

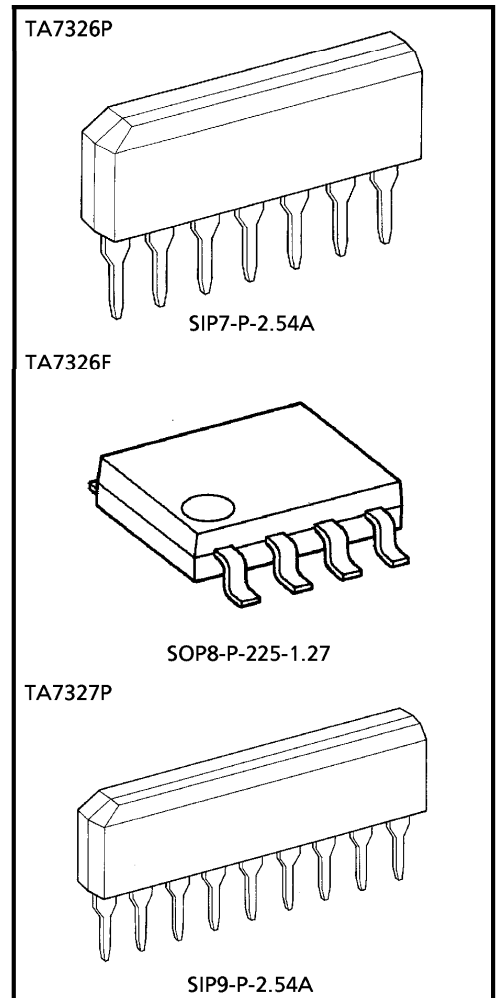
TENTATIVE TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA7326P, TA7326F, TA7327P

CR TIMER

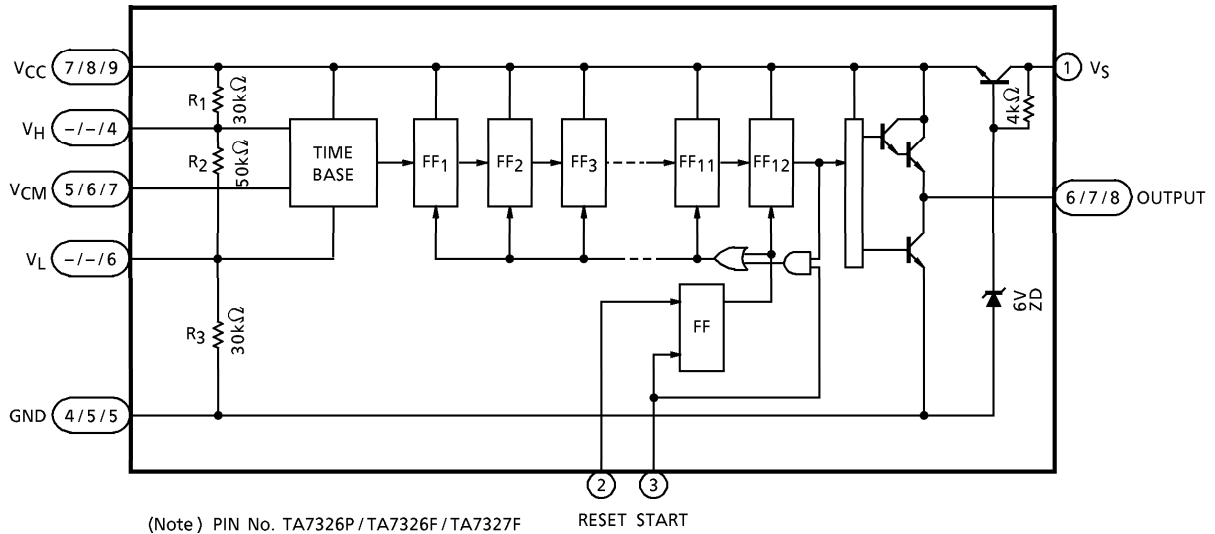
FEATURES

- I²L IC with 12-stage binary counter.
- Built-in initialize circuit.
- Built-in Voltage regulator.
- Operates in both timer and oscillator modes.
- Excellent temperature stability.
- TA7327P has initial adjustment terminals of timing.



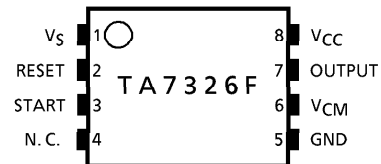
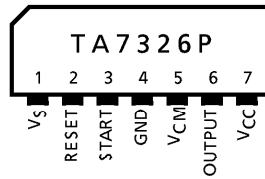
Weight	
SIP7-P-2.54A	: 0.7g (Typ.)
SOP8-P-225-1.27	: 0.1g (Typ.)
SIP9-P-2.54A	: 0.9g (Typ.)

BLOCK DIAGRAM



PIN CONNECTION

PIN No.	CONNECTION		
	TA7326P	TA7326F	TA7327F
1	V _S	V _S	V _S
2	RESET	RESET	RESET
3	START	START	START
4	GND	N.C.	V _H
5	V _{CM}	GND	GND
6	OUTPUT	V _{CM}	V _L
7	V _{CC}	OUTPUT	V _{CM}
8	—	V _{CC}	OUTPUT
9	—	—	V _{CC}



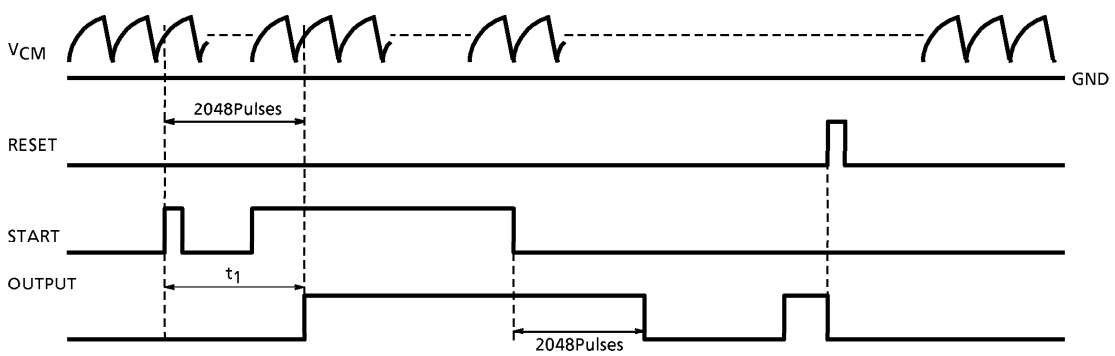
TRUTH TABLE

MODE	INPUTS		OUTPUT
	RESET	START	
1	H	(*)	L
2	L	H	COUNT, OSCILLATOR MODE
3	L	H	HOLD "H", TIMER MODE
4	L	L	HOLD LAST STATE

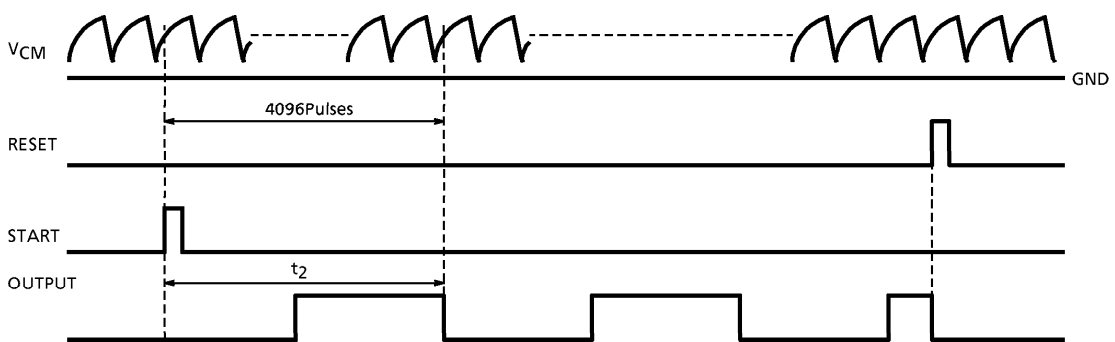
(*) H or L
Output equal "L" when power on.

TIMING CHART

• Timer mode



• Oscillator mode



MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		V _S	12	V
Supply Voltage		V _{CC}	7	V
Input Voltage		V _{IH}	20	V
Output Current		I _{OH}	-30	mA
		I _{OL}	2	
Power Dissipation (Note)	TA7326P, TA7326F	P _D	400	mW
	TA7327P		600	
	Operating Temperature		T _{opr}	
Storage Temperature		T _{stg}	-55 ~ 125	°C

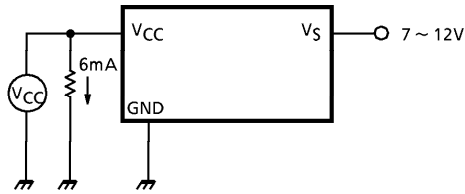
(Note) Derated above Ta = 25°C in the propotion of 4mW/°C for TA7326P and 6mW/°C for TA7327P.

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

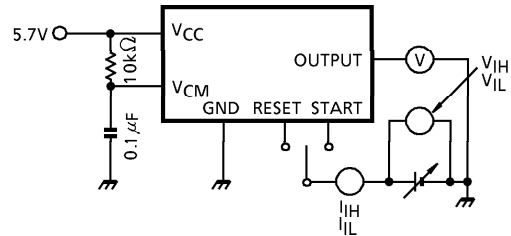
CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage		V _S	—	Ta = -20 ~ 75°C	7	—	12	V
Supply Voltage		V _{CC}	1	V _S = 7 ~ 12V, I _{CC} = 6mA	5.0	—	6.3	V
Supply Current		I _S	2	V _S = 12V	—	2	5	mA
Input Bias Current		I _I	3	V _{CC} = 5.7V	—	—	0.35	μA
Input Voltage	"H" Level	V _{IH}	4	V _{CC} = 5.7V	2.5	—	—	V
	"L" Level	V _{IL}	4	V _{CC} = 5.7V	—	—	1.5	V
Input Current	"H" Level	I _{IH}	4	V _{CC} = 5.7V, V _{IH} = 2.5V	—	—	0.25	mA
	"L" Level	I _{IL}	4	V _{CC} = 5.7V, V _{IL} = 0V	—	—	-1	μA
Output Voltage	"H" Level	V _{OH}	5	V _{CC} = 5.7V, I _{OH} = -30mA	3.5	—	—	V
	"L" Level	V _{OL}	6	V _{CC} = 5.7V, I _{OH} = 1mA	—	—	0.3	V
Temperature Coefficient of V _{CC}		ΔV _{CC} / ΔTa	—	V _S = 10V, Ta = -20 ~ 75°C	—	5	—	mV / °C
Temperature Coefficient of Timing		Δt / ΔTa	—	V _{CC} = 5.7V, Ta = -20 ~ 75°C, C _t = 100 μF, R _t = 10kΩ	—	200	—	ppm / °C
Timing Drift with Supply Voltage Ratio		Δt / ΔV _{CC}	—	V _{CC} = 5.0 ~ 6.3V, C _t = 100 μF, R _t = 10kΩ	—	0.5	—	% / V
Timing Resistance		R _t	—	—	1	—	1000	kΩ

TEST CIRCUIT

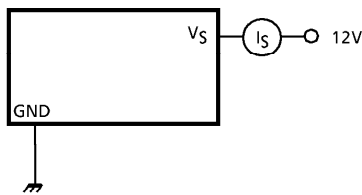
1. V_{CC}



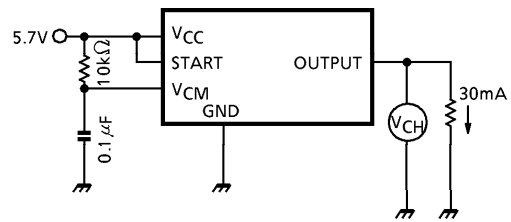
4. $V_{IH}, V_{IL}, I_{IH}, I_{IL}$



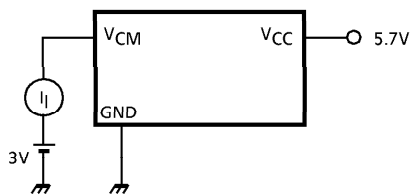
2. I_S



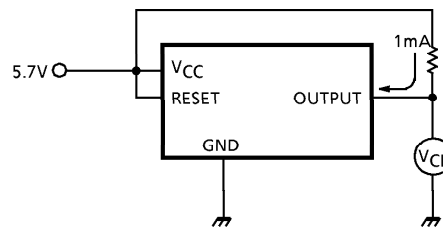
5. V_{OH}

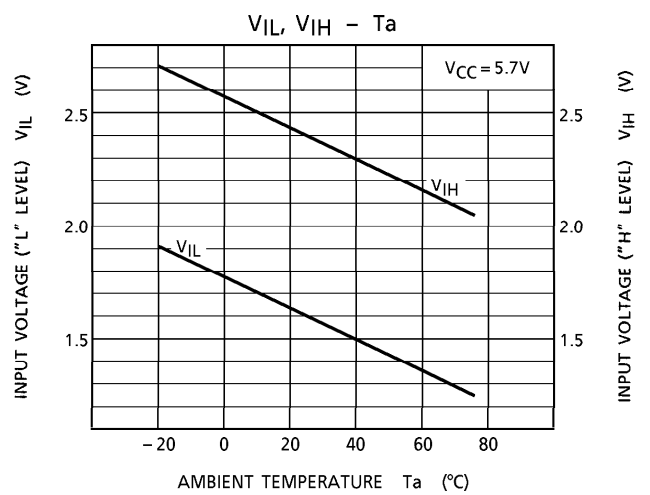
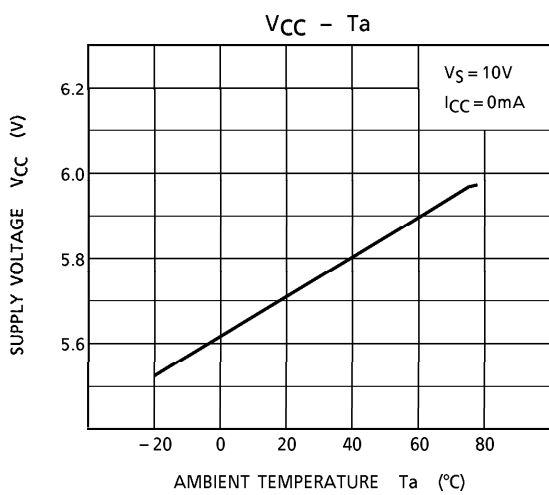
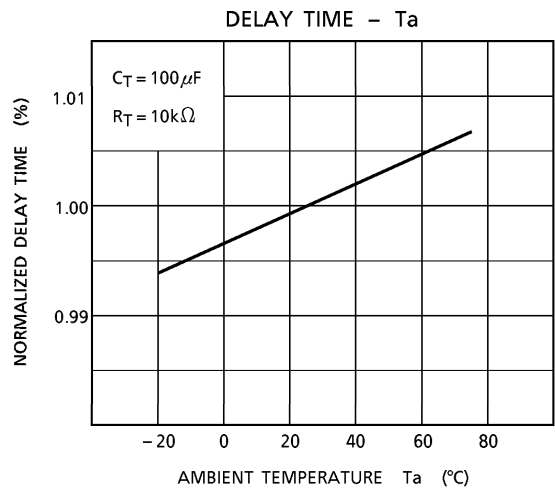
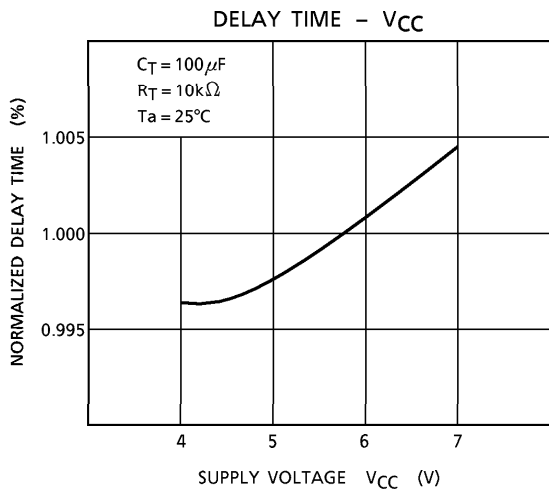
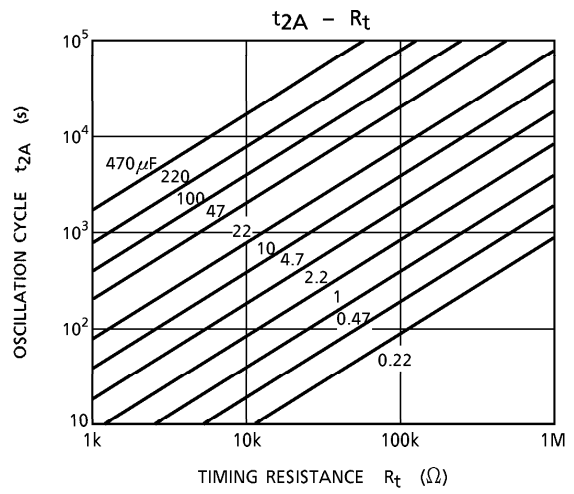
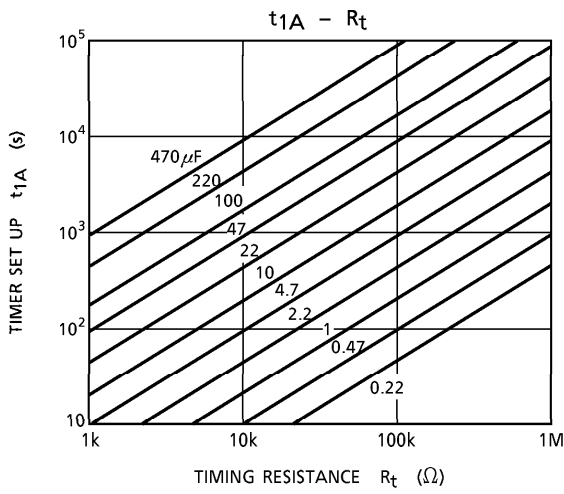


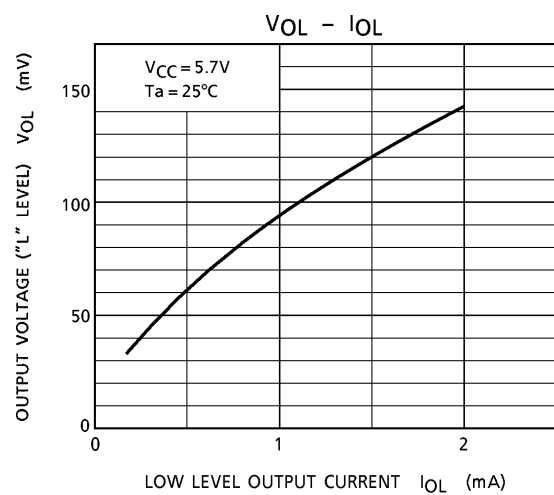
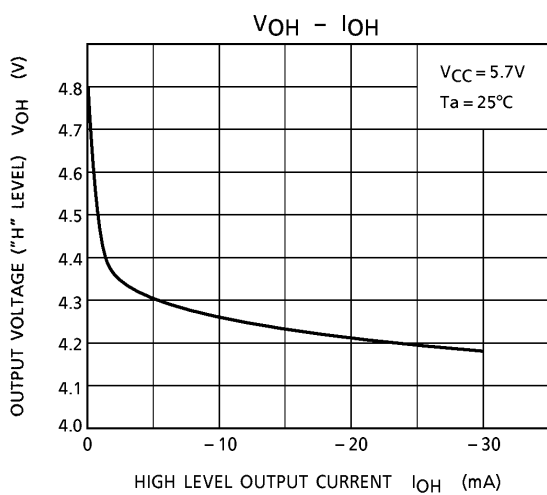
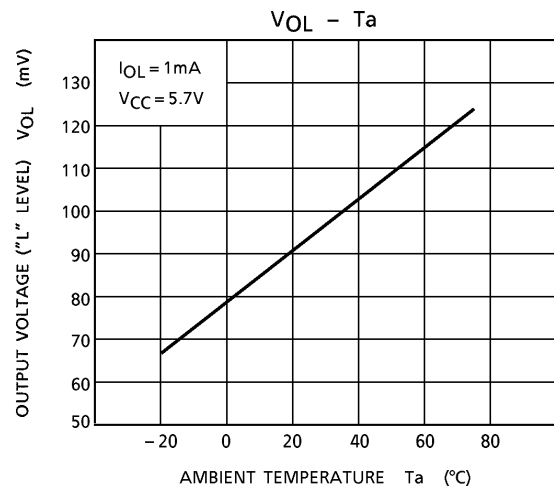
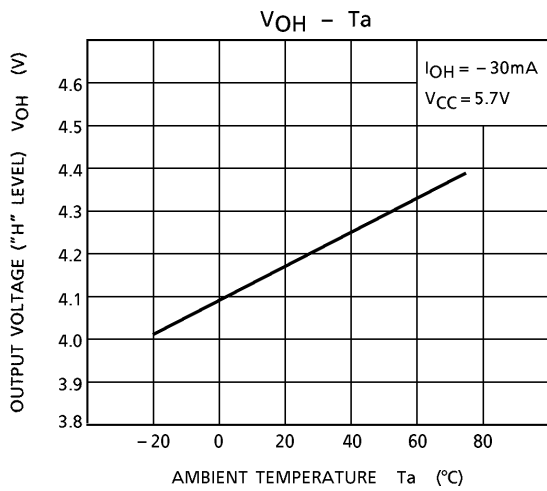
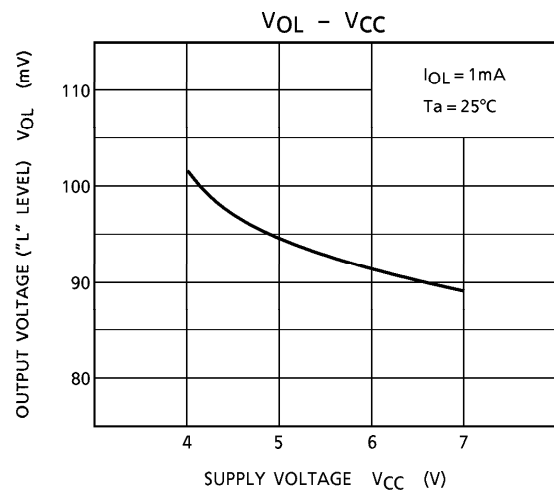
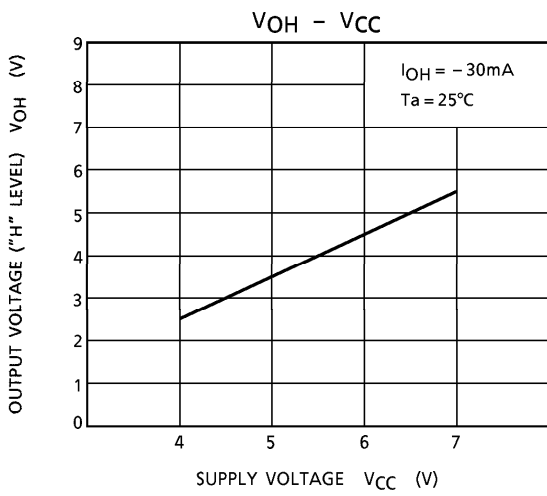
3. I_I

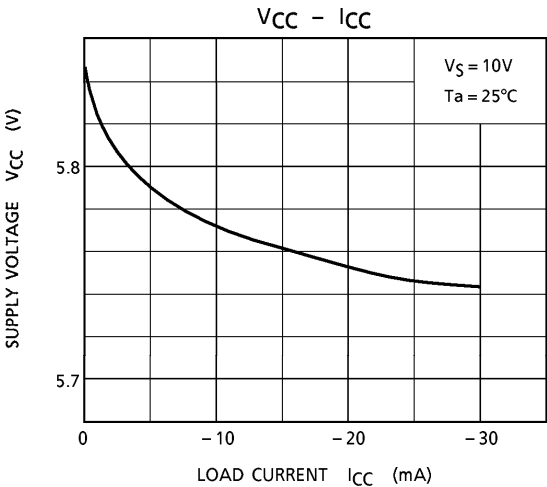
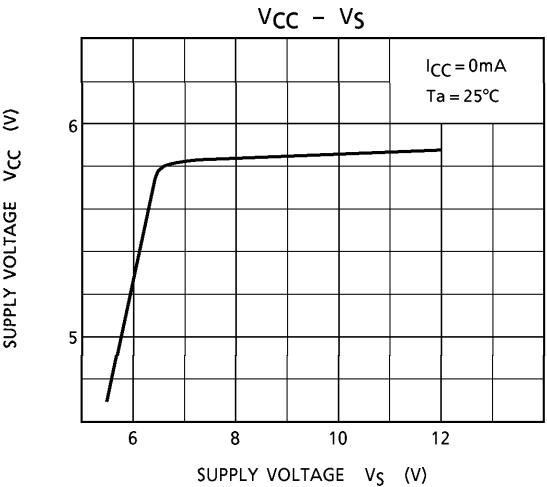


6. V_{OL}



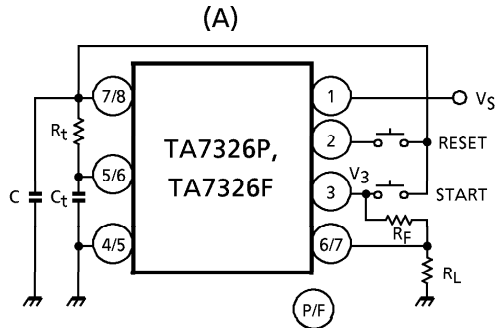




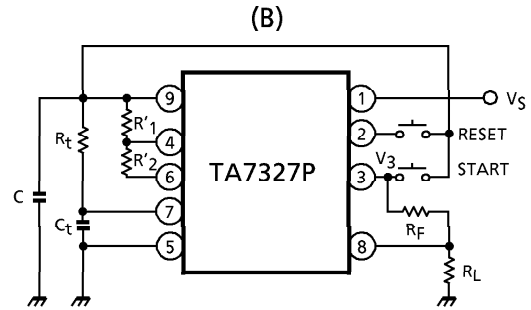


APPLICATION CIRCUIT (Ta = 25°C)

Timer mode



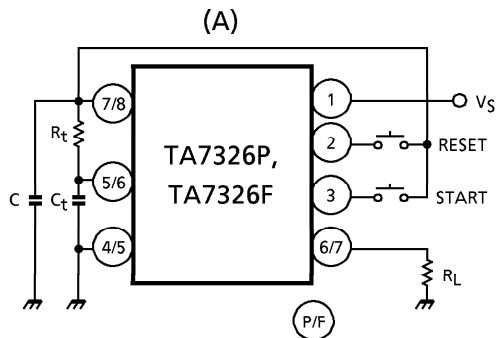
$C = 1 \sim 10 \mu\text{F}$
 $V_3 > V_{IH}$
 $t_{1A} \cong 2048 C_t \cdot R_t \text{ (s)}$
 $C_t : \text{(F)}$
 $R_t : \text{(\Omega)}$



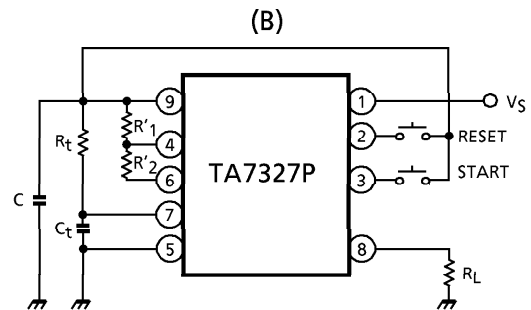
$C = 1 \sim 10 \mu\text{F}$
 $V_3 > V_{IH}, V_H < V_{CC} - 1\text{V}, V_L > 1.2\text{V}$
 $t_{1B} = 2048 C_t \cdot R_t \left| \ln \frac{r_1}{r_1 + r_2} \right| \text{ (s)}$

$C_t : \text{(F)}$
 $R_t : \text{(\Omega)}$
 $r_1 = R_1 // R'_1, R_1 = 30\text{k}\Omega$
 $r_2 = R_2 // R'_2, R_2 = 50\text{k}\Omega$

Oscillator mode



$C = 1 \sim 10 \mu\text{F}$
 $t_{2A} \cong 4096 C_t \cdot R_t \text{ (s)}$
 $C_t : \text{(F)}$
 $R_t : \text{(\Omega)}$

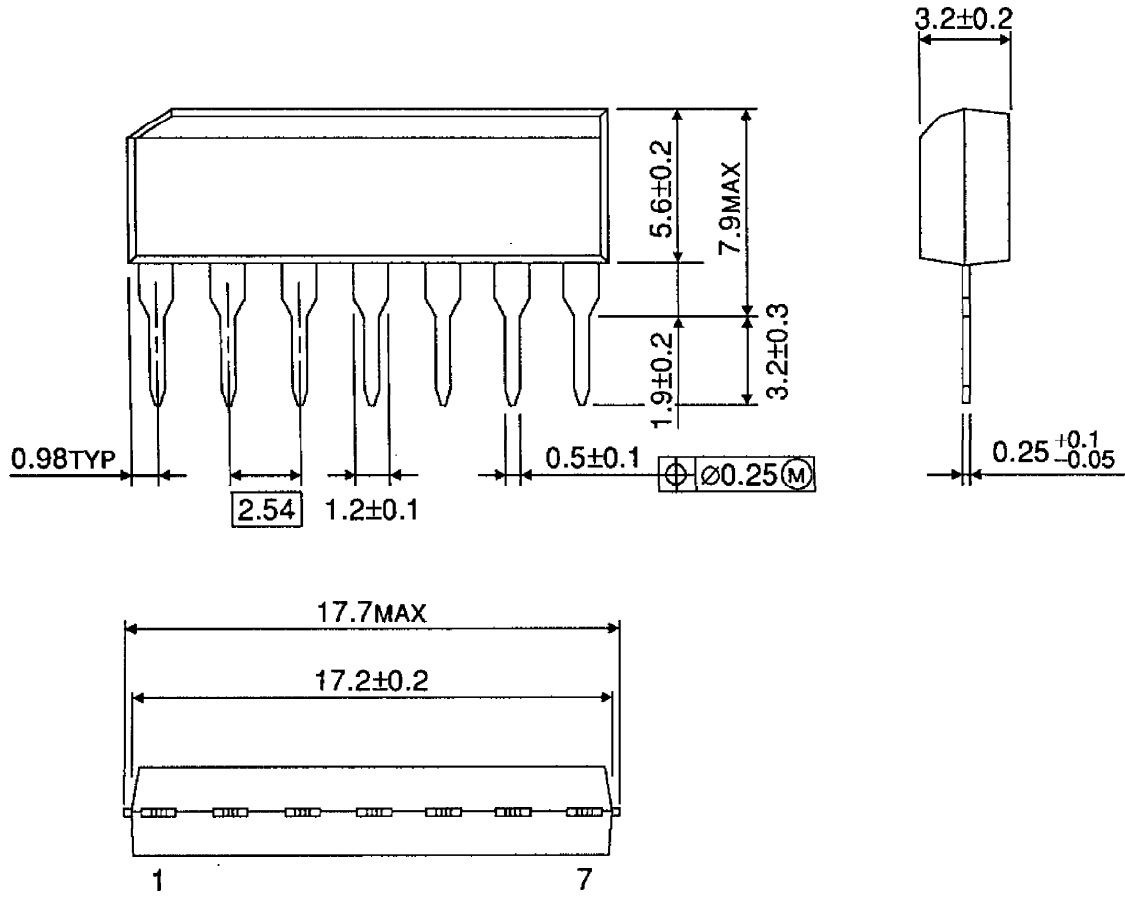


$C = 1 \sim 10 \mu\text{F}$
 $V_H < V_{CC} - 1\text{V}, V_L > 1.2\text{V}$
 $t_{2B} = 4096 C_t \cdot R_t \left| \ln \frac{r_1}{r_1 + r_2} \right| \text{ (s)}$

$C_t : \text{(F)}$
 $R_t : \text{(\Omega)}$
 $r_1 = R_1 // R'_1, R_1 = 30\text{k}\Omega$
 $r_2 = R_2 // R'_2, R_2 = 50\text{k}\Omega$

PACKAGE DIMENSIONS
SIP7-P-2.54A

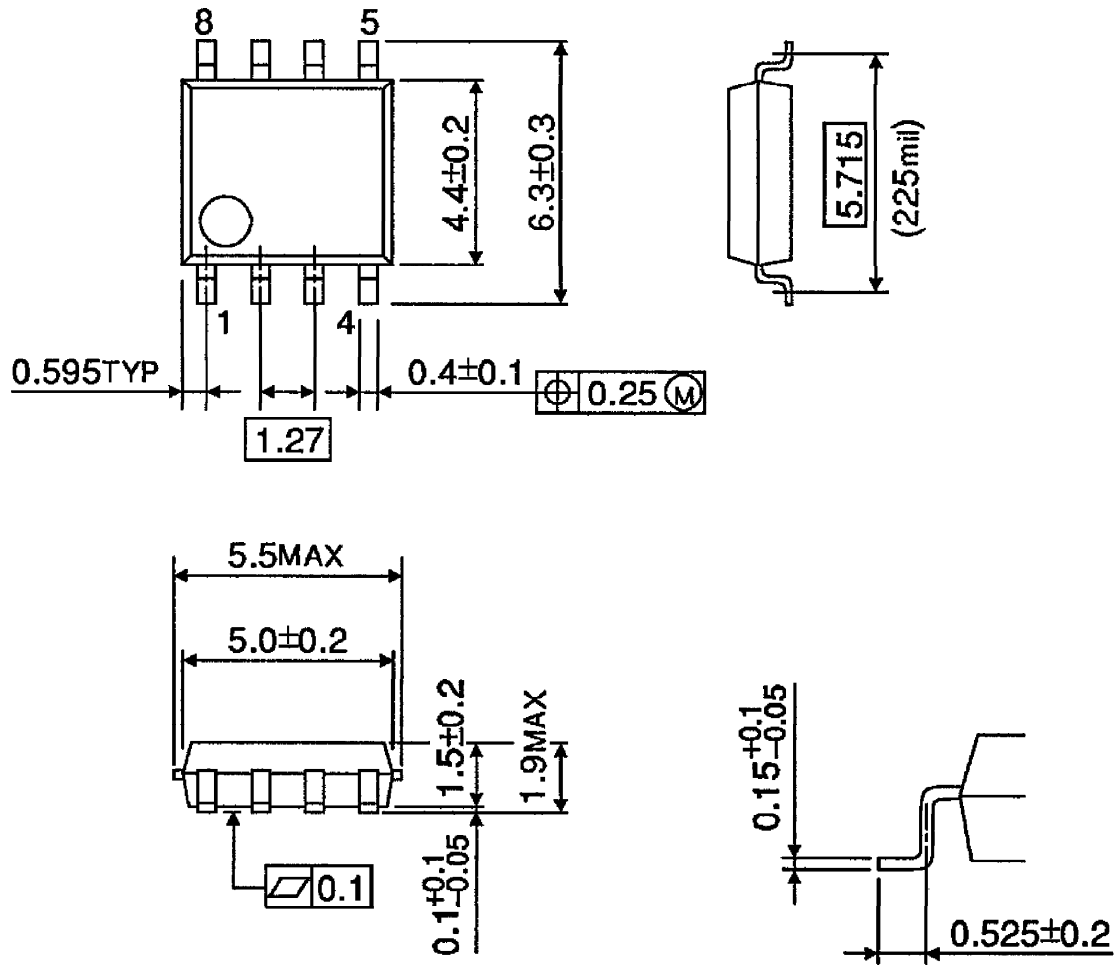
Unit : mm



Weight : 0.7g (Typ.)

PACKAGE DIMENSIONS
SOP8-P-225-1.27

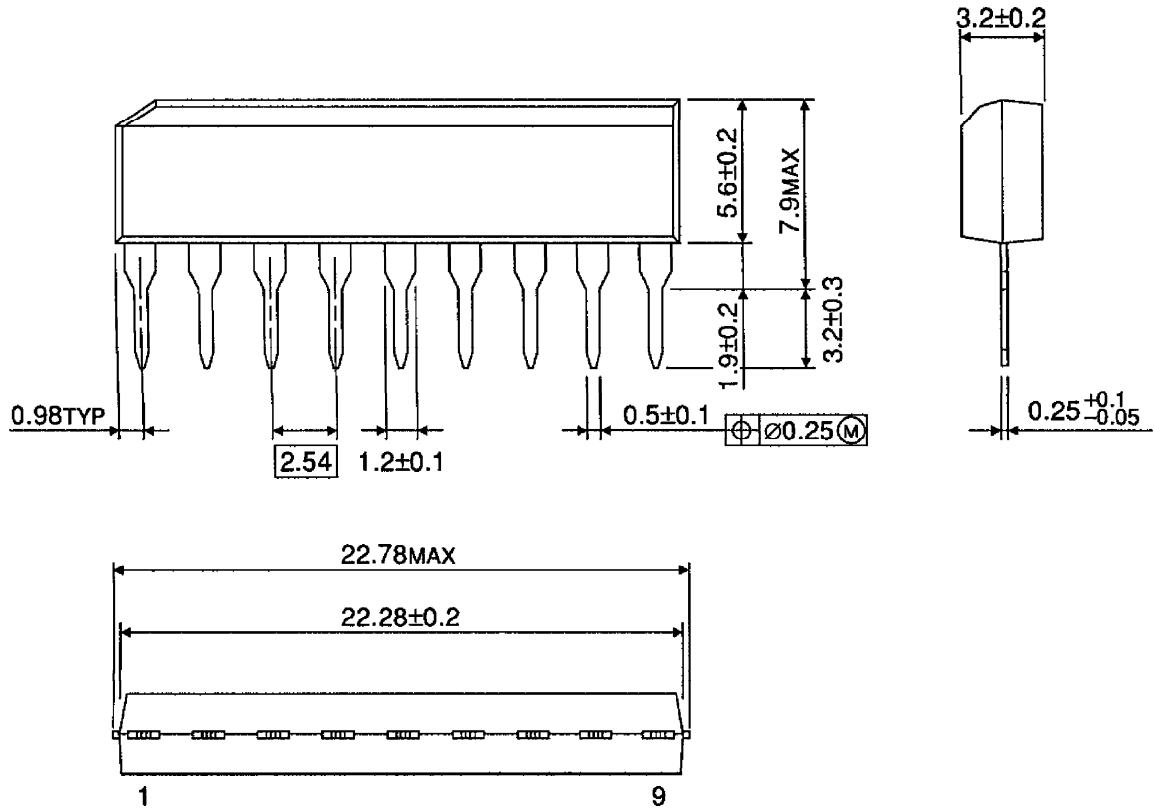
Unit : mm



Weight : 0.1g (Typ.)

PACKAGE DIMENSIONS
SIP9-P-2.54A

Unit : mm



Weight : 0.9g (Typ.)

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000707EBA

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