# DATA SHEET

- DEVICE NUMBER : AX-1838HS

<table>
<thead>
<tr>
<th>SHEET</th>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>CONTENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007-4-19</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>Initial Released</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>APPROVED</th>
<th>DRAWER</th>
</tr>
</thead>
</table>

http://www.photo-link.cn
INFRARED RECEIVER MODULE

● Description
The AX-1838HS is miniaturized infrared receivers for remote control and other applications requiring improved ambient light rejection.
The separate PIN diode and preamplifier IC are assembled on a single leadframe.
The epoxy package contains a special IR filter.
This module has excellent performance even in disturbed ambient light applications and provides protection against uncontrolled output pulses.

● Features
- Photo detector and preamplifier in one package.
- Internal filter for PCM frequency.
- Inner shield, good anti-interference ability.
- High immunity against ambient light.
- Improved shielding against electric field disturbance.
- 3.0V or 5.0V supply voltage; low power consumption.
- TTL and CMOS compatibility.
- 8ms data pause time codes are acceptable.

● Applications:
1. Optical switch
2. Light detecting portion of remote control
   - AV instruments such as Audio, TV, VCR, CD, MD, DVD, etc.
   - Home appliances such as Air-conditioner, Fan, etc.
   - CATV set top boxes
   - Multi-media Equipment

Absolute Maximum Ratings (Ta=25°C)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Ratings</th>
<th>Unit</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Voltage</td>
<td>Vs</td>
<td>2.1-6.5</td>
<td>V</td>
<td>i</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>Topr</td>
<td>-20~+65</td>
<td>°C</td>
<td>i</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>Tstg</td>
<td>-40~+85</td>
<td>°C</td>
<td>i</td>
</tr>
<tr>
<td>Soldering Temperature</td>
<td>Tsd</td>
<td>260</td>
<td>°C</td>
<td>4mm from mold body less than 5 sec</td>
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</tbody>
</table>
Electrical And Optical Characteristics (Ta=25°C)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Ratings</th>
<th>Unit</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Min.</td>
<td>Typ.</td>
<td>Max.</td>
</tr>
<tr>
<td>Supply Voltage</td>
<td>V_s</td>
<td>2.1</td>
<td>-</td>
<td>5.5</td>
</tr>
<tr>
<td>Supply Current</td>
<td>I_{cc}</td>
<td>i</td>
<td>i</td>
<td>1.5</td>
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<tr>
<td>Reception Distance</td>
<td>L_0</td>
<td>17</td>
<td>i</td>
<td>i</td>
</tr>
<tr>
<td></td>
<td>L_{45}</td>
<td>8</td>
<td>i</td>
<td>i</td>
</tr>
<tr>
<td>B.P.F Center Frequency</td>
<td>f_o</td>
<td>i</td>
<td>38</td>
<td>i</td>
</tr>
<tr>
<td>Peak Wavelength</td>
<td>\lambda_p</td>
<td>i</td>
<td>940</td>
<td>i</td>
</tr>
<tr>
<td>Half Angle</td>
<td>\theta</td>
<td>i</td>
<td>45</td>
<td>i</td>
</tr>
<tr>
<td>High Level Pulse Width</td>
<td>T_H</td>
<td>400</td>
<td>i</td>
<td>800</td>
</tr>
<tr>
<td>Low Level Pulse Width</td>
<td>T_L</td>
<td>400</td>
<td>i</td>
<td>800</td>
</tr>
<tr>
<td>High Level Output Voltage</td>
<td>V_H</td>
<td>4.5</td>
<td>i</td>
<td>i</td>
</tr>
<tr>
<td>Low Level Output Voltage</td>
<td>V_L</td>
<td>i</td>
<td>i</td>
<td>0.5</td>
</tr>
</tbody>
</table>

*1: The ray receiving surface at a vertex and relation to the ray axis in the range of \theta=0° and \theta=45°

*2: A range from 30cm to the arrival distance. Average value of 50 pulses

** BLOCK DIAGRAM **

![Block Diagram](http://www.photo-link.cn)
Test Method

A. Standard Transmitter

Transmitter Output

600us  600us

B. Detection Length Test

Standard Transmitter

D.U.T Output Pulse

Vcc

Vout

Vcc

Vout

Oscilloscope

Vcc

GND

Vout

Oscilloscope

C. Pulse Width Test

Transmitter Output

600us  600us

D. U.T Output Pulse

T_L

T_H

V_H

V_L

0V

Application Circuit

Infrared Emitting Diode

IRM

Vcc

Out

47uF

47

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Package Dimensions:

NOTES:
1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.30mm (0.012"") unless otherwise specified.
3. Specifications are subject to change without notice.
Electrical And Optical Curves (Ta=25°C)

Fig. 1 Relative Spectral Sensitivity vs. Wavelength

Fig. 2 Relative Transmission Distance vs. Direction

Fig. 3 Frequency Dependence of Responsivity

Fig. 4 Supply Current vs. Ambient Temperature

Fig. 5 Relative Transmission Distance vs. Direction