MN3005
4096-STAGE LONG DELAY BBD

Product Specification

Specification Revision History ：

Version	Data	Description
2015-04-A1	2015-04	New-made

1、General Description

The MN3005 is world's first 4096-stage long delay BBD,8 times longer than 512-stage BBD manufactured by using a P-channel low noise silicon gate process.

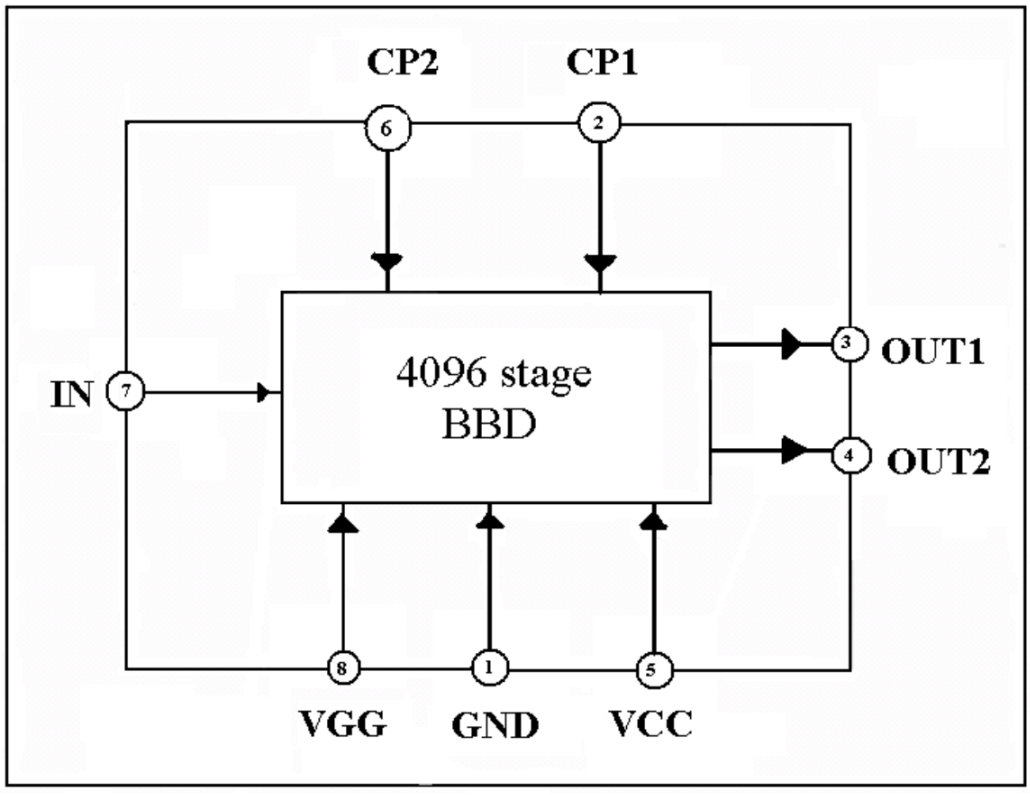
Long signal delay time 205ms can be obtained at clock frequency 10KHz.S/N is 75dB. S/N has been improved by more than 20dB in comparting with 8-connected 512-stage BBD's. The MN3005 is suitably used for reverberation and echo effects in electronic musical instruments such as electronic organ, guitar amplifier and music synthesizer which need long delay time.

Features:

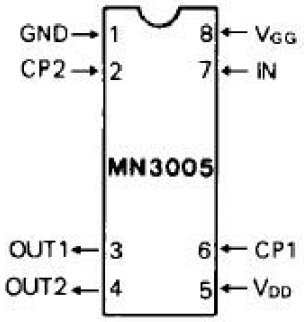
- 1 chip 4096 stage and wide range of variable delay times: 20.48~204.8ms.
- High S/N in spite of multi-stage and wide dynamic range: S/N≈75dB typ.
- No insertion loss since the loss occuring in the signal transfer is corrected by the MOS capacity of input and output. Li = 0dB.
- High integration and high reliability by using P channel low noise silicon gate process.
- Special 8 lead dual-in-line plastic package.

2、Block Diagram And Pin Description

2.1、Block Diagram



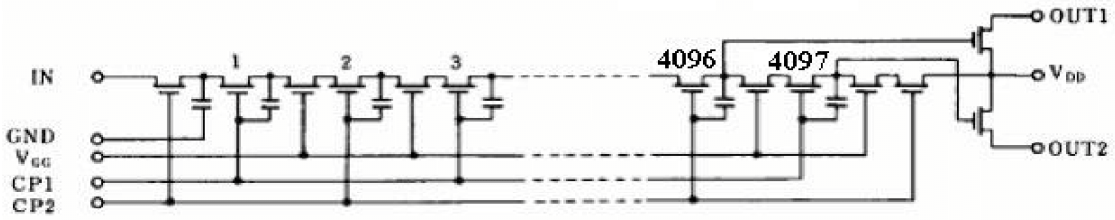
2.2、Pin Configurations



2.3、Pin Description

Pin No.	Pin Name	Description
1	GND	Ground Pin
2	CP2	Clock input Pin
3	OUT1	Signal output Pin
4	OUT2	Signal output Pin
5	VDD	Power supply pin
6	CP1	Clock input Pin
7	IN	Signal input Pin
8	VGG	Bar voltage

2.4、Circuit Diagram



3、Electrical Parameter

3.1、 Absolute Maximum Ratings

(Ta=25℃)

Characteristic	Symbol	Conditions	Value	Unit
Terminal voltage	V_{DD},V_{GG},V_{CP},V_I		-18~+0.3	V
Output voltage	V_O		-18~+0.3	V
Operating temperature	Topr		-20~+60	℃
Storage temperature	Tstg		-55~+125	℃

3.2、Operating Conditions

(Ta=25℃)

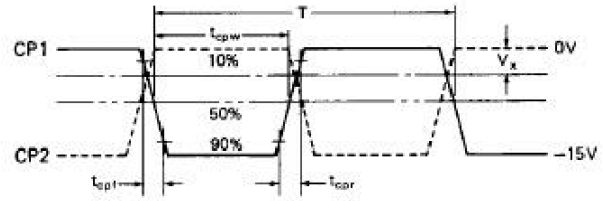
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain Supply Voltage	V_{DD}		-14	-15	-16	V
Gate Supply Voltage	V_{GG}			VDD+1		V
Clock Voltage "H" Level	V_{CPH}		0		-1	V
Clock Voltage "L" Level	V_{CPL}			VDD		V
Clock Input Capacitance	V_{CP}				2800	pF
Clock Frequency	Fcp		10		100	kHz
Clock Pulse Width *2	T_{CPW}	Test Circuit			0.5T*2	
Clock Rise Time *2	Tcpr	Test Circuit			500	ns
Clock Fall Time *2	Tcpf	Test Circuit			500	ns
Clock Cross Point	Vx		0		-3	V
Input DC Bias Voltage	V		-5		-10	V

3.3、Electrical Characteristics

(Ta=25℃ , VDD=V_{CPL}=-15V,V_{CPH}=0V,VGG=-14V， R_L=100kΩ)

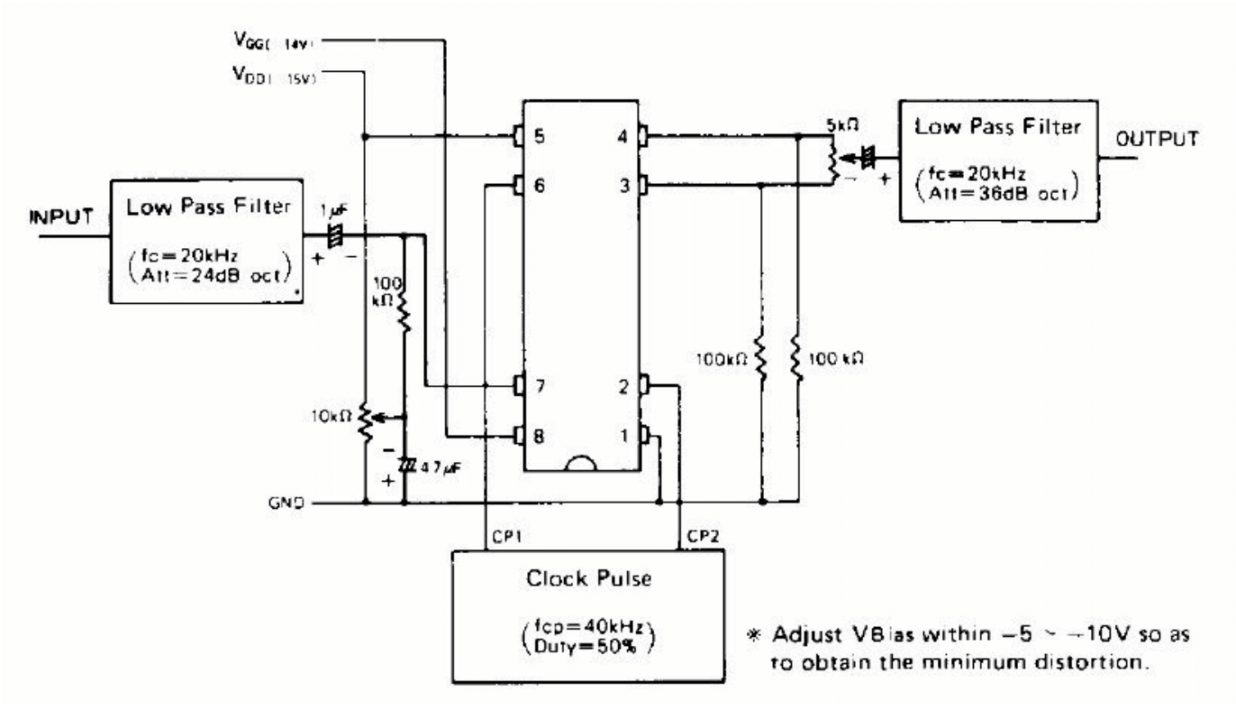
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Signal Delay Time	**t_D**		**20.48**		**204.8**	**ms**
Input Signal Frequency	**fi**	**Fcp=40kHz,Vi=1Vrms,Output Attenuation ≤ 3dB**	**10**			**KHz**
Input Signal Swing	**Vi**	**Fcp=40kHz,fi=1kHz,THD=2.5%**	**0.9**			**Vrms**
Insertion Loss	**Li**	**Fcp=40kHz,fi=1kHz,Vi=1Vrms**	**-4**	**0**	**4**	**dB**
Total Harmonic Distortion	**THD**	**Fcp=40kHz,fi=1kHz,Vi=0.78Vrms**		**2.5**	**4**	**%**
Noise Voltage	**Vno**	**Fcp=100kHz weighted by "A" curve**			**0.8**	**mVrms**
Signal to Noise Ratio	**S/N**			**75**		**dB**

3.4、Clock Pulse Waveforms



*2 T = 1/fcp

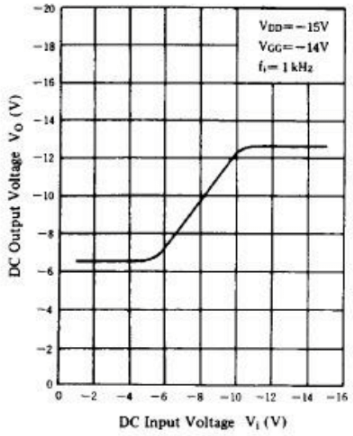
4、Testing Circuit



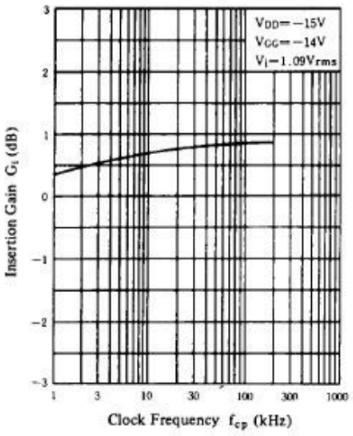
5、Characteristic Curve

5.1、Typical Electrical Characteristic Curves

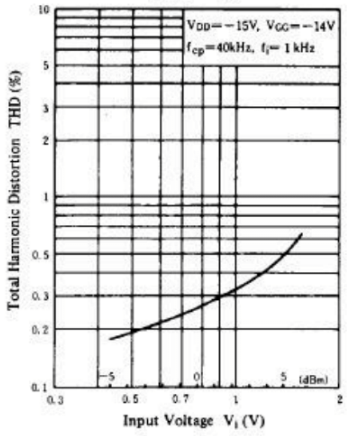
V_O—V_I



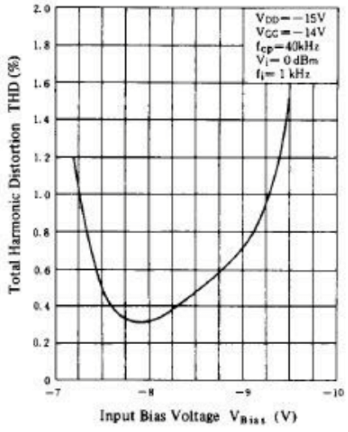
G_i—f_{cp}



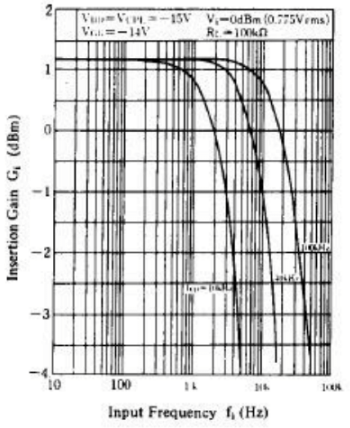
THD—V_i



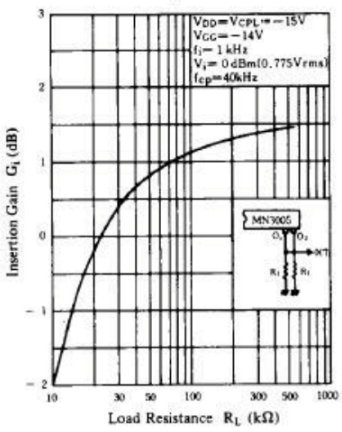
THD—V_{Bias}



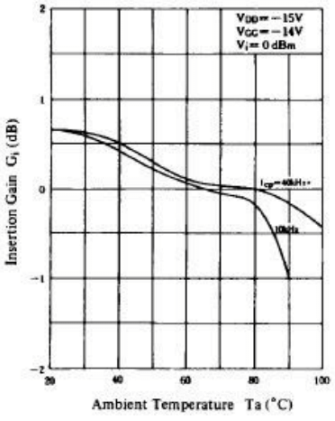
G_i—f_i



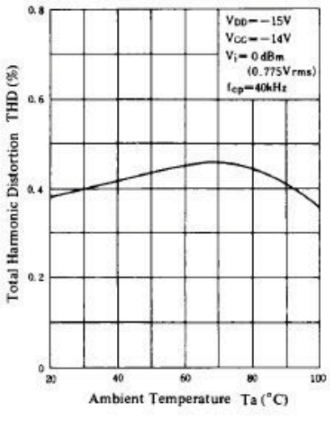
G_i—R_L



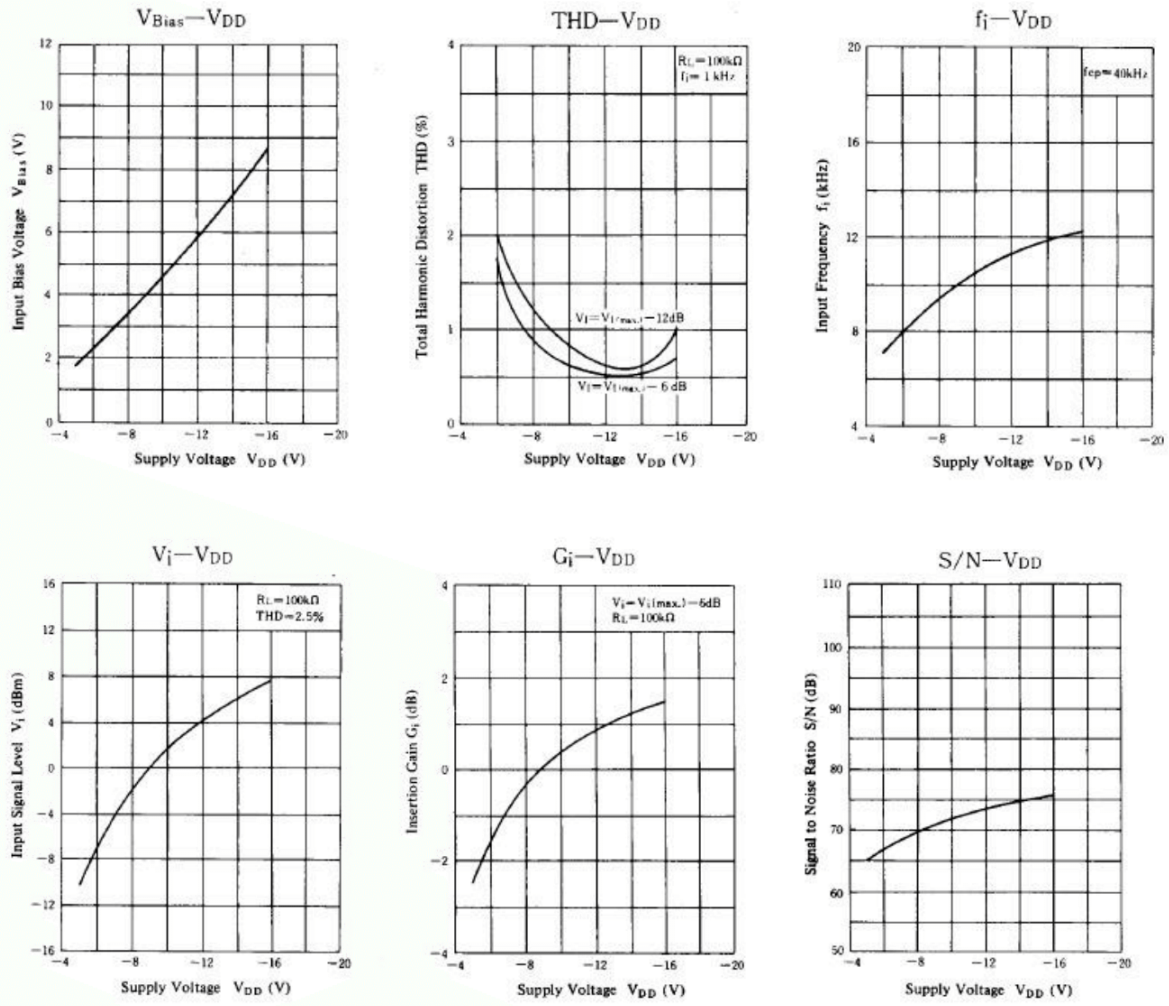
G_i—Ta



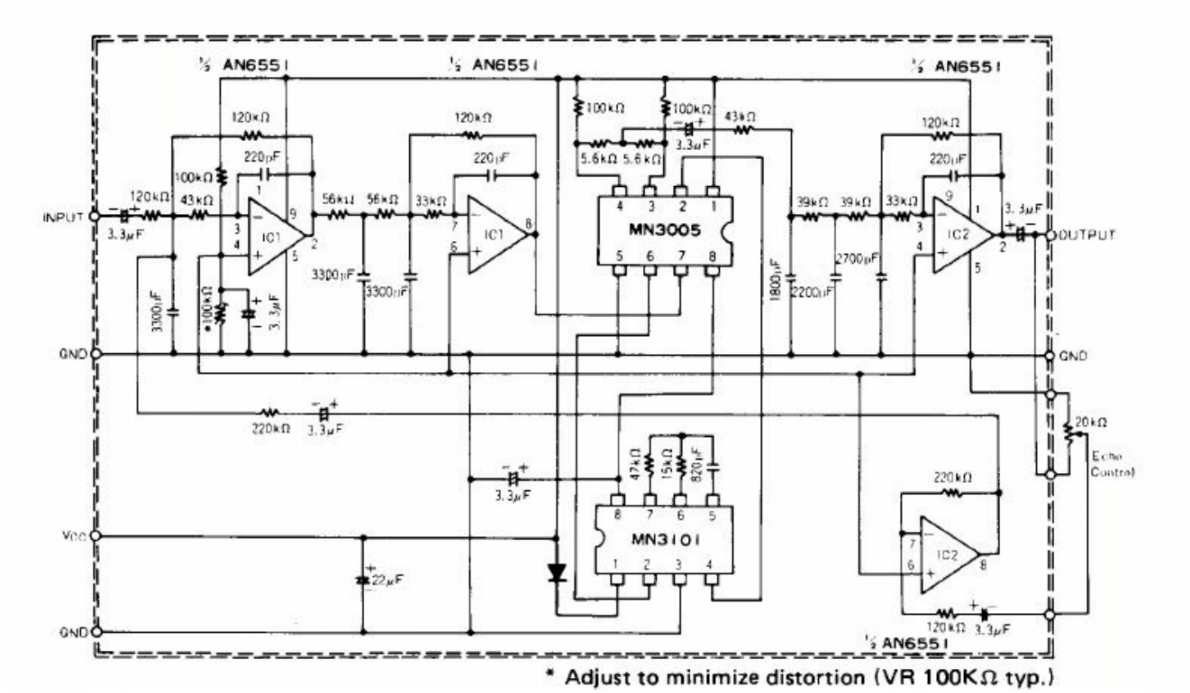
THD—Ta



5.2、Supply Voltage Characteristics

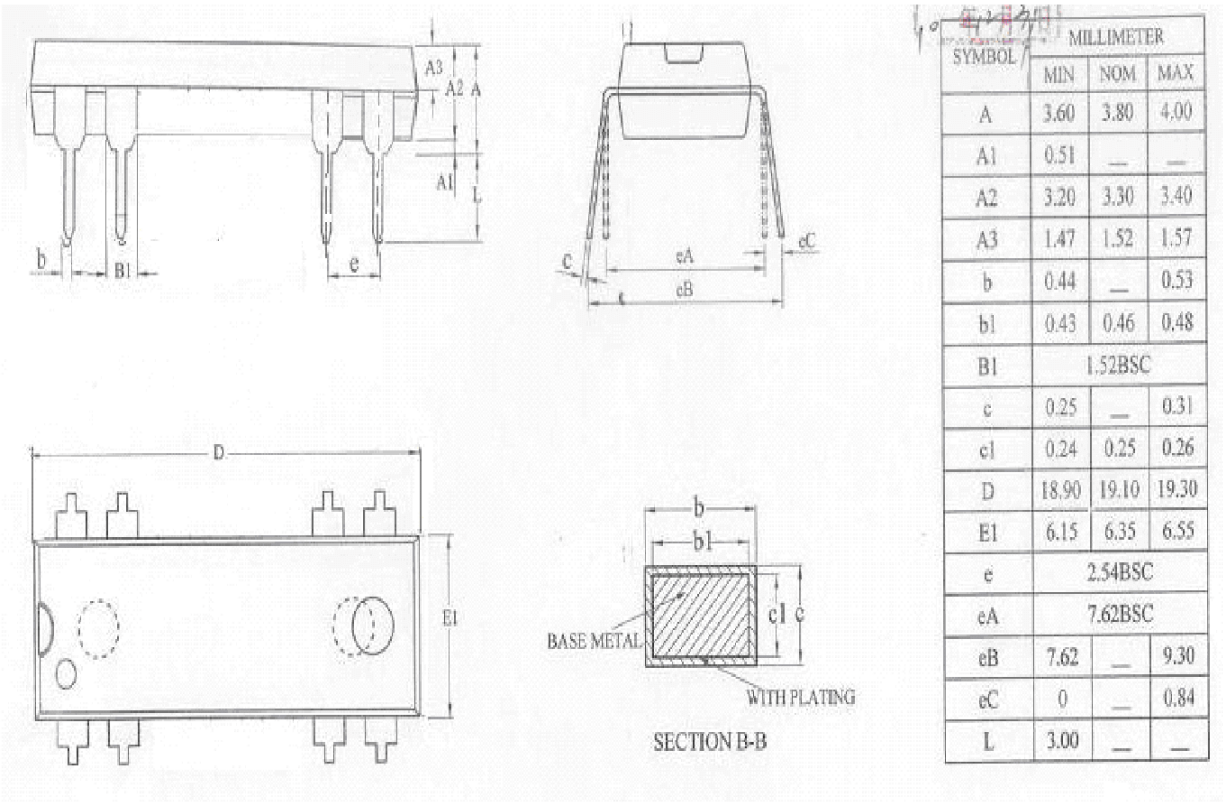


6、Typical Application Circuit



7、Package Information

7. 1、PDIP14(C)



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	3.60	3.80	4.00
A1	0.51	—	—
A2	3.20	3.30	3.40
A3	1.47	1.52	1.57
b	0.44	—	0.53
b1	0.43	0.46	0.48
B1	1.52BSC		
c	0.25	—	0.31
c1	0.24	0.25	0.26
D	18.90	19.10	19.30
E1	6.15	6.35	6.55
e	2.54BSC		
eA	7.62BSC		
eB	7.62	—	9.30
eC	0	—	0.84
L	3.00	—	—

8、Statements And Notes：

8.1、The name and content of Hazardous substances or Elements in the product

Part name	Hazardous substances or Elements					
	Lead and lead compounds	Mercury and mercury compounds	Cadmium and cadmium compounds	Hexavalent chromium compounds	Polybrominated biphenyls	Polybrominated biphenyl ethers
Lead frame	○	○	○	○	○	○
Plastic resin	○	○	○	○	○	○
Chip	○	○	○	○	○	○
The lead	○	○	○	○	○	○
Plastic sheet installed	○	○	○	○	○	○
explanation	○：Indicates that the content of hazardous substances or elements in the detection limit of the following the SJ/T11363-2006 standard。 ×：Indicates that the content of hazardous substances or elements exceeding the SJ/T11363-2006 Standard limit requirements。					

8.2、Notion:

Recommended carefully reading this information before the use of this product；

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