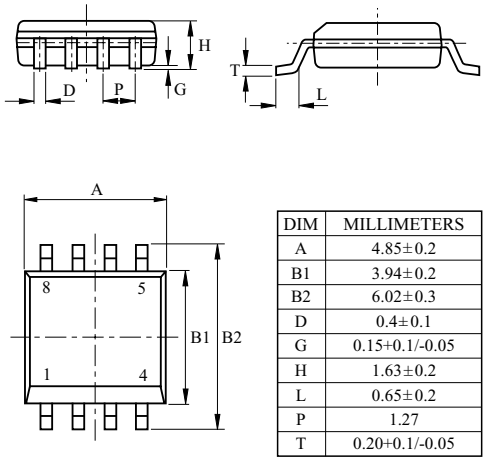
LM358F

BIPOLAR LINEAR INTEGRATED CIRCUIT

DUAL OPERATIONAL AMPLIFIER

FEATURES

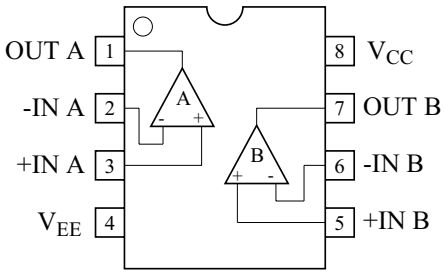
- In the Linear Mode the Input Common Mode Voltage Range Includes Ground.
- Two Internally Compensated OP Amps are in Single Package.
- Low Power Dissipation and Power Drain Suitable for Battery Operation.
- Differential Input Voltage Range Equal to the Power Supply Voltage.
- Wide Power Supply Voltage Range and Signal Power Supply
  : Sungle Supply $3V_{DC}$ to $32V_{DC}$ Dual Supplies $\pm 1.5V_{DC}$ to $\pm 16V_{DC}$
- Large Output Voltage Swing : $0V_{DC}$ to V_{CC}-$1.5V_{DC}$ (Typ.)
- Low Input Biasing Current : I_I=$45nA_{DC}$ (Typ.)



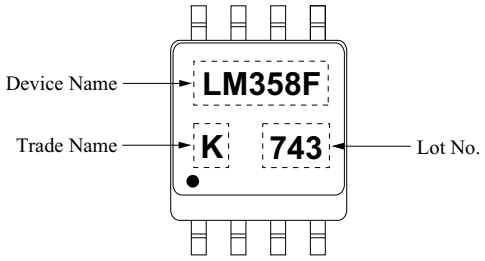
DIM	MILLIMETERS
A	4.85±0.2
B1	3.94±0.2
B2	6.02±0.3
D	0.4±0.1
G	0.15+0.1/-0.05
H	1.63±0.2
L	0.65±0.2
P	1.27
T	0.20+0.1/-0.05

FLP-8

PIN CONNECTION (TOP VIEW)



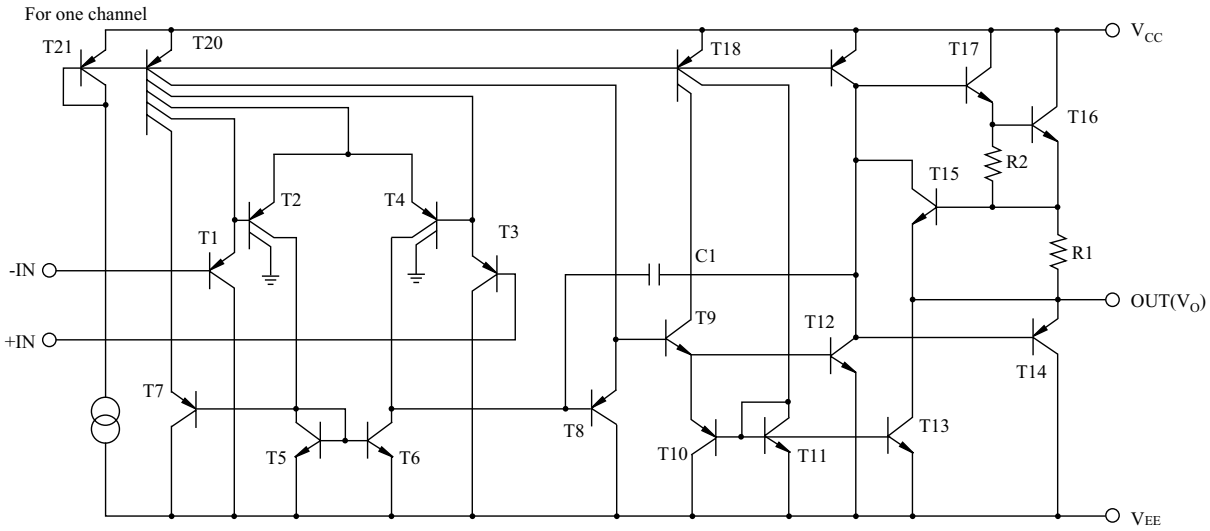
MARKING



MAXIMUM RATINGS (Ta=25℃)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	32, +16	V
	V_{EE}	0, -16	
Differential Input Voltage	$V_{I(DIFF)}$	±32	V
Input Voltage	V_I	-0.3~32	V
Power Dissipation	P_D	280	mW
Operating Temperature	T_{OPR}	-40~85	℃
Storage Temperature	T_{STG}	-65~150	℃
Junction Temperature	T_J	125	℃

EQUIVALENT CIRCUIT



ELECTRICAL CHARACTERISTICS (V_{CC}=5V, V_{EE}=GND, Ta=25℃, unless otherwise specified)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	V_{CM}=0V to V_{CC}-1.5V $V_{O(P)}$=1.4V, R_S=0 Ω	-	2.9	7.0	mV
Input Offset Current	I_{IO}	-	-	5	50	nA
Input Bias Current	I_{BIAS}	-	-	45	250	nA
Input Common Mode Voltage	$V_{I(CM)}$	V_{CC}=30V	0	-	V_{CC}-1.5	V
Power Supply Current	I_{CC}	R_L=∝ , V_{CC}=30V	-	0.8	2.0	mA
		R_L=∝ , Full Temperature Range	-	0.5	1.2	mA
Large Signal Voltage Gain	G_V	V_{CC}=15V, R_L≧2k Ω $V_{O(P)}$=1V~11V	25	100	-	V/mV
Output Voltage Swing	$V_{O(H)}$	V_{CC}=30V, R_L=2k Ω	26	-	-	V
		V_{CC}=30V, R_L=10k Ω	27	28	-	V
Common Mode Rejection Ratio	CMRR	-	65	80	-	dB
Power Supply Rejection Ratio	PSRR	-	65	100	-	dB
Channel Separation	CS	f=1KHz ~ 20kHz	-	120	-	dB
Short Circuit Current to Ground	I_{SC}	-	-	40	60	mA
Output Current	I_{SOURCE}	V_I(+)=1V, V_I(-)=0V V_{CC}=15V, $V_{O(P)}$=2V	10	30	-	mA
	I_{SINK}	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	$V_{I(DIFF)}$	-	-	-	V_{CC}	V

Fig. 1 Input Current vs Temperature

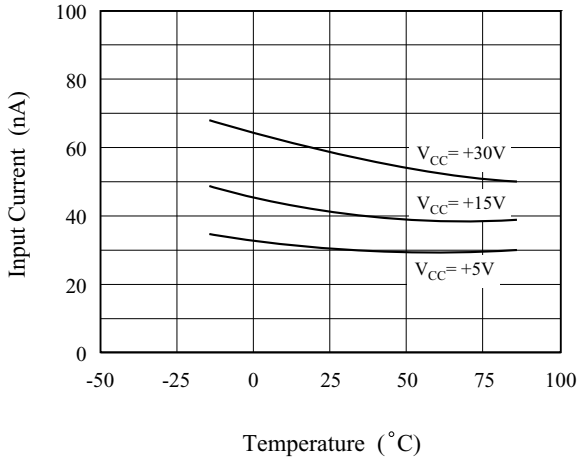


Fig. 2 Supply Current vs Supply Voltage

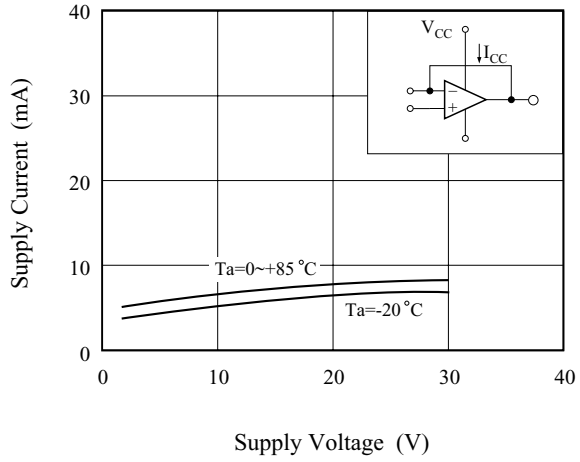


Fig. 3 Voltage Gain vs Supply Voltage

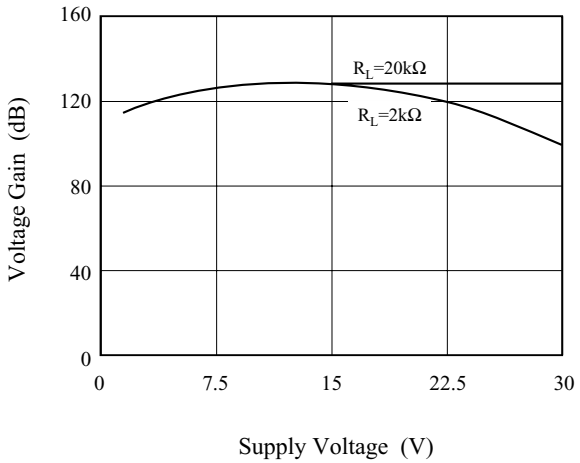


Fig. 4 Open Loop Frequency Response

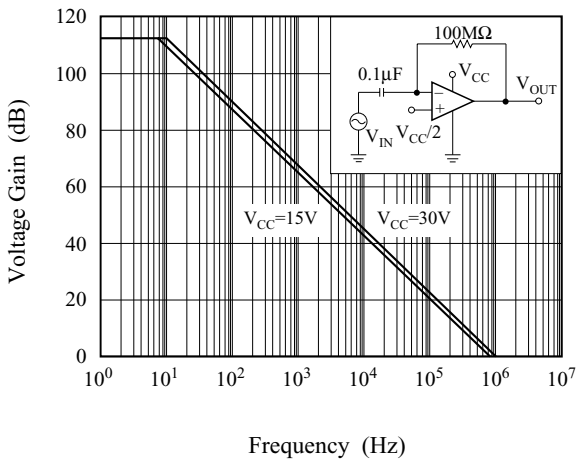


Fig. 5 Large signal Frequency Response

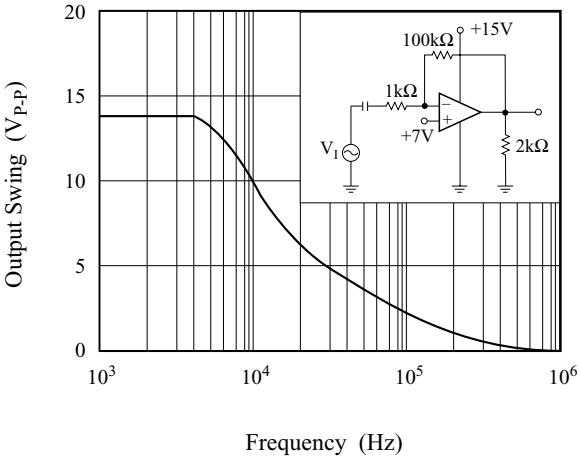


Fig. 6 CMRR vs Frequency

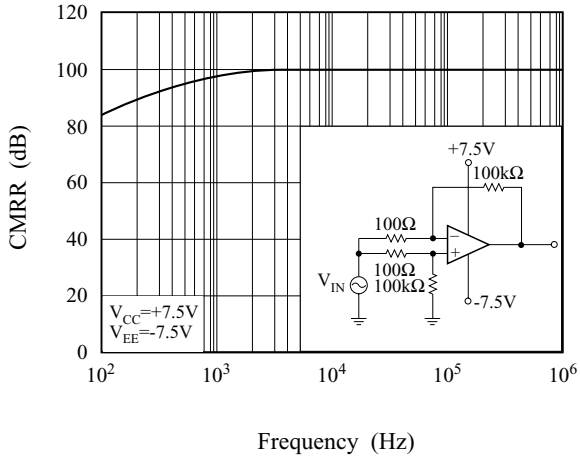


Fig. 7 Voltage Follower Pulse Response

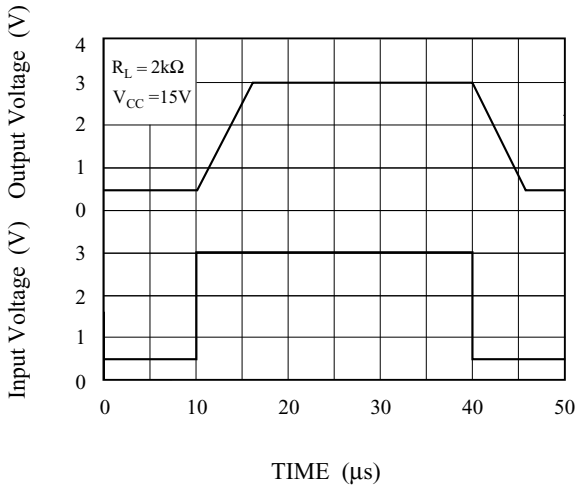


Fig. 8 Voltage Follower Response (Small Signal)

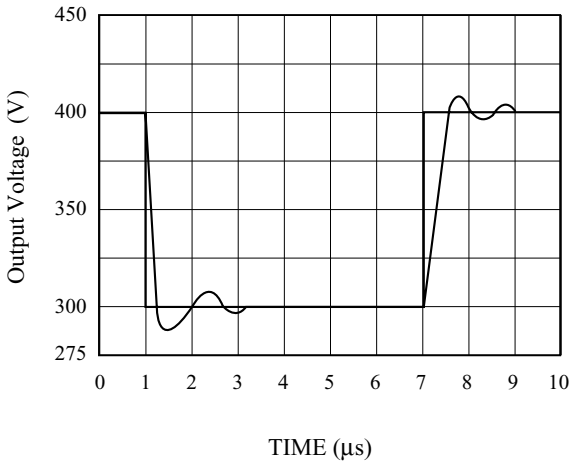


Fig. 9 Output Characteristics Current Sourcing

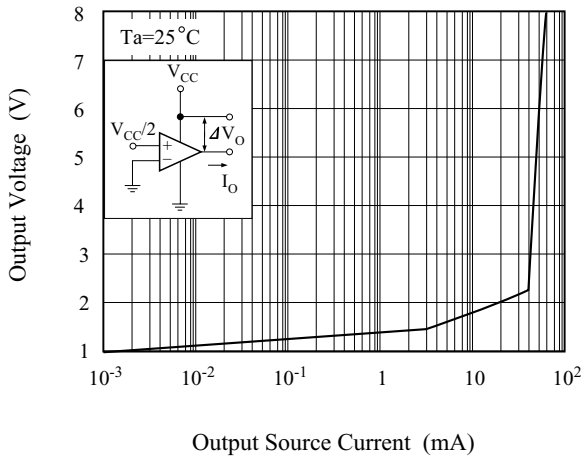


Fig. 10 Output Characteristics Current Sinking

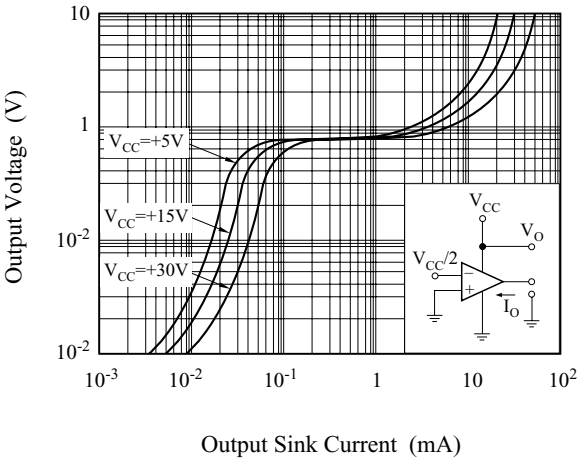


Fig. 11 Current Limiting