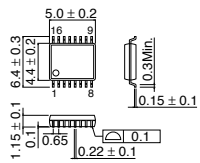
Shock Sensor Signal Processing IC
BD3893FV

● 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)



SSOP-B16

● 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)

● Applications

HDD, CD, DVD drive

● Absolute Maximum Ratings (Ta=25˚C)

Parameter	Symbol	Limits	Unit
Supply voltage	V_{DD}	–0.3 ~ +6.0	V
Terminal voltage	V_{IN}	–0.3 ~ V_{DD}+0.3	V
Storage temperature range	Tstg	–55 ~ +125	˚C
Power dissipation	Pd	400 *	mW
Operating temperature range	Topr	–25 ~ +75	˚C

∗Derating : 4.0mW/˚C for operation above Ta=25˚C
∗This product is not designed for protection against radioactive rays.

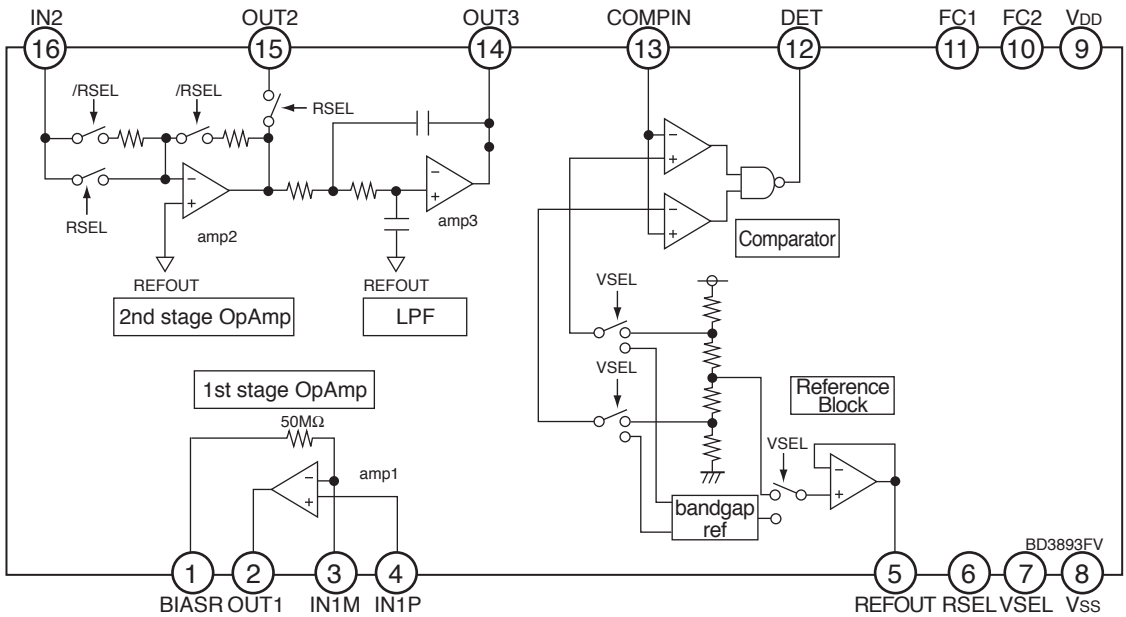
● Recommended Operating Conditions (Ta=25˚C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	V_{DD}	3.0	–	5.5	V

● Electrical characteristics (Unless otherwise noted; Ta=25˚C, V_{DD}=5V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Current consumption	I_{DD}	–	2	4	mA	
<Reference voltage>						
Reference voltage 1	V_{REF1}	2.42	2.5	2.58	V	V_{DD}=5V, VSEL=Low
Reference voltage 2	V_{REF2}	1.59	1.65	1.71	V	V_{DD}=3.3V, VSEL=Low
Reference voltage 3	V_{REF3}	1.12	1.2	1.28	V	V_{DD}=3.3V, VSEL=High
<Pre-Op. Amp.>						
Internal resistor	R_{BIAS}	30	50	–	MΩ	
<2nd step Op. Amp.>						
Gain	G_V	28	30	32	dB	RSEL=Low
<Low pass filter>						
Cut-off frequency 1	F_{CLP1}	1	2	3.6	kHz	FC1=Low, FC2=Low, −3dB
Cut-off frequency 2	F_{CLP2}	2	4	7.2	kHz	FC1=Low, FC2=High, −3dB
Cut-off frequency 3	F_{CLP3}	4	8	14.4	kHz	FC1=High, FC2=Low, −3dB
Cut-off frequency 4	F_{CLP4}	6	12	21.6	kHz	FC1=High, FC2=High, −3dB
<Window comparator>						
Trip voltage 1	V_{TRIP1H}	2.9	3	3.1	V	V_{DD}=5V, VSEL=Low
	V_{TRIP1L}	1.91	2	2.09	V	
Trip voltage 2	V_{TRIP2H}	1.9	1.98	2.06	V	V_{DD}=3.3V, VSEL=Low
	V_{TRIP2L}	1.24	1.32	1.4	V	
Trip voltage 3	V_{TRIP3H}	1.38	1.5	1.62	V	V_{DD}=3.3V, VSEL=High
	V_{TRIP3L}	0.8	0.9	1.0	V	

● Block Diagram



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