# Wireless Audio Link IC

## BH1415F

The BH1415F is a FM stereo transmitter IC that transmits simple configuration. The IC consists of a stereo modulator for generating stereo composite signals and a FM transmitter for broadcasting a FM signal on the air. The stereo modulator generates a composite signal which consists of the MAIN, SUB, and pilot signal from a 38kHz oscillator.
The FM transmitter radiates FM wave on the air by modulating the carrier signal with a composite signal.

### ●Applications

CD changer, Car TV, Car navigation, Wireless speakers, Personal computer (sound board), Game machine

### ●Features

1) It is possible to improve the timbre because it has the pre-emphasis circuit, limiter circuit, and the low-pass filter circuit.
2) Built-in pilot-tone system FM stereo modulator circuit.
3) The transmission frequency is stable because it has a PLL system FM transmitter circuit.
4) PLL data input (CE, CK, DA) by serial input.

### ●Absolute maximum ratings (Ta = 25°C, In measurement circuit.)

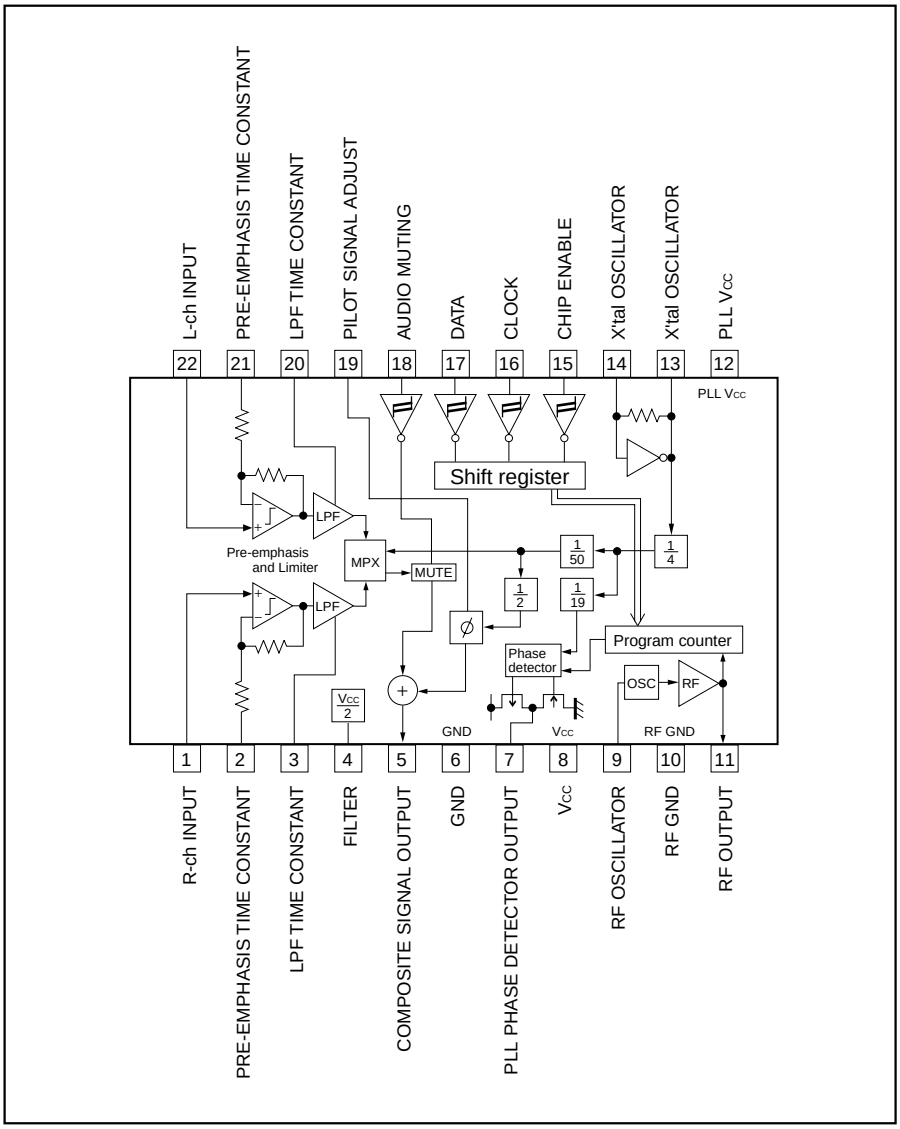
| Parameter | Symbol | Limits | Unit | Conditions |
|---|---|---|---|---|
| Supply voltage | $V_{CC}$ | +7.0 | V | Pin8,12 |
| Data input voltage | $V_{IN-D}$ | –0.3 to $V_{CC}$+0.3 | V | Pin15,16,17,18 |
| Phase comparator output voltage | $V_{OUT-P}$ | –0.3 to $V_{CC}$+0.3 | V | Pin7 |
| Power dissipation | Pd | 450* | mW | |
| Storage temperature | Tstg | –55 to +125 | °C | |

* Derating : 4.5mW/°C for operation above Ta=25°C.

### ●Recommended operating conditions (Ta = 25°C)

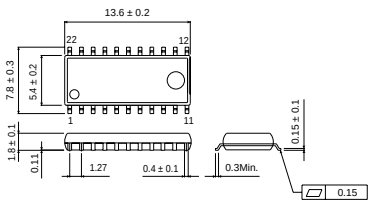
| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|---|---|---|---|---|---|---|
| Operating supply voltage | $V_{CC}$ | 4.0 | – | 6.0 | V | Pin8,12 |
| Operating temperature | Topr | –40 | – | +85 | °C | |
| Audio input level | $V_{IN-A}$ | – | – | –10 | dBV | Pin1,22 |
| Audio input frequency band | $f_{IN-A}$ | 20 | – | 15k | Hz | Pin1,22 |
| Pre-emphasis time constant set up range | $t_{PRE}$ | – | – | 155 | µsec | Pin2,21 |
| Transmission frequency | $f_{TX}$ | 70 | – | 120 | MHz | Pin9,11 |
| Control terminal "H" level input voltage | $V_{IH}$ | 0.8$V_{CC}$ | – | $V_{CC}$ | V | Pin15,16,17,18 |
| Control terminal "L" level input voltage | $V_{IL}$ | GND | – | 0.2$V_{CC}$ | V | Pin15,16,17,18 |

●**Block diagram**



<table>
<tr><th>No.</th><th>Control unit / Data</th><th>Contents</th></tr>
<tr><td>(2)</td><td>MULTIPLEXER<br><br>MONO</td><td>• It changes a stereo and monaural operation.
<table>
<tr><th>MONO</th><th>Condition of the composite signal</th></tr>
<tr><td>0</td><td>Monaural operation L+R , Pilot OFF</td></tr>
<tr><td>1</td><td>Stereo operation L+R+(L-R),sin$\omega_s$t+Psin $\frac{\omega_s}{2}$ t</td></tr>
</table></td></tr>
<tr><td>(2)</td><td>PHASE DETECTOR<br><br>$PD_0$, $PD_1$</td><td>• It controls charge pump output by the phase comparator compulsorily.
<table>
<tr><th>$PD_0$</th><th>$PD_1$</th><th>Charge pump output</th></tr>
<tr><td>0</td><td>0</td><td>Usual operation</td></tr>
<tr><td>0</td><td>1</td><td>Compulsion by Low</td></tr>
<tr><td>1</td><td>0</td><td>Compulsion by High</td></tr>
<tr><td>1</td><td>1</td><td>High impedance</td></tr>
</table></td></tr>
<tr><td>(3)</td><td>TEST MODE<br><br>$T_0$, $T_1$</td><td>• It is data for the LSI test.<br>• Always in $T_0$ Input "1".<br>• Always in $T_1$ Input "0".</td></tr>
</table>

●**External dimensions** (Units : mm)




SOP22

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