Monolithic Hall Effect ICs  EM-series  ASAHI KASEI MICRODEVICES

EM-1791

Shipped in packet-tape reel(5000pcs/Reel)

EM-1791 is ultra-small Hall effect ICs of a single silicon chip composed of Hall element and a signal processing IC.

Unipolar Hall Effect Switch
Two output for S and N-pole
Supply Voltage
1.6~5.5V
Hall Element Pulse Exitation
High Sensitivity
Bop:2.5mT
Output CMOS
Two output for S and N-pole
SMT

Notice: It is requested to read and accept "IMPORTANT NOTICE" written on the back of the front cover of this catalogue.

Operational Characteristics

Vout 1
Vh
H
Bop1
Bop1
Bop1
Bop1
0
Brp1
Brp1
Brp1
Brp1
S-pole
Magnetic flux density
Vout 2
Vh
H
Bop2
Bop2
Bop2
Bop2
0
Brp2
Brp2
Brp2
Brp2
N-pole
Magnetic flux density

Absolute Maximum Ratings (Ta=25C)

<table>
<thead>
<tr>
<th>Item</th>
<th>Symbol</th>
<th>Min.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Voltage</td>
<td>VDD</td>
<td>-0.1</td>
<td>6.0</td>
<td>V</td>
</tr>
<tr>
<td>Output Current</td>
<td>Iout</td>
<td>-0.5</td>
<td>+0.5</td>
<td>mA</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>Tstg</td>
<td>-40</td>
<td>+125</td>
<td>°C</td>
</tr>
</tbody>
</table>

Recommended Operating Conditions

<table>
<thead>
<tr>
<th>Item</th>
<th>Symbol</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Voltage</td>
<td>VDD</td>
<td>1.6</td>
<td>1.85</td>
<td>5.5</td>
<td>V</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>Topr</td>
<td>-30</td>
<td>+25</td>
<td>+85</td>
<td>°C</td>
</tr>
</tbody>
</table>

Magnetic and Electrical Characteristics (Ta=25°C VDD=1.85V)

<table>
<thead>
<tr>
<th>Item</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Point</td>
<td>Bop1</td>
<td>*1.4</td>
<td>2.5</td>
<td>3.2</td>
<td>mT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bop2</td>
<td>-3.2</td>
<td>-2.5</td>
<td>-1.4</td>
<td>mT</td>
<td></td>
</tr>
<tr>
<td>Releasing Point</td>
<td>Brp1</td>
<td>1.2</td>
<td>2.0</td>
<td>3.0</td>
<td>mT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Brp2</td>
<td>-3.0</td>
<td>-2.0</td>
<td>-1.2</td>
<td>mT</td>
<td></td>
</tr>
<tr>
<td>Hysteresis</td>
<td>Bh1,Bh2</td>
<td>0.5</td>
<td></td>
<td></td>
<td>mT</td>
<td></td>
</tr>
<tr>
<td>Period</td>
<td>Tp</td>
<td>50</td>
<td>100</td>
<td>ms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output High Voltage</td>
<td>Voh</td>
<td>Ioh=0.2mA</td>
<td></td>
<td></td>
<td>V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VDD</td>
<td>VDD=0.4</td>
<td></td>
<td></td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Output Low Voltage</td>
<td>Vol</td>
<td>Iol=+0.2mA</td>
<td></td>
<td>0.4</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Supply Current</td>
<td>Ios</td>
<td>Average</td>
<td>6.5</td>
<td>9</td>
<td>μA</td>
<td></td>
</tr>
</tbody>
</table>

Note: The characteristics with* marks are design targets. 1 mT = 10 Gauss

Magnetic Characteristics (Ta=-30~+85°C VDD=1.85V)

<table>
<thead>
<tr>
<th>Item</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Point</td>
<td>Bop1</td>
<td></td>
<td>1.3</td>
<td>2.5</td>
<td>3.5</td>
<td>mT</td>
</tr>
<tr>
<td></td>
<td>Bop2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Releasing Point</td>
<td>Brp1</td>
<td></td>
<td>1.1</td>
<td>2.0</td>
<td>3.3</td>
<td>mT</td>
</tr>
<tr>
<td></td>
<td>Brp2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hysteresis</td>
<td>Bh1,Bh2</td>
<td></td>
<td>0.5</td>
<td></td>
<td></td>
<td>mT</td>
</tr>
</tbody>
</table>

Application Circuit

CMOS OUTPUT

OUT1: VDD
EM-1791
OUT2: VSS
Bypass Capacitor
0.1μF

CMOS OUTPUT

VDD
Bypass Capacitor
0.1μF
GND
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### Package (Unit:mm)

![Package Diagram](image)

### Function Timing Chart

![Function Timing Chart](image)

This Hall effect IC’s output is held as internal data just before the internal circuit turns OFF (Icc OFF). And after 48.8 μs, the output changes.

### IDD Pulse Driving (Vcc=1.85V)

![IDD Pulse Driving](image)

### Temperature Dependence of Bop. Brp

![Temperature Dependence](image)
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