be evaluated carefully.
7. Accurate test circuit values are required to measure electrical characteristics.
It may be a cause of miscorrelation if there is any deviation, especially stray capacitance, from the test circuit in the specification.
8. For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.

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■ Impedance Curve



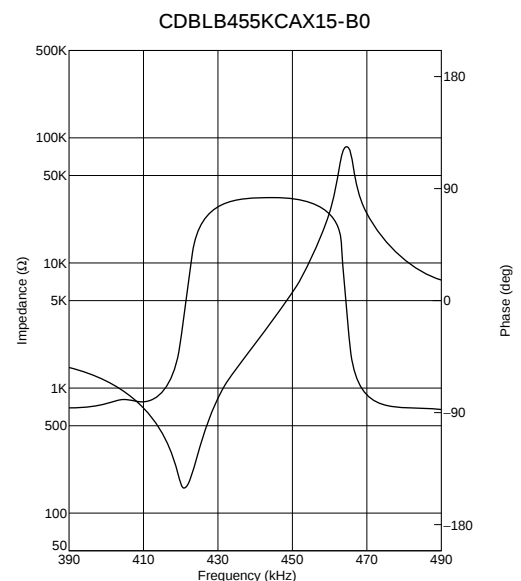
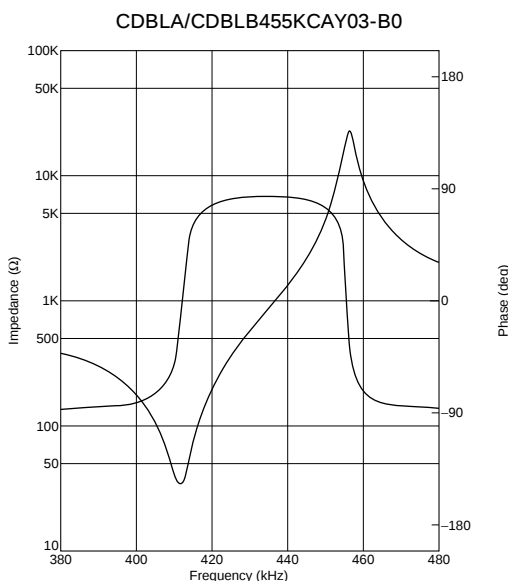
Specified by Impedance Characteristics (Type 2)

Part Number	Nominal Center Frequency (fn)	Anti-resonant Frequency (Fa)	Delta F (Fa-Fr)	Resonant Resistance (R)	Capacitance (C)	IC	IC Maker	Type
CDBKB455KCAX33-R0	-	462.0±1.5kHz	40±4.0kHz	200ohm max.	150pF±20%	CXA1474	SONY	SMD
CDBLA455KCAY03-B0	-	455.0±1.5kHz	48±5.0kHz	70ohm max.	600pF±20%	CXA1184M	SONY	Lead
CDBLB455KCAY03-B0	-	455.0±1.5kHz	46±5.0kHz	70ohm max.	550pF±20%	CXA1184M	SONY	Lead
CDBLB455KCAX15-B0	-	463.5±1.0kHz	43±2.0kHz	300ohm max.	140pF±20%	CXA1183M	SONY	Lead
CDBLB455KCAX25-B0	-	465.0±1.5kHz	45±4.0kHz	300ohm max.	135pF±20%	CXA1484	SONY	Lead
CDBLB455KCAX33-B0	-	465.0±1.5kHz	45±4.0kHz	300ohm max.	135pF±20%	CXA1474	SONY	Lead

For safety purposes, avoid applying a direct current between the terminals.

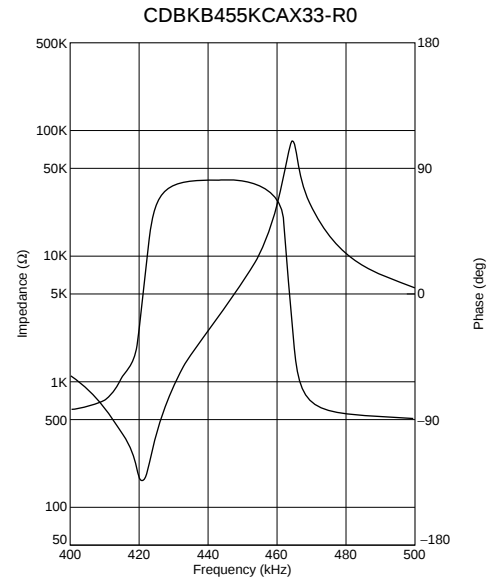
The order quantity should be an integral multiple of the "Minimum Quantity" shown in package page in this catalog.

■ Impedance Curve



Continued on the following page.

■ Impedance Curve



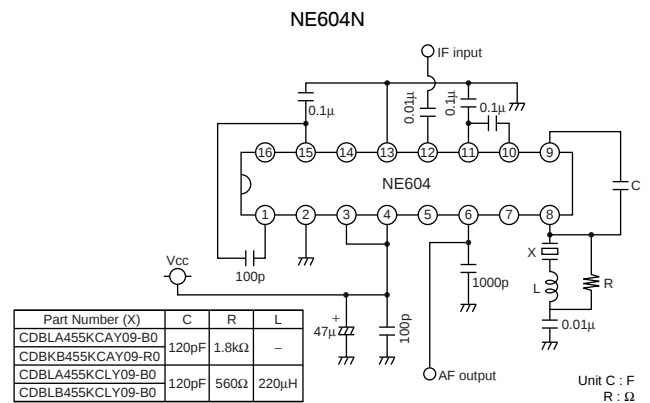
Specified by Recovered Audio Characteristics

Part Number	Nominal Center Frequency (fn) (kHz)	Recovered Audio 3dB BW (kHz)	Recovered Audio Output (mV)	Distortion (at fn) (%)	Distortion (%)	IC	IC Maker	Type
CDBKB450KCAY79-R0	450	fn±3.0 min.	145 ±40	-	-	TB32302FG	TOSHIBA	SMD
CDBKB455KCAY07-R0	455	fn±4.0 min.	350 ±60	3.0 max.	-	MC3357	MOTOROLA	SMD
CDBKB455KCAY09-R0	455	fn±4.0 min.	120 ±40	1.5 max.	-	NE604N	PHILIPS	SMD
CDBKB455KCAY13-R0	455	fn±4.0 min.	330 ±50	4.0 max.	-	CXA1003BM	SONY	SMD
CDBKB455KCAY16-R0	455	fn±4.0 min.	175 ±40	2.0 max.	-	MC3372	MOTOROLA	SMD
CDBKB455KCAY24-R0	455	fn±4.0 min.	100 ±40	2.0 max.	-	TA31136	TOSHIBA	SMD
CDBKB455KCAY27-R0	455	fn±4.0 min.	90 ±30	2.0 max.	-	TK10487	TOKO	SMD
CDBKB455KCAY28-R0	455	fn±4.0 min.	40 ±20	3.0 max.	-	TA31142F	TOSHIBA	SMD
CDBKB455KCAY29-R0	455	fn±4.0 min.	100 ±30	2.5 max.	-	NE605	PHILIPS	SMD
CDBKB455KCAY35-R0	455	fn±4.0 min.	100 ±40	2.5 max.	-	TK10930	TOKO	SMD
CDBKB455KCAY40-R0	455	fn±4.0 min.	40 ±20	3.5 max.	-	TA31145	TOSHIBA	SMD
CDBKB455KCAY49-R0	455	fn±4.0 min.	45 ±10	3.0 max.	-	MC3361	MOTOROLA	SMD
CDBKB455KCAY50-R0	455	fn±4.0 min.	64 ±6.4	4.0 max.	-	CXA3117N	SONY	SMD
CDBKB455KCAY66-R0	455	fn±4.2 min.	40 ±10	4.0 max.	-	NJM2590	JRC	SMD
CDBKB455KCLX36-R0	455	fn±13.0 min.	90 ±30	2.5 max.	5.0 max. [within fn ±6kHz]	NE(SA)606 /NE(SA)616	PHILIPS	SMD
CDBKB455KCLX39-R0	455	fn±11.0 min.	130 ±20	2.5 max.	7.0 max. [within fn ±8kHz]	NE607 /NE617	PHILIPS	SMD
CDBKB455KCLY13-R0	455	fn±13.0 min.	120 ±30	1.5 max.	5.0 max. [within fn ±8kHz]	CXA1003BM	SONY	SMD
CDBLA455KCAY07-B0	455	fn±4.0 min.	340 ±60	2.5 max.	-	MC3357	MOTOROLA	Lead
CDBLA455KCAY09-B0	455	fn±5.0 min.	100 min.	1.5 max.	-	NE604N	PHILIPS	Lead
CDBLA455KCAY13A-B0	455	fn±4.0 min.	350 ±50	3.0 max.	-	CXA1003BM	SONY	Lead
CDBLA455KCAY16-B0	455	fn±4.0 min.	185 ±40	2.0 max.	-	MC3372	MOTOROLA	Lead
CDBLA455KCAY24-B0	455	fn±4.0 min.	100 ±40	2.0 max.	-	TA31136	TOSHIBA	Lead
CDBLA455KCAY28-B0	455	fn±4.0 min.	40 ±20	3.0 max.	-	TA31142	TOSHIBA	Lead
CDBLA455KCAY34-B0	455	fn±4.0 min.	65 ±20	2.5 max.	-	MC13136	MOTOROLA	Lead
CDBLA455KCLY09-B0	455	fn±15.0 min.	70 ±20	1.5 max.	3.5 max. [within fn ±8kHz]	NE604N	PHILIPS	Lead
CDBLA455KCLY13-B0	455	fn±15.0 min.	110 ±30	1.5 max.	5.0 max. [within fn ±8kHz]	CXA1003BM	SONY	Lead
CDBLB455KCAY07-B0	455	fn±4.0 min.	340 ±60	3.0 max.	-	MC3357	MOTOROLA	Lead

Continued on the following page.

Part Number	Nominal Center Frequency (fn) (kHz)	Recovered Audio 3dB BW (kHz)	Recovered Audio Output (mV)	Distortion (at fn) (%)	Distortion (%)	IC	IC Maker	Type
CDBLB455KCAY13A-B0	455	fn±4.0 min.	350 ±50	3.0 max.	-	CXA1003BM	SONY	Lead
CDBLB455KCAY24-B0	455	fn±4.0 min.	100 ±40	2.0 max.	-	TA31136	TOSHIBA	Lead
CDBLB455KCAY28-B0	455	fn±4.0 min.	40 ±20	3.0 max.	-	TA31142FN	TOSHIBA	Lead
CDBLB455KCAY34-B0	455	fn±4.0 min.	65 ±20	2.5 max.	-	MC13136	MOTOROLA	Lead
CDBLB455KCAY40-B0	455	fn±4.0 min.	40 ±20	3.0 max.	-	TA31145	TOSHIBA	Lead
CDBLB455KCAY42-B0	455	fn±4.0 min.	40 ±15	3.0 max.	-	TK14590 /TK14591	TOKO	Lead
CDBLB455KCAY49-B0	455	fn±4.0 min.	45 ±10	3.0 max.	-	MC3361	MOTOROLA	Lead
CDBLB455KCAY50-B0	455	fn±4.0 min.	64 ±6.4	4.0 max.	-	CXA3117N	SONY	Lead
CDBLB455KCLY09-B0	455	fn±15.0 min.	70 ±20	1.5 max.	3.5 max. [within fn ±8kHz]	NE604N	PHILIPS	Lead
CDBLB455KCLY13-B0	455	fn±15.0 min.	110 ±30	1.5 max.	5.0 max. [within fn ±8kHz]	CXA1003BM	SONY	Lead
CDBLB455KCAX16-B0	455	fn±4.0 min.	185 ±40	2.0 max.	-	MC3372	MOTOROLA	Lead
CDBLB455KCAX18-B0	455	fn±3.0 min.	180 ±40	2.0 max.	-	MC3371	MOTOROLA	Lead
CDBLB455KCAX36-B0	455	fn±3.5 min.	100 ±25	3.5 max.	-	NE606 /NE616	PHILIPS	Lead

■ Test Circuit

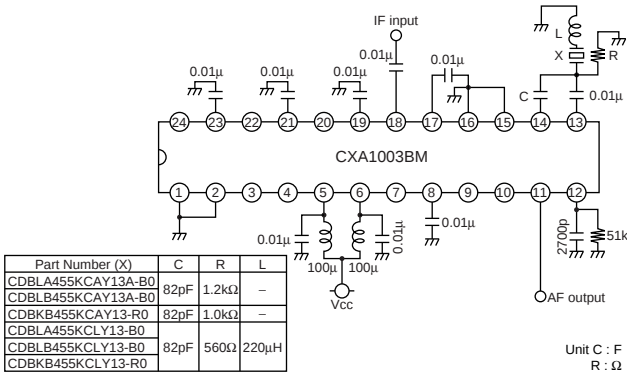


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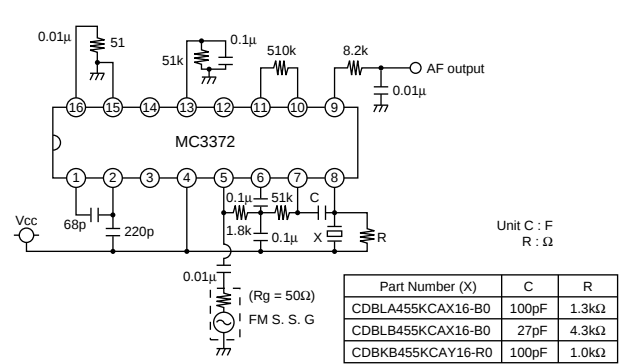
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Test Circuit

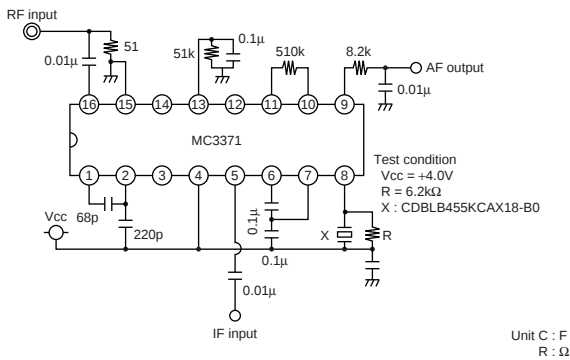
CXA1003BM



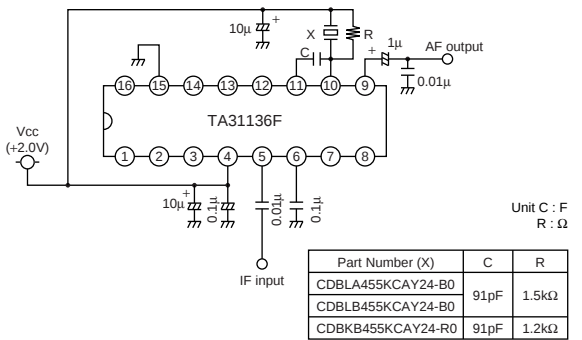
MC3372



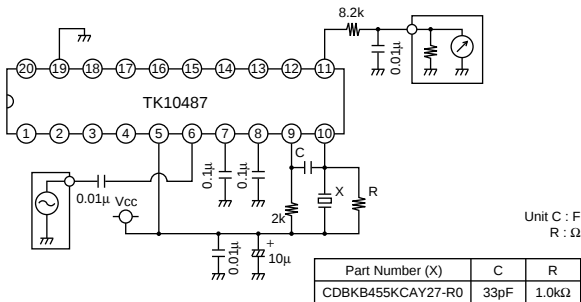
MC3371



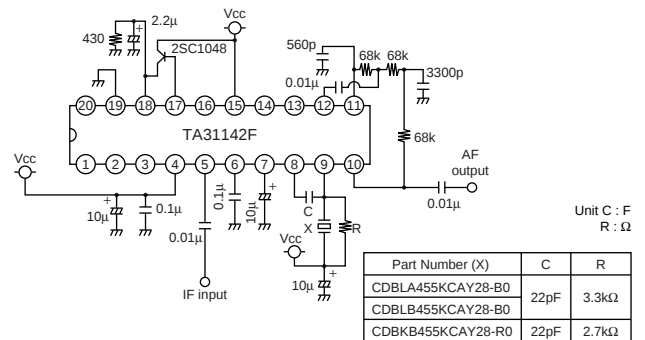
TA31136



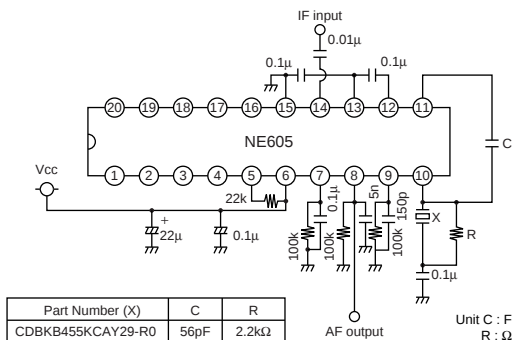
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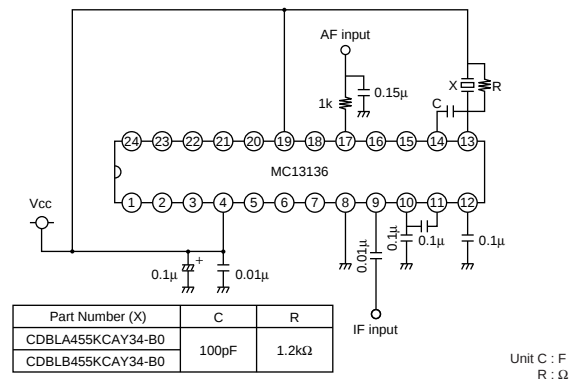
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NE605



MC13136

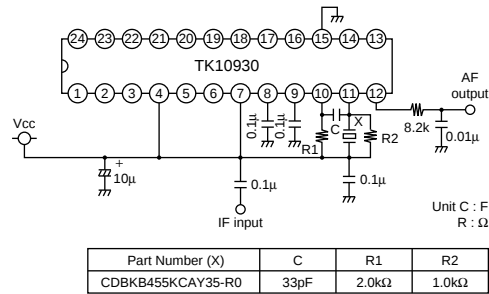


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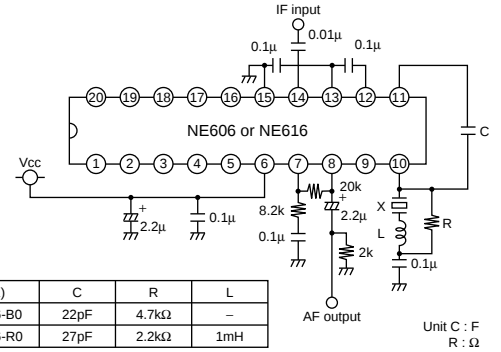
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Test Circuit

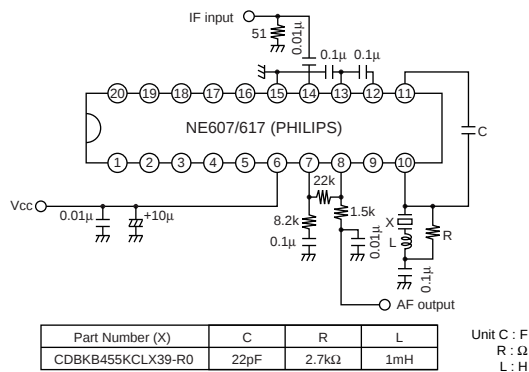
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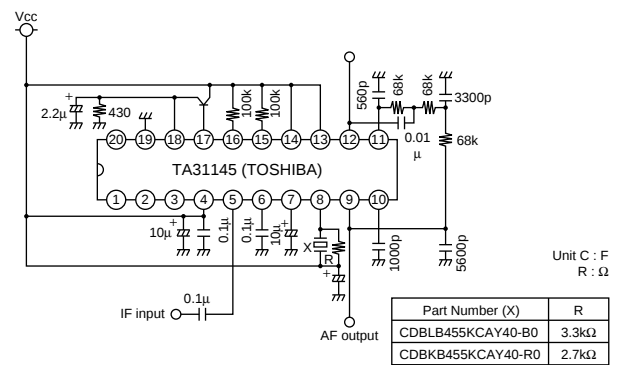
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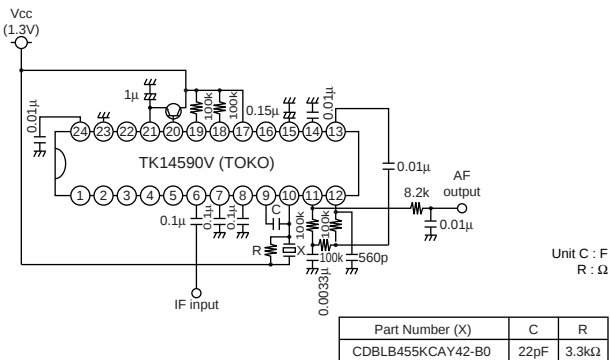
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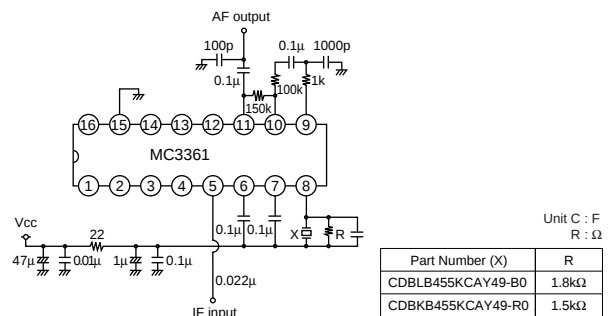
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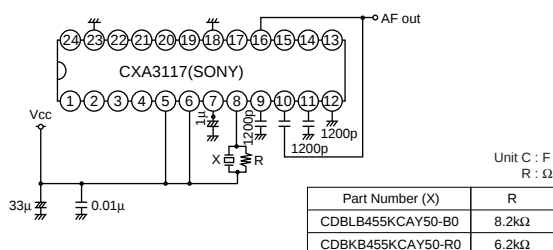
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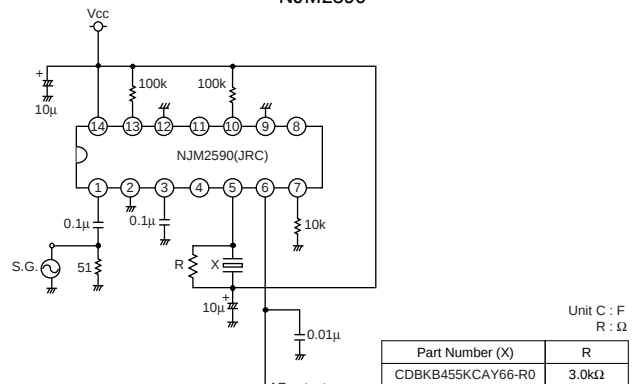
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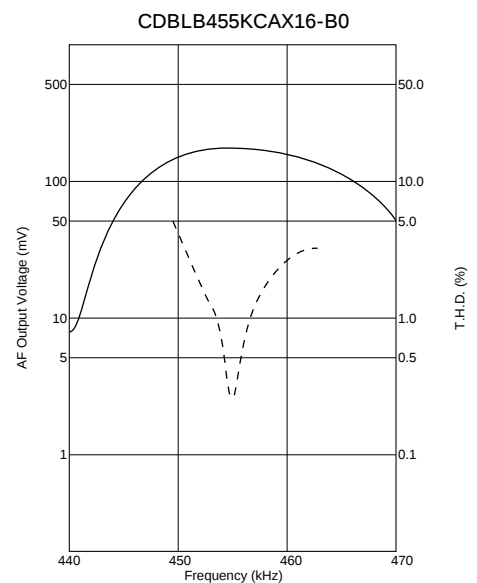
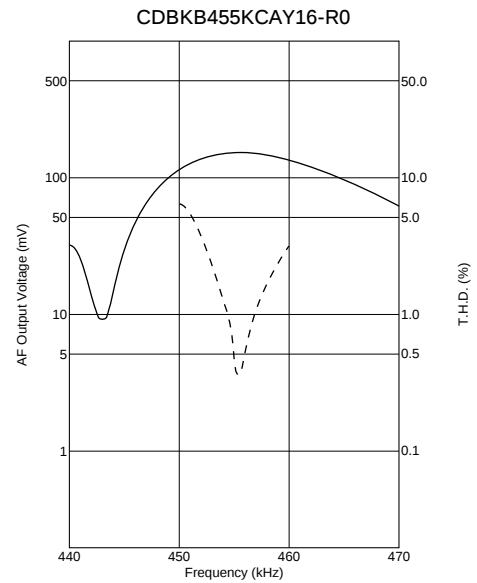
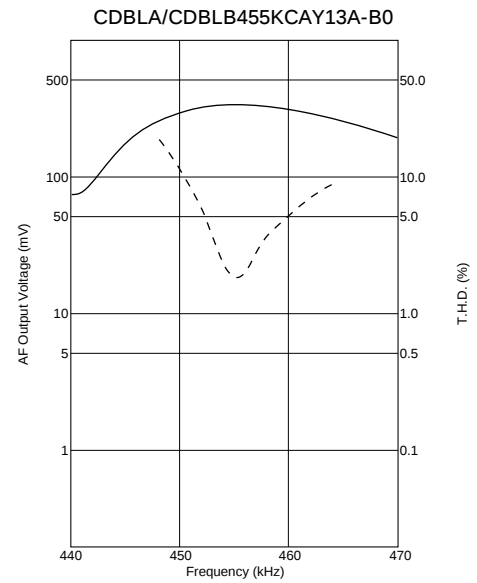
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NJM2590

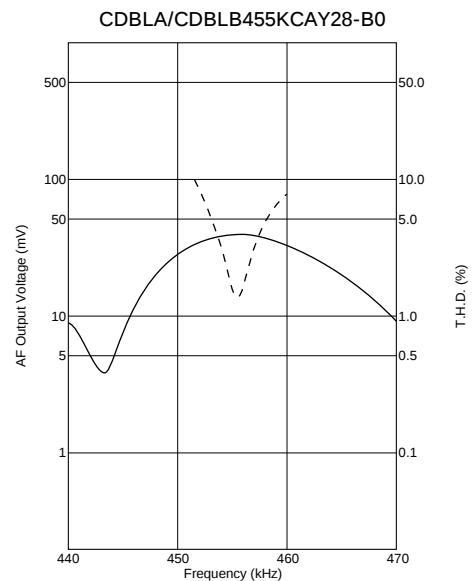
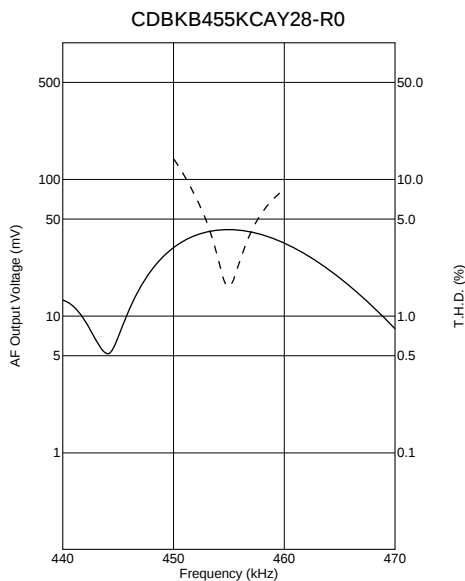
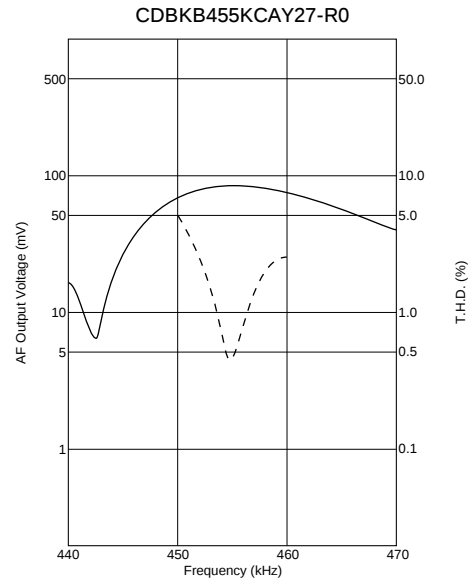
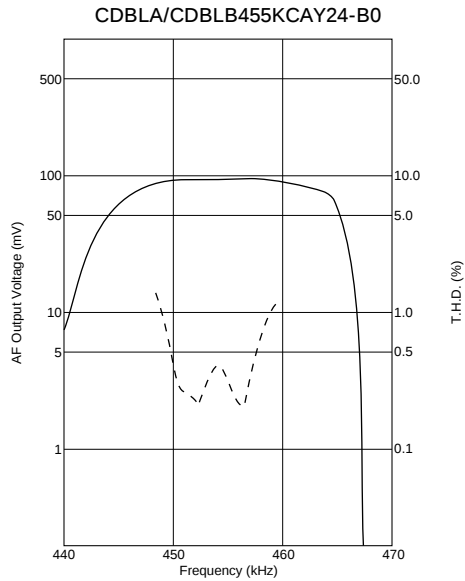
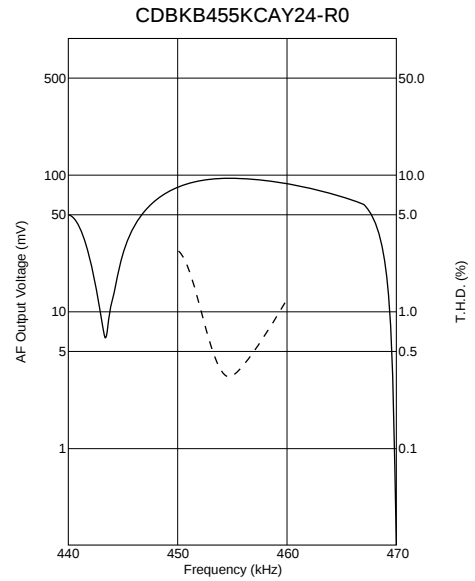
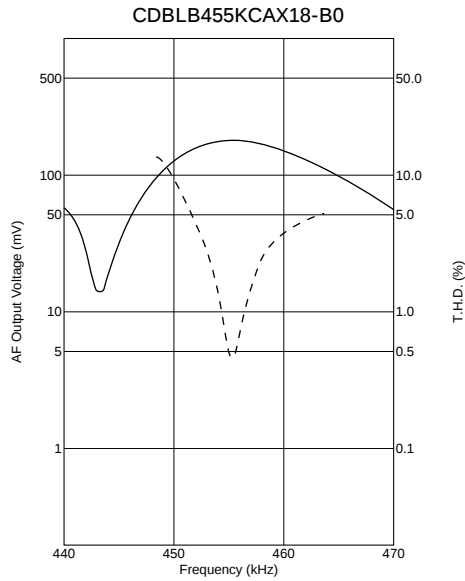


■ Recovered Audio Curve



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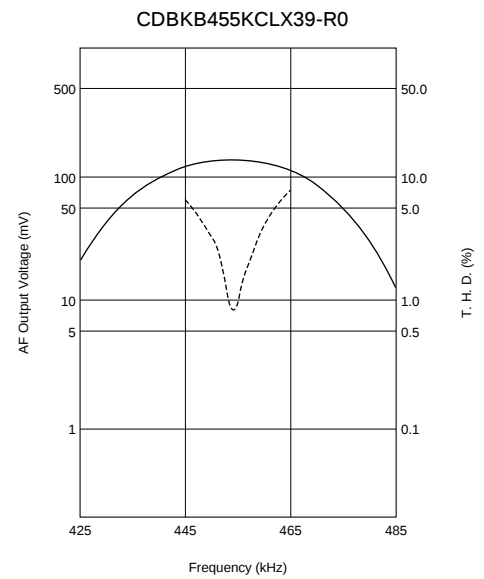
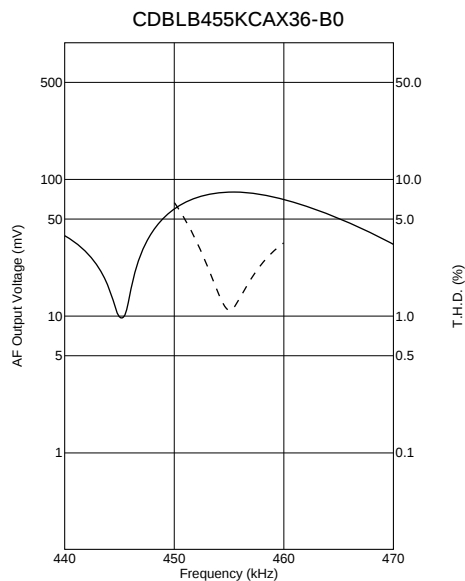
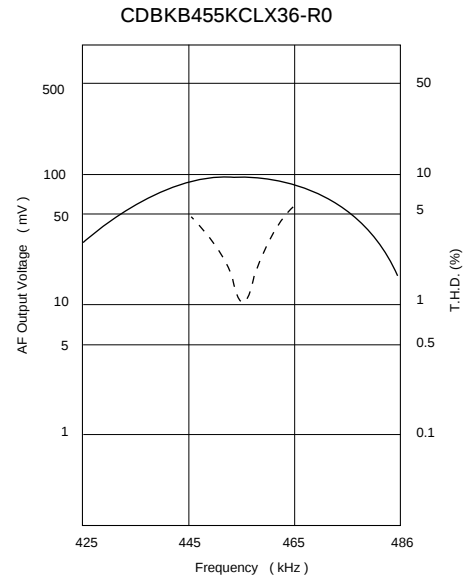
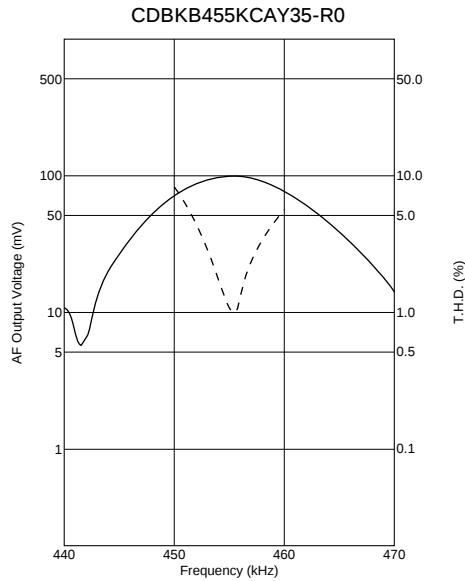
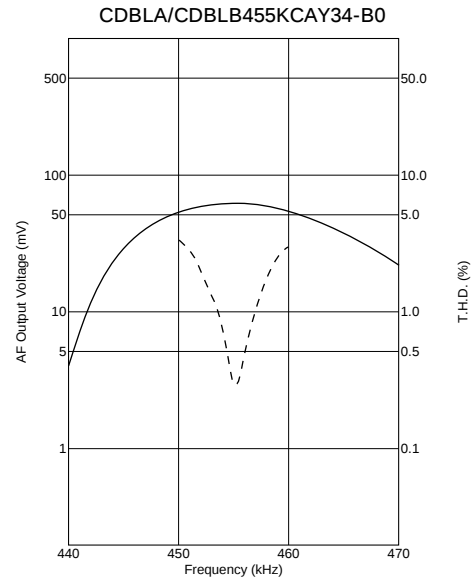
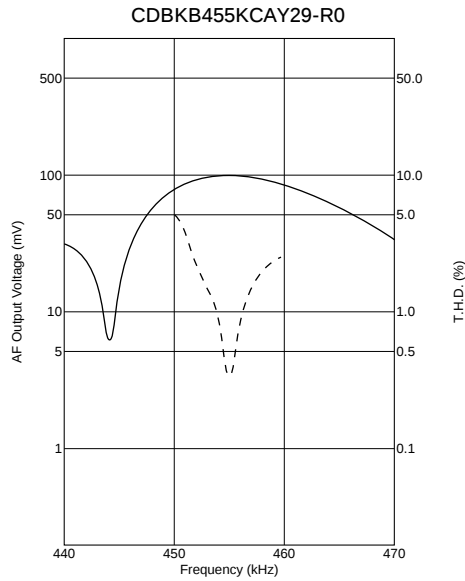
Recovered Audio Curve



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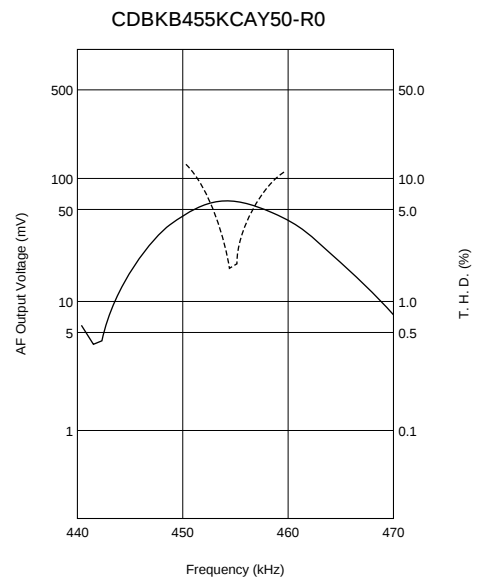
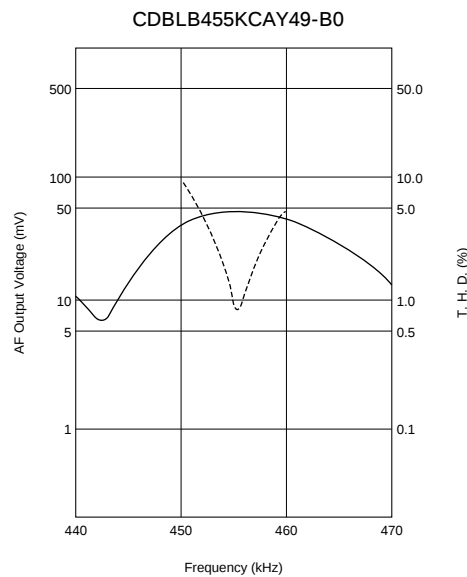
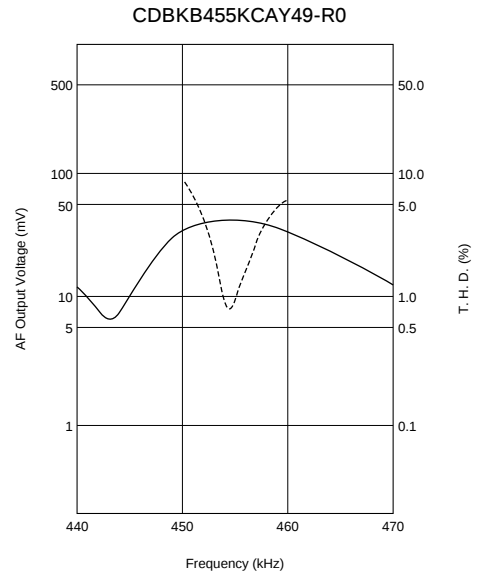
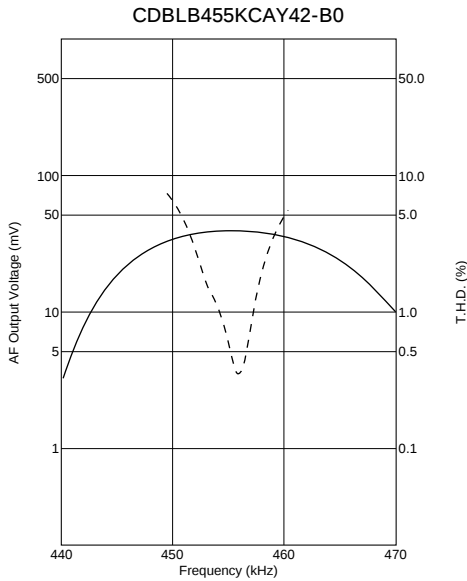
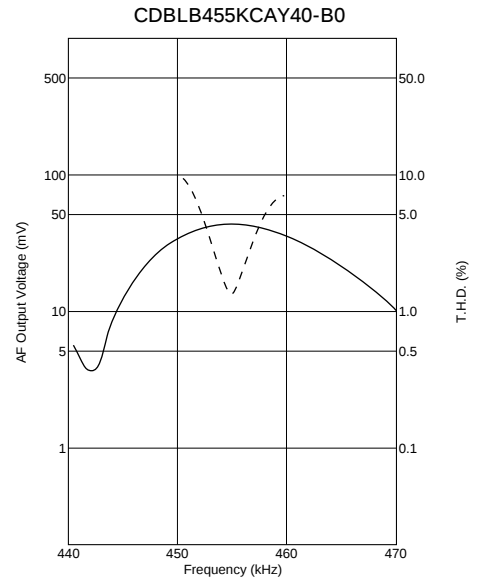
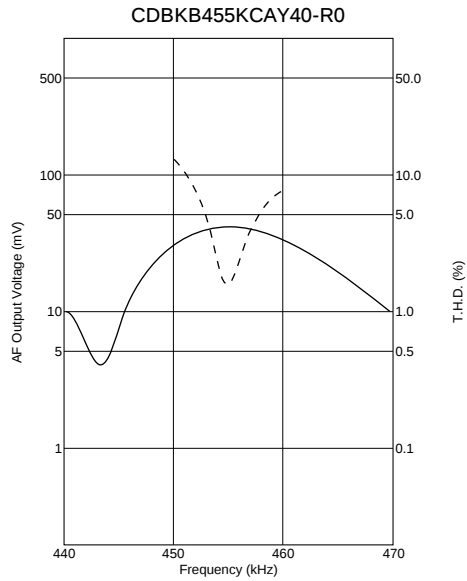
Recovered Audio Curve



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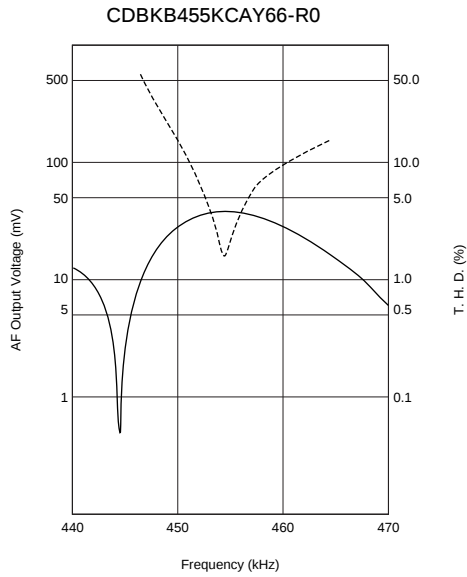
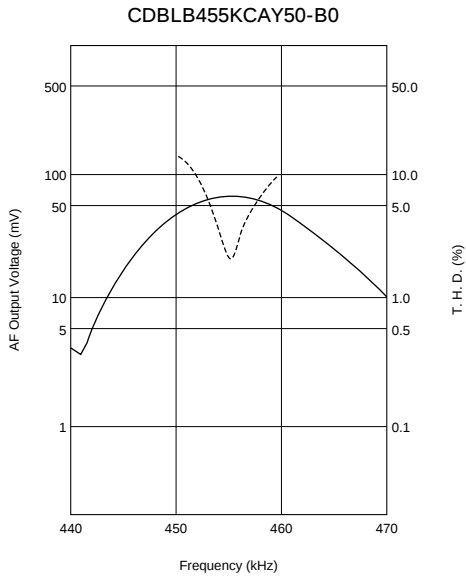
Recovered Audio Curve



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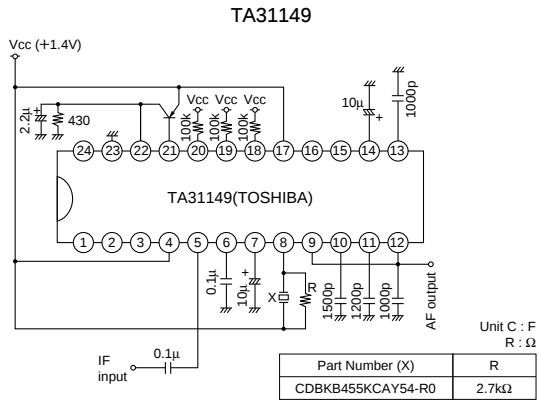
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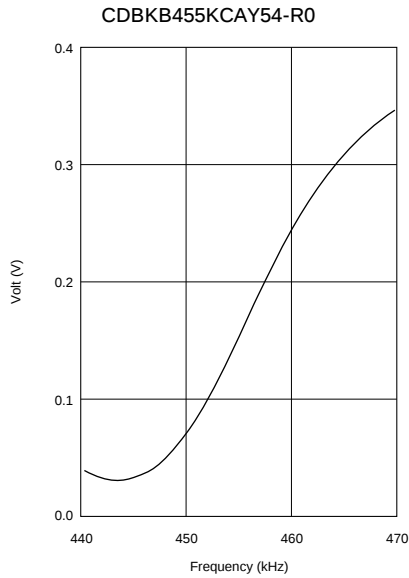
Specified by S Curve Characteristics

Part Number	Nominal Center Frequency (fn) (kHz)	S Curve (1) Output Volt. at fn (mV)	S Curve (2) at fn±4.8kHz (mV)	IC	IC Maker	Type
CDBKB455KCAY54-R0	455	165 ±20	170 ±20	TA31149	TOSHIBA	SMD

Test Circuit



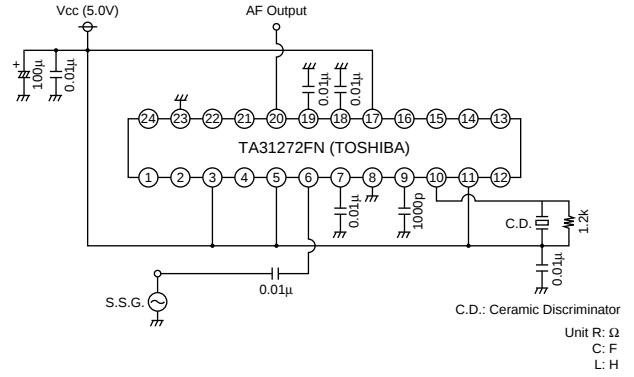
S Curve



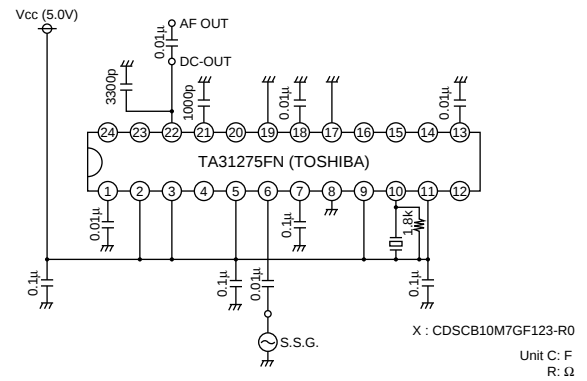
myRato

■ Test Circuit

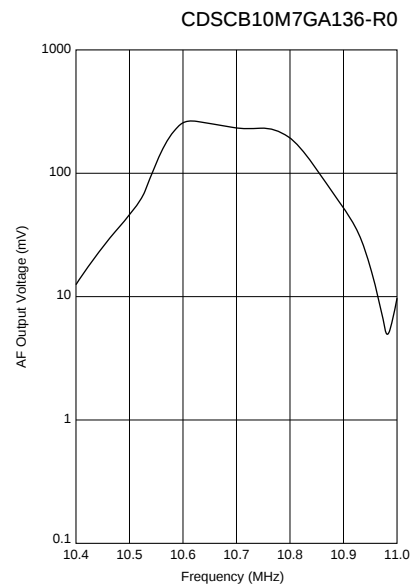
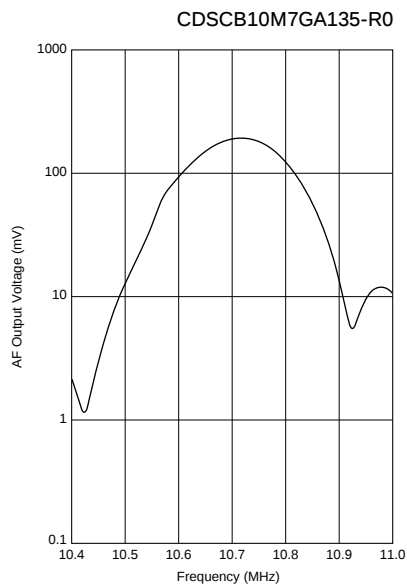
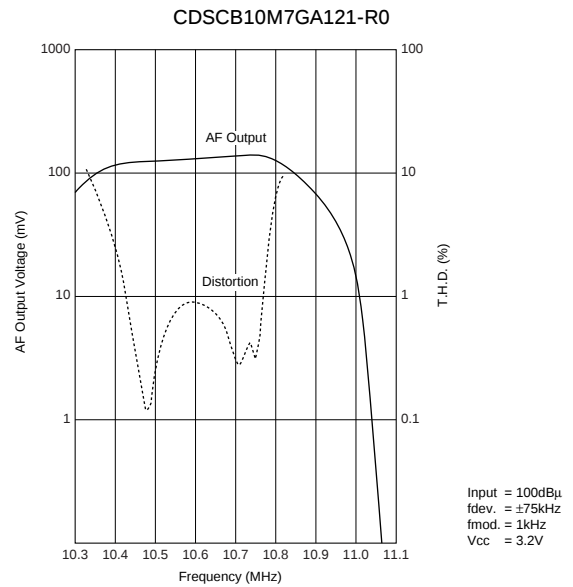
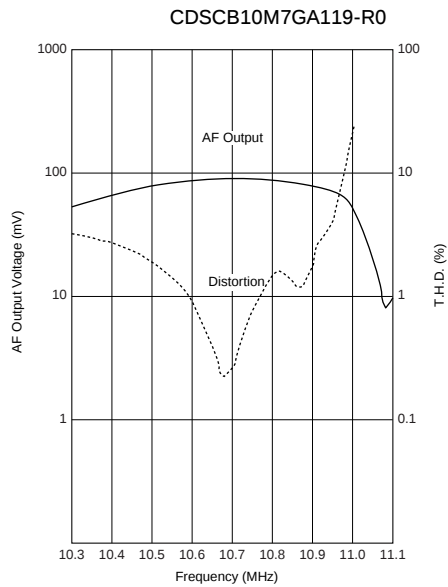
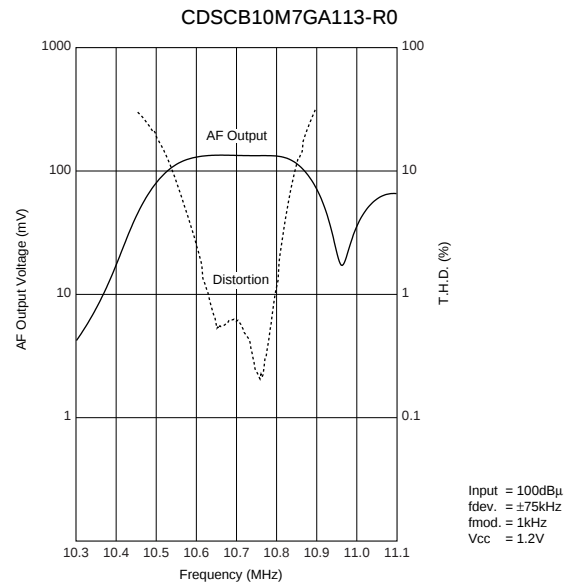
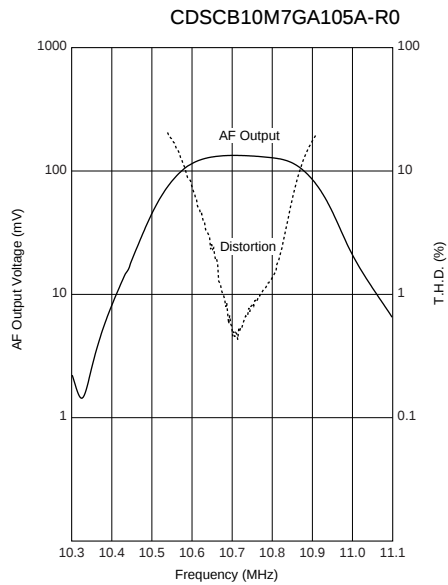
CDSCB10M7GF107S-R0



CDSCB10M7GF123-R0

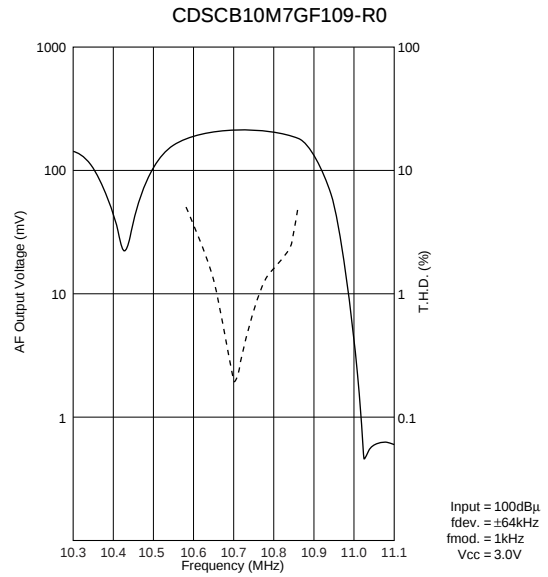
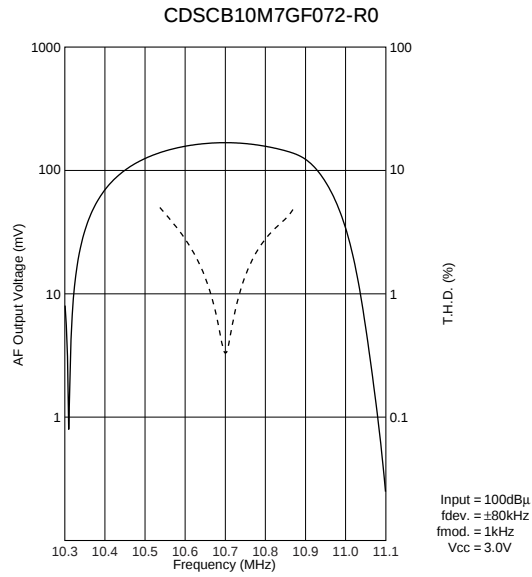


■ Recovered Audio Curve

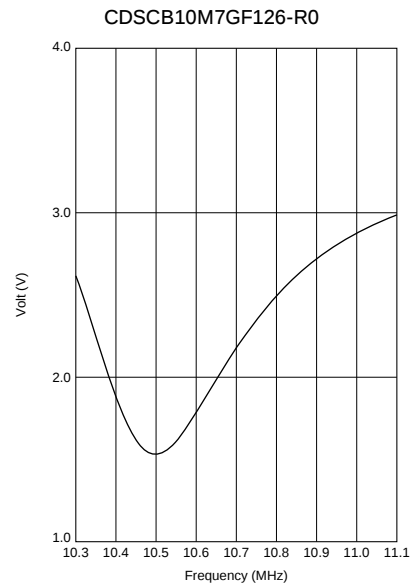
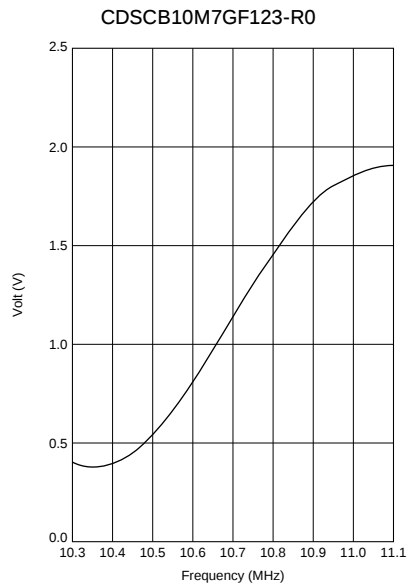


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■ Recovered Audio Curve



■ S Curve



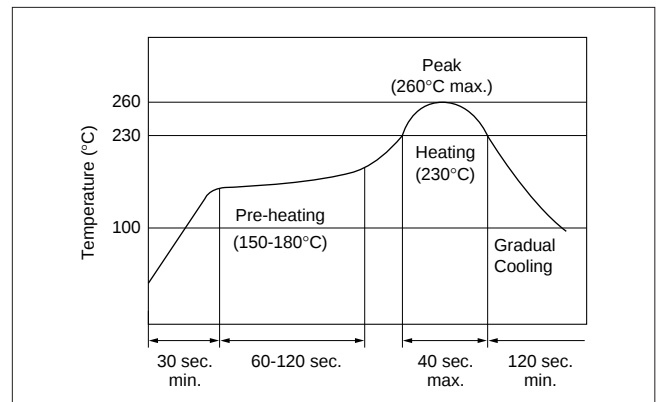
Ceramic Discriminators Notice

■ CDBKB Series Notice (Soldering and Mounting)

1. Standard Reflow Soldering Conditions

(1) Reflow

Filter is soldered twice within the following temperature conditions.



(2) Soldering Iron

Electrode is directly soldered with the tip of soldering iron at $+350 \pm 5^\circ\text{C}$ for 3.0 ± 0.5 seconds.

2. Wash

(1) Cleaning Solvent

CFC alternatives (HCFC Series), Isopropyl Alcohol (IPA), Water (Demineralized Water), Cleaning Water Solution (Cleanthrough-750H, Pine Alpha 100S), Silicon (Technocare FRW)

(2) Cleaning Conditions

- Immersion Wash
2 minutes max. in above solvent at $+60^\circ\text{C}$ max.
- Shower or Rinse Wash
2 minutes max. in above solvent at $+60^\circ\text{C}$ max.

(3) Notice

- When components are immersed in solvent, be sure to maintain the temperature of components below the temperature of solvent.
- Please do not use ultrasonic cleaning.
- Total washing time should be within 4 minutes.
- Please ensure the component is thoroughly evaluated in your application circuit.
- Please do not use chlorine, petroleum and alkaline cleaning solvents.
- If you plan to use any other type of solvents, please consult with Murata or Murata representative prior to using.

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Ceramic Discriminators Notice

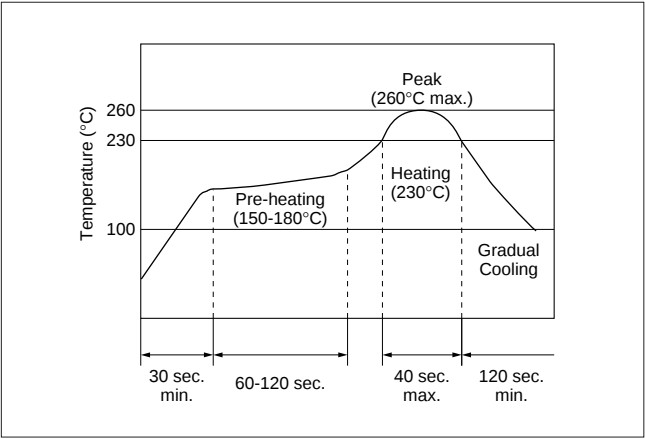
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■ CDSCB Series Notice (Soldering and Mounting)

1. Standard Reflow Soldering Conditions

(1) Reflow

Filter is soldered twice within the following temperature conditions.



(2) Soldering Iron

Filter is soldered at $+300\pm5^{\circ}\text{C}$ for 3.0 ± 0.5 seconds. The soldering iron should not touch the filter while soldering.

2. Wash

The component cannot withstand washing.

Ceramic Discriminators Notice

■ CDBKB Series Notice (Handling)

1. The component will be damaged when an excessive stress is applied.
2. In the case that the component is cleaned, confirm no reliability degradation is created.
3. In case of covering filter with over coat, conditions such as material of resin, cure temperature, and so on should be evaluated carefully.
4. Do not use strong acidity flux, more than 0.2wt% chlorine content, in re-flow soldering.

■ CDBLA/CDBLB Series Notice (Handling)

1. Do not use this product with bend. The component may be damaged if excess mechanical stress is applied to it mounted on the printed circuit board.
2. The component will be damaged when an excessive stress is applied.
3. All kinds of re-flow soldering must not be applied on the component.
4. Do not clean or wash the component as it is not hermetically sealed.

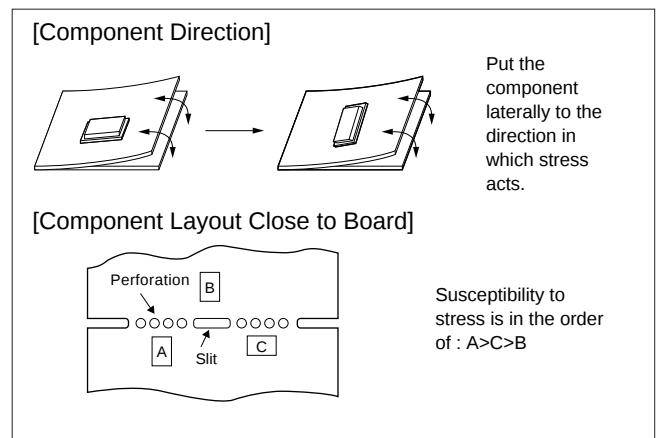
■ CDSCB Series Notice (Handling)

1. The component mounted on the PCB may be damaged if excessive mechanical stress is applied.
2. Layout the components on the PCB to minimize the stress imposed on the warp or flexure of the board.
3. After installing components, if solder is excessively applied to the circuit board, mechanical stress will cause destruction resistance characteristics to lower. To prevent this, be extremely careful in determining shape and dimension before designing the circuit board diagram.
4. The component may be damaged during mounting process if some part of mounter such as positioning claws or nozzle are worn down. The regular maintenance recommended for mounters should be done to prevent troubles.
5. When correcting component's position with a soldering iron, the tip of the soldering iron should not directly touch the chip component. Depending on the soldering conditions, the effective area of terminations may be reduced. The use of solder containing Ag should be considered to prevent the electrode erosion.
6. Do not clean or wash the component as it is not hermetically sealed.
7. In case of overcoating the part, coating conditions such as material of resin, curing temperature, and so on should be evaluated carefully.
8. Accurate test circuit values are required to measure electrical characteristics.
It may be a cause of miscorrelation if there is any deviation, especially stray capacitance, from the test circuit in the specification.
9. For safety purposes, avoid applying a direct current between the terminals.

5. The product, packed in the moisture-proof bag (dry pack), is sensitive to moisture.

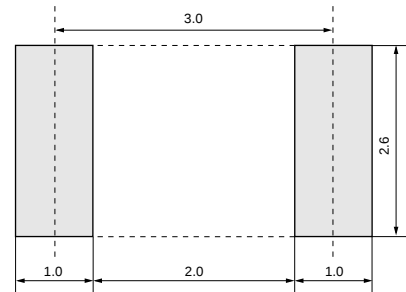
The following treatment is required before applying re-flow soldering, to avoid package cracks or reliability degradation caused by thermal stress. When unpacked, store the component in an atmosphere of below 25 degrees C. and below 65%R.H., and solder within 48 hours.

5. Do not use strong acidity flux, more than 0.2wt% chlorine content, in flow soldering.
6. In case of covering discriminator with over coat, conditions such as material of resin, cure temperature, and so on should be evaluated carefully.



■ Standard Land Pattern Dimensions

CDSCB Series



(in mm)

Part Number	Taping ø180mm	Bulk	Magazine
CDBKB Series	500		
CDBLA Series		500	50
CDBLB Series		500	80
CDSCB Series	2000		

(pcs.)

Dimensions of Carrier Tape

Top view: Shows a carrier tape with dimensions: 2.0±0.1, 4.0±0.1, 1.75±0.1, 16.0±0.15, 7.5±0.1, 8.0±0.1, 1.5^{+0.1}/_{-0.0}, and a hole diameter of $\phi 1.5^{+0.1}_{-0.0}$. The "User direction of feed" is indicated.

Side view: Shows a cross-section with dimensions 3.3±0.1 and 7.2±0.1.

Detail view: Shows a cross-section of the carrier tape with a 3° max. angle and a 6.3±0.1 dimension.

Dimensions of Reel

Top view: Shows a reel with dimensions: 160 to 190 (Trailer), 160 to 200 (Empty), 400 to 560 (Leader), 2.0±0.2, $\phi 13.0 \pm 0.5$, $\phi 60^{+1.0}_{-0.0}$, $\phi 180^{+3.0}_{-3.0}$, 17.0±0.3, and 19.4±1.0.

Side view: Shows a cross-section of the reel with dimensions: 160 to 190 (Trailer), 160 to 200 (Empty), 400 to 560 (Leader), and 19.4±1.0.

• Part number marked side is always facing upside.

(in mm)

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() : Reference
(in mm)



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 • This PDF catalog has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

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No Murata products should be used or sold, through any channels, for use in the design, development, production, utilization, maintenance or operation of, or otherwise contribution to (1) any weapons (Weapons of Mass Destruction [nuclear, chemical or biological weapons or missiles] or conventional weapons) or (2) goods or systems specially designed or intended for military end-use or utilization by military end-users.

<For customers in Japan>

For products which are controlled items subject to the "Foreign Exchange and Foreign Trade Law" of Japan, the export license specified by the law is required for export.

2. Please contact our sales representatives or product engineers before using the products in this catalog for the applications listed below, which require especially high reliability for the prevention of defects which might directly damage a third party's life, body or property, or when one of our products is intended for use in applications other than those specified in this catalog.

- | | |
|-----------------------------|--|
| ① Aircraft equipment | ② Aerospace equipment |
| ③ Undersea equipment | ④ Power plant equipment |
| ⑤ Medical equipment | ⑥ Transportation equipment (vehicles, trains, ships, etc.) |
| ⑦ Traffic signal equipment | ⑧ Disaster prevention / crime prevention equipment |
| ⑨ Data-processing equipment | ⑩ Application of similar complexity and/or reliability requirements to the applications listed above |

3. Product specifications in this catalog are as of September 2010. They are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering. If there are any questions, please contact our sales representatives or product engineers.

4. Please read rating and CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.

5. This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

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7. No ozone depleting substances (ODS) under the Montreal Protocol are used in our manufacturing process.



Murata Manufacturing Co., Ltd.

<http://www.murata.com/>

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