

CMOS-CCD 1H Delay Line for PAL

Description

The CXL5003M/P are general-purpose CMOS-CCD delay line ICs that provide 1H delay time for PAL.

Features

- Low power consumption 110mW (Typ.)
- Small size package (8-pin SOP, DIP)
- Low differential gain DG = 3% (Typ.)
- Input signal amplitude 180 IRE (= 1.28Vp-p, Max.)
- Low input clock amplitude operation 150mVp-p (Min.)
- Built-in peripheral circuits (clock driver, timing generator, autobias, and output circuits)

Functions

- 848-bit CCD register
- Clock drivers
- Autobias circuit
- Sync tip clamp circuit
- Sample and hold circuit

Structure

CMOS-CCD

Absolute Maximum Ratings (Ta = 25°C)

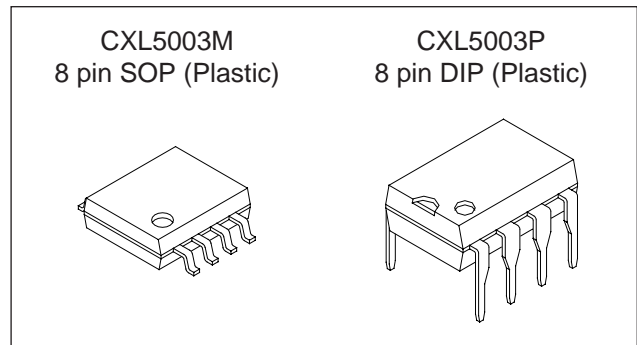
- | | | | |
|-------------------------------|------------------|-------------|--------|
| • Supply voltage | V _{DD} | 11 | V |
| • Supply voltage | V _{CL} | 6 | V |
| • Operating temperature | T _{opr} | -10 to +60 | °C |
| • Storage temperature | T _{stg} | -55 to +150 | °C |
| • Allowable power dissipation | P _D | | |
| | | CXL5003M | 350 mW |
| | | CXL5003P | 480 mW |

Recommended Operating Conditions

- | | | | |
|----------------|-----------------|--------|---|
| Supply voltage | V _{DD} | 9 ± 5% | V |
| | V _{CL} | 5 ± 5% | V |

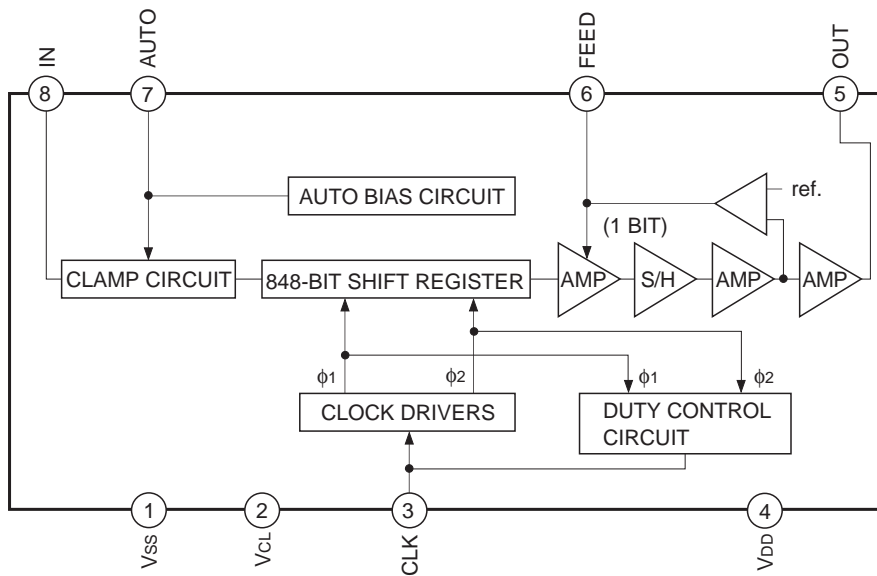
Recommended Clock Conditions

- | | | |
|-------------------------|------------------|--|
| • Input clock amplitude | V _{CLK} | 150mVp-p to 1.0Vp-p
(250mVp-p typ.) |
| • Clock frequency | f _{CLK} | 13.300856MHz |



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Blook Diagram



Pin Description

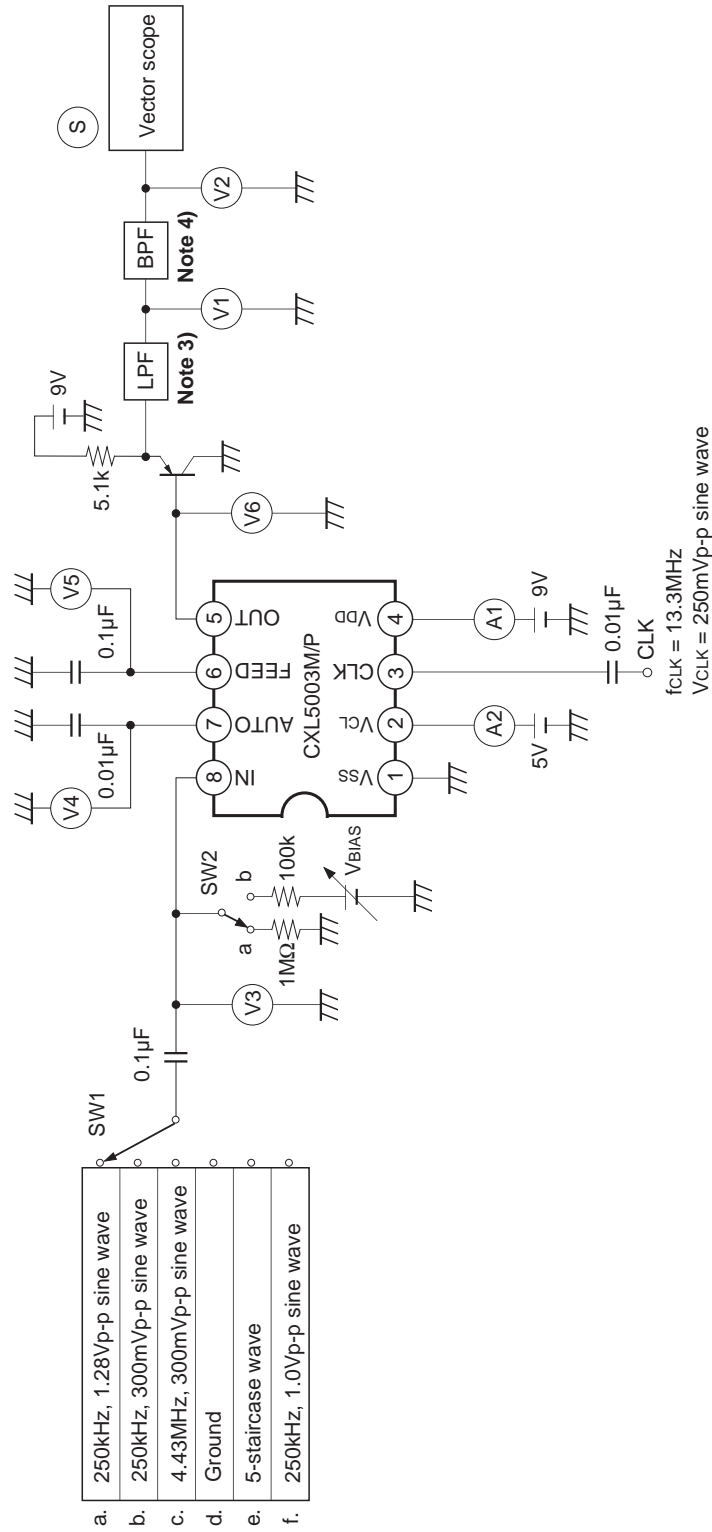
Pin No.	Symbol	Description	Impedance [Ω]	Pin No.	Symbol	Description	Impedance [Ω]
1	V _{SS}	GND		5	OUT	Signal output	600 to 1k
2	V _{CL}	5V power supply		6	FEED	Feedback DC output	> 100k
3	CLK	Clock input	> 100k	7	AUTO	Autobias DC output	10k
4	V _{DD}	9V power supply		8	IN	Signal input	> 100k

Electrical Characteristics

($T_a = 25^\circ\text{C}$, $V_{DD} = 9.0\text{V}$, $V_{CL} = 5.0\text{V}$, $f_{CLK} = 13.3\text{MHz}$, $V_{CLK} = 250\text{mVp-p}$ sine wave,
See "Electrical characteristics test circuit")

Item	Symbol	Measuring condition	SW conditions		Measuring point	Min.	Typ.	Max.	Unit
			1	2					
Supply current	I _{DD}	250kHz, 1.28Vp-p, sine wave input	a	a	A1	—	4	5	mA
	I _{CL}				A2	—	14	16	mA
Insertion gain	IG	250kHz, 1.28Vp-p, sine wave input IG = 20 log (Output voltage [Vp-p] / 1.28 [Vp-p])	a	a	V1	-3	0	3	dB
Frequency response	fG	Dissipation at 4.43MHz in relation to 250kHz fG = 20 log (V _{4.43MHz} / V _{250kHz}) (Note 1)	b, c	b	V1	-3.0	-2.1	—	dB
Differential gain	DG	5-staircase wave input Y = 140 IRE (= 1.0Vp-p) Measure S point with vector scope (Note 2)	e	a	S	—	3	5	%
Differential phase	DP					—	3	5	deg
Allowable input amplitude	V _{IN-AC}		—	—	—	—	—	1.28	Vp-p
Noise	S/N	S: Input = 250kHz, 1.0Vp-p output (Vp-p)	f	a	V2	55	60	—	dB
		N: Input = DC ground output (mVrms)	d	a	V2				
Output DC voltage	V _{IN-AC}		d	a	V3	3.5	5.0	6.5	V
	V _{AUTO-DC}				V4	3.5	5.0	6.5	V
	V _{FEED-DC}	250kHz, 1.28Vp-p, sine wave input	a	a	V5	1.3	2.3	3.3	V
	V _{OUT-DC}				V6	1.7	2.7	3.7	V

Electrical Characteristics Test Circuit

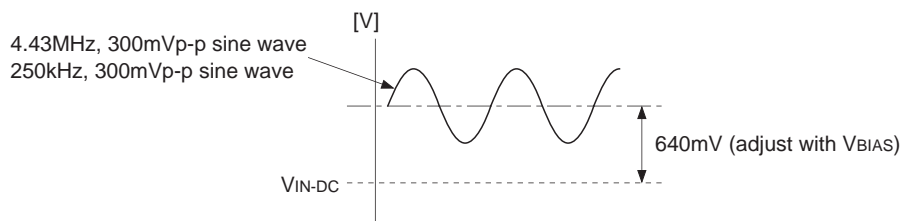


Note 1) Frequency response measuring condition

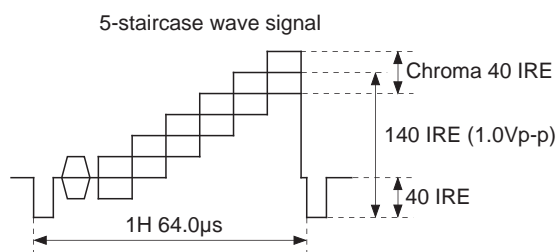
$V_{4.43\text{MHz}}$ (Output signal voltage [Vp-p] at 4.43MHz input)

$V_{250\text{kHz}}$ (Output signal voltage [Vp-p] at 250kHz input)

Set Pin 8 (IN) voltage [V] = $V_{\text{IN-DC}} + 640\text{mV}$.

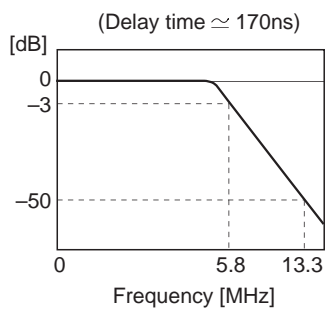


Note 2) Differential gain and differential phase measuring condition

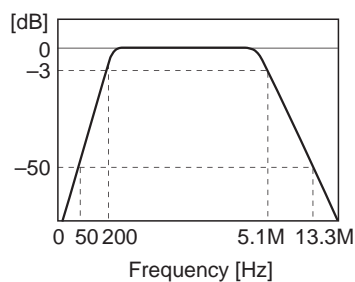


DG and DP are measured at output S point by vector scope.

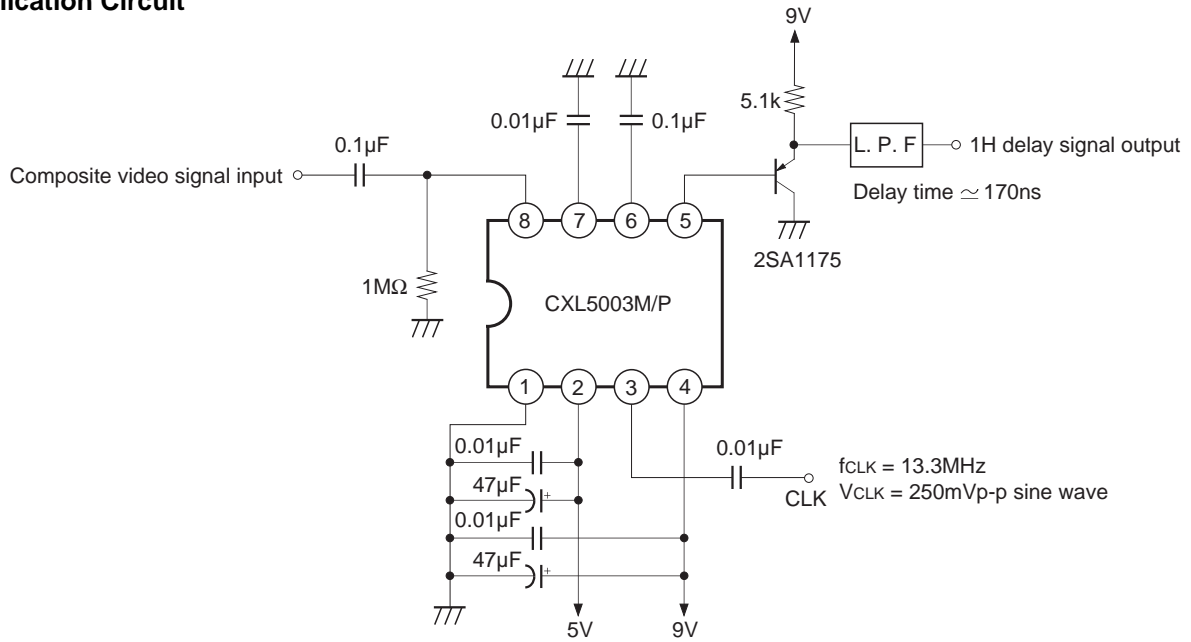
Note 3) LPF frequency response



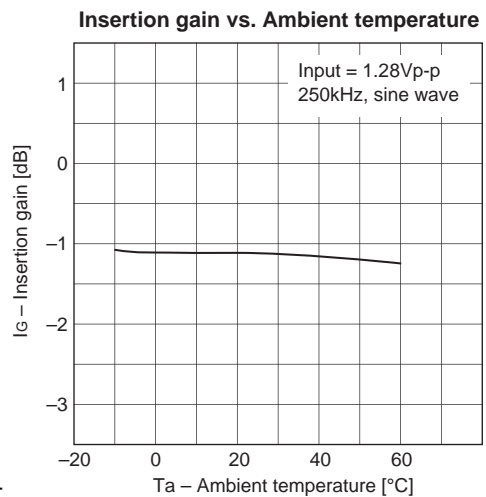
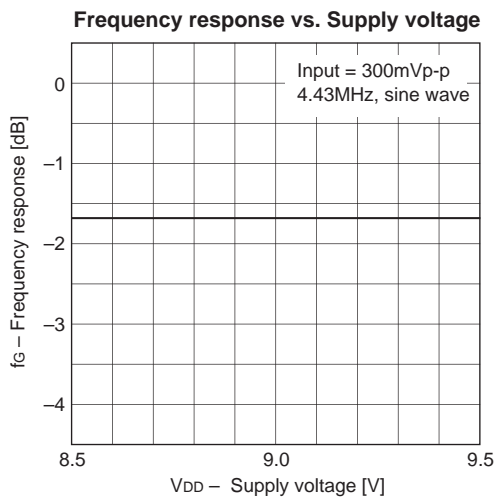
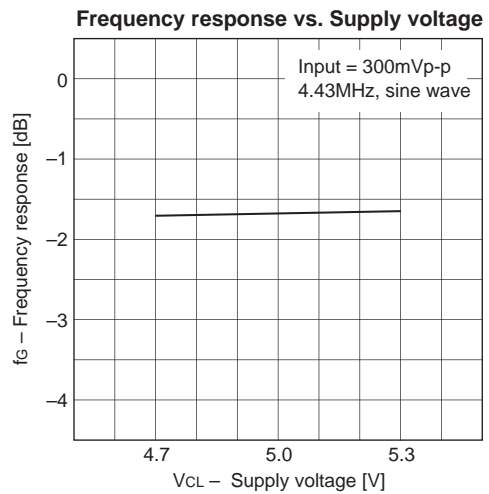
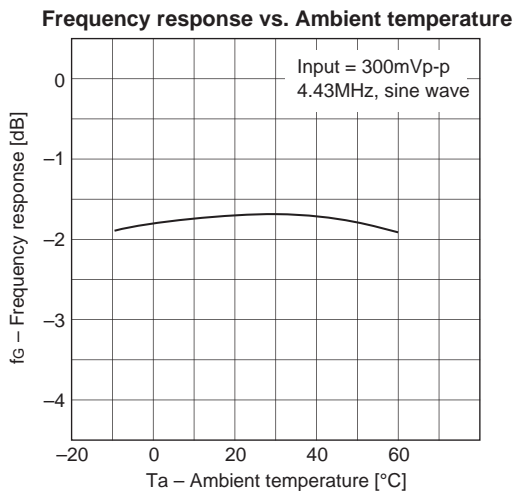
Note 4) BPF frequency response

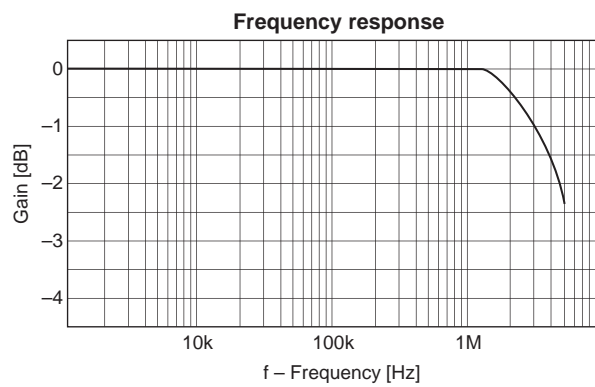
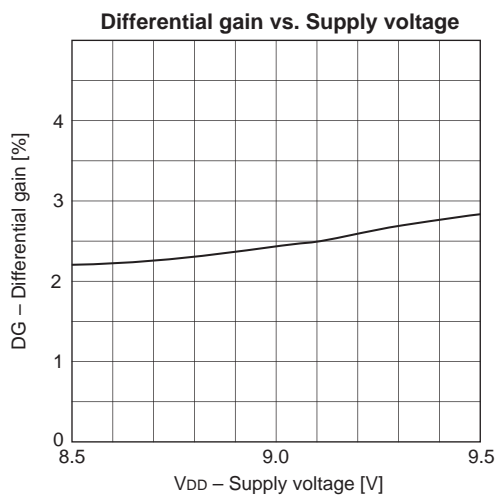
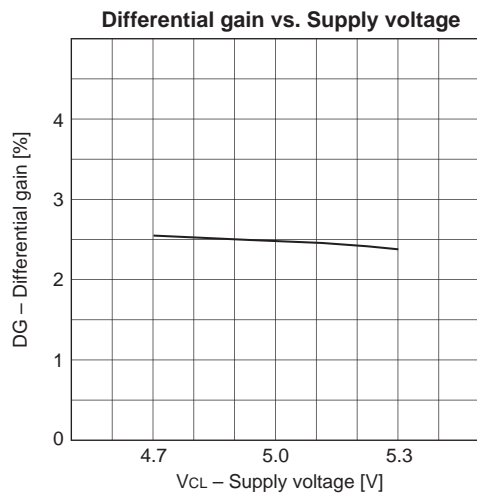
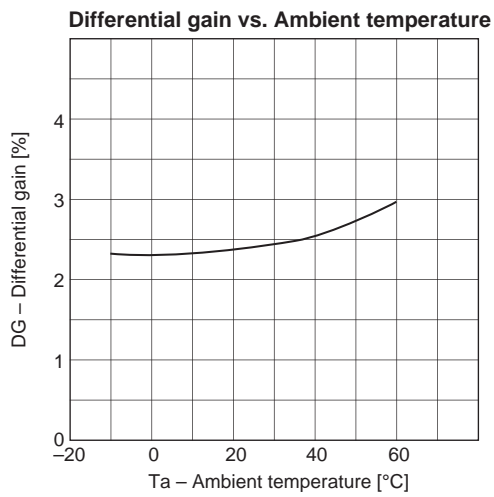
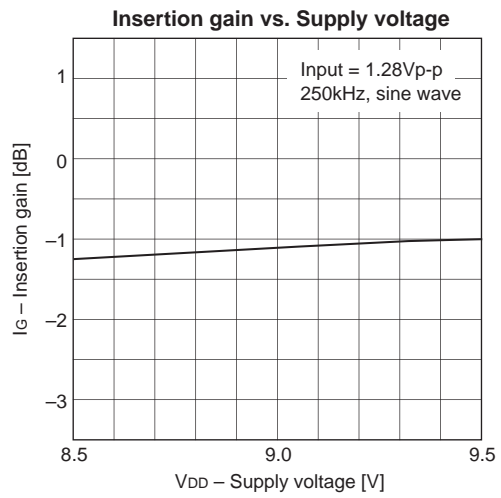
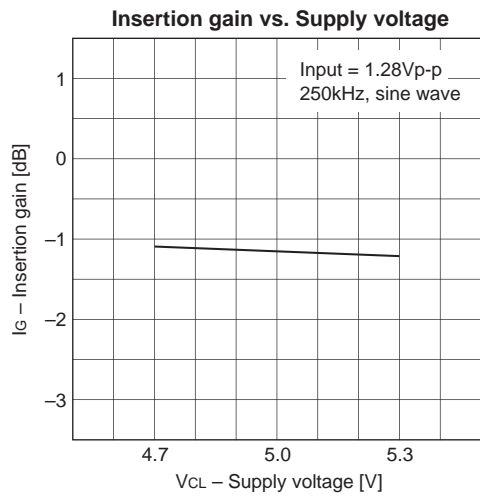


Application Circuit



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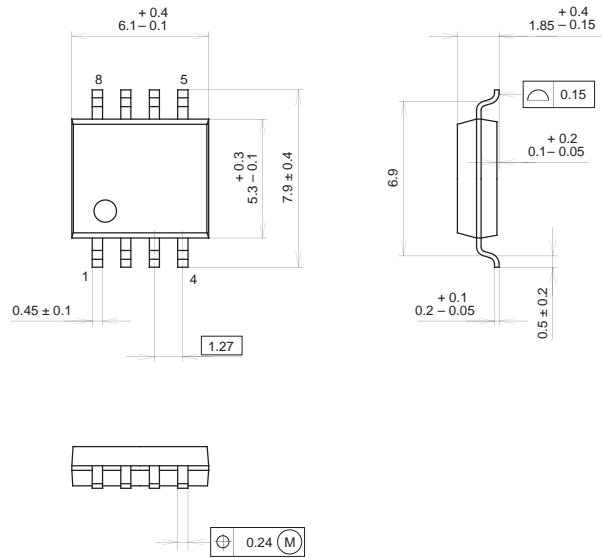


Package Outline

Unit: mm

CXL5003M

8PIN SOP (PLASTIC)



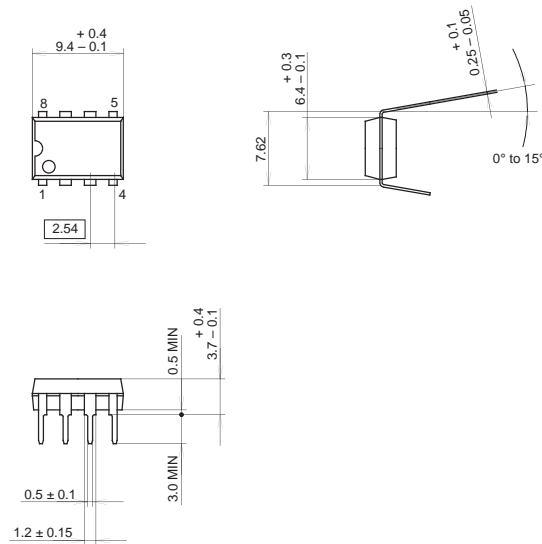
PACKAGE STRUCTURE

SONY CODE	SOP-8P-L01
EIAJ CODE	SOP008-P-0300
JEDEC CODE	---

PACKAGE MATERIAL	EPOXY RESIN
LEAD TREATMENT	SOLDER PLATING
LEAD MATERIAL	42/COPPER ALLOY
PACKAGE MASS	0.1g

CXL5003P

8PIN DIP (PLASTIC)



PACKAGE STRUCTURE

SONY CODE	DIP-8P-01
EIAJ CODE	DIP008-P-0300
JEDEC CODE	---

PACKAGE MATERIAL	EPOXY RESIN
LEAD TREATMENT	SOLDER PLATING
LEAD MATERIAL	COPPER ALLOY
PACKAGE MASS	0.5g