

SURFACE ACOUSTIC WAVE FILTER

Murata

SAW Filter for TV/VCR SAF60/70/80/200Z Series

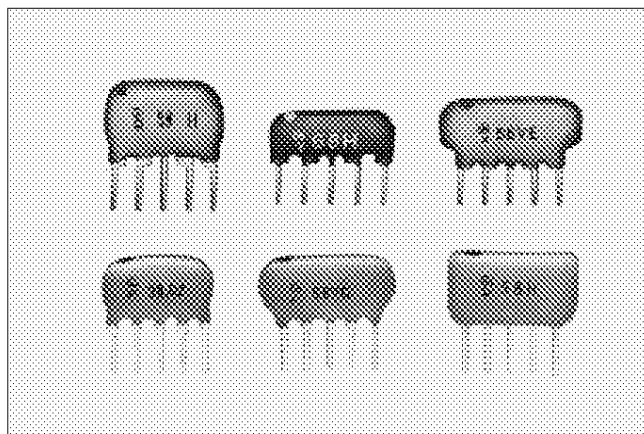
Suitable for Adjustment-free of VIF/SIF Circuit of TV/VCR.

Murata was the first company to manufacture surface acoustic wave filter for TVs and VCRs, using ZnO thin film. Murata has STD (70Z series), low profile (60Z series), electro-magnetically shielded (80Z series), and shielded by metal film package (200Z series).

Murata's resin molded structure is effective for cost saving.

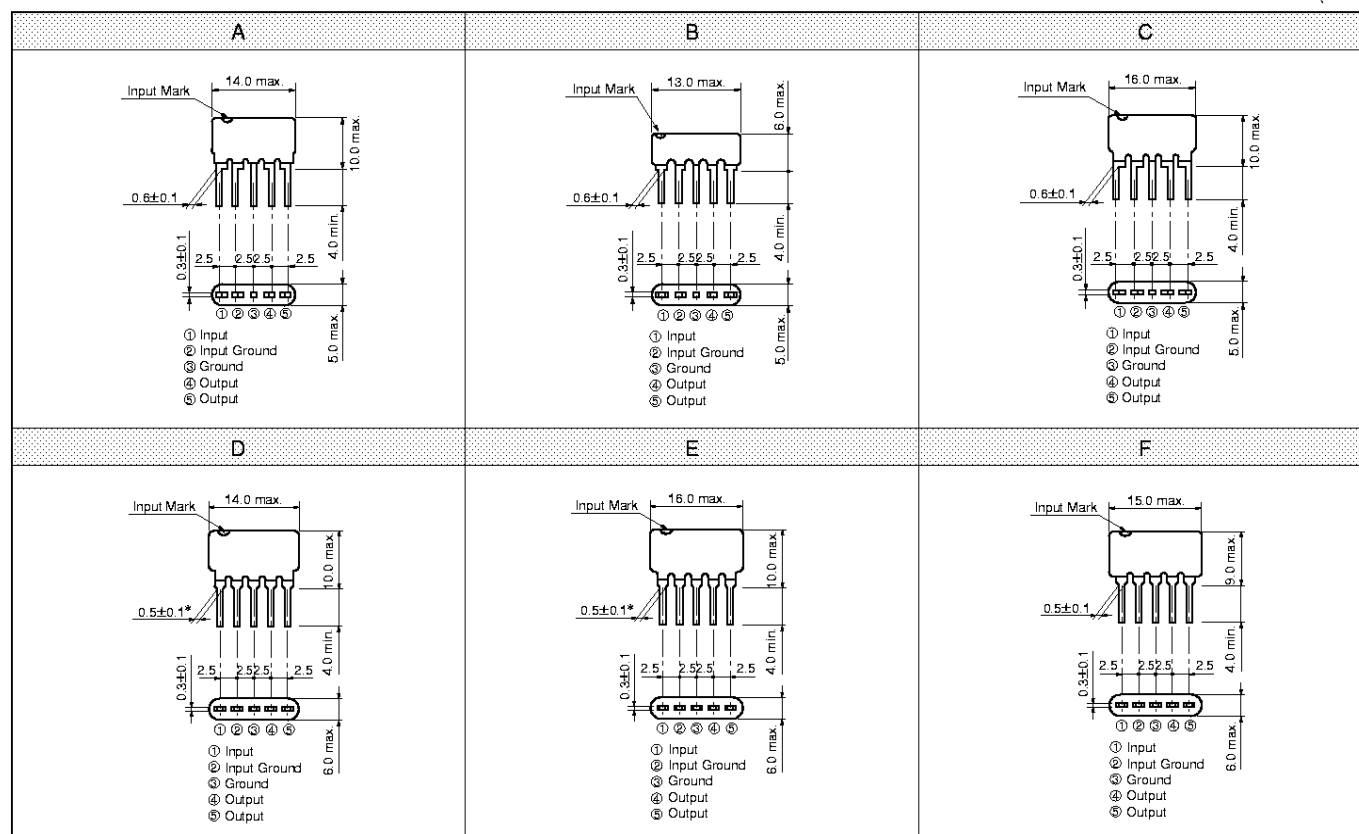
FEATURES

1. Frequency Adjustment-free.
2. High performance. High durability.
3. Low cost due to its resin molded structure.
4. 80Z and 200Z series are electro-magnetically shielded.



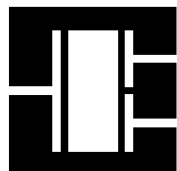
DIMENSIONS

(in mm)



STANDARD PACKAGING QUANTITY

300 pcs./Bag



SURFACE ACOUSTIC WAVE FILTER

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■ SPECIFICATIONS

1. PIF FILTER

● FOR COLOR TV/VCR

Part Number	Insertion Loss [dB]max.	Picture Carrier [dB]	Chroma Carrier [dB]	Sound Carrier [dB]	Adjacent Sound Carrier [dB]min.	Adjacent Picture Carrier [dB]min.	Spurious Response [dB]min.	Temperature Coefficient [ppm/°C]	Frequency Char.	DIMENSIONS
SAF58MH210Z	21 (17)	4.2±1.2	4.2±1.5	20±3	40 (57)	40 (53)	30	-28±20	Fig.-1	F
SAF45MA210Z	21 (18)	4.0±1.2	4.5±1.5	18±3	40 (54)	40 (47)	30	-28±20	Fig.-2	
SAF39.5MZ210Z	25 (22)	5.0±1.2	4.5±1.5	20±3	40 (52)	40 (55)	30	-10±20	Fig.-3	
SAF38.9MZ210Z	24 (19)	5.0±1.2	5.8±1.5	20±3	40 (55)	40 (47)	30	-10±20	Fig.-4	
SAF38.0MZ210Z	27 (25)	6.0±1.5	6.6±1.5	25±3	40 (48)	40 (55)	30	-10±20	Fig.-5	
SAF36.9MZ80Z	25 (21)	5.0±1.2	5.0±1.5	20±3	40 (50)	40 (53)	30	-10±20	Fig.-6	D
SAF32.7MZ80Z	25 (22)	6.5±1.5	1.0±1.0	38 min.	40 (48)	35 (48)	30	-10±20	Fig.-7	
SAF58MVB200Z	20 (15)	4.5±1.2	4.5±1.5	25 min.	40 (55)	40 (57)	30	-28±20	Fig.-8	F
SAF45MVG200Z	21 (19)	4.5±1.2	4.5±1.5	25 min.	40 (55)	40 (47)	29	-28±20	Fig.-9	
SAF38.9MVB200Z	24 (21)	4.5±1.2	4.8±1.5	25 min.	40 (48)	40 (55)	30	-10±20	Fig.-10	

*SAF58MVB200Z, SAF45MVG200Z, and SAF38.9MVB200Z are for picture IF filter in Quasi-parallel or Split Carrier System.

(): Typ value

● FOR LIQUID CRYSTAL COLOR TV (LOW PROFILE)

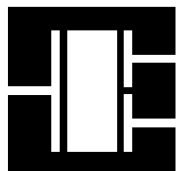
Part Number	Insertion Loss [dB]max.	Picture Carrier [dB]	Chroma Carrier [dB]	Sound Carrier [dB]	Adjacent Sound Carrier [dB]min.	Adjacent Picture Carrier [dB]min.	Spurious Response [dB]min.	Temperature Coefficient [ppm/°C]	Frequency Char.	DIMENSIONS
SAF58MH60Z	20 (16)	4.2±1.2	4.2±1.5	20±3	40 (53)	40 (55)	30	-28±20	Fig.-11	B
SAF45MA60Z	21 (17)	4.0±1.2	4.5±1.5	18±3	40 (58)	40 (55)	30	-28±20	Fig.-12	
SAF39.5MZ60Z	25 (22)	5.0±1.2	5.0±1.5	22±3	40 (50)	40 (53)	30	-10±20	Fig.-13	
SAF38.9MZ60Z	24 (19)	5.0±1.2	5.5±1.5	20±3	40 (48)	40 (48)	30	-10±20	Fig.-14	
SAF32.7MZ60Z	25 (22)	6.5±1.5	1.0±1.0	38 max.	40 (48)	35 (48)	30	-10±20	Fig.-15	

(): Typ value

● FOR NEW-FTZ

Part Number	Insertion Loss [dB]max.	Picture Carrier [dB]	Chroma Carrier [dB]	Sound Carrier [dB]	Adjacent Sound Carrier [dB]min.	Attenuation at f _{as} +1.0MHz [dB]min.	Attenuation at f _{ap} -0.5MHz [dB]min.	Adjacent Picture Carrier [dB]min.	Attenuation at f _{ap} +0.5MHz [dB]min.	Spurious Response [dB]min.	Temperature Coefficient [ppm/°C]	Frequency Char.	DIMENSIONS
SAF38.9MZ215Z	24 (19)	5.0±1.2	5.8±1.5	19±2	44 (56)	42 (52)	—	45 (50)	—	36	-10±20	Fig.-16	F
SAF38.9MZR80Z	24 (22)	4.5±1.2	4.5±1.5	22±3	40 (48)	38 (48)	35 (45)	40 (48)	37 (50)	30	-10±20	Fig.-17	D
SAF38.9MZW210Z	22.5 (20)	4.5±1.2	3.1±1.0	17.5±3	43 (54)	38 (52)	38 (42)	36 (42)	38 (42)	33	-10±20	Fig.-18	F

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● FOR HIGH PICTURE LEVEL(Wide Pass Band TYPE)

Part Number	Insertion Loss [dB]max.	Picture Carrier [dB]	Chroma Carrier [dB]max.	Sound Carrier [dB]min.	Attenuation at $f_p-4.0\text{MHz}$ [dB]max.	Adjacent Sound Carrier [dB]min.	Adjacent Picture Carrier [dB]min.	Spurious Response [dB]min.	Temperature Coefficient [ppm/°C]	Frequency Char.	DIMENSIONS
SAF58MVG80Z	23 (20)	4.8±1.2	1.0	20	5.0 (2.0)	40 (53)	40 (58)	30	-28±20	Fig.-19	E
SAF45MVE80Z	23 (20)	5±1.2	1.2	20	5.5 (2.7)	40 (48)	40 (53)	28	-28±20	Fig.-20	

() : Typ value

● FOR MULTI SYSTEM TV/VCR

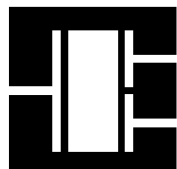
Part Number	Insertion Loss [dB]max.	Picture Carrier [dB]	Chroma Carrier [dB]	Sound 1 Carrier [dB]	Sound 2 Carrier [dB]	Sound 3 Carrier [dB]	Adjacent Sound Carrier [dB]min.	Adjacent Picture Carrier [dB]min.	Spurious Response [dB]min.	Temperature Coefficient [ppm/°C]	System	Frequency Char.	DIMENSIONS
SAF38.0MZE210Z	27 (22)	4.8±1.2	3.8±1.3	17.5±3	—	17.0±3	40 (53)	40 (53)	30 (43)	-10±20	D/K/B/G/I	Fig.-21	F
SAF38.0MZJ80Z	29 (26)	5.1±1.2	4.1±1.5	22.0±3	—	19.5±3	40 (56)	40 (55)	30 (40)	-10±20	D/K/B/G/I	Fig.-22	D
SAF38.9MX200Z	26 (22)	5.0±1.2	3.4±1.0	18.0±3	15.0±3	22.0±4	40 (48)	35 (49)	30 (38)	-10±20	B/G//D/K	Fig.-23	F
SAF38.9MZA80Z	25 (22)	4.5±1.3	4.5±1.3	16.5±3	15.0±3	20.0±3	45 (53)	40 (58)	30 (46)	-10±20	B/G//D/K	Fig.-24	D
SAF38.9MZC200Z	25.5 (22)	3.7±1.3	4.3±1.3	15.5±3	—	16.5±3	40 (50)	40 (47)	30 (36)	-10±20	B/G//D/K	Fig.-25	F

() : Typ value

● FOR LOW INSERTION LOSS APPLICATION

Part Number	Insertion Loss [dB]max.	Picture Carrier [dB]	Chroma Carrier [dB]	Sound Carrier [dB]	Adjacent Sound Carrier [dB]min.	Adjacent Picture Carrier [dB]min.	Spurious Response [dB]min.	Temperature Coefficient [ppm/°C]	Frequency Char.	DIMENSIONS
SAF45MFL200Z	14.5 (11.4)	5.7±1.5	2.8±1.2	20±3	40 (55)	40 (55)	30 (43)	-28±20	Fig.-26	F
SAF45MBP200Z	14.5 (11.5)	4.6±1.5	1.8±1.5	19±3	40 (52)	40 (54)	33 (43)	-28±20	Fig.-27	

() : Typ value



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2. SIF FILTER

● FOR TV/VCR SOUND IF

Part Number	Insertion Loss [dB]max.	Picture Carrier [dB]	Chroma Carrier [dB]min.	Attenuation [dB]max. at fs-0.3MHz	Attenuation [dB]max. at fs+0.3MHz	Adjacent Sound Carrier [dB]min.	Adjacent Picture Carrier [dB]min.	Spurious Response [dB]min.	Spurious Response [dB]min.	Temperature Coefficient [ppm/°C]	Frequency Char.	DIMENSIONS
SAF54MC200Z	16 (13)	40 min.	17	3	3	40	37	28 [0-52.75MHz]	30 [56.75-70MHz]	-28±20	Fig.-28	F
SAF41MC200Z	17 (14)	40 min.	17	3	3	40	37	28 [0-39.75MHz]	30 [43.75-56MHz]	-28±20	Fig.-29	
SAF39.2MC70Z	19 (14)	40 min.	35	6	6	40	30	30 [28-31.2MHz]	30 [40.7-45MHz]	-10±20	Fig.-30	A
SAF33.4MC200Z	20 (18)	40 min.	20	4	4	40	35	30 [0-31.9MHz]	30 [40.4-47MHz]	-10±20	Fig.-31	F
SAF54MD200Z	20 (17)	within±3	20	fs-0.2MHz 3	fs+0.2MHz 3	35	30	28 [0-70MHz]	15*1 [55.5-57.5MHz]	-28±20	Fig.-32	
SAF41MD200Z	17 (14)	within±3	20	fs-0.2MHz 3	fs+0.2MHz 3	35	35	30 [0-55MHz]	15*1 [42.5-44.5MHz]	-28±20	Fig.-33	
SAF33.4MD200Z	20.5 (16)	within±3	20	fs-0.2MHz 3	fs+0.2MHz 3	35	35	30 [0-50MHz]	15*1 [34.67-37.7MHz]	-10±20	Fig.-34	
SAF33.0MDA70Z	26 (23)	5.0±3.0	12	fs-0.2MHz 3	fs+0.2MHz 3	26	20	15 [0-39.5MHz]	8*1 [34.67-37MHz]	-10±20	Fig.-35	A
SAF32.9MDE70Z	25 (23)	4.3±3.0	15	fs-0.2MHz 3	fs+0.2MHz 3	35	25	22 [0-31.5MHz]	10*1 [35.27-38MHz]	-10±20	Fig.-36	
SAF31.4MD70Z	28 (26)	within±3	15	fs-0.2MHz 3	fs+0.2MHz 3	35	35	30*1 [0-45MHz]	15*1 [32.645-35.675MHz]	-10±20	Fig.-37	

● SAF54MC200Z, SAF41MC200Z and SAF33.4MC200Z are for Split Carrier System.

● SAF54MD70Z, SAF41MD70Z, SAF33.4MD70Z and SAF31.4MD70Z are for Quasi-Parallel System.

● SAF33.0MDA70Z is for Multi-Sound TV of Northern Europe.

● SAF32.9MDE70Z is for Multi-Sound TV of U. K.

● *1 : Minimum attenuation between picture carrier and sound carrier.

● 0 dB level should be at fs.

● FOR MULTI SYSTEM TV/VCR SOUND IF

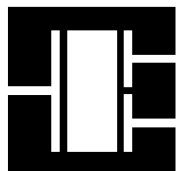
Part Number	Insertion Loss [dB]max.	Picture Carrier [dB]min.	Chroma Carrier [dB]min.	Attenuation [dB]max. at fs-0.3MHz	Sound 1 (fs1) Carrier [dB]max.	Sound 2 (fs2) Carrier [dB]max.	Attenuation [dB]max. at fs+0.3MHz	Adjacent Sound Carrier [dB]min.	Adjacent Picture Carrier [dB]min.	Spurious Response [dB]min.	Spurious Response [dB]min.	Temperature Coefficient [ppm/°C]	Frequency Char.	DIMENSIONS
SAF32.0MCA70Z	26 (23)	35 (55)	25 (35)	6	3	3	6	40 (55)	35 (50)	30 [0-30MHz]	22 [33.57-42MHz]	-10±20	Fig.-38	C
SAF32.9MCA70Z	25 (22)	35 (53)	25 (34)	6	3	3	6	40 (55)	35 (43)	30 [0-30.9MHz]	22 [34.47-42MHz]	-10±20	Fig.-39	
SAF33.4MCB200Z	29 (26)	30 (47)	14 (30)	6	3	3	6	30 (46)	35 (50)	25 [0-30.9MHz]	25 [40.4-46MHz]	-10±20	Fig.-40	F
SAF33.4MCD70Z	29 (26)	30 (49)	20 (37)	2 [32.348 MHz]	2	2.5	8	30 (50)	28 (42)	25 [0-30.9MHz]	30 [40.4-46MHz]	-10±20	Fig.-41	A

● 0 dB level should be at fs.

() : Typ value

(Note. 1) Since Insertion Loss of Surface Acoustic Wave Filter varies with matching state, values of insertion loss in the table are not always in conformity with insertion loss of actual circuit.

(Note. 2) fp --Picture Carrier, fc --Chroma Carrier, fs --Adjacent Sound Carrier, fap --Adjacent Picture Carrier.



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■ FREQUENCY CHARACTERISTICS

1. PIF FILTER

● FOR COLOR TV/VCR

● SAF58MH210Z

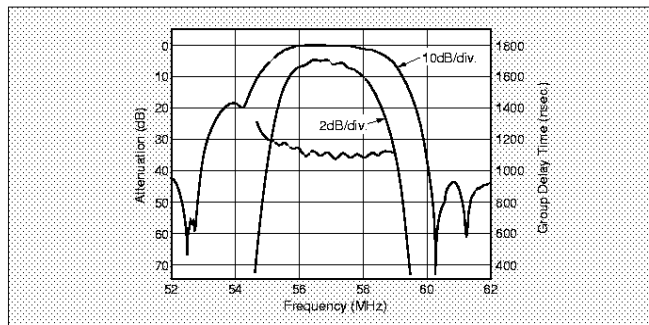


Fig.-1

● SAF45MA210Z

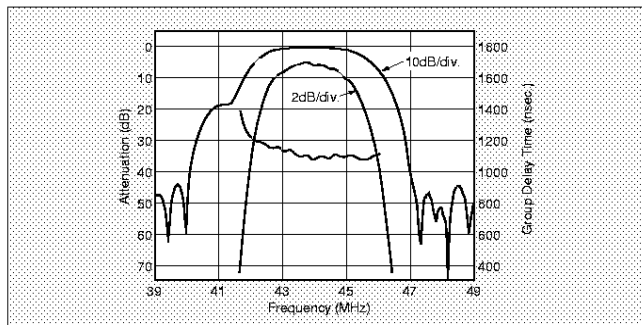


Fig.-2

● SAF39.5MZ210Z

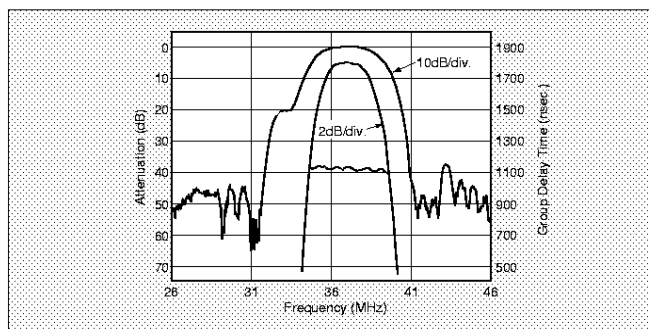


Fig.-3

● SAF38.9MZ210Z

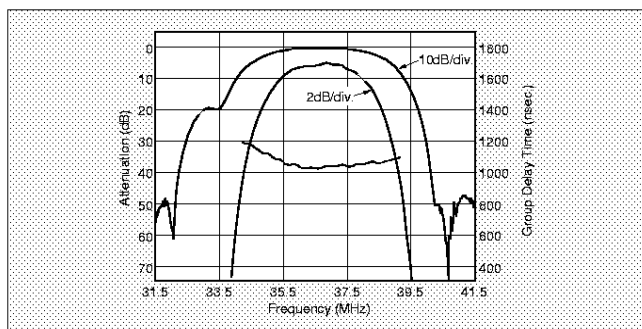


Fig.-4

● SAF38.0MZ210Z

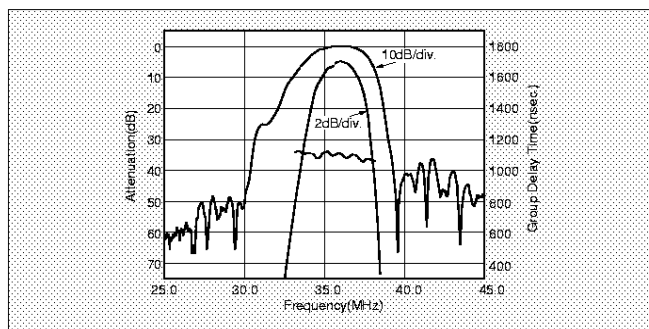


Fig.-5

● SAF36.9MZ80Z

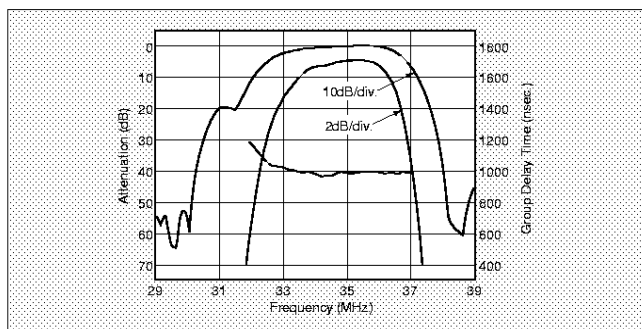


Fig.-6

● SAF32.7MZ80Z

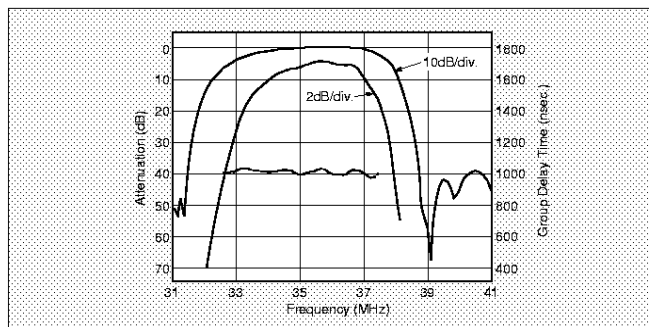


Fig.-7

● SAF58MVB200Z

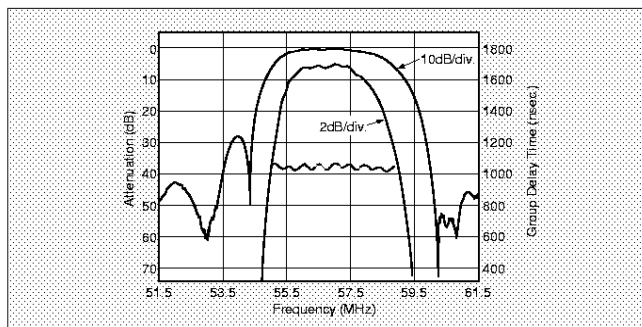
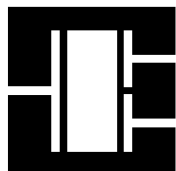


Fig.-8



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●SAF45MVG200Z

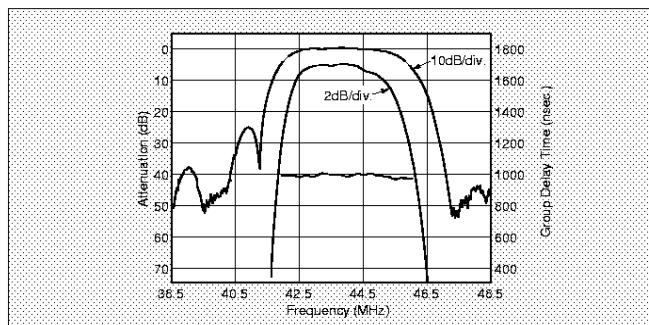


Fig.-9

●SAF38.9MVB200Z

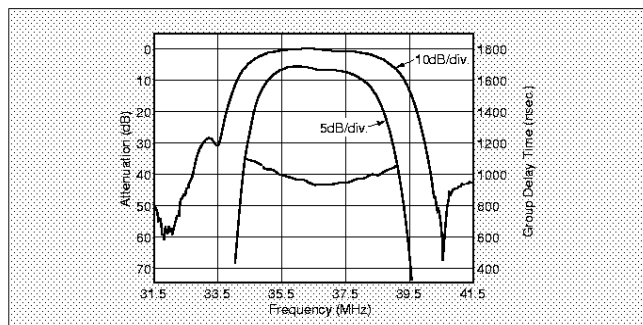


Fig.-10

●FOR LIQUID CRYSTAL COLOR TV(LOW PROFILE)

●SAF58MH60Z

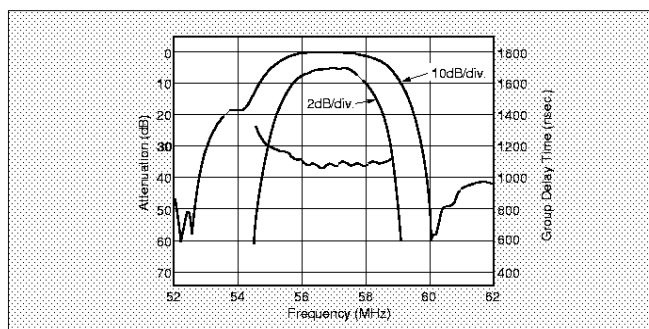


Fig.-11

●SAF45MA60Z

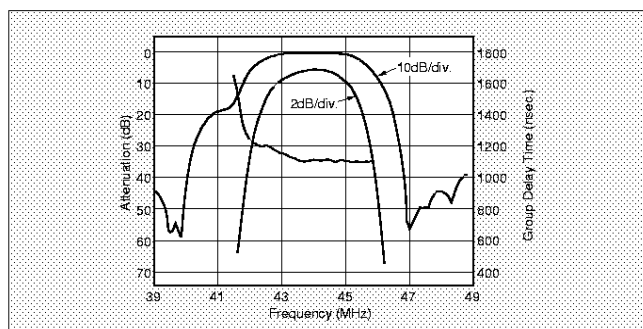


Fig.-12

●SAF39.5MZ60Z

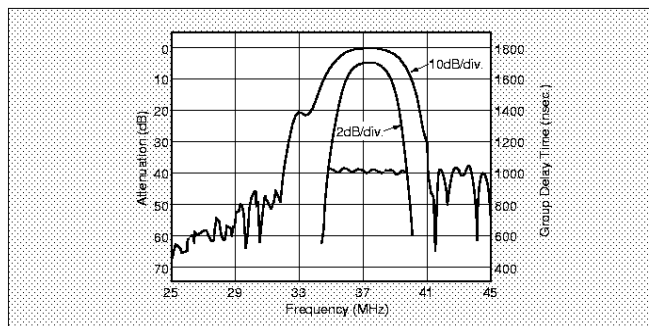


Fig.-13

●SAF38.9MZ60Z

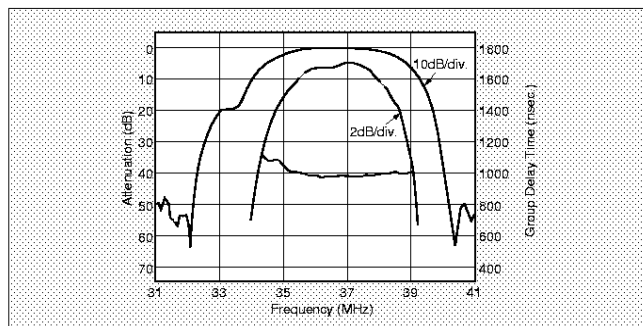


Fig.-14

●SAF32.7MZ60Z

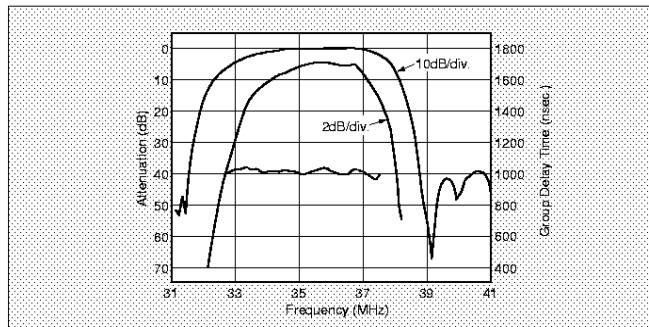
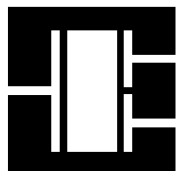


Fig.-15



SURFACE ACOUSTIC WAVE FILTER

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● FOR NEW-FTZ

● SAF38.9MZ215Z

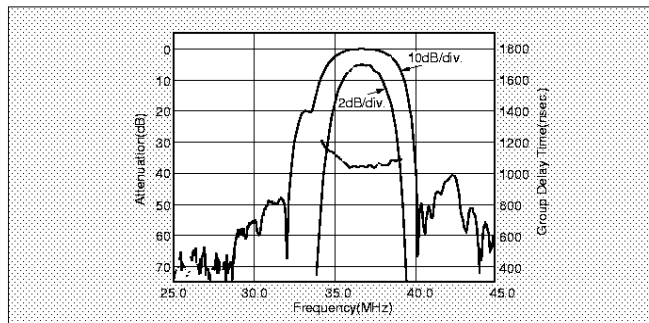


Fig.-16

● SAF38.9MZ80Z

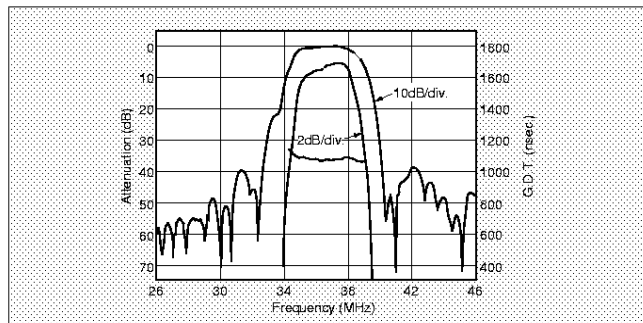


Fig.-17

● SAF38.9MZW210Z

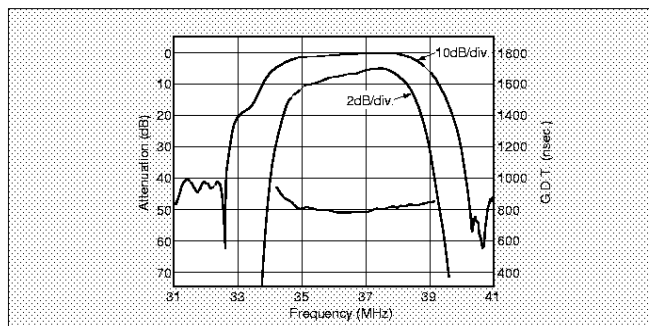


Fig.-18

● FOR HIGH PICTURE LEVEL

● SAF58MVG80Z

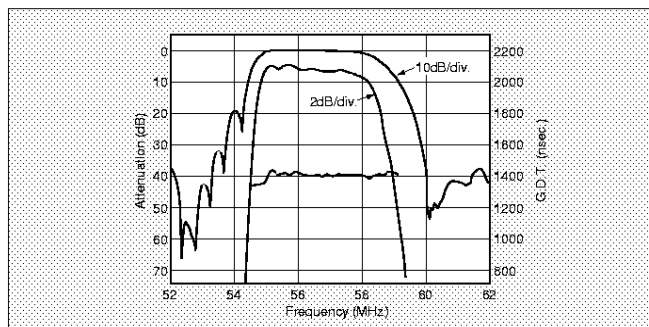


Fig.-19

● SAF45MVE80Z

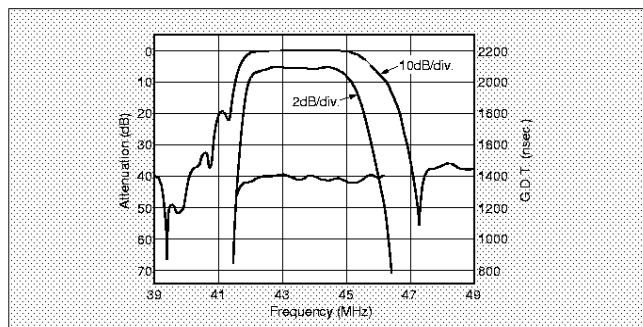
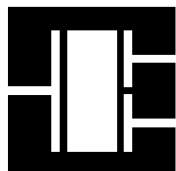


Fig.-20



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● FOR MULTI SYSTEM TV/VCR

● SAF38.0MZE210Z

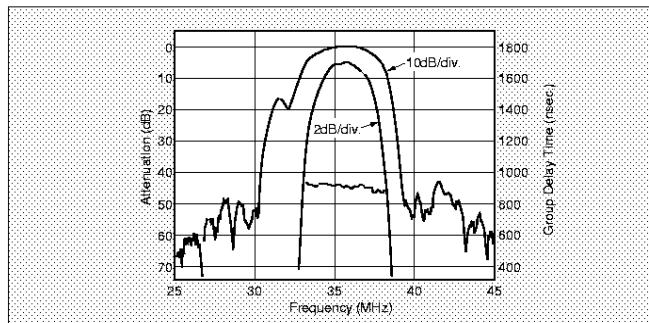


Fig.-21

● SAF38.0MZJ80Z

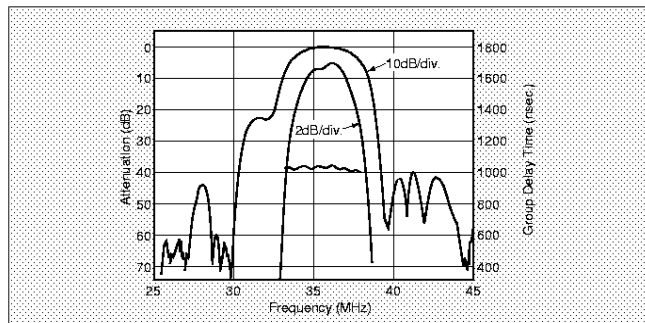


Fig.-22

● SAF38.9MX200Z

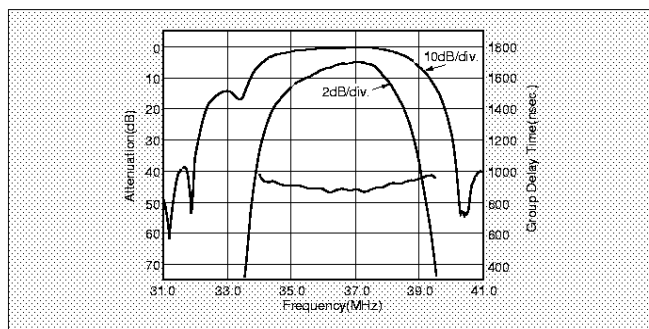


Fig.-23

● SAF38.9MZA80Z

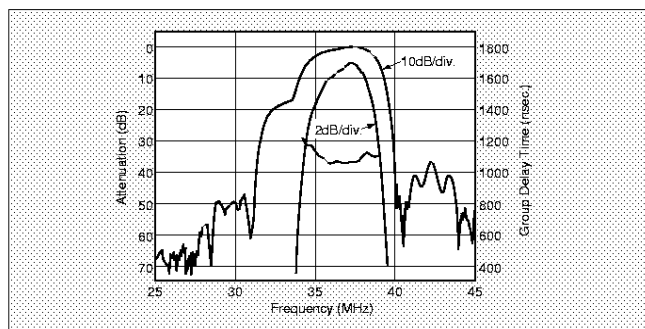


Fig.-24

● SAF38.9MZC200Z

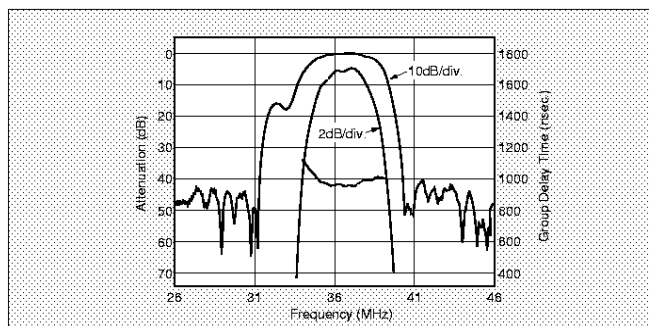


Fig.-25

● FOR INSERTION LOSS APPLICATION

● SAF45MFL200Z

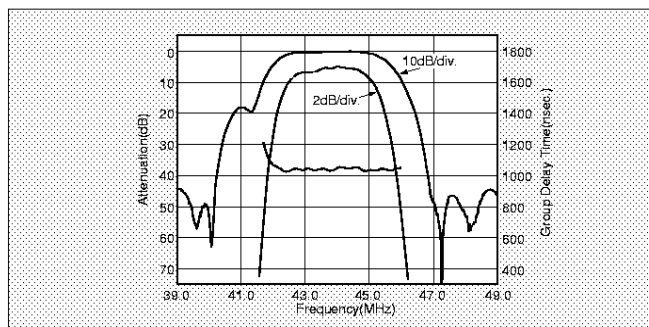


Fig.-26

● SAF45MBP200Z

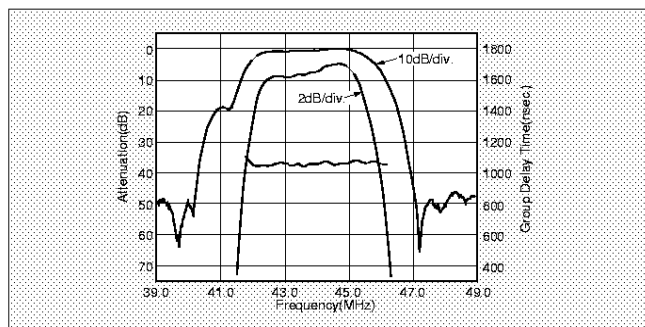
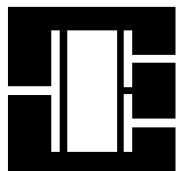


Fig.-27



SURFACE ACOUSTIC WAVE FILTER

muRata

SAW Filter for TV/VCR SAF60/70/80/200Z Series

2. SOUND IF FILTER

● FOR TV/VCR SOUND IF

● SAF54MC200Z

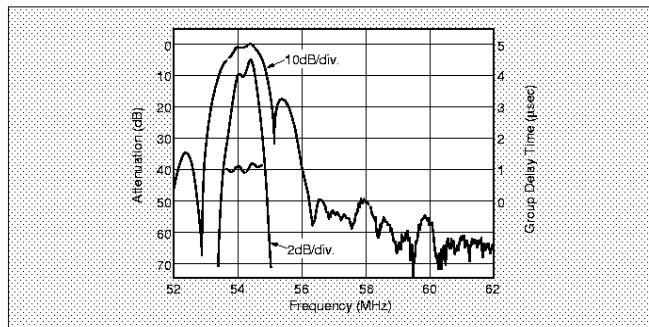


Fig.-28

● SAF41MC200Z

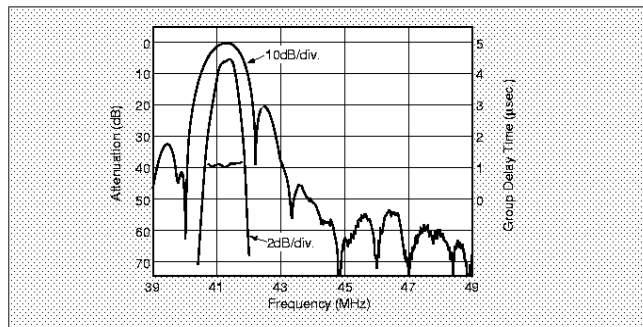


Fig.-29

● SAF39.2MC70Z

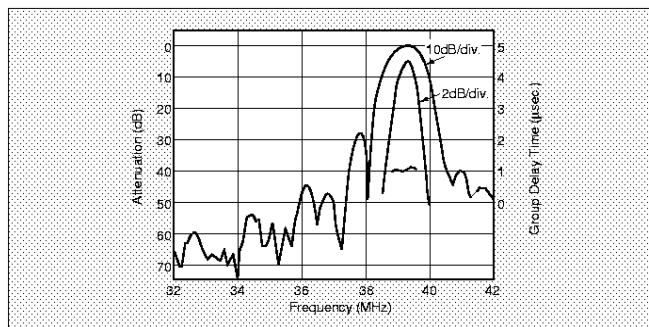


Fig.-30

● SAF33.4MC200Z

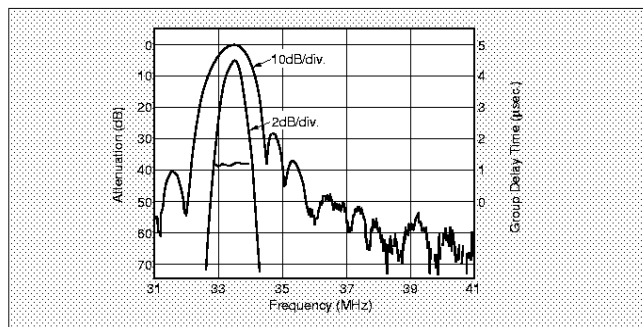


Fig.-31

● SAF54MD200Z

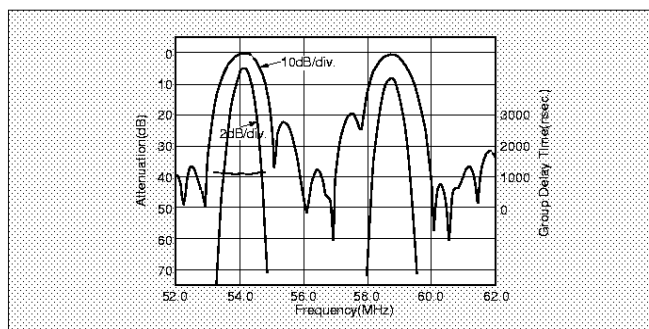


Fig.-32

● SAF41MD200Z

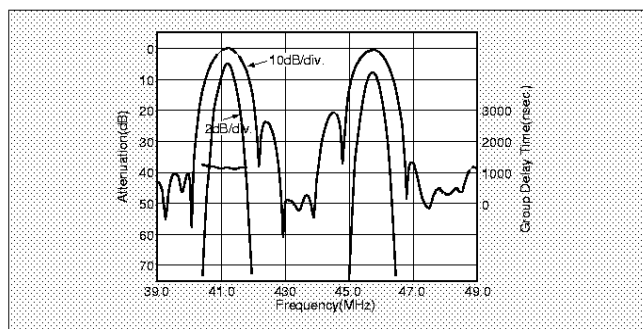


Fig.-33

● SAF33.4MD200Z

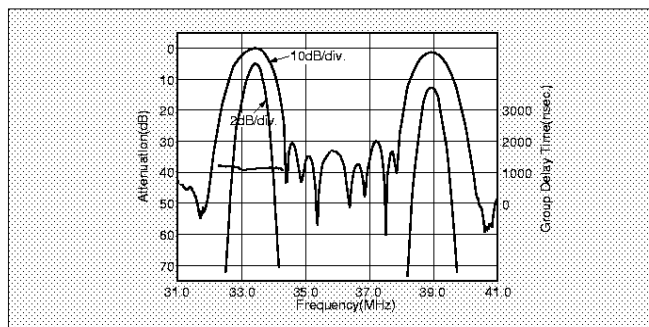


Fig.-34

● SAF33.0MDA70Z

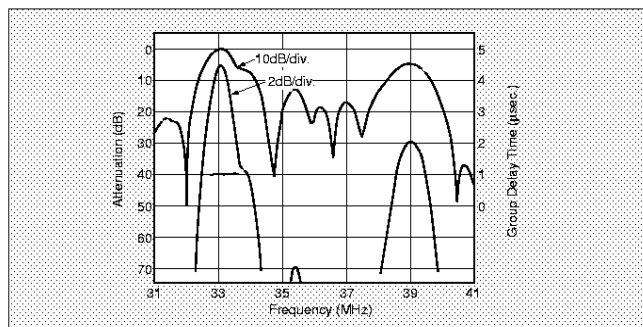
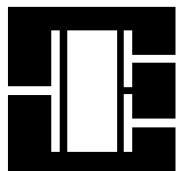


Fig.-35



SURFACE ACOUSTIC WAVE FILTER

muRata

SAW Filter for TV/VCR SAF60/70/80/200Z Series

●SAF32.9MDE70Z

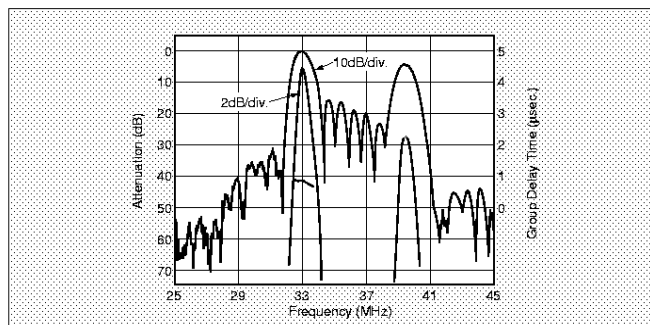


Fig.-36

●SAF31.4MD70Z

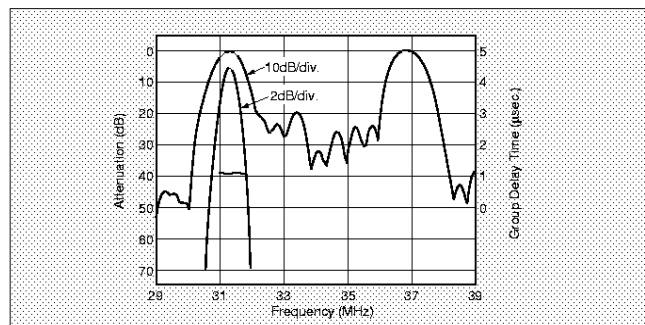


Fig.-37

●FOR MULTISYSTEM TV/VCR SOUND IF

●SAF32.0MCA70Z

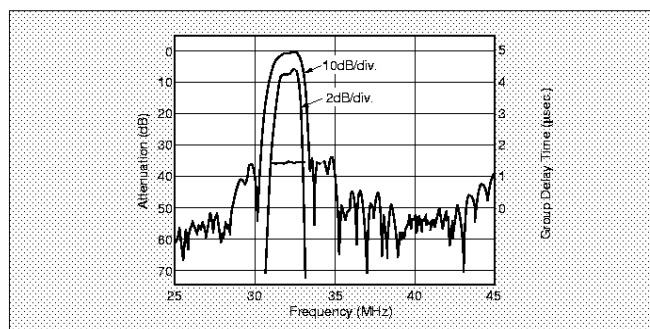


Fig.-38

●SAF32.9MCA70Z

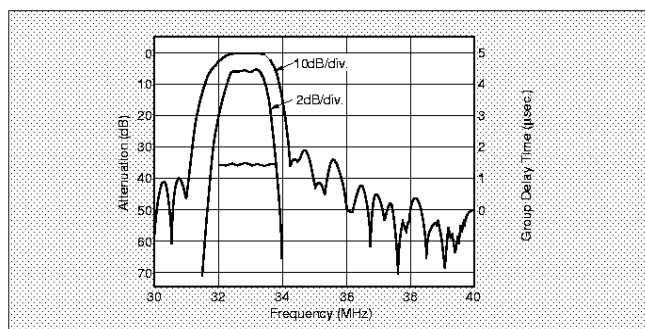


Fig.-39

●SAF33.0MCB200Z

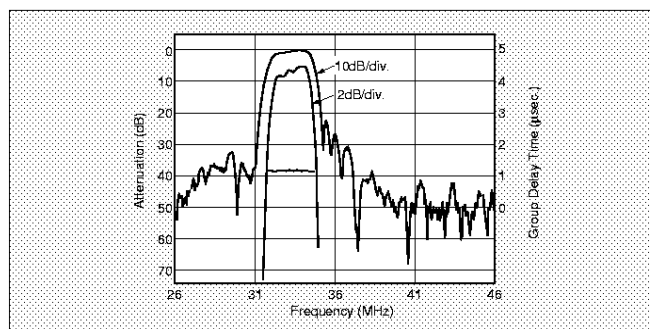


Fig.-40

●SAF33.4MCD70Z

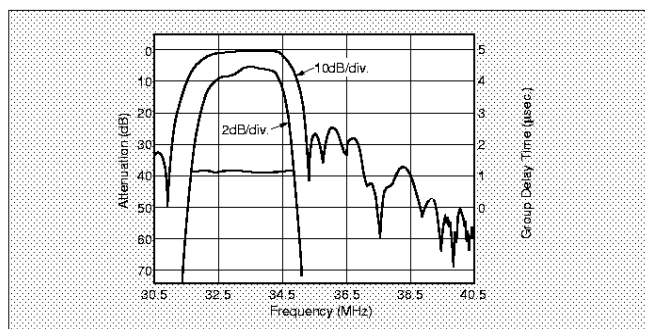


Fig.-41

■DESIGNING OF APPLICATION CIRCUIT

Direct signal propagation between input and output, what we call direct breakthrough, is a peculiar phenomenon of SAW filters.

In the worst case, bad attenuation may occur at stop band or ripple at pass band. In such a case, reexamination of ground pattern, layout and ground point of by-pass capacitor are needed.