

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA7709P, TA7709F

DUAL PREAMPLIFIERS (3V USE)

The TA7709P and TA7709F are dual preamplifier designed for use in a playback amplifier of low voltage operating tape recorder.

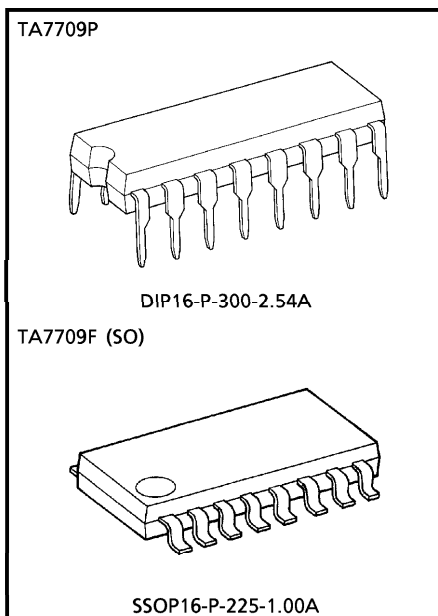
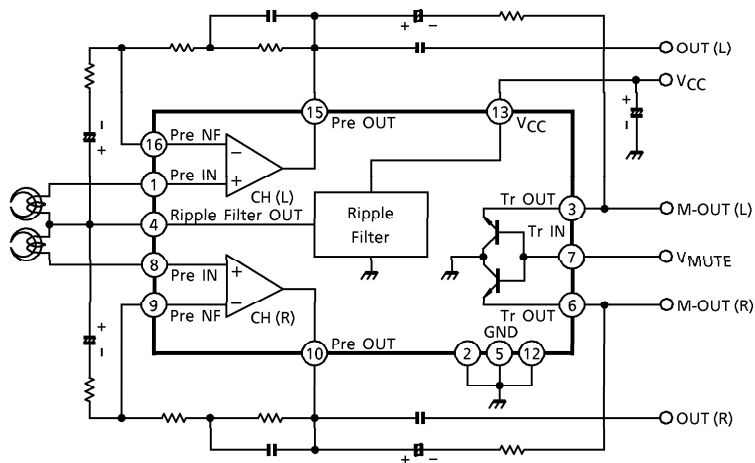
It is consist of two channels preamplifier and two transistors of collector common grounded.

They are prepared two type package.
(FLAT and Dual In-line package)

FEATURES

- High voltage gain at open loop.
: $G_{VO} = 85\text{dB}$ (Typ.) ($V_{CC} = 3\text{V}$, $f = 1\text{kHz}$)
- Non-necessary the input coupling condensers.
- Operating supply voltage range
: $V_{CC} = 1.6\sim 5\text{V}$ ($T_a = 25^\circ\text{C}$)
- TA7709F (SO) is standard model of flat package.

BLOCK DIAGRAM



Weight
 DIP16-P-300-2.54A : 1.00g (Typ.)
 SSOP16-P-225-1.00A : 0.14g (Typ.)

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APPLICATION NOTE

- Input signals can be applied between pin① or ⑧ and pin④ as common without input coupling capacitors.
In case that input signals is applied between pin① or ⑧ and GND terminal, it is necessary that connecting input coupling capacitors, and starting time of amplifiers will increase.
- Test pin⑪ and ⑭ should not be connected to avoid malfunctions.
- Ripple rejection characteristics are shown in the attached paper. To keep good rejection ratio, a combination of the TA7709P, TA7709F and the TA7688F is recommendable.
In this case, the V_{CC} of the TA7709P, TA7709F is supplied by V_{RF} output of the TA7688F.

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	7	V
Power Dissipation	TA7709P	750	mW
	TA7709F		
Operating Temperature	T_{opr} (Note 2)	-25~75	°C
Storage Temperature	T_{stg}	-55~150	°C

(Note 1) Derated above $T_a = 25^\circ\text{C}$ in the proportion of $6\text{mW}/^\circ\text{C}$ for TA7709P, and of $2.8\text{mW}/^\circ\text{C}$ for TA7709F

(Note 2) At $T_a = -25^\circ\text{C}$, $V_{CC} \geq 1.7\text{V}$

ELECTRICAL CHARACTERISTICS (Unless otherwise specified, $V_{CC} = 3\text{V}$, $f = 1\text{kHz}$, $T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current	I_{CCQ}	—	$V_{in} = 0$	—	2.0	3.4	mA
Open Loop Voltage Gain	G_{VO}	—	$V_{in} = -60\text{dBV}$	70	85	—	dB
Maximum Output Voltage	V_{om}	—	THD = 1%	0.5	0.9	—	V_{rms}
Total Harmonic Distortion	THD	—	$V_o = 0.1V_{rms}$	—	0.07	0.5	%
Output Noise Voltage	V_{no}	—	$R_g = 2.2\text{k}\Omega$, $G_V = 40\text{dB}$ BPF = 50Hz~20kHz	—	0.14	0.22	mV_{rms}
Cross Talk	CT	—	$R_g = 600\Omega$, $V_o = -10\text{dBV}$	—	60	—	dB
Muting Attenuation	ATT	—	$V_{MUTE} = 1\text{V}$	—	43	—	dB
Input Resistance	R_{IN}	—	—	20	30	—	$\text{k}\Omega$

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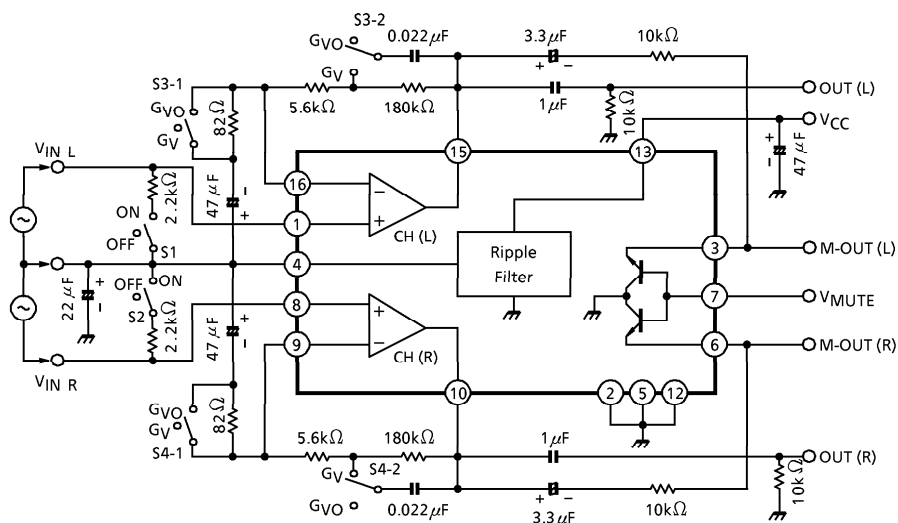
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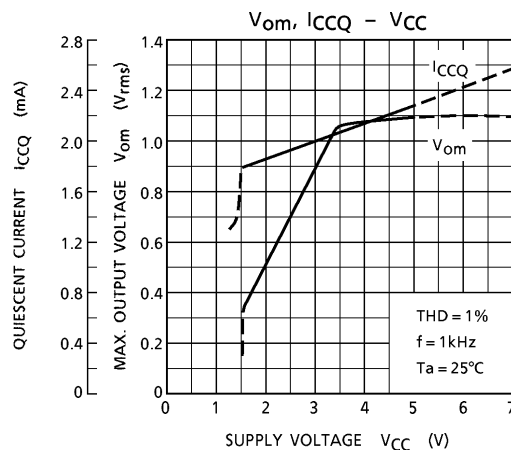
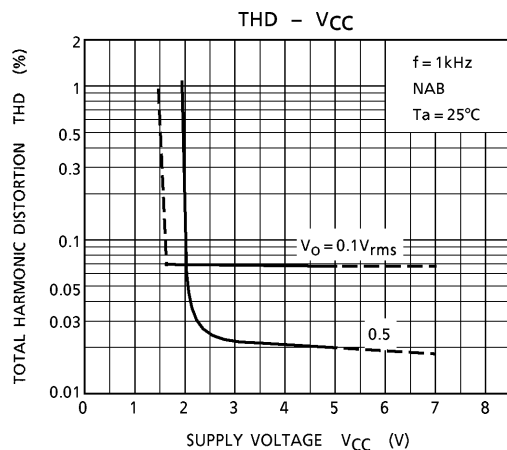
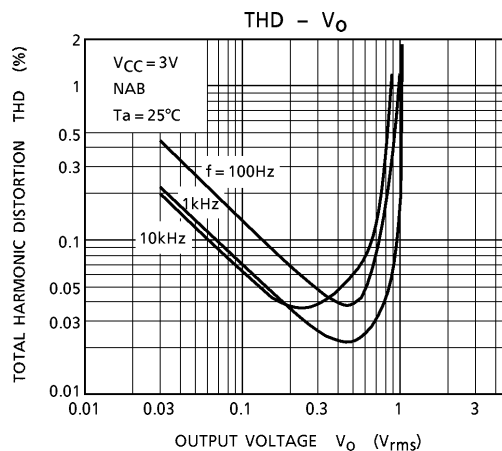
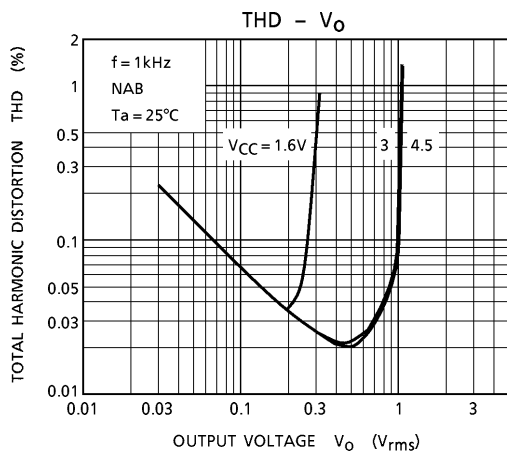
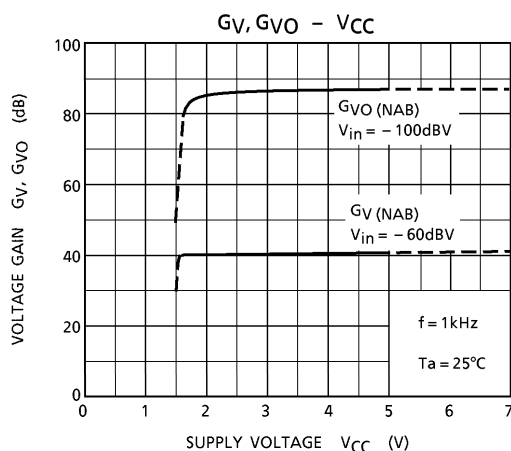
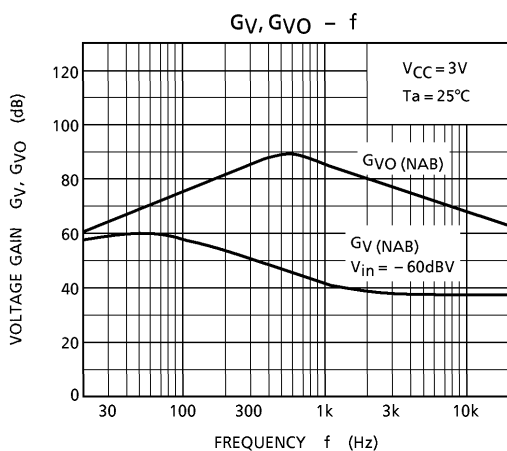
DC CHARACTERISTICS

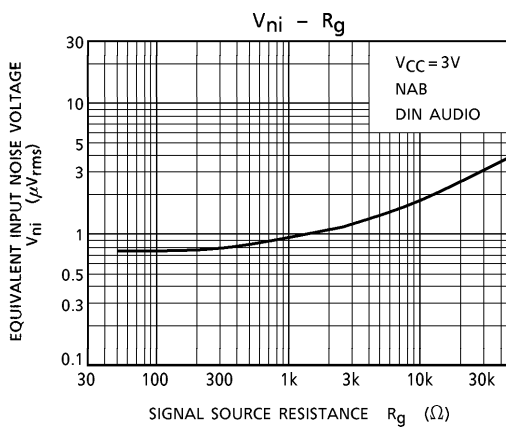
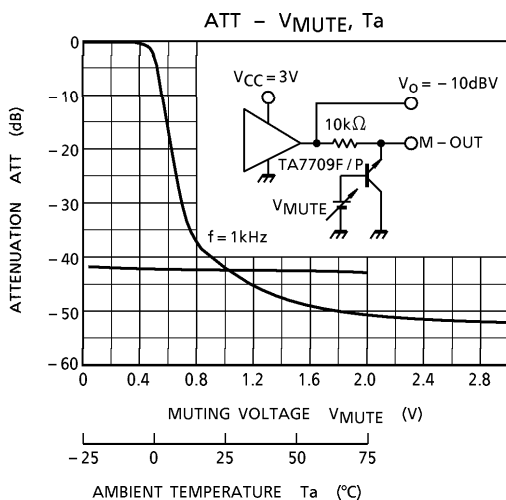
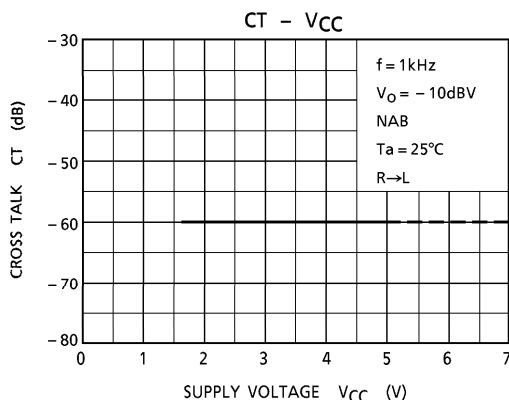
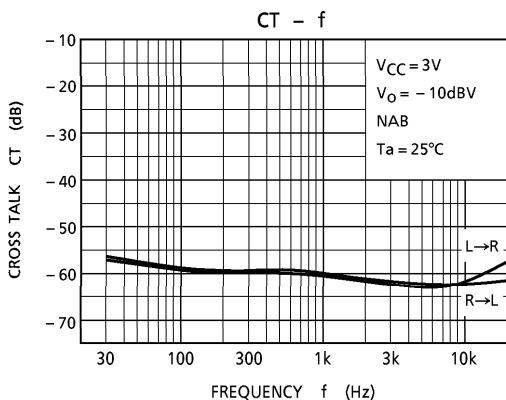
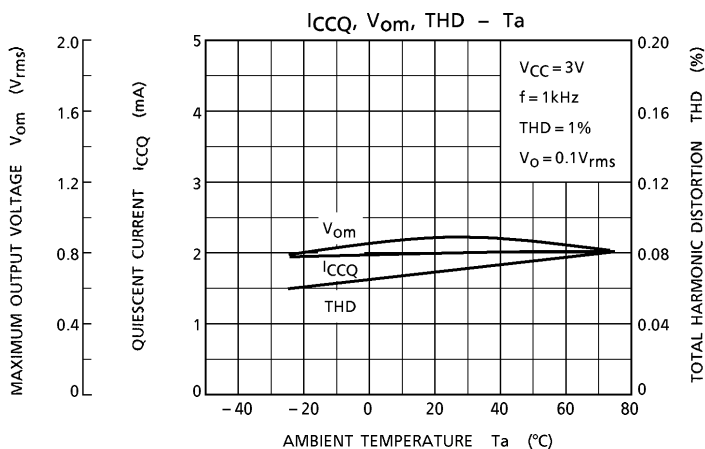
($V_{CC} = 3V$, $T_a = 25^\circ C$, Terminal voltage at no signal)

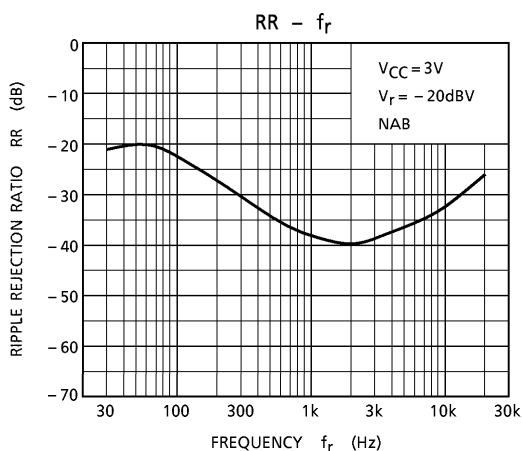
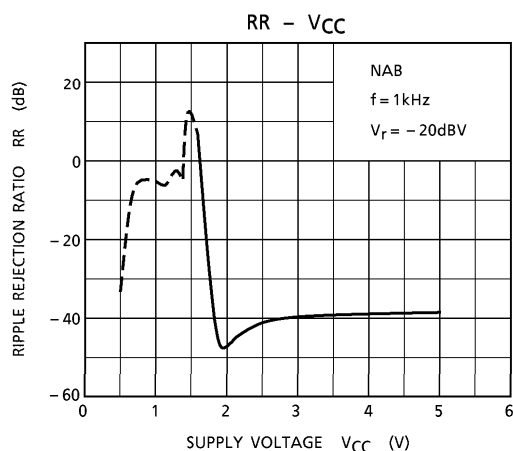
PIN No.	ITEM	SYMBOL	TYP.	UNIT
1	Pre IN	V_1	1.35	V
2	GND	V_2	0	V
3	Tr-OUT	V_3	—	V
4	Ripple Filter OUT	V_4	1.36	V
5	GND	V_5	0	V
6	Tr-OUT	V_6	—	V
7	Tr-IN	V_7	—	V
8	Pre IN	V_8	1.35	V
9	Pre NF	V_9	1.35	V
10	Pre OUT	V_{10}	1.44	V
11	TEST Pin	V_{11}	—	V
12	GND	V_{12}	0	V
13	V_{CC}	V_{13}	3.0	V
14	TEST Pin	V_{14}	—	V
15	Pre OUT	V_{15}	1.44	V
16	Pre NF	V_{16}	1.35	V

TEST CIRCUIT

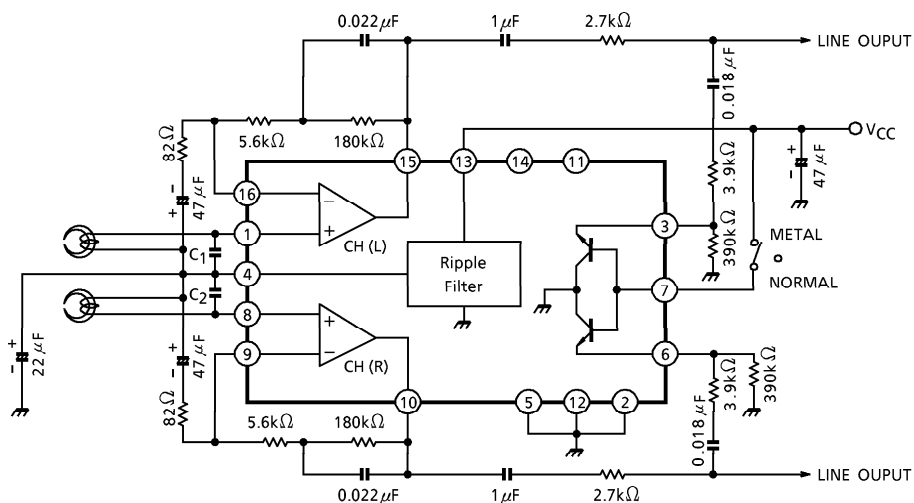








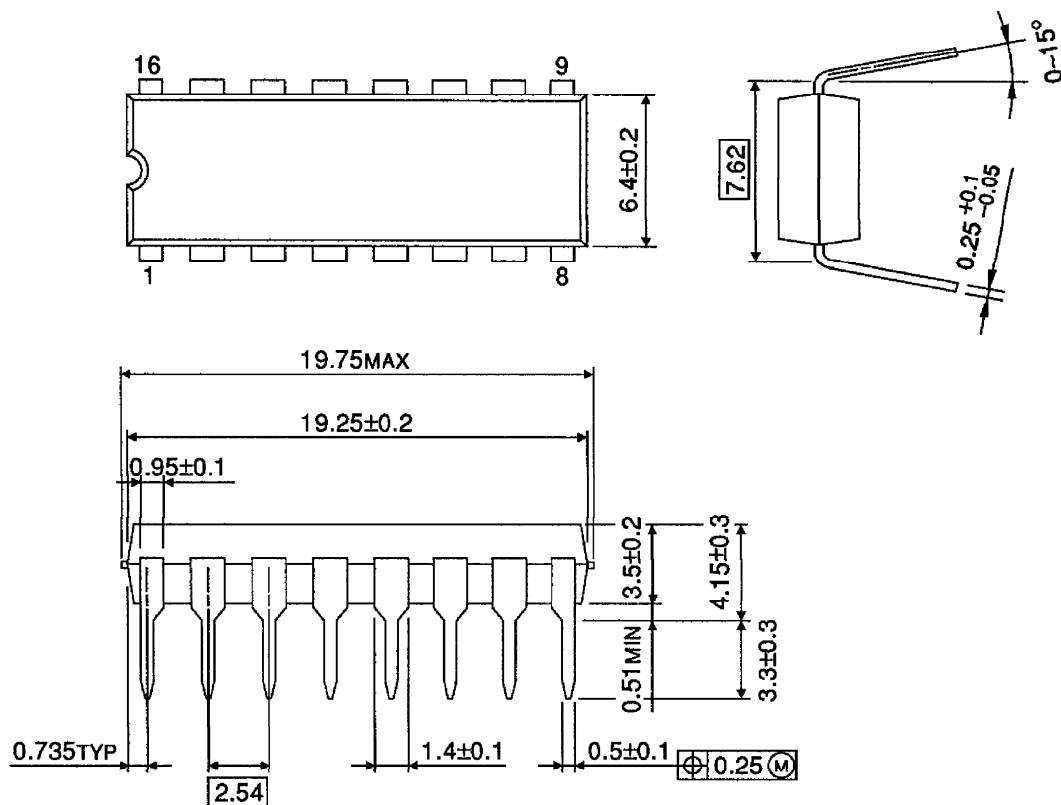
APPLICATION CIRCUIT



(Note) Capacitor C₁ and C₂ may be required for preventing a instability caused by the pattern layout or interference of external high frequency signal.

OUTLINE DRAWING
DIP16-P-300-2.54A

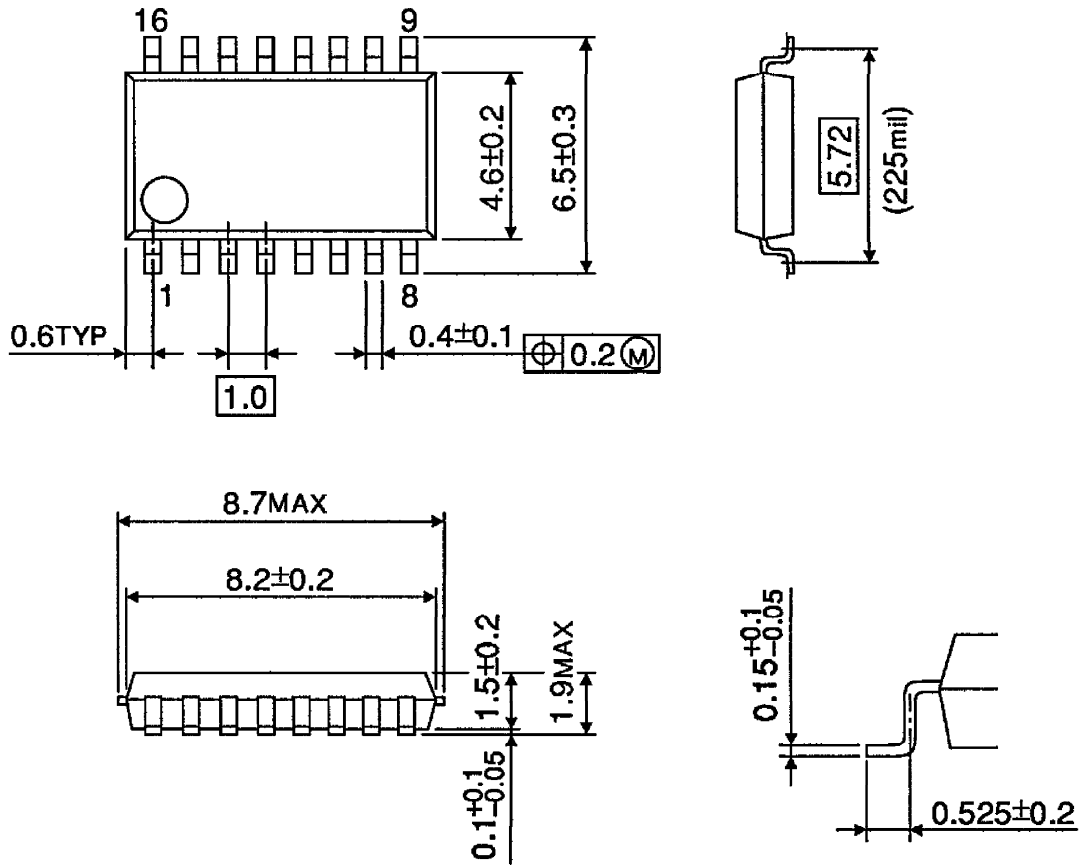
Unit : mm



Weight : 1.00g (Typ.)

OUTLINE DRAWING
SSOP16-P-225-1.00A

Unit : mm



Weight : 0.14g (Typ.)