

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA7795F, TA7795FN

DUAL PREAMPLIFIERS FOR AUTO-REVERSE SYSTEM (1.5V USE)

The TA7795F, TA7795FN are Dual preamplifiers ICs, which are designed for low voltage operation (1.5V, 3V). They are especially suitable for a stereo headphone cassette player and for that of auto-reverse type.

FEATURES

- Switchover between F/R directional mode is possible with only one-make switch.
- Built-in M/N equalizer drivers, switchover between M/N equalizer mode is possible with only one-make switch. Those drivers are applicable to LED driver for F/R display, too ($V_{LED} \geq 2.5V$).

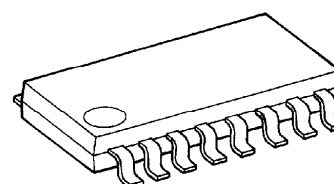
- Low noise (Equivalent input noise).
 $V_{ni} = 1.3 \mu V_{rms}$ (Typ.)
 $(V_{CC} = 1.5V, R_g = 2.2k\Omega, BPF = 20 \sim 20kHz)$

- Low supply current.
 $I_{CC} = 1.6mA$ (Typ.) ($V_{CC} = 1.5V, T_a = 25^\circ C$)

- Operating supply voltage range.
 $V_{CC(opr)} = 0.9 \sim 4.5V$ ($T_a = 25^\circ C$)
 (Note 1) F/R : Direction (FORWARD / REVERSE)

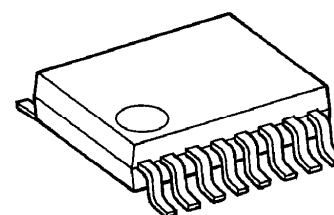
(Note 2) M/N : Equalizer (METAL / NORMAL)

TA7795F



SSOP16-P-225-1.00A

TA7795FN

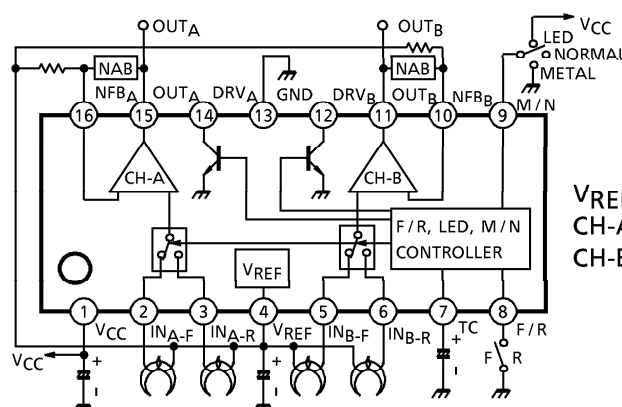


SSOP16-P-225-0.65B

Weight

SSOP16-P-225-1.00A	: 0.14g (Typ.)
SSOP16-P-225-0.65B	: 0.09g (Typ.)

BLOCK DIAGRAM



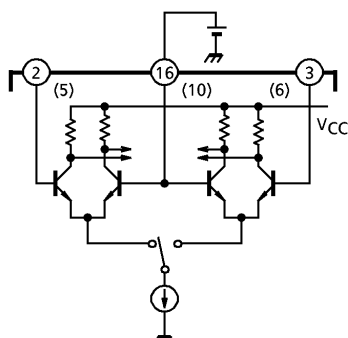
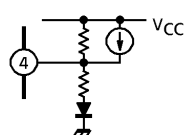
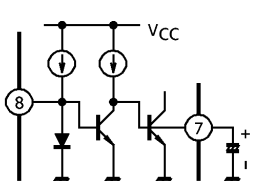
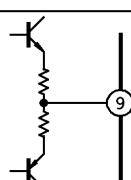
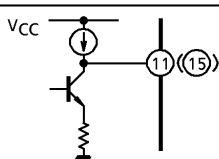
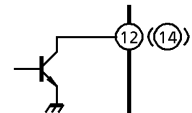
VREF : Reference voltage
 CH-A : Channel A preamplifier
 CH-B : Channel B preamplifier

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PIN FUNCTION

Terminal voltage : Typical terminal voltage at no signal with test circuit ($V_{CC} = 1.5V$, $T_a = 25^\circ C$)

PIN No.	PIN NAME	CONTENTS	EQUIVALENT	TERMINAL VOLTAGE (V)	
1	V _{CC}	—	—	1.5	
2	IN _{A-F}	Input for Forward mode Input impedance R _{in} = 100kΩ (Typ.)		1.1	
5	IN _{B-F}			1.1	
3	IN _{A-R}			Input for Reverse mode Input impedance R _{in} = 100kΩ (Typ.)	1.1
6	IN _{B-R}	NFB			1.1
10	NFB _A				NFB
16	NFB _B				
4	V _{REF}	Reference voltage		1.1	
7	TC	Smoothing Reducing pop noise, at switchover between F/R mode.		0.7	
8	F/R	Switch for F/E mode Off : Forward mode On : Reverse mode		0.7	
9	M/N	Switch for M/N LED To V _{CC} : LED mode Open : Normal mode To GND : Metal mode		—	
11	OUT _B	Output		0.75	
15	OUT _A				
12	DRV _B	CH-B·Metal Driver (LED driver for Reverse mode)		—	
14	DRV _A	CH-A·Metal Driver (LED driver for Forward mode)			
13	GND	—	—	0	

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APPLICATION NOTE

1. Function of built-in driver (Equalizer SW / LED driver)

The built-in driver is set to the mode shown in the table below by the voltage applied to Pin⑨ and ⑧.

FUNCTION		PIN⑨	PIN⑧	Q1 (PIN⑭)	Q2 (PIN⑫)
Equalizer Switchover	Normal	OPEN	—	OFF	OFF
	Metal	GND	—	ON	ON
LED Driver	FWD	V _{CC}	OPEN	ON	OFF
	REV		GND	OFF	ON

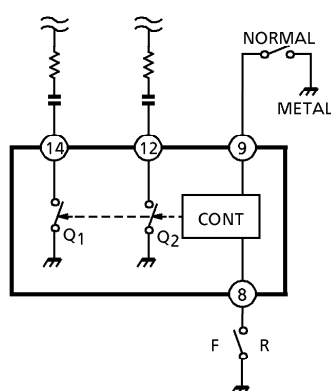


Fig.1 Equalizer switchover function

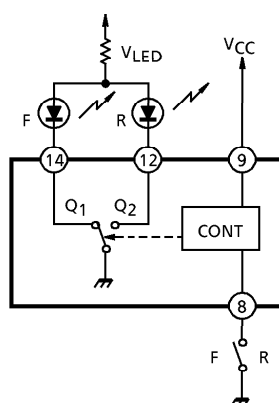


Fig.2 LED driver function

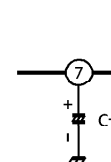


Fig.3 Smoothing function

2. Smoothing function

The Pin⑦ is the smoothing terminal for reducing the pop noise produced at F/R switchover by using the external capacitor C_T. (Fig.3)

3. NFB terminal

The resistance of 18k Ω is advisable to be connected between NFB terminal (Pin⑬ and ⑩) and V_{REF} for using this IC. That is because NFB terminal is designed to have the off-set voltage ($\Delta V = 36\text{mV}$) against each terminal (Pin ②, ③, ⑤ and ⑥). Therefore, the DC potential of the output terminals (Pin⑮ and ⑪) can be set at about V_{CC}/2 with the current produced by this off-set potential. (Fig.4)

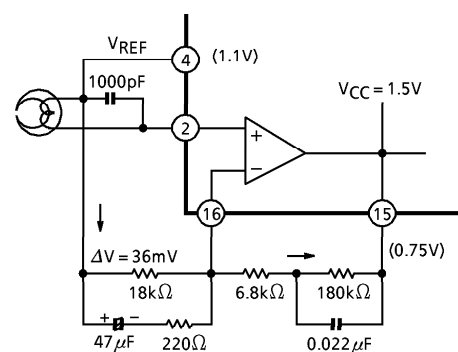


Fig.4 NFB terminal

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V _{CC}	5	V
LED Supply Voltage	V _L	6	V
LED Driver Current	I _L	5	mA
Power Dissipation	P _D (Note)	350	mW
		400	
Operating Temperature	T _{opr}	−25~75	°C
Storage Temperature	T _{stg}	−55~150	°C

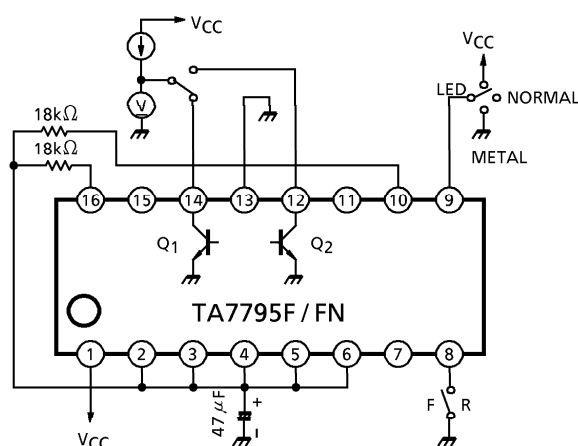
(Note) Derated above Ta = 25°C in the proportion of 2.8mW/°C for TA7795F, and of 3.2mW/°C for TA7795FN.

ELECTRICAL CHARACTERISTICS

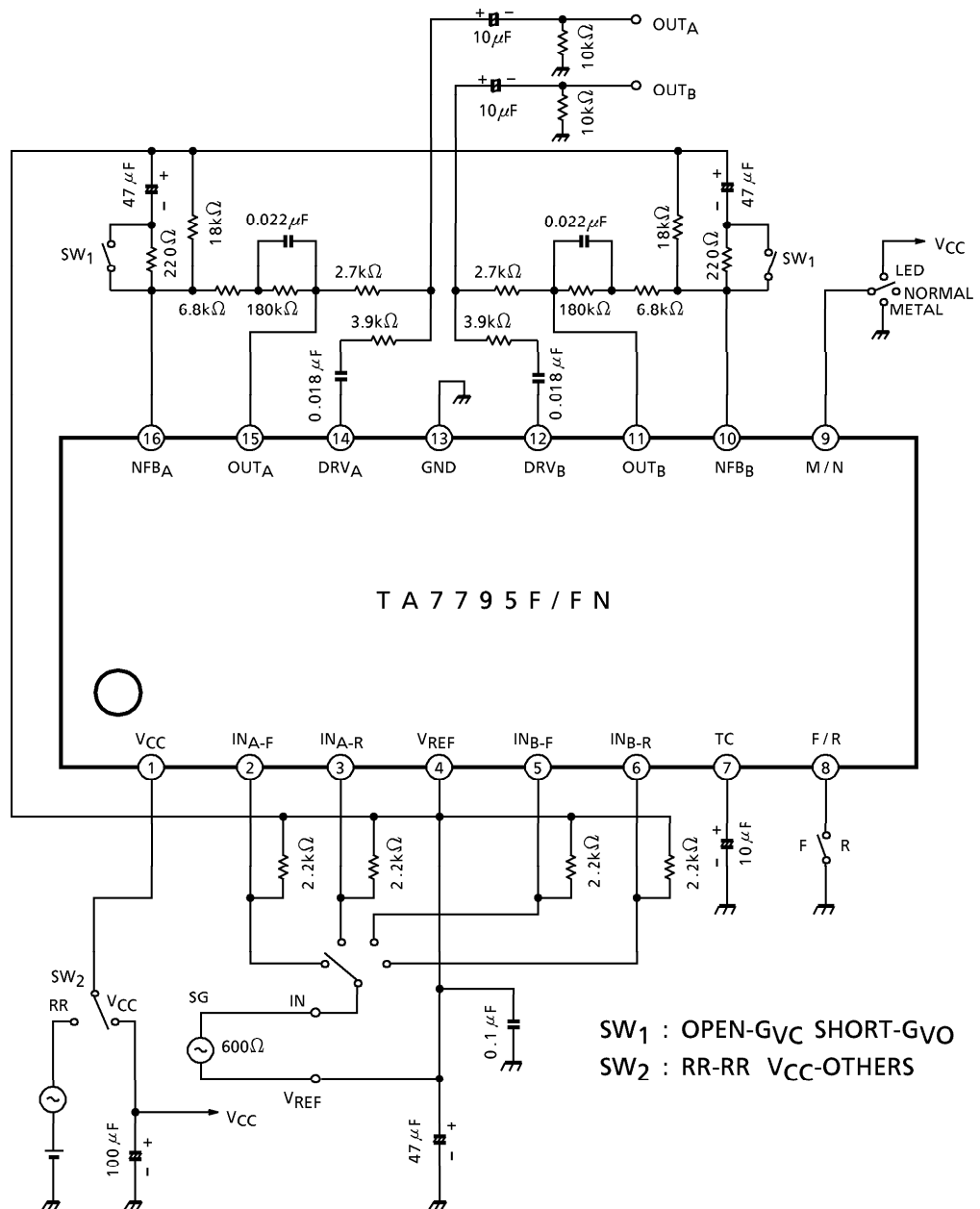
Unless otherwise specified, (Ta = 25°C, V_{CC} = 1.5V, R_g = 2.2kΩ, f = 1kHz, Normal EQ)

CHARACTERISTIC	SYM-BOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current	I _{CC}	1	V _{in} = 0	—	1.6	2.5	mA
Reference Voltage	V _{REF}	2		1.0	1.1	1.2	V
Open Loop Voltage Gain	G _{VO}	2	V _{in} = 32μV _{rms}	60	66	—	dB
Closed Loop Voltage Gain	G _{VC}	2	V _{in} = 320μV _{rms}	—	31	—	dB
Maximum Output Voltage	V _{om}	2	THD = 0.5%	270	350	—	mV _{rms}
Total Harmonic Distortion	THD	2	V _O = 100mV _{rms}	—	0.03	0.1	%
Equivalent Input Noise Voltage	V _{ni}	2	R _g = 2.2kΩ, BPF = 20Hz~20kHz NAB (G _V = 31dB, f = 1kHz)	—	1.3	3.0	μV _{rms}
Ripple Rejection Ratio	RR	2	V _r = 32mV _{rms} , f _r = 1kHz	—	48	—	dB
Cross Talk (CH-A / CH-B)	CT1	2	V _O = 100mV _{rms}	—	67	—	dB
Cross Talk (F / R)	CT2	2	V _O = 100mV _{rms}	—	70	—	dB
Saturation Voltage Of LED Driver	V _{on}	1	I _L = 3mA, LED Mode	—	80	—	mV
On-Resistance Of Metal Driver	R _{on}	1	I _L = 100μA, Metal Mode	—	100	—	Ω

TEST CIRCUIT 1

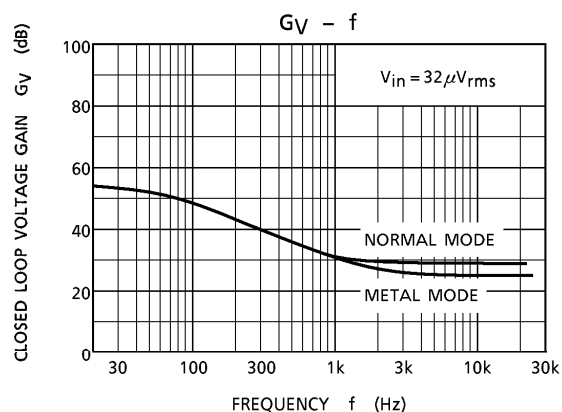
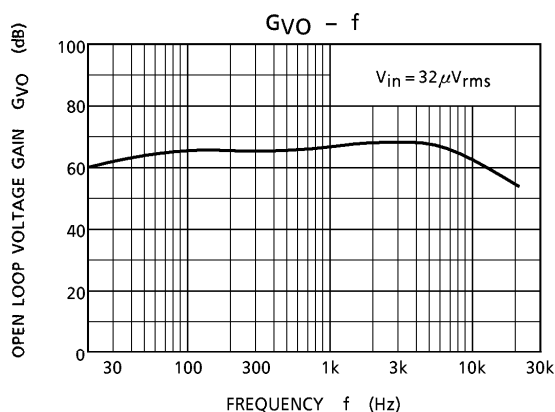
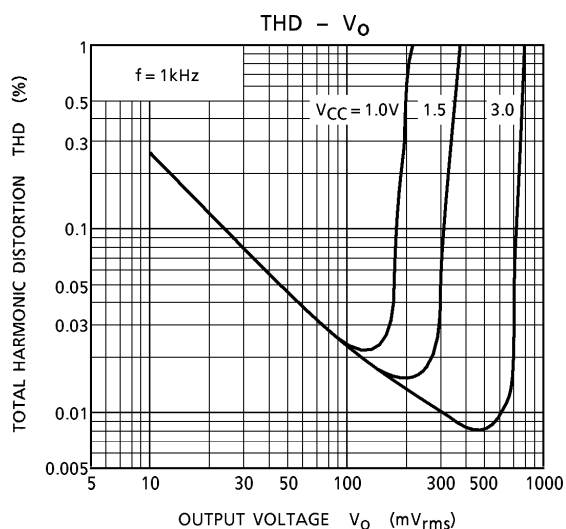
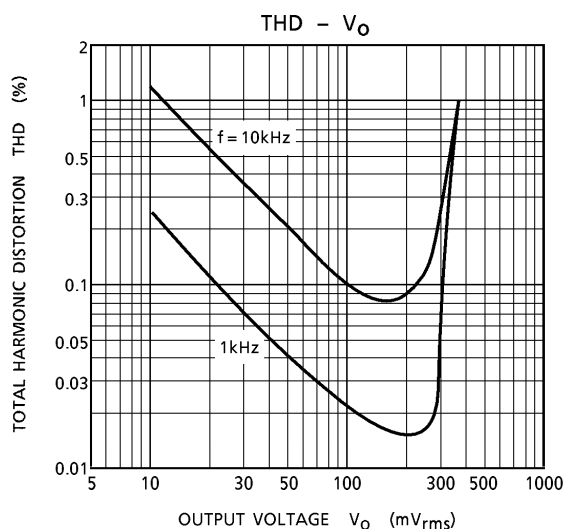
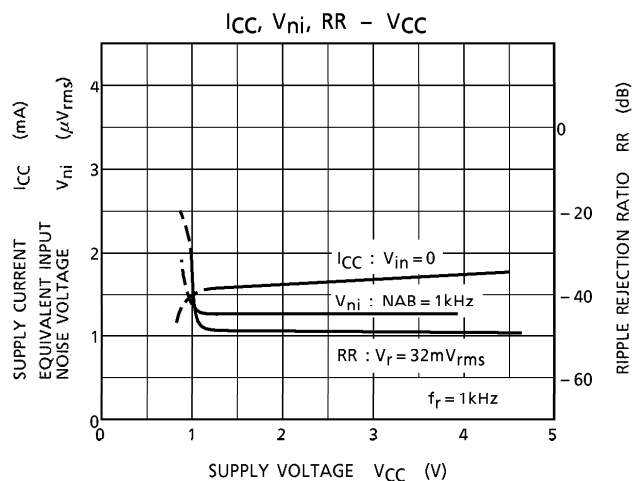
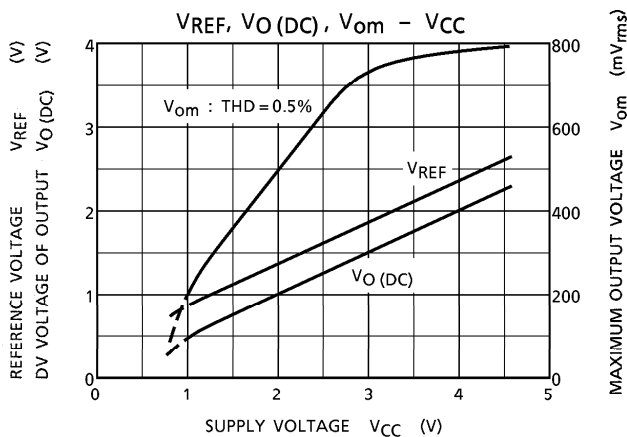


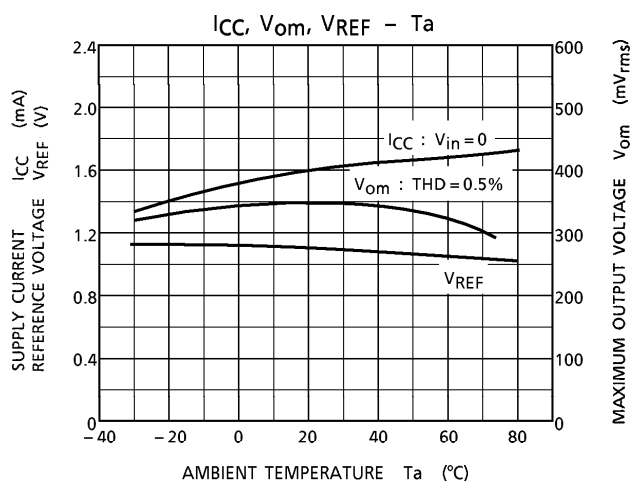
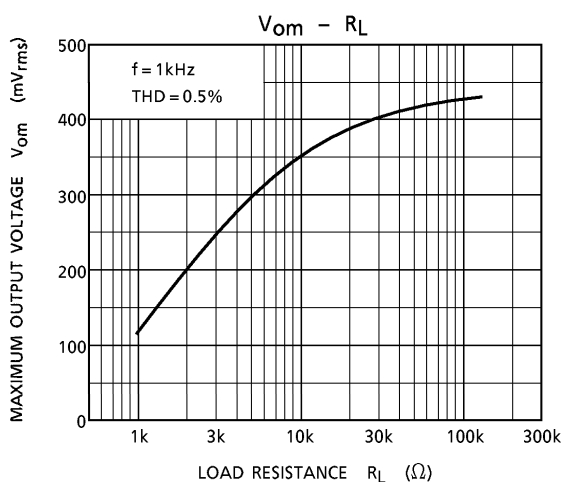
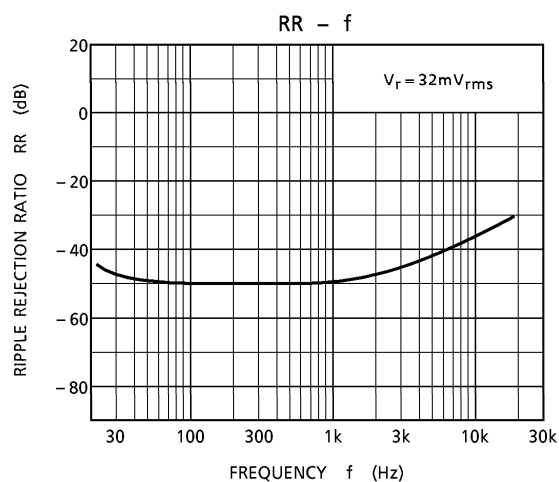
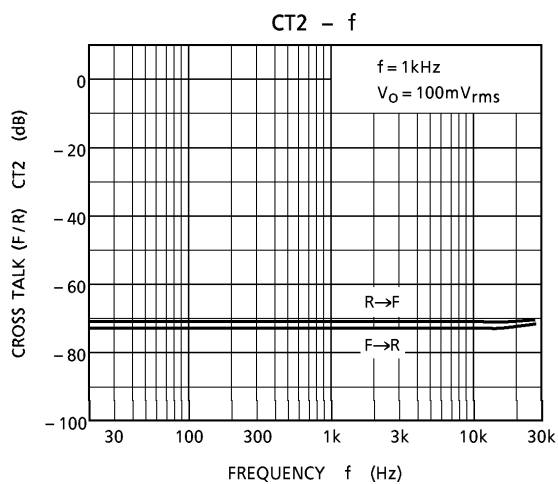
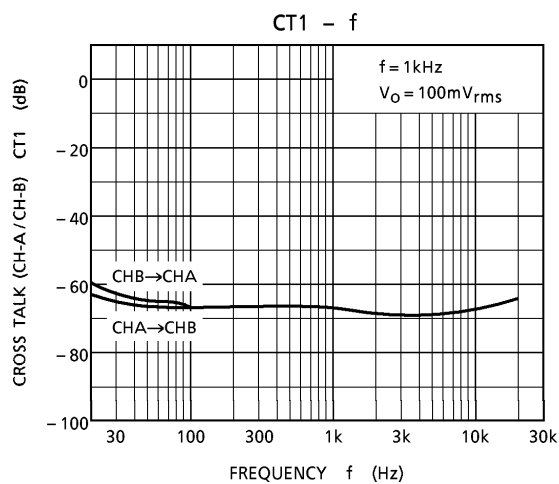
TEST CIRCUIT 2



CHARACTERISTICS CURVES

Unless otherwise specified, $V_{CC} = 1.5V$, $T_a = 25^\circ C$, $f = 1kHz$, Normal Mode

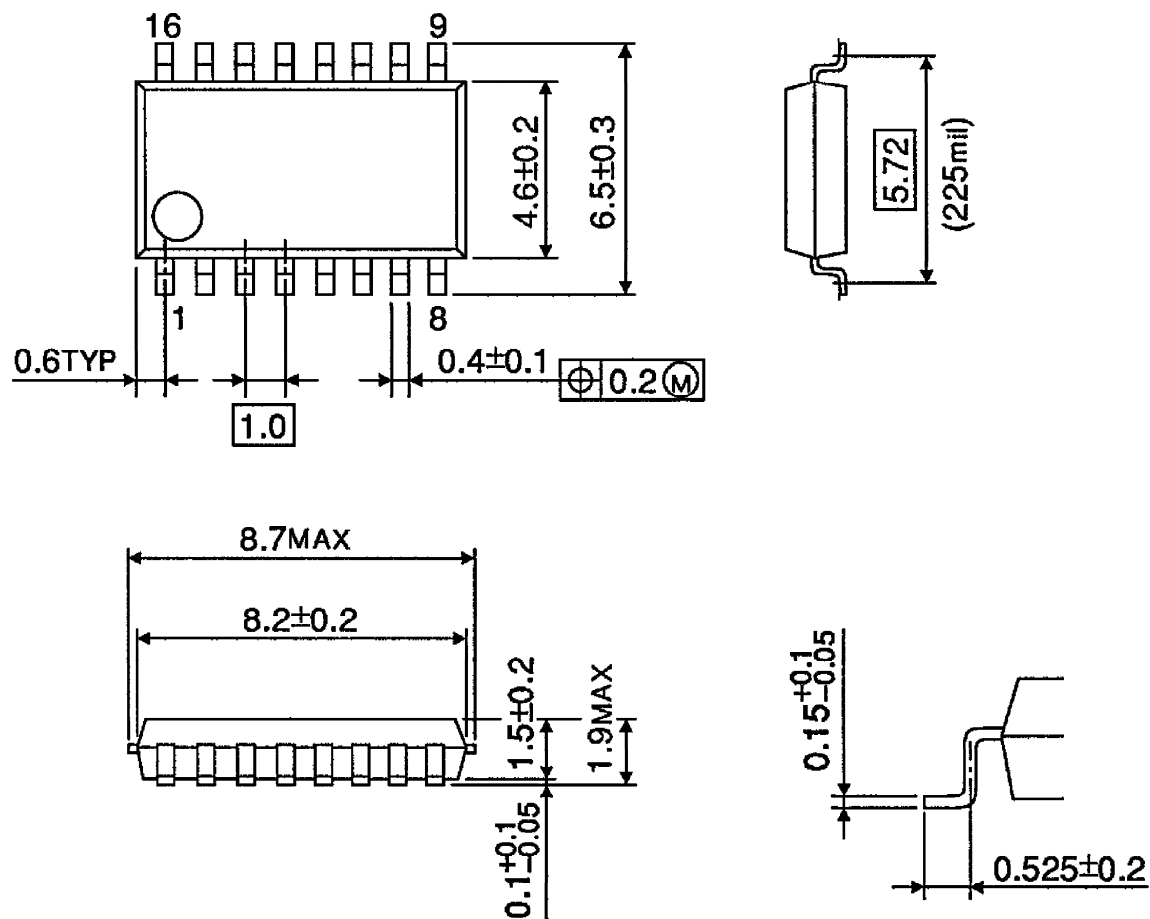




OUTLINE DRAWING

SSOP16-P-225-1.00A

Unit : mm

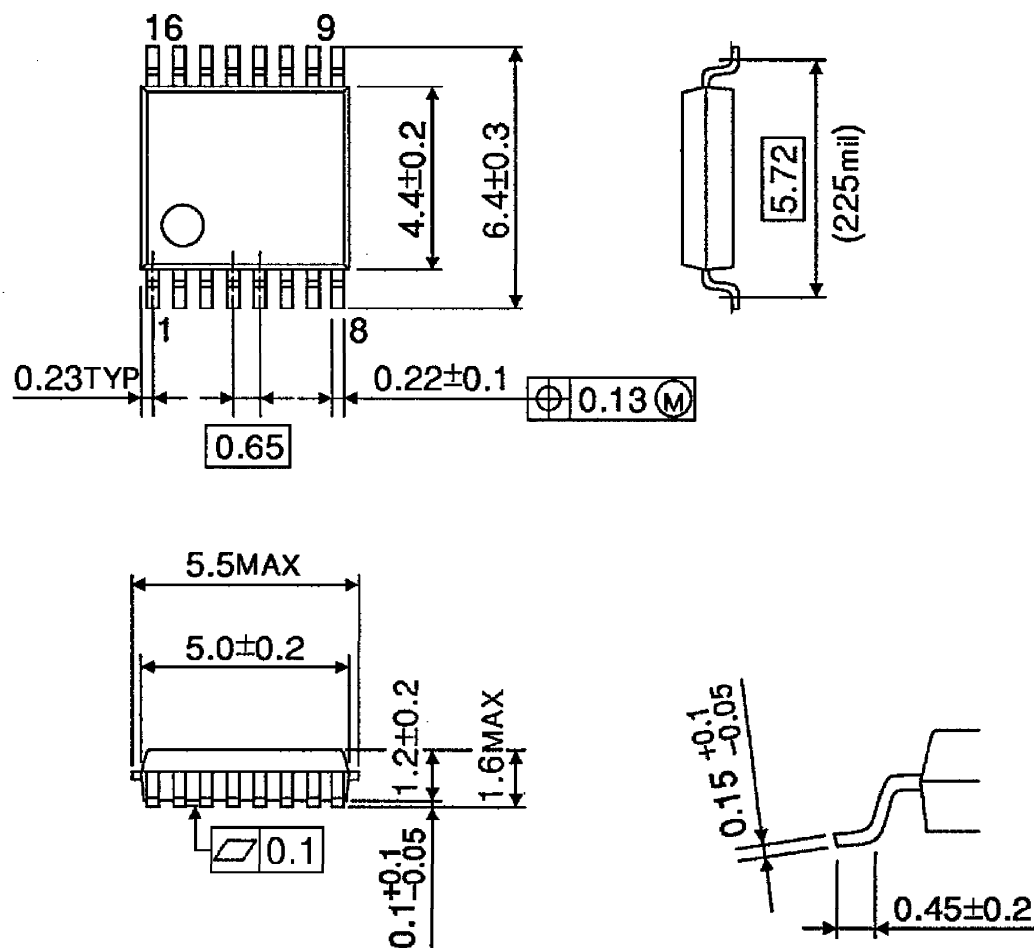


Weight : 0.14g (Typ.)

OUTLINE DRAWING

SSOP16-P-225-0.65B

Unit : mm



Weight : 0.09g (Typ.)