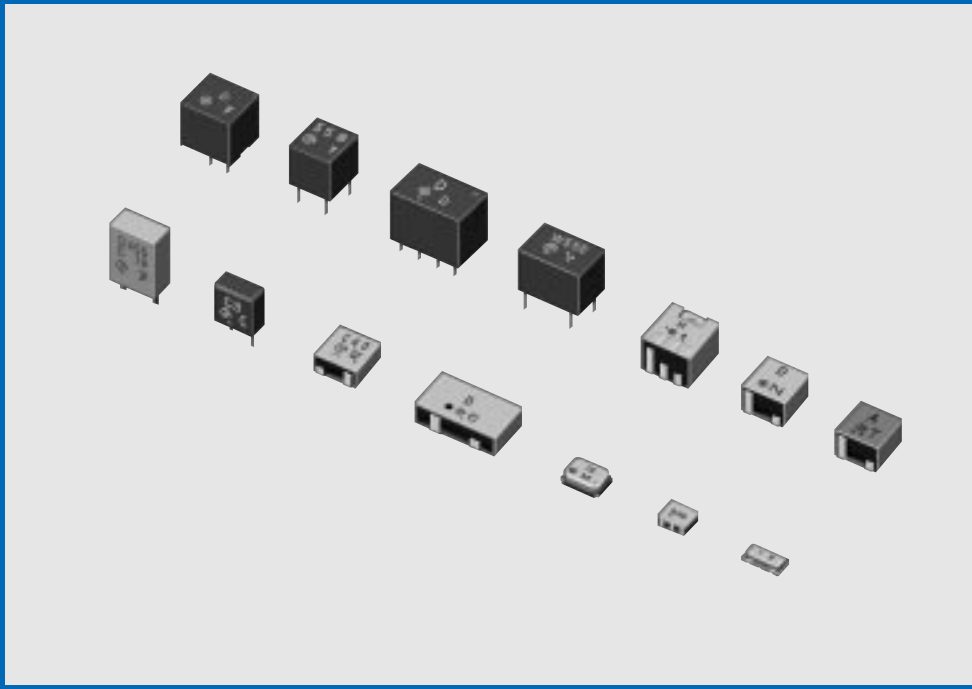
Ceramic Filters(CERAFIL®)/Ceramic Discriminators for Communications Equipment

CERAMIC FILTERS/ CERAMIC DISCRIMINATORS FOR COMMUNICATIONS EQUIPMENT



GLOBAL PART NUMBERS
JUNE 2001

muRata Innovator in Electronics
Murata
Manufacturing Co., Ltd.

Cat.No.P05E-11

CONTENTS

● Part Numbering (The structure of the "Global Part Numbers" that have been adopted since June 2001 and the meaning of each code are described herein. If you have any questions about details, inquire at your usual Murata sales office or distributor.)

Ceramic Filters (CERAFIL®) for IF

(Global Part Number)

	❶	❷	❸	❹	❺	❻	❼
	CF	X	CA	450K	CFA	001	-R0
	SF	P	CA	455K	D4A		-R0
	SF	E	CS	10M8	PF00	00	-R0

❶Product ID

❷Oscillating/Element

Product ID		Oscillating/Element	
CF	CERAFIL® for Communication Equipment	U	4 Elements Area Expansion mode
		W	6 Elements Area Expansion mode
		X	4 Elements Length mode
SF		P	4 Elements Area Expansion mode
		E	2 Elements Thickness Expansion mode
		S	2 Elements Thickness Shear mode
		J	4 Elements Thickness Shear mode

❸Structure/Size

Code	Structure/Size
C□	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.

❹Nominal 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**".

❺Product Specification

Code	Product Specification
CFA	Three letters express pass band width, center frequency tolerance and design type.

SFECS series are expressed by four letters.

❻Individual Specification

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

SFE/S/J series are expressed by two-digit alphanumerics.
With standard type, ❻ is omitted.

❼Packaging

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

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

Ceramic Discriminators for IF (kHz)

(Global Part Number) **CD** ❶ | **B** ❷ | **LB** ❸ | **450K** ❹ | **C** ❺ | **A** ❻ | **X** ❼ | **16** ❽ | **-B0** ❾

❶Product ID

Product ID	
CD	Ceramic Discriminators

❷Oscillating

Code	Oscillating
B	Area Expansion mode

❸Structure/Size

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

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

❹Nominal Center Frequency

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

❺Detection

Code	Detection
C	Quadrature Detection

❻Application

Code	Application
A	Standard
L	Application with coil

❼Element Type

Code	Element Type
X	Low-capacitance
Y	High-capacitance

❽IC

Code	IC
16	Applicable IC Control code

❾Packaging

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

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

Ceramic Discriminators for IF (MHz)

(Global Part Number) **CD** ❶ | **S** ❷ | **CA** ❸ | **10M7** ❹ | **GF** ❺ | **001** ❻ | **-R0** ❼

❶Product ID

Product ID	
CD	Discriminators

❷Oscillation

Code	Oscillation
S	Thickness Shear mode

❸Structure/Size

Code	Structure/Size
C□	Chip Type

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

❹Nominal Center Frequency

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

❺Product Specification

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

❻IC

Code	IC
001	Applicable IC Control Code

❼Packaging

Code	Packaging
-R0	Plastic Taping ø=180mm

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

Products Guide

●SMD Type (kHz)

Type	Applications	General Use: AMPS / PDC / PAGER CORDLESS / TACS CORDLESS / AM											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	Within 455±80 or ±100kHz
High Selectivity Series (Plastic Case Type)	**SFPCA455K□** (4 Elements)	–	–	–	●	●	●	●	●	–	–	–	27 (G to H ; 25)
	CFUCG455K□ (4 Elements)	–	–	–	●	●	●	●	●	–	–	–	27 (G ; 25)
Narrow Bandwidth GDT Flat Type Miniature Series (Plastic Case Type)	**CFUCG455K□X** (4 Elements)	–	–	–	●	●	●	●	●	–	–	–	27 (G to H ; 25)
GDT Flat Type Miniature Series (Plastic Case Type)	**CFUCF455K□** (4 Elements)	●	●	●	●	●	–	–	–	–	–	–	25 (D to E ; 23)
GDT Flat Type High Selectivity SMD Series (Plastic Case Type)	**CFWCA450KBFY** (6 Elements)	–	●	–	–	–	–	–	–	–	–	–	45
High Selectivity SMD Series (Plastic Case Type)	**CFWCA450K□** (6 Elements)	–	●	–	●	●	●	●	–	–	–	–	50
Ultra Small Package Series (Cap Package)	**CFXCA** (4 Elements)	–	●	●	–	–	–	–	–	–	–	–	47
	CFXCD (4 Elements)	–	–	●	–	–	–	–	–	–	–	–	47

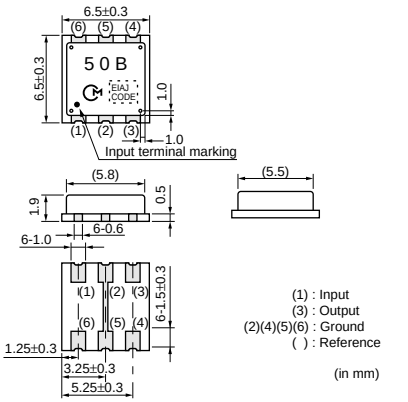
●Lead Type (kHz)

Type	Applications	General Use: AMPS / PDC / PAGER CORDLESS / TACS CORDLESS / AM											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	Within 455±80 or ±100kHz
High Selectivity Low Profile Series	**CFULA455K□** (4 Elements)	–	●	●	●	●	●	●	●	–	–	–	27 (G ; 25) (H, J ; 35)
	CFWLA455K□ (6 Elements)	–	●	●	●	●	●	●	●	●	–	–	35 (H, J ; 60)
High Selectivity Miniature Series	**CFULB455K□** (4 Elements)	–	●	●	●	●	●	●	●	●	–	–	27 (G ; 25) (H, J ; 35)
	CFWLB455K□ (6 Elements)	–	●	●	●	●	●	●	●	●	–	–	35 (H, J : 65)
GDT Flat Type Series	**CFULA455K□Y** (4 Elements)	–	●	●	●	●	●	●	–	–	–	–	25 (D to F ; 23) (G ; 20)
	CFWLA455K□Y (6 Elements)	●	●	●	●	●	●	●	–	–	–	–	35
GDT Flat Type Miniature Series	**CFULB455K□Y** (4 Elements)	–	●	●	●	●	●	●	–	–	–	–	25 (D to F ; 23) (G ; 20)
	CFWLB455K□Y (6 Elements)	●	●	●	●	●	●	●	–	–	–	–	35

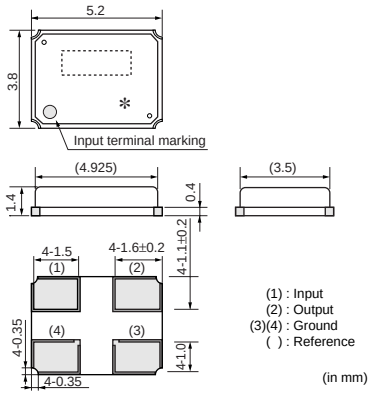
CERAFIL® kHz SMD Type CFXC_ Series

CFXC_ series are very small and high-efficiency surface mount, ladder type 450/455 kHz ceramic filters "CERAFIL" for IF section.
Compared to our previous compact surface mounted 6-element product, this ceramic filter has been significantly downsized to approximately one-third the original volume and reduced to less than 2 mm in height.
As for electrical performance, this product, which consists of 4 elements, provides stop band attenuation equivalent to that of our previous 6-element product. The input/output impedance characteristics are also equivalent to those of the previous product, and spurious responses in the vicinity of the passing band can now be eliminated. This allows mobile telecommunications equipment manufacturers to easily design the periphery of the IF section and thus greatly enhance the interference suppression capability of the equipment.In addition, this ceramic filter provides flatter group delay time characteristics than the previous product, and will effectively work as a component for data transmission in digital mobile telecommunications systems.

CFXCA Series



CFXCD Series



■ Features

1. Compact, thin, and lightweight.
   (Size : CFXCA450KBFA-R1: 6.5x6.5x1.9mm
   CFXCD450KCFA-R1: 5.2x3.8x1.4mm
   Weight: CFXCA series: 225mg
   CFXCD series: 75mg)
2. Out-of-band attenuation is increased and spurious responses are greatly decreased.
3. Group delay time characteristics are flattened.
4. Surface mountable, and reflow soldering can be used for mounting.

■ Applications

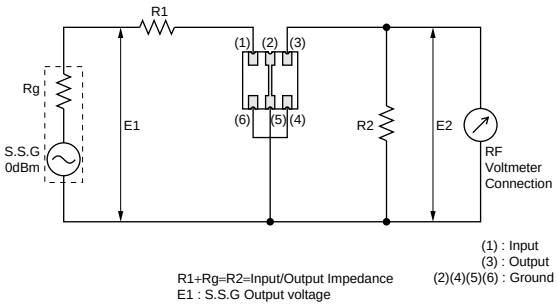
1. IF filters for PDCs.
2. IF filters for various types of pagers.
3. IF filters for various types of analog and digital cellular telephones.
4. IF filters for radio communication circuits applicable for PDA or PCMCIA.
5. IF filters for other general mobile wireless equipment

Part Number	Nominal Center Frequency (fn) (kHz)	3dB Bandwidth (kHz)	6dB Bandwidth (kHz)	Stop Bandwidth (kHz)	Stop Band Attenuation (dB)	Stop Band Att.(2) (dB)	Stop Band Att.(3) (dB)	Insertion Loss (dB)	Ripple (dB)	GDT Deviation (µs)
CFXCA450KBFA-R1	450	-	fn±15.0 min.	fn±50.0 max. [within 50dB]	47 min. [within fn±100kHz]	-	-	6.0 max. [at fn]	0.5 max. [within fn±10kHz]	15.0 max. [within fn±10kHz]
CFXCD450KCFA-R1	450	fn±9.0 to ±12.0kHz max.	-	fn±35.0 max. [within 50dB]	30 min. [at fn±25kHz]	55 min. [within fn±40kHz to ±50kHz]	47 min. [within fn±100kHz]	6.0 max. [at fn]	0.5 max. [within fn±10.5kHz]	27.0 max. [within fn±10.5kHz]

Spurious:40dB [within 0.1 to 1.0MHz]
Input/Output Impedance:2000 ohm
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.

■ Test Circuit

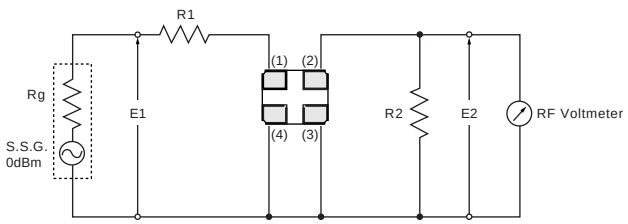
CFXCA Series



R1+Rg=R2=Input/Output Impedance
E1 : S.S.G Output voltage

(1) : Input
(3) : Output
(2)(4)(5)(6) : Ground

CFXCD Series

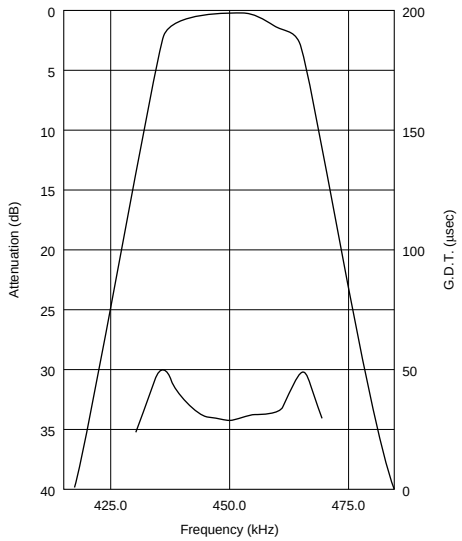


R1 + Rg = R2 = Input/Output Impedance
E1 : S.S.G. Output Voltage

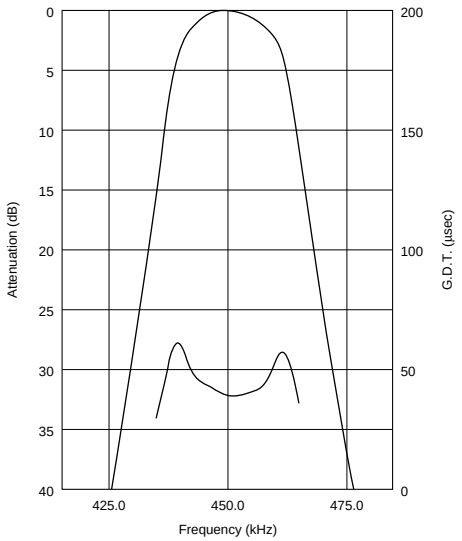
(1) Input
(2) Output
(3)(4) Ground

■ Frequency Characteristics

CFXCA450KBFA-R1

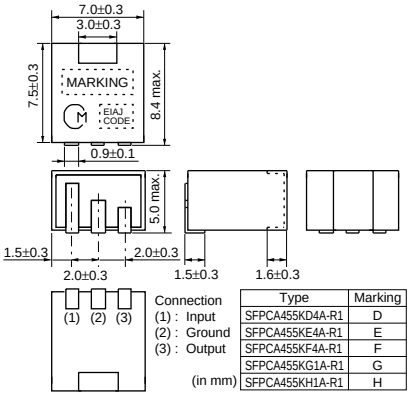


CFXCD450KCFA-R1



CERAFIL® kHz SMD Type SFPCA Series

The SFPCA series comprises 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, pager and transceivers.



Type	Marking
SFPCA455KD4A-R1	D
SFPCA455KE4A-R1	E
SFPCA455KF4A-R1	F
SFPCA455KG1A-R1	G
SFPCA455KH1A-R1	H

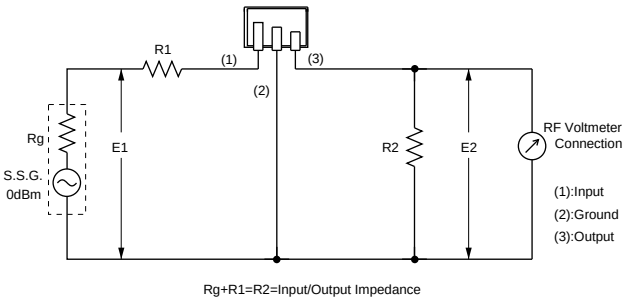
■ Features

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 (degree C)
   Storage temperature range : -40 to +85 (degree 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)
SFPCA455KD4A-R1	455.0 ±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
SFPCA455KE4A-R1	455.0 ±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
SFPCA455KF4A-R1	455.0 ±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
SFPCA455KG1A-R1	455.0 ±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
SFPCA455KH1A-R1	455.0 ±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

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.
(fn) means nominal center frequency 455kHz.

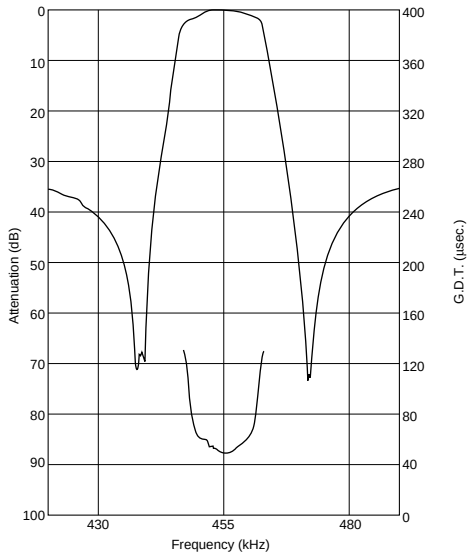
■ Test Circuit



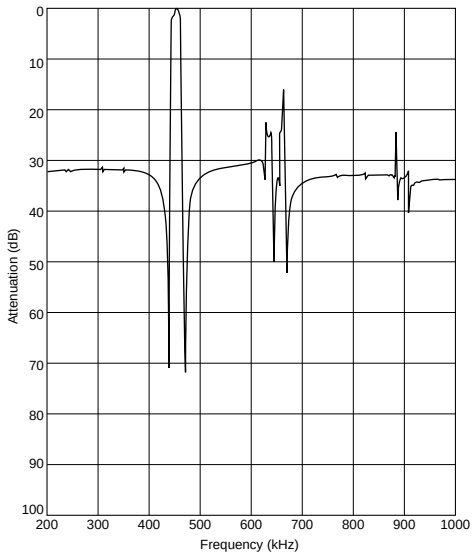
Rg+R1=R2=Input/Output Impedance

■ Frequency Characteristics

SFPCA455KE4A-R1

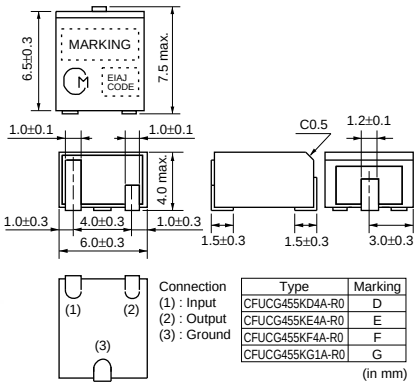


SFPCA455KE4A-R1



CERAFIL® kHz SMD Type CFUCG Series

The CFUCG series comprises small, high performance, thin (4.0mm) filters consisting of 4 ceramic elements. Their innovative construction is perfect for shrinking mobile communication products such as pocket pagers and cellular phones.



Type	Marking
CFUCG455KD4A-R0	D
CFUCG455KE4A-R0	E
CFUCG455KF4A-R0	F
CFUCG455KG1A-R0	G

(in mm)

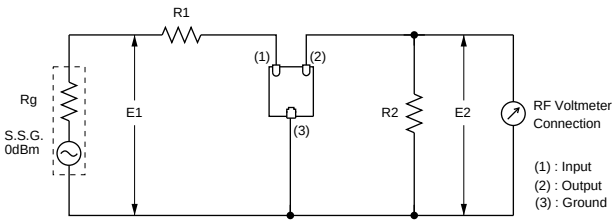
■ Features

1. The filters are mountable by automatic placers.
2. The filters can be reflow soldered and withstand washing.
3. They are slim, at only 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 (degree C)
   Storage temperature range : -40 to +85 (degree 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)
CFUCG455KD4A-R0	455.0 ±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
CFUCG455KE4A-R0	455.0 ±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
CFUCG455KF4A-R0	455.0 ±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
CFUCG455KG1A-R0	455.0 ±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

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.
(fn) means nominal center frequency 455kHz.

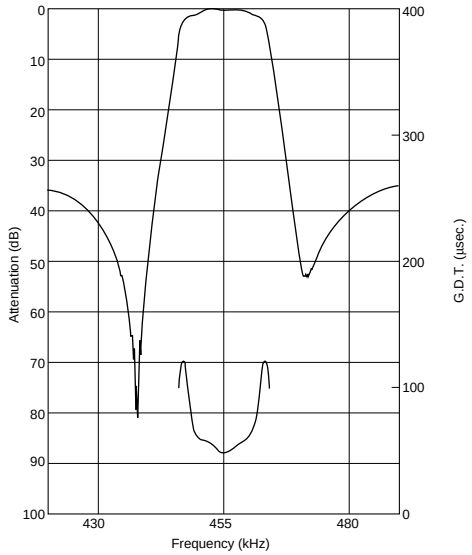
■ Test Circuit



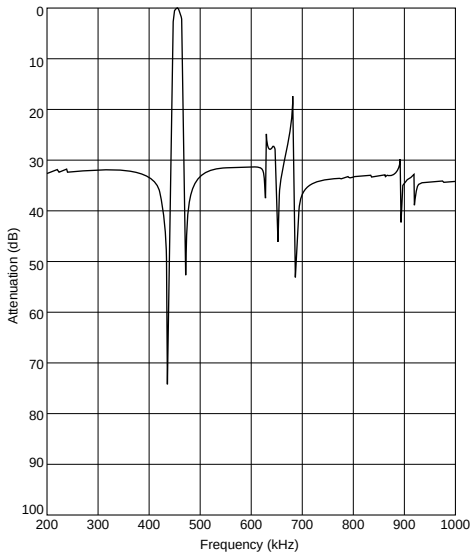
Rg+R1=R2=Input/Output Impedance

■ Frequency Characteristics

CFUCG455KE4A-R0



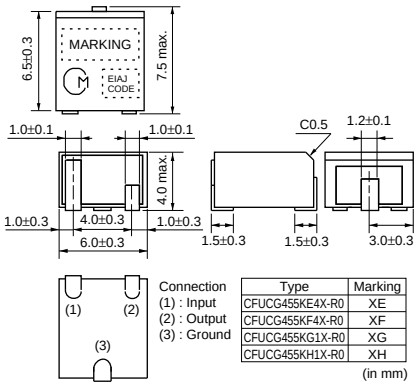
CFUCG455KE4A-R0



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

CERAFIL® kHz SMD Type CFUCG_X Series

The CFUCG_X series comprises small, high performance, thin (4.0mm) filters consisting of 4 ceramic elements. The filters exhibit an extremely flat GDT characteristic combined with a narrow bandwidth. The filters are recommended for narrow band digital communication applications.



Type	Marking
CFUCG455KE4X-R0	XE
CFUCG455KF4X-R0	XF
CFUCG455KG1X-R0	XG
CFUCG455KH1X-R0	XH

(in mm)

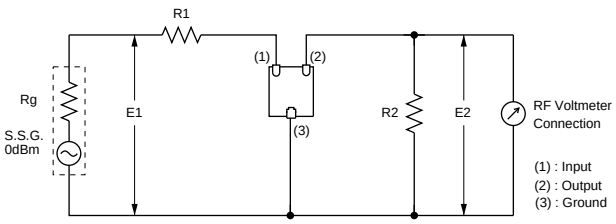
■ Features

1. The filters are mountable by automatic placers.
2. The filters can be reflow soldered and withstand washing.
3. They are slim, at only 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 (degree C)
   Storage temperature range : -40 to +85 (degree 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)
CFUCG455KE4X-R0	455.0 ±1.5kHz	fn±7.5 min.	fn±17.5 max. [within 40dB]	27 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	1.0 max. [within fn±5kHz]	25.0 max. [within fn±5kHz]	1500
CFUCG455KF4X-R0	455.0 ±1.5kHz	fn±6.0 min.	fn±15.0 max. [within 40dB]	27 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	1.0 max. [within fn±4kHz]	25.0 max. [within fn±4kHz]	1500
CFUCG455KG1X-R0	455.0 ±1.0kHz	fn±4.5 min.	fn±12.5 max. [within 40dB]	25 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	1.0 max. [within fn±3kHz]	25.0 max. [within fn±3kHz]	1500
CFUCG455KH1X-R0	455.0 ±1.0kHz	fn±3.0 min.	fn±10.0 max. [within 40dB]	25 min. [within fn±100kHz]	7.0 max. [at minimum loss point]	1.0 max. [within fn±2kHz]	25.0 max. [within fn±2kHz]	1500

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.
(fn) means nominal center frequency 455kHz.

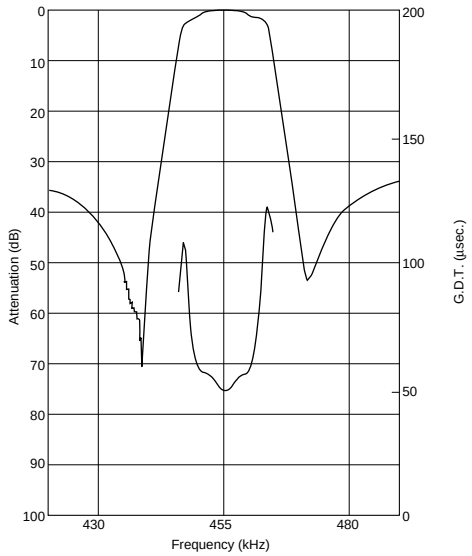
■ Test Circuit



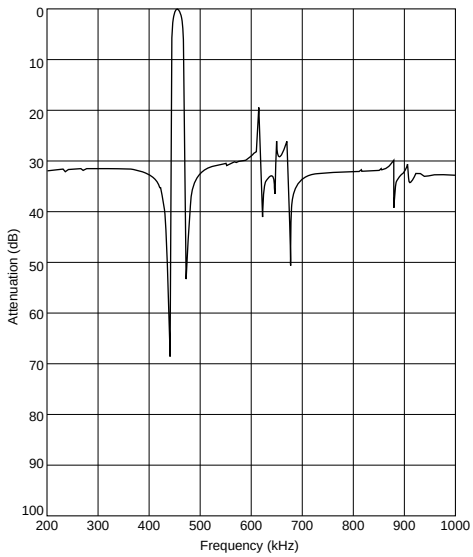
Rg+R1=R2=Input/Output Impedance

■ Frequency Characteristics

CFUCG455KE4X-R0



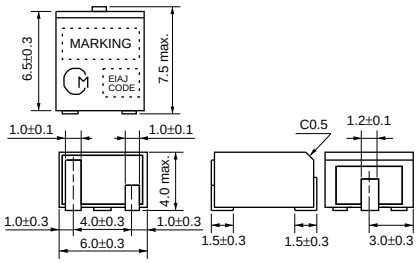
CFUCG455KE4X-R0

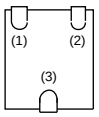


Ceramic Filters (CERAFIL®) / Ceramic Discriminators for Communications Equipment

CERAFIL® kHz SMD Type CFUCF Series

The CFUCF series comprises small, high performance, thin (4.0mm) filters consisting of 4 ceramic elements. The filters exhibit an extremely flat GDT characteristic.
The filters are recommended for digital communication applications and are perfect in hand held cellular phones, etc.





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

(in mm)

Type	Marking
CFUCF455KA2X-R0	A
CFUCF455KB4X-R0	B
CFUCF455KC4X-R0	C
CFUCF455KD1X-R0	D
CFUCF455KE1X-R0	E

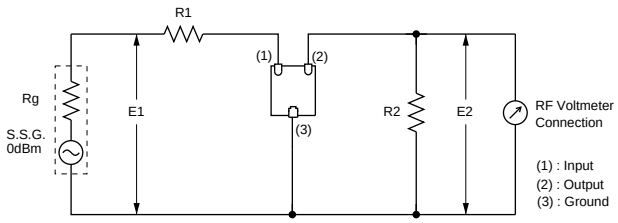
■ Features

1. The filters are mountable by automatic placers.
2. The filters can be reflow soldered and withstand washing.
3. They are slim, at only 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 (degree C)
   Storage temperature range : -40 to +85 (degree 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)
CFUCF455KA2X-R0	455.0 ±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
CFUCF455KB4X-R0	455.0 ±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
CFUCF455KC4X-R0	455.0 ±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
CFUCF455KD1X-R0	455.0 ±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
CFUCF455KE1X-R0	455.0 ±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

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.
(fn) means nominal center frequency 455kHz.

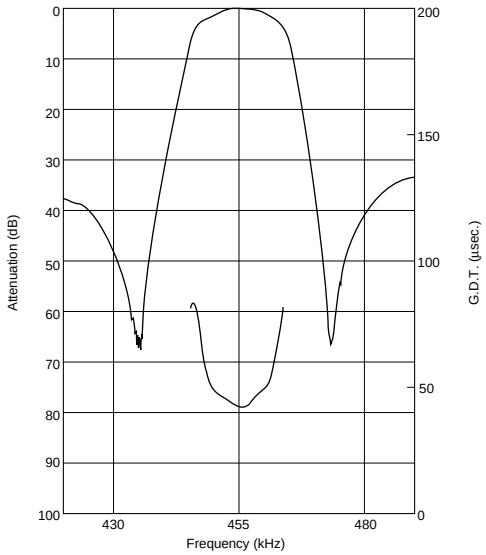
■ Test Circuit



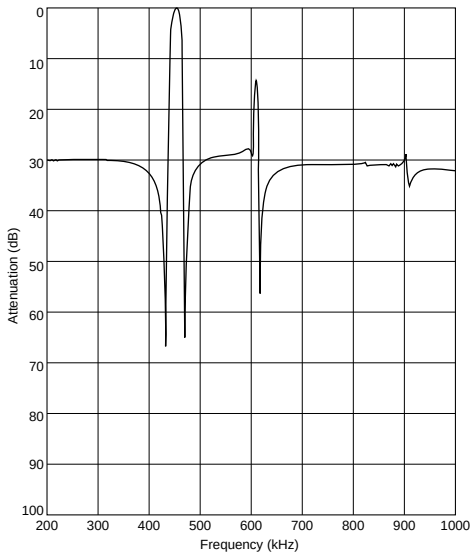
Rg+R1=R2=Input/Output Impedance

■ Frequency Characteristics

CFUCF455KE1X-R0



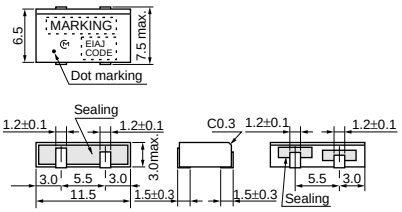
CFUCF455KE1X-R0

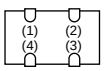


Ceramic Filters (CERAFIL®) / Ceramic Discriminators for Communications Equipment

CERAFIL® kHz SMD Type CFWCA Series

The CFWCA series comprises small, high performance, thin (3.0mm) filters consisting of 6 ceramic elements. The filters are recommend for pager or hand held cellular phones.





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

Type	Marking
CFWCA450KDFA-R0	50D
CFWCA450KEFA-R0	50E
CFWCA450KEFA001-R0	50E1
CFWCA450KFFA-R0	50F
CFWCA450KGFA-R0	50G

(Tolerance ±0.3mm in mm)

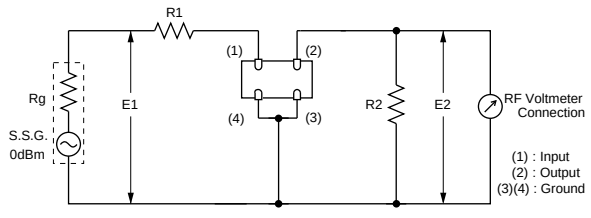
■ Features

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

Part Number	Nominal Center Frequency (fn) (kHz)	3dB Bandwidth (kHz)	6dB Bandwidth (kHz)	Stop Bandwidth (kHz)	Stop Band Attenuation (dB)	Stop Band Att.(2) (dB)	Insertion Loss (dB)	Ripple (dB)	Input/Output Impedance (ohm)
CFWCA450KDFA-R0	450	-	fn±10.0 min.	fn±20.0 max. [within 50dB]	50 min. [within fn±100kHz]	-	4.0 max. [at minimum loss point]	3.0 max. [within fn±7kHz]	1500
CFWCA450KEFA-R0	450	-	fn±7.5 min.	fn±15.0 max. [within 50dB]	50 min. [within fn±100kHz]	-	6.0 max. [at minimum loss point]	3.0 max. [within fn±5kHz]	1500
CFWCA450KEFA001-R0	450	fn±6.5 min.	-	fn±15.0 max. [within 50dB]	55 min. [fn±18 to ±33kHz]	50 min. [within fn±100kHz]	4.0 max. [at fn]	3.0 max. [within fn±6.5kHz]	1500
CFWCA450KFFA-R0	450	-	fn±6.0 min.	fn±12.5 min. [within 50dB]	50 min. [within fn±100kHz]	-	6.0 max. [at minimum loss point]	3.0 max. [within fn±4kHz]	1500
CFWCA450KGFA-R0	450	-	fn±4.5 min.	fn±11.0 max. [within 50dB]	50 min. [within fn±100kHz]	-	6.0 max. [at minimum loss point]	2.0 max. [within fn±3kHz]	1500

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.

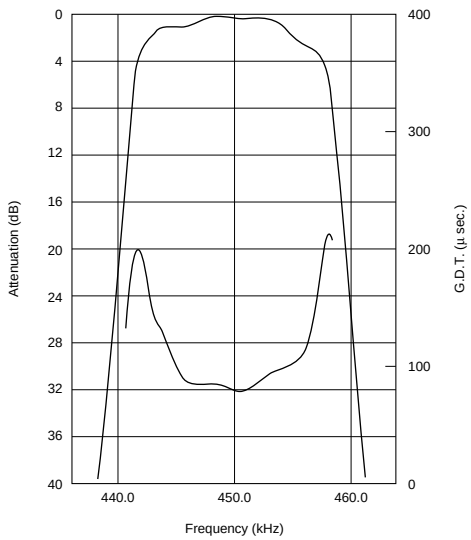
■ Test Circuit



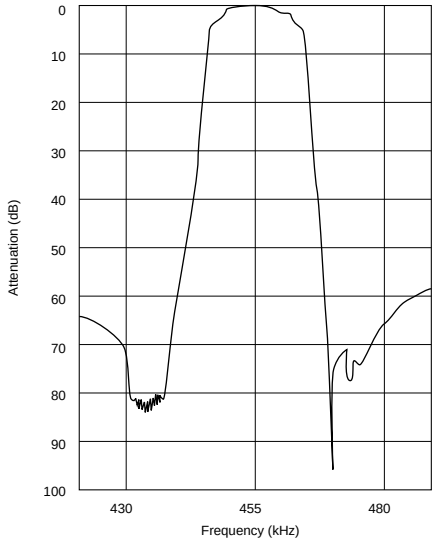
Rg+R1=R2=Input/Output Impedance

■ Frequency Characteristics

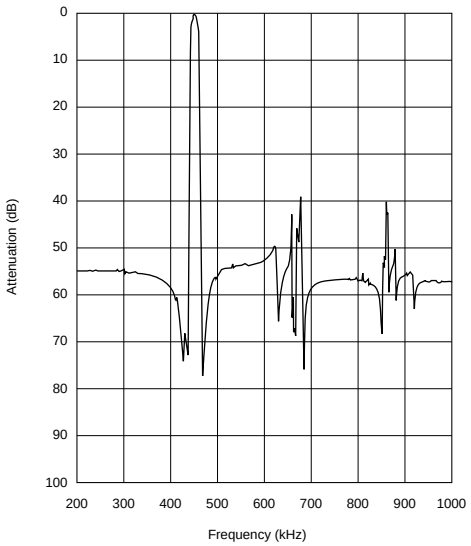
CFWCA450KEFA001-R0



CFWCA450KEFA001-R0



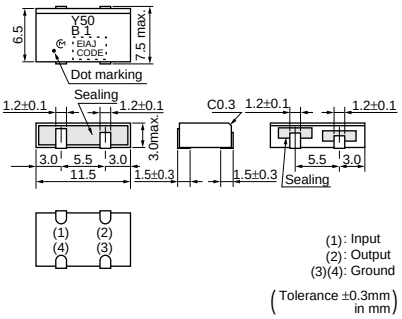
CFWCA450KEFA001-R0



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

CERAFIL® kHz SMD Type CFWCA_Y Series

The CFWCA_Y series comprises small, high performance, thin (3.0mm) filters consisting of 6 ceramic elements. The filters are recommend for digital communication applications and are perfect in hand held cellular phones.



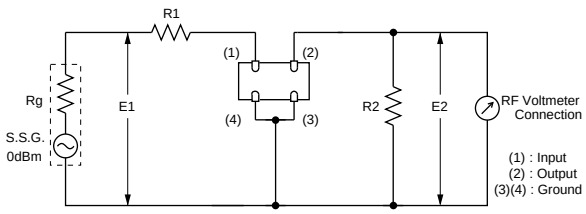
■ Features

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

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)
CFWCA450KBFY001-R0	450	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

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.

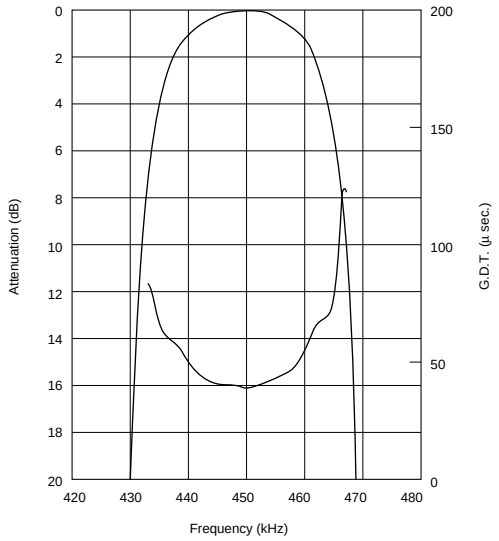
■ Test Circuit



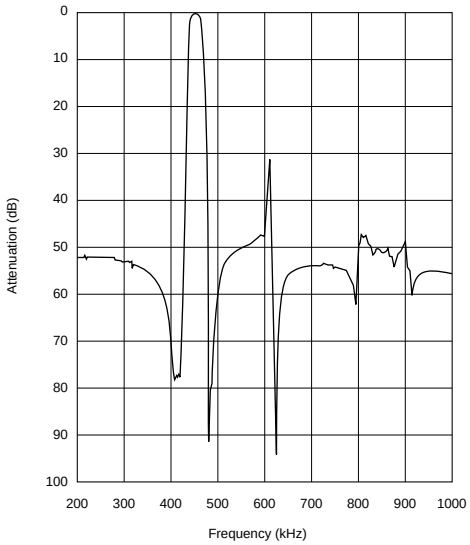
Rg+R1=R2=Input/Output Impedance

■ Frequency Characteristics

CFWCA450KBFY001-R0



CFWCA450KBFY001-R0



7

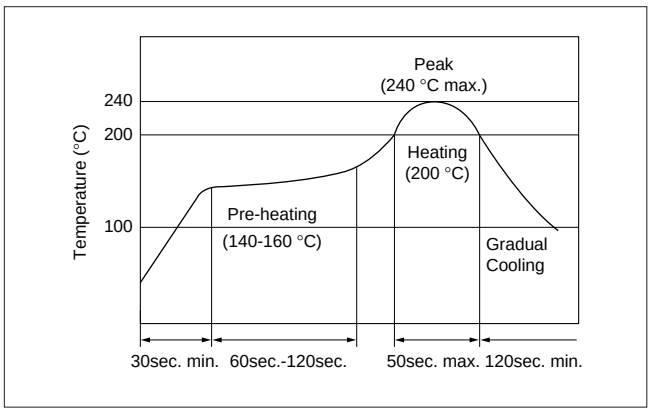
kHz SMD Type CERAFIL® Notice

■ CFXC_ Series Notice (Soldering and Mounting)

1. Standard Reflow Soldering Condition

(1) Reflow

Filter is soldered twice within the following temperature condition and then being placed in natural condition for 24 hours.



(2) Soldering Iron

Elecrode is directly contacted with the tip of soldering iron of +350±5°C for 3±1 seconds, and then being placed in natural condition for 24 hours.

2. Wash

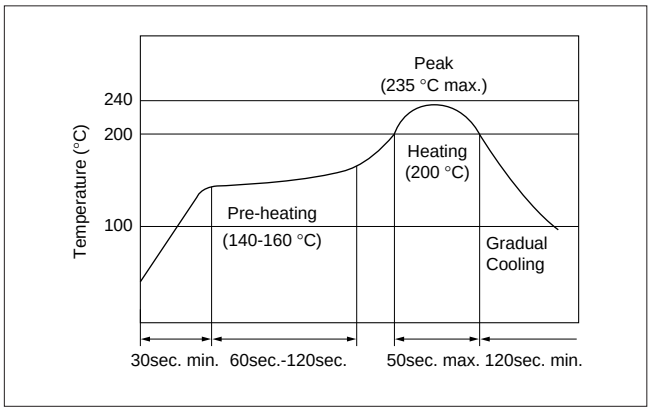
The component cannot be withstand washing.

■ SFPCA/CFUCG/CFUCF Series Notice (Soldering and Mounting)

1. Standard Reflow Soldering Condition

(1) Reflow

Filter is soldered one time within the following temperature condition and then being placed in natural condition for 24 hours.



(2) Soldering Iron

Electrode is directly with the tip of soldering iron of +350 ±5°C for 3±1 seconds, and then being placed in natural condition for 24hours.

2. Wash

(1) Cleaning Solvent

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

(2) Cleaning Conditions

- Immersion Wash
  2 minutes max. in above solvent at +60°C max.
- Shower or Rinse Wash
  2 minutes max. in above solvent at +60°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 4minutes.
- Please ensure the component is thoroughly evaluated in your application circuit.
- Please do not use chlorine, petroleum and alkali cleaning solvent.
- 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

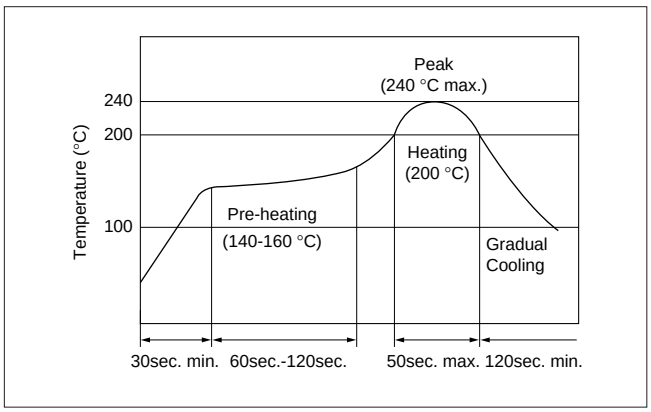
Continued from the preceding page.

■ CFWCA Series Notice (Soldering and Mounting)

1. Standard Reflow Soldering Condition

(1) Reflow

Filter is soldered once within the following temperature condition and then being placed in natural condition for 24 hours.



(2) Soldering Iron

Electrode is directly contacted with the tip of soldering iron of +350±5°C for 3±1 seconds, and then being placed in natural condition for 24hours.

2. Wash

The component cannot be withstand washing.

■ CFXC_/CFWCA Series Notice (Handling)

1. The component will be damaged when an excessive stress is applied.
2. Use coupling capacitors to prevent applying D.C. voltage between input-ground, output-ground of "CERAFIL" as D.C. current may harm the component.
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.

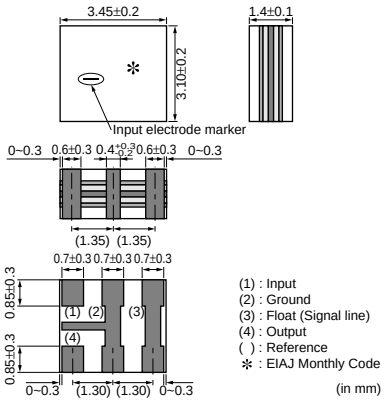
■ SFPCA/CFUCG/CFUCF Series Notice (Handling)

1. The component will be damaged when an excessive stress is applied.
2. Use coupling capacitors to prevent applying D.C. voltage between input-ground, output-ground of "CERAFIL" as D.C. current may harm the component.
3. In the case that the component is cleaned, confirm no reliability degradation is created.
4. In case of covering filter with over coat, conditions such as material of resin, cure temperature, and so on should be evaluated well.
5. Do not use strong acidity flux, more than 0.2wt% chlorine content, in re-flow soldering.
6. 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 C. and below 65% R.H., and solder within 48 hours.

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

CERAFIL® MHz SMD Type SFECS10M8 Series

The SFECS10M8 series are small, high performance and super thin (1.4mm) filters. Piezoelectric element is connected in the sandwich shape by heat resistant substrate.
The filters exhibit flat GDT characteristic in pass band.
The filters are recommended for digital communication applications and are perfect in hand held cellular phones, pocket cordless phones, etc.



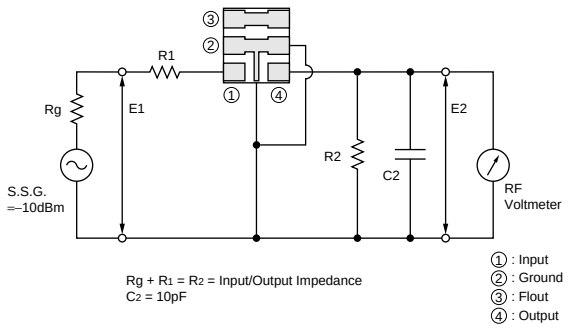
■ Features

1. The filters are mountable by automatic placers.
2. They are slim, at only 1.4mm thickness, and have a small mounting area (3.5x3.1mm2) enabling flexible PCB design.
3. Types with 10.7/10.75/10.8MHz of center frequency are available.
4. Operating temperature range : -10 to +50 (degree C)
   Storage temperature range : -40 to +85 (degree C)

Part Number	Nominal Center Frequency (fn) (MHz)	3dB Bandwidth (kHz)	Stop Bandwidth (kHz)	Insertion Loss (dB)	Ripple (dB)	Spurious Response (dB)	GDT Deviation (µs)	Absolute GDT (µs)	Input/Output Impedance (ohm)
SFECS10M8PF00-R0	10.800	fn±110 min.	fn±310 max. [within 20dB]	6.0 max. [at fn]	0.5 max. [within fn±100kHz]	-	1.5 max. [within fn±100kHz]	2.8 ±1.0µs [at fn]	330
SFECS10M8RF00-R0	10.800	fn±135 min.	fn±350 max. [within 20dB]	6.0 max. [at fn]	0.5 max. [within fn±100kHz]	-	1.2 max. [within fn±100kHz]	2.6 ±1.0µs [at fn]	330
SFECS10M8SF00-R0	10.800	fn±150 min.	fn±420 max. [within 20dB]	5.0 max. [at fn]	1.0 max. [within fn±110kHz]	25 min. [within 9 to 12 MHz]	1.5 max. [within fn±110kHz]	-	330

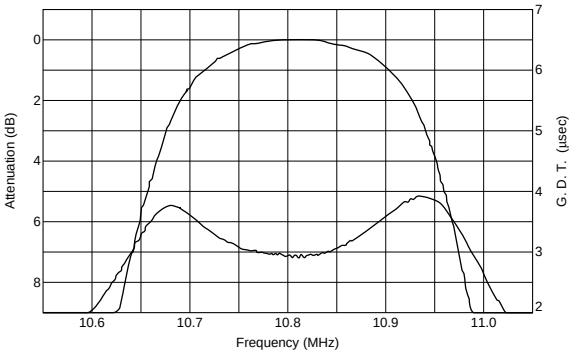
For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.

■ Test Circuit

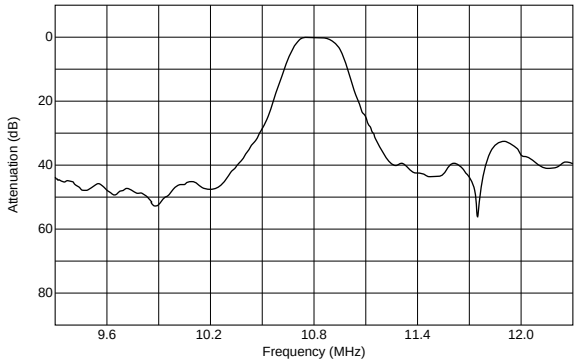


■ Frequency Characteristics

SFECS10M8PF00-R0



SFECS10M8PF00-R0

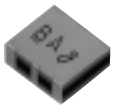


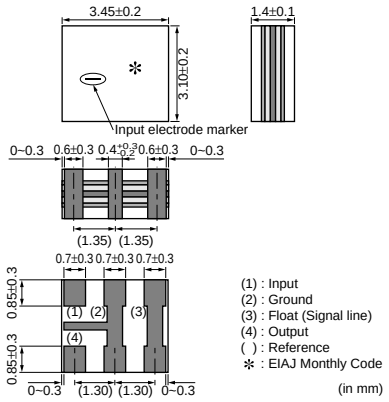
8

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

CERAFIL® MHz SMD Type SFECS10M7 Series

The SFECS10M7 series are small, high performance and super thin (1.4mm) filters. Piezoelectric element is connected in the sandwich shape by heat resistant substrate.
The filters are recommended for digital communication applications and are perfect in pocket cordless phones, RKE (Remote Keyless Entry), TPMS (Tire Pressure Monitoring System) etc.





■ Features

1. The filters are mountable by automatic placers.
2. They are slim, at only 1.4mm thickness, and have a small mounting area (3.5x3.1mm2) enabling flexible PCB design.
3. Various bandwidths are available. Select a suitable type in accordance with the desires selectivity.
4. Operating temperature range : -10 to +50 (degree C)
   Storage temperature range : -40 to +85 (degree C)

Part Number	Center Frequency (fo) (MHz)	Nominal Center Frequency(fn) (MHz)	3dB Bandwidth (kHz)	Attenuation (kHz)	Insertion Loss (at minimum loss point) (dB)	Ripple (within 3dB B.W.) (dB)	Spurious Attenuation (dB)	Input/Output Impedance (ohm)
SFECS10M7HA00-R0	10.700 ±30kHz	-	180 ±40kHz	470 max.	4.5 ±2.0dB	1.0 max.	30 min.	330
SFECS10M7GA00-R0	10.700 ±30kHz	-	230 ±50kHz	510 max.	3.5 ±2.0dB	1.0 max.	30 min.	330
SFECS10M7FA00-R0	10.700 ±30kHz	-	280 ±50kHz	590 max.	3.0 ±2.0dB	1.0 max.	30 min.	330
SFECS10M7EA00-R0	10.700 ±30kHz	-	330 ±50kHz	700 max.	3.0 ±2.0dB	1.0 max.	30 min.	330
SFECS10M7DF0021-R0	-	10.700	fn ±200kHz min.	950 max.	3.0 ±2.0dB	3.0 max.	20 min.	330

Area of Attenuation : [within 20dB] Area of Spurious Attenuation : [within 9MHz to 12MHz]
Center frequency (fo) defined by center of 3dB bandwidth.

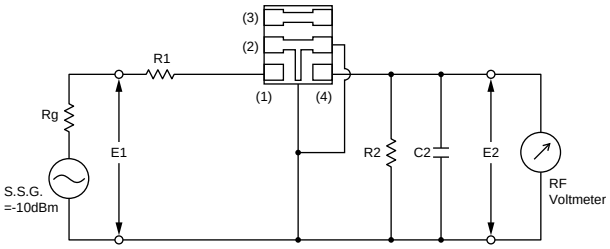
■ Center Frequency Rank Code

CODE	30kHz Step	25kHz Step
D	10.64MHz±30kHz	10.650MHz±25kHz
B	10.67MHz±30kHz	10.675MHz±25kHz
A	10.70MHz±30kHz	10.700MHz±25kHz
C	10.73MHz±30kHz	10.725MHz±25kHz
E	10.76MHz±30kHz	10.750MHz±25kHz
Z	Combination A,B,C,D,E	
M	Combination A,B,C	

Continued on the following page.

Continued from the preceding page.

■ Test Circuit

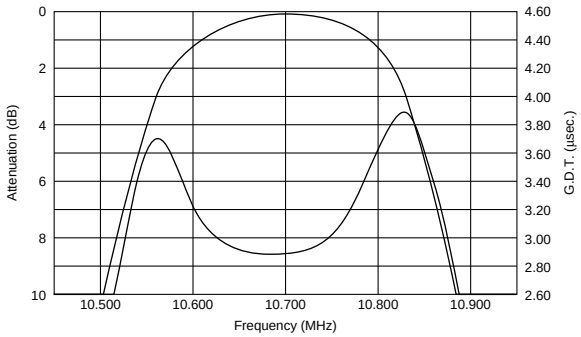


Rg=50Ω
R1=280Ω
R2=330Ω
C2=10pF
(Including stray capacitance
and Input capacitance of RF Voltmeter)

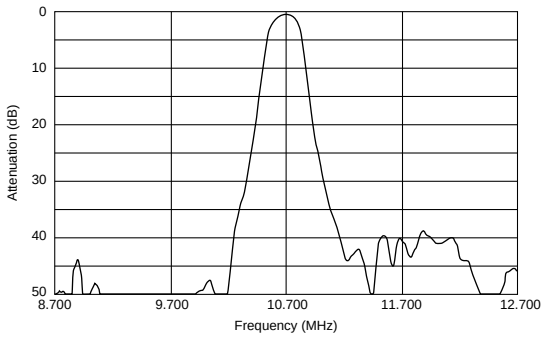
(1) : Input
(2) : Ground
(3) : Float
(4) : Output

■ Frequency Characteristics

SFECS10M7FA00-R0



SFECS10M7FA00-R0



9

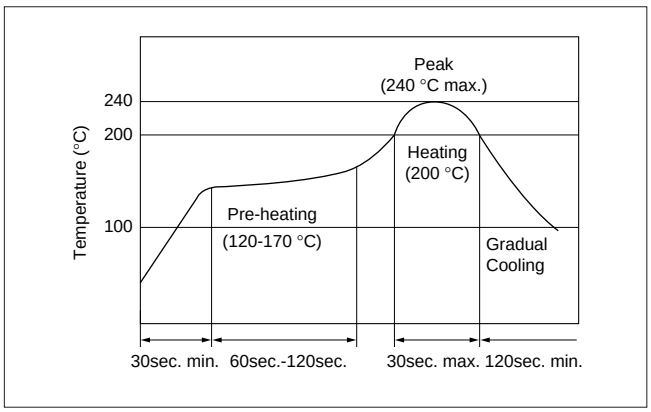
MHz SMD Type CERAFIL® Notice

■ Notice (Soldering and Mounting)

1. Standard Reflow Soldering Condition

(1) Reflow

Filter is soldered twice within the following temperature condition and then being placed in natural condition for 24^{+1}_{-0} hours.



(2) Soldering Iron

Filter is soldering at +280±5°C for 3±1 seconds and the being placed in natural condition for 24 hours. The soldering iron shall not touch the filter while soldering.

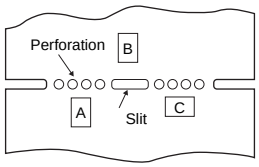
2. Wash

The component cannot be withstand washing.

■ 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 extremly careful in determining shape and dimension before designing the circuit board diagram.
5. When the positioning claws and pick up nozzle are worn, the load is applied to the chip while positioning is concentrated to one positioning accuracy, etc. Careful checking and maintenance are necessary to prevent unexpected trouble.
6. 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.
7. Do not clean or wash the component as it is not hermetically sealed.
8. In case of covering discriminator with over coat, conditions such as material of resin, cure temperature, and so on should be evaluated well.
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.

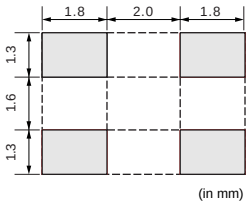
[Component layout close to board]



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

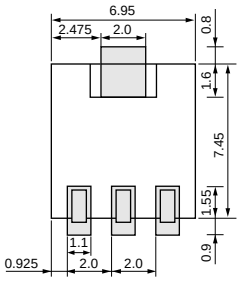
SMD Type CERAFIL® Standard Land Pattern Dimensions

■ CFXCD Series



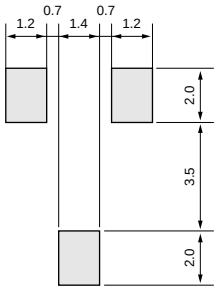
(in mm)

■ SFPCA Series



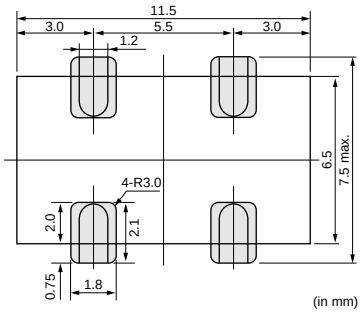
(in mm)

■ CFUCG/CFUCF Series



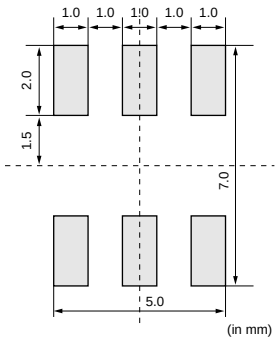
(in mm)

■ CFWCA Series



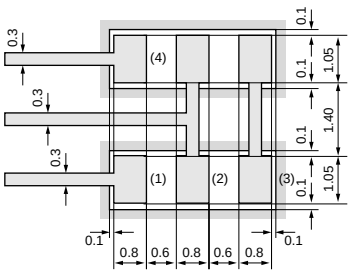
(in mm)

■ CFXCA Series



(in mm)

■ SFECS Series



It shoes solder resist land pattern.

(1) : Input
(2) : Ground
(3) : Float (Signal Line)
(4) : Output

(in mm)

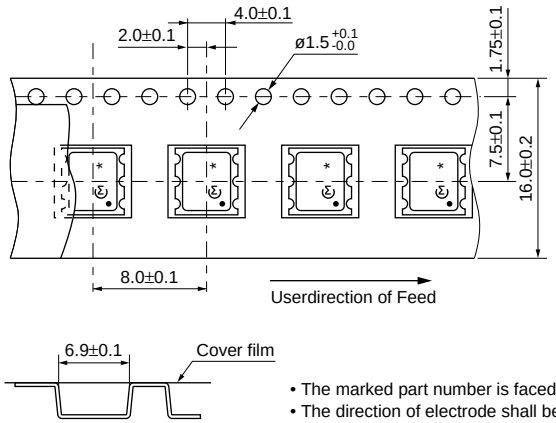
kHz SMD Type CERAFIL® Packaging

■ Minimum Quantity

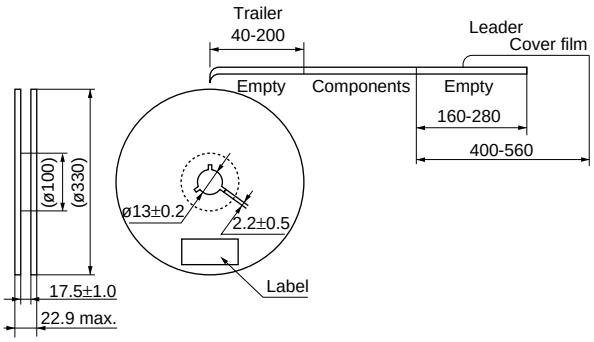
Part Number	ø180mm	ø330mm
CFXC□		2,500
SFPCA		1,000
CFUCG	450	
CFUCF	450	
CFWCA	350	

■ CFXCA Series

Dimensions of Carrier Tape



Dimensions of Reel

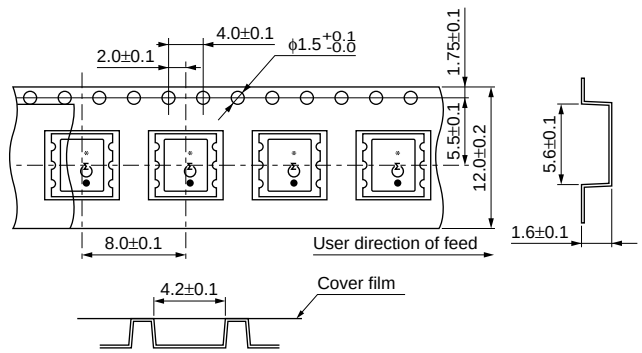


- The marked part number is faced on the cover film side.
- The direction of electrode shall be placed by one direction.

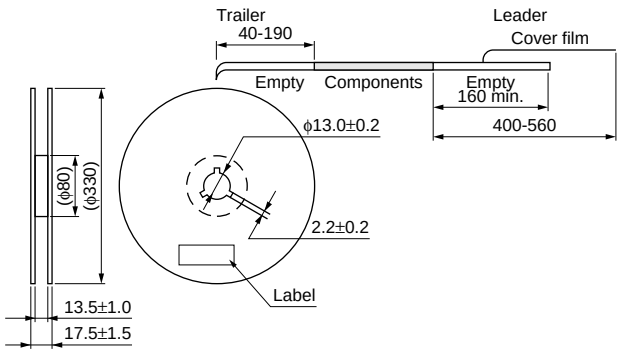
(in mm)

■ CFXCD Series

Dimensions of Carrier Tape



Dimensions of Reel



(in mm)

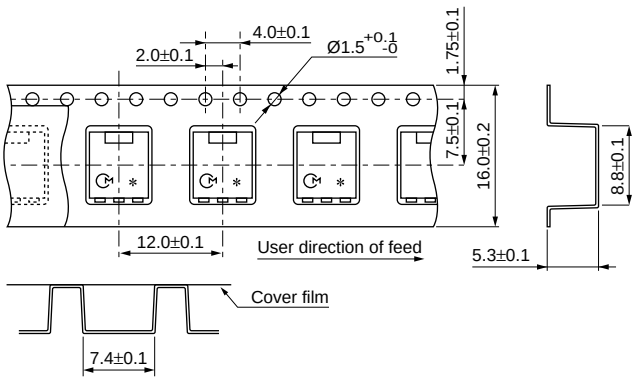
Continued on the following page.

kHz SMD Type CERAFIL® Packaging

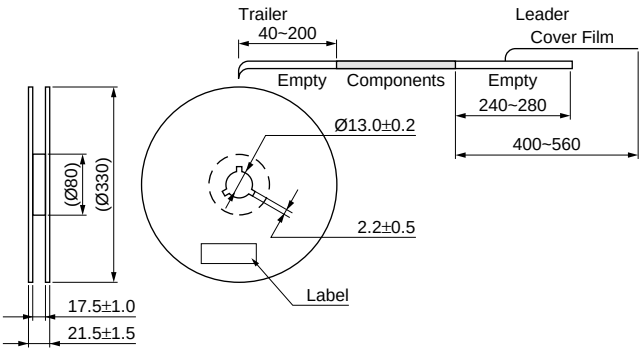
Continued from the preceding page.

■ SFPCA Series

Dimensions of Carrier Tape



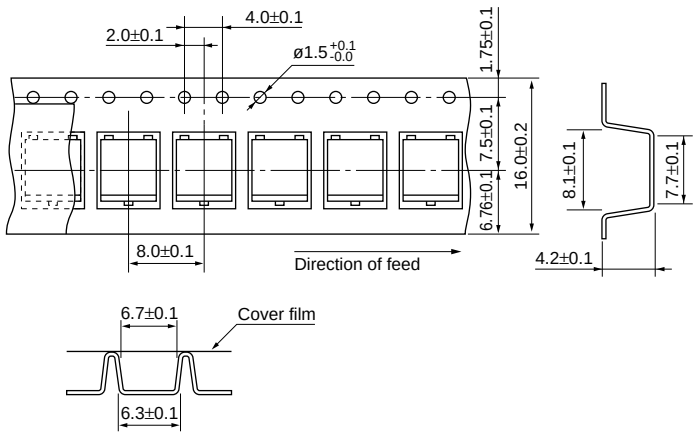
Dimensions of Reel



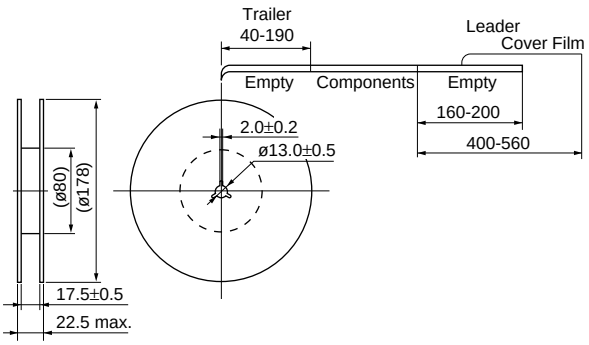
(in mm)

■ CFUCG/CFUCF Series

Dimensions of Carrier Tape



Dimensions of Reel



• The marked part number is faced on the cover film side.

(in mm)

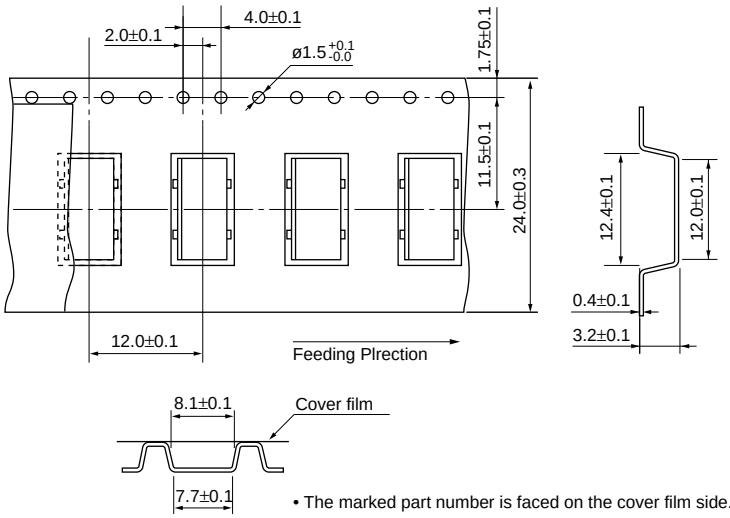
Continued on the following page.

kHz SMD Type CERAFIL® Packaging

Continued from the preceding page.

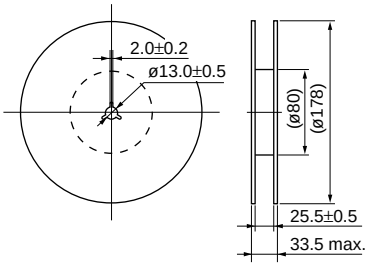
■ CFWCA Series

Dimensions of Carrier Tape



• The marked part number is faced on the cover film side.

Dimensions of Reel



(in mm)

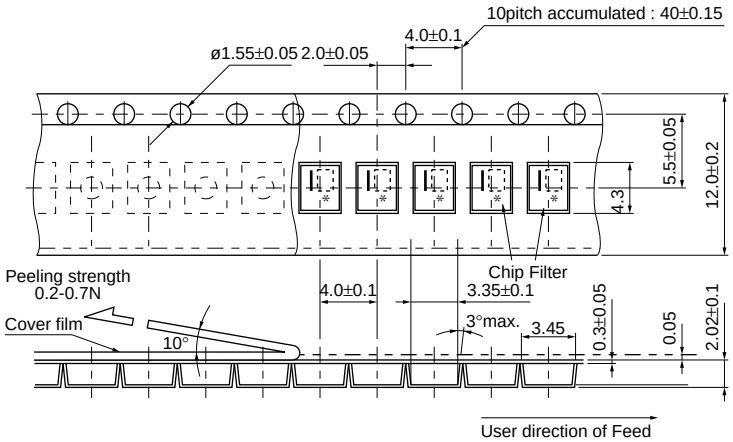
MHz SMD Type CERAFIL® Packaging

■ Minimum Quantity

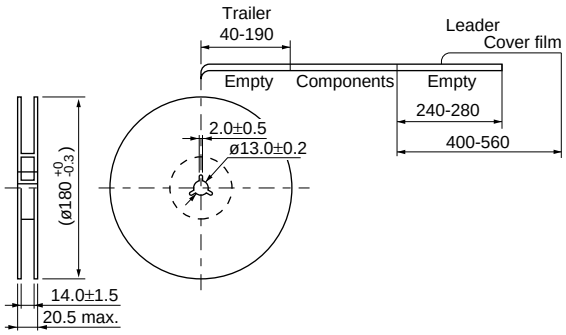
Part Number	ø180mm	ø330mm
SFECS	2,000	

■ SFECS Series

Dimensions of Carrier Tape



Dimensions of Reel

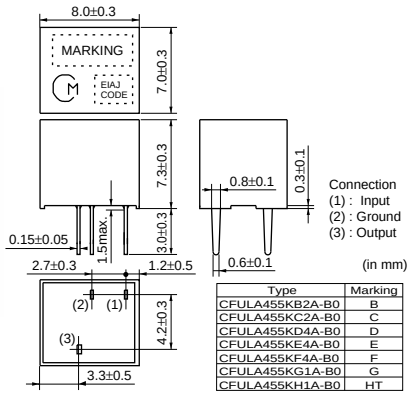


• The marked part number is faced on the cover film side.
• Input electrode is packed in the direction of carrier hole side.

(in mm)

CERAFIL® Plastic Case General Use CFULA_A Series

CFULA_A 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.



Type	Marking
CFULA455KB2A-B0	B
CFULA455KC2A-B0	C
CFULA455KD4A-B0	D
CFULA455KE4A-B0	E
CFULA455KF4A-B0	F
CFULA455KG1A-B0	G
CFULA455KH1A-B0	HT

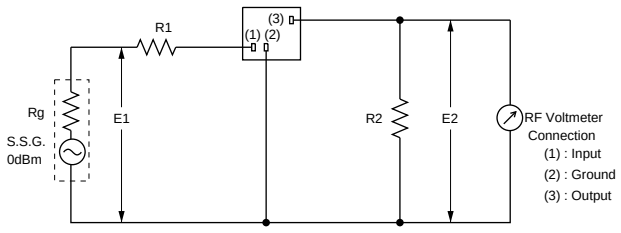
■ Features

1. High selectivity.
2. A variety of bandwidth 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 (degree C)
   Storage temperature range : -40 to +85 (degree 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	455.0 ±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	455.0 ±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	455.0 ±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	455.0 ±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	455.0 ±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	455.0 ±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	455.0 ±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

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.
(fn) means nominal center frequency 455kHz.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in package page in this catalog.

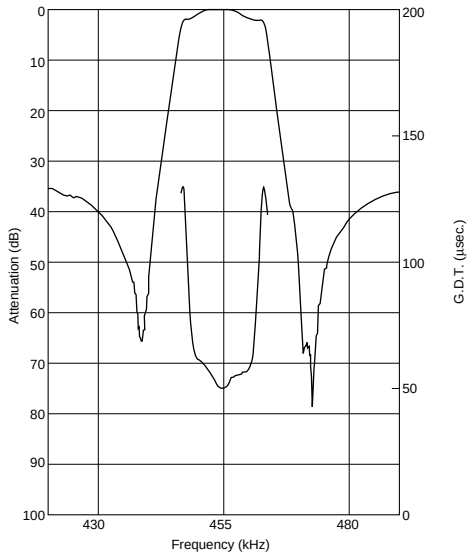
■ Test Circuit



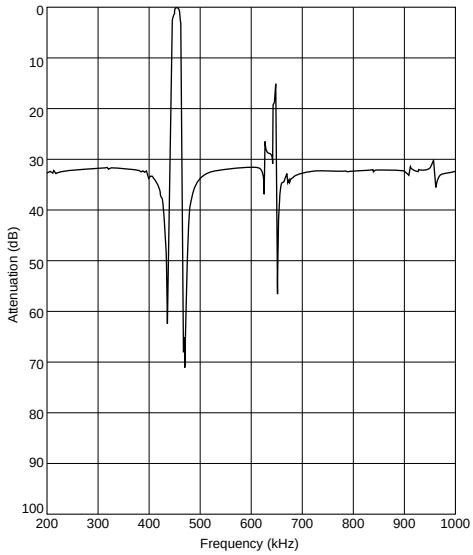
Rg+R1=R2=Input/Output Impedance

■ Frequency Characteristics

CFULA455KE4A-B0



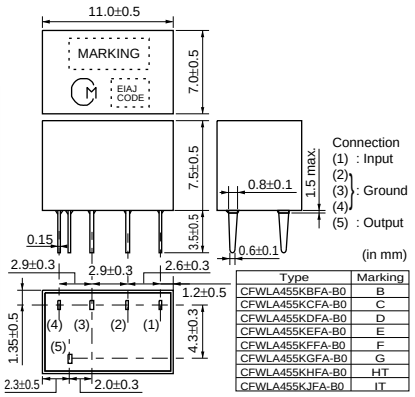
CFULA455KE4A-B0



10

CERAFIL® Plastic Case Miniaturized Type CFWLA_A Series

Ceramic filter CFWLA_A 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.



Type	Marking
CFWLA455KBFA-B0	B
CFWLA455KCFA-B0	C
CFWLA455KDFA-B0	D
CFWLA455KEFA-B0	E
CFWLA455KFFA-B0	F
CFWLA455KGFA-B0	G
CFWLA455KHFA-B0	HT
CFWLA455KJFA-B0	IT

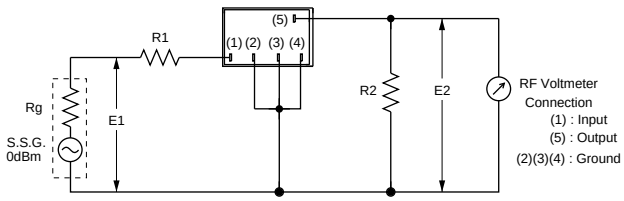
■ Features

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 (degree C)
   Storage temperature range : -40 to +85 (degree 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	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	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	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	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	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	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	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	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.

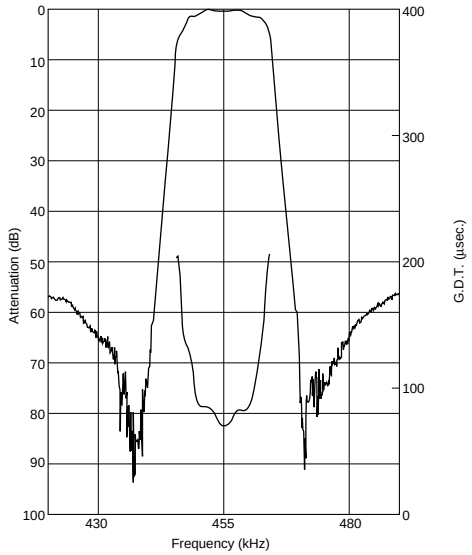
■ Test Circuit



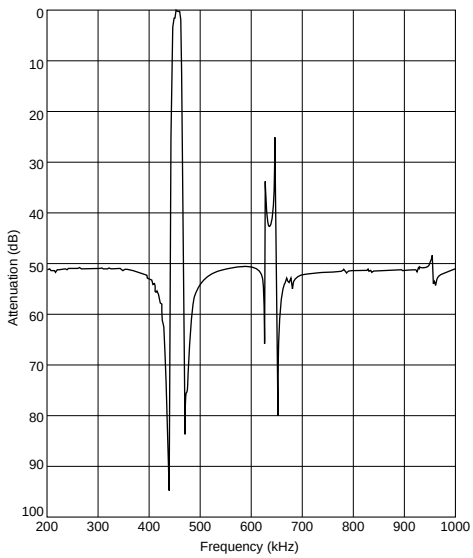
Rg+R1=R2=Input/Output Impedance

■ Frequency Characteristics

CFWLA455KEFA-B0



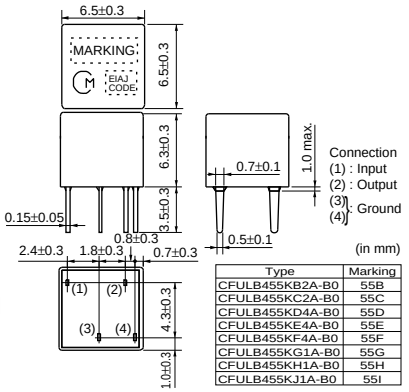
CFWLA455KEFA-B0



11

CERAFIL® Plastic Case Miniaturized Type CFULB_A Series

CFULB_A series ceramic filters are miniature, high performance ceramic filters composed of piezoelectric elements connected in a ladder form.
These filters, with only 6.3mm high, are 65% the volume of conventional types. (CFULA455K_A series)
They are well suited for miniaturizing various kinds of communications equipment, pocket pagers, car radios, cordless telephones and mobile telephones.



Type	Marking
CFULB455KB2A-B0	55B
CFULB455KC2A-B0	55C
CFULB455KD4A-B0	55D
CFULB455KE4A-B0	55E
CFULB455KF4A-B0	55F
CFULB455KG1A-B0	55G
CFULB455KH1A-B0	55H
CFULB455KJ1A-B0	55I

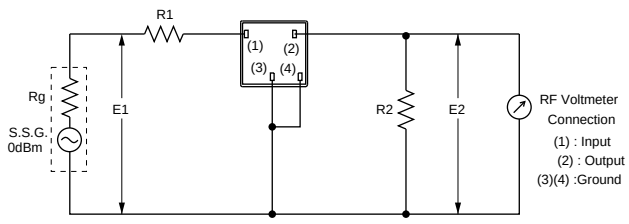
■ Features

1. Miniature and high selectivity.
2. A variety of bandwidths are available.
3. Operating temperature range : -20 to +80 (degree C)
   Storage temperature range : -40 to +85 (degree 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	455.0 ±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	455.0 ±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	455.0 ±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	455.0 ±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	455.0 ±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	455.0 ±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	455.0 ±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	455.0 ±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

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.
(fn) means nominal center frequency 455kHz.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in package page in this catalog.

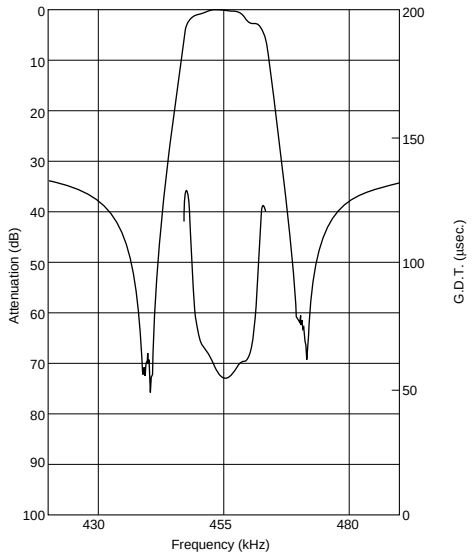
■ Test Circuit



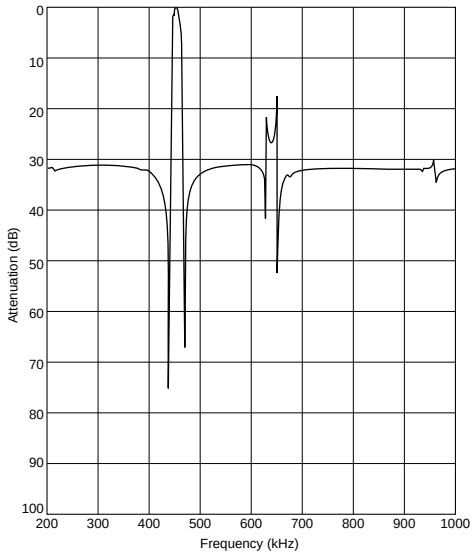
Rg+R1=R2=Input/Output Impedance

■ Frequency Characteristics

CFULB455KE4A-B0



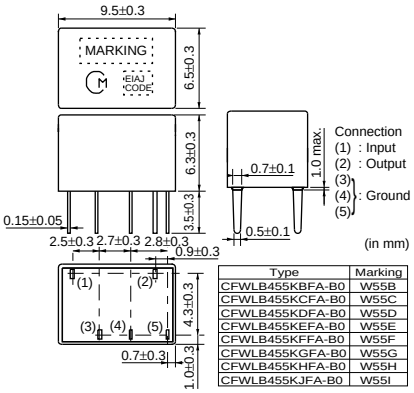
CFULB455KE4A-B0



12

CERAFIL® Plastic Case General Use CFWLB_A Series

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



Type	Marking
CFWLB455KBFA-B0	W55B
CFWLB455KCFA-B0	W55C
CFWLB455KDFA-B0	W55D
CFWLB455KEFA-B0	W55E
CFWLB455KFFA-B0	W55F
CFWLB455KGFA-B0	W55G
CFWLB455KHFA-B0	W55H
CFWLB455KJFA-B0	W55I

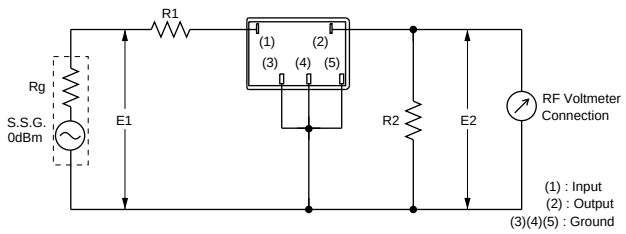
■ Features

1. Miniature and high selectivity.
2. A variety of bandwidths are available.
3. Operating temperature range : -20 to +80 (degree C)
   Storage temperature range : -40 to +85 (degree 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	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	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	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	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	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	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	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	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	fn±2.0 min.	fn±7.0 max. [within 50dB]	55 min. [within fn±100kHz]	7.0 max. [at minimum loss point]	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.

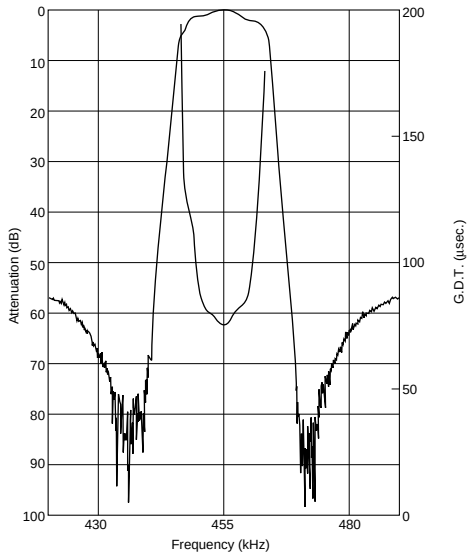
■ Test Circuit



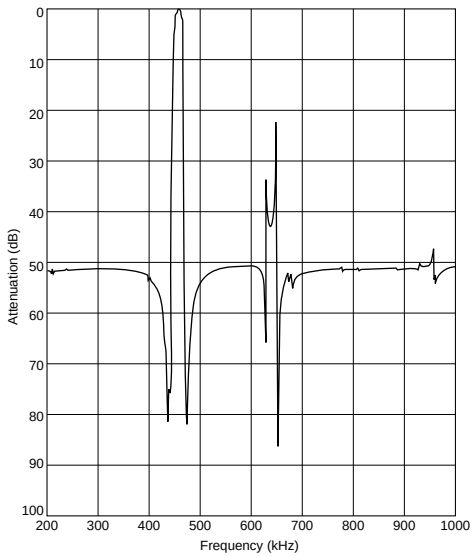
Rg+R1=R2=Input/Output Impedance

■ Frequency Characteristics

CFWLB455KEFA-B0



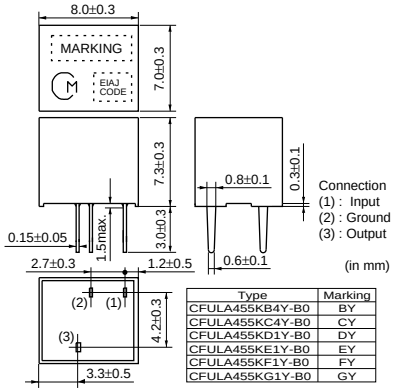
CFWLB455KEFA-B0



13

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.



Type	Marking
CFULA455KB4Y-B0	BY
CFULA455KC4Y-B0	CY
CFULA455KD1Y-B0	DY
CFULA455KE1Y-B0	EY
CFULA455KF1Y-B0	FY
CFULA455KG1Y-B0	GY

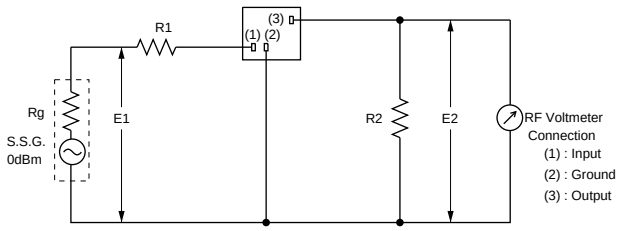
■ Features

1. High selectivity.
2. A variety of bandwidth 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 (degree C)
   Storage temperature range : -40 to +85 (degree 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	455.0 ±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	455.0 ±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	455.0 ±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	455.0 ±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	455.0 ±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	455.0 ±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

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.
(fn) means nominal center frequency 455kHz.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in package page in this catalog.

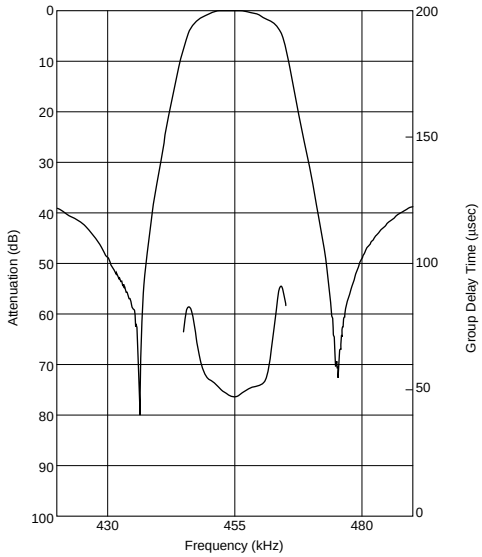
■ Test Circuit



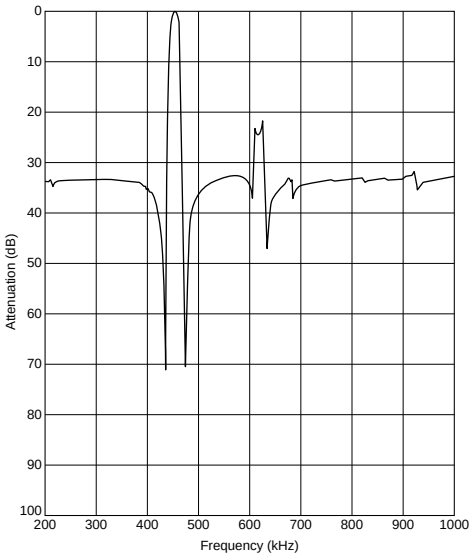
Rg+R1=R2=Input/Output Impedance

■ Frequency Characteristics

CFULA455KE1Y-B0



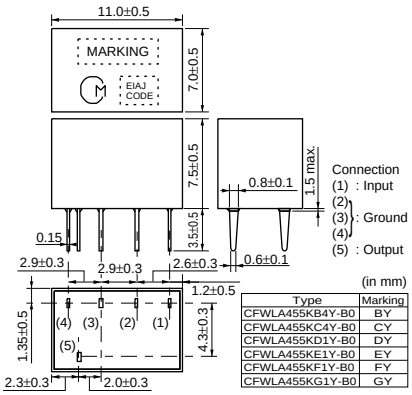
CFULA455KE1Y-B0



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

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.



Type	Marking
CFWLA455KB4Y-B0	BY
CFWLA455KC4Y-B0	CY
CFWLA455KD1Y-B0	DY
CFWLA455KE1Y-B0	EY
CFWLA455KF1Y-B0	FY
CFWLA455KG1Y-B0	GY

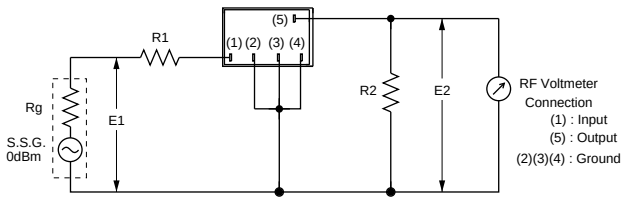
■ Features

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 (degree C)
   Storage temperature range : -40 to +85 (degree 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	455.0 ±1.5kHz	fn±15.0 min.	fn±35.0 max. [within 50dB]	40 min. [within fn±100kHz]	6.0 max. [at minimum loss point]	30.0 max. [within fn±10kHz]	1500
CFWLA455KC4Y-B0	455.0 ±1.5kHz	fn±12.5 min.	fn±30.0 max. [within 50dB]	40 min. [within fn±100kHz]	7.0 max. [at minimum loss point]	30.0 max. [within fn±8kHz]	1500
CFWLA455KD1Y-B0	455.0 ±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	455.0 ±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	455.0 ±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	455.0 ±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

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.
(fn) means nominal center frequency 455kHz.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in package page in this catalog.

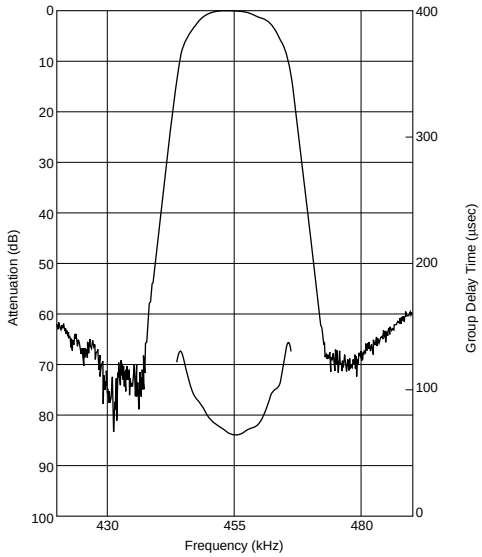
■ Test Circuit



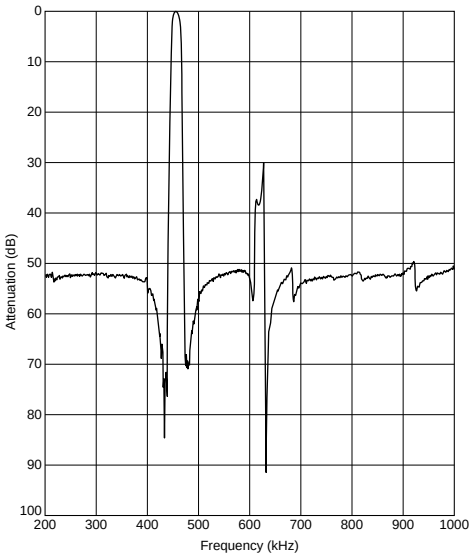
Rg+R1=R2=Input/Output Impedance

■ Frequency Characteristics

CFWLA455KE1Y-B0



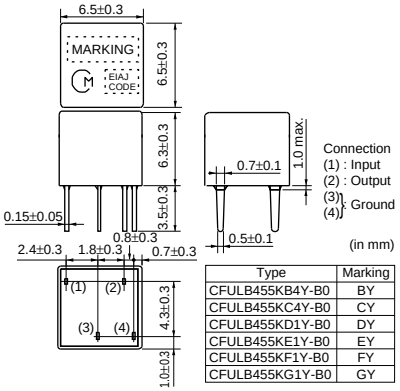
CFWLA455KE1Y-B0



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

CERAFIL® Plastic Case Group Delay Flat Type Miniaturized Type CFULB_Y Series

Ceramic filter CFULB_Y series are miniature and high performance filters. These filters, with only 6.3mm high, are 65% the volume of conventional types (CFULA455K_Y series).
Well suited for miniaturizing the communications equipment, especially for a cellular phone.



Type	Marking
CFULB455KB4Y-B0	BY
CFULB455KC4Y-B0	CY
CFULB455KD1Y-B0	DY
CFULB455KE1Y-B0	EY
CFULB455KF1Y-B0	FY
CFULB455KG1Y-B0	GY

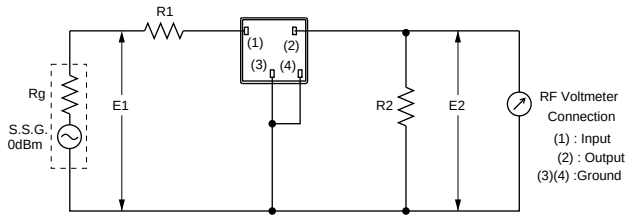
■ Features

1. Miniature, flat GDT characteristics.
2. Suitable for a cellular phone.
3. A variety of band width are available.
4. Operating temperature range : -20 to +80 (degree C)
   Storage temperature range : -40 to +85 (degree 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)
CFULB455KB4Y-B0	455.0 ±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
CFULB455KC4Y-B0	455.0 ±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
CFULB455KD1Y-B0	455.0 ±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
CFULB455KE1Y-B0	455.0 ±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
CFULB455KF1Y-B0	455.0 ±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
CFULB455KG1Y-B0	455.0 ±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

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.
(fn) means nominal center frequency 455kHz.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in package page in this catalog.
CFULB455K_Y series filters are 4-element ceramic filters and miniature versions of CFULA455K_Y series.

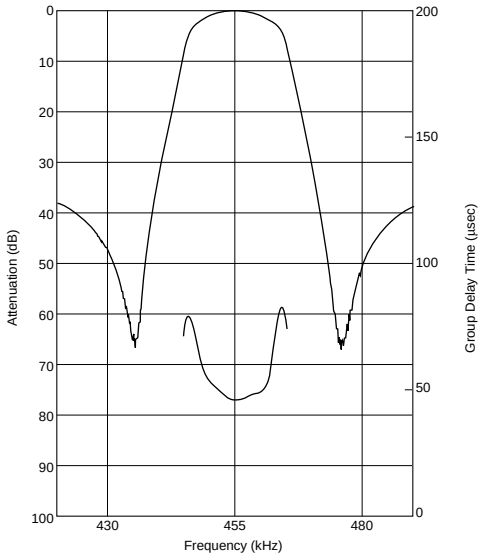
■ Test Circuit



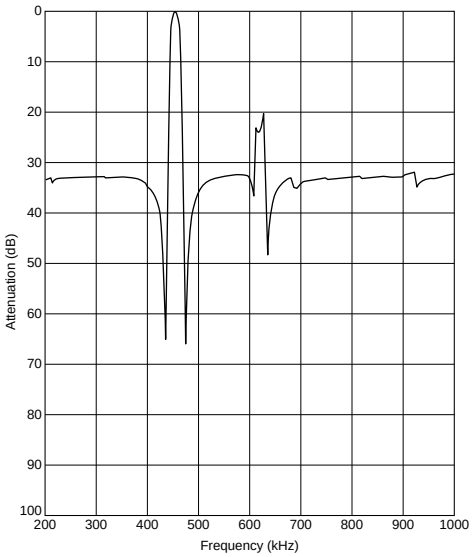
Rg+R1=R2=Input/Output Impedance

■ Frequency Characteristics

CFULB455KE1Y-B0



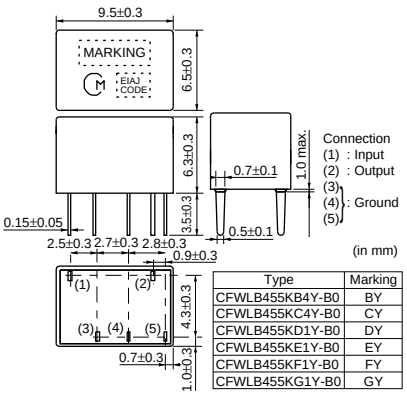
CFULB455KE1Y-B0



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

CERAFIL® Plastic Case Group Delay Flat Type CFWLB_Y Series

Ceramic filter CFWLB_Y series are miniature and high-performance filters. These filters, with only 6.3mm high, are 67% the volume of conventional types (CFWLA455K_Y series).
Well suited for miniaturizing the communications equipment, especially for a cellular phone.



Type	Marking
CFWLB455KB4Y-B0	BY
CFWLB455KC4Y-B0	CY
CFWLB455KD1Y-B0	DY
CFWLB455KE1Y-B0	EY
CFWLB455KF1Y-B0	FY
CFWLB455KG1Y-B0	GY

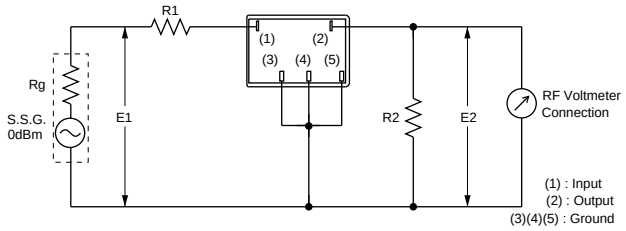
■ Features

1. Miniature, flat GDT characteristics.
2. Suitable for a cellular phone.
3. A variety of band width are available.
4. Operating temperature range : -20 to +80 (degree C)
   Storage temperature range : -40 to +85 (degree 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)
CFWLB455KB4Y-B0	455.0 ±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
CFWLB455KC4Y-B0	455.0 ±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
CFWLB455KD1Y-B0	455.0 ±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
CFWLB455KE1Y-B0	455.0 ±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
CFWLB455KF1Y-B0	455.0 ±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
CFWLB455KG1Y-B0	455.0 ±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

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.
(fn) means nominal center frequency 455kHz.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in package page in this catalog.
CFWLB455K_Y series filters are 4-element ceramic filters and miniature versions of CFWLA455K_Y series.

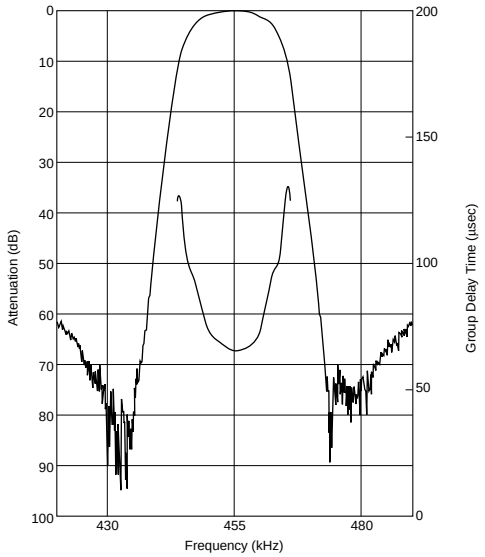
■ Test Circuit



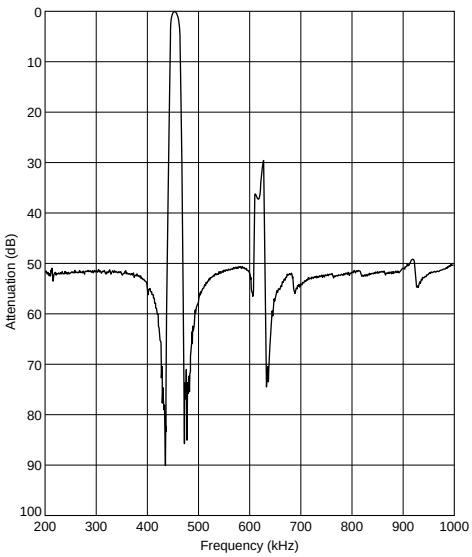
Rg+R1=R2=Input/Output Impedance

■ Frequency Characteristics

CFWLB455KE1Y-B0



CFWLB455KE1Y-B0



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_A Series	150	55
CFWLB_Y Series	150	50

The order quantity should be an integral multiple of the "Minimum Quantity" shown above. (pcs.)

■ 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.
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 well.
7. 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.
8. Use coupling capacitors to prevent applying D.C. voltage between input-ground, output-ground of "CERAFIL" as D.C. current may harm the component.

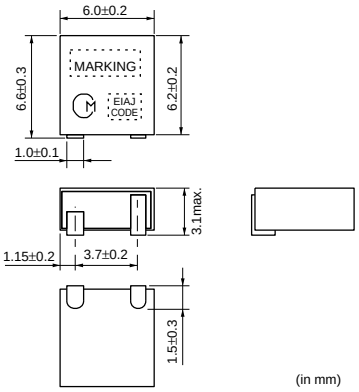
kHz Type Ceramic Discriminators

Ceramic discriminator consists of wide band piezoelectric resonator.
It is ideal for mobile communication equipments due to its small size and light weight.
Standard line include products for wide range of application, from cordless telecom to cellular telephone, making non-adjustment and shrinking of the detection circuit possible.

■ Features

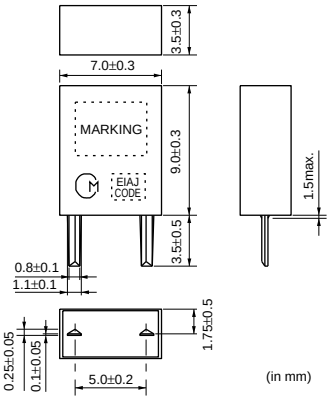
1. Small in size and light weight.
2. Realize no-adjustment in detection circuit.
3. High sensitivity and stability.
4. Wide range of standard products are available for various ICs.
5. Operating temperature range : -20 to +80 (degree C)
   Storage temperature range : -40 to +85 (degree C)

CDBCB Series



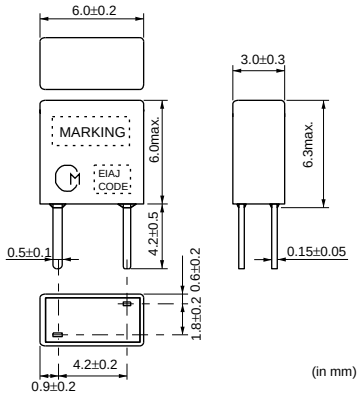
(in mm)

CDBLA Series



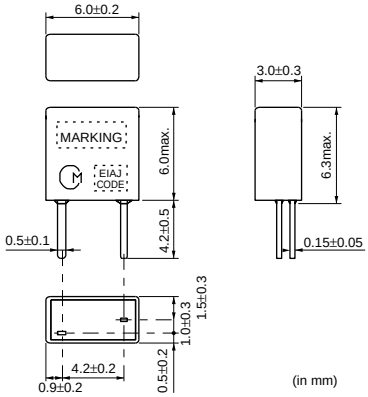
(in mm)

CDBLB_CAX Series



(in mm)

CDBLB_CAY Series



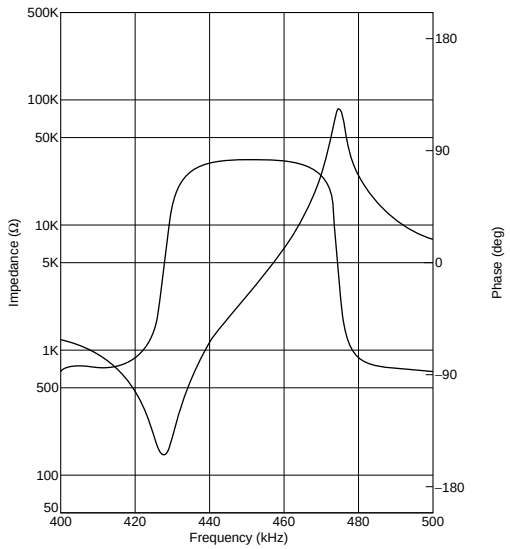
(in mm)

Specified by Impedance Characteristics 1

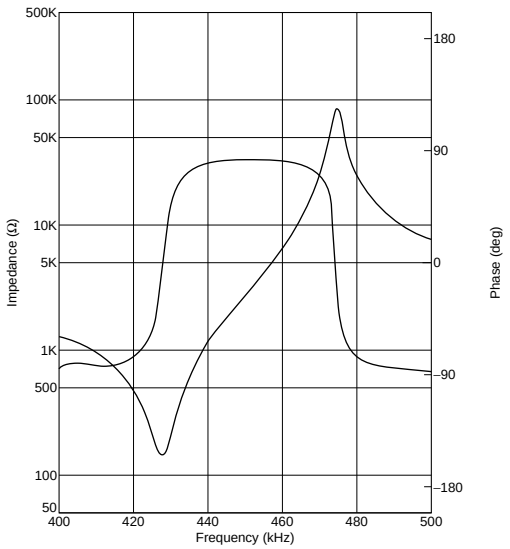
Part Number	Nominal Center Frequency (fn) (kHz)	Inclination of Impedance Curve(1)	Inclination of Impedance Curve(2)	Capacitance (C)	IC	IC Maker	Type
CDBLB455KCAX02-B0	455	447.0±1.5kHz (at |Z|=2.05kohm)	463.0±1.5kHz (at |Z|=10.0kohm)	140pF±20%	TA8104F	TOSHIBA	PLASTIC
CDBLB455KCAX31-B0	455	447.0±1.5kHz (at |Z|=2.05kohm)	463.0±1.5kHz (at |Z|=10.0kohm)	140pF±20%	TA31141	TOSHIBA	PLASTIC

■ Impedance Curve Specification 1

CDBLB455KCAX02-B0



CDBLB455KCAX31-B0

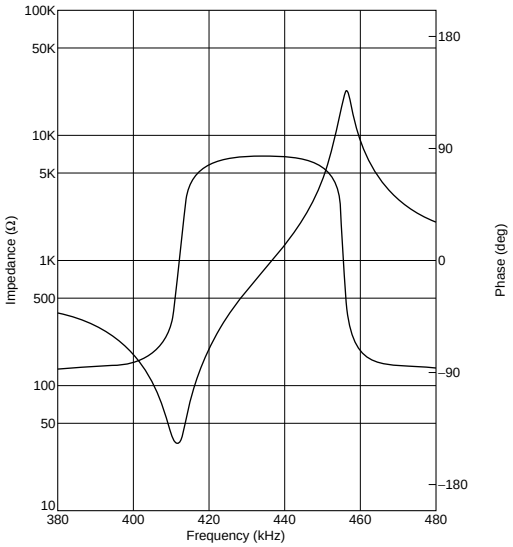


Specified by Impedance Characteristics 2

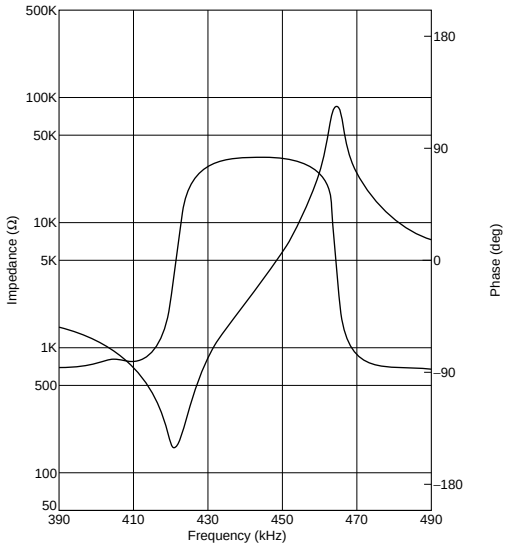
Part Number	Nominal Center Frequency (fn) (kHz)	Anti-resonant Frequency (Fa)	Delta F (Fa-Fr)	Resonant Resistance (R)	Capacitance (C)	IC	IC Maker	Type
CDBCB455KCAX33-R0	-	458.0±1.5kHz	42±4.0kHz	300ohm max.	280pF±20%	CXA1474	SONY	SMD
CDBLA455KCAY03-B0	-	455.0±1.5kHz	48±5.0kHz	70ohm max.	600pF±20%	CXA1184	SONY	PLASTIC
CDBLB455KCAY03-B0	-	455.0±1.5kHz	46±5.0kHz	70ohm max.	550pF±20%	CXA1184M	SONY	PLASTIC
CDBLB455KCAX15-B0	-	463.5±1.0kHz	43±2.0kHz	300ohm max.	140pF±20%	CXA1183M	SONY	PLASTIC
CDBLB455KCAX25-B0	455	465.0±1.5kHz	45±4.0kHz	300ohm max.	135pF±20%	CXA1484	SONY	PLASTIC
CDBLB455KCAX33-B0	455	465.0±1.5kHz	45±4.0kHz	300ohm max.	135pF±20%	CXA1474	SONY	PLASTIC

■ Impedance Curve Specification 2

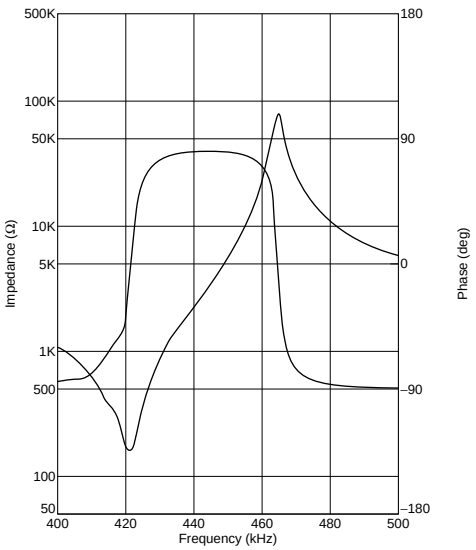
CDBLA/CDBLB455KCAY03-B0



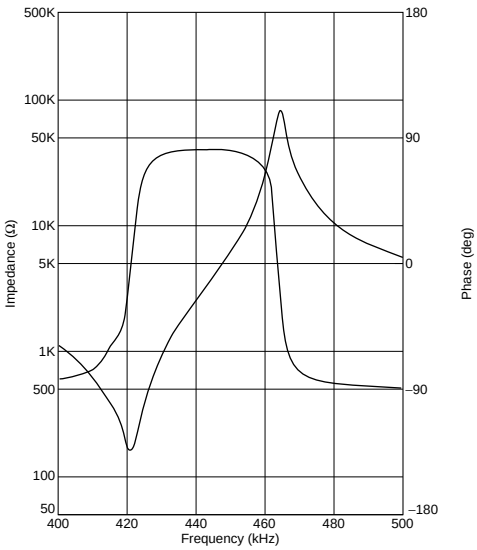
CDBLB455KCAX15-B0



CDBLB455KCAX25-B0



CDBCB455KCAX33-R0



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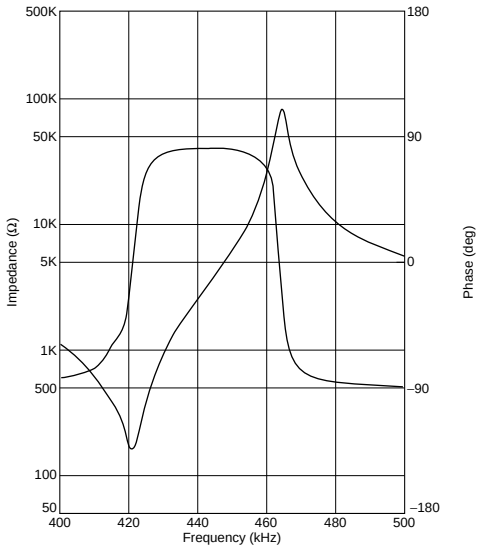
■ Impedance Curve Specification 2

CDBLB455KCAX33-B0



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
CDBCB455KCAY07-R0	455	fn±4.0 min.	350 ±60	3.0 max.	-	MC3357	MOTOROLA	SMD
CDBCB455KCAY09-R0	455	fn±4.0 min.	120 ±40	1.5 max.	-	NE604N	PHILIPS	SMD
CDBCB455KCAY13-R0	455	fn±4.0 min.	330 ±50	4.0 max.	-	CXA1003BM	SONY	SMD
CDBCB455KCAY16-R0	455	fn±4.0 min.	175 ±40	2.0 max.	-	MC3372	MOTOROLA	SMD
CDBCB455KCAY21-R0	455	fn±4.0 min.	55 ±20	2.0 max.	-	TA31132	TOSHIBA	SMD
CDBCB455KCAY24-R0	455	fn±4.0 min.	100 ±40	2.0 max.	-	TA31136	TOSHIBA	SMD
CDBCB455KCAY27-R0	455	fn±4.0 min.	90 ±30	2.0 max.	-	TK10487	TOKO	SMD
CDBCB455KCAY28-R0	455	fn±4.0 min.	40 ±20	3.0 max.	-	TA31142F	TOSHIBA	SMD
CDBCB455KCAY29-R0	455	fn±4.0 min.	100 ±30	2.5 max.	-	NE605	PHILIPS	SMD
CDBCB455KCAY32-R0	455	fn±4.0 min.	40 ±20	3.0 max.	-	TA31143	TOSHIBA	SMD
CDBCB455KCAY35-R0	455	fn±4.0 min.	100 ±40	2.5 max.	-	TK10930	TOKO	SMD
CDBCB455KCAY40-R0	455	fn±4.0 min.	40 ±20	3.5 max.	-	TA31145	TOSHIBA	SMD
CDBCB455KCAY49-R0	455	fn±4.0 min.	45 ±10	3.0 max.	-	MC3361	MOTOROLA	SMD
CDBCB455KCAY50-R0	455	fn±4.0 min.	64 ±6.4	4.0 max.	-	CXA3117N	SONY	SMD
CDBCB455KCLX36-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
CDBCB455KCLX39-R0	455	fn±11.0 min.	130 ±20	2.5 max.	7.0 max. [within fn ±8kHz]	NE607 /NE617	PHILIPS	SMD
CDBCB455KCLY13-R0	455	fn±13.0 min.	120 ±30	1.5 max.	5.0 max. [within fn ±8kHz]	CXA1003BM	SONY	SMD
CDBCB455KCLY21-R0	455	fn±11.0 min.	75 ±25	2.5 max.	5.0 max. [within fn ±5.5kHz]	TA31132	TOSHIBA	SMD
CDBLA455KCAY07-B0	455	fn±4.0 min.	340 ±60	2.5 max.	-	MC3357	MOTOROLA	PLASTIC
CDBLA455KCAY09-B0	455	fn±5.0 min.	100 min.	1.5 max.	-	NE604N	PHILIPS	PLASTIC
CDBLA455KCAY13A-B0	455	fn±4.0 min.	350 ±50	3.0 max.	-	CXA1003BM	SONY	PLASTIC
CDBLA455KCAY16-B0	455	fn±4.0 min.	185 ±40	2.0 max.	-	MC3372	MOTOROLA	PLASTIC
CDBLA455KCAY24-B0	455	fn±4.0 min.	100 ±40	2.0 max.	-	TA31136	TOSHIBA	PLASTIC
CDBLA455KCAY28-B0	455	fn±4.0 min.	40 ±20	3.0 max.	-	TA31142	TOSHIBA	PLASTIC
CDBLA455KCAY34-B0	455	fn±4.0 min.	65 ±20	2.5 max.	-	MC13136	MOTOROLA	PLASTIC
CDBLA455KCLY09-B0	455	fn±15.0 min.	70 ±20	1.5 max.	3.5 max. [within fn ±8kHz]	NE604N	PHILIPS	PLASTIC
CDBLA455KCLY13-B0	455	fn±15.0 min.	110 ±30	1.5 max.	5.0 max. [within fn ±8kHz]	CXA1003BM	SONY	PLASTIC

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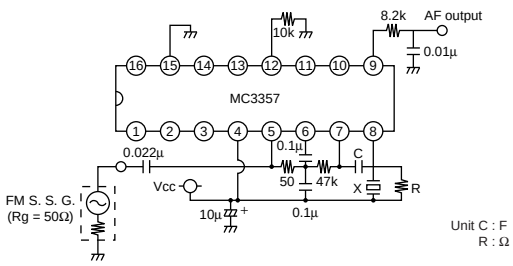
Part Number	Nominal Center Frequency (fn) (kHz)	Recovered Audio 3dB BW (kHz)	Recovered Audio Output (mV)	Distortion (at fn) (%)	Distortion (%)	IC	IC Maker	Type
CDBLB455KCAY07-B0	455	fn±4.0 min.	340 ±60	3.0 max.	-	MC3357	MOTOROLA	PLASTIC
CDBLB455KCAY13A-B0	455	fn±4.0 min.	350 ±50	3.0 max.	-	CXA1003BM	SONY	PLASTIC
CDBLB455KCAY21-B0	455	fn±4.0 min.	55 ±20	2.0 max.	-	TA31132	TOSHIBA	PLASTIC
CDBLB455KCAY24-B0	455	fn±4.0 min.	100 ±40	2.0 max.	-	TA31136	TOSHIBA	PLASTIC
CDBLB455KCAY28-B0	455	fn±4.0 min.	40 ±20	3.0 max.	-	TA31142FN	TOSHIBA	PLASTIC
CDBLB455KCAY32-B0	455	fn±4.0 min.	40 ±20	3.0 max.	-	TA31143	TOSHIBA	PLASTIC
CDBLB455KCAY34-B0	455	fn±4.0 min.	65 ±20	2.5 max.	-	MC13136	MOTOROLA	PLASTIC
CDBLB455KCAY40-B0	455	fn±4.0 min.	40 ±20	3.0 max.	-	TA31145	TOSHIBA	PLASTIC
CDBLB455KCAY42-B0	455	fn±4.0 min.	40 ±15	3.0 max.	-	TK14590 /TK14591	TOKO	PLASTIC
CDBLB455KCAY49-B0	455	fn±4.0 min.	45 ±10	3.0 max.	-	MC3361	MOTOROLA	PLASTIC
CDBLB455KCAY50-B0	455	fn±4.0 min.	64 ±6.4	4.0 max.	-	CXA3117N	SONY	PLASTIC
CDBLB455KCLY09-B0	455	fn±15.0 min.	70 ±20	1.5 max.	3.5 max. [within fn ±8kHz]	NE604N	PHILIPS	PLASTIC
CDBLB455KCLY13-B0	455	fn±15.0 min.	110 ±30	1.5 max.	5.0 max. [within fn ±8kHz]	CXA1003BM	SONY	PLASTIC
CDBLB455KCLY21-B0	455	fn±13.0 min.	65 ±20	2.5 max.	5.0 max. [within fn ±8kHz]	TA31132	TOSHIBA	PLASTIC
CDBLB455KCAX16-B0	455	fn±4.0 min.	185 ±40	2.0 max.	-	MC3372	MOTOROLA	PLASTIC
CDBLB455KCAX18-B0	455	fn±3.0 min.	180 ±40	2.0 max.	-	MC3371	MOTOROLA	PLASTIC
CDBLB455KCAX36-B0	455	fn±3.5 min.	100 ±25	3.5 max.	-	NE606 /616	PHILIPS	PLASTIC

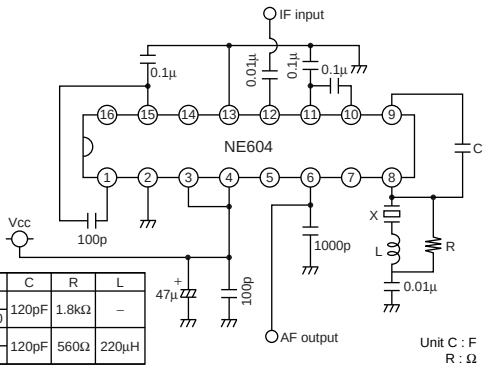
■ Test Circuit

MC3357



Part Number (X)	C	R
CDBLA455KCAY07-B0	150pF	1.5kΩ
CDBLB455KCAY07-B0		
CDBCB455KCAY07-R0	150pF	1.3kΩ

NE604N



Part Number (X)	C	R	L
CDBLA455KCAY09-B0	120pF	1.8kΩ	–
CDBCB455KCAY09-R0			
CDBLA455KCLY09-B0	120pF	560Ω	220µH
CDBLB455KCLY09-B0			

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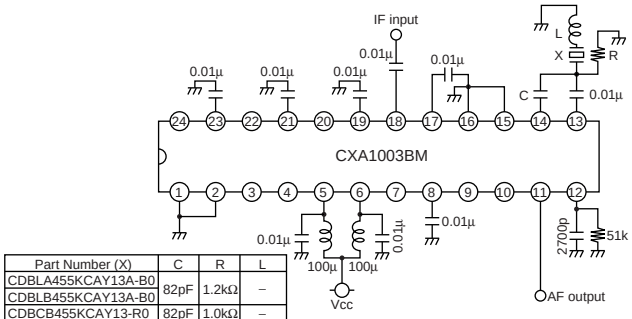
■ Test Circuit

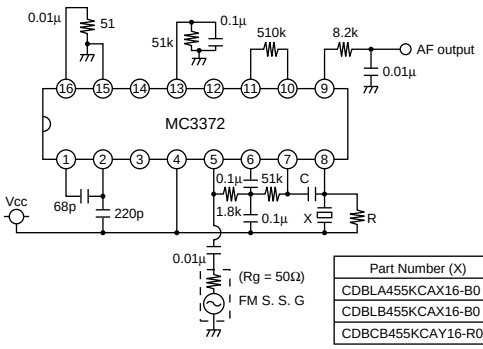
CXA1003BM



Part Number (X)	C	R	L
CDBLA455KCAY13A-B0	82pF	1.2kΩ	–
CDBLB455KCAY13A-B0			
CDBCB455KCAY13-R0	82pF	1.0kΩ	–
CDBLA455KCLY13-B0			
CDBLB455KCLY13-B0	82pF	560Ω	220μH
CDBCB455KCLY13-R0			

Unit C : F
R : Ω

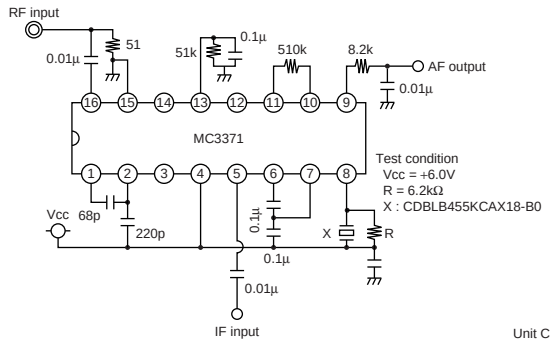
MC3372



Part Number (X)	C	R
CDBLA455KCAX16-B0	100pF	1.3kΩ
CDBLB455KCAX16-B0	27pF	4.3kΩ
CDBCB455KCAY16-R0	100pF	1.0kΩ

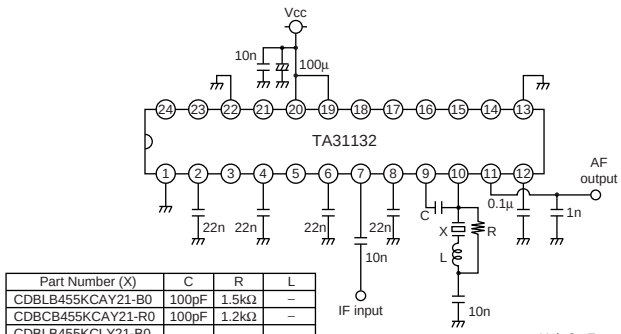
Unit C : F
R : Ω

MC3371



Unit C : F
R : Ω

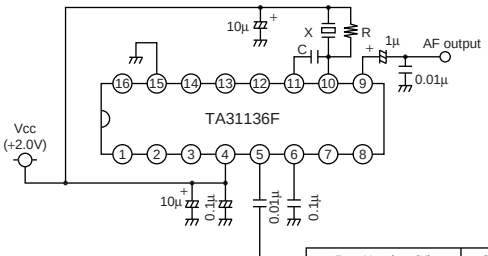
TA31132



Part Number (X)	C	R	L
CDBLB455KCAY21-B0	100pF	1.5kΩ	–
CDBCB455KCAY21-R0		1.2kΩ	–
CDBLB455KCLY21-B0	100pF	680Ω	220μH
CDBCB455KCLY21-R0			

Unit C : F
R : Ω

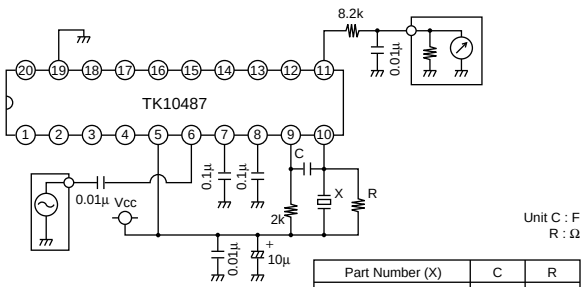
TA31136



Part Number (X)	C	R
CDBLA455KCAY24-B0	91pF	1.5kΩ
CDBLB455KCAY24-B0		
CDBCB455KCAY24-R0	91pF	1.2kΩ

Unit C : F
R : Ω

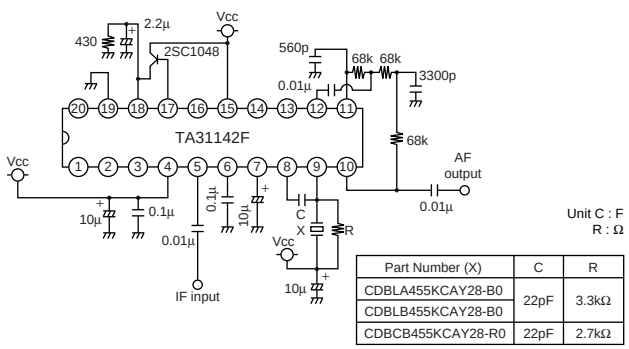
TK10487



Part Number (X)	C	R
CDBCB455KCAY27-R0	33pF	1.0kΩ

Unit C : F
R : Ω

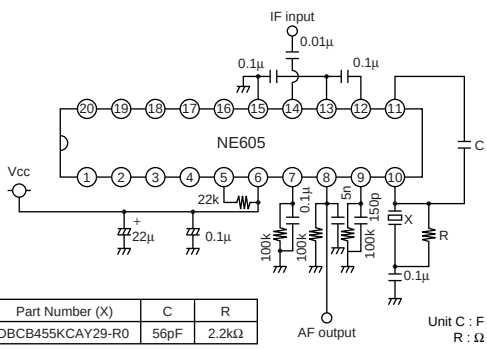
TA31142



Part Number (X)	C	R
CDBLA455KCAY28-B0	22pF	3.3kΩ
CDBLB455KCAY28-B0		
CDBCB455KCAY28-R0	22pF	2.7kΩ

Unit C : F
R : Ω

NE605



Part Number (X)	C	R
CDBCB455KCAY29-R0	56pF	2.2kΩ

Unit C : F
R : Ω

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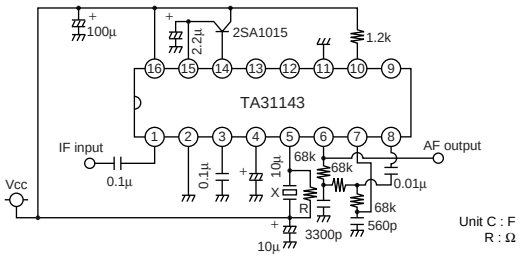
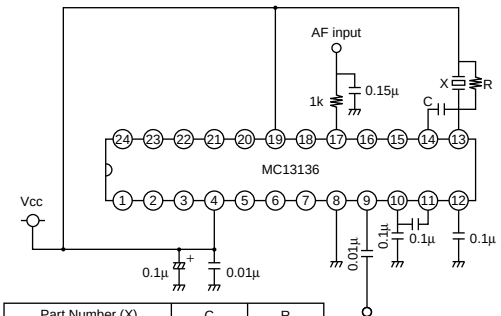
■ Test Circuit

TA31143



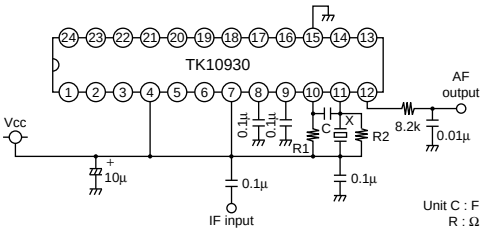
Part Number (X)	R
CDBLB455KCAY32-B0	3.3kΩ
CDBCB455KCAY32-R0	2.7kΩ

MC13136



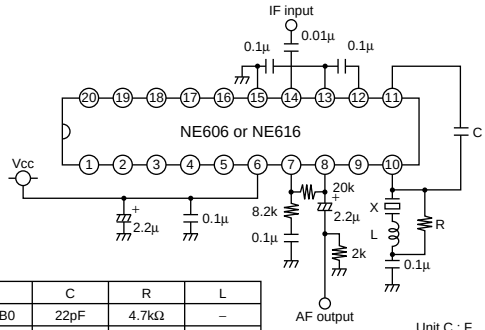
Part Number (X)	C	R
CDBLA455KCAY34-B0	100pF	1.2kΩ
CDBLB455KCAY34-B0		

TK10930



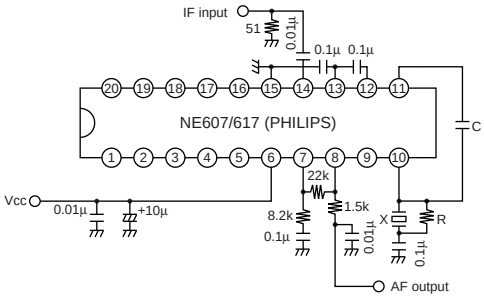
Part Number (X)	C	R1	R2
CDBCB455KCAY35-R0	33pF	2.0kΩ	1.0kΩ

NE(SA)606/616



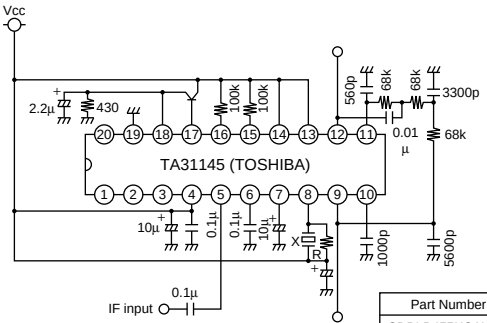
Part Number (X)	C	R	L
CDBLB455KCAX36-B0	22pF	4.7kΩ	–
CDBCB455KCLX36-R0	27pF	2.2kΩ	1mH

NE(SA)607/617



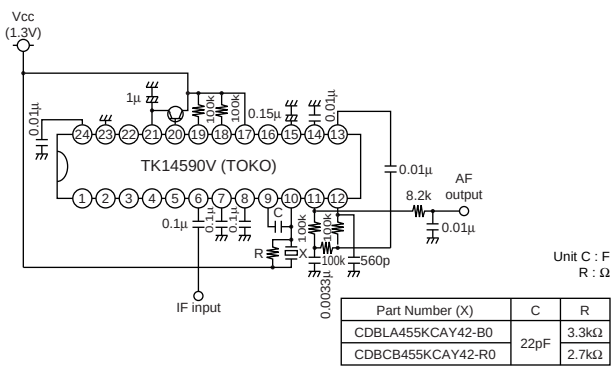
Part Number (X)	C	R
CDBCB455KCLX39-R0	22pF	2.7kΩ

TA31145



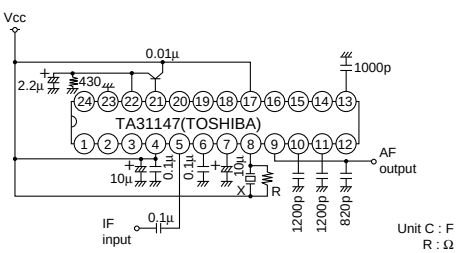
Part Number (X)	R
CDBLB455KCAY40-B0	3.3kΩ
CDBCB455KCAY40-R0	2.7kΩ

TK14590/14591



Part Number (X)	C	R
CDBLA455KCAY42-B0	22pF	3.3kΩ
CDBCB455KCAY42-R0		2.7kΩ

TA31147



Part Number (X)	R
CDBLB455KCAY47-B0	3.3kΩ
CDBCB455KCAY47-R0	2.7kΩ

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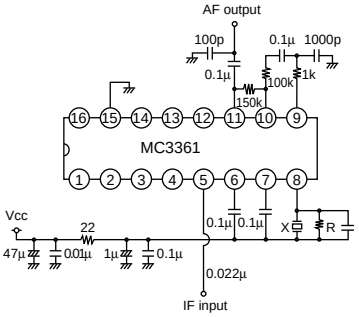
■ Test Circuit

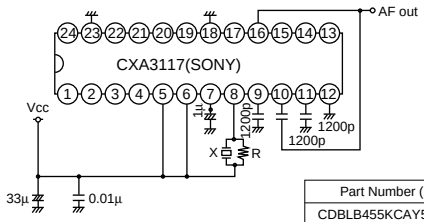
MC3361



Unit C : F
R : Ω

Part Number (X)	R
CDBLB455KCAY49-B0	1.8kΩ
CDBCB455KCAY49-R0	1.5kΩ

CXA3117

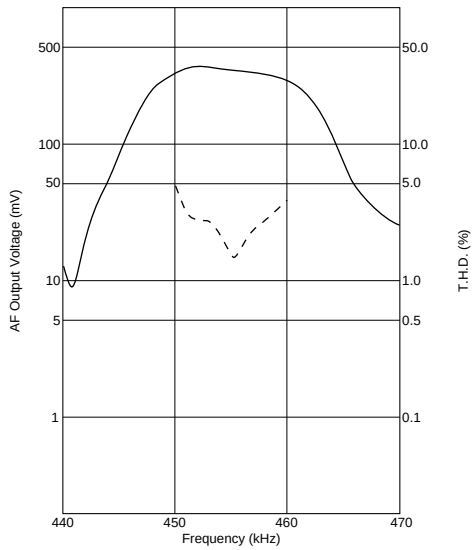


Unit C : F
R : Ω

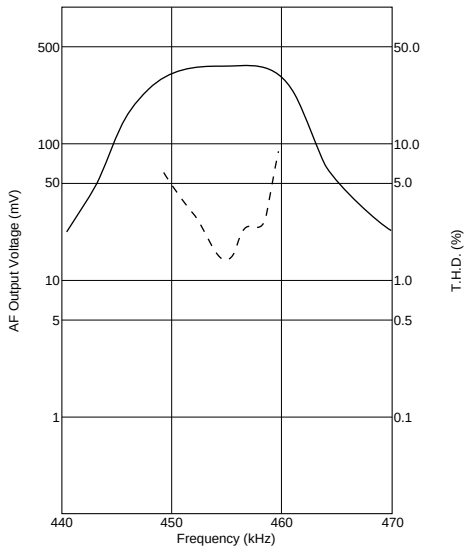
Part Number (X)	R
CDBLB455KCAY50-B0	8.2kΩ
CDBCB455KCAY50-R0	6.2kΩ

■ Recovered Audio Curve Specification

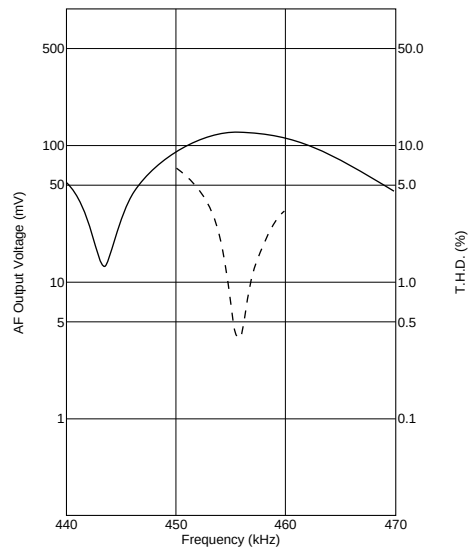
CDBCB455KCAY07-R0



CDBLA/CDBLB455KCAY07-B0



CDBCB455KCAY09-R0



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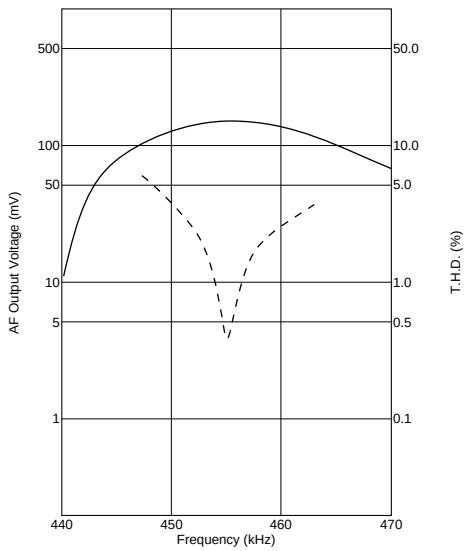

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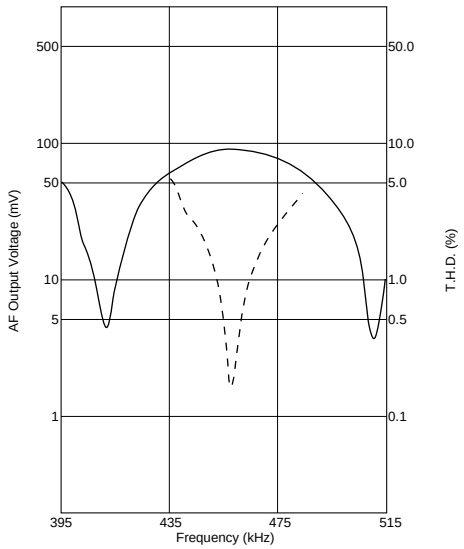
■ Recovered Audio Curve Specification

CDBLA/CDBLB455KCLY09-B0



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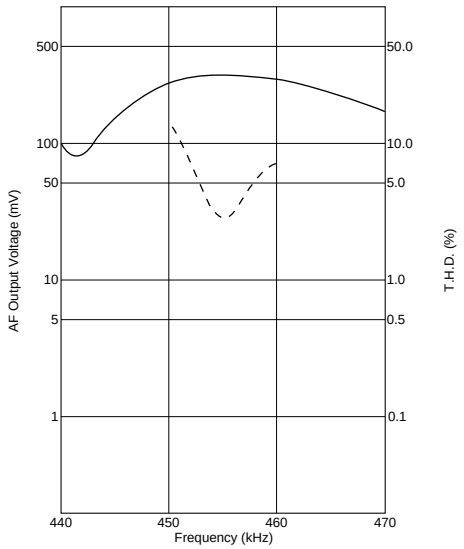

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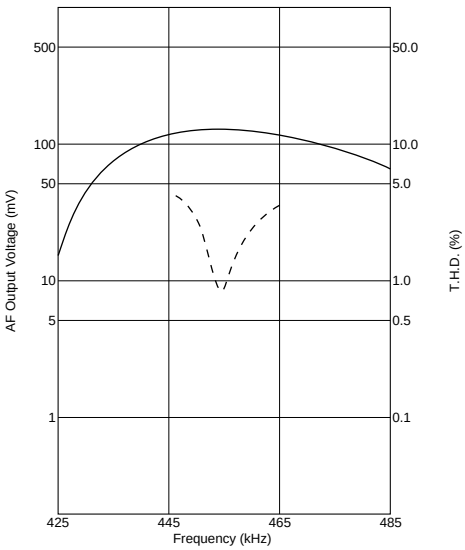

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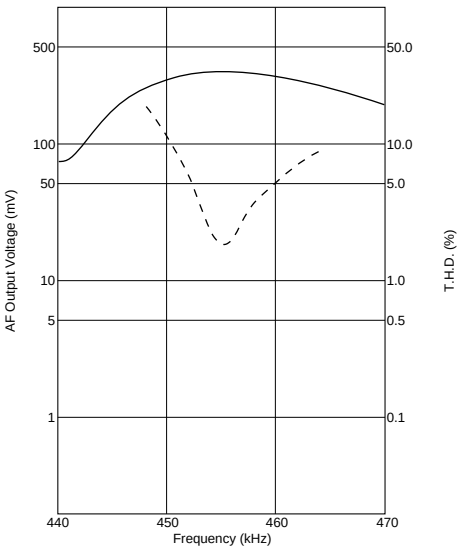

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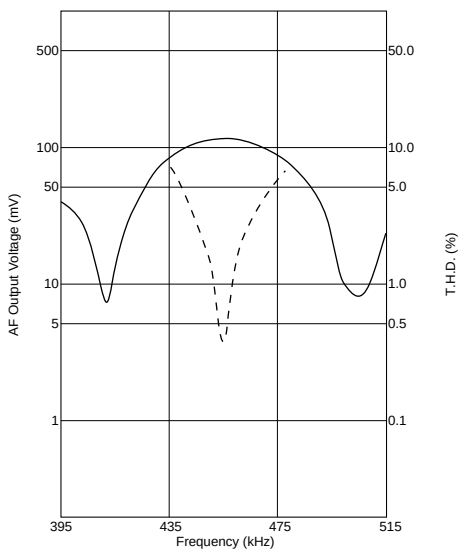

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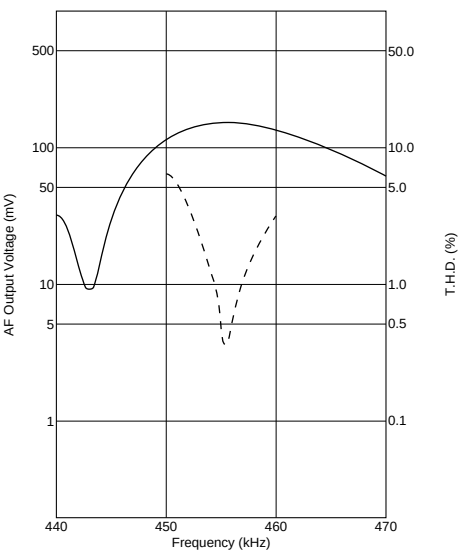

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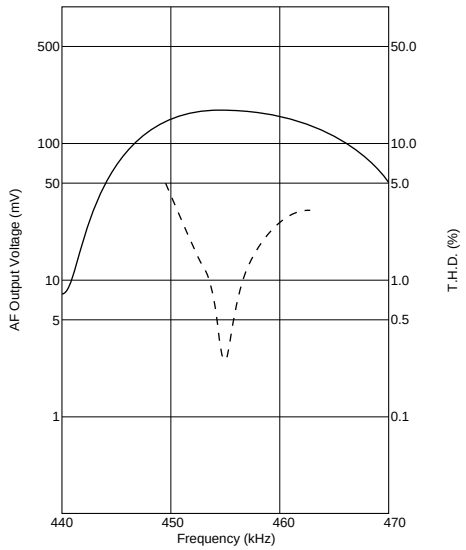
■ Recovered Audio Curve Specification

CDBLA455KCAY16-B0



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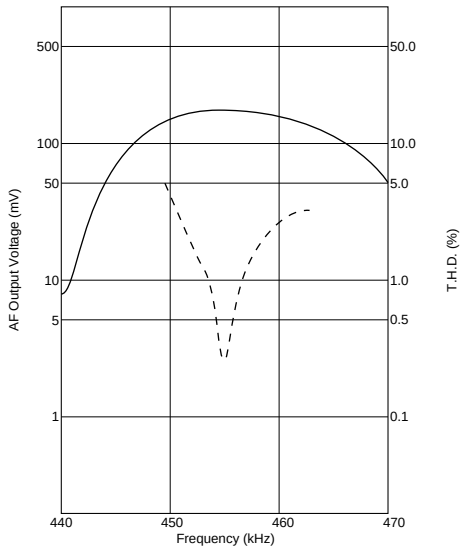

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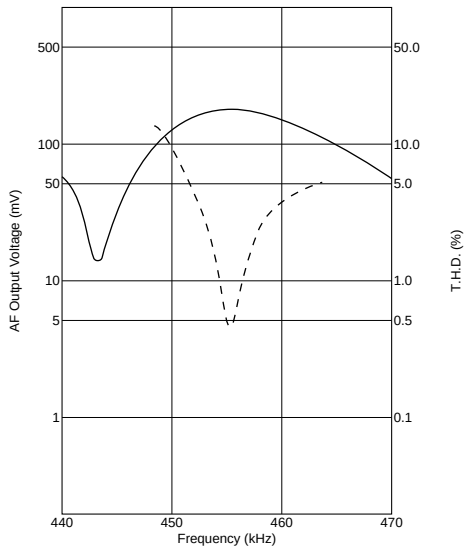

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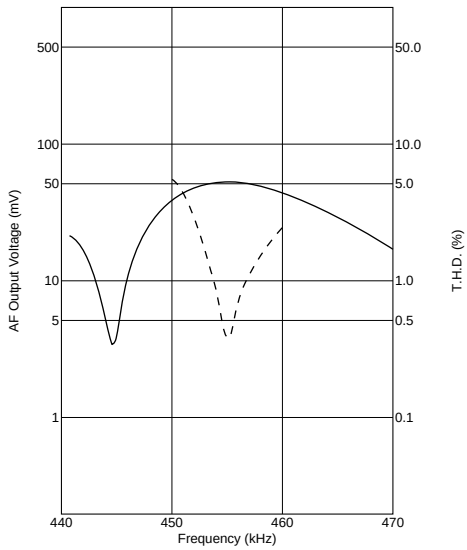

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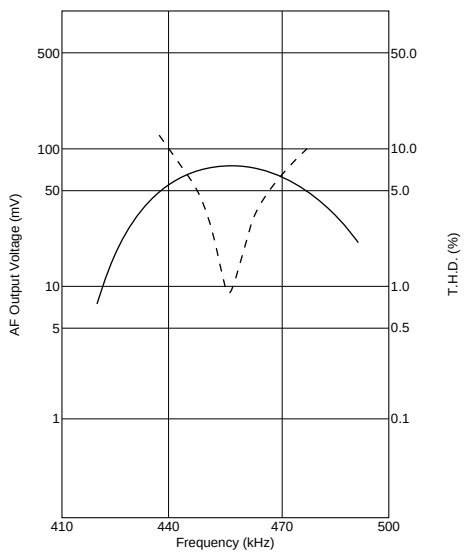

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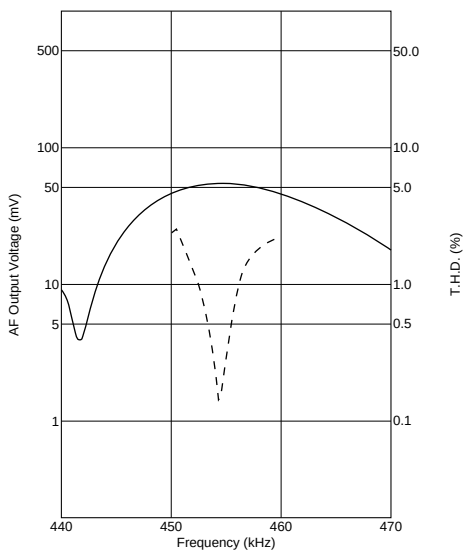

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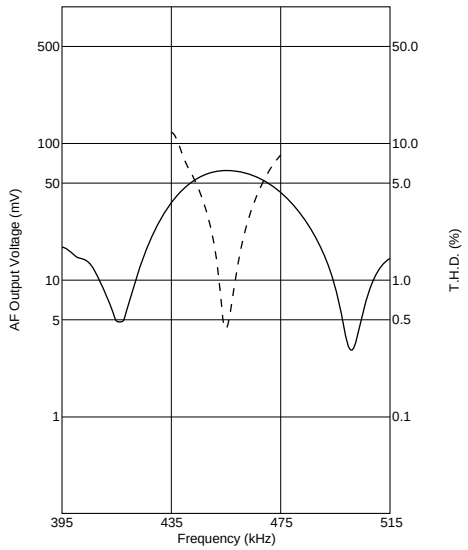
■ Recovered Audio Curve Specification

CDBLB455KCLY21-B0



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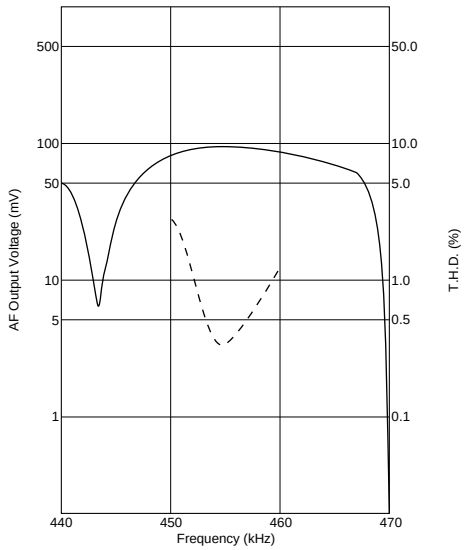

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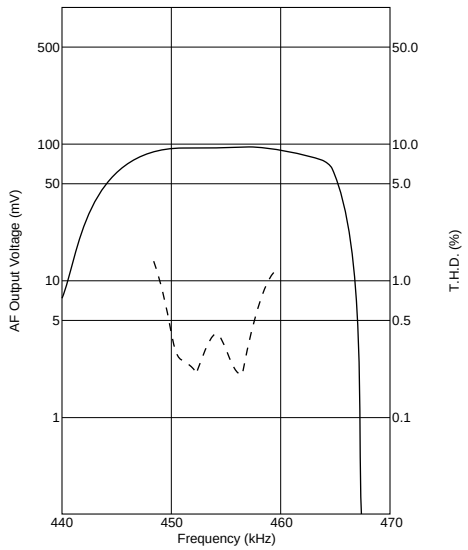

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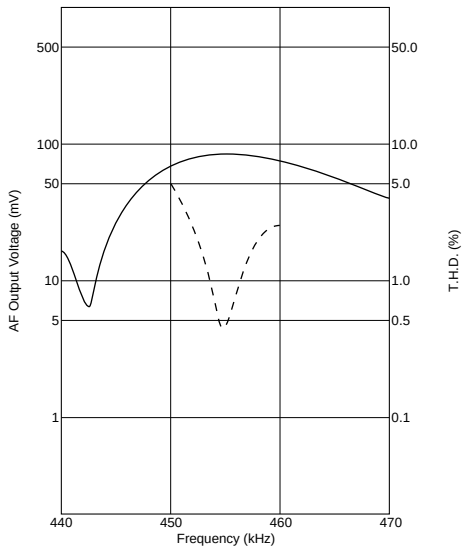

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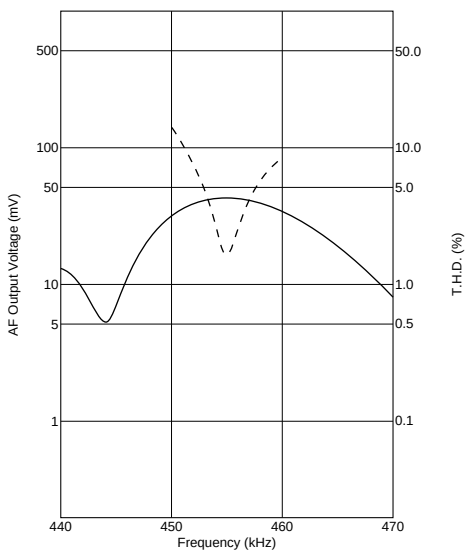

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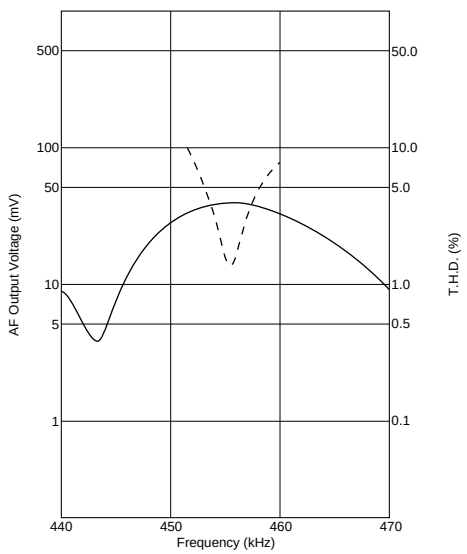

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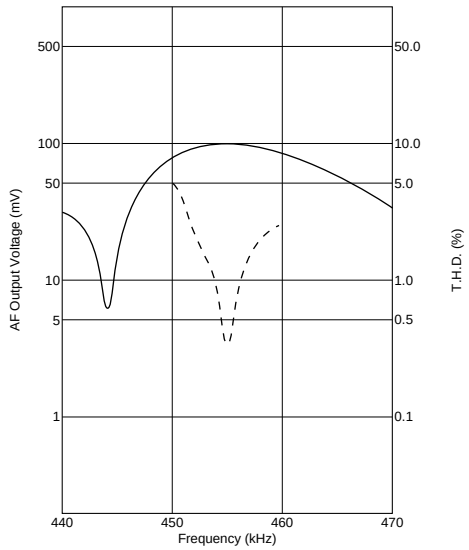
■ Recovered Audio Curve Specification

CDBCB455KCAY29-R0



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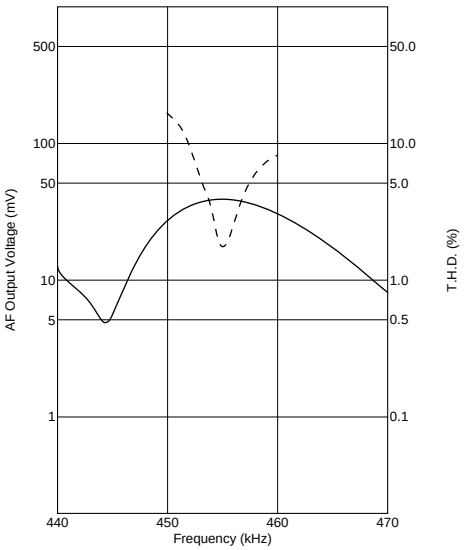

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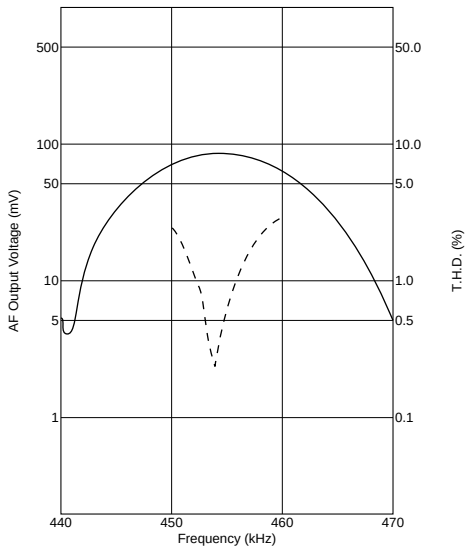

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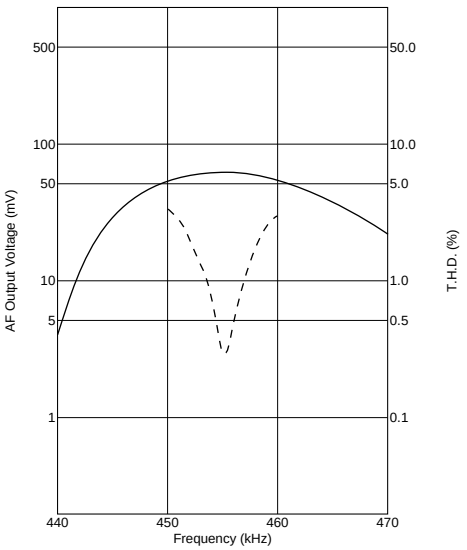

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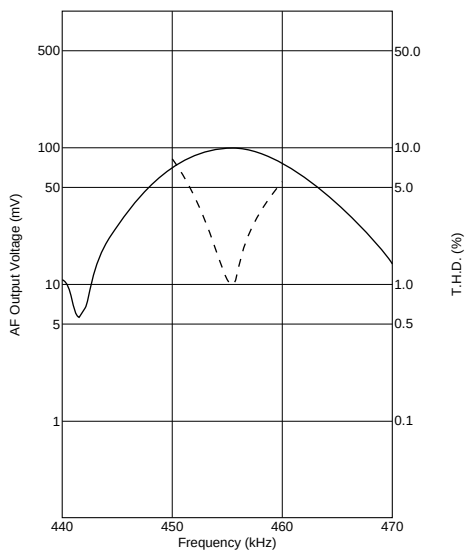

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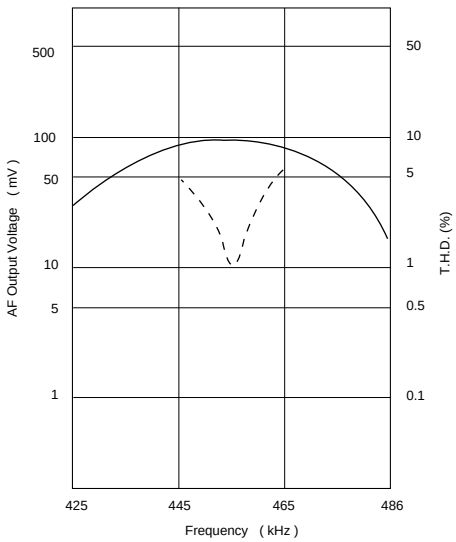

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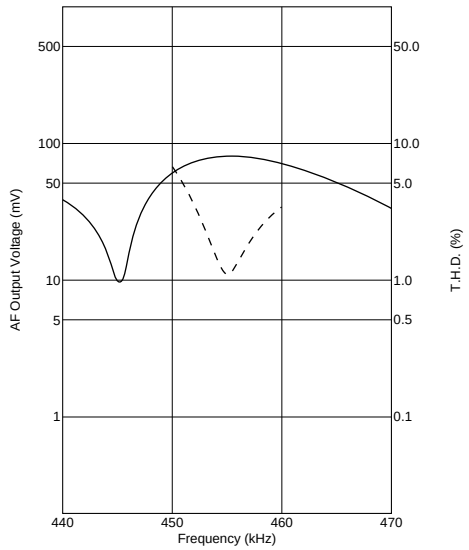
■ Recovered Audio Curve Specification

CDBLB455KCAX36-B0



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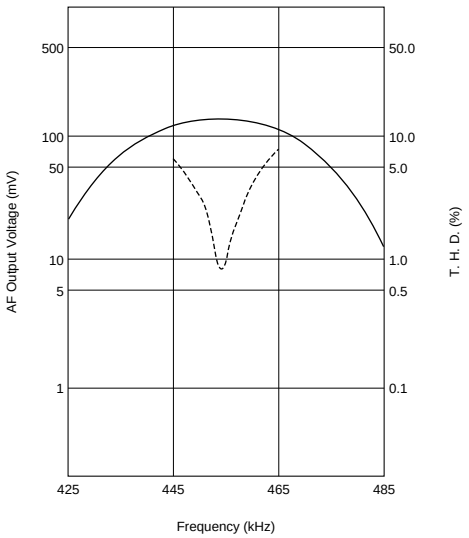

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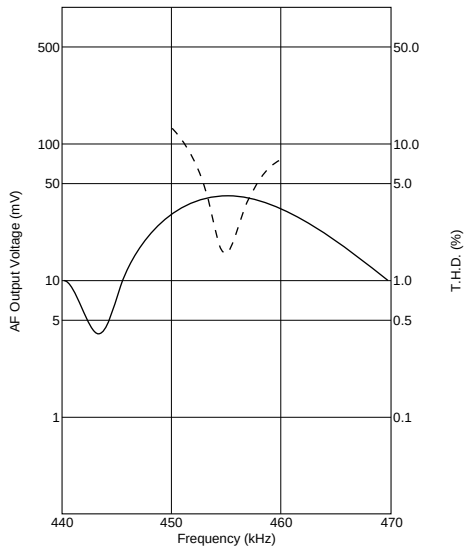

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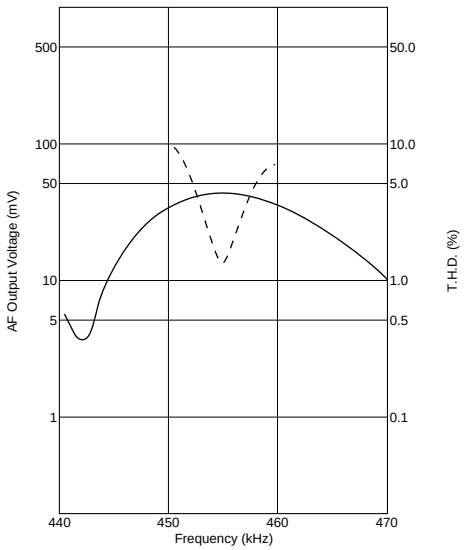
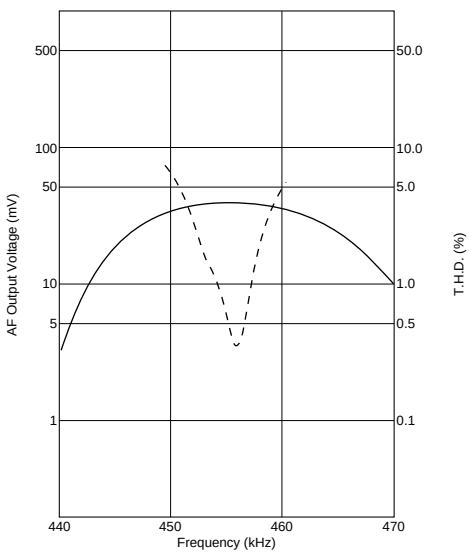


CDBLA/CDBLB455KCAY42-B0



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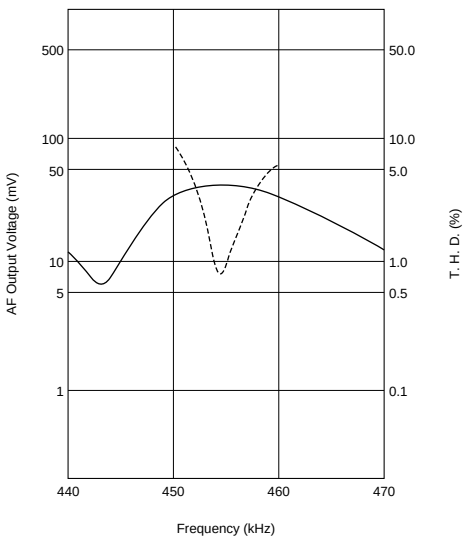

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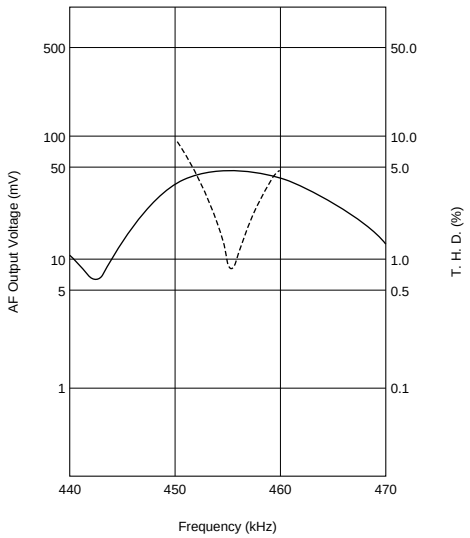
■ Recovered Audio Curve Specification

CDBLB455KCAY49-B0



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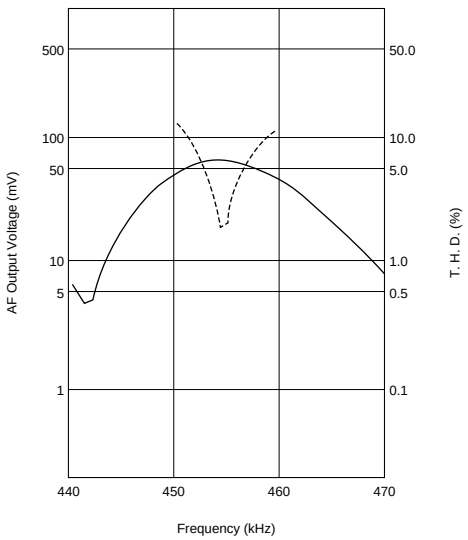

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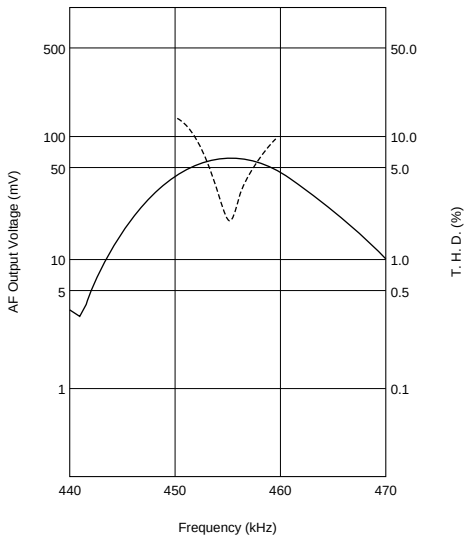
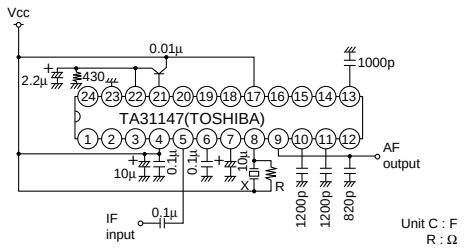


Specified by S Curve Characteristics

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
CDBCB455KCAY47-R0	455	130 ±20	150 ±15	TA31147	TOSHIBA	SMD
CDBCB455KCAY54-R0	455	165 ±20	170 ±20	TA31149	TOSHIBA	SMD
CDBLB455KCAY47-B0	455	140 ±20	150 ±15	TA31147	TOSHIBA	PLASTIC

■ Test Circuit

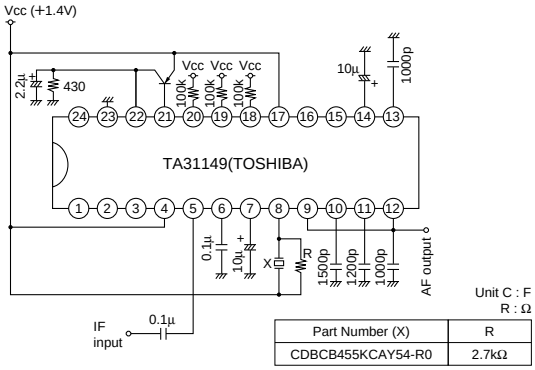
TA31147



Unit C : F
R : Ω

Part Number (X)	R
CDBLB455KCAY47-B0	3.3kΩ
CDBCB455KCAY47-R0	2.7kΩ

TA31149

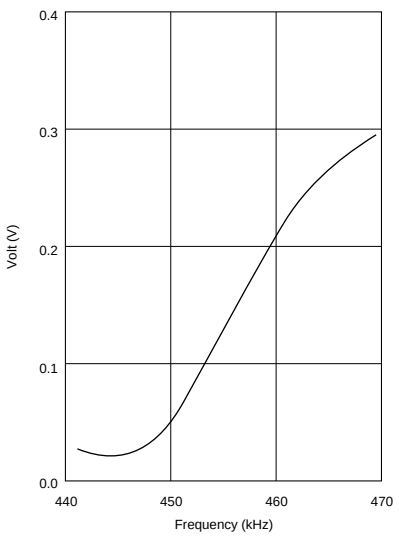


Unit C : F
R : Ω

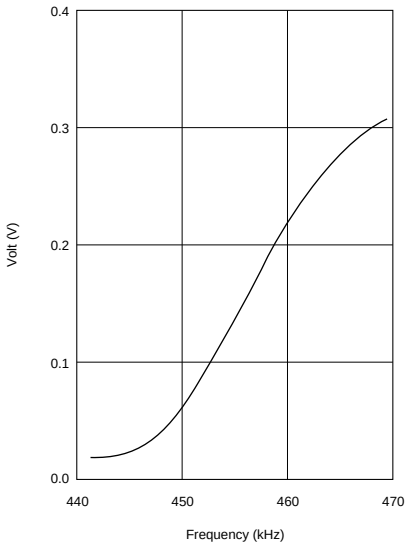
Part Number (X)	R
CDBCB455KCAY54-R0	2.7kΩ

■ S Curve Specification

CDBCB455KCAY47-R0



CDBLB455KCAY47-B0



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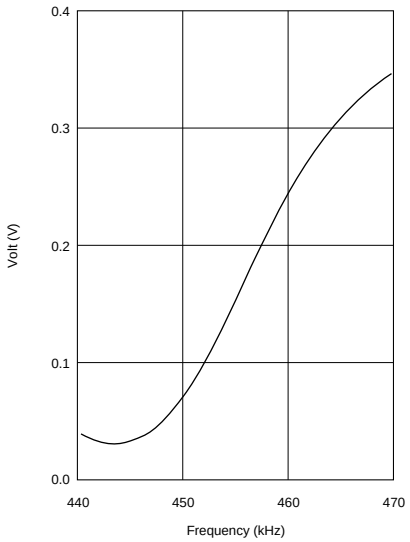
■ S Curve Specification

CDBCB455KCAY54-R0

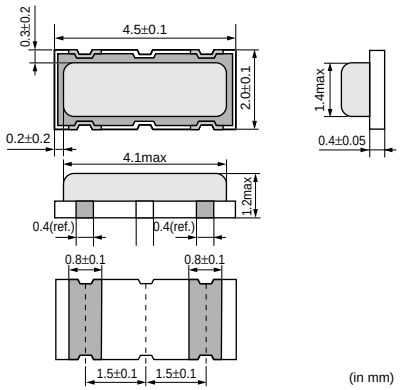


Ceramic Filters (CERAFIL®)/Ceramic Discriminators for Communications Equipment

MHz Type Ceramic Discriminators

CDSCA10M7 series forms a resonator on a piezo electric ceramic sabstrate. In combination with ICs, this type obtains stable demoduration characteristics in wide bandwidth.

CDSCA Series



(in mm)

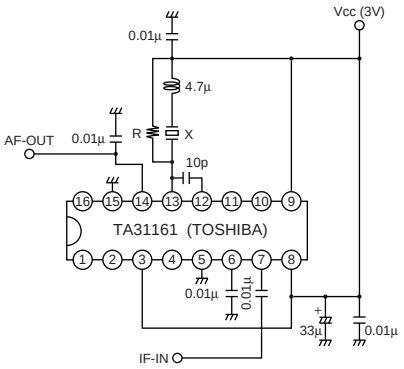
■ Features

1. Compact and high reliability and recommended for automotive applications.
2. Can be combined with various ICs. The IC is determined by the last number in the part number.
3. Stable demoduration characteristics can be obtained without adjustment.
4. Stable temperature characteristics.
5. Recommended for Pb free soldering.

Part Number	Nominal Center Frequency (fn) (MHz)	Recovered Audio 3dB BW (kHz)	Recovered Audio Output (mV)	Distortion (at fn) (%)	IC	IC Maker	Type
CDSCA10M7GF072-R0	10.700	fn±150 min.	130 min.	2.0 max.	TA31161	TOSHIBA	SMD
CDSCA10M7GF107-R0	10.700	fn±80 min.	52 min.	3.0 max.	TA31272F	TOSHIBA	SMD
CDSCA10M7GF109-R0	10.700	fn±100 min.	170 min.	3.0 max.	TK14588V	TOKO	SMD

■ Test Circuit

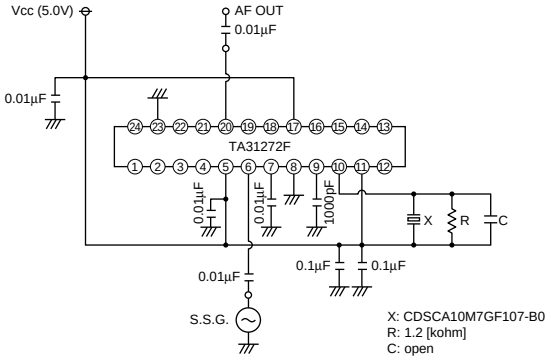
CDSCA10M7GF072-R0



Unit C : F
R : Ω

Part Number (X)	R
CDSCA10M7GF072-R0	820

CDSCA10M7GF107-R0



X: CDSCA10M7GF107-B0
R: 1.2 [kohm]
C: open

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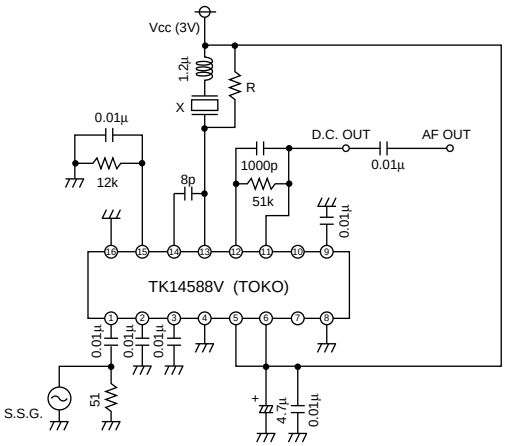
■ Test Circuit

CDSCA10M7GF109-R0

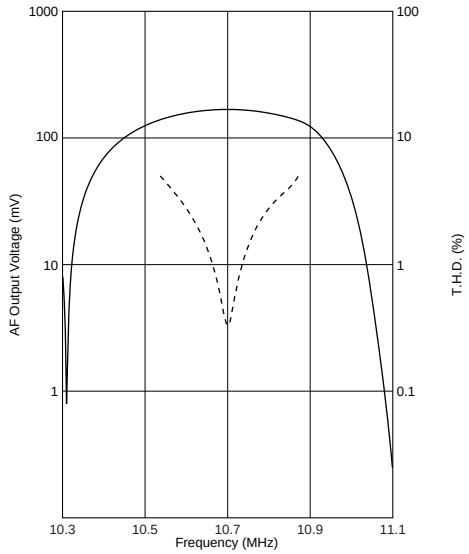


Unit C : F
R : Ω
L : H

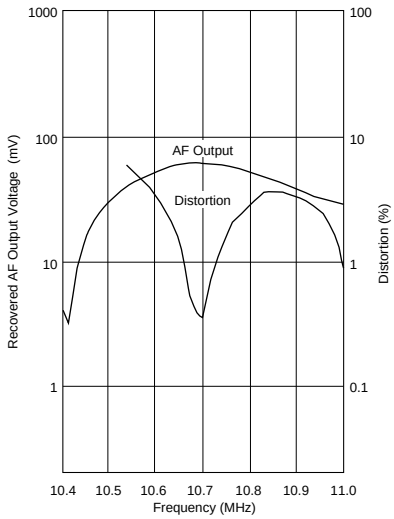
Part Number (X)	R
CDSCA10M7GF109-R0	820

■ Frequency Characteristics

CDSCA10M7GF072-R0



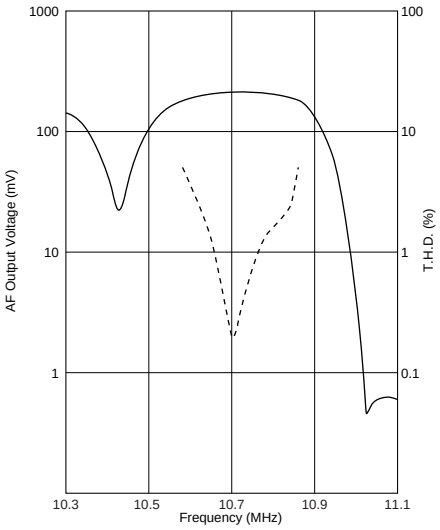
CDSCA10M7GF107-R0



Input signal conditions

Input Level	100dBµ
Mod. Freq.	1000Hz
Freq.Dev.	±40kHz

CDSCA10M7GF109-R0



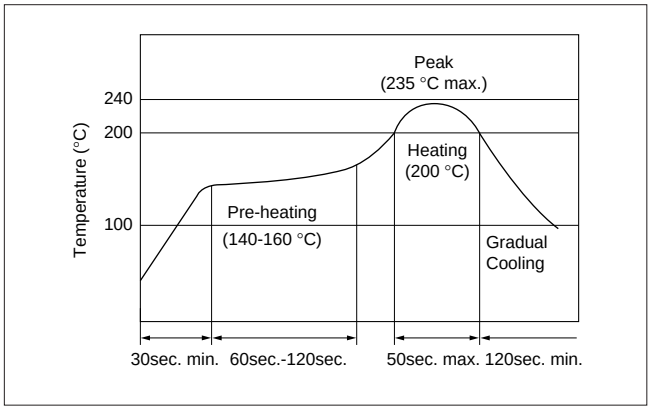
Ceramic Discriminators Notice

■ CDBCB Series Notice (Soldering and Mounting)

1. Standard Reflow Soldering Condition

(1) Reflow

Filter is soldered one time within the following temperature condition and then being placed in natural condition for 24 hours.



(2) Soldering Iron

Electrode is directly with the tip of soldering iron of +350 ±5°C for 3±1 seconds, and then being placed in natural condition for 24hours.

2. Wash

(1) Cleaning Solvent

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

(2) Cleaning Conditions

- Immersion Wash
  2 minutes max. in above solvent at +60°C max.
- Shower or Rinse Wash
  2 minutes max. in above solvent at +60°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 4minutes.
- Please ensure the component is thoroughly evaluated in your application circuit.
- Please do not use chlorine, petroleum and alkali cleaning solvent.
- 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.

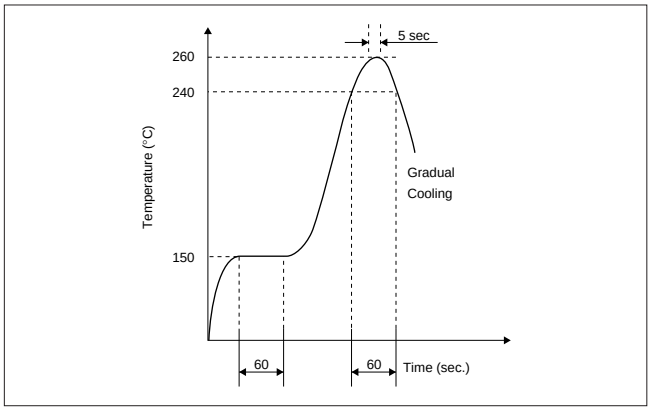
Ceramic Discriminators Notice

Continued from the preceding page.

■ CDSCA Series Notice (Soldering and Mounting)

1. Standard Reflow Soldering Condition

(1) Reflow



(2) Soldering Iron

Lead terminal is directly contacted with the tip of soldering iron of +280±5°C for 3.0 seconds±0.5 seconds.

2. Wash

The component cannot be withstand washing.

Ceramic Discriminators Notice

■ CDBCB 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 well.
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 25C. and below 65%R.H., and solder within 48 hours.

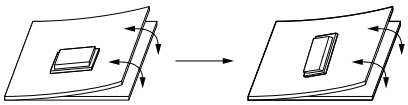
■ CDBLA/CDBLB Series Notice (Handling)

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.
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 emperature, and so on should be evaluated well.

■ CDSCA Series Notice (Handling)

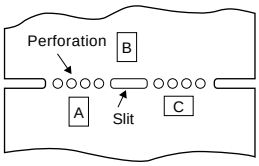
1. The component mounted on the PCB may be damaged if excess mechanical stress is applied.
2. Layout the components on the PCB to minimize the stress imposed by the warp or flexure of the board.
3. After installing components, if solder is excessively applied to the circuit board, mechanical stress will cause destruction resistance characteristics to be lower. To prevent this, be extremely careful in determining shape and dimension before designing the circuit board diagram.
4. When the positioning claw or pick up nozzle are worn, the excess load is applied to the components while positioning or placing are performed. Careful checking and maintenance are necessary to prevent unexpected trouble.
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 considerd 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, curing temperature, and so on must be evaluated deeply.
8. 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.

[Component direction]



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

[Component layout close to board]

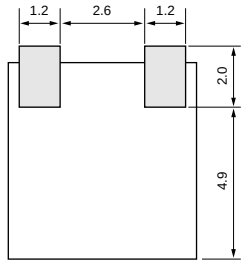


Susceptibility to stress is in the order of : A>C>B

Ceramic Discriminators Standard Land Pattern Dimensions/Packaging

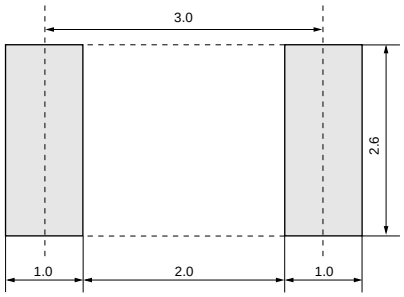
■ Standard Land Pattern Dimensions

CDBCB Series



(in mm)

CDSCA Series



(in mm)

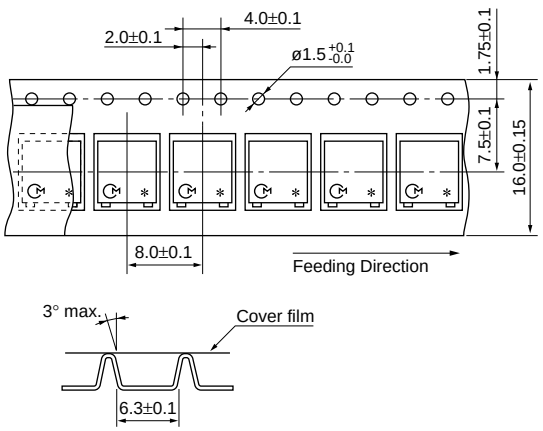
■ Minimum Quantity

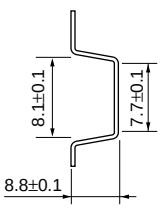
Part Number	Taping ø180mm	Bulk	Magazine
CDBCB Series	500		
CDBLA Series		500	50
CDBLB Series		500	80
CDSCA Series	2000		

The order quantity should be an integral multiple of the "Minimum Quantity" shown above. (pcs.)

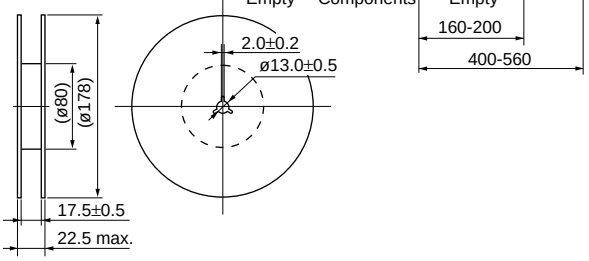
■ CDBCB Series

Dimensions of Carrier Tape





Dimensions of Reel



• The marked part number is faced on the cover film side.

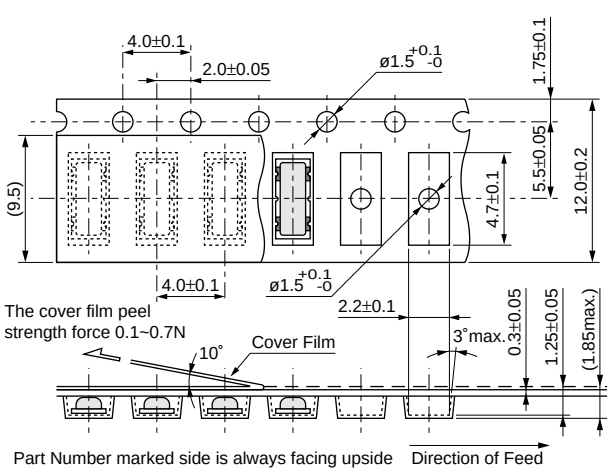
(in mm)

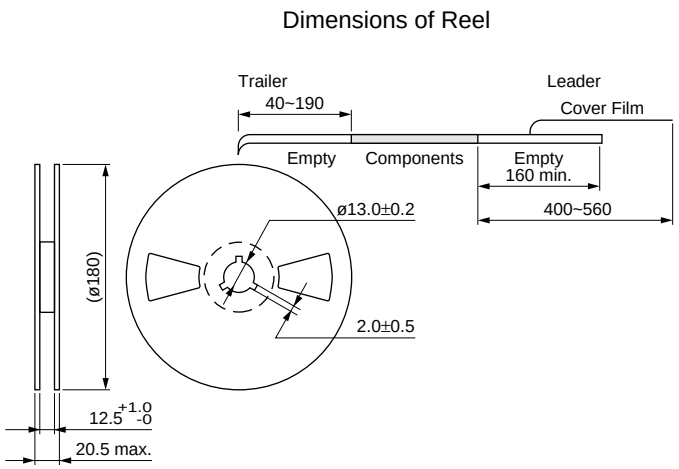
Continued on the following page.

Ceramic Discriminators Standard Land Pattern Dimensions/Packaging

Continued from the preceding page.

■ CDSCA Series





(in mm)

⚠Note:

1. Export Control
   〈For customers outside Japan〉
   Murata products should not be used or sold for use in the development, production, stockpiling or utilization of any conventional weapons or mass-destructive weapons (nuclear weapons, chemical or biological weapons, or missiles), or any other weapons.
   〈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 our products listed in this catalog for the applications listed below which require especially high reliability for the prevention of defects which might directly cause damage to the third party's life, body or property, or when intending to use one of our products for other applications than 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 in the above
3. Product specifications in this catalog are as of July 2002. 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.
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5. This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specification or transact the approval sheet for product specification before ordering.
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8. No ozone depleting substances (ODS) under the Montreal Protocol are used in our manufacturing process.

muRata **Murata Manufacturing Co., Ltd.**

http://www.murata.com/

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