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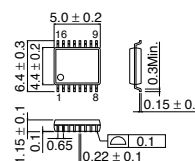
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## Shock Sensor Signal Processing IC BD3893FV

### ● Description

The BD3893FV is a shock sensor signal processing IC for HDD, CD/DVD drive that detects a shock by signal from sensor by connecting an external shock sensor. It is available for shock sensors of voltage sensitivity type and electric charge sensitivity type. This IC incorporates high-resistance (50MΩ) to compose a charge amplifier.

### ● Dimension (Unit : mm)



### ● Features

- 1) Available for shock sensor of voltage sensitivity type and electric charge sensitivity type
- 2) Built-in 50MΩ of resistance for pre-amplifier
- 3) Available for applications of flag detection type and analog signal output type
- 4) Built-in secondary LPF
- 5) Cut-off frequency of LPF can be changed to 2k, 4k, 8k and 12k
- 6) Internal reference voltage selectable  
(Resistance split voltage, band gap voltage)

**SSOP-B16**

### ● Applications

HDD, CD, DVD drive

### ● Absolute Maximum Ratings (Ta=25°C)

| Parameter                   | Symbol           | Limits                      | Unit |
|-----------------------------|------------------|-----------------------------|------|
| Supply voltage              | V <sub>DD</sub>  | -0.3 ~ +6.0                 | V    |
| Terminal voltage            | V <sub>IN</sub>  | -0.3 ~ V <sub>DD</sub> +0.3 | V    |
| Storage temperature range   | T <sub>stg</sub> | -55 ~ +125                  | °C   |
| Power dissipation           | P <sub>d</sub>   | 400 *                       | mW   |
| Operating temperature range | T <sub>opr</sub> | -25 ~ +75                   | °C   |

\*Derating : 4.0mW/°C for operation above Ta=25°C

\*This product is not designed for protection against radioactive rays.

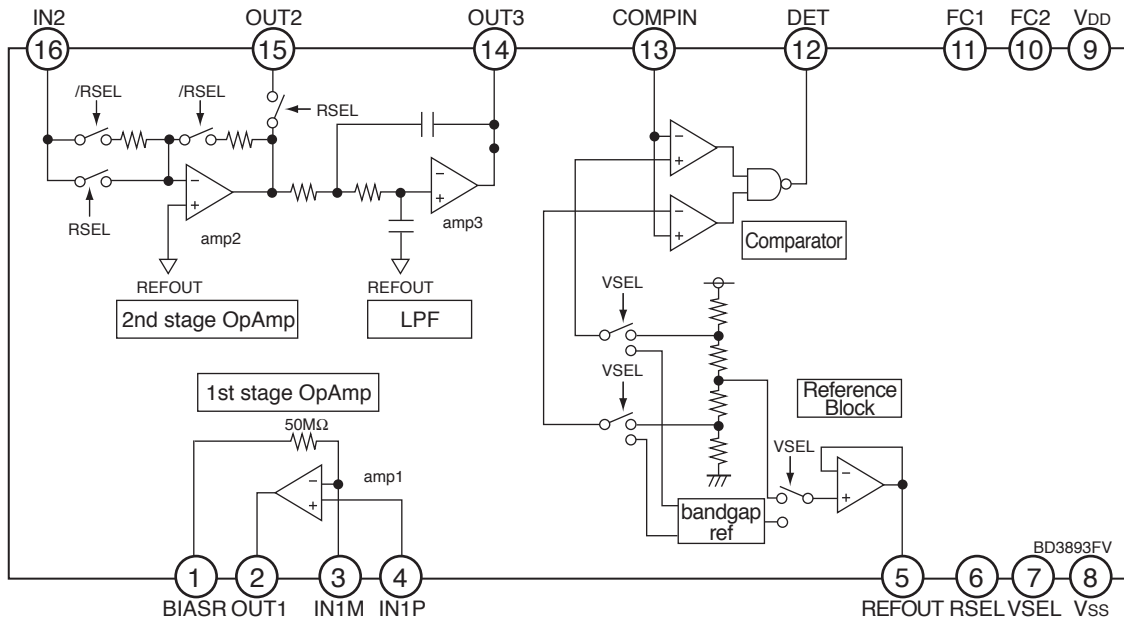
### ● Recommended Operating Conditions (Ta=25°C)

| Parameter      | Symbol          | Min. | Typ. | Max. | Unit |
|----------------|-----------------|------|------|------|------|
| Supply voltage | V <sub>DD</sub> | 3.0  | -    | 5.5  | V    |

● Electrical characteristics (Unless otherwise noted; Ta=25°C, VDD=5V)

| Parameter           | Symbol  | Min. | Typ. | Max. | Unit | Conditions               |
|---------------------|---------|------|------|------|------|--------------------------|
| Current consumption | IDD     | –    | 2    | 4    | mA   |                          |
| <Reference voltage> |         |      |      |      |      |                          |
| Reference voltage 1 | VREF1   | 2.42 | 2.5  | 2.58 | V    | VDD=5V, VSEL=Low         |
| Reference voltage 2 | VREF2   | 1.59 | 1.65 | 1.71 | V    | VDD=3.3V, VSEL=Low       |
| Reference voltage 3 | VREF3   | 1.12 | 1.2  | 1.28 | V    | VDD=3.3V, VSEL=High      |
| <Pre-Op. Amp.>      |         |      |      |      |      |                          |
| Internal resistor   | RBIAS   | 30   | 50   | –    | MΩ   |                          |
| <2nd step Op. Amp.> |         |      |      |      |      |                          |
| Gain                | Gv      | 28   | 30   | 32   | dB   | RSEL=Low                 |
| <Low pass filter>   |         |      |      |      |      |                          |
| Cut-off frequency 1 | FCLP1   | 1    | 2    | 3.6  | kHz  | FC1=Low, FC2=Low, -3dB   |
| Cut-off frequency 2 | FCLP2   | 2    | 4    | 7.2  | kHz  | FC1=Low, FC2=High, -3dB  |
| Cut-off frequency 3 | FCLP3   | 4    | 8    | 14.4 | kHz  | FC1=High, FC2=Low, -3dB  |
| Cut-off frequency 4 | FCLP4   | 6    | 12   | 21.6 | kHz  | FC1=High, FC2=High, -3dB |
| <Window comparator> |         |      |      |      |      |                          |
| Trip voltage 1      | VTRIP1H | 2.9  | 3    | 3.1  | V    | VDD=5V, VSEL=Low         |
|                     | VTRIP1L | 1.91 | 2    | 2.09 | V    |                          |
| Trip voltage 2      | VTRIP2H | 1.9  | 1.98 | 2.06 | V    | VDD=3.3V, VSEL=Low       |
|                     | VTRIP2L | 1.24 | 1.32 | 1.4  | V    |                          |
| Trip voltage 3      | VTRIP3H | 1.38 | 1.5  | 1.62 | V    | VDD=3.3V, VSEL=High      |
|                     | VTRIP3L | 0.8  | 0.9  | 1.0  | V    |                          |

● Block Diagram



## Appendix

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