

## ■ Europe: LNBs for Satellite Broadcast

### ◆ Features

- (1) Wide band type receiving all broadcasting channels (analog & digital) in Europe. [Universal LNB]
- (2) Originally developed feed-horn waveguide makes the wide-band, low-noise characteristics possible.
- (3) One of the industry's most compact and lightweight package
- (4) Low dissipation current design for energy saving [95 mA (TYP.): BS1K2EL100A]

### ◆ Specifications

Destination		Europe, Astra/Eutelsat Satellite etc.			
Receiving polarization		Horizontal/Vertical polarization			
Model No. <Type>		BS1K1EL500A <4 output>	BS1K1EL400A <4 output>	BS1K1EL200A <2 output>	BS1K2EL100A <1 output>
Input frequency (GHz)		10.7 to 11.7 [Low band], 11.7 to 12.75 [High band]			
Output frequency (MHz)		950 to 1 950 [Low band], 1 100 to 2 150 [High band]			
Local oscillation frequency (GHz)		9.75 [Low band], 10.6 [High band]			
NF (dB)		0.4 (TYP.)			
Conversion gain (dB)		56 (TYP.)		58 (TYP.)	
Phase noise		−55 dBc/Hz at 1 kHz (TYP.)		−80 dBc/Hz at 1 kHz (TYP.)	
Cross-polar discrimination (dB)		25 (TYP.)			
Supply voltage (V DC) (Polarization switching)	Vertical polarization	11.5 to 14.0 (0/22 kHz)			
	Horizontal polarization	16.0 to 19.0 (0/22 kHz)			
Dissipation current (mA)		200 (TYP.)/250 (MAX.)	150 (TYP.)/300 (MAX.)	190 (TYP.)/250 (MAX.)	95 (TYP.)/120 (MAX.)
Waveguide		Feed-horn (F/D = 0.6)			
Output impedance (Ω)		75			
Output connector (F-type)		4-output (H/H, H/L, V/H, V/L)	4-output (H/V, High and low switching)	2-output (H/V, High and low switching)	1-output (H/V, High and low switching)
Outline dimensions (W) × (D) × (H) (mm)		150 × 70 × 60	150 × 70 × 60	142 × 60 × 60	80 × 55 × 55
Weight (g)		Approx. 190	Approx. 190	Approx. 145	Approx. 60



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## ■ Japan: LNBs for BS/CS 110° Satellite Broadcast

### ◆ Features

- (1) Can receive 2 satellite broadcasts of 110° BS/CS digital  
[Employs wide-band (1 GHz) circular' linear polarization conversion technology (septum waveguide structure)]
- (2) Outstanding noise figure (NF) characteristics enabling compact design of antenna diameter. [NF: 0.45 dB (TYP.)]
- (3) Low dissipation current design for improved energy saving. [75 mA (TYP.)]

### ◆ Standard Specifications

Destination	Japan BS/CS 110° Satellite
Receiving polarization	Right circular polarization
Model No.	BS1G4JU300A
Input frequency (GHz)	11.71023 to 12.751
Output frequency (MHz)	1 032.23 to 2 073
Local oscillation frequency (GHz)	10.678
NF (dB)	0.45 (TYP.) / 0.6 (MAX.)
Conversion gain (dB)	48 to 58
Phase noise	-80 dBc/Hz at 1 kHz (TYP.)
Cross-polar discrimination (dB)	25 (TYP.)/20 (MIN.)
Supply voltage (V DC)	9.5 to 18.0
Dissipation current (mA)	75 (TYP.)/100 (MAX.)
Waveguide	Feed-horn (F/D = 0.5)
Output impedance ( $\Omega$ )	75
Output connector (F-type)	1-output
Outline dimensions (mm)	105 (W) × 46 (D) × 46 (H)
Weight* (g)	Approx. 100

\* Not including outer cabinet

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## ■ Digital DBS Front-End Units

### ◆ Features

- (1) Equipped with a high-performance direct conversion IC. Reliability is improved by reducing power consumption and component counts.
- (2) Wide-band reception design also covering CS broadcast band. [Reception frequency: 950 to 2 150 MHz]
- (3) User support tools can be provided. [Sample/evaluation boards and software are available.]

### ◆ Standard Specifications <IQ output type>

Destination	Global (ISDB-S/DVB-S2/ABS-S)	
Input type	1-input/1-loop through output	1-input
Model No.	BS2S7VZ7A03	BS2S7VZ6A02
Input frequency (MHz)	950 to 2 150	
Input signal level (dBm)	-65 to -25	
The 1st intermediate frequency (MHz)	Zero-IF (Direct conversion)	
Base band frequency bandwidth (MHz)	5 to 40, 2 MHz step (BB LPF)	
RF input local leak (dBm)	-68 and below	
Output type	I/Q	
Noise figure (dB)	6 (TYP.)	
Phase noise (dBc/Hz)	-88 at 10 kHz offset (TYP.)	
Supply voltage (V DC)	3.3	
LNB power supply	DC 25 V, 400 mA (MAX.)	
Input impedance ( $\Omega$ )	75	
Outline dimensions (mm)	30.4 (W) × 29.4 (D) × 12.9 (H)	25.2 (W) × 17.4 (D) × 8.7 (H)

\* Low-profile type is also available.



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## ■ Front-End Units for ISDB-T/S

### ◆ Features

- (1) Low phase noise characteristics, high elimination of adjacent channel interference.
- (2) Compact, low power consumption.



VA4M5JD2272

### ◆ Standard Specifications

Destination	Japan (ISDB-T/S)			
Model No.	VA4M5JD2272		VA4M6JC2290	
	Digital terrestrial	Digital satellite	Digital terrestrial	Digital satellite
Number of tuners	1	1	2	2
Input frequency (MHz)	93 to 767	950 to 2 150	93 to 767	950 to 2 150
Output type	DIF	I, Q	DIF	I, Q
Noise figure (dB)	4 (TYP.)	6 (TYP.)	4 (TYP.)	6 (TYP.)
Phase noise (dBc/Hz)	-90 (TYP.) at 10 kHz offset	-85 (TYP.) at 10 kHz offset	-90 (TYP.) at 10 kHz offset	-85 (TYP.) at 10 kHz offset
Supply voltage (V DC)	3.3	3.3	1.8, 3.3	3.3
Power consumption (W)	0.6	0.5	0.9	1.0
Outline dimensions (mm)	40 (W) × 34 (D) × 7.8 (H)			

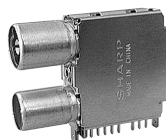
## ■ Front-End Units for DVB-T2/DTMB

### ◆ Features

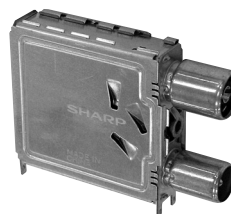
- (1) Low phase noise characteristics, high elimination of adjacent channel interference.
- (2) Compact, low power consumption.
- (3) Other types are available with various chassis forms (vertical or horizontal type) and input connectors (F or DIN type), etc.

### ◆ Standard Specifications

Destination	Europe/Asia (DVB-T2), China (DTMB)		
Model No.	VA4M1DX2331	VA4M1DX2323	VA4M2DX2194
Input frequency (MHz)	51 to 868		47 to 868
Output type	DIF	DIF (Off through)	DIF (Dual output)
Noise figure (dB)	5 (TYP.)		
Phase noise (dBc/Hz)	-90		
Power consumption (W)	0.49		1.13
Supply voltage (V DC)	3.3, 1.8		5, 3.3, 1.8
Outline dimensions (mm)	24.2 (W) × 25.8 (D) × 8 (H)		41.3 (W) × 37.5 (D) × 12.3 (H)



VA4M1DX2331



VA4M2DX2194

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## ■ Front-End Units for Digital Terrestrial and Analog Terrestrial Broadcasting

### ◆ Features

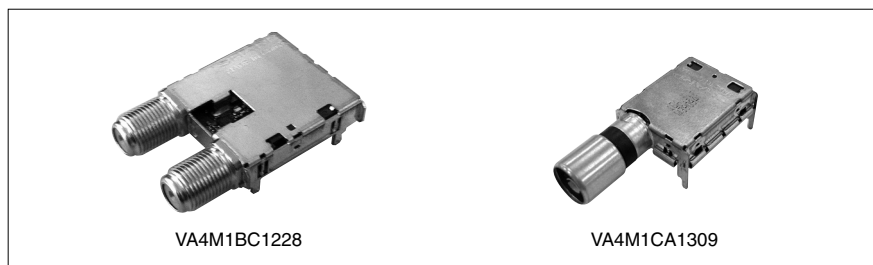
Contributing to the development of thinner LCD TVs and similar products by combining compatibility with digital and analog terrestrial broadcasts into a single unit.

### ◆ Standard Specifications

Destination	Brazil	China*1
Model No.	VA4M1BC1228	VA4M1CA1309
Input frequency (MHz)	47 to 866	
Output type	IF	
Digital IF bandwidth (MHz)	6	8
Phase noise (dBc/Hz)	-90 (TYP.) at 10 kHz offset	
Supply voltage (V DC)	3.3	
Noise figure (dB)	4 (TYP.)	
Channel selection system	PLL (I <sup>2</sup> C-bus)*2	
Outline dimensions (W) × (D) × (H) (mm)	30 × 28 × 7.5	26.2 × 20 × 10.6

\*1 Built-in isolator type

\*2 I<sup>2</sup>C-bus is a trademark of Philips Corporation.



### ◆ Features

Universal specifications compatible with various broadcasting systems all over the world

Digital: DVB-T/T2, DVB-C, ATSC, ISDB-T, DTMB

Analog: NTSC-M/N, PAL-B/G/I/DK, SECAM-L, L'

### ◆ Standard Specifications

Destination	Global
Model No.	VA4M1DB1261
Input frequency (MHz)	47 to 868
Output type	IF
Noise figure (dB)	4 (TYP.)
Phase noise (dBc/Hz)	-90 (TYP.)
Supply voltage (V)	3.3
Outline dimensions (W) × (D) × (H) (mm)	27 × 14 × 7.5

\* Contact SHARP for custom design product.

(For connector shape or facing side, analog output format, etc.)



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## Full-Seg Tuner Module for Diversity Reception

### ◆ Features

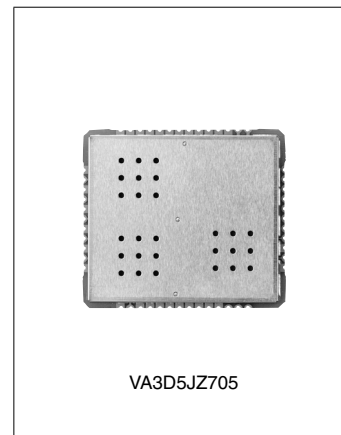
Compact package, enabling 4-diversity reception (35.0 × 31.0 × 2.95 mm)

### ◆ Standard Specifications

Destination	Japan	
Model No.	VA3D5JZ705	
Type	Built-in diversity demodulator for four signal reception	
Input frequency (MHz)	470 to 770	
IF frequency (MHz)	4	
Output type	Transport stream	
Input sensitivity (dBm)	During diversity reception	−88 (TYP.) (64QAM, CR = 3/4)
	During single reception	−82 (TYP.) (64QAM, CR = 3/4)
Supply voltage (V)	Vcc1: 1.2, Vcc2: 3.3 (IO: 3.3)	
Power consumption (W)	1.24 (TYP.)	
Operating temperature (°C)	−40 to 85	
Control interface	I <sup>2</sup> C-bus*1	
Outline dimensions (W) × (D) × (H) (mm)	35.0 × 31.0 × 2.95	

Diversity demodulator for two signal reception is also available.

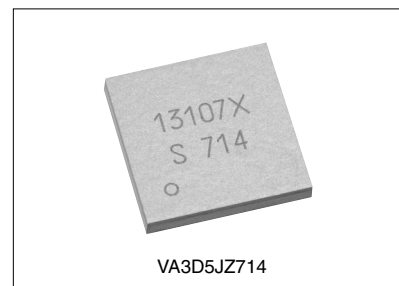
\*1 I<sup>2</sup>C-bus is a trademark of Philips Corporation.



## Tuner Module for Multimedia Broadcast Reception

### ◆ Features

- (1) Compact and thin design: 6.7 × 6.7 × 1.0 mm
- (2) Capable of receiving digital terrestrial broadcasts such as One-seg or Full-seg.
- (3) Output interface: TS or SPI output



### ◆ Standard Specifications

Destination	Japan	
Model No.	VA3D5JZ714	
Input frequency (MHz)	90 to 108 207.5 to 222 470 to 710	
Outline dimensions (mm)	6.7 × 6.7 × 1.0	
Supply voltage (V)	1.1, 1.8, I/O: 1.8	
Power consumption (mW)	80 (When receiving One-seg broadcasting) 135 (When receiving V-High multimedia broadcasting) 145 (When receiving Full-seg broadcasting)	
Operating temperature (°C)	−20 to 65	
Control I/F	I <sup>2</sup> C-bus*1	

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## One-Seg Tuner Module

### ◆ Features

- (1) High sensitivity: -100 dBm (13 seg, QPSK CR: 2/3)
- (2) Compact and thin design: 5.4 × 5.4 × 1.0 mm
- (3) Low power consumption: 41 mW (with software power control)
- (4) Output interface: TS serial output



VA3A5JZ967

### ◆ Standard Specifications

Destination	Japan
Model No.	VA3A5JZ967
Input frequency (MHz)	470 to 770 (UHF: 13 to 62)
Input signal level (dBm)	-100 (13 seg, QPSK CR: 2/3)
Outline dimensions (mm)	5.4 (W) × 5.4 (D) × 1.0 (H)
Supply voltage (V DC)	1.2 (RF) 1.2 (OFDM Core) 1.62 to 3.6 (I/O)
Power consumption (mW)	41 (TYP.)
Operating temperature (degree C)	-20 to 65
Control I/F	I <sup>2</sup> C-bus*1

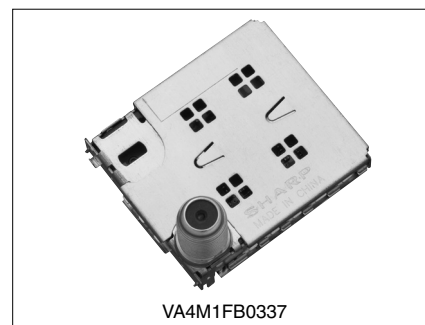
\*1 I<sup>2</sup>C-bus is a trademark of Philips Corporation.

## Emergency Warning Broadcasting Receiver Module

### ◆ Features

- (1) Drastically reduced power consumption with use of One-Seg broadcasting system\*
- (2) Compact size for simple assembly

\* Basic television and data broadcasting services are not supported by the EWBS module (DU6J9ZB0xxx).



VA4M1FB0337

### ◆ Standard Specifications

Product name	EWBS module	Digital terrestrial front-end unit with EWBS
Destination	Japan/Global (common)	
Model No.	DU6J9ZB0xxx	VA4M1FB0337
Outline dimensions (mm)	7 × 7 × 1.4	34 × 40.5 × 7.8
Reception bandwidth (MHz)	6/7/8	
Reception frequency range (MHz)	UHF (470 to 862)	Full-seg tuner: (54 to 864), EWBS module: UHF (470 to 862)
Standby power consumption (mW)	30 mW (intermittent operation)	Full-seg tuner: Typ. 690, EWBS: Typ. 63
Communication system	I <sup>2</sup> C	
Power supply	3.3 V, 1.2 V	Full-seg tuner: 3.3 V, EWBS: 3.3 V, 1.2 V

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## ■ Ionizing Radiation Sensor Module

### ◆ Features

- (1) Low-noise amplifier to efficiently amplify weak currents
- (2) Built-in circuit to eliminate noise caused by vibration and shock
- (3) Compact module size thanks to a newly developed dedicated IC  
(25 × 20 × 2.5 mm)
- (4) Low power consumption (7.5 mW at normal operation)



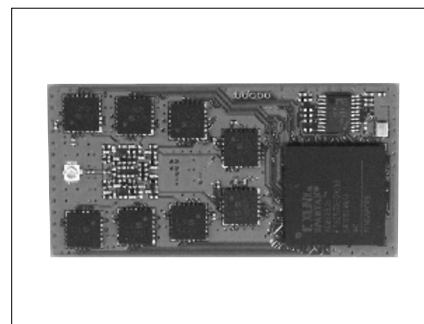
### ◆ Specifications

Model No.	QM1H0M0058
Object to be detected	Gamma ray (γ-ray) (Detector: PIN photodiode)
Measuring range (μSv/h)	0.05 to 20
Output interface	I <sup>2</sup> C output
Power supply voltage	DC 5 V (Photodiode), 2.75 V (Analog), 1.8 V (Digital)
Power consumption (mW)	7.5 (at normal operation)
Outline dimensions (mm)	25 × 20 × 2.5

## ■ One-Seg 8 Tuner Module

### ◆ Features

- (1) Up to 8 simultaneously receivable TV channels (Industry's first)
- (2) Compact module size (board space): Smaller than 30 × 60 mm
- (3) Simultaneous recording and tuning of up to 8 TV channels



### ◆ Specifications

Mounting method	MoM unit (Module ×8 units installed)
Reception frequency (MHz)	470 to 710
Number of receiving channels	8 (MAX.)
Distribution method	8 power dividers for digital terrestrial broadcasting only
Receiving sensitivity (dBm)	-84 (TYP.) (QPSK CR: 2/3 BW: 13 seg)
Dispersion of receiving sensitivity	No
Module size (mm)	30 × 60

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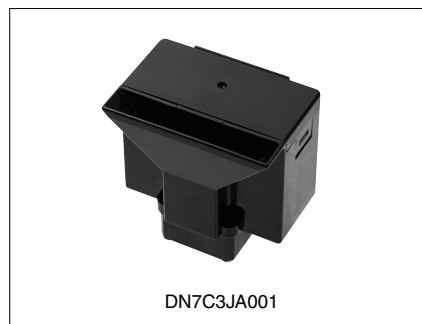


## ■ PM2.5 Sensor Module

### ◆ Features

- (1) Easy assembly for use in air purifiers and other products thanks to industry's smallest\*<sup>1</sup> size of 53 x 40 x 51 mm
- (2) Industry's shortest\*<sup>1</sup> detection time of 10 seconds
- (3) Ability to measure fine dust concentrations improves ease of use of the host devices

\*1: As of May 1, 2014 (measured by Sharp)



### ◆ Specifications

Model No.	☆DN7C3JA001
Measurement range ( $\mu\text{g}/\text{m}^3$ )	25 to 500
Power supply voltage (Vcc/fan)	DC5 V $\pm$ 0.5 V
Power consumption (mW) (TYP.)	40 (sensor), 700 (fan)
Output voltage range (V)	3.4 or more
Outline dimensions (mm)	53.0 $\times$ 40.0 $\times$ 51.0 (excluding protruding parts)
Operating temperature ( $^{\circ}\text{C}$ )	-10 to +60

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