

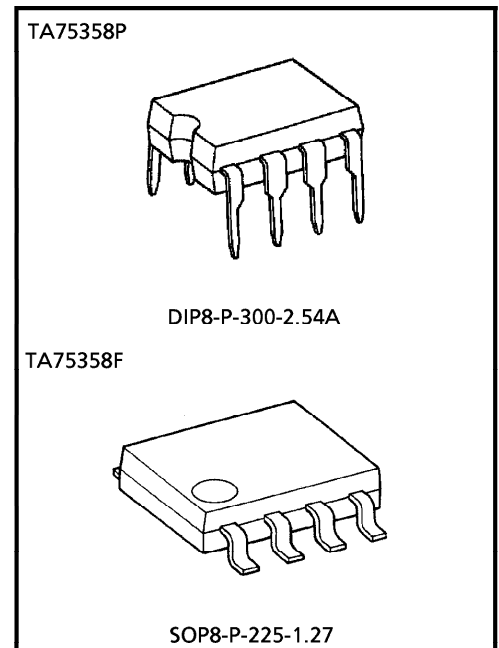
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA75358P, TA75358F

DUAL OPERATIONAL AMPLIFIER

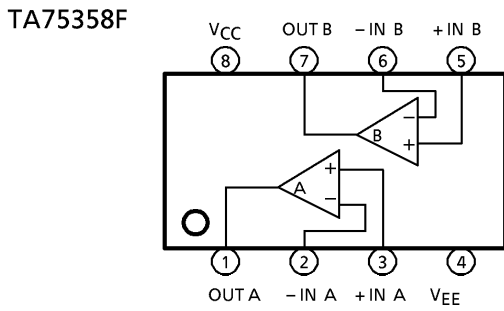
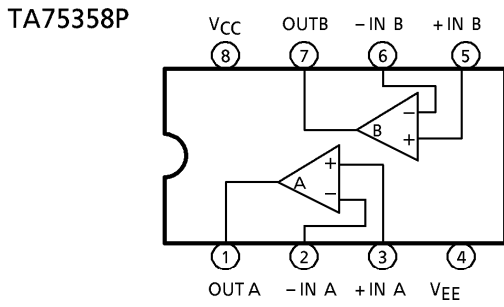
FEATURES

- 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 ($A_V \geq 20dB$).

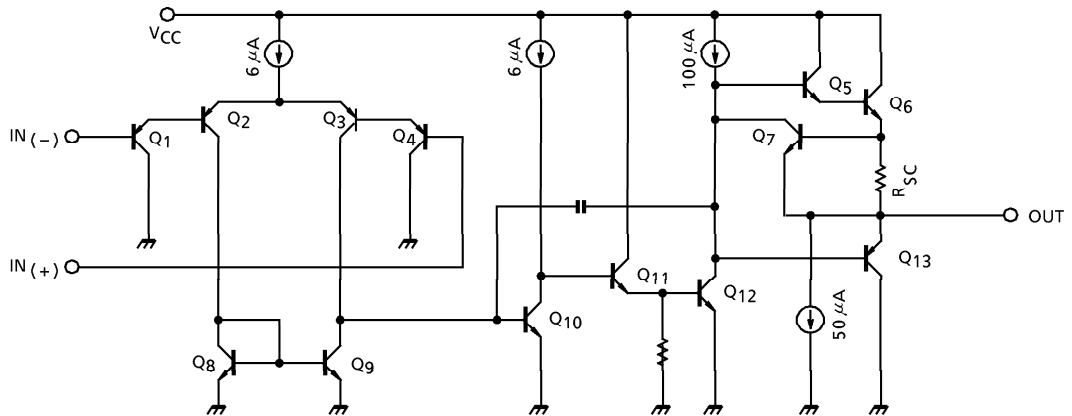


Weight
DIP8-P-300-2.54A : 0.5g (Typ.)
SOP8-P-225-1.27 : 0.1g (Typ.)

PIN CONNECTION (TOP VIEW)



EQUIVALENT CIRCUIT



MAXIMUM RATINGS (Ta = 25°C)

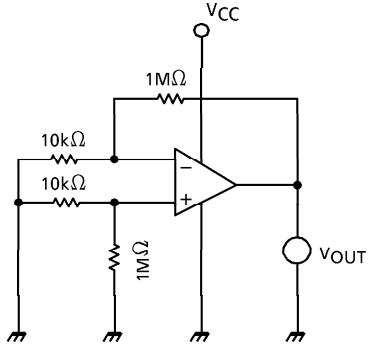
CHARACTERISTIC	SYMBOL	TA75358P	TA75339F	UNIT
Supply Voltage	V _{CC} , V _{EE}	± 18 OR 36	± 18 OR 36	V
Differential Input Voltage	DV _{IN}	± 36	± 36	V
Input Voltage	V _{IN}	- 0.3~36	- 0.3~36	V
Power Dissipation	P _D	500	240	mW
Operating Temperature	T _{opr}	- 40~85	- 40~85	°C
Storage Temperature	T _{stg}	- 55~125	- 55~125	°C

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

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	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	—	—	—	1.5	—	MHz
Slew Rate	S _R	—	—	—	0.8	—	V / μs

TEST CIRCUIT

(1) V_{IO} , SVRR



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

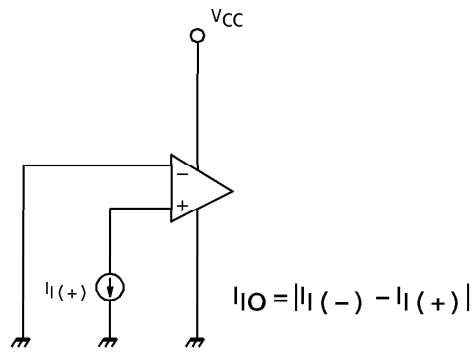
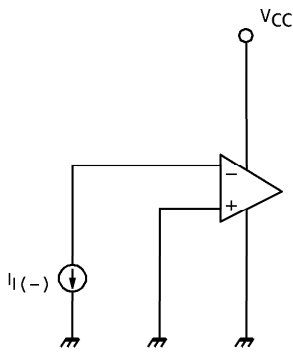
- $SVRR = 20 \log E$ (dB)

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

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

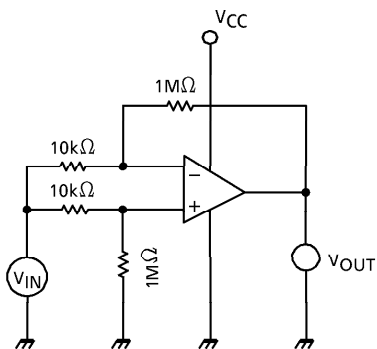
V_{OUT2} : V_{OUT} ($V_{CC2} = 10V$)

(2) I_I , I_{IO}



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

(3) CMV_{IN} , CMRR



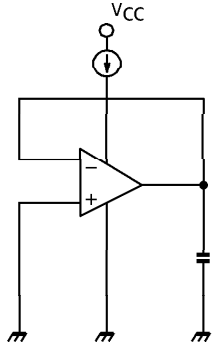
- $CMRR = 20 \log G_D / G_C$ (dB)

G_D : DIFFERENTIAL VOLTAGE GAIN

G_C : COMMON MODE VOLTAGE GAIN

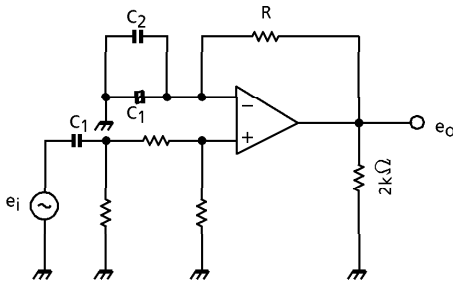
- CMV_{IN} : $V_{IN} = 0V$, $V_{CC} - 1.5V$ SUPPLIES

(4) I_{CC}



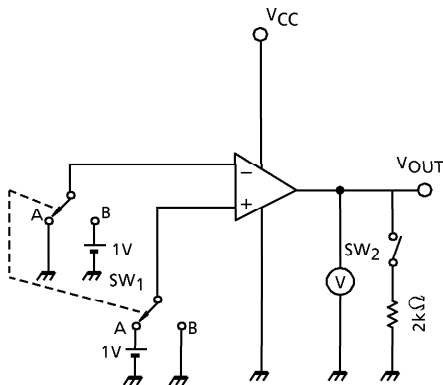
- $I_{CC} : V_{CC} = 5V$

(5) G_V



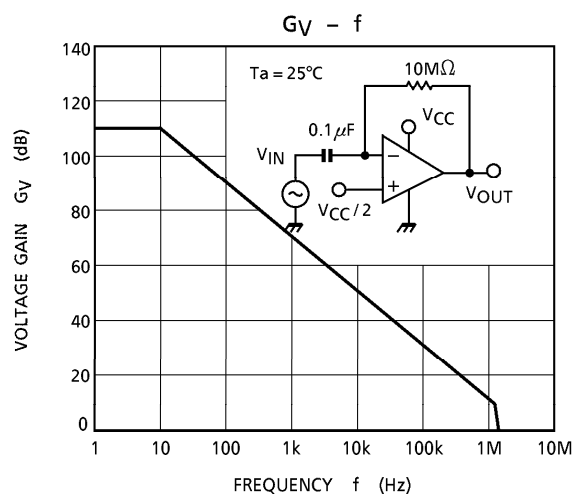
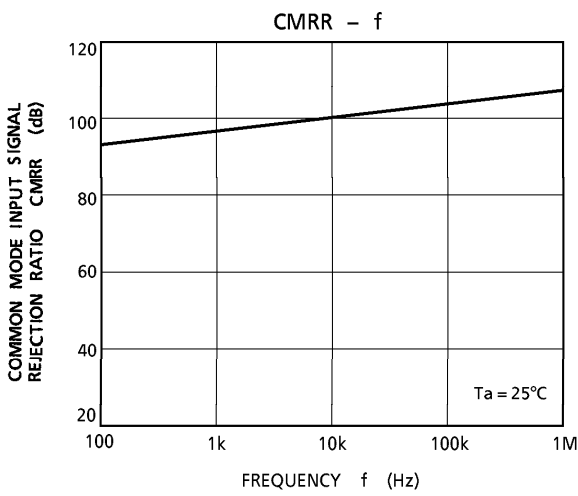
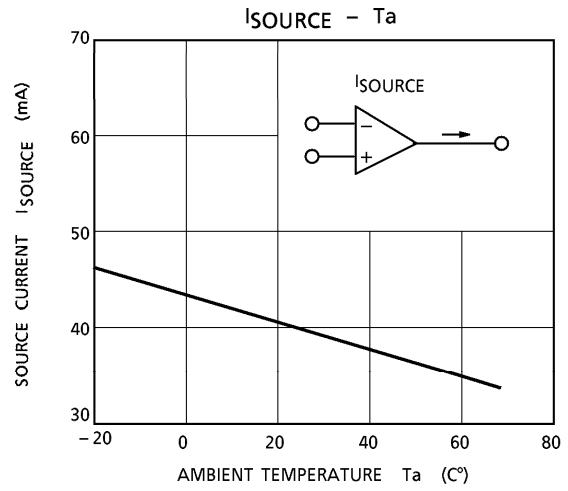
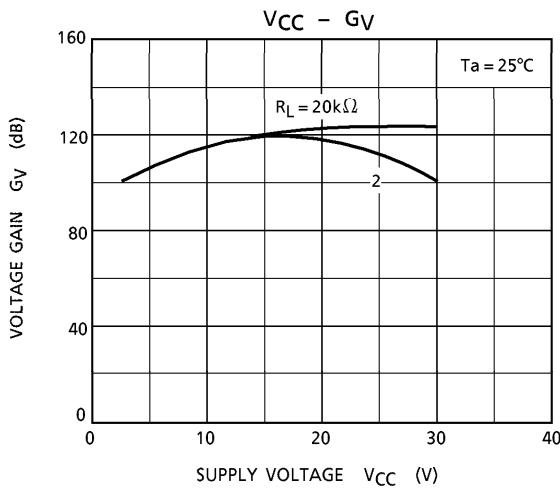
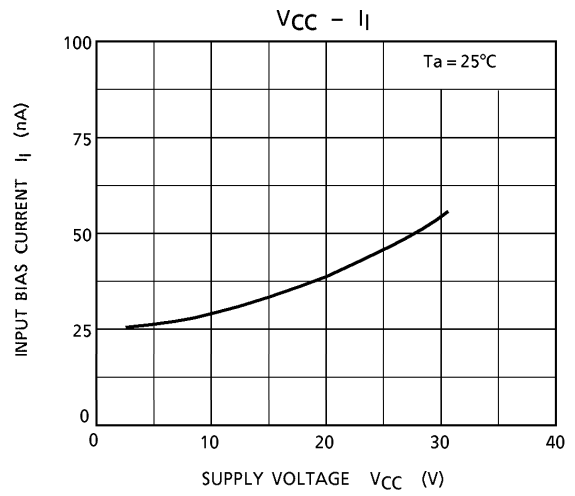
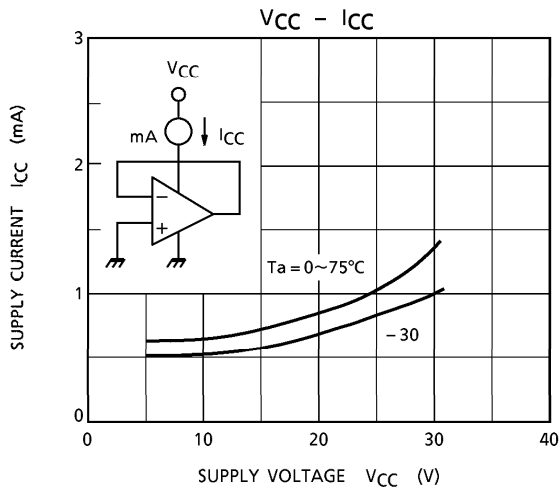
- $G_V = 20 \log e_o / e_i$ (dB)
- $R \gg 1 / W_{C1}$
- C_1 : COUPLING CONDENSER
- C_2 : HIGH FREQUENCY BYPASS CONDENSER

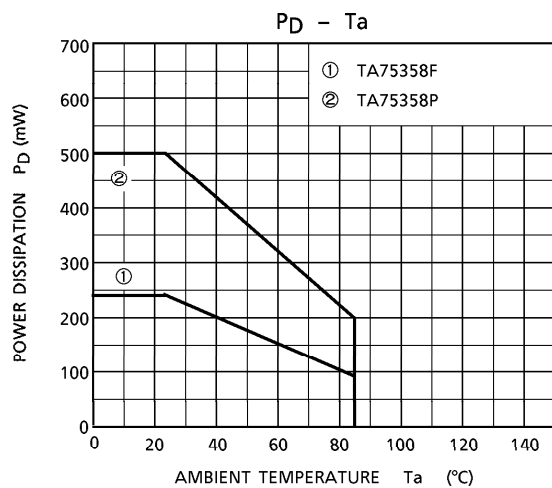
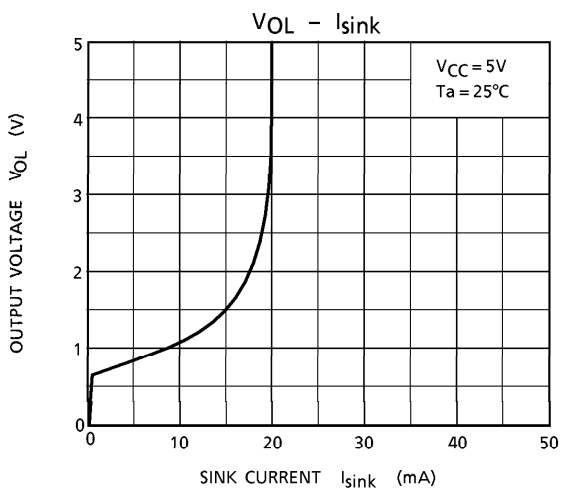
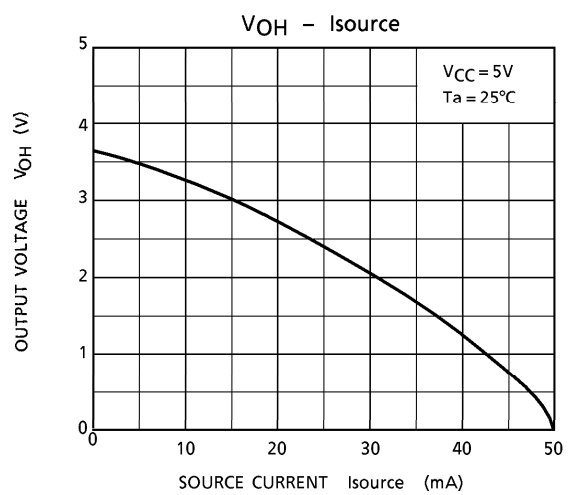
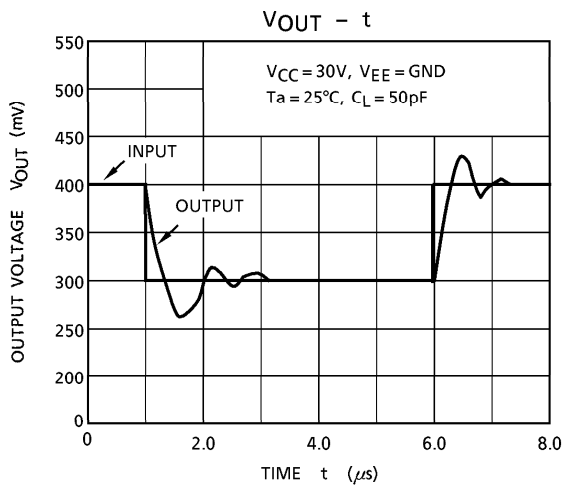
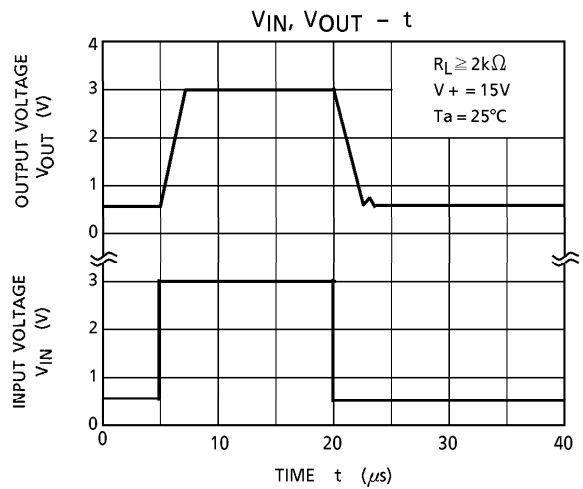
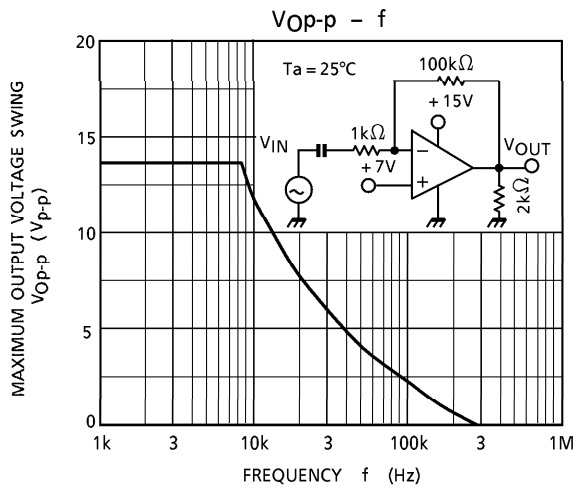
(6) V_{Op-p} , I_{source} , I_{sink}



- 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

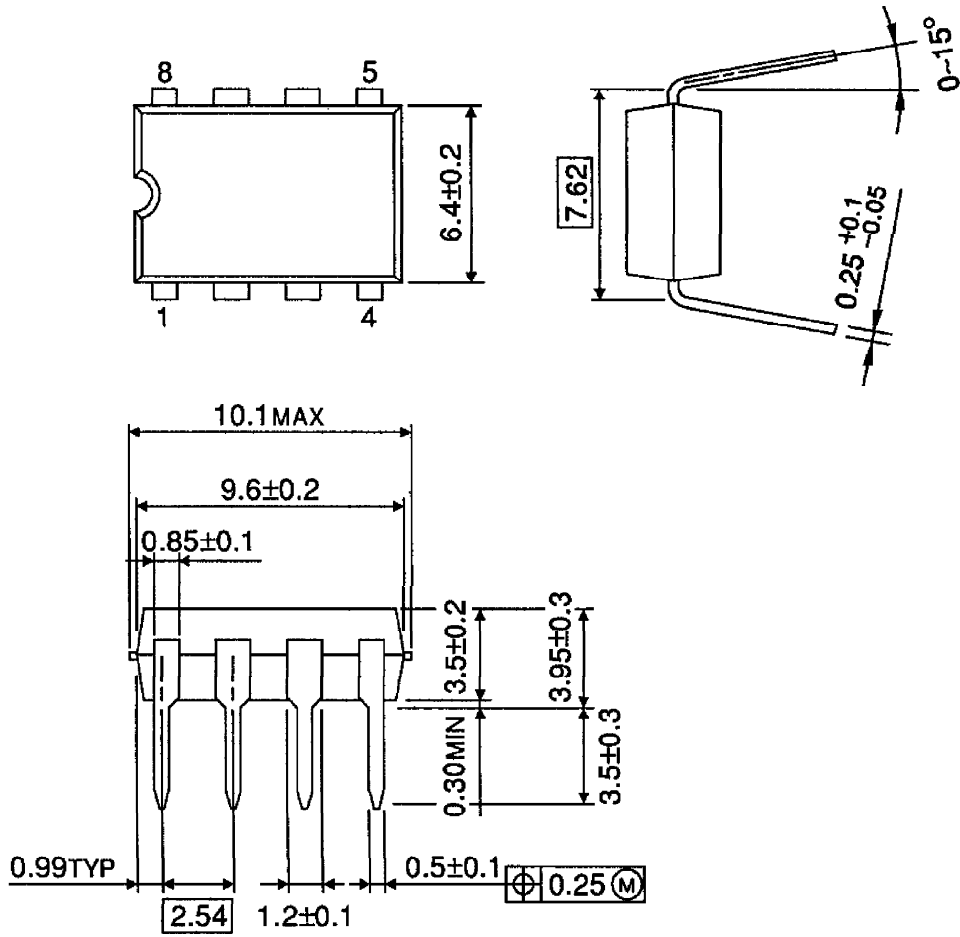
CHARACTERISTICS





PACKAGE DIMENSIONS
DIP8-P-300-2.54A

Unit : mm

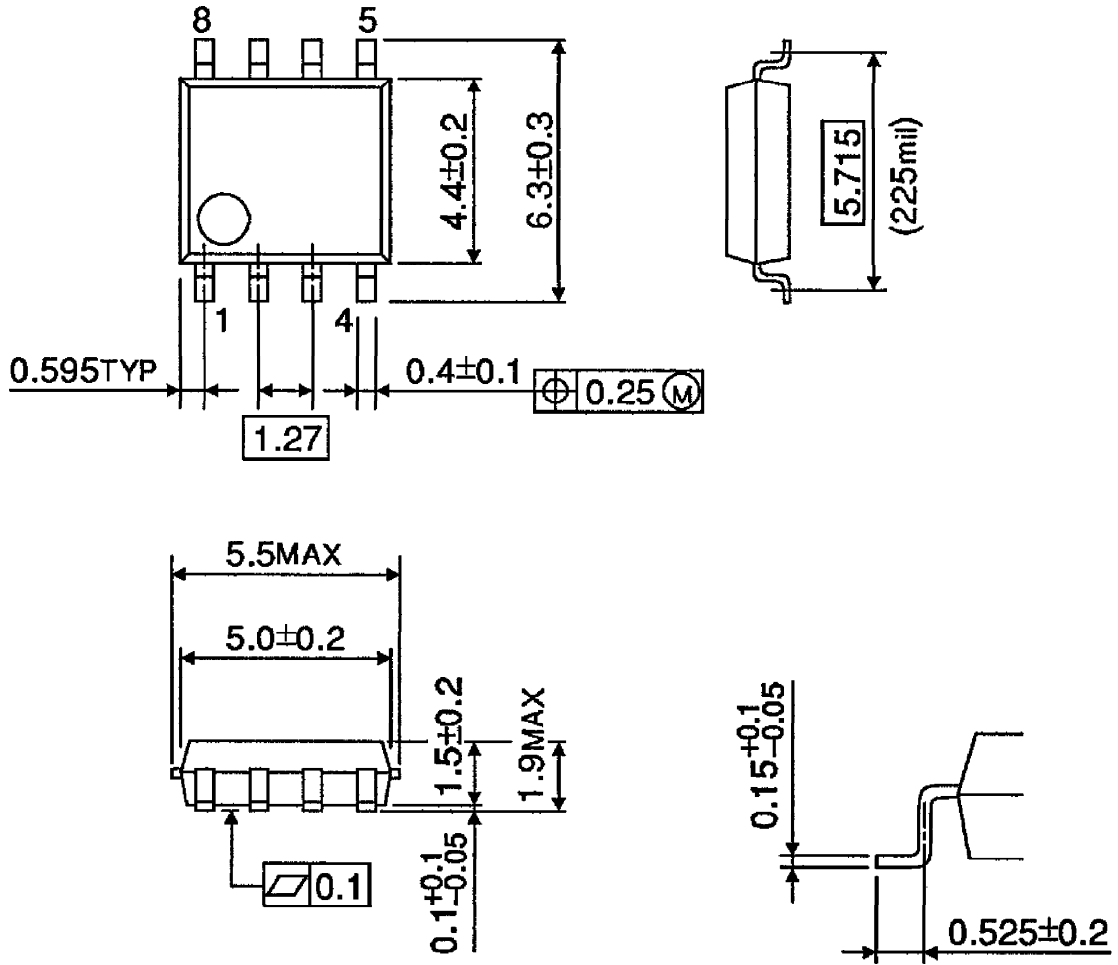


Weight : 0.5g (Typ.)

PACKAGE DIMENSIONS

SOP8-P-225-1.27

Unit : mm



Weight : 0.1g (Typ.)

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000707EBA

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