

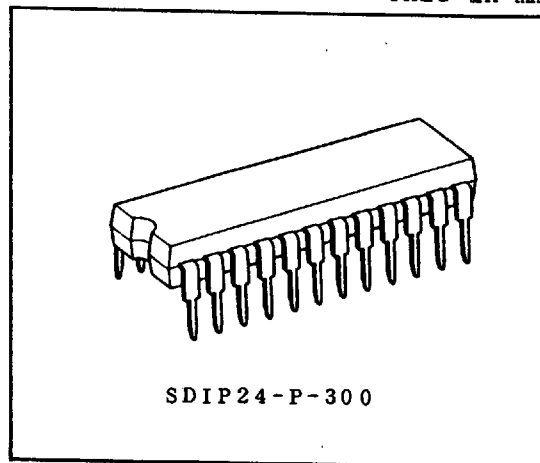
TENTATIVE DATA

AM/FM CLOCK RADIO IC WITH POWER AMPLIFIER

The TA8117N is an AM/FM IF IC with power amplifier and it is suitable for clock radio application by combining the TA7358P (FM F/E IC)

- Built-in, AM RF Amp, Local Oscillator, AM Mixer AM/FM IF AMP, AM/FM Detector, AM AGC Circuit and B Class-Audio Power Amplifier.
- Low Overload Distortion at AM.
- It is possible to drive $8\ \Omega$ load.
: $P_o=1.0W$ (Typ.), THD=10% (9V/8 Ω)
- The power supply for the power stage is independent of that for the tuner stage.
- Wide Operating Supply Voltage Range ($T_a=25^\circ C$)
: Power Section $V_{opr}(V_{cc1})=4.0\sim 15V$ (Typ. : 9V)
Radio Section $V_{opr}(V_{cc2})=3.5\sim 6V$ (Typ. : 4.5V)

Unit in mm



SDIP24-P-300

Weight : 1.2g (Typ.)

MAXIMUM RATINGS ($T_a=25^\circ C$)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	VCC1	16	V
Output Current	$I_O(\text{peak})$	800	mA
Radio Section Supply Voltage	VCC2	6	V
Power Dissipation (Note)	P_D	1.2	W
Operating Temperature	T_{opr}	-20~75	$^\circ C$
Storage Temperature	T_{stg}	-55~150	$^\circ C$

Note : Derated above $T_a=25^\circ C$ in the proportion of 9.6mW/ $^\circ C$.

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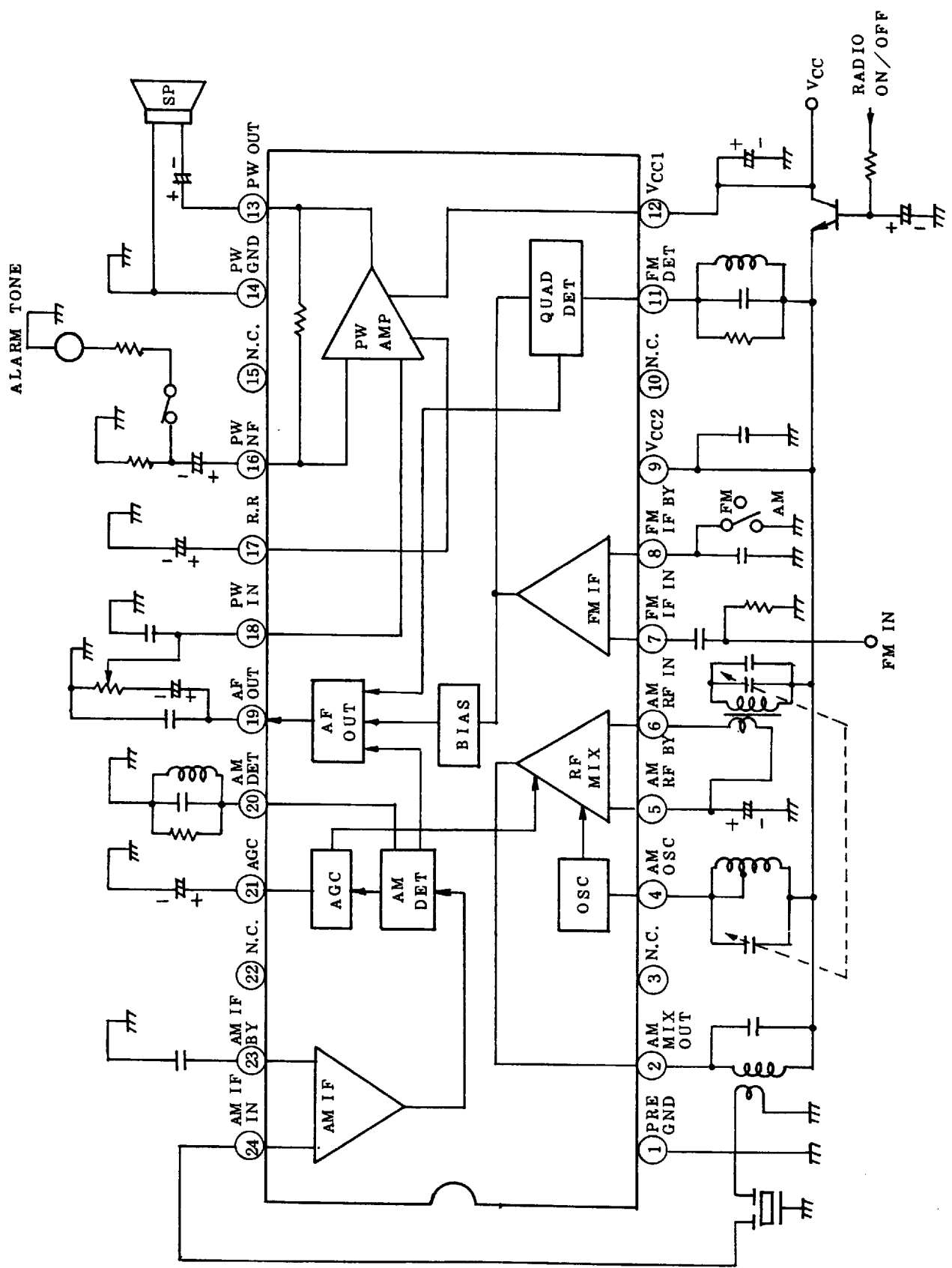
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TA8117N-1

1991-9-18

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BLOCK DIAGRAM



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TA8117N-2
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TERMINAL EXPLANATION (Terminal Voltage : $V_{CC1}=9V$, $V_{CC2}=4.5V$, $T_a=25^\circ C$,
Typical Terminal Voltage at no signal with Test Circuit)

Pin No.	Terminal	Contents	Internal Around Circuit	Terminal Voltage (V)	
				A M	F M
1	Pre GND	Pre GND	—————	0	0
2	AM MIX OUT	AM MIX Output	Refer to pin ⑤, pin ⑥	4.5	4.5
3	N.C.		—————	-	-
4	AM OSC	AM LOCAL OSC		4.5	4.5
5	AM RF BY	AM Mixer Bypass (Connected to Bypass Condensor.)		2.2	1.6
6	AM RF IN	AM RF Input		2.2	1.6
7	FM IF IN	FM IF Input		4.0	3.6
8	FM IF BY	FM IF Bypass (Connected to Bypass Condensor.)		0	3.6
9	VCC2	Power Supply for Tuner Stage.	—————	4.5	4.5
10	N.C.		—————	-	-

Pin No.	Terminal	Contents	Internal Around Circuit	Terminal Voltage (V)	
				A M	F M
11	FM DET	FM Quadrature Detector		4.5	4.5
12	VCC1	Power Supply for Power Stage	_____	9.0	9.0
13	PW OUT	Power Stage output		4.0	4.0
14	PW GND	Power GND	_____	0	0
15	N.C.		_____	-	-
16	PW NF	Power Stage NF		0.6	0.6
17	RR	Ripple Filter		2.2	2.2
18	PW IN	Power Stage Input		(4mV)	(4mV)

Pin No.	Terminal	Contents	Internal Around Circuit	Terminal Voltage (V)	
				A M	F M
19	AF OUT	AM/FM Detector Output $R_o(AM)=10k\Omega$ (typ.) $R_o(FM)=5k\Omega$ (typ.)		1.1	1.6
20	AM DET	AM Detector		0	0
21	AGC	AM AGC		0.5	-
22	N.C.		—	-	-
23	AM IF BY	AM IF Bypass (Connected to Bypass Condenser.)		1.4	-
24	AM IF IN	AM IF Input		1.4	1.4

ELECTRICAL CHARACTERISTICS

Unless otherwise specified.

VCC1(PW)=9V, VCC2(RADIO)=4.5V, Ta=25°C

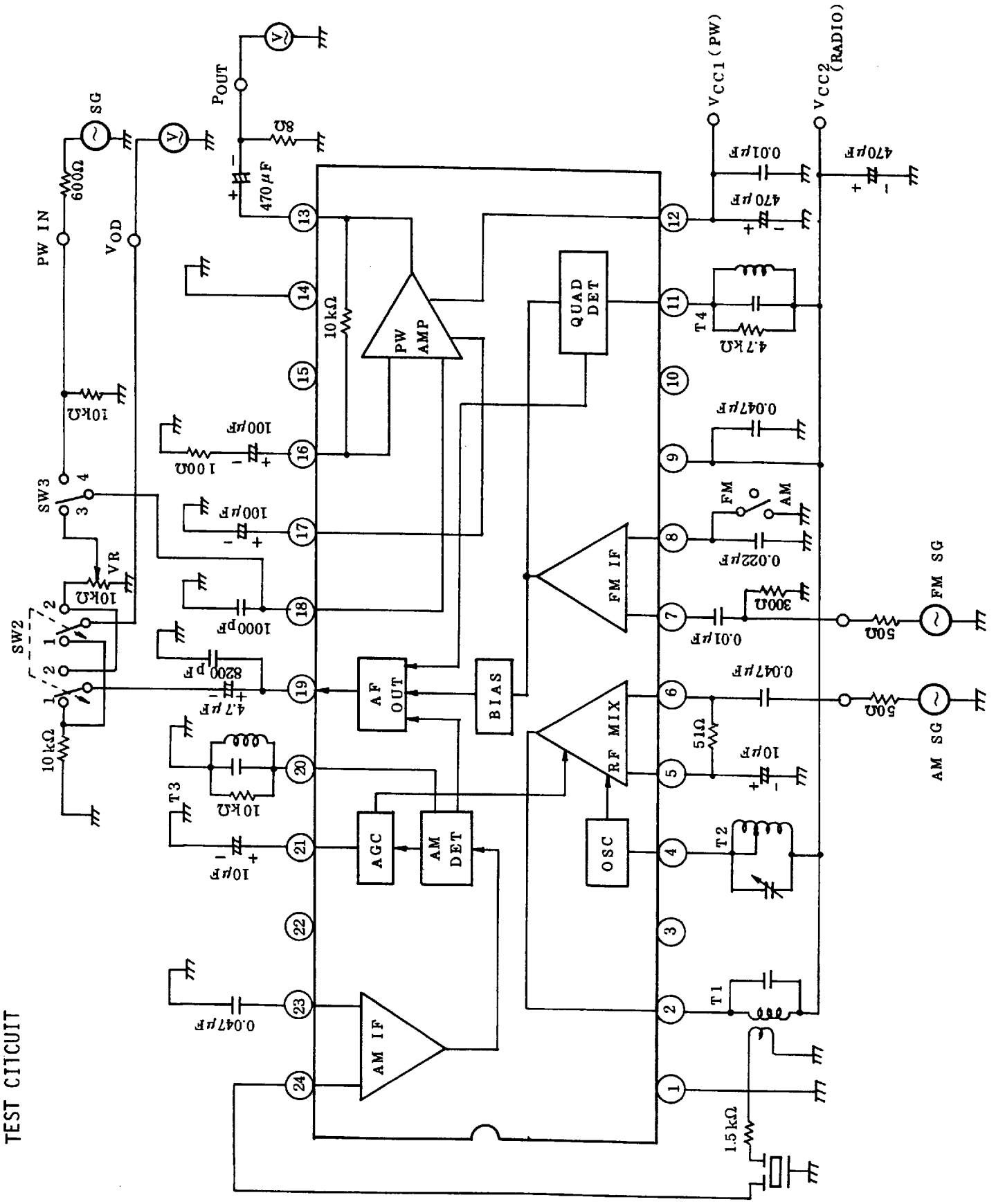
FM : f=10.7MHz, fm=1kHz, Δf=±22.5kHz dev.

AM : f=1MHz, fm=1kHz, Mod=30%

PW : f=1kHz, RL=8Ω, Rg=600Ω, RNF=100Ω

CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Power Supply Current		ICC(FM)	-	Vin=0	-	7.7	11.5	mA
		ICC(AM)	-	Vin=0	-	3.5	5.8	
		ICC(PW)	-	Vin=0	-	7.5	12.0	
FM	Input Limiting Voltage	Vin(lim)	-	-3dB Limiting	-	41	45	dB
	Total Harmonic Distortion	THD1	-	Vin=80dBμ	-	0.3	-	%
	Signal to Noise Ratio	S/N	-	Vin=80dBμ	-	71	-	dB
	AM Rejection Ratio	AMR	-	Vin=80dBμ, MOD=30%	-	36	-	dB
	Recovered Output Voltage	VOD	-	Vin=80dBμ	55	74.5	110	mVrms
AM	Gain	Gv	-	Vin=30dBμ	10	24	60	mVrms
	Recovered Output Voltage	VOD	-	Vin=66dBμ	48	75	96	mVrms
	Signal to Noise Ratio	S/N	-	Vin=66dBμ	-	49	-	dB
	Total Harmonic Distortion	THD2	-	Vin=66dBμ	-	0.66	-	%
PW	Output Power	PO	-	THD=10%	0.8	1.0	-	W
	Voltage Gain	Gv	-	Vin=-40dBm	36.5	39.5	42.5	dB
	Output Noise Voltage	VNO	-	Rg=10kΩ, BW=30Hz ~ 20kHz	-	0.18	-	mVrms
	Ripple Rejection Ratio	R.R	-	Vin=0dBm, f=100Hz	-	33	-	dB
	Total Harmonic Distortion	THD3	-	PO=0.5W	-	0.22	1.0	%

Vin : Open Measurement



TEST CIRCUIT

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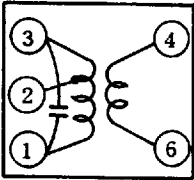
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Explanation of Switch

SW No.	Name	Explanation
SW1	AM/FM Switching	GND → AM OPEN → FM
SW2	AM/FM OUT	1 → 10kΩ Fixed Load Output 2 → Input AM/FM output signal to PW (pin18) through 10k VR.
SW3	PW IN	3 → Input AM/FM output signal to PW (pin18) through 10k VR. 4 → Input AUDIO SG to PW (pin18).

Coil Data (Test Circuit)

T1 AM IFT

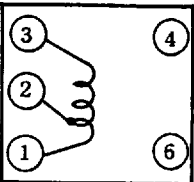


(BOTTOM VIEW)

Co (pF)	f (MHz)	Qo	TURNS		
			1-2	2-3	4-6
1500	455	60	12	51	17

SUMIDA ELECTRIC Co., Ltd. :
2150-2105-261
Wire: 0.1mmφ UEW

T2 AM OSC

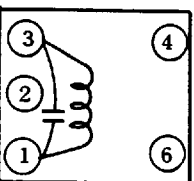


(BOTTOM VIEW)

f (kHz)	L (μH)	Qo	TURNS	
			1-2	2-3
796	268	125	15	89

SUMIDA ELECTRIC Co., Ltd. :
2157-2239-213A
Wire: 0.06mmφ UEW

T3 AM DET

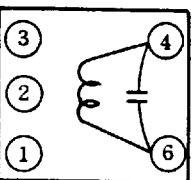


(BOTTOM VIEW)

Co (pF)	f (kHz)	Qo	TURNS
			1-3
330	455	105	127

SUMIDA ELECTRIC Co., Ltd. :
2150-2083-061
Wire: 0.06mmφ UEW

T4 FM Detect



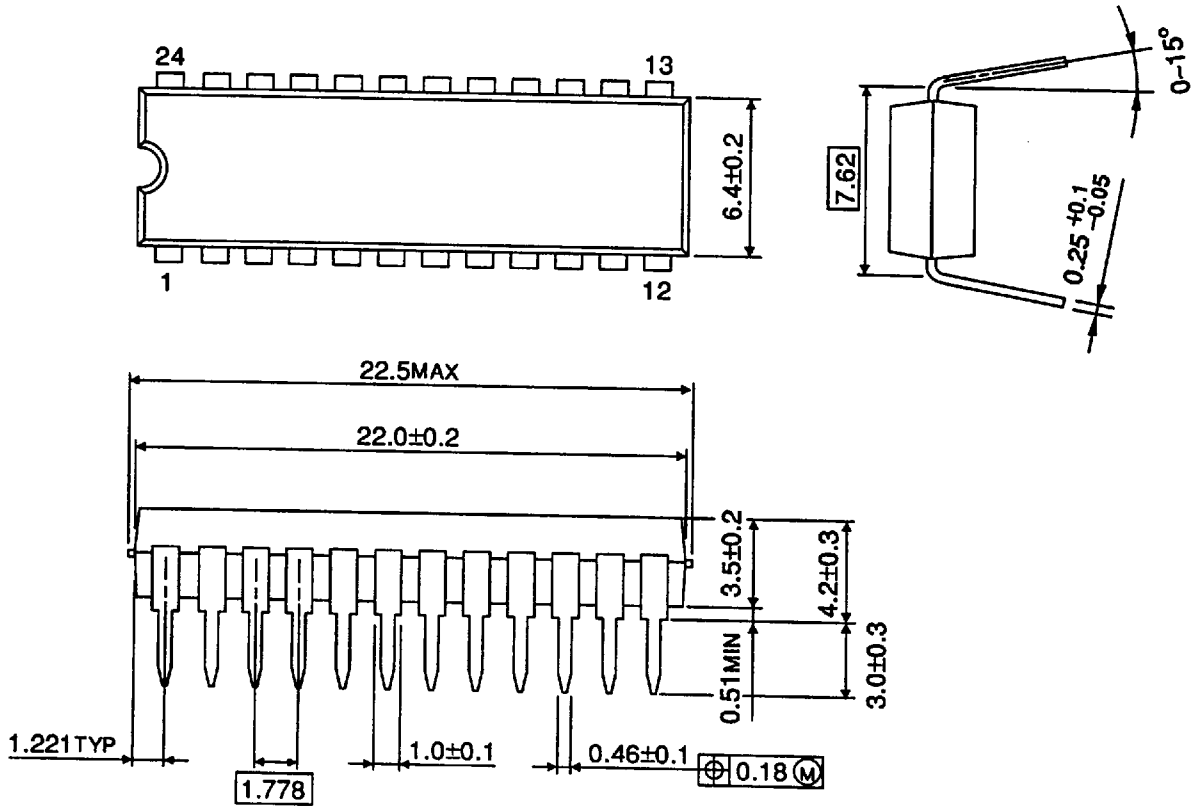
(BOTTOM VIEW)

Co (pF)	f (MHz)	Qo	TURNS
			4-6
150	10.7	95	10

SUMIDA ELECTRIC Co., Ltd. :
2153-4095-331
Wire: 0.14mmφ UEW

OUTLINE DRAWING
SDIP24-P-300

Unit in mm



Weight : 1.2g (Typ.)