STRUCTURE Silicon Monolithic Integrated Circuit

PRODUCT SERIES Wireless Audio Link LSI for Mobile Phone (FM Stereo Transmitter)

TYPE **BH1426KN**

FEATURE
- Low voltage Fast Mode I^2C-BUS interface.
- Adjustment free wideband PLL frequency synthesizer (76MHz~108MHz).
- Possible to select reference clock frequency freely.
- Possible to select transmission power by serial control.
- Possible to select pre-emphasis time constant by serial control.
- Built-in high performance Low-pass Filter.
- Built-in pilot-tone system FM stereo modulator circuit.
- The transmission frequency is stable because it has PLL system FM transmitter circuit.
- Possible to operate in monaural mode.
- Built-in the sound muting circuit.

○ Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Limits	Unit	Condition
Supply voltage	VCC	-0.3 to +5.5	V	Pin 2, 7, 11, 13, 25
Data input voltage 1	V_{IN-D1}	-0.3 to V_{DDIO}+0.3	V	Pin 16, 19, 20
Data input voltage 2	V_{IN-D2}	-0.3 to VCC	V	Pin 17, 18
Power dissipation	Pd	370	mW	*(Note 1)*
Storage temperature	Tstg	-55 to +125	℃	

(Note 1) To use at a temperature higher than Ta=25℃, derate 3.7mW per 1℃.

Status of this document
The Japanese version of this document is the formal specification. A customer may use this translation version only for a reference to help reading the formal version. If there are any differences in translation version of this document, formal version takes priority.

Application example
- **ROHM cannot provide adequate confirmation of patents.**
- **The product described in this specification is designed to be used with ordinary electronic equipment or devices (such as audio-visual equipment, office-automation equipment, communications devices, electrical appliances, and electronic toys).**
  Should you intend to use this product with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.
- **ROHM assumes no responsibility for use of any circuits described herein, conveys no license under any patent or other right, and makes no representations that the circuits are free from patent infringement.**

○ Operating Supply Voltage Range

Parameter	Symbol	Limits	Unit	Conditions
Operating supply voltage 1	V_{CC}	2.7 to 3.6	V	Pin 2, 7, 11, 25
Operating supply voltage 2	V_{DDIO}	1.7 to 3.6	V	Pin 13
Operating temperature	Tpor	-20 to +85	℃	
Audio input level	V_{IN-A}	to -10	dBV	Pin 26, 27
Audio input frequency	f_{IN-A}	20 to 15k	Hz	Pin 26, 27
Transmission frequency	f_{TX}	76.0 to 108.0	MHz	100kHz step
Control terminal "H" level input voltage 1	V_{IH1}	$0.7V_{DDIO}$ to V_{DDIO}	V	Pin 16, 19, 20
Control terminal "H" level input voltage 2	V_{IH2}	$0.7V_{DDIO}$ to +5.5	V	Pin 17, 18
Control terminal "L" level input voltage	V_{IL}	GND to $0.3V_{DDIO}$	V	Pin 16, 17, 18, 19, 20

○ Electrical Characteristics

Unless otherwise specified Ta=25℃, V_{CC}=3.0V, V_{DDIO}=1.8V

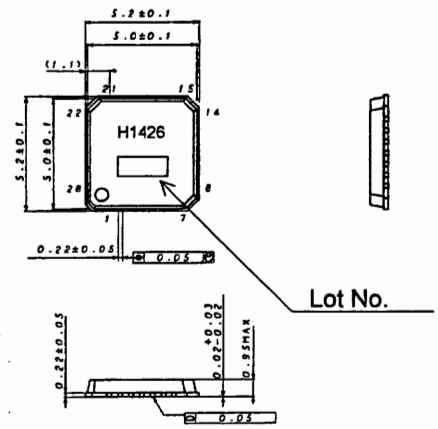
Signal source : f_{IN}=1kHz, V_{IN}=-20dBV Common condition : f_{TX}=90MHz, Δf=±75kHz, τ=50μs

Parameter	Symbol	Limits			Unit	Condition
		Min.	Typ.	Max.		
Quiescent current	I_Q	11	16	23	mA	Tx Control : 0dB
Power down current	I_{PWD}	—	0	1	μA	BUSEN = "L"
Channel separation	Sep	25	40	—	dB	L→R, R→L
Signal to noise ratio	SNR	60	69	—	dB	L+R
		61	70	—	dB	MONO
Total harmonic distortion	THD	—	0.1	0.3	%	L+R
		—	0.1	0.3	%	MONO
Transmission power level	P_{TX}	-8	-5	-2	dBm	Tx Control : 0dB
Pilot modulation rate	M_P	7	11	15	%	L+R
"H" level input current	I_{IH}	—	—	1.0	μA	Pin 16, 19, 20 V_{IN}=3V
"L" level input current	I_{IL}	-1.0	—	—	μA	Pin 16, 19, 20 V_{IN}=0V
"L" level output voltage	V_{OL}	—	—	$0.2V_{DDIO}$	V	Pin 18 I_O=3mA

◎ This product is not designed for protection against radioactive rays.

◎ The specification of transmission output level be based on the Radio Law in every country and the area.

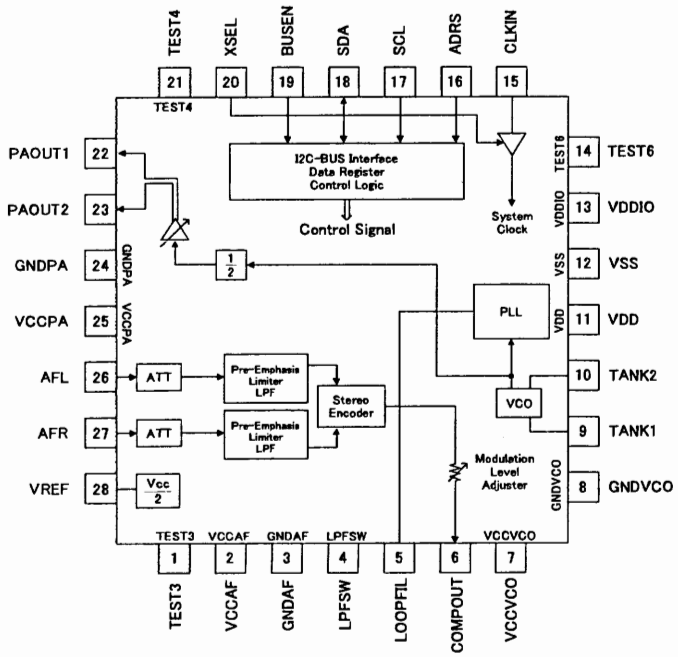
○ PACKAGE OUTLINE



VQFN28 (Unit : mm)

Notice:Do not use the dotted line area for soldering

○ BLOCK DIAGRAM



○ Pin number・Pin name

No.	Name	No.	Name
1	TEST3	15	CLKIN
2	VCCAF	16	ADRS
3	GNDAF	17	SCL
4	LPFSW	18	SDA
5	LOOPFIL	19	BUSEN
6	COMPOUT	20	XSEL
7	VCCVCO	21	TEST4
8	GNDVCO	22	PAOUT1
9	TANK1	23	PAOUT2
10	TANK2	24	GNDPA
11	VDD	25	VCCPA
12	VSS	26	AFL
13	VDDIO	27	AFR
14	TEST6	28	VREF

* Please use TEST3,TEST4,TEST6 as open terminal.

○ Cautions on use

(1) Numbers and data in entries are representative design values and are not guaranteed values of the items.
(2) Although we are confident in recommending the sample application circuits, carefully check their characteristics further when using them. When modifying externally attached component constants before use, determine them so that they have sufficient margins by taking into account variations in externally attached components and the Rohm LSI, not only for static characteristics but also including transient characteristics.
(3) Absolute maximum ratings
If applied voltage, operating temperature range, or other absolute maximum ratings are exceeded, the LSI may be damaged. Do not apply voltages or temperatures that exceed the absolute maximum ratings. If you think of a case in which absolute maximum ratings are exceeded, enforce fuses or other physical safety measures and investigate how not to apply the conditions under which absolute maximum ratings are exceeded to the LSI.
(4) GND potential
Make the GND pin voltage such that it is the lowest voltage even when operating below it. Actually confirm that the voltage of each pin does not become a lower voltage than the GND pin, including transient phenomena.
(5) Thermal design
Perform thermal design in which there are adequate margins by taking into account the allowable power dissipation in actual states of use.