

弾性表面波 (SAW) デバイス Surface Acoustic Wave (SAW) Devices

\$B!& Surface-mount
(J type (SMD)
package for
small,
lightweight,
and slim
equipment
(improved
mounting
efficiency)

\$B!& Wide and
(J sharp
pass-band
characteristics

\$B!& Superior
(J interface
resistance,
owing to low
insertion loss
and deep
stop-band
attenuation

\$B!&
(J \$BI=LL.7?!"7ZNL!"Gv7?2=!Je!K\$,?^\$1\$^\$9!# (J

\$B!&
(J \$B9-BS0h\$G5^=T\$JBS0hFC@-\$r

\$B!& \$BDcB;<:\$GBS0h308:?jEY\$,?<\$\$\$?\$a!"BQK832@-\$KM%\$I\$F\$\$\$^\$9!#
(J (J

- [\\$B7HBSEEOCMQ%U%m%s%H%\(%s%I%b%8%e!<%k \(J
Front-end Module for portable telephones](#)
- [\\$B7HBSEEOCMQ \(JRF SAW \\$B%U%#%k%? \(J
SAW Filter for high-frequency of portable telephones](#)
- [\\$BFCDj>.EENOMQ \(JSAW \\$B%U%#%k%? \(J
SAW Filters for Small Power Application](#)
- [\\$B%+!<%\(%1%/%H%m%K%//%9MQ \(JSAW \\$B%U%#%k%? \(J
SAW Filter for Automotive Electronics](#)
- [\\$B%G%8%?%k%*!<%G%#%*J|AwMQ \(JSAW \\$B%U%#%k%? \(J
IF SAW Filters for DAB](#)
- [\\$BCO>eGH%G%8%?%kJ|AwMQ \(JIF SAW \\$B%U%#%k%? \(J
IF SAW Filters for Ground-based Digital Broadcasting](#)

■ [\\$B8w \(JPCM \\$BEAAwMQ \(JSAW \\$B%U%#%k%? \(J](#)
[SAW Filters for Optical Transmission Modules](#)

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Front-end Module for portable telephones

■ **\$BFCD9 (J**

■ **Features**

- \$B%"s%F%J%9%\$%C%A5Z\$\$ (JRF-SAW
\$B\$r9b=8@Q2=\$7F\$\$\$^\$9!# (J
- High integrated antenna switch and
RF-SAW

EGSM/DCS \$B%G%e%"%k%P%s%IBP1~ (J



[Package:FEM-3](#)

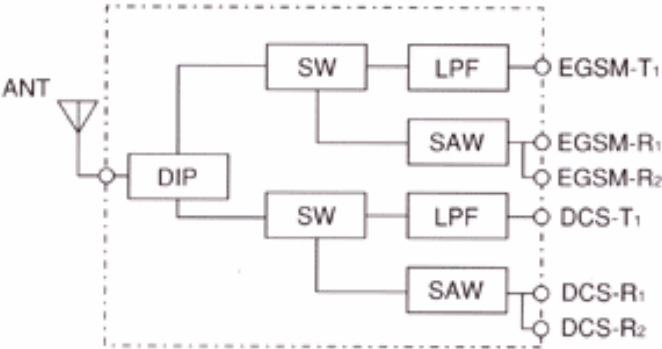


[Package:FEM-2](#)

■ **\$B%V%m%C%//%@%\$%"%0%i%`!! (JBlock Diagram**

● **EGSM/DCS Dual Band Support**

• Internal block diagram (EGSM/DCS-Balance)



■ **\$B;EMM!! (JSpecification**

Model	HWXP206				HWXP215			
Band	EGSM		DCS		EGSM		DCS	
Mode	T1	R1	T1	R1	T1	R1	T1	R1
Freq.(MHz)	880-915	925-960	1710-1785	1805-1880	880-915	925-960	1710-1785	1805-1880
Inband Level(dB)	0.9	3.0	1.2	3.0	0.9	3.3	1.0	3.5
Rx Output	\$B!] (J	Unbalance	\$B!] (J	Unbalance	\$B!] (J	Balance	\$B!] (J	Unbalance
Package	FEM-3				FEM-2			

EGSM/DCS/PCS \$B%H%j%W%k%P%s%IBP1~
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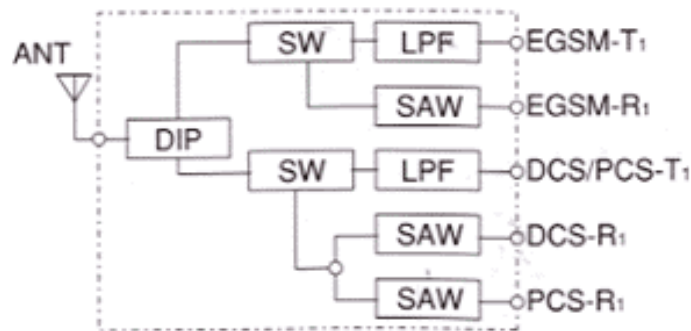


Package:FEM-1



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(JBlock Diagram

- Internal block diagram
(EGSM/DCS/PCS-Unbalance)



■ \$B;EMM!! (JSpecification

Model	HWXQ205					
Band	EGSM		DCS		PCS	
Mode	T1	R1	T1	R1	T1	R1
Freq.(MHz)	880-915	925-960	1710-1785	1805-1880	1850-1910	1930-1990
Inband Level(dB)	1.0	3.0	1.1	3.3	1.1	3.6
Rx Output	\$B!] (J	Unbalance	\$B!] (J	Unbalance	\$B!] (J	Unbalance
Package	FEM-1					

cdmaOne \$BBP1~ (J



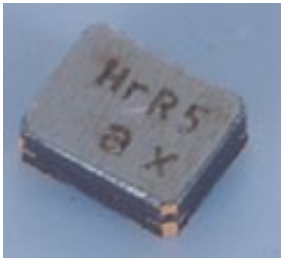
Package:FEM-1

■ \$B;EMM!! (JSpecification

System	cdmaOne			
Model	HWXN003			
	Tx \$B"* (JANT		ANT \$B"* (JR _x	
Frequency (MHz)	887-901	915-925	832-846	860-870
Contorl voltage(v)	2.8	0	2.8	0

Inband loss (dB)(Max.) (-20 \$B!] (J85 \$B!n (J		2.8	2.8	4.2	4.2
Isolation (dB) (Min.)	+25 \$B!] (J+85 \$B!n (J	\$B!] (J	\$B!] (J	38	38
	25 \$B!n (J	52	52	\$B!] (J	\$B!] (J
	-25 \$B!] (J+85 \$B!n (J	42	48	35	35
Package		FEM-1			

\$B7HBSEEOCMQ (JRF SAW \$B%U%#%k%? (J
SAW Filter for high-frequency of portable telephones



SMD-2520

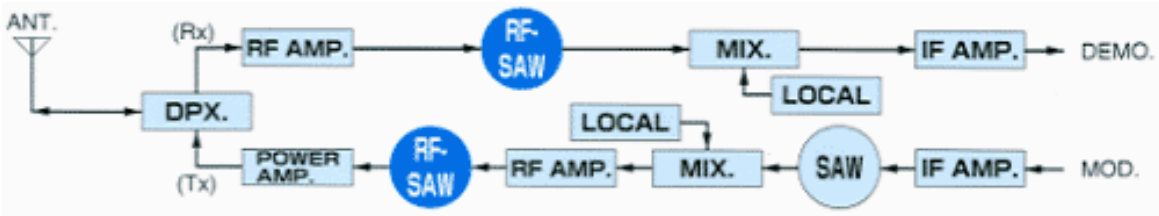


SMD-30



SMD-35

■ \$B%V%m%C%//%@%\$%"%0%i%`!! (JBlock
Diagram



■ \$B;EMM!! (JSpecification

Sysetm	New PDC800		PDC800		PDC1.5		cdmaOne	
	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx
Model	HWFA063	HWFB064B	HWEA059	HWEB059	HWEA077	HWFB078	HWGA036	HWFB03*
Center frequency(MHz)	924.5	847.5	950	820	1441	1489	906.0	851.0
Bandwidth(MHz)	71	75	20		24		38	
Insertion loss(dB)	3.8	4.0	2.7	2.5	2.0		3.4	2.9
Stop-band attenuation(1)(dB) (Frequency:MHz)	28 (810-843)	40 (550-625)	41 (810-830)	47 (940-960)	20 (1477-1501)	25 (1429-1453)	58 (722-761)	26 (612-651)
Stop-band attenuation(2)(dB) (Frequency:MHz)	20 (2667-2880)	20 (925-960)	49 (681-701)	46 (5-700)	40 (1607-1631)	40 (1607-1631)	50 (832-870)	25 (887-925)
Input/output impedance (\$B&8 (J or \$B&8 (J/nH)	50//15		50				50//8.2	50//12
Package	SMD-30 SMD-2520 \$B0II t@=IJB P1~ (JPartially appolled)							

System	GSM			EAMPS/CDMA		EGSM	DCS
	Tx		Rx	Tx	Rx	Rx	Rx
Model	HWCA203A	HWCA208	HWFB242	HWFA614	HWFB614	HWFB243	HWFB251
Center frequency(MHz)	902.5		947.5	836.5	881.5	942.5	1842.5
Bandwidth(MHz)	25			25		35	75
Insertion loss(dB)	4.0	2.5	2.7	2.6	2.5	2.2	2.5
Stop-band attenuation(1)(dB) (Frequency:MHz)	42 (980-1005)	20 (935-960)	38 (890-915)	31 (869-894)	45 (824-849)	33 (880-915)	25 (1710-1785)
Stop-band attenuation(2)(dB) (Frequency:MHz)	37 (1005-2400)	30 (980-1780)	28 (980-1025)	40 (894-1049)	30 (914-939)	25 (980-1200)	25 (1920-2400)
Input/output impedance (Ω or Ω/nH)	50//6.4	50	50	50	50	50	50
Package	SMD-35			SMD-30			

\$BFCDj>.EENOMQ (J SAW \$B%U%#%k%? (J SAW Filter for small power Application

■ \$BFCD9 (J

- PHS

\$B!"%3!<%I%1%9EEOC5Z\$S%Z!<%8%c\$J\$I\$NFCDj>.EENOMQ5!4o\$K:GE,\$G\$9!#
(J

■ Features

- Appropriate for special-purpose small power application for PHS, cordless phone, pager, etc.



[SMD-35](#)



[SMD-50](#)

■ \$B;EMM!! (J Specification

System	PHS	CT-2	ISM	\$BFCDj>.EENOMQ (J Small power application		
Model	HWCG012	HWCG603	HWFG621	HWCE602	HWAE611	HWAE614
Center frequency (MHz)	1906.55	912.0	926	930.0	425.0	468.0
Bandwidth (MHz)	22.8	4.0	4.0	4	10	
Insertion loss (dB)	2.0	2.5	2.5	4.0	4.5	
Pass-band variation (dB)				0.5	0.8	
Stop-band attenuation(1)(dB) (Frequency: MHz)	30 (1797-1820)	45 (812-892)	55 (896-902)	45 (5-910)	48 (325-390)	48 (368-433)
Stop-band attenuation(2)(dB) (Frequency: MHz)	30 (3790-3896)	45 (932-1012)	55 (946-956)	45 (971-1000)	48 (450-525)	48 (493-568)
Input/output impedance (Ω or Ω/nH)	50//6.8	50		50	50//18	
Package	SMD-35	SMD-35	SMD-30	SMD-35	SMD-50	

\$B%+!<%(%l%/%H%m%K%//%9MQ (JSAW
\$B%U%#%k%? (J
SAW Filters for Autoioive Electronics

■ \$BFCD9 (J

- \$B<+F0NA6b<}

■Features

- Used as the bandpass filter for IF and RF clrcuits in an electronic toll collection(ETC) system, grobal positioning system (GPS), keyless entry system and degital audio broadcasting receivers(DAB).

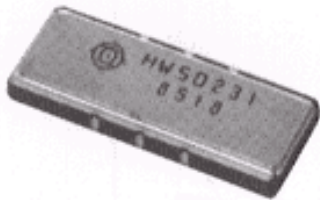


[SMD-38](#)

■ \$B;EMM!! (JSpecification

System	ETC	GPS	Keyless entry
Model	HWBD011	HWFK045	HWAL011
Center frequency(MHz)	40.5	1575.42	315
Bandwidth(MHz)	5.1	2.0	1.0
Insertion loss(dB)	14	2.0	2.5
Stop-band attenuation(1) (Frequency:MHz)	48(dBc) (10.0-30.0)	25(dB) (1200-1540)	52(dB) (215-307)
Stop-band attenuation(2) (Frequency:MHz)	47(dBc) (50.0-70.0)	23(dB) (1625-1850)	53(dB) (322-415)
Input/output impedance (\$B&8 (J or \$B&8 (J//nH)	50 \$B&8 (J+1 \$B&L (JH//10pH	50 \$B&8 (J	50 \$B&8 (J
Package	SMD-38	SMD-30	SMD-50

\$B%G%8%?%k%*!<%G%#%*J|AwMQ (JIF
\$B!! (JSAW \$B%U%#%k%? (J
IF SAW Filters for DAB



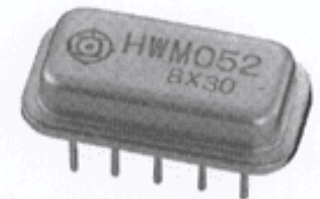
Package: SMD-15360

[SMD-15360](#)

■ \$B;EMM!! (JSpecification

Model	HWS0231
Center frequency(MHz)	38,912
Bandwidth(MHz)	1.5
Inband level(dB)	25
Inband variation(dB)	2.7
Stop-band attenuation(1)(dB) (frequency:MHz)	38 (34,912-36,412)
Stop-band attenuation(2)(dB) (Frequency:MHz)	37 (41,412-42,912)
Group delayr ripple(nsp-P)	110
Input/output impedance(\$B&8 (J)	50
Package	SMD-15360

\$BCO>eGH%G%8%?%kJ|AwMQ (JIF \$B!!
(JSAW \$B%U%#%k%? (J
IF SAW Filter for Ground-based Degital Broadcasting



Package: FIL-107

[FIL-107](#)

■ \$B;EMM!! (JSpecification

Model	HWM052
Center frequency(MHz)	57.0
Bandwidth(MHz)	5.28
Inband level(dB)	33
Inband ripple(dB)	1.2
Stop-band attenuation(1)(dB) (frequency:MHz)	40 (52,75)

Stop-band attenuation(2)(dB) (Frequency:MHz)	35 (60.25)
Group delayr ripple(nsp-P)	80
Input/output impedance(\$B&8 (J)	50
Package	FIL-107

\$B8w (JPCM \$BEAAwMQ (JSAW \$B%U%#%k%? (J
SAW Filters for Optical Transmission Modules

■ \$BFCD9 (J

- \$B8w (JPCM
\$BEAAw\$N%?%\$%_%s%0Cj=P2sO)MQ%U%#%k%?\$H\$7\$F;HMQ\$5\$I\$^\$9!#
(J

■Features

- Used in the
timing
extraction
circuit of
optical
transmission
modules.



Package: SMD-SH
SMD-SH



Package: SMD-ML
SMD-ML

■ \$B;EMM!! (JSpecification

Model	HWSH001	HWSH012	HWSH023	HWH041
Center frequency (MHz)	51.84	155.520	622.090	2400
Q3dB	600-1200			460-1,000
Country(System)	CCITT			
Package	SMD-SH		SMD-ML	TO-47

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