TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

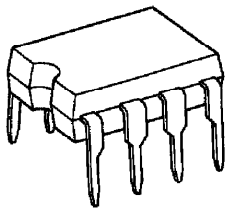
TA75358P, TA75358F

DUAL OPERATIONAL AMPLIFIER

FEATURES

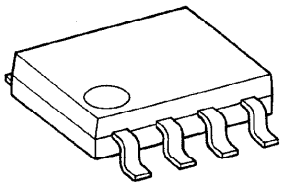
- In the linear mode the input common mode voltage range includes ground.
- Two internally compensated OP amps are in single package.
- Low power dissipation and power drain suitable for battery operation.
- Differential input voltage range equal to the power supply voltage.
- Large output voltage swing. : 0V~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 ≧ 20dB).

TA75358P



DIP8-P-300-2.54A

TA75358F

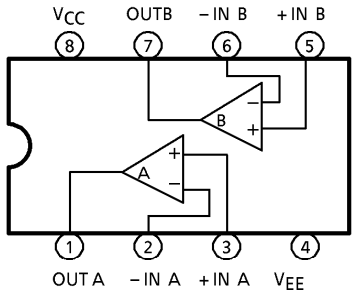


SOP8-P-225-1.27

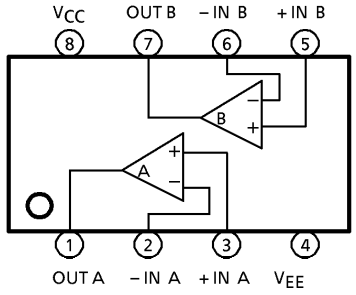
Weight
DIP8-P-300-2.54A : 0.5g (Typ.)
SOP8-P-225-1.27 : 0.1g (Typ.)

PIN CONNECTION (TOP VIEW)

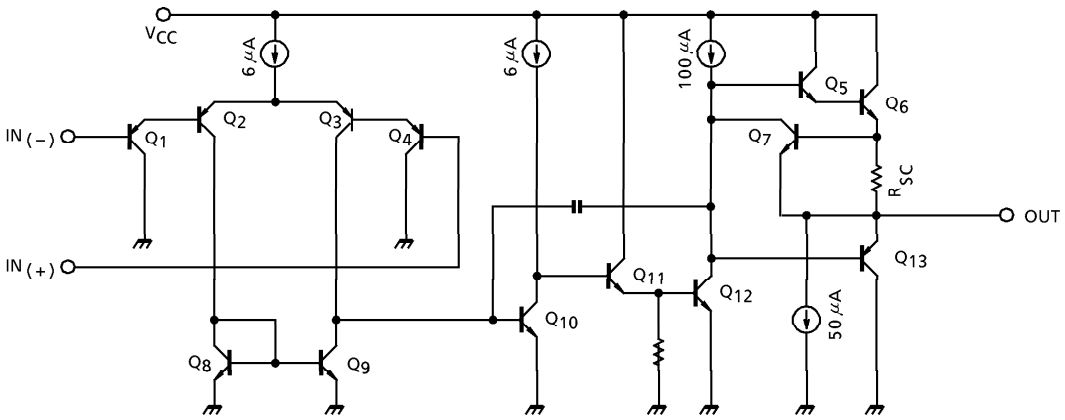
TA75358P



TA75358F



EQUIVALENT CIRCUIT



MAXIMUM RATINGS (Ta = 25°C)

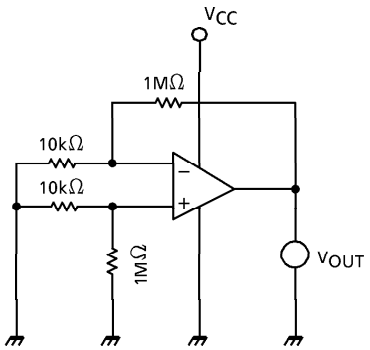
CHARACTERISTIC	SYMBOL	TA75358P	TA75339F	UNIT
Supply Voltage	V_{CC}, V_{EE}	± 18 OR 36	± 18 OR 36	V
Differential Input Voltage	DV_{IN}	± 36	± 36	V
Input Voltage	V_{IN}	− 0.3~36	− 0.3~36	V
Power Dissipation	P_D	500	240	mW
Operating Temperature	T_{opr}	− 40~85	− 40~85	°C
Storage Temperature	T_{stg}	− 55~125	− 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	$R_g \leqq 10k\Omega$	—	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	$R_L = \infty$, All OP Amps	—	0.7	1.2	mA
Voltage Gain	G_V	5	$R_L \geqq 2k\Omega$	86	100	—	dB
Maximum Output Voltage Swing	V_{Op-p}	6	$R_L = 2k\Omega$	0	—	V_{CC} − 1.5	V
Common Mode Rejection Ratio	CMRR	3	—	60	85	—	dB
Supply Voltage Rejection Ratio	SVRR	1	$R_g = 10k\Omega$	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

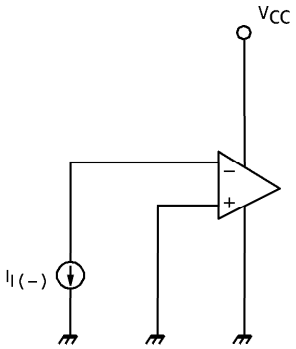


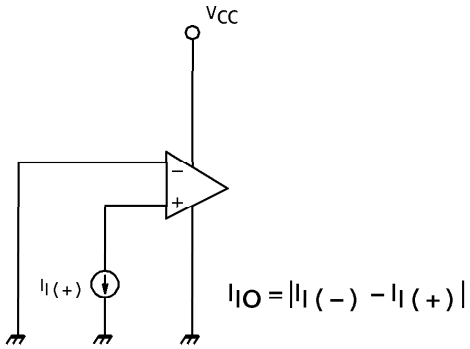
- $V_{IO} = V_{OUT} / 100$
- SVRR = 20ℓog E (dB)

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

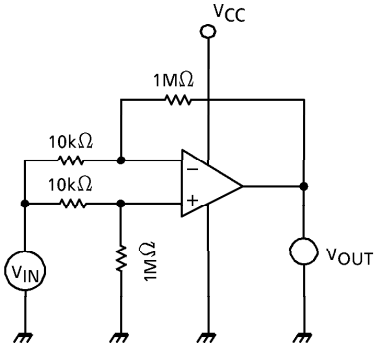
V_{OUT1} : V_{OUT} (V_{CC1} = 5V)
V_{OUT2} : V_{OUT} (V_{CC2} = 10V)

(2) I_I, I_{IO}





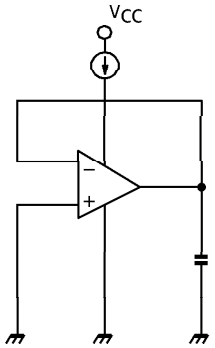
(3) CMV_{IN}, CMRR



- CMRR = 20ℓog G_D / G_C (dB)
  G_D : DIFFERENTIAL VOLTAGE GAIN
  G_C : COMMON MODE VOLTAGE GAIN

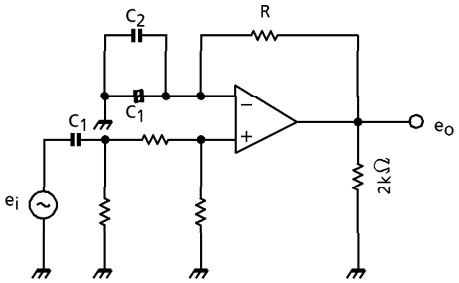
- CMV_{IN} : V_{IN} = OV, V_{CC} − 1.5V SUPPLES

(4) I_{CC}



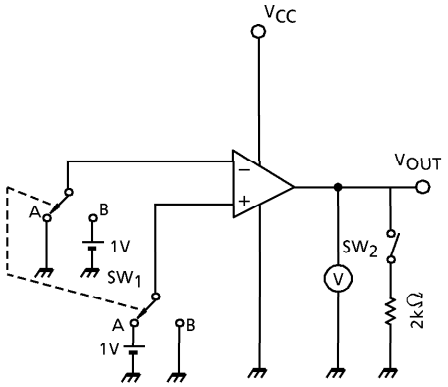
- I_{CC} : V_{CC} = 5V

(5) G_V



- $G_V = 20\ell og\ eo / ei$ (dB)
  $R \gg 1 / W_{C1}$
  C_1 : COUPLING CONDENSER
  C_2 : HIGH FREQUENCY BYPASS CONDENSER

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



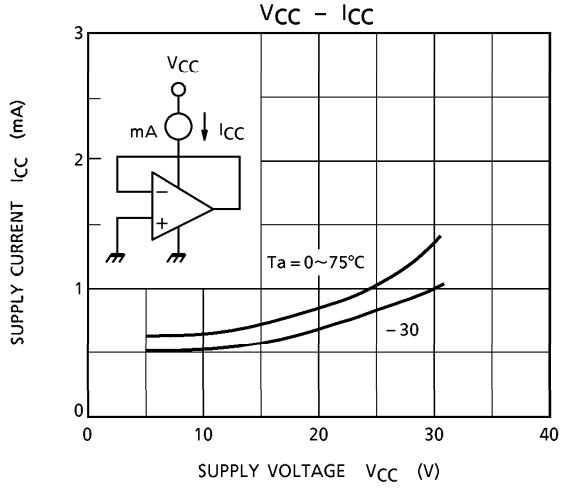
- V_{Op-p} :
  V_{OH} : SW_1 IS SIDE A, SW_2 ON
  V_{OL} : SW_1 IS SIDE B, SW_2 ON

- I_{source}
  SW_1 IS SIDE A, SW_2 OFF
  $V_{OUT} \rightarrow$ 0V MEASURE

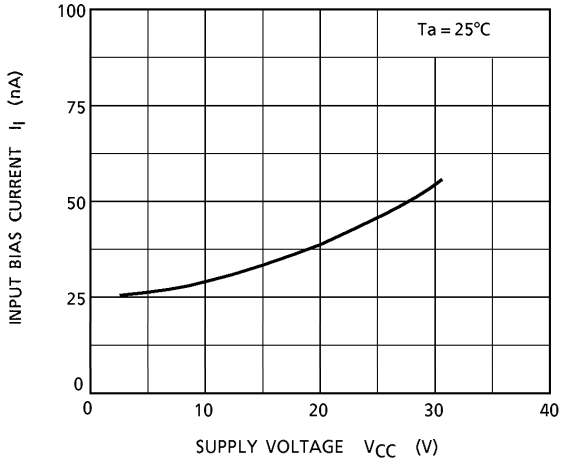
- I_{sink}
  SW_1 IS SIDE B, SW_2 OFF
  $V_{OUT} \rightarrow$ 5V MEASURE

CHARACTERISTICS

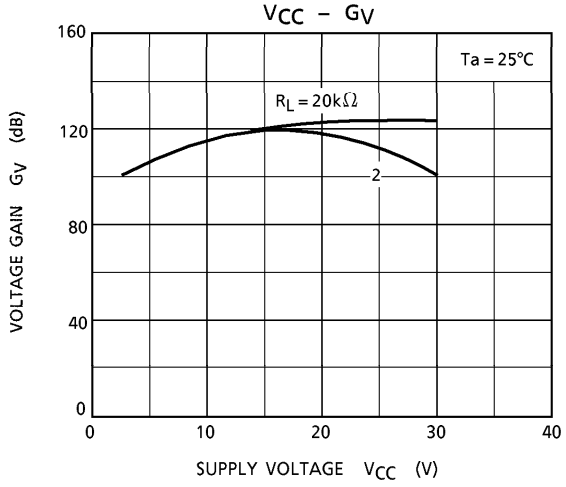
V_{CC} – I_{CC}



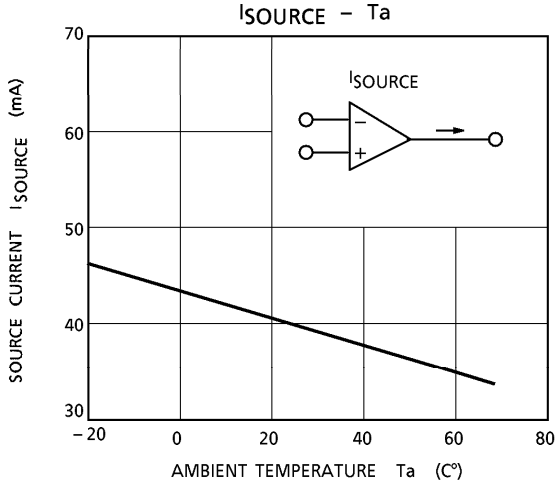
V_{CC} – I_I



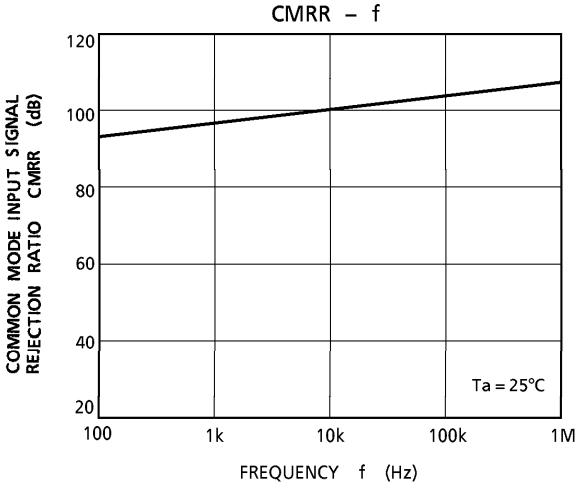
V_{CC} – G_V



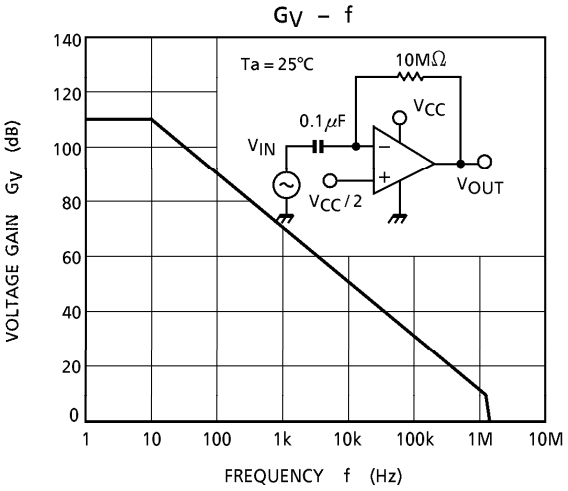
I_{SOURCE} – Ta



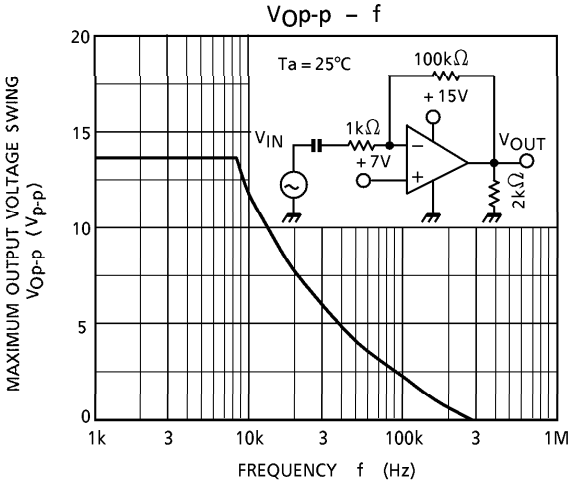
CMRR – f



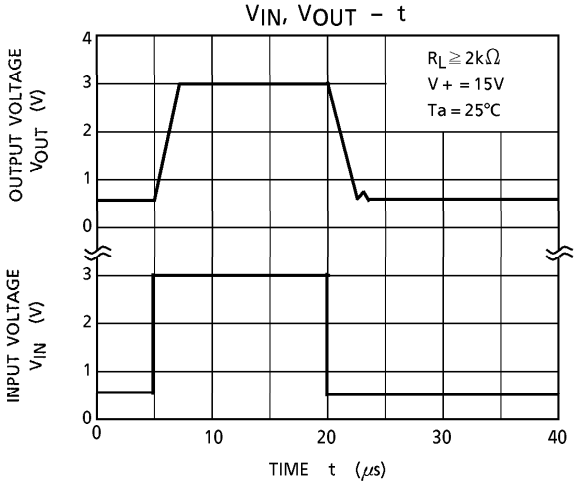
G_V – f



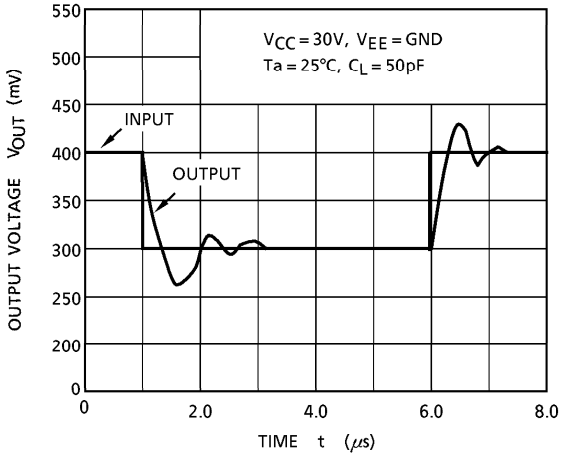
V_{OP-P} – f



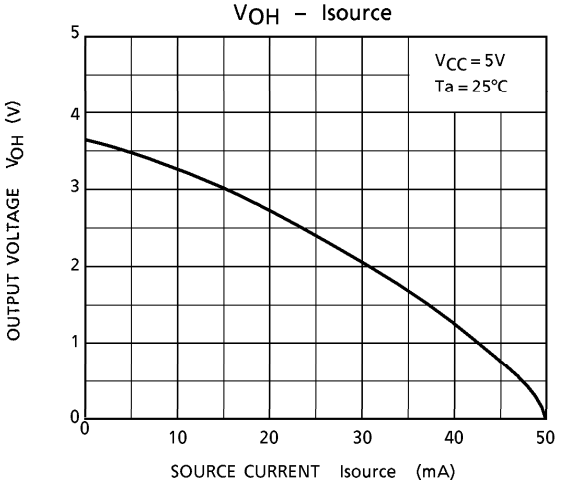
V_{IN}, V_{OUT} – t



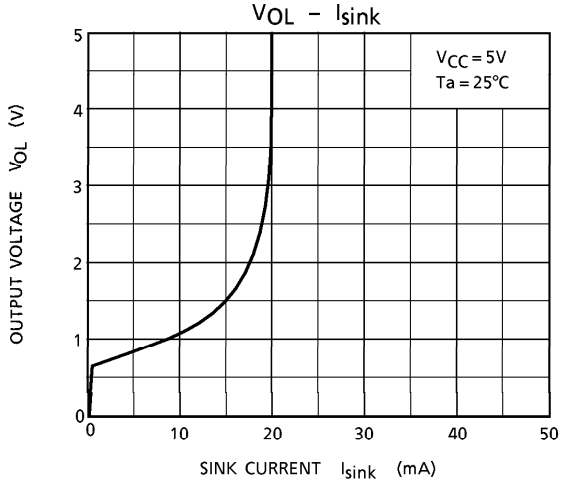
V_{OUT} – t



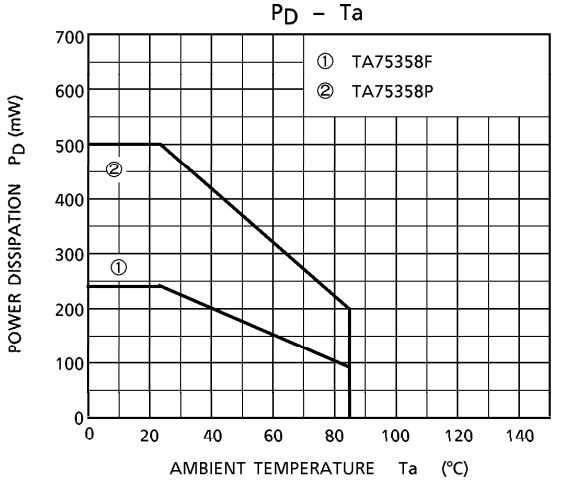
V_{OH} – Isource



V_{OL} – I_{sink}



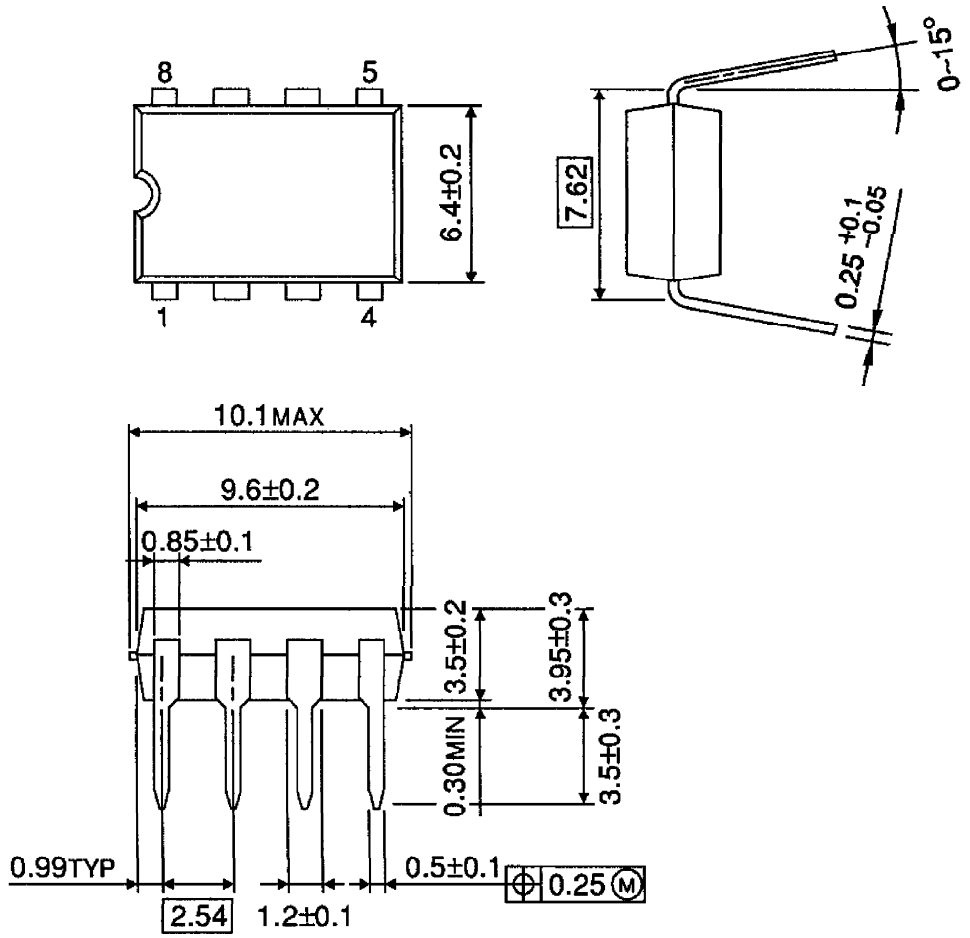
P_D – Ta



PACKAGE DIMENSIONS

DIP8-P-300-2.54A

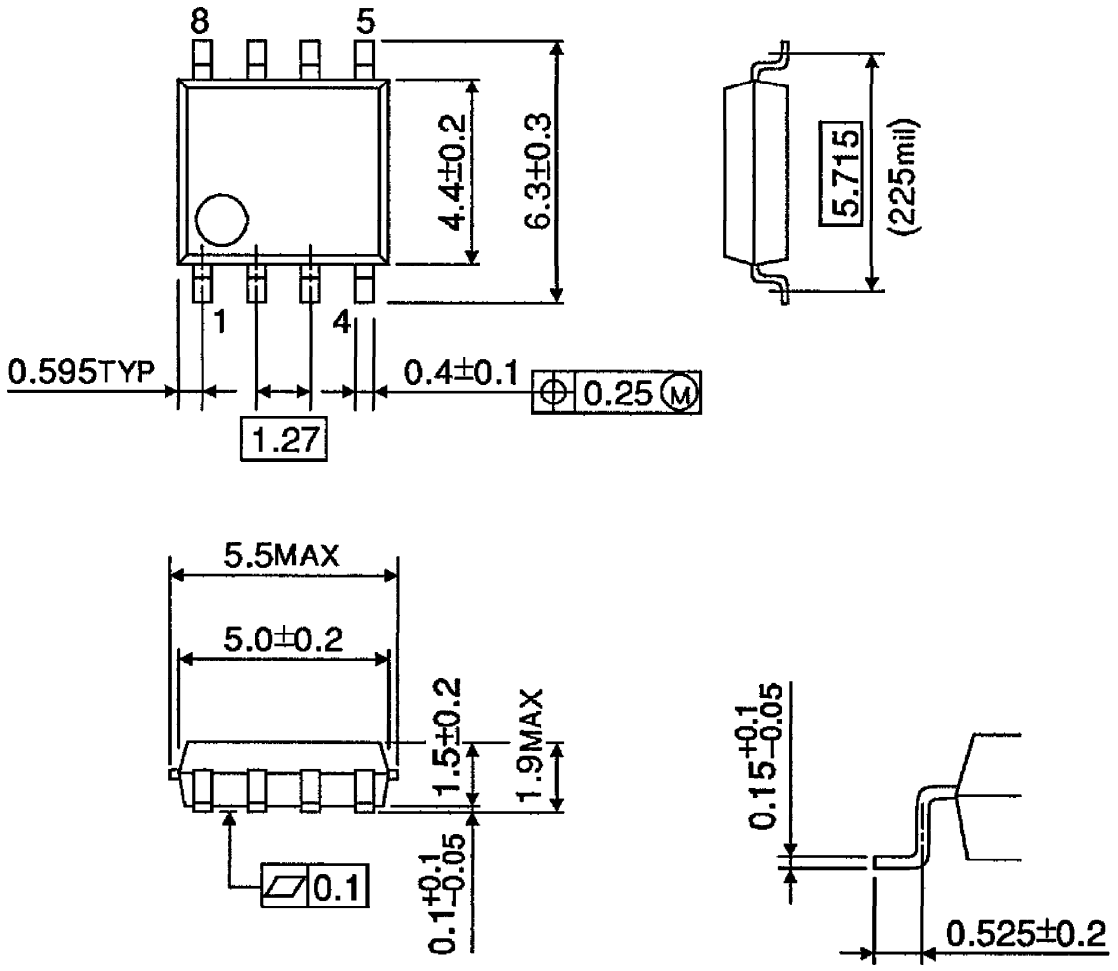
Unit : mm



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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