

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

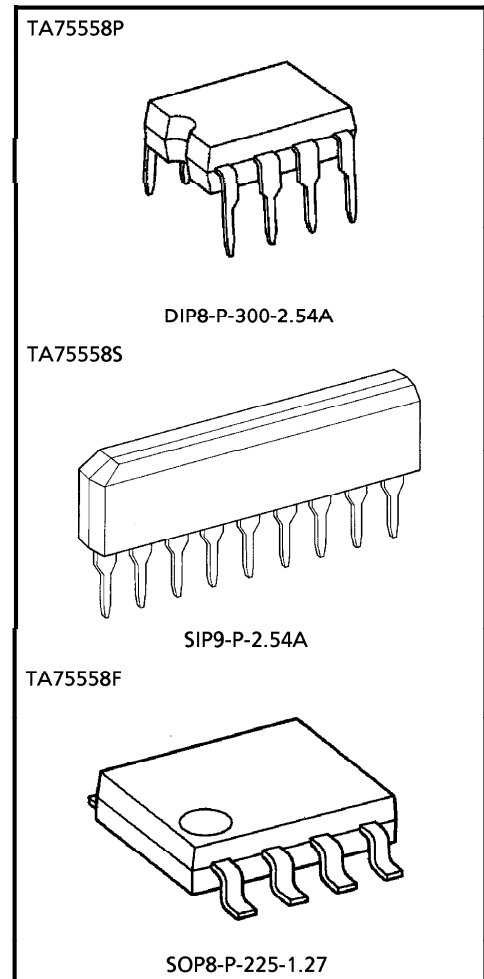
TA75558P, TA75558S, TA75558F

DUAL OPERATIONAL AMPLIFIER

The TA75558P, TA75558S and TA75558F are Low-Noise Operational Amplifiers with High Speed and Wide Bandwidth.

FEATURES

- Internal Frequency Compensation Type
- Pin Compatible with TA75458P, TA75458S and TA75458F
- Possible to Exchange the Position of 9 Pin for 1 Pin Because of Pin Connection Being Symmetric. (TA75558S Device Only)
- Wide Band Range : $f_T = 3\text{MHz}$ (Typ.)
- Suitable Application for Active Filter Equalizer Amplifier and Headphone Amplifier.



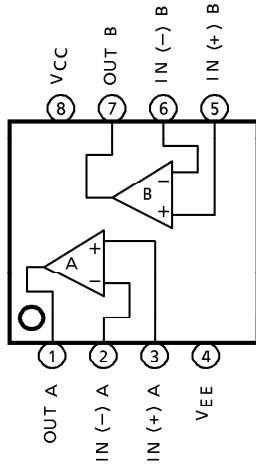
Weight
 DIP8-P-300-2.54A : 0.5g (Typ.)
 SIP9-P-2.54A : 0.9g (Typ.)
 SOP8-P-225-1.27 : 0.1g (Typ.)

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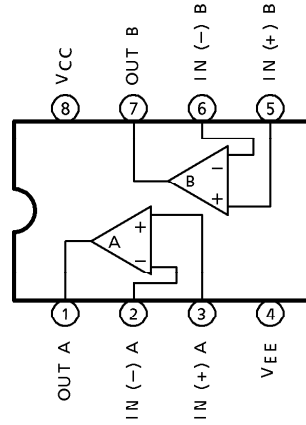
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PIN CONNECTION (TOP VIEW)

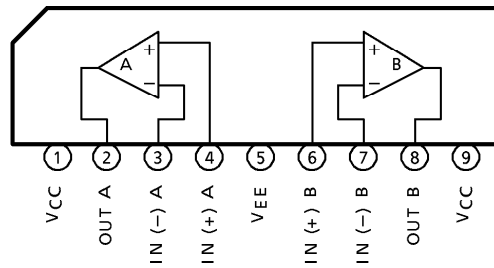
TA75558F



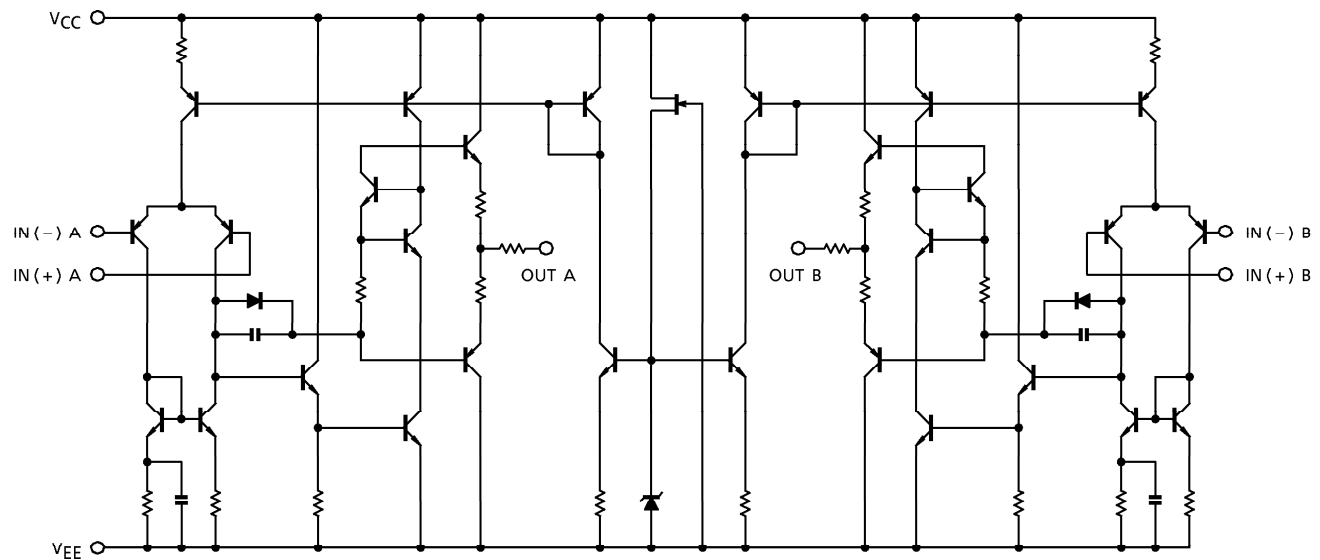
TA75558P



TA75558S



EQUIVALENT CIRCUIT



MAXIMUM RATINGS (Ta = 25°C)

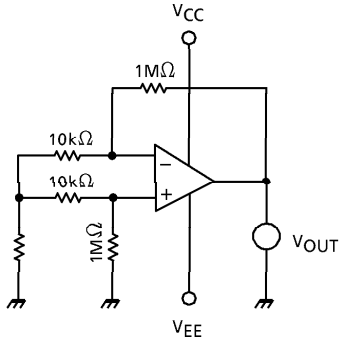
| CHARACTERISTIC | SYMBOL | TA75558P TA75558S | TA75558F | UNIT |
|----------------------------|------------------|----------------------------------|----------------------------------|------|
| Supply Voltage | V _{CC} | + 18 | + 18 | V |
| | V _{EE} | - 18 | - 18 | |
| Differential Input Voltage | DV _{IN} | ± 30 | ± 30 | V |
| Input Voltage | V _{IN} | V _{CC} ~V _{EE} | V _{CC} ~V _{EE} | V |
| Power Dissipation | P _D | 500 | 240 | mW |
| Operating Temperature | T _{opr} | - 40~85 | - 30~70 | °C |
| Storage Temperature | T _{stg} | - 55~125 | - 55~125 | °C |

ELECTRICAL CHARACTERISTICS (V_{CC} = 15V, V_{EE} = - 15V, Ta = 25°C)

| CHARACTERISTIC | SYMBOL | TEST CIR-CUIT | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|--|-----------------------------------|---------------|--|------|------|------|-------------------|
| Input Offset Voltage | V _{IO} | 1 | R _g ≤ 10kΩ | — | 0.5 | 6 | mV |
| Input Offset Current | I _{IO} | 2 | — | — | 5 | 200 | nA |
| Input Bias Current | I _I | 2 | — | — | 60 | 500 | nA |
| Common Mode Input Voltage | CMV _{IN} | 3 | — | ± 12 | ± 14 | — | V |
| Maximum Output Voltage | V _{OM} | 6 | R _L = 10kΩ | ± 12 | ± 14 | — | V |
| | V _{OMR} | | R _L = 2kΩ | ± 10 | ± 13 | — | |
| Source Current | I _{source} | 8 | — | — | 40 | — | mA |
| Sink Current | I _{sink} | 7 | — | — | 40 | — | mA |
| Voltage Gain (Open Loop) | G _V | 5 | V _{OUT} = ± 10V, R _L = 2kΩ | 86 | 100 | — | dB |
| Common Mode Input Signal Rejection Ratio | CMRR | 3 | R _g ≤ 10kΩ | 70 | 90 | — | dB |
| Supply Voltage Rejection Ratio | SVRR | 1 | R _g ≤ 10kΩ | — | 30 | 150 | μV/V |
| Slew Rate | SR | 9 | G _V = 1, R _L = 2kΩ | — | 1.0 | — | V/μs |
| Unity Gain Cross Frequency | f _T | 5 | Open Loop | — | 3.0 | — | MHz |
| Supply Current | I _{CC} , I _{EE} | 4 | — | — | 4.0 | 6.0 | mA |
| Equivalent Input Noise Voltage | V _{Ni} | — | R _S = 1kΩ, f = 30Hz~30kHz | — | 2.5 | — | μV _{rms} |

TEST CIRCUIT

(1) V_{IO} , $SVRR$



- $V_{IO} = V_{OUT} / 100$
- $SVRR = 20 \log E \text{ (dB)}$

$$E = \left| \frac{V_{OUT1} - V_{OUT2}}{(V_{CC1} - V_{EE1}) - (V_{CC2} - V_{EE2})} \right| \times \frac{1}{100}$$

V_{OUT1} : V_{OUT} (V_{CC} , $V_{EE} = \pm 8V$)

V_{OUT2} : V_{OUT} (V_{CC} , $V_{EE} = \pm 18V$)

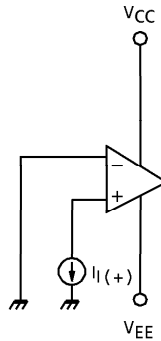
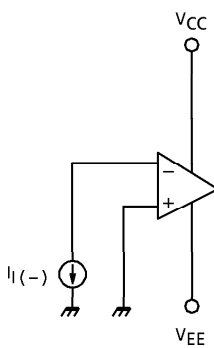
V_{CC1} : $V_{CC} = -8V$

V_{EE1} : $V_{EE} = -8V$

V_{CC2} : $V_{CC} = +18V$

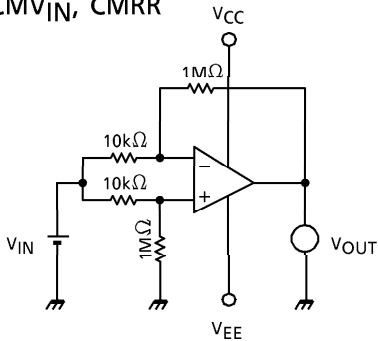
V_{EE2} : $V_{EE} = -18V$

(2) I_I , I_{IO}



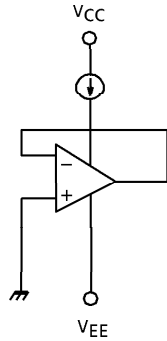
$$I_{IO} = |I_I(-) - I_I(+)|$$

(3) CMV_{IN} , $CMRR$



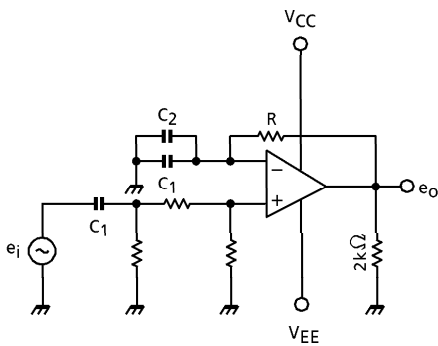
- $CMRR = 20 \log G_D / G_C \text{ (dB)}$
- G_D : DIFFERENTIAL VOLTAGE GAIN
- G_C : COMMON MODE VOLTAGE GAIN
- CMV_{IN} : $V_{IN} = -12V, 12V \text{ SUPPLIES}$

(4) I_{CC}



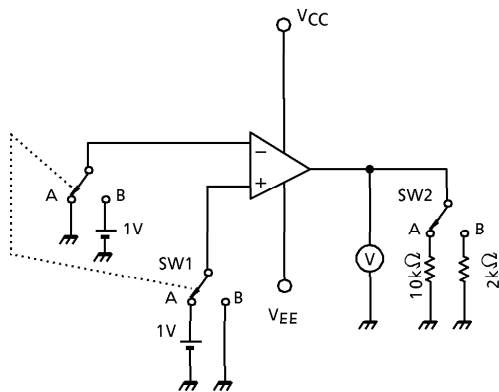
- $I_{CC} : V_{CC}, V_{EE} = \pm 15V$

(5) G_V, f_T



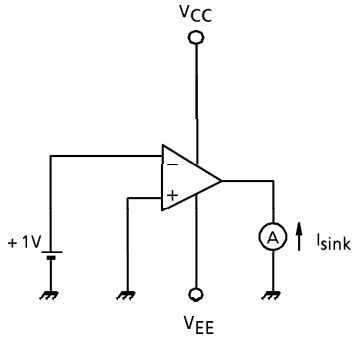
- $G_V = 20 \log e_o / e_i$ (dB)
 $R \gg 1 / \omega C_1$
 C_1 : COUPLING CONDENSER
 C_2 : HIGH FREQUENCY BYPASS CONDENSER
- f_T : INPUT FREQUENCY AT $e_i = e_o$

(6) V_{OM}, V_{OMR}

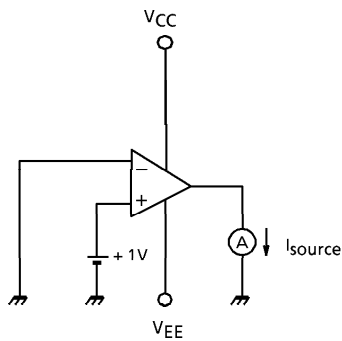


- $V_{OM} : (+) : SW1$ IS SIDE A, $SW2$ IS SIDE A
 $(-) : SW1$ IS SIDE B, $SW2$ IS SIDE A
- $V_{OMR} : (+) : SW1$ IS SIDE A, $SW2$ IS SIDE B
 $(-) : SW1$ IS SIDE B, $SW2$ IS SIDE B

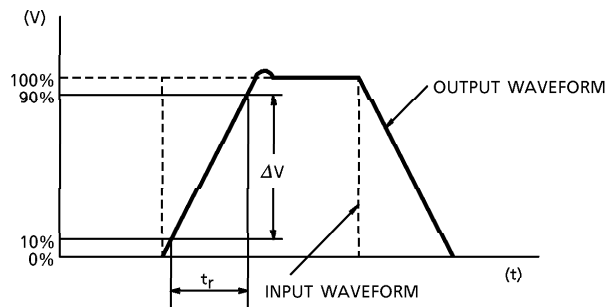
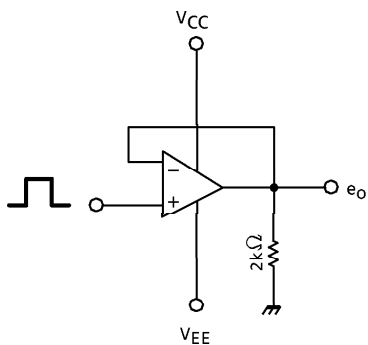
(7) I_{sink}



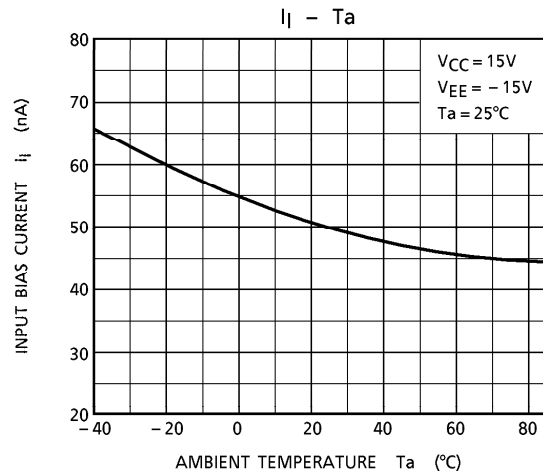
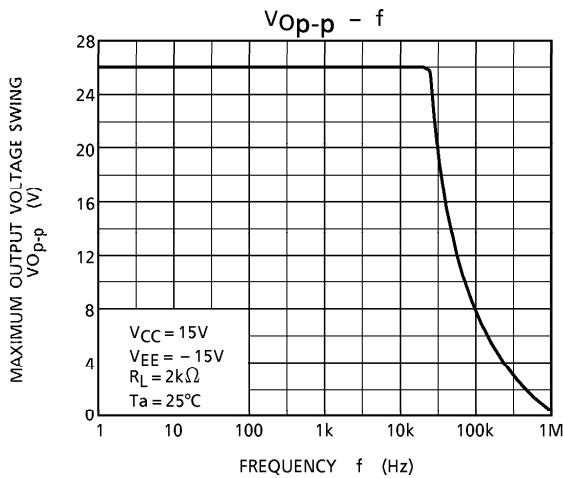
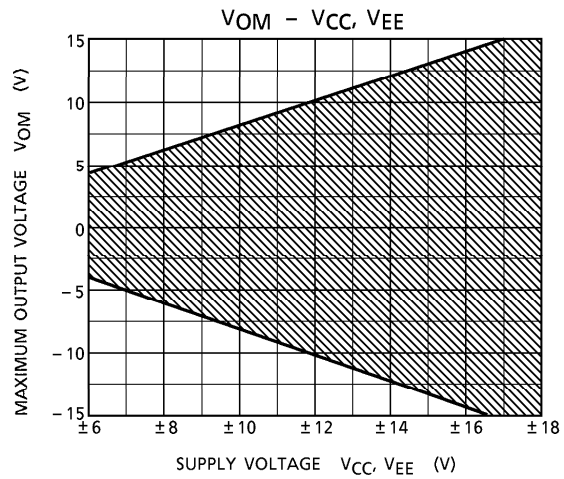
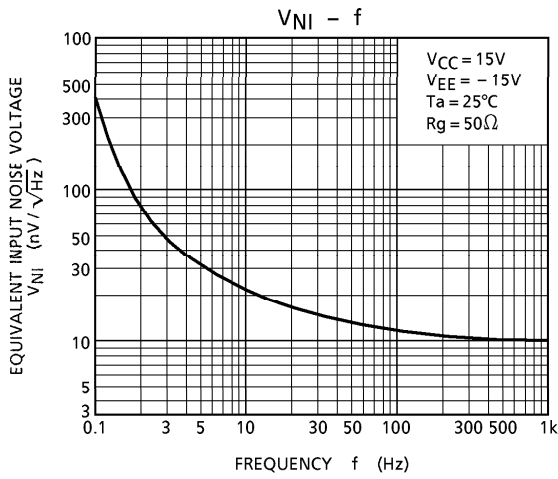
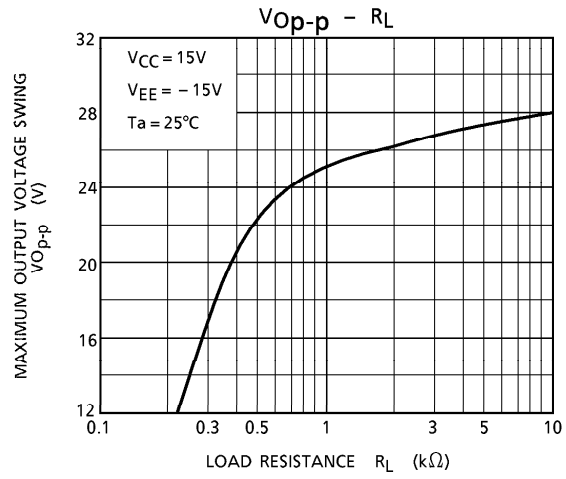
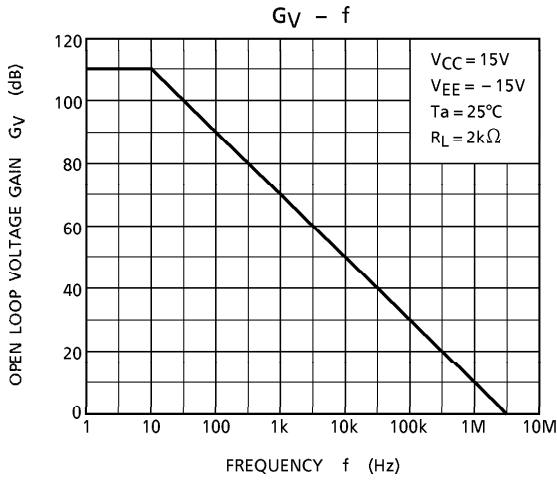
(8) I_{source}

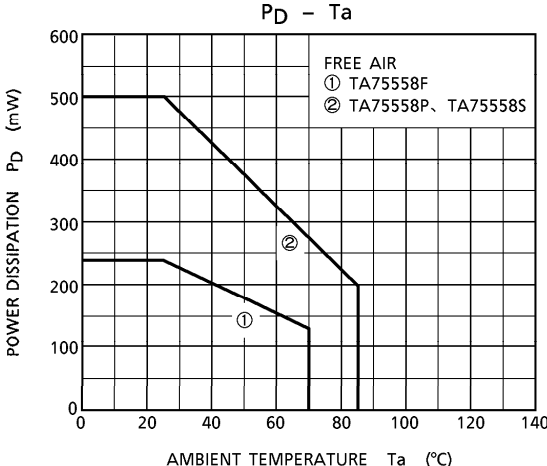


(9) SR



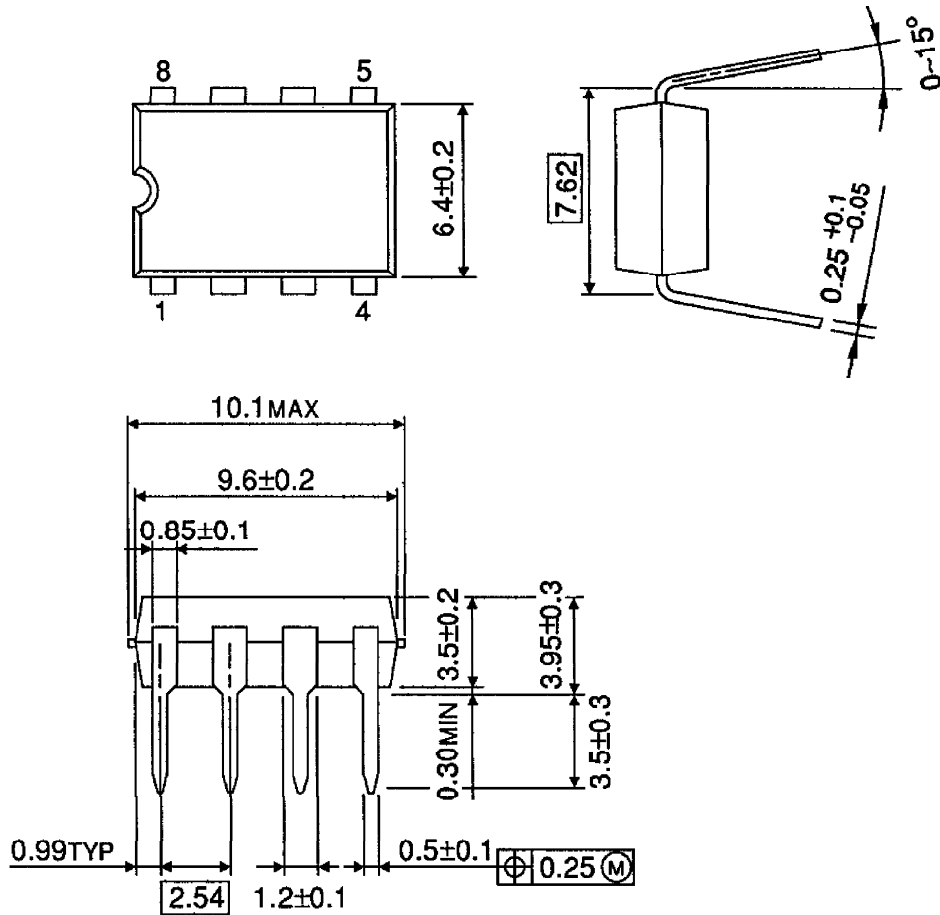
CHARACTERISTIC





OUTLINE DRAWING
DIP8-P-300-2.54A

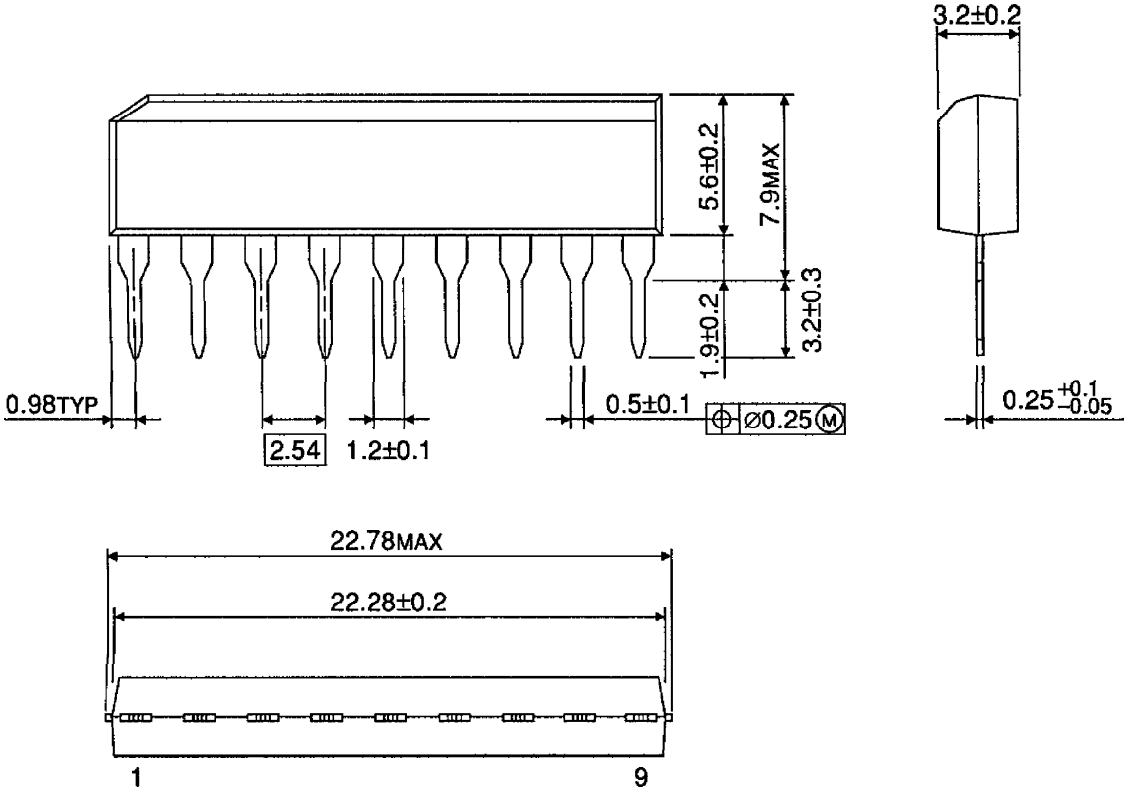
Unit : mm



Weight : 0.5g (Typ.)

OUTLINE DRAWING
SIP9-P-2.54A

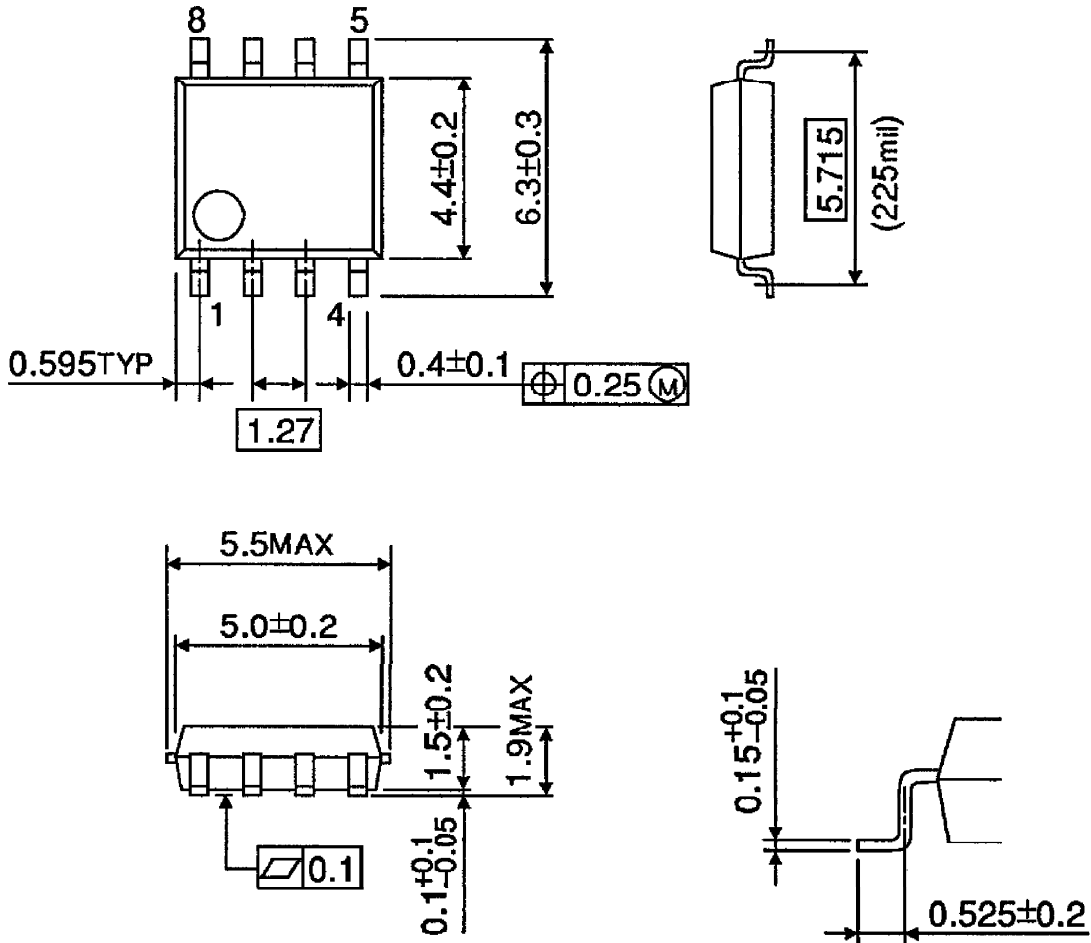
Unit : mm



Weight : 0.9g (Typ.)

OUTLINE DRAWING
SOP8-P-225-1.27

Unit : mm



Weight : 0.1g (Typ.)