

LINEAR INTEGRATED CIRCUIT

DUAL OPERATIONAL AMPLIFIER

DESCRIPTION

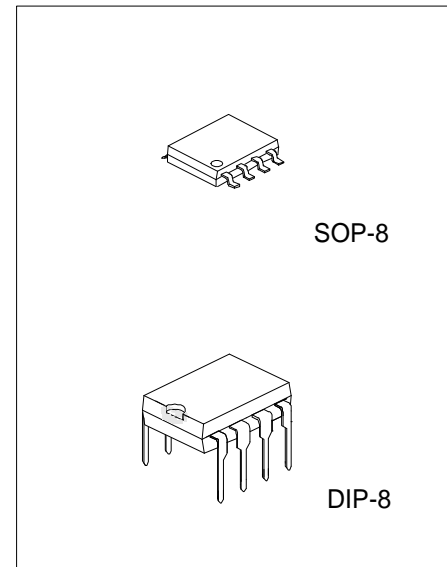
The LM358 consists of two independent high gain, internally frequency compensated operational amplifier. It can be operated from a single power supply and also split power supplies.

FEATURES

- *Internally frequency compensated for unity gain.
- *Wide power supply range 3V - 36V.
- *Input common-mode voltage range include ground.
- *Large DC voltage gain.

APPLICATIONS

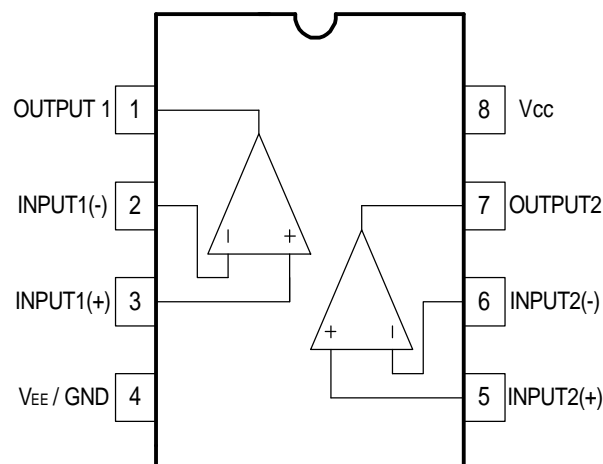
- *General purpose amplifier.
- *Transducer amplifier.



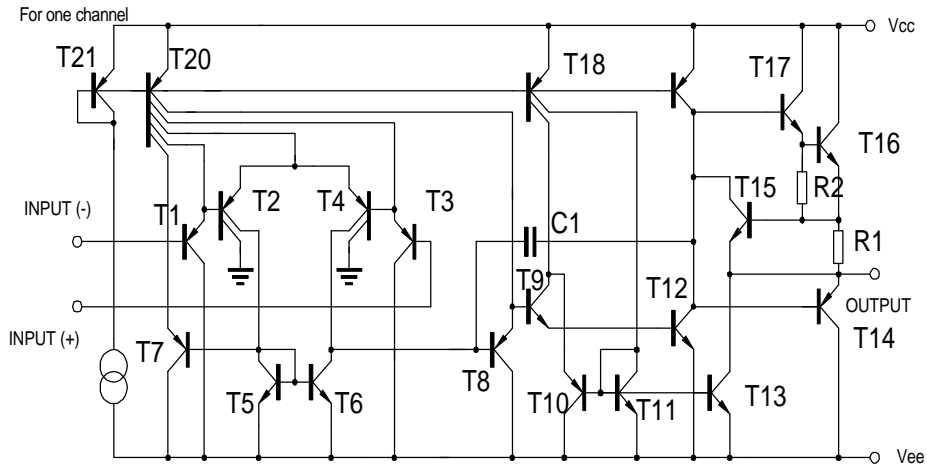
ORDERING INFORMATION

DEVICE	Package Type	MARKING	Packing	Packing Qty
LM358N	DIP8	LM358	TUBE	2000/box
LM358M/TR	SOP8	LM358	REEL	2500/reel

PIN CONFIGURATIONS



BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	Vcc	±18 or 36	V
Differential Input Voltage	VI(DIFF)	32	V
Input Voltage	VI	-0.3 ~ +36	V
Output Short to Ground		Continuous	
Operating Temperature Range	TOPR	0 ~ +70	°C
Storage Temperature Range	TSTG	-65 ~ +150	°C

ELECTRICAL CHARACTERISTICS($V_{CC}=5.0V, V_{EE}=GND, T_A=25^{\circ}C$, unless otherwise specified) ©

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Input Offset Voltage	VIO	$V_{CM}=0V$ to $V_{CC}-1.5V$ $V_{O(P)}=1.4V, R_S=0\Omega$		2.9	7.0	mV
Input Offset Current	IIO			5	50	nA
Input Bias Current	IBIAS			45	250	nA
Input Common Mode Voltage	VI(R)	$V_{CC}=30V$	0		$V_{CC}-1.5$	V
Power Supply Current	ICC	$R_L=\infty, V_{CC}=30V$		0.8	2.0	mA
		$R_L=\infty$, Full Temperature Range		0.5	1.2	mA
Large Signal Voltage Gain	GV	$V_{CC}=15V, R_L \geq 2K\Omega$ $V_{O(P)}=1V$ to $11V$	25	100		V/mV
Output Voltage Swing	VO(H)	$V_{CC}=30V, R_L=2K\Omega$	26			V
		$V_{CC}=30V, R_L=10K\Omega$	27	28		V
	VO(L)	$V_{CC}=5V, R_L \geq 10K\Omega$		5	20	mV
Common Mode Rejection Ratio	CMRR		65	80		dB
Power Supply Rejection Ratio	PSRR		65	100		dB
Channel Separation	CS	$f=1KHZ$ to $20KHZ$		120		dB
Short Circuit Current to Ground	ISC			40	60	mA
Output Current	ISOURCE	$V_{I(+)}=1V, V_{I(-)}=0V$ $V_{CC}=15V, V_{O(P)}=2V$	20	30		mA
	ISINK	$V_{I(+)}=0V, V_{I(-)}=1V$ $V_{CC}=15V, V_{O(P)}=2V$	10	15		mA
		$V_{I(+)}=0V, V_{I(-)}=1V$ $V_{CC}=15V, V_{O(P)}=200mV$	12	100		mA
Differential Input Voltage	VI(DIFF)				V_{CC}	V

TYPICAL PERFORMANCE CHARACTERISTICS

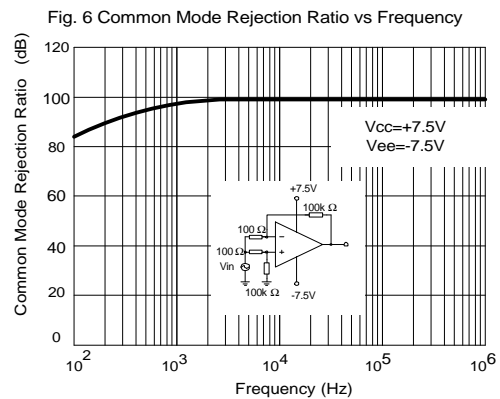
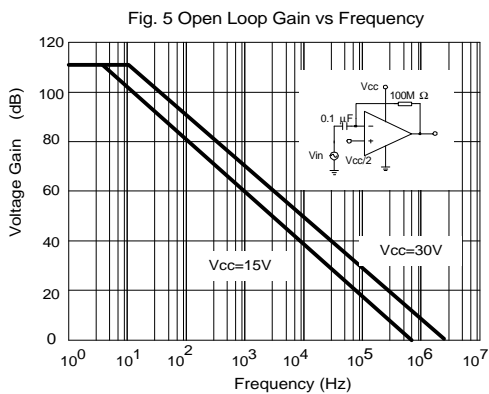
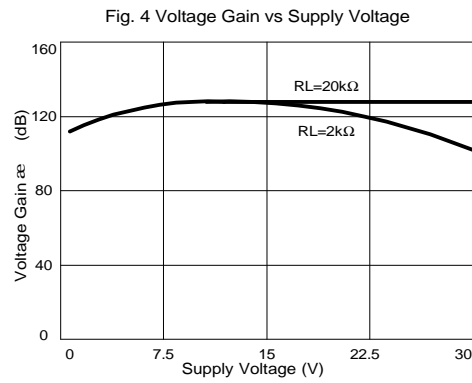
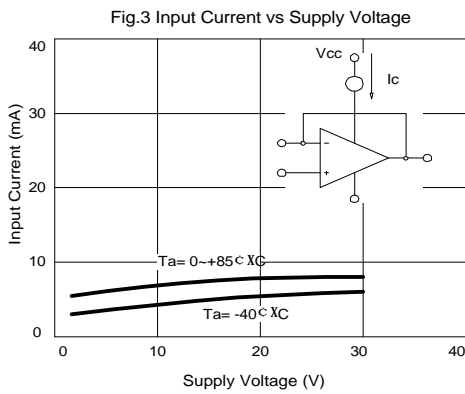
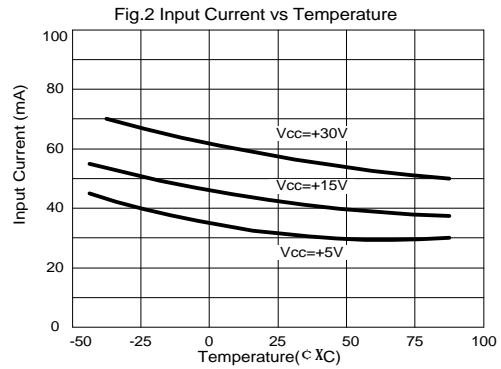
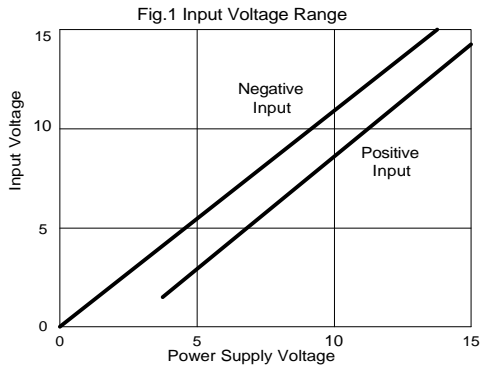


Fig. 7 Voltage Follower Pulse Response

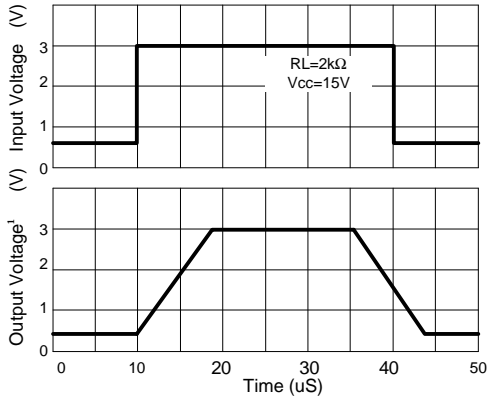


Fig. 8 Voltage Follower Response (Small Signal)

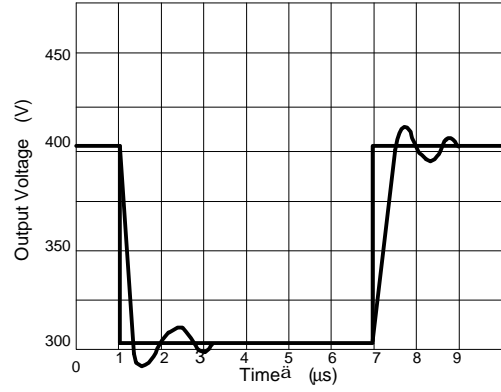


Fig. 9 Gain vs Large Signal Frequency

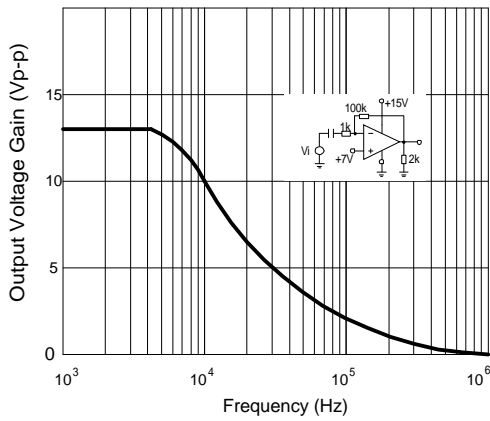


Fig. 10 Output Current Sinking vs Output Voltage

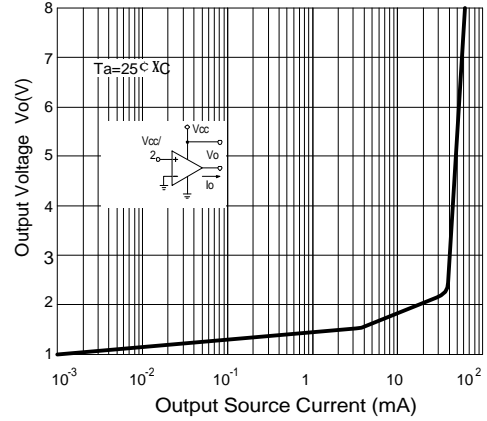


Fig. 11 Output Sink Current vs Output Voltage

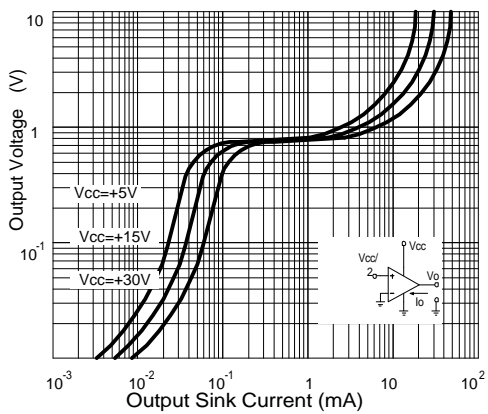
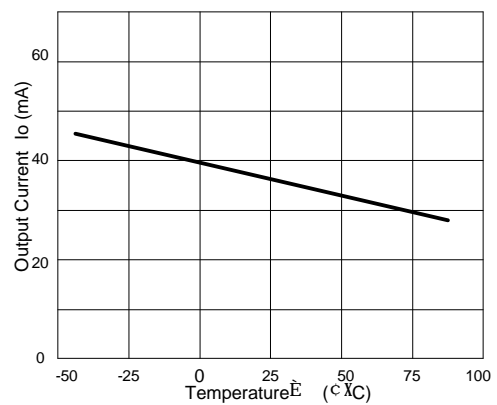
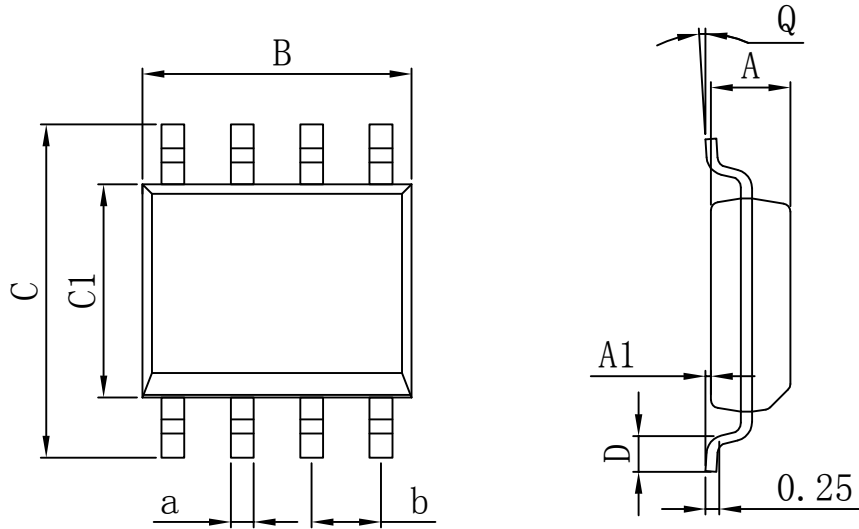


Fig. 12 Current Limiting vs Temperature



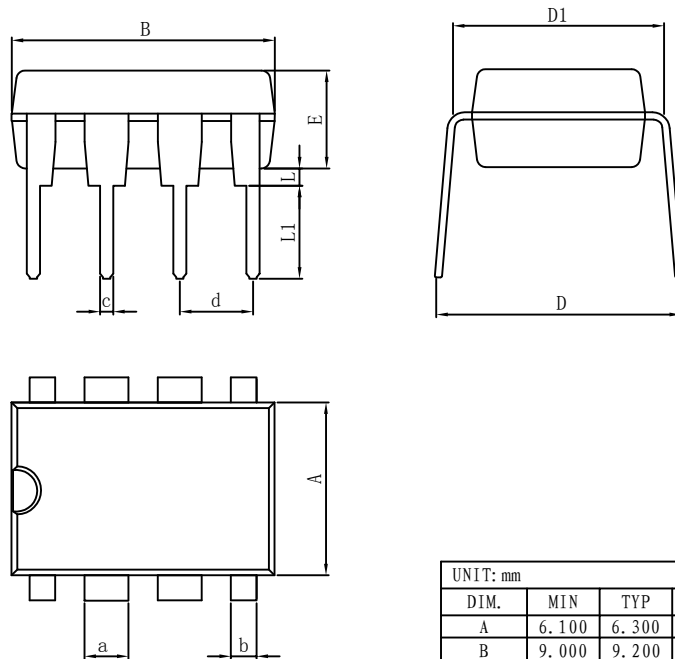
PACKAGE

SOP8



UNIT: mm							
DIM.	MIN	TYP	MAX	DIM.	MIN	TYP	MAX
A	4.520	4.570	4.620	a	0.400	0.420	0.440
A1	0.100	-	0.250	b	1.260	1.270	1.280
B	4.800	4.920	5.100	Q	0°	-	8°
C	5.800	6.100	6.250				
C1	3.800	3.900	4.000				
D	0.400	-	0.950				

DIP8



UNIT: mm							
DIM.	MIN	TYP	MAX	DIM.	MIN	TYP	MAX
A	6.100	6.300	6.680	a	1.504	1.524	1.544
B	9.000	9.200	9.500	b	-	0.889	-
D	8.400	8.700	9.000	c	0.437	0.457	0.477
D1	7.42	7.62	7.82	d	2.530	2.540	2.550
E	3.100	3.300	3.550	L	0.500	-	0.700
				L1	3.000	3.200	3.600

Important statement:

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