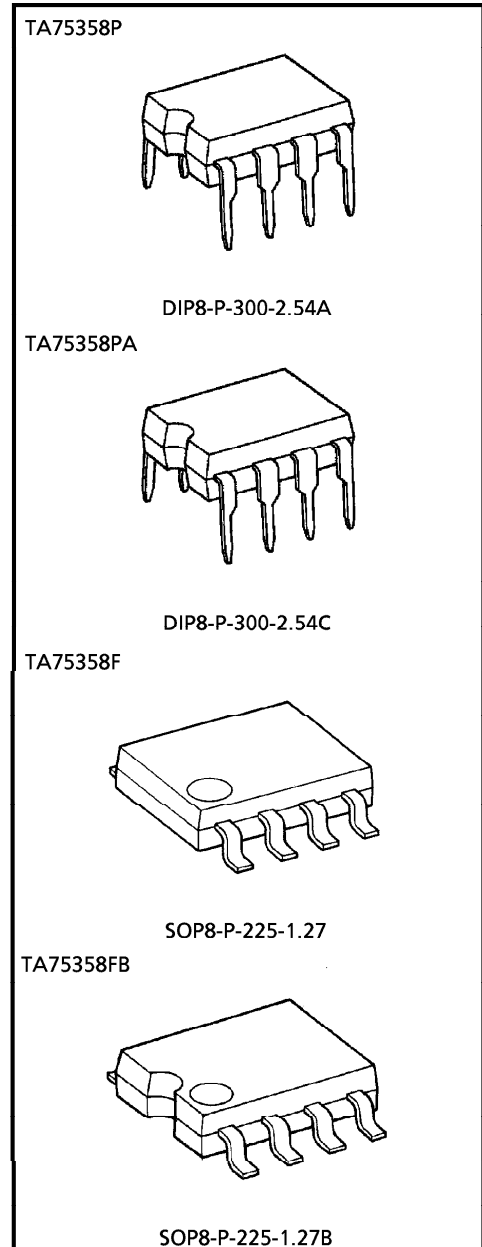


**TA75358P, TA75358PA, TA75358F, TA75358FB**

**DUAL OPERATIONAL AMPLIFIER**

**FEATURES**

- In the linear mode the input common mode voltage range includes ground.
- Two internally compensated OP amps are in 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.
- Low input biasing current :  $I_I = 45nA$  (Typ.)
- Wide Band Decompensated ( $A_V \geq 20dB$ ).

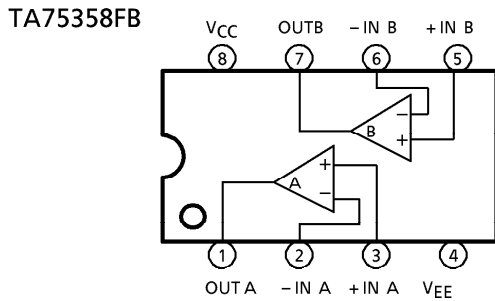
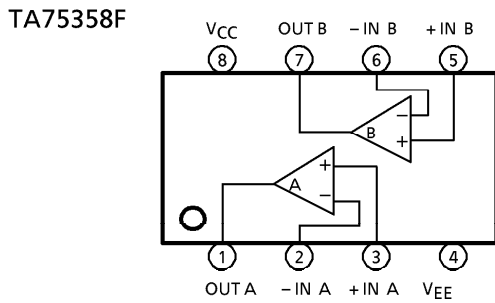
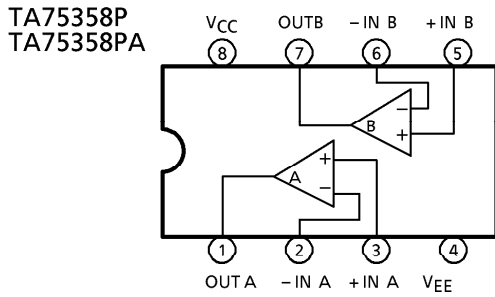


Weight	
DIP8-P-300-2.54A	: 0.5g (Typ.)
DIP8-P-300-2.54C	: 0.6g (Typ.)
SOP8-P-225-1.27	: 0.1g (Typ.)
SOP8-P-225-1.27B	: 0.1g (Typ.)

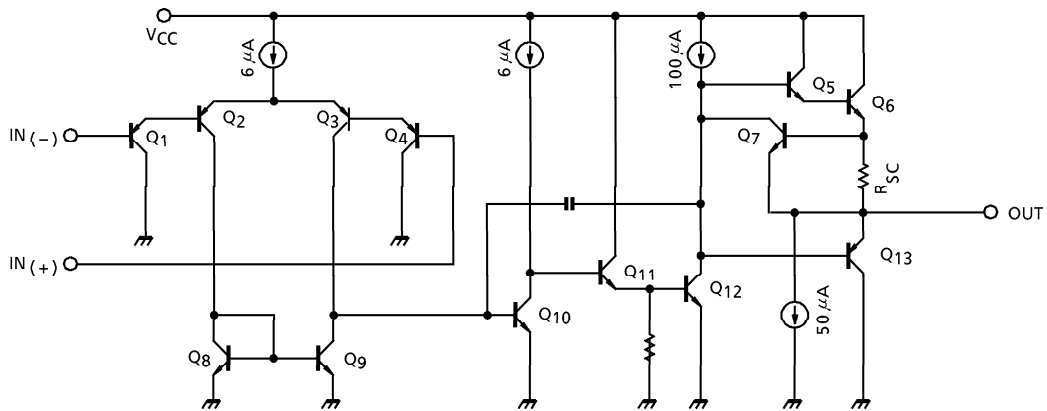
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**PIN CONNECTION (TOP VIEW)**



**EQUIVALENT CIRCUIT**



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## MAXIMUM RATINGS (Ta = 25°C)

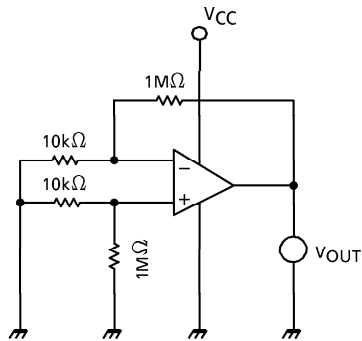
CHARACTERISTIC	SYMBOL	TA75358P TA75358PA	TA75339F TA75339FB	UNIT
Supply Voltage	V <sub>CC</sub> , V <sub>EE</sub>	± 18 OR 36	± 18 OR 36	V
Differential Input Voltage	DV <sub>IN</sub>	± 36	± 36	V
Input Voltage	V <sub>IN</sub>	-0.3~36	-0.3~36	V
Power Dissipation	P <sub>D</sub>	500	240	mW
Operating Temperature	T <sub>opr</sub>	-40~85	-40~85	°C
Storage Temperature	T <sub>stg</sub>	-55~125	-55~125	°C

ELECTRICAL CHARACTERISTICS (V<sub>CC</sub> = 5V, V<sub>EE</sub> = GND, Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V <sub>IO</sub>	1	R <sub>g</sub> ≤ 10kΩ	—	2	7	mV
Input Offset Current	I <sub>IO</sub>	2	—	—	5	50	nA
Input Bias Current	I <sub>I</sub>	2	—	—	45	250	nA
Common Mode Input Voltage	CMV <sub>IN</sub>	3	V <sub>CC</sub> = 30V, V <sub>EE</sub> = GND	0	—	V <sub>CC</sub> -1.5	V
Supply Current	I <sub>CC</sub> , I <sub>EE</sub>	4	R <sub>L</sub> = ∞, All OP Amps	—	0.7	1.2	mA
Voltage Gain	G <sub>V</sub>	5	R <sub>L</sub> ≥ 2kΩ	86	100	—	dB
Maximum Output Voltage Swing	V <sub>Op-p</sub>	6	R <sub>L</sub> = 2kΩ	0	—	V <sub>CC</sub> -1.5	V
Common Mode Rejection Ratio	CMRR	3	—	60	85	—	dB
Supply Voltage Rejection Ratio	SVRR	1	R <sub>g</sub> = 10kΩ	60	100	—	dB
Source Current	I <sub>source</sub>	6	IN (-) = 0V, IN (+) = 1V	20	40	—	mA
Sink Current	I <sub>sink</sub>	6	IN (-) = 1V, IN (+) = 0V	10	20	—	mA
Unity Gain Cross Frequency	f <sub>T</sub>	—	—	—	1.5	—	MHz
Slew Rate	S <sub>R</sub>	—	—	—	0.8	—	V / μs

TEST CIRCUIT

(1)  $V_{IO}$ , SVRR



- $V_{IO} = V_{OUT} / 100$

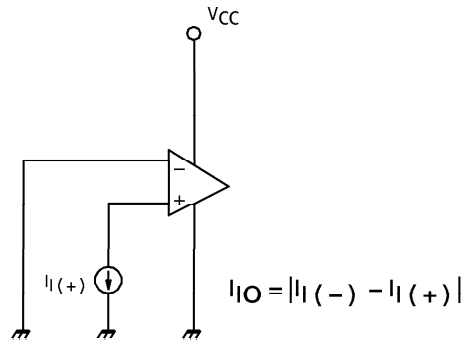
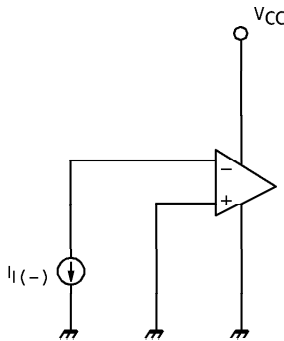
- $SVRR = 20 \log E$  (dB)

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

$V_{OUT1}$  :  $V_{OUT}$  ( $V_{CC1} = 5V$ )

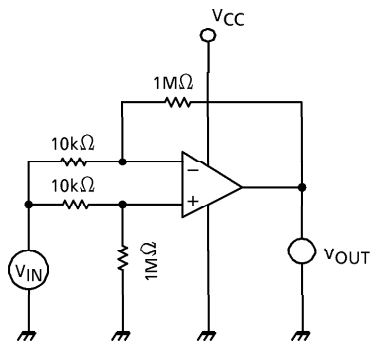
$V_{OUT2}$  :  $V_{OUT}$  ( $V_{CC2} = 10V$ )

(2)  $I_I$ ,  $I_{IO}$



$$I_{IO} = |I_1(-) - I_1(+)|$$

(3)  $CMV_{IN}$ , CMRR



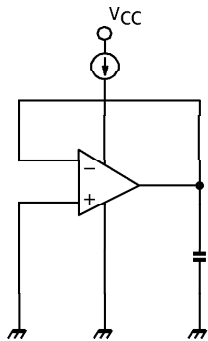
- $CMRR = 20 \log G_D / G_C$  (dB)

$G_D$  : DIFFERENTIAL VOLTAGE GAIN

$G_C$  : COMMON MODE VOLTAGE GAIN

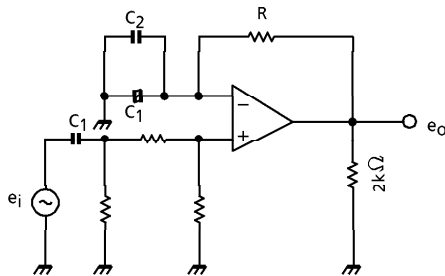
- $CMV_{IN}$  :  $V_{IN} = 0V$ ,  $V_{CC} - 1.5V$  SUPPLIES

(4)  $I_{CC}$



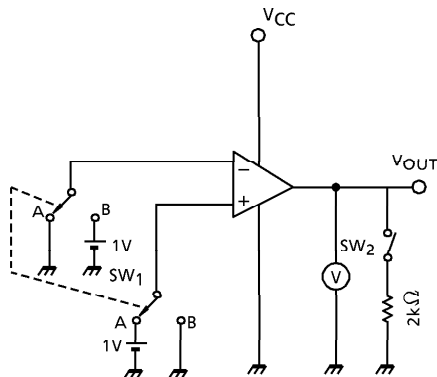
- $I_{CC} : V_{CC} = 5V$

(5)  $G_V$



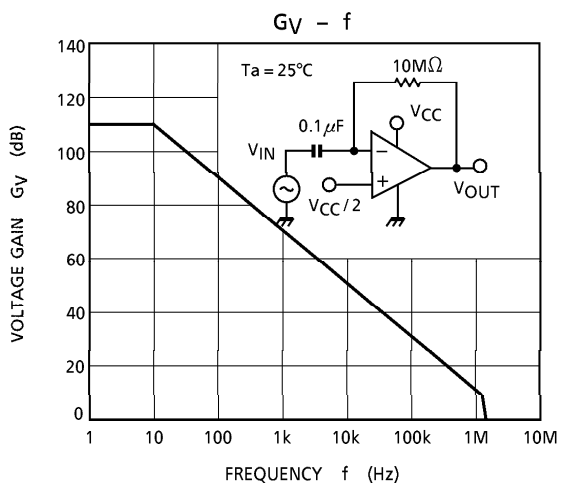
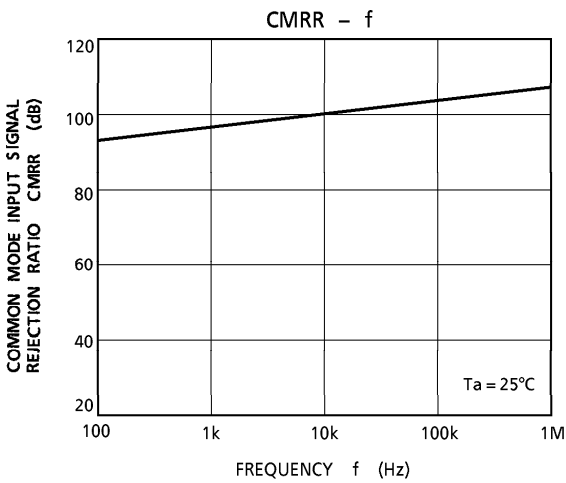
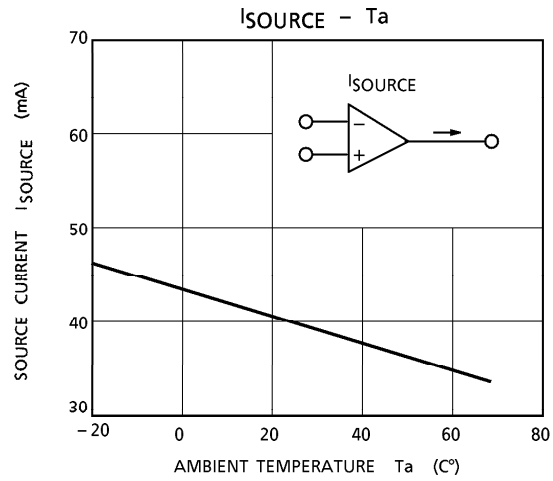
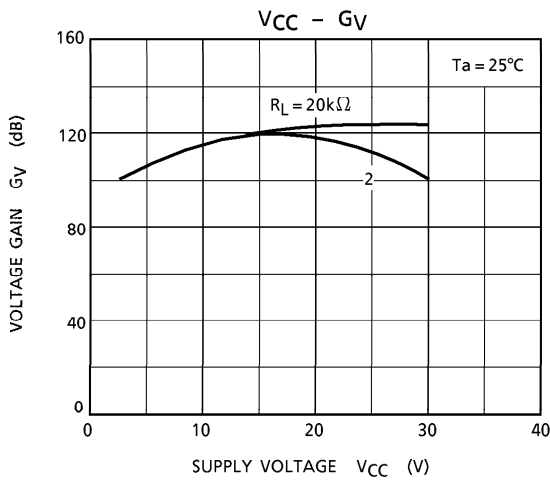
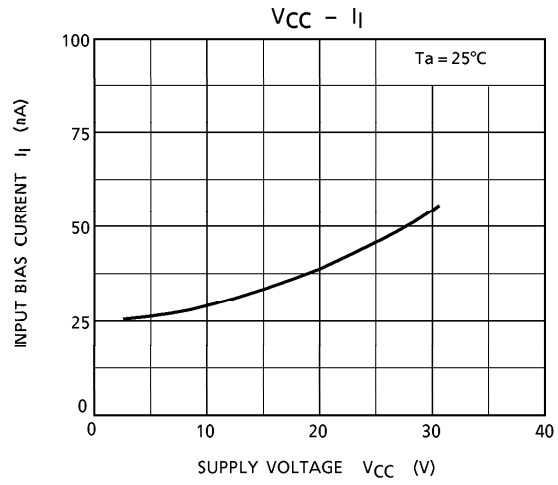
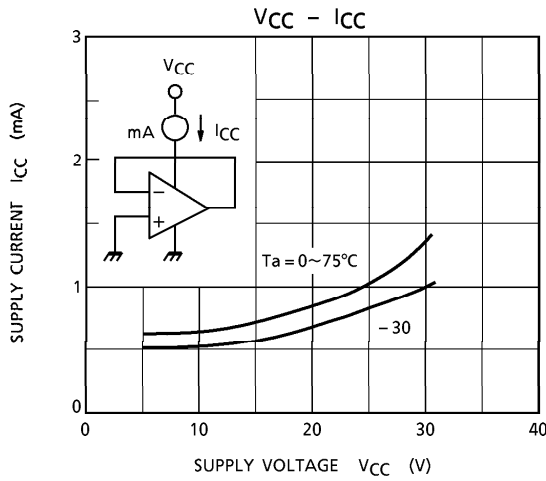
- $G_V = 20 \log e_o / e_i$  (dB)
- $R \gg 1 / \omega C_1$
- $C_1$  : COUPLING CONDENSER
- $C_2$  : HIGH FREQUENCY BYPASS CONDENSER

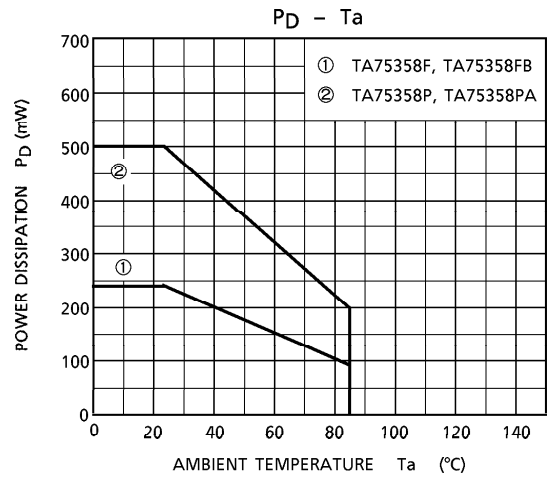
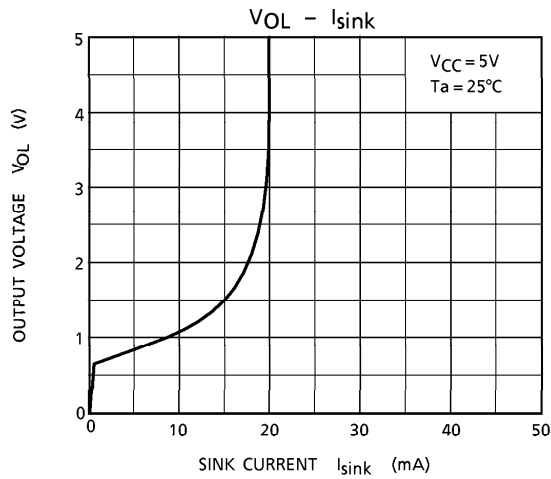
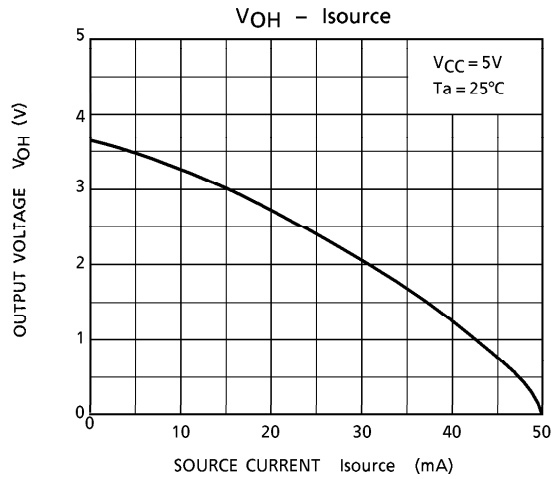
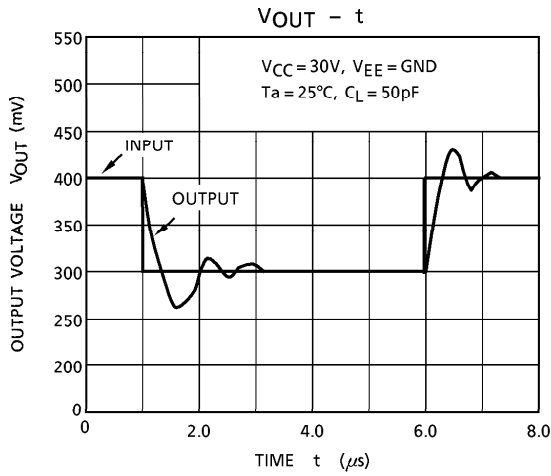
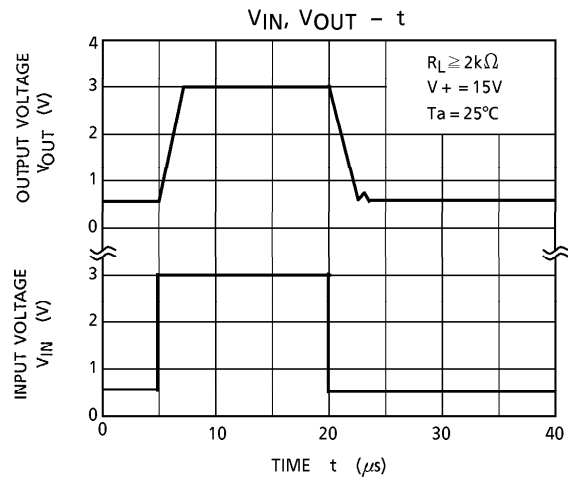
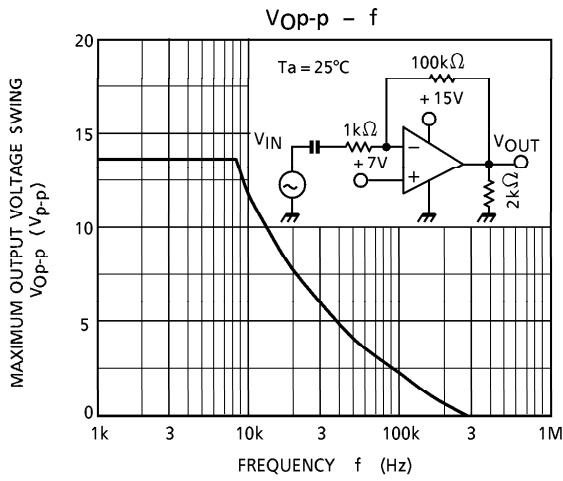
(6)  $V_{Op-p}$ ,  $I_{source}$ ,  $I_{sink}$



- $V_{Op-p}$  :  
 $V_{OH}$  : SW<sub>1</sub> IS SIDE A, SW<sub>2</sub> ON  
 $V_{OL}$  : SW<sub>1</sub> IS SIDE B, SW<sub>2</sub> ON
- $I_{source}$   
SW<sub>1</sub> IS SIDE A, SW<sub>2</sub> OFF  
 $V_{OUT} \rightarrow 0V$  MEASURE
- $I_{sink}$   
SW<sub>1</sub> IS SIDE B, SW<sub>2</sub> OFF  
 $V_{OUT} \rightarrow 5V$  MEASURE

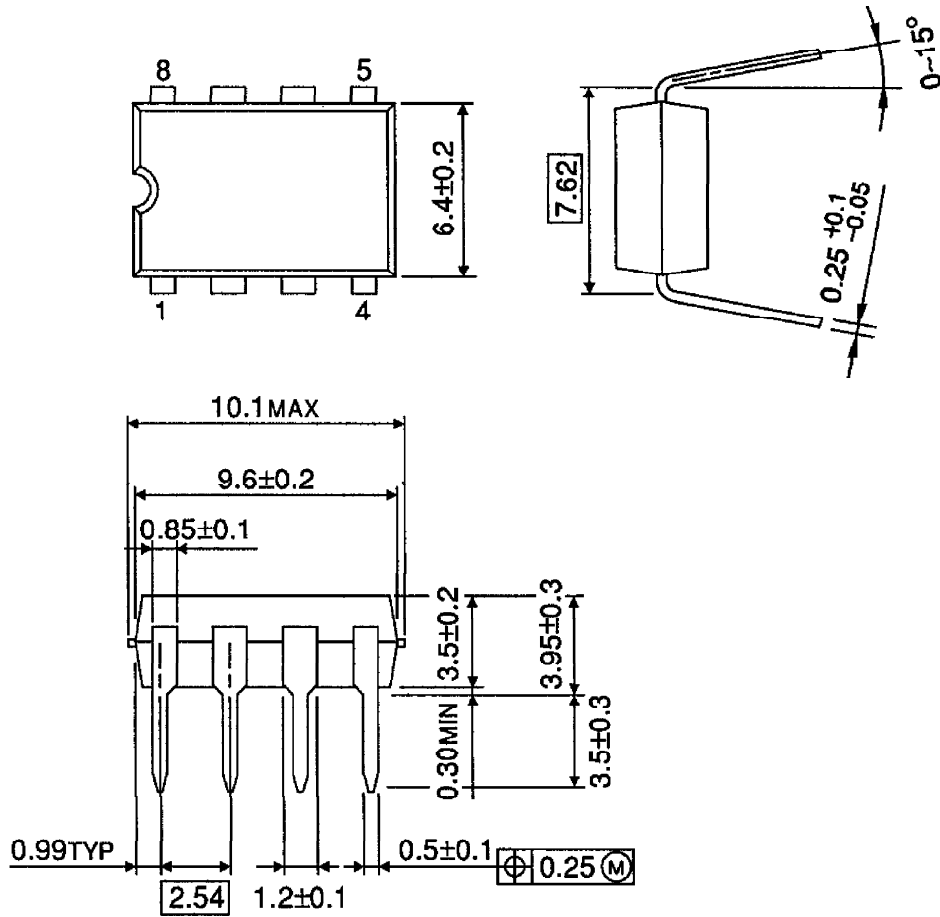
CHARACTERISTICS





**OUTLINE DRAWING**  
DIP8-P-300-2.54A

Unit : mm

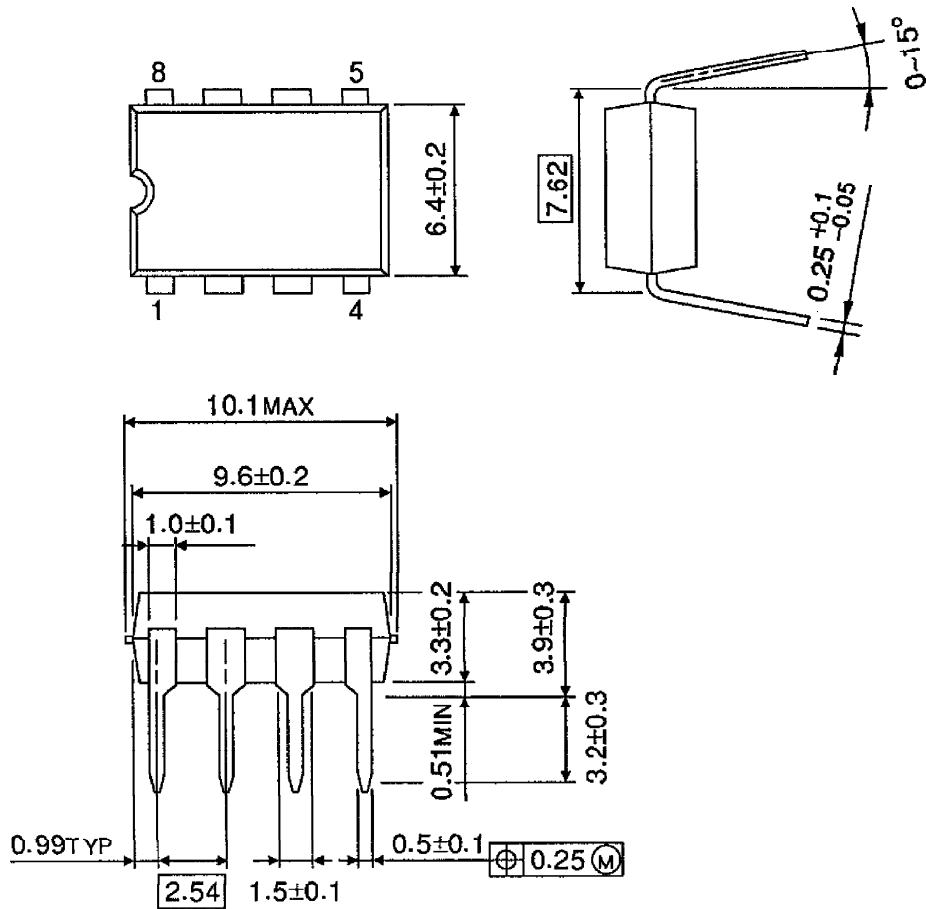


Weight : 0.5g (Typ.)



**OUTLINE DRAWING**  
DIP8-P-300-2.54C

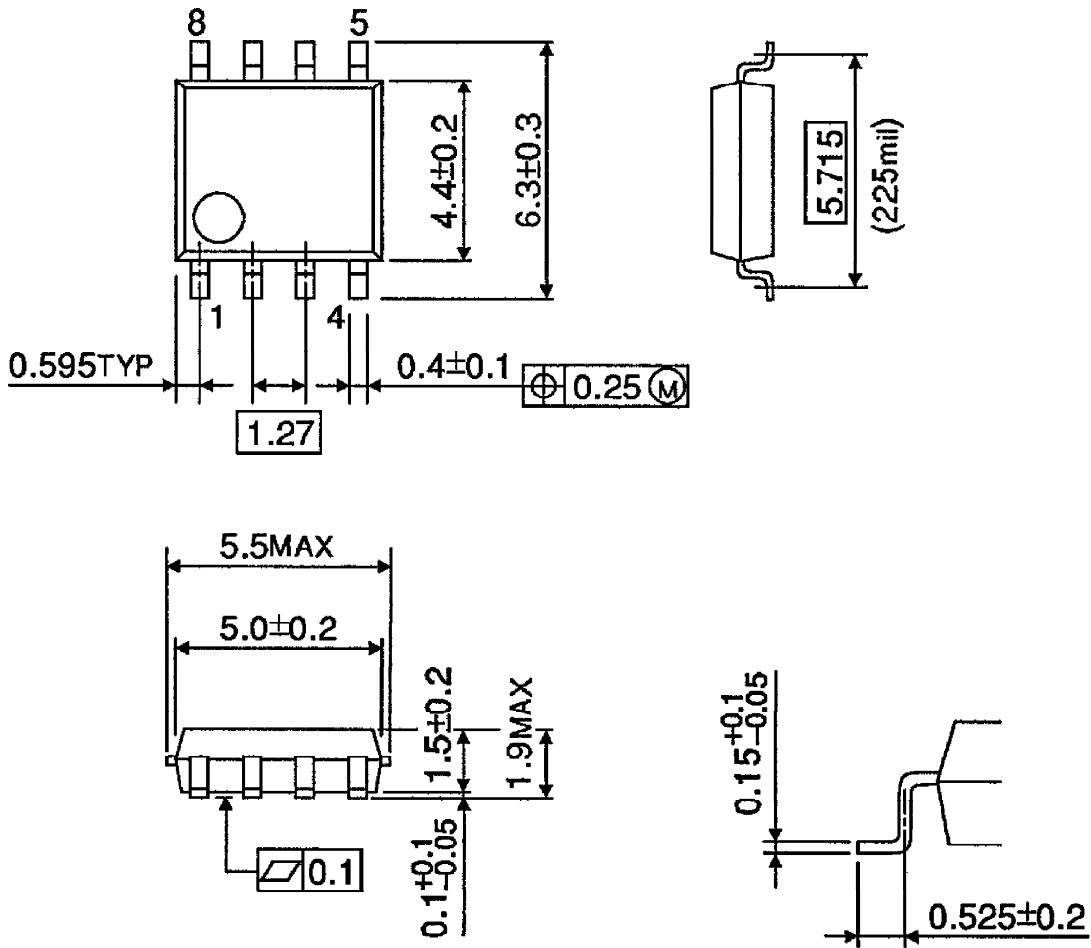
Unit : mm



Weight : 0.6g (Typ.)

OUTLINE DRAWING  
SOP8-P-225-1.27

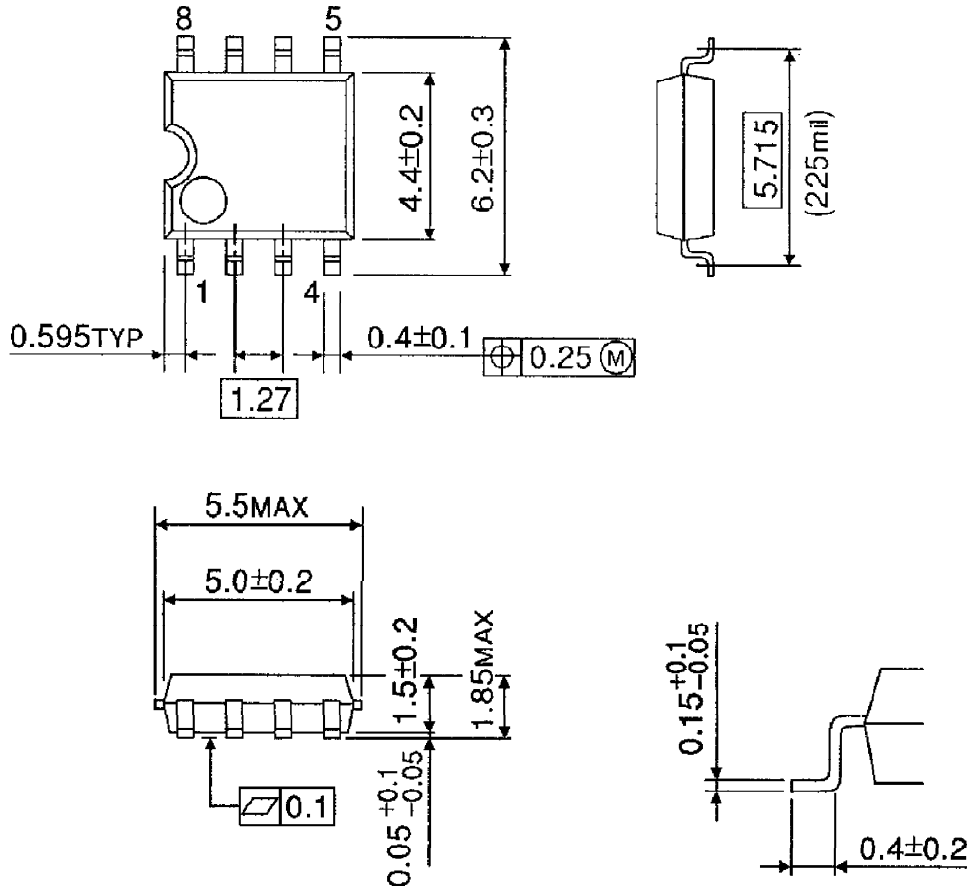
Unit : mm



Weight : 0.1g (Typ.)

OUTLINE DRAWING  
SOP8-P-225-1.27B

Unit : mm



Weight : 0.1g (Typ.)