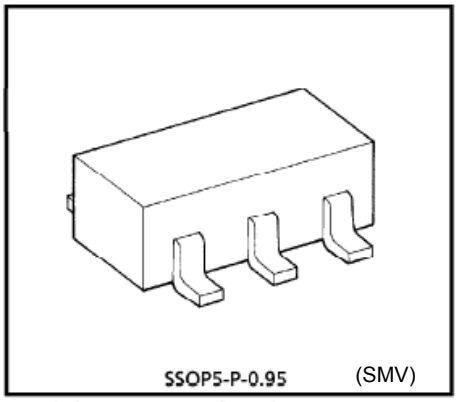
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA75S558F

Single Low-Noise Operational Amplifier

TA75S558F is a low-noise monolithic precision operational amplifier.

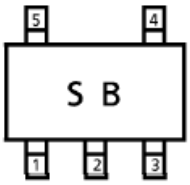


Weight : 0.014g (Typ.)

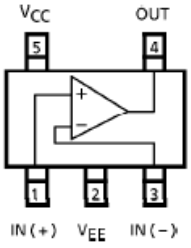
Features

- Internal Frequency Compensation Type.
- Pin Compatible with TA75S01F.
- Wide Band Range : $f_T = 3MHz$ (Typ.)
- Noise Voltage Range : $V_{NI} = 2.5\mu V_{rms}$ (Typ.)
- Power Supply Range : $\pm 4V_{DC}$ to $\pm 18V_{DC}$
- Suitable Application for Active Filter Equalizer Amplifier and Headphone Amplifier.

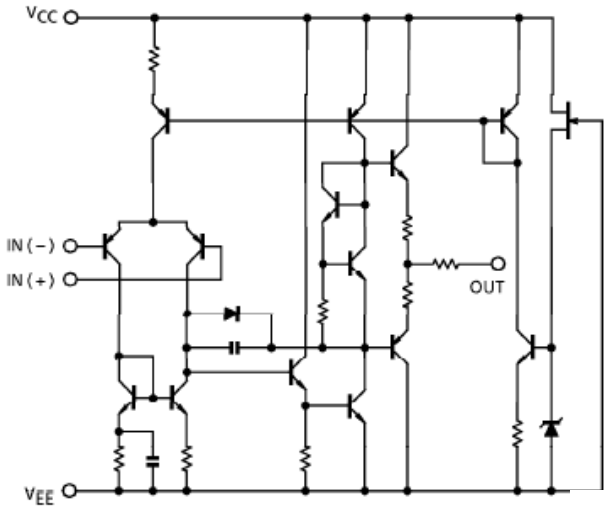
Marking (TOP VIEW)



Pin Assignment (TOP VIEW)



Equivalent Circuit



Start of commercial production
1992-03

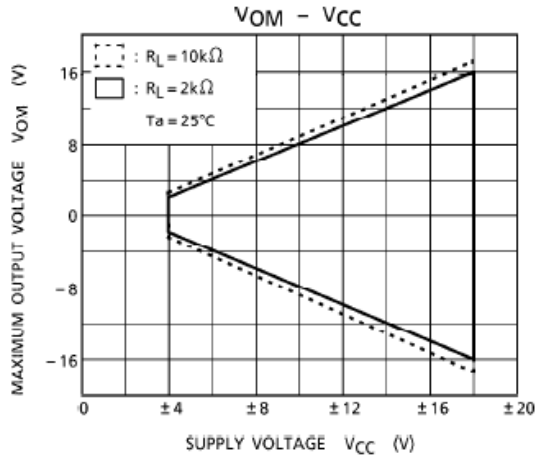
Absolute Maximum Ratings (Ta=25°C)

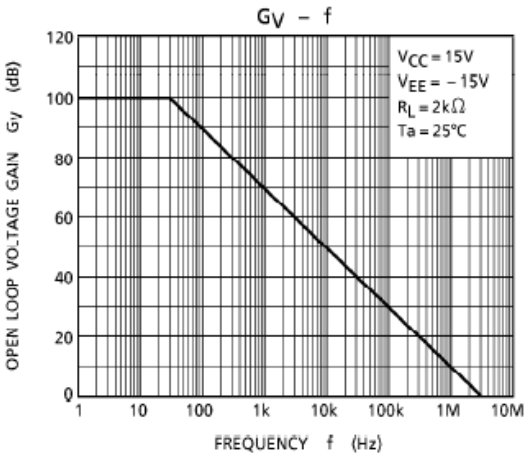
CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}, V_{EE}	±18	V
Differential Input Voltage	DV_{IN}	±30	V
Input Voltage	V_{IN}	V_{EE}~V_{CC}	V
Power Dissipation	P_D	200	mW
Operating Temperature	T_{opr}	−40~85	°C
Storage Temperature	T_{stg}	−55~125	°C

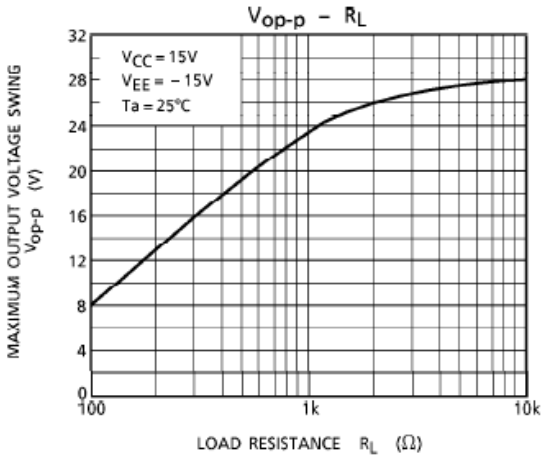
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings and the operating ranges.
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook (“Handling Precautions”/“Derating Concept and Methods”) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

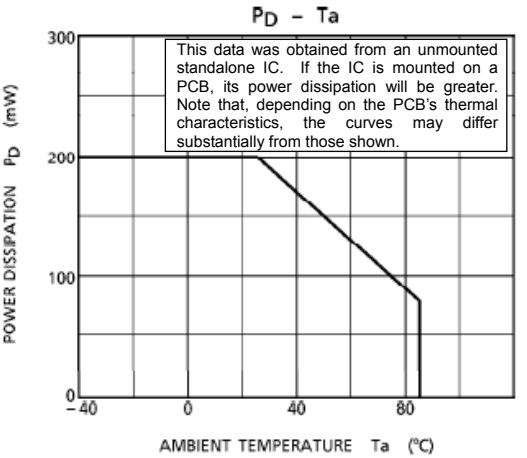
Electrical Characteristics (V_{CC} = 15 V, V_{EE} = -15V, Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	—	Rg≦10kΩ	—	0.5	6	mV
Input Offset Current	I_{IO}	—	—	—	5	200	nA
Input Bias Current	I_I	—	—	—	60	500	nA
Common Mode Input Voltage	CMV_{IN}	—	—	±12	±14	—	V
Maximum Output Voltage	V_{OM}	—	R_L = 10kΩ	±12	±14	—	V
	V_{OMR}	—	R_L = 2kΩ	±10	±13	—	
Source Current	I_{source}	—	—	—	40	—	mA
Sink Current	I_{sink}	—	—	—	40	—	mA
Voltage Gain (Open Loop)	G_V	—	V_{OUT} = ±10V, R_L = 2kΩ	86	100	—	dB
Common Mode Input Signal Rejection Ratio	CMRR	—	Rg≦10kΩ	70	90	—	dB
Supply Voltage Rejection Ratio	SVRR	—	Rg≦10kΩ	—	30	150	μV / V
Slew Rate	SR	—	G_V = 1, R_L = 2kΩ	—	1.0	—	V / μs
Unity Gain Cross Frequency	f_T	—	—	—	3.0	—	MHz
Supply Current	I_{CC}	—	—	—	2.5	4.0	mA
Equivalent Input Noise Voltage	V_{NI}	—	R_S = 1kΩ, f = 30Hz~30kHz	—	2.5	—	μV_{rms}


V_{OM} – V_{CC}
: R_L = 10kΩ
: R_L = 2kΩ
Ta = 25°C
MAXIMUM OUTPUT VOLTAGE V_{OM} (V)
16
8
0
−8
−16
0
±4
±8
±12
±16
±20
SUPPLY VOLTAGE V_{CC} (V)

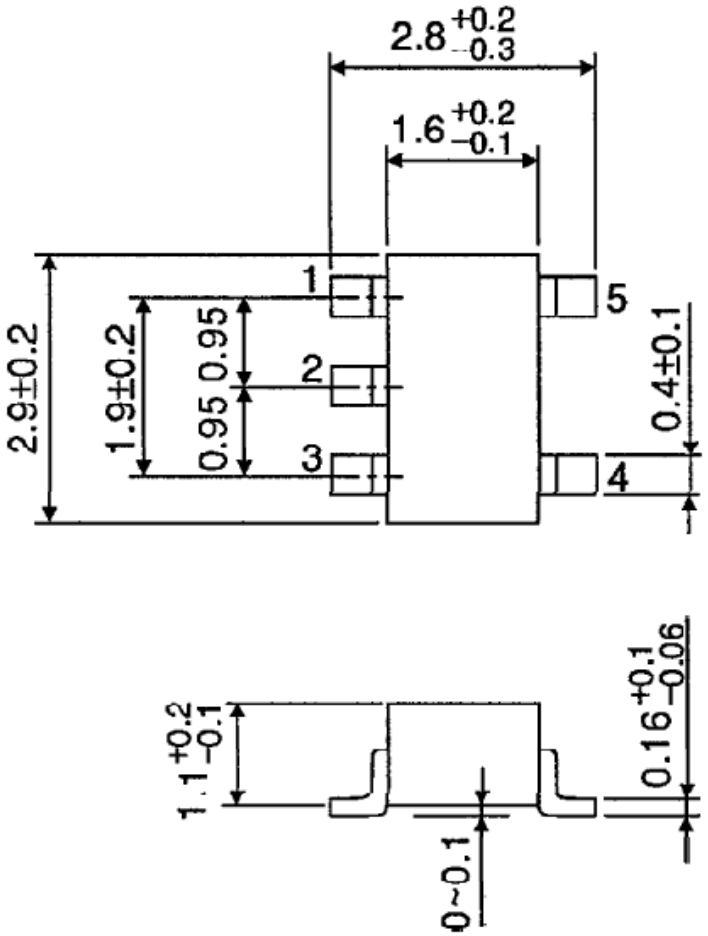

G_V – f
V_{CC} = 15V
V_{EE} = −15V
R_L = 2kΩ
Ta = 25°C
OPEN LOOP VOLTAGE GAIN G_V (dB)
120
100
80
60
40
20
0
1
10
100
1k
10k
100k
1M
10M
FREQUENCY f (Hz)


V_{op-p} – R_L
V_{CC} = 15V
V_{EE} = −15V
Ta = 25°C
MAXIMUM OUTPUT VOLTAGE SWING V_{op-p} (V)
32
28
24
20
16
12
8
4
0
100
1k
10k
LOAD RESISTANCE R_L (Ω)


P_D – Ta
This data was obtained from an unmounted standalone IC. If the IC is mounted on a PCB, its power dissipation will be greater. Note that, depending on the PCB's thermal characteristics, the curves may differ substantially from those shown.
POWER DISSIPATION P_D (mW)
300
200
100
0
−40
0
40
80
AMBIENT TEMPERATURE Ta (°C)

Package Dimension

SSOP5-P-0.95 Unit : mm



Weight : 0.014g (Typ.)

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TA75S558F,LF

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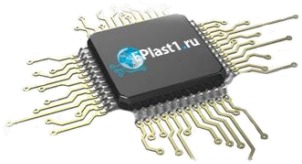

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