**IS3H4**

**DESCRIPTION**

The IS3H4 is an optically coupled isolator consisting of two infrared light emitting diodes in inverse parallel and an NPN silicon photo transistor. It belongs to Isocom’s Compact range of opto-couplers.

**FEATURES**

- Low profile package (half pitch)
- Bi-Directional input
- AC Isolation test voltage 3750Vrms
- Low coupling capacitance typically 0.6pF
- CTR selections available
- Wide temperature range
- Lead free

**APPLICATIONS**

- Power Supply Feedback Voltage/Current
- Industrial system controllers
- Measuring instruments
- Ring detection on telephone lines
- Signal transmission between systems of different potentials and impedance

**ORDER INFORMATION**

- Available in Tape and Reel with 1000 and 5000 pieces per reel

**MARKING INFORMATION**

Please note that the device will be marked with the generic part number “AHP1” the date code will also be marked on the device.

**ABSOLUTE MAXIMUM RATINGS**

**Input Diode**

- Forward Current ±50mA
- Reverse Voltage 6V
- Power dissipation 70mW

**Output Transistor**

- Collector to Emitter Voltage 80V
- Emitter to Collector Voltage 6V
- Collector Current 50mA
- Power Dissipation 150mW

**Total Package**

- Isolation test Voltage 3750Vrms
- Operating Temperature -55 to 100°C
- Storage Temperature -55 to 125°C
IS3H4 AC Input (Compact Range)

**ELECTRICAL CHARACTERISTICS**
Ambient Temperature = 25°C unless otherwise specified

### INPUT

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Test Condition</th>
<th>Min</th>
<th>Typ.</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward Voltage</td>
<td>$V_F$</td>
<td>$I_F = 50\text{mA}$</td>
<td>1.25</td>
<td>1.6</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Reverse Leakage</td>
<td>$I_R$</td>
<td>$V_R = 6\text{V}$</td>
<td></td>
<td>10</td>
<td></td>
<td>$\mu\text{A}$</td>
</tr>
<tr>
<td>Junction Capacitance</td>
<td>$C_j$</td>
<td>$V_R = 0\text{V}, f = 1\text{ MHz}$</td>
<td>50</td>
<td></td>
<td></td>
<td>pF</td>
</tr>
</tbody>
</table>

### OUTPUT

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Test Condition</th>
<th>Min</th>
<th>Typ.</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collector—Emitter breakdown Voltage</td>
<td>$BV_{CEO}$</td>
<td>$I_C = 100\mu\text{A}$</td>
<td>80</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Emitter—Collector breakdown Voltage</td>
<td>$BV_{EEO}$</td>
<td>$I_E = 100\mu\text{A}$</td>
<td>6</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Collector dark Current</td>
<td>$I_{CEO}$</td>
<td>$V_{CE} = 20\text{V}, I_F = 0\text{mA}$</td>
<td>100</td>
<td></td>
<td></td>
<td>nA</td>
</tr>
</tbody>
</table>

### COUPLED

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Test Condition</th>
<th>Min</th>
<th>Typ.</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current transfer ratio</td>
<td>$CTR$</td>
<td>$I_F = \pm 1\text{mA}, V_{CE} = 5\text{V}$</td>
<td>20</td>
<td>300</td>
<td></td>
<td>%</td>
</tr>
<tr>
<td>Collector—Emitter saturation Voltage</td>
<td>$V_{CEsat}$</td>
<td>$I_F = \pm 20\text{mA}, I_C = 1\text{mA}$</td>
<td>0.2</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Input to output isolation Voltage</td>
<td>$V_{ISO}$</td>
<td>See note 1</td>
<td>3750</td>
<td></td>
<td></td>
<td>$V_{RMS}$</td>
</tr>
<tr>
<td>Output rise time</td>
<td>$t_r$</td>
<td>$V_S = 2\text{V}, I_C = 2\text{mA}, R_L = 100\Omega$</td>
<td>6</td>
<td>18</td>
<td></td>
<td>$\mu\text{S}$</td>
</tr>
<tr>
<td>Output fall time</td>
<td>$t_f$</td>
<td>$V_S = 2\text{V}, I_C = 2\text{mA}, R_L = 100\Omega$</td>
<td>6</td>
<td>18</td>
<td></td>
<td>$\mu\text{S}$</td>
</tr>
<tr>
<td>Cut off frequency</td>
<td>$f_c$</td>
<td>$I_F = 10\text{mA}, V_{CE} = 5\text{V}, R_L = 100\Omega$</td>
<td>100</td>
<td></td>
<td></td>
<td>kHz</td>
</tr>
<tr>
<td>Floating Capacitance</td>
<td>$C_{IO}$</td>
<td>$f = 1\text{ MHz}$</td>
<td>0.6</td>
<td>1.0</td>
<td></td>
<td>pF</td>
</tr>
</tbody>
</table>

**Note 1** Measured with input leads shorted together and output leads shorted together.
IS3H4 AC Input (Compact Range)

Figure 4. Total Power Dissipation vs. Ambient Temperature

Figure 7. Collector Dark Current vs. Ambient Temperature

Figure 5. Forward Current vs. Forward Voltage

Figure 6. Collector Current vs. Forward Current

Figure 6. Relative Current Transfer Ratio vs. Ambient Temperature

Figure 9. Collector Current vs. Collector Emitter Voltage
IS3H4 AC Input (Compact Range)

Figure 10. Collector Emitter Saturation Voltage vs. Collector Current

Figure 11. Current Transfer Ratio vs. Forward Current

Figure 12. Turn on/off Time vs. Forward Current

Figure 13. Turn on/off Time vs. Collector Current

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