



# SAW Filters & SAW Duplexers

Product Name	Part Number	Package Type	Minimum Quantity* (Pieces)	
			Bulk	Tape
SAW Filter	CQSF_SS-33(8) / CQSF_SS-33(6)	SMD Type	-	1,000
SAW Filter	CQSF_SS-38(8) / CQSF_SS-38(6)	SMD Type	-	1,000
SAW Filter	CQSF_SS-55	SMD Type	-	1,000
SAW Filter	CQSF_F-11SS	SMD Type	-	500
SAW Filter	CQX_D / CQK_D / CQM_D	Lead Type	500	-
SAW Filter	CQSF_F-11	Lead Type	500	-
SAW Filter	CQSF_TO-39 / CQSF_TO-39-2	Lead Type	500	-
SAW Filter	CQSF_TO-39-3 / CQSF_TO-39-4	Lead Type	500	-

\* The quantity of each delivery / order must be an integral multiple of the "Minimum Quantity"

## ● Dimension

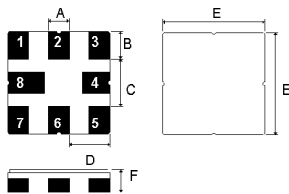
### SS-33(8)

Pin No.	Function*
1	Input
2	Input ground
5	Output
6	Output ground
3,7	To be grounded
4,8	Case ground

\* Pin function may vary

SS-33(8)	
A	0.6
B	0.75
C	1.5
D	1.2
E	3.0
F	1.1

Unit: mm  
Tolerance: ±0.3mm



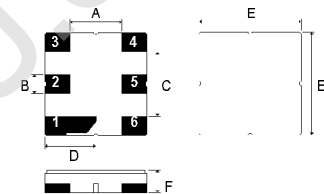
### SS-33(6)

Pin No.	Function*
2	Input / output
5	Output / input
1,3,4,6	Ground

\* Pin function may vary

SS-33(6)	
A	1.5
B	0.6
C	1.8
D	1.5
E	3.0
F	1.1

Unit: mm  
Tolerance: ±0.3mm



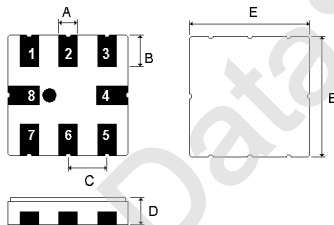
### SS-38(8)

Pin No.	Function*
1	Input
2	Input ground
5	Output
6	Output ground
3,7	To be grounded
4,8	Case ground

\* Pin function may vary

SS-38(8)	
A	0.6
B	1.0
C	1.27
D	1.5
E	3.8

Unit: mm  
Tolerance: ±0.3mm



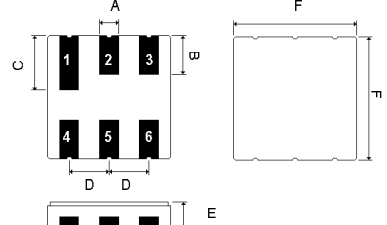
### SS-38(6)

Pin No.	Function*
2	Input / output
5	Output / input
1,3,4,6	Ground

\* Pin function may vary

SS-38(6)	
A	0.6
B	1.0
C	1.6
D	1.27
E	1.2
F	3.8

Unit: mm  
Tolerance: ±0.3mm



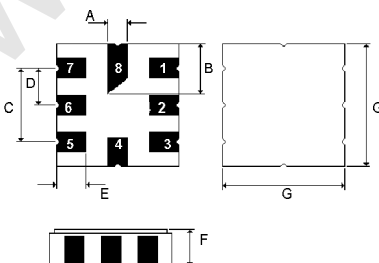
### SS-55

Pin No.	Function*
1	Input
5	Output
2,7	Input ground
3,6	Output ground
4,8	Case ground

\* Pin function may vary

SS-55	
A	0.6
B	2.08
C	2.54
D	1.27
E	1.2
F	1.35
G	5.0

Unit: mm  
Tolerance: ±0.3mm



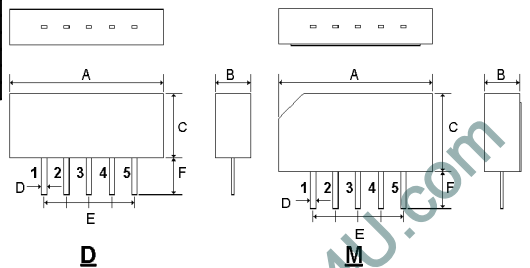
### D / M

Pin No.	Function*
1	Input
2	Input ground
3	Ground
4	Output
5	Output

\* Pin function may vary

	X D	X M
A	14.5	17.3
B	3.8	3.9
C	5.8	8.7
D	0.54	0.64
E	4x2.54	4x2.54
F	3.5	3.5

Unit: mm  
Tolerance: ±0.3mm





**TO-39-2 / TO-39-3 / TO-39 / TO-39-4**

Pin No.	Function*
1	Input / output
2	Output / input
3	Ground

\* Pin function may vary

	TO-39-2
A	∅5.08
B	∅9.15
C	3.5 max.
D	2.0 min.
E	∅0.5 x 3

Unit: mm  
Tolerance: ±0.3mm

Pin No.	Function*
1	Input / output
2	Output2 / input2
3	Output1 / input1
4	Ground

\* Pin function may vary

	TO-39-3
A	∅5.08
B	∅9.15
C	3.5 max.
D	2.0 min.
E	∅0.5 x 3

Unit: mm  
Tolerance: ±0.3mm

Pin No.	Function*
1	Input
2	Output
3	Ground

\* Pin function may vary

	TO-39
A	∅5.08
B	∅9.15
C	3.5 max.
D	2.0 min.
E	∅0.5 x 3

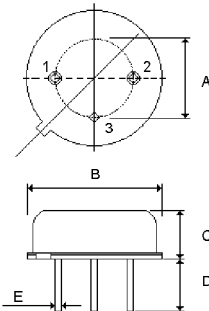
Unit: mm  
Tolerance: ±0.3mm

Pin No.	Function*
1	Ground
2	Ground
3	Input / output
4	Output / input
5	Ground

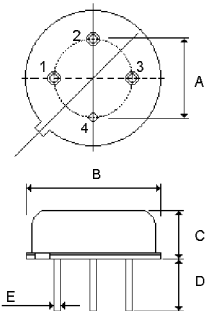
\* Pin function may vary

	TO-39-4
A	∅9.16
B	∅15.3
C	4.5 max.
D	3.5 min.
E	∅0.65 x 5
F	2.54

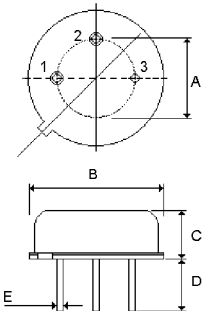
Unit: mm  
Tolerance: ±0.3mm



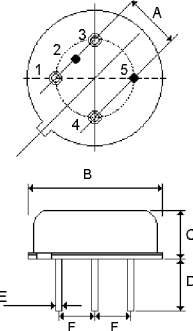
**TO-39-2**



**TO-39-3**



**TO-39**



**TO-39-4**

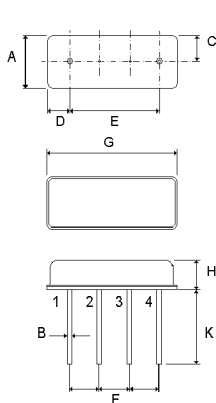
**F-11 / F-11SS**

Pin No.	Function*
1	Input / output
2,3	Ground
4	Output / input

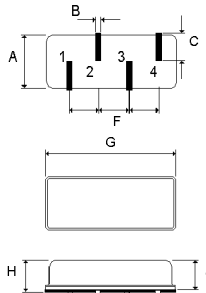
\* Pin function may vary

	F-11	F-11SS
A	4.5±0.5	4.5±0.5
B	0.45±0.2	0.6±0.05
C	2.25±0.2	2.45±0.2
D	1.7±0.2	-
E	7.6±0.2	-
F	2.54±0.2	2.54±0.2
G	11.0±0.5	11.0±0.5
H	3.2±0.3	4.1±0.3
J	-	3.4±0.3
K	6.3±0.5	-

Unit: mm  
Tolerance: ±0.3mm



**F-11**



**F-11SS**



## ● Front-end SAW Filters For Automotive Electronics &amp; Remote Controls

Center Frequency (MHz)	Insertion Loss (dB max.)	3dB Bandwidth (MHz)	Package	Application(s)
295	3.0	0.6	TO-39	Automotive Electronics & Remote Controls
303.825	3.0	0.6	TO-39	
303.825	3.0	0.6	SS-55	
303.875	3.0	0.6	TO-39	
303.875	3.0	0.6	SS-55	
310	3.0	0.8	SS-55	
315	3.0	0.6	TO-39	
315	3.0	0.6	F-11	
315	3.0	0.6	SS-55	
315.5	3.0	0.6	TO-39	
318	3.0	0.6	TO-39	
319.5	2.5	0.7	TO-39	
345	2.5	4.5	SS-38(8)	
345	3.0	0.9	SS-55	
372.5	3.0	0.6	TO-39	
390	3.0	1.0	SS-55	
395	3.0	1.0	SS-55	
401.65	3.0	0.6	SS-55	
401.9	3.0	0.6	TO-39	
418	3.0	0.6	TO-39	
418	3.0	0.6	SS-55	
419.2	3.0	1.2	SS-55	
430.5	3.0	0.6	TO-39	
430.5	3.0	0.6	F-11	
433.42	3.5	0.6	SS-55	
433.42	3.0	0.9	SS-38(6)	
433.92	3.0	0.6	TO-39	
433.92	3.0	0.6	F-11	
433.92	3.0	0.6	SS-55	
433.92	2.0	0.73	TO-39	
433.92	2.0	0.73	SS-55	
433.92	2.5	0.6	SS-55	
433.92	2.5	0.95	SS-55	
433.92	2.2	0.7	SS-55	
433.92	2.8	6.0	SS-38(8)	
433.92	2.3	0.56	SS-38(8)	
434.42	3.0	0.6	SS-55	
463.912	2.5	1.2	SS-55	
499.25	3.0	0.54	TO-39	
859.15	4.0	1.0	F-11	
868	3.5	1.2	SS-55	
868.3	4.0	1.2	SS-55	
868.35	4.0	1.2	F-11	
868.35	4.0	1.2	SS-55	
868.35	3.5	1.8	SS-38(8)	
902.3	3.5	1.2	SS-55	
914.5	3.8	1.2	F-11	
915	3.5	1.2	TO-39	
915	4.0	1.2	SS-55	
916.5	4.0	1.2	TO-39	
916.5	3.5	1.2	F-11	
916.5	4.0	1.2	SS-55	
916.5	4.0	1.2	SS-55	

- Other frequencies and specifications are also available upon request, please consult with our sales representatives.



● SAW Filters For Satellite Receiver

Center Frequency (MHz)	Insertion Loss (dB max.)	3dB Bandwidth (MHz)	Package	Application(s)
480.0	21	18	TO-39-2	One-Channel Satellite Filters
	21	18	SS-55	
	22.5	27	TO-39-2	
	22.5	27	SS-55	
	20	27	TO-39-2	
	21	36	TO-39-2	
	15	16	TO-39	
	4	22	TO-39-2	
479.5	24	54	TO-39-3	
	21.5	8	TO-39-2	
	21.5	8	SS-55	
	18	6.5	TO-39-2	
	22	16 (5.5dB)	TO-39-3	
	22	16 (5.5dB)	F-11	
	22	16 (5.5dB)	SS-55	
	23.3	18 (5.5dB)	TO-39-3	
	21 / 21	27 / 18	TO-39-3	
	21.8 / 22	15 / 27	TO-39-3	
22 / 25	27 / 36	TO-39-3		
480.0	21.5 / 23.5	8 / 54	TO-39-3	
402.78	20.5 / 20.0	15.5 / 28.0	TO-39-3	
	20.5 / 20.0	15.5 / 28.0	SS-55	

- Other frequencies and specifications are also available upon request, please consult with our sales representatives.

● SAW Filters For CATV Channel (PAL Systems)

Center Frequency (MHz)	Insertion Loss (dB max.)	1dB Bandwidth (MHz)	Passband Ripple (dB max.)	Package
52.5	23.0 (typical)	6.75MHz (Ch1~Ch5) 6.50MHz	±0.6	TO-39-4
68.5				
88.0				
179.0				
195.0				
211.0				
115.0				
131.0				
147.0				
163.0				
60.5				
80.0				
171.0				
187.0				
203.0				
219.0				
123.0				
139.0				
155.0				
227.0				
610.0	6.5 (typical)	6.75MHz (Ch1~Ch5) 6.50MHz	±1.0	TO-39

- Other frequencies and specifications are also available upon request, please consult with our sales representatives.

● RF Filters For Cellular Phone

System	Center Frequency (MHz)	Bandwidth (MHz)	Insertion Loss (dB max.)	Package
AMPS	Tx	836.5	25	2.7
	Rx	881.5	25	2.7
CDMA	Tx	902.5	25	2.7
	Rx	947.5	25	2.7
GSM	Tx	897.5	26	3.0
			35	2.7
EGSM	Rx	945.0	35	2.7
			35	2.7
PCN / DCS	Rx	1842.5	75	3.5
K-PCS	Rx	1855.0	30	3.0

- Other frequencies and specifications are also available upon request, please consult with our sales representatives.



● SAW Duplexers For Cordless Phone

Lower Center Frequency (MHz)	Upper Center Frequency (MHz)	Insertion Loss (dB max.)	System	Package
26.40	41.40	6.0 / 4.0	CT1	W2
45.24	48.24	4.5 / 4.5		
46.79	49.83	3.5 / 3.5		
903	927	3.5 / 3.5	ISM band	SS-38(8)
903.45	926.45	3.5 / 3.5		
		3.5 / 3.5		
903.75	926.25	3.5 / 3.5	ISM band	TO-39
		3.5 / 3.5		TO-39
		3.5 / 3.5		SS-55
		3.5 / 3.5		SS-55
		3.5 / 3.5		SS-38(8)
914.5	959.5	3.5 / 3.5	CT1	TO-39
		3.5 / 3.5		TO-39
		3.5 / 3.5		SS-55
		3.5 / 3.5		SS-55
		3.5 / 3.5		SS-38(8)

- Other frequencies and specifications are also available upon request, please consult with our sales representatives.

● SAW Filters For FRS & PMA

Center Frequency (MHz)	Bandwidth (MHz)	Insertion Loss (dB max.)	Rejection (dB min.)	I/O Impedance (Ω)	Package
295	±2.0 (Typical)	4.5	50	50	TO-39
311				150	F-11
311				150	SS-55
315				50	SS-55
318				50	TO-39
350				50	F-11
350				50	SS-55
380				50	SS-55
395				50	SS-55
400				50	F-11
403				50	F-11
406				50	F-11
410				50	F-11
410				150	F-11
410				50	F-11SS
410				50	SS-55
410				50	SS-38(6)
418				150	F-11
425				50	SS-38(6)
426				50	F-11
426				50	SS-55
426				50	SS-38(6)
429				50	SS-38(6)
430				50	F-11
430				50	SS-38(6)
434				50	SS-38(6)
446				50	F-11
446				150	F-11
446				50	SS-55
446				150	SS-55
448				50	SS-38(6)
450				50	F-11
450	50	SS-38(6)			
455	50	SS-38(6)			
458	50	F-11			
460	50 // 10nH	SS-55			
465	50	F-11			
465	150	F-11			
465	50	F-11SS			
465	150	F-11SS			
465	50	SS-55			
465	50	SS-38(6)			
470	50	F-11			
475	50	F-11			

- Other frequencies and specifications are also available upon request, please consult with our sales representatives.



## ● IF Filters For Wireless LAN

Center Frequency (MHz)	3dB Bandwidth (MHz)	Insertion Loss (dB max.)	Package
280	20	11	SS-55
374	22	9	TO-39
374	22	8.5	TO-39
374	22	9	SS-55
374	22	8.5	SS-55
374	19	9	SS-55
374	20.5	9	SS-55
374	23	9	SS-38(8)

- Other frequencies and specifications are also available upon request, please consult with our sales representatives.

## ● RF Filters For GPS

Center Frequency (MHz)	Bandwidth (MHz)	Insertion Loss (dB max.)	Package
1542.50	34	3.3	SS-33(6)
1575.42	2.4	1.6	SS-33(6)

- Other frequencies and specifications are also available upon request, please consult with our sales representatives.

## ● IF Filters For Base Station

Center Frequency (MHz)	3dB Bandwidth (MHz)	Insertion Loss (dB max.)	System	Package
70	6.0	21.8	CDMA	DIP3512*
70	19.2	34.3		DIP3512*
233.15	0.52	14.2	PHS	F-16*

- Other frequencies and specifications are also available upon request, please consult with our sales representatives.

\* For package information, please contact our sales representative for more information

## ● IF Filters For Wireless Local Loop / Broadband Access

Center Frequency (MHz)	3dB Bandwidth (MHz)	Insertion Loss (dB max.)	System	Package
110.592	±0.576 min.	3.5	DECT	SR-75*
112.32	1.05	13.5		DOC14C*
204	1.15	9	SCDMA	SR-75*

- Other frequencies and specifications are also available upon request, please consult with our sales representatives.

\* For package information, please contact our sales representative for more information

## ● IF Filters For Pager Application

Center Frequency (MHz)	3dB Bandwidth (MHz)	Insertion Loss (dB max.)	Package
139	±4.0	6.5 max.	F-11
147	±4.0	6.5 max.	F-11
147	±4.0	6.5 max.	SS-55
155	±4.0	6.5 max.	F-11
155	±4.0	6.5 max.	SS-55
163	±4.0	6.5 max.	F-11
163	±4.0	6.5 max.	SS-55
171	±4.0	6.5 max.	F-11
281	±3.0	4.5 max.	F-11
281	±4.0	4.5 max.	SS-55
930.5	±2.0	4.5 max.	F-11

- Other frequencies and specifications are also available upon request, please consult with our sales representatives.



## ● Bandpass Filters for Digital Cable Applications

Center Frequency (MHz)	Part No.	Package	3dB Bandwidth (MHz)	Application(s)
36.125	CQX3134D	D	6.0	DVB-C (Europe), Euro DOCSIS
36.125	CQX3033D	D	8.0	DVB-C (Europe), Euro DOCSIS
43.75	CQX3035D	M	6.0	DVB-C (US), OpenCable DOCSIS
44.00	CQX3034D	D	6.0	DVB-C (US), OpenCable

- Other frequencies and specifications are also available upon request, please consult with our sales representatives.

## ● Bandpass Filter for Digital Terrestrial TV Applications

Center Frequency (MHz)	Part No.	Package	3dB Bandwidth (MHz)	Application(s)
36.00	CQX3142D	D	8.1	DVB-T (Europe)
36.125	CQX3125D	D	8.0	DVB-T (Europe)
36.17	CQX2748D	D	7.0 / 8.0	DVB-T (Europe), Switchable IF Filter
44.00	CQX3058D	D	5.6	ATSC (US), HDTV

- Other frequencies and specifications are also available upon request, please consult with our sales representatives.

## ● Bandpass Filters for Digital Audio Applications

Center Frequency (MHz)	Part No.	Package	3dB Bandwidth (MHz)	Application(s)
36.00	CQX3142D	D	8.1	DAB
38.912	CQX3077D	D	1.5	

- Other frequencies and specifications are also available upon request, please consult with our sales representatives.

## ● IF Filters for Intercarrier Applications

Picture Carrier (MHz)	Part No.	Package	TV System	PC-SC Distance (MHz)	Sound Carrier (dB)	Color Carrier (dB)
38.90	CQK7044D	M	B/G, D/K	5.5 – 6.5	21, 20	3.8
38.90	CQK7033D	D	B/G, D/K	5.5 – 6.5	19, 20	3.1
45.75	CQM8032D	D	M/N	4.5	19	1.0

- Other frequencies and specifications are also available upon request, please consult with our sales representatives.

## ● IF Filters for Video Applications

Picture Carrier (MHz)	Part No.	Package	TV System	PC-SC Distance (MHz)	Sound Carrier (dB)	Color Carrier (dB)
33.90	CQK6046D	M	L	-6.5	53	-
38.90			B/G, D/K, L, I	5.5 – 6.5	24, 52	1.0
33.90	CQK2742D	M	L	-6.5	53	-
38.90			B/G, D/K, L,	5.5 – 6.5	43, 60	0.5
38.90			M/N	4.5	39	2.6
38.00	CQK2737D	D	B/G, D/K	5.5 – 6.5	53, 44	1.8
38.00			M/N	4.5	47	1.9
38.00	CQK6042D	M	B/G, D/K	5.5 – 6.5	48, 55	1.0

- Other frequencies and specifications are also available upon request, please consult with our sales representatives.

## ● IF Filters for Audio Applications

Sound Carrier (MHz)	Part No.	Package	TV System	PC-SC Distance (MHz)	Picture Carrier (dB)
31.50 – 32.50	CQK0544D (38.00)	M	Channel 1: D/K, I, B/G	5.5 – 6.5	-56
33.50			Channel 2: M/N	4.5	-56
39.75 (L' NICAM) 40.40 (L')	CQK0543D	D	Channel 1: L' NICAM (PC: 38.90MHz)	-6.5	-49
32.40 – 33.40			Channel 2: B/G, D/K, L, I (PC: 38.90MHz)	5.5 – 6.5	-50
39.75 (L' NICAM) 40.40 (L')	CQK0343D	M	Channel 1: L' NICAM (PC: 38.90MHz)	-6.5	-51
32.40 – 33.40			Channel 2: B/G, D/K, L, I (PC: 38.90MHz)	5.5 – 6.5	-41
32.40 – 33.40	CQK0346D (38.90)	D	Channel 1: B/G, I, D/K	5.5 – 6.5	-50
34.40			Channel 2: M/N	4.5	-54

- Other frequencies and specifications are also available upon request, please consult with our sales representatives.

## ● Bandpass Filters for Dual Conversion Turners

Center Frequency (MHz)	Bandwidth (MHz)	Insertion Loss (dB max.)	Package
1090	12	4.0	SS-38(8)
1120	32	3.5	SS-38(8)
1120	32	3.5	SS-33(8)
1216	8	3.2	SS-33(8)
1220	8	4.7	SS-38(8)

- Other frequencies and specifications are also available upon request, please consult with our sales representatives.