

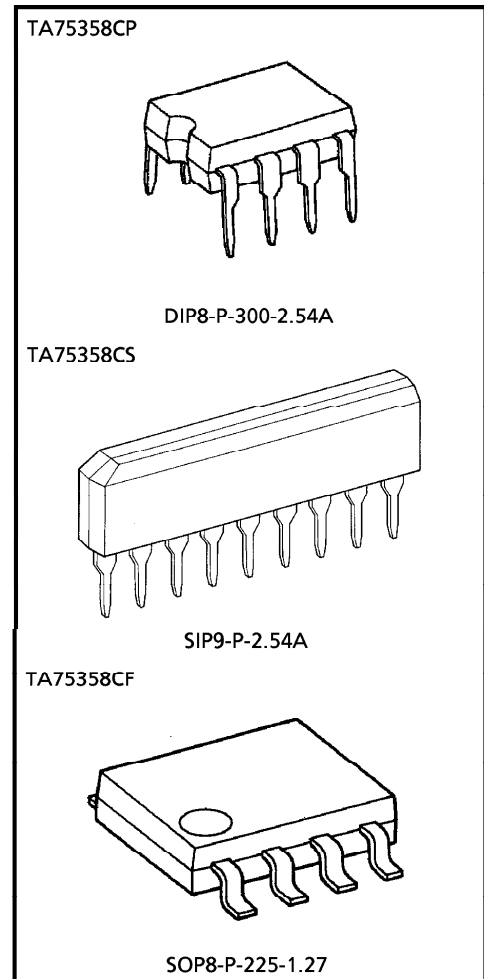
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA75358CP, TA75358CS, TA75358CF

DUAL OPERATIONAL AMPLIFIER

FEATURES

- In the Linear Mode the Input Common Mode Voltage Range Includes Ground.
- Two Internally Compensated OP Amps is Single Package.
- Low Power Dissipation and Power Drain Suitable for Battery Operation.
- Differential Input Voltage Range Equal to the Power Supply Voltage.
- Large Output Voltage Swing : $0V \sim V_{CC} - 1.5V$
- Wide Power Supply Voltage Range and Single Power Supply is Possible.
- Single Supply $3V \sim 36V$ or Dual Supplies $\pm 1.5V \sim 18V$.
- Low Input Biasing Current : $I_I = 45nA$ (Typ.)



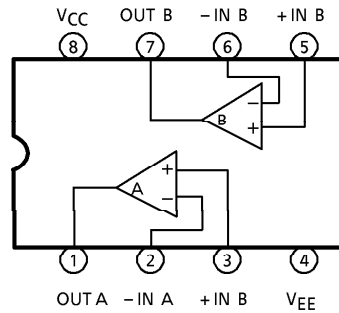
Weight	
DIP8-P-300-2.54A	: 0.5g (Typ.)
SIP9-P-2.54A	: 0.9g (Typ.)
SOP8-P-225-1.27	: 0.1g (Typ.)

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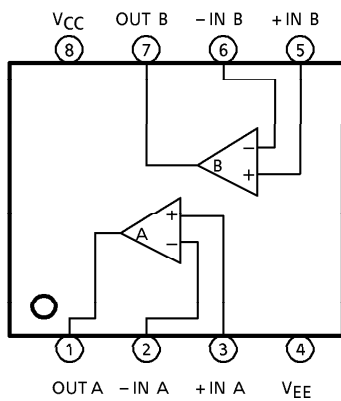
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PIN CONNECTION (TOP VIEW)

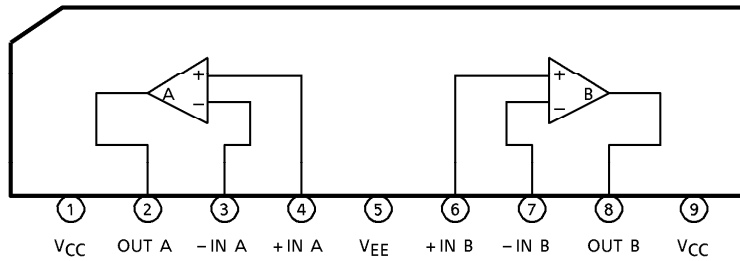
TA75358CP



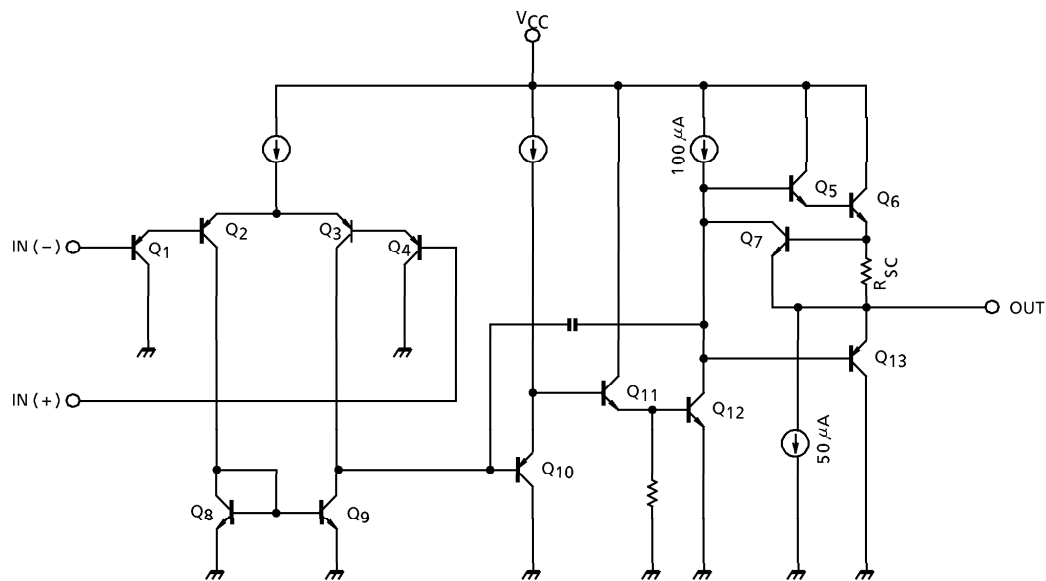
TA75358CF



TA75358CS



EQUIVALENT CIRCUIT



MAXIMUM RATINGS (Ta = 25°C)

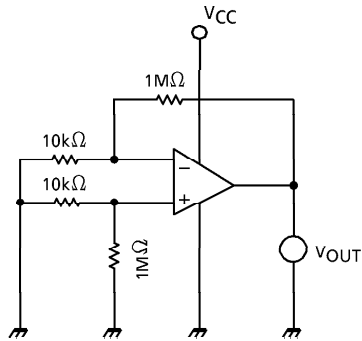
CHARACTERISTIC	SYMBOL	RATING	UNIT	
Supply Voltage	V _{CC} , V _{EE}	± 18 OR 36	V	
Differential Input Voltage	DV _{IN}	± 36	V	
Input Voltage	V _{IN}	- 0.3~36	V	
Power Dissipation	TA75358CP	P _D	mW	
	TA75358CS			500
	TA75358CF			240
Operating Temperature	T _{opr}	- 40~85	°C	
Storage Temperature	T _{stg}	- 55~125	°C	

ELECTRICAL CHARACTERISTICS (V_{CC} = 5V, V_{EE} = GND, Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V _{IO}	1	R _g ≤ 10kΩ	—	2	7	mV
Input Offset Current	I _{IO}	2	—	—	5	50	nA
Input Bias Current	I _I	2	—	—	45	250	nA
Common Mode Input Voltage	CMV _{IN}	3	V _{CC} = 30V, V _{EE} = GND	0	—	V _{CC} - 1.5	V
Supply Current	I _{CC} , I _{EE}	4	R _L = ∞, All OP Amps	—	0.7	1.2	mA
Voltage Gain	G _V	5	R _L ≥ 2kΩ	86	100	—	dB
Maximum Output Voltage Swing	V _{Op-p}	6	R _L = 2kΩ	0	—	V _{CC} - 1.5	V
Common Mode Rejection Ratio	CMRR	3	—	60	85	—	dB
Supply Voltage Rejection Ratio	SVRR	1	R _g = 10kΩ	60	100	—	dB
Source Current	I _{source}	6	IN (-) = 0V, IN (+) = 1V	20	40	—	mA
Sink Current	I _{sink}	6	IN (-) = 1V, IN (+) = 0V	10	20	—	mA
Unity Gain Cross Frequency	f _T	—	—	—	0.6	—	MHz
Slew Rate	SR	—	—	—	0.3	—	V / μs

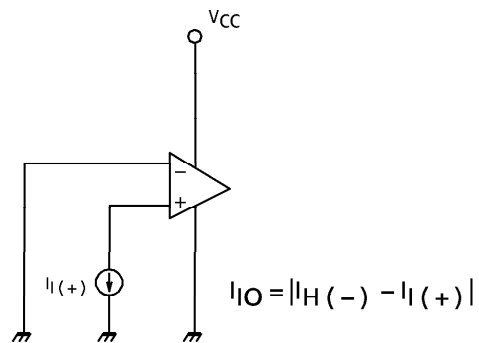
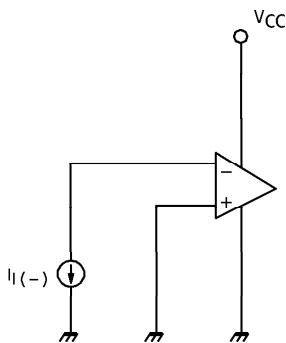
TEST CIRCUIT

(1) V_{IO} , SVRR

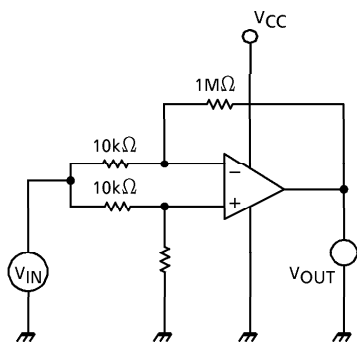


- $V_{IO} = V_{OUT} / 100$
 - $SVRR = 20 \log E$ (dB)
- $$E = \left| \frac{V_{OUT1} - V_{OUT2}}{V_{CC1} - V_{CC2}} \right| \times \frac{1}{100}$$
- V_{OUT1} : V_{OUT} ($V_{CC1} = 5V$)
 V_{OUT2} : V_{OUT} ($V_{CC2} = 10V$)

(2) I_I , I_{IO}

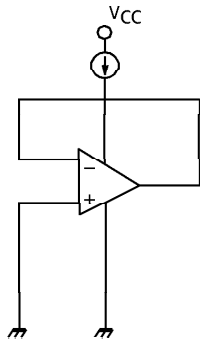


(3) CMV_{IN} , CMRR



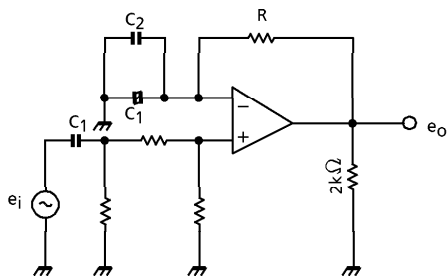
- $CMRR = 20 \log G_D / G_C$ (dB)
- G_D : DIFFERENTIAL VOLTAGE GAIN
- G_C : COMMON MODE VOLTAGE GAIN
- CMV_{IN} : $V_{IN} = 0V$
 $V_{CC} = 1.5V$ SUPPLIES

(4) I_{CC}



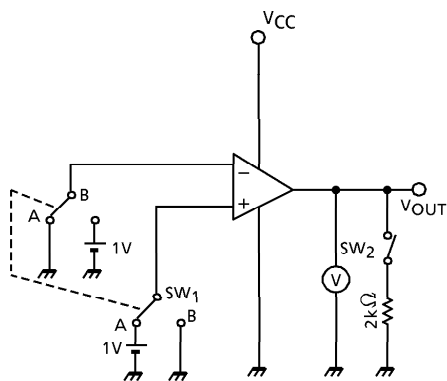
- $I_{CC} : V_{CC} = 5V$

(5) G_V



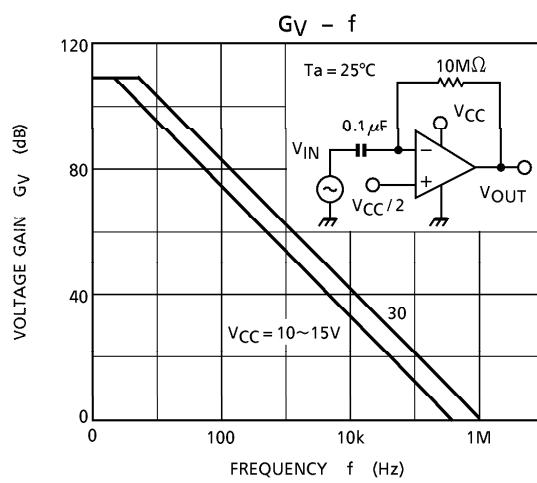
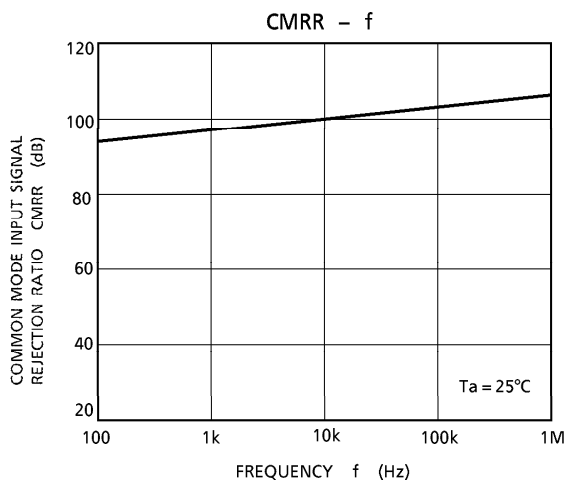
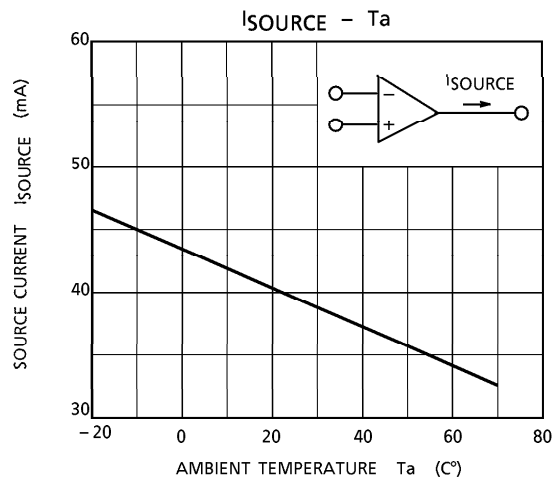
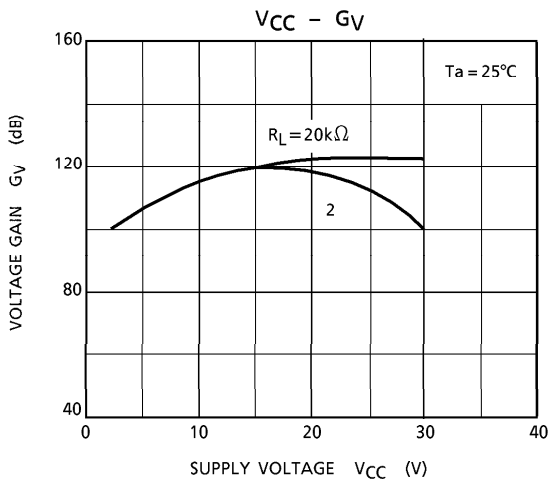
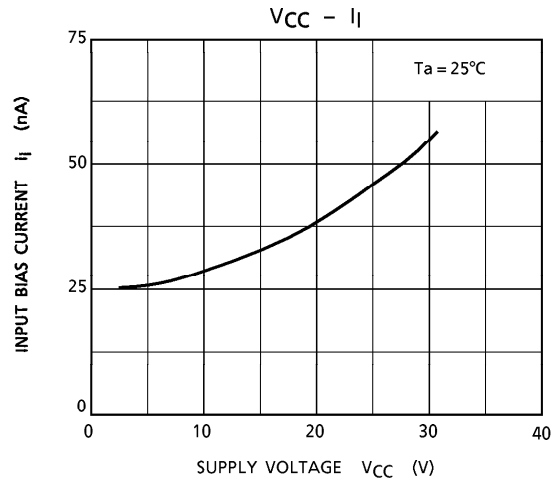
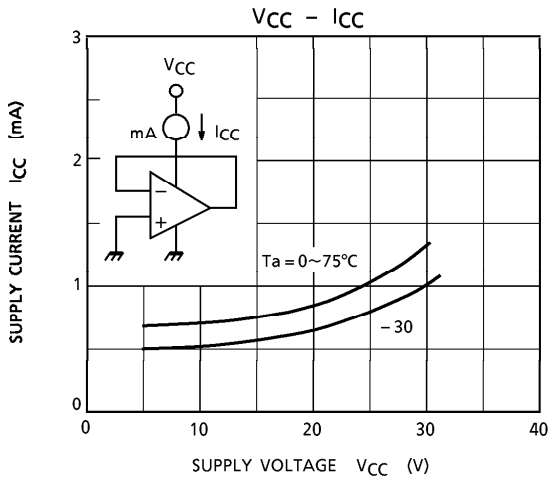
- $G_V = 20 \log e_o / e_i$ (dB)
- $R \gg 1 / \omega C_1$
- C_1 : COUPLING CONDENSER
- C_2 : HIGH FREQUENCY BYPASS CONDENSER

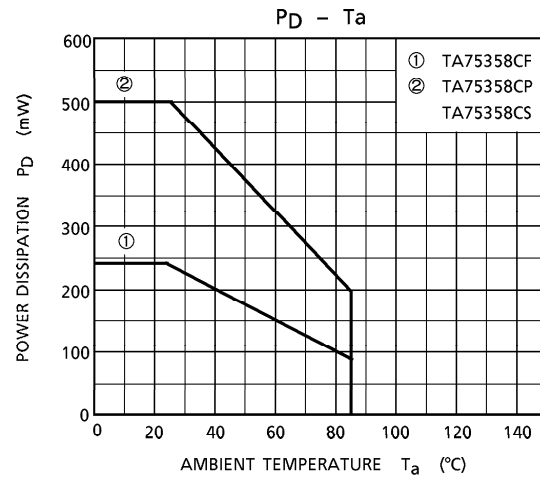
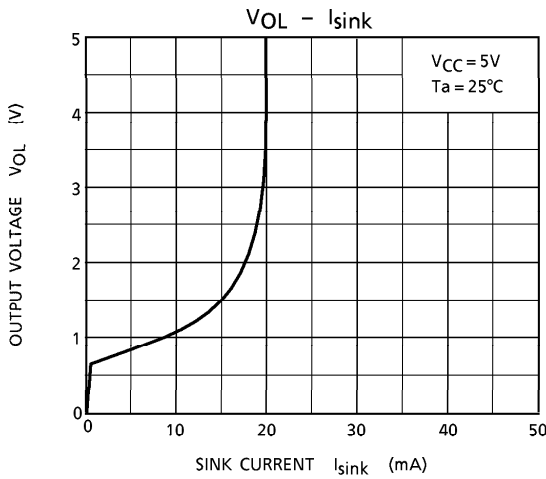
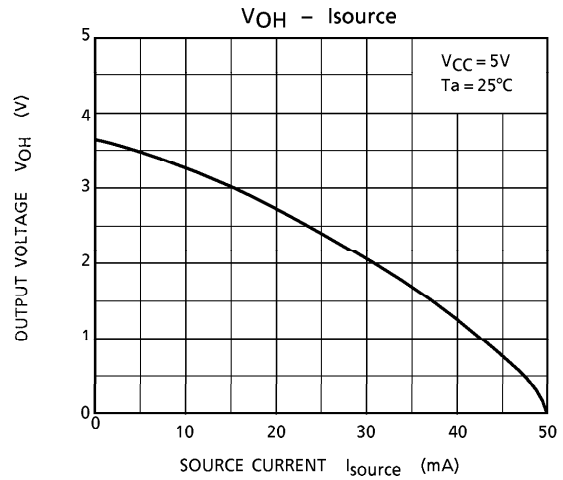
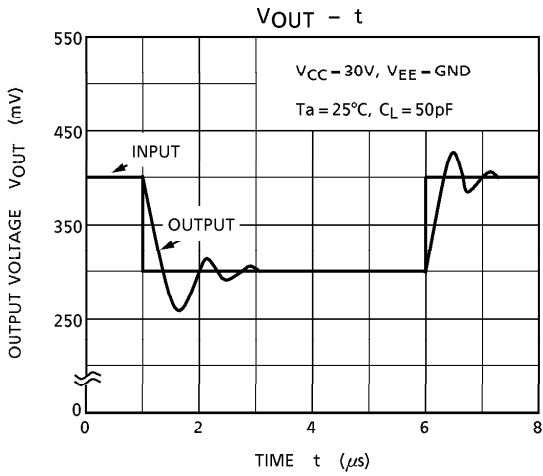
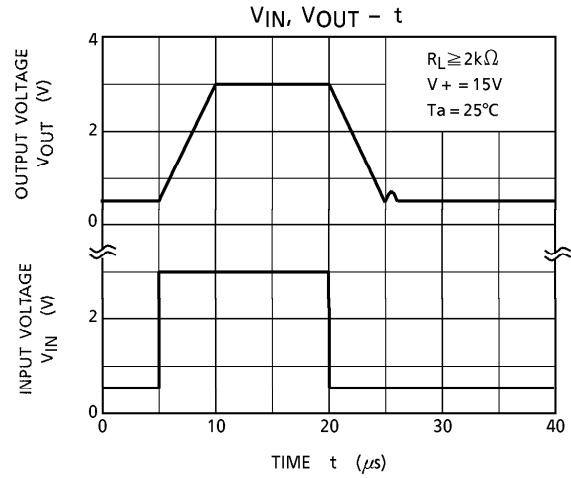
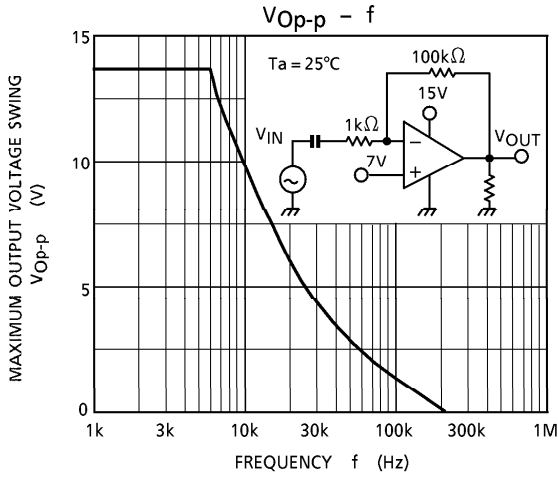
(6) V_{Op-p} , I_{source} , I_{sink}



- V_{Op-p}
 V_{OH} : SW₁ IS SIDE A, SW₂ ON
 V_{OL} : SW₁ IS SIDE B, SW₂ ON
- I_{source}
SW₁ IS SIDE A, SW₂ OFF
 $V_{OUT} \rightarrow 0V$ MEASURE
- I_{sink}
SW₁ IS SIDE B, SW₂ OFF
 $V_{OUT} \rightarrow 5V$ MEASURE

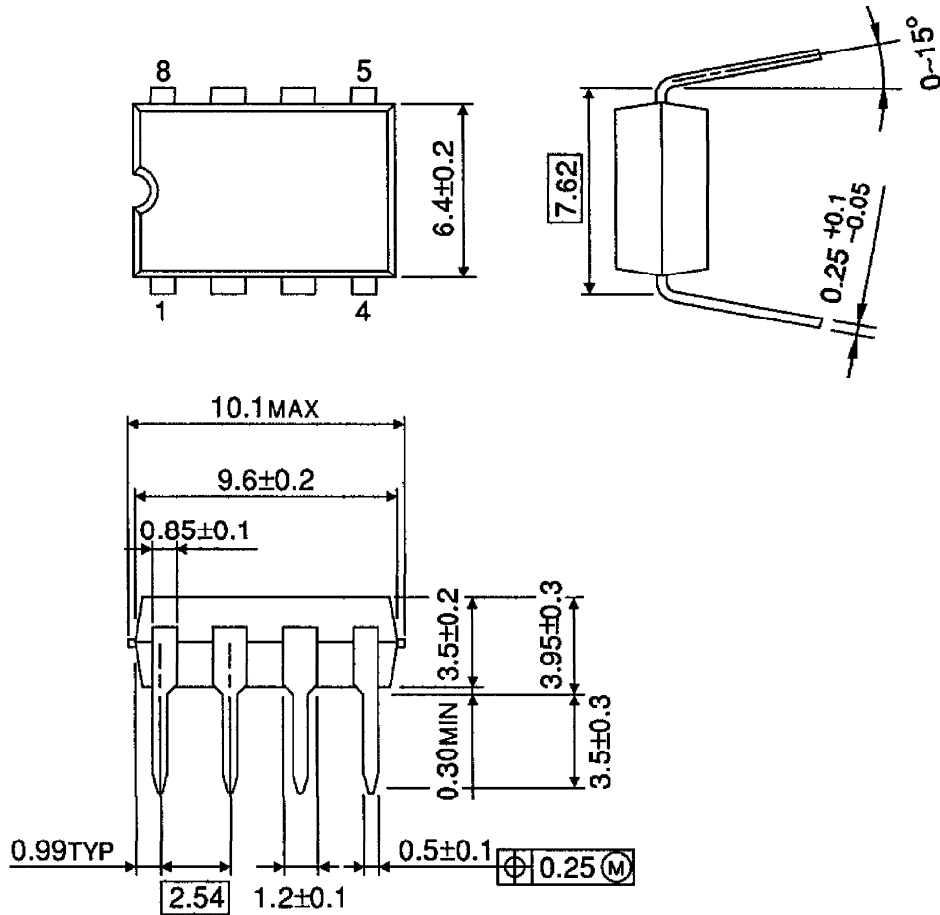
CHARACTERISTICS





OUTLINE DRAWING
DIP8-P-300-2.54A

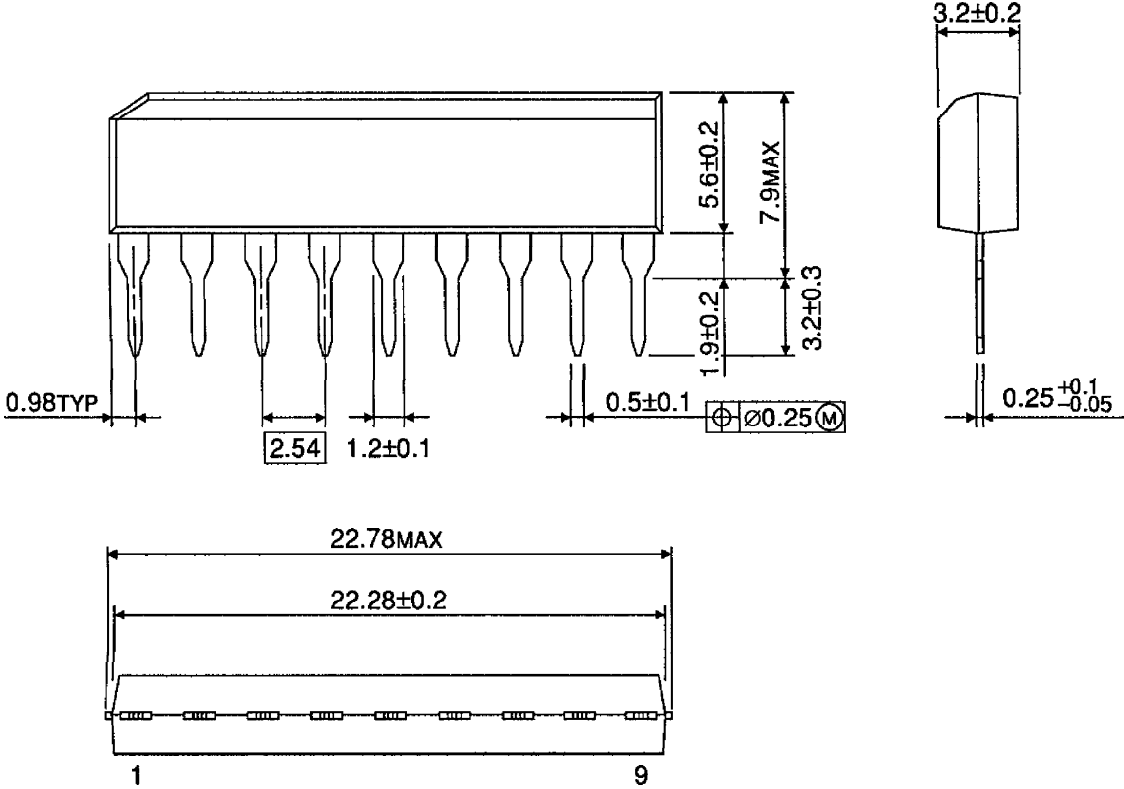
Unit : mm



Weight : 0.5g (Typ.)

OUTLINE DRAWING
SIP9-P-2.54A

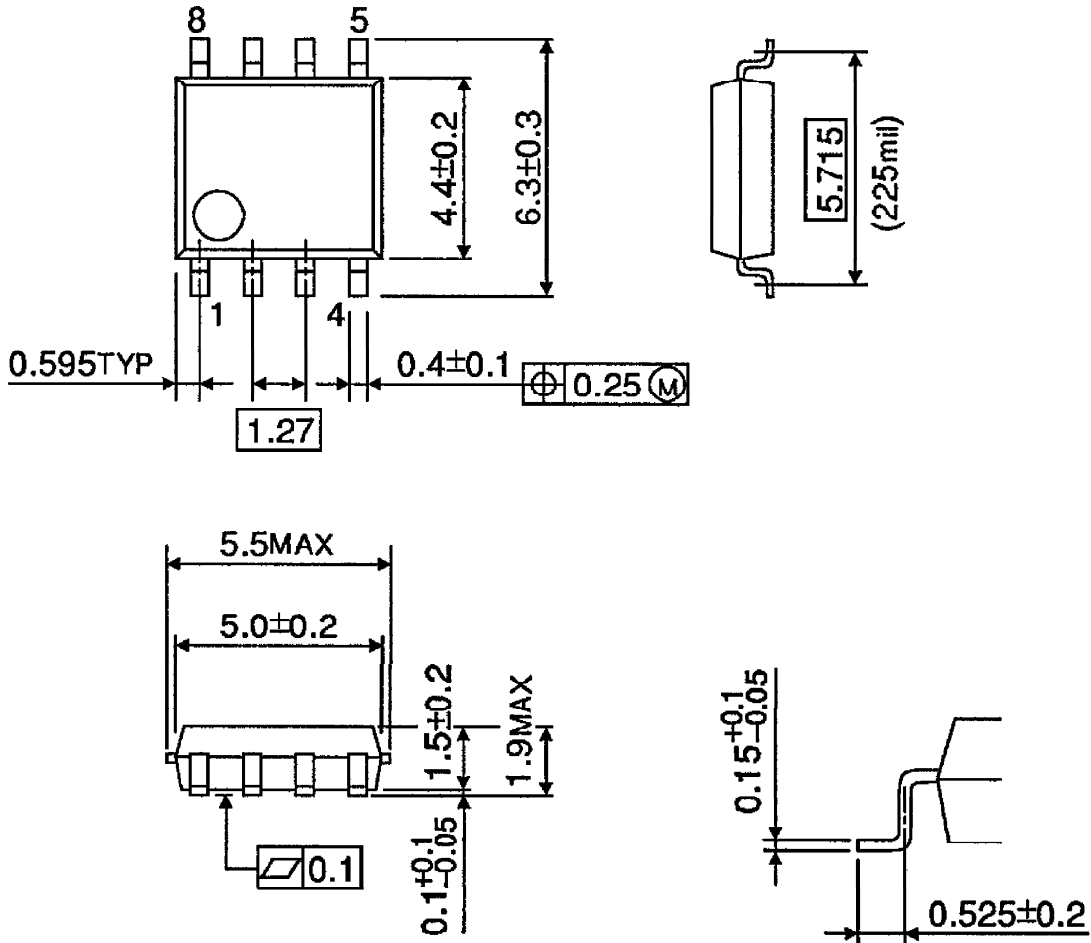
Unit : mm



Weight : 0.9g (Typ.)

OUTLINE DRAWING
SOP8-P-225-1.27

Unit : mm



Weight : 0.1g (Typ.)