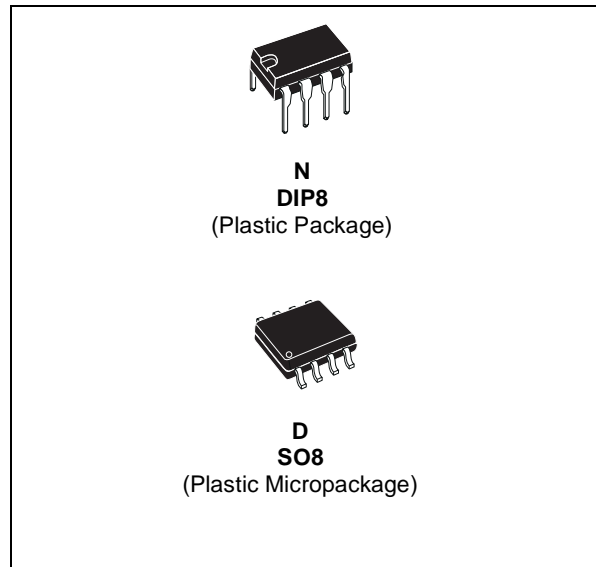


## WIDE BANDWIDTH SINGLE J-FET OPERATIONAL AMPLIFIER

- INTERNALLY ADJUSTABLE INPUT OFFSET VOLTAGE
- LOW POWER CONSUMPTION
- WIDE COMMON-MODE (UP TO  $V_{CC}^+$ ) AND DIFFERENTIAL VOLTAGE RANGE
- LOW INPUT BIAS AND OFFSET CURRENT
- OUTPUT SHORT-CIRCUIT PROTECTION
- HIGH INPUT IMPEDANCE J-FET INPUT STAGE
- INTERNAL FREQUENCY COMPENSATION
- LATCH UP FREE OPERATION
- HIGH SLEW RATE :  $16V/\mu s$  (typ)

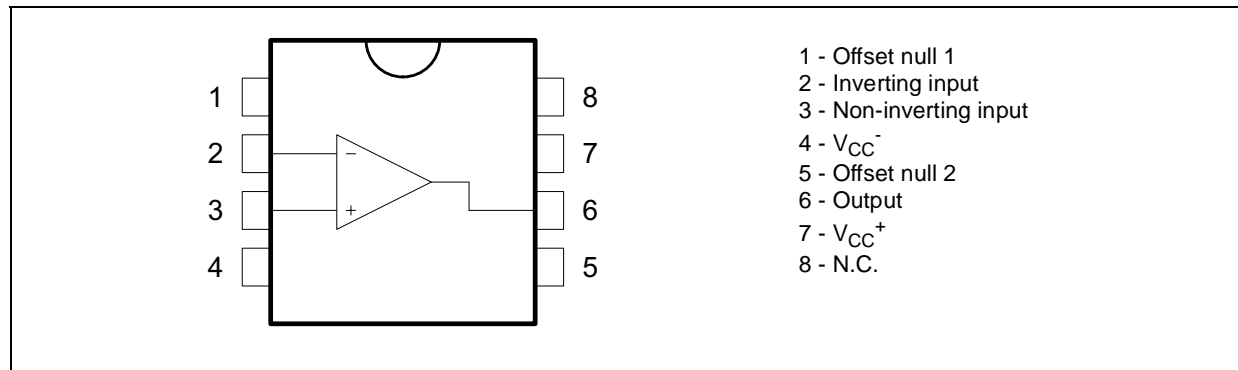


### DESCRIPTION

These circuits are high speed J-FET input single-operational amplifiers incorporating well matched, high voltage J-FET and bipolar transistors in a monolithic integrated circuit.

The devices feature high slew rates, low input bias and offset currents, and low offset voltage temperature coefficient.

### PIN CONNECTIONS (top view)

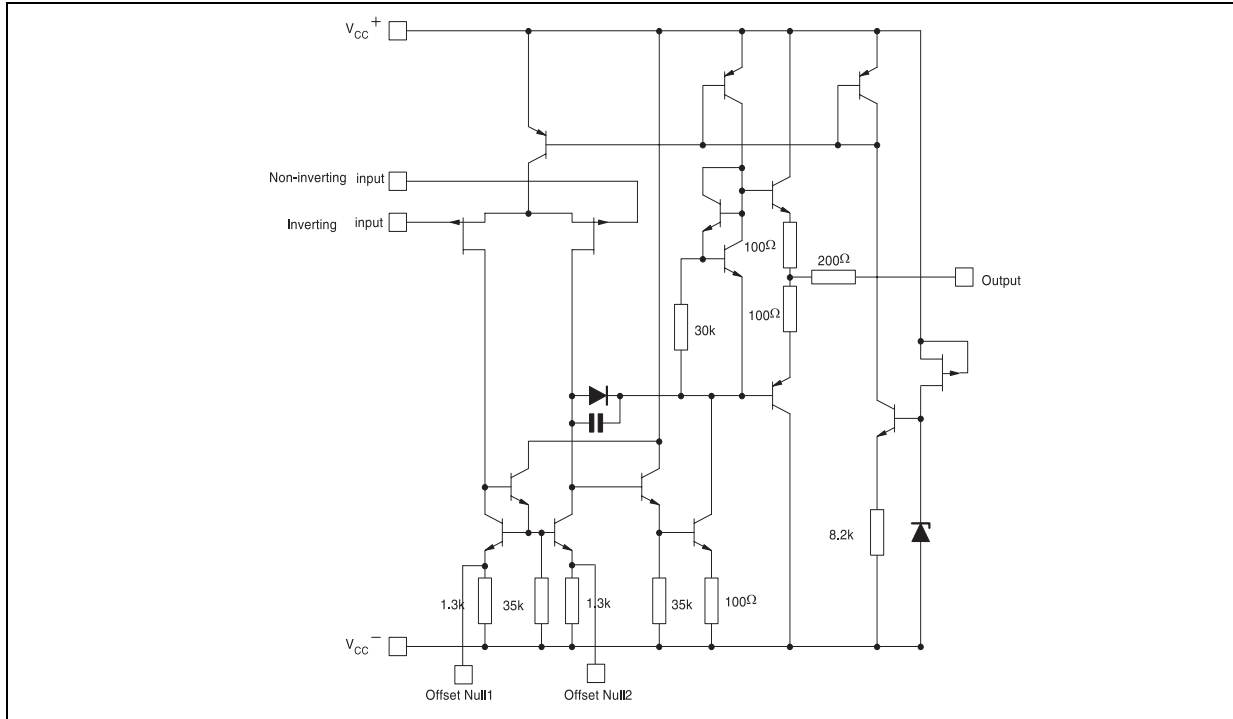


### ORDER CODE

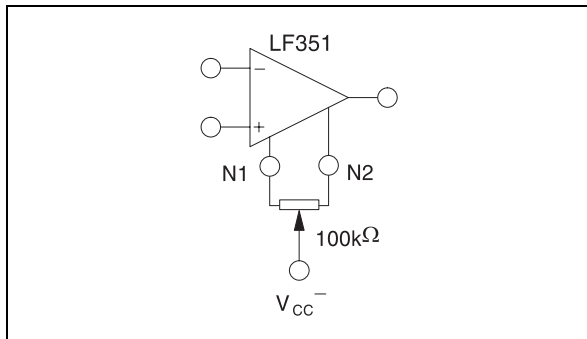
Part Number	Temperature Range	Package	
		N	D
LF351	0°C, +70°C	•	•
LF251	-40°C, +105°C	•	•
LF151	-55°C, +125°C	•	•

**N** = Dual in Line Package (DIP)  
**D** = Small Outline Package (SO) - also available in Tape & Reel (DT)

**SCHEMATIC DIAGRAM**



**INPUT OFFSET VOLTAGE NULL CIRCUIT**



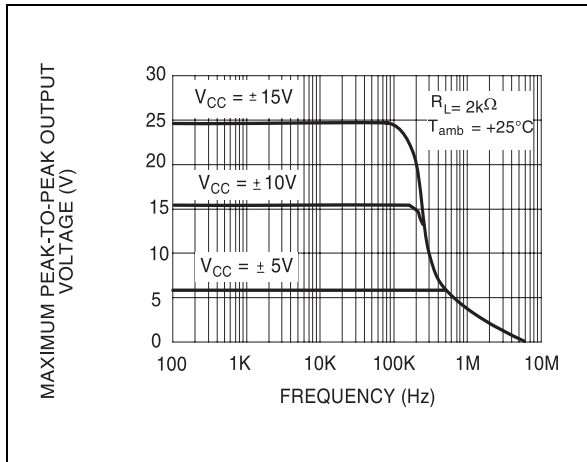
**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	LF151	LF251	LF351	Unit
$V_{CC}$	Supply voltage - note 1)	±18			V
$V_i$	Input Voltage - note 2)	±15			V
$V_{id}$	Differential Input Voltage - note 3)	±30			V
$P_{tot}$	Power Dissipation	680			mW
	Output Short-circuit Duration - note 4)	Infinite			
$T_{oper}$	Operating Free-air Temperature Range	-55 to +125	-40 to +105	0 to +70	°C
$T_{stg}$	Storage Temperature Range	-65 to +150			°C

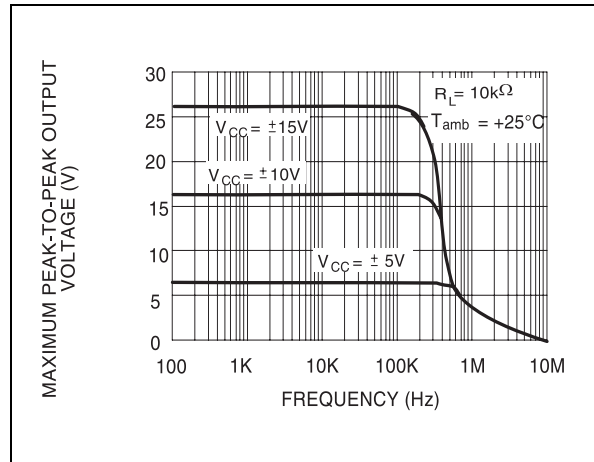
1. All voltage values, except differential voltage, are with respect to the zero reference level (ground) of the supply voltages where the zero reference level is the midpoint between  $V_{CC}^+$  and  $V_{CC}^-$ .
2. The magnitude of the input voltage must never exceed the magnitude of the supply voltage or 15 volts, whichever is less.
3. Differential voltages are the non-inverting input terminal with respect to the inverting input terminal.
4. The output may be shorted to ground or to either supply. Temperature and/or supply voltages must be limited to ensure that the dissipation rating is not exceeded.



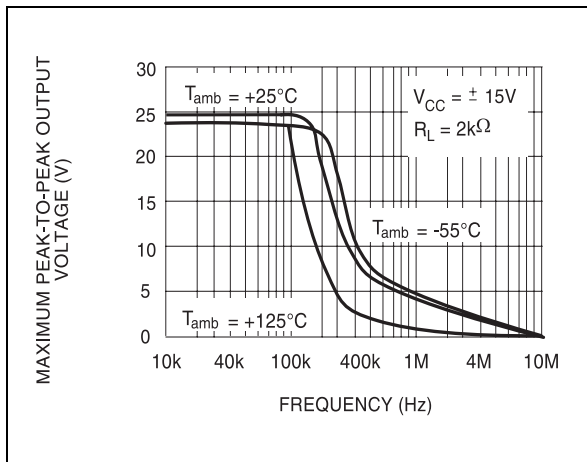
**VOLTAGE versus FREQUENCY**



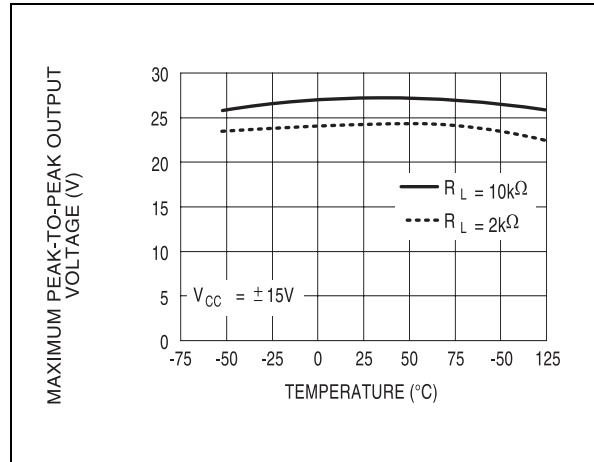
**VOLTAGE versus FREQUENCY**



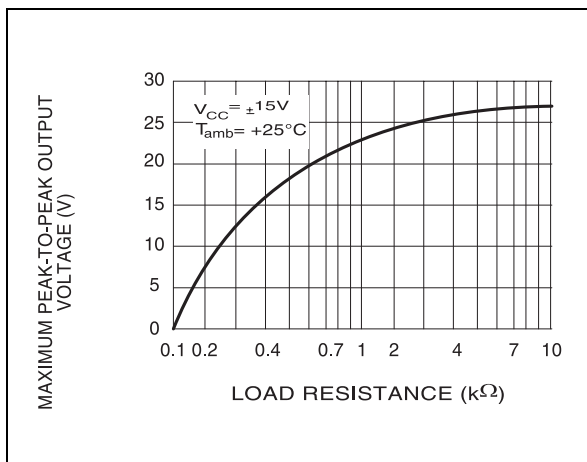
**MAXIMUM PEAK-TO-PEAK OUTPUT VOLTAGE versus FREQUENCY**



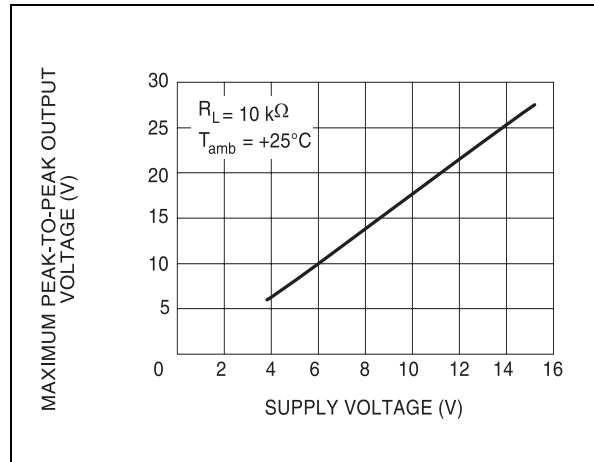
**MAXIMUM PEAK-TO-PEAK OUTPUT VOLTAGE versus FREE AIR TEMP.**



**MAXIMUM PEAK-TO-PEAK OUTPUT VOLTAGE versus LOAD RESISTANCE**



**MAXIMUM PEAK-TO-PEAK OUTPUT VOLTAGE versus SUPPLY VOLTAGE**

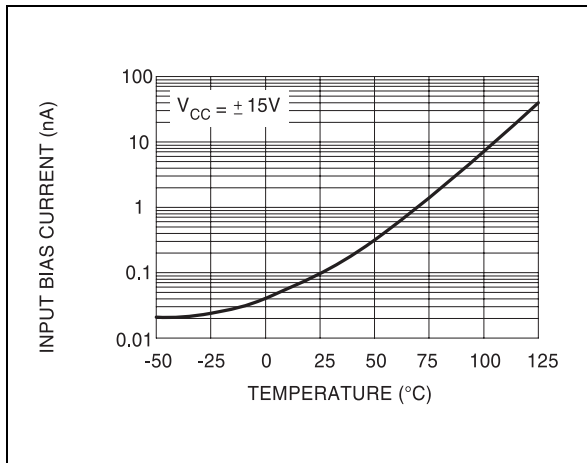


**MAXIMUM PEAK-TO-PEAK OUTPUT**

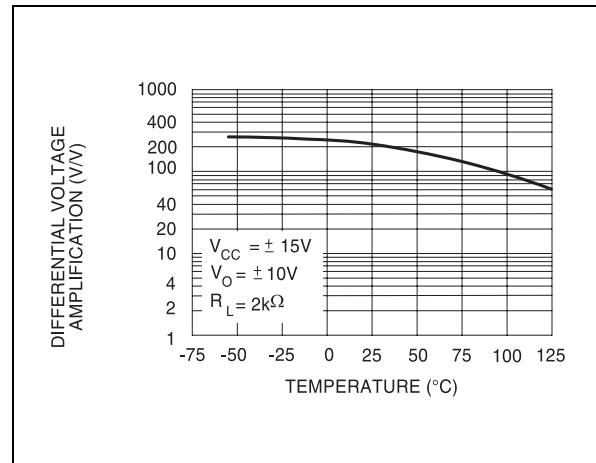
**INPUT BIAS CURRENT versus FREE AIR**



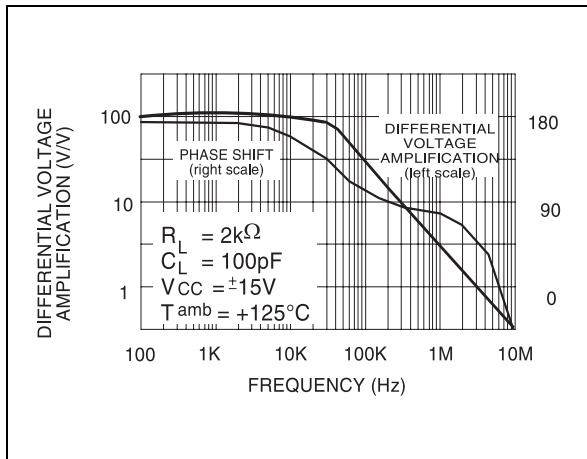
**TEMPERATURE**



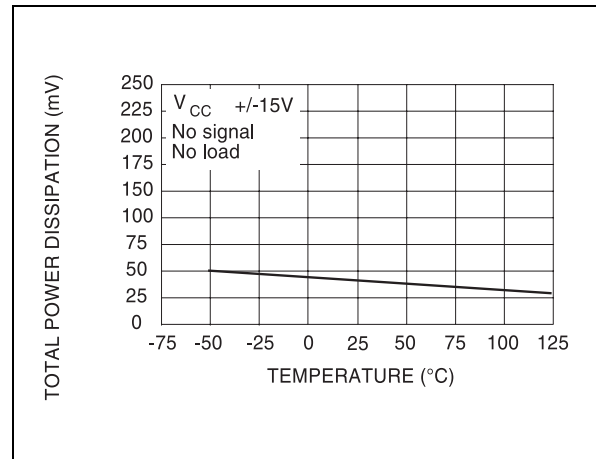
**AMPLIFICATION versus FREE AIR TEMP.**



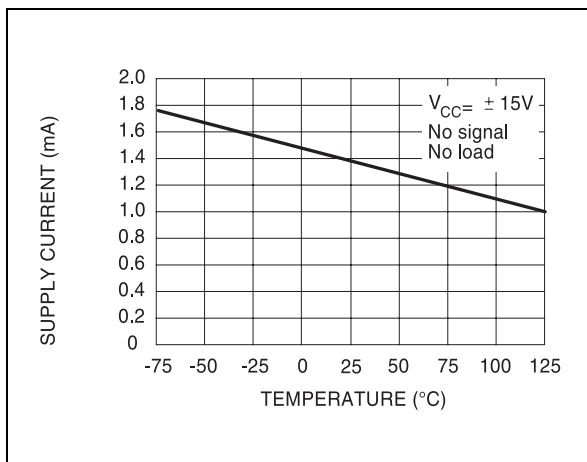
**LARGE SIGNAL DIFFERENTIAL VOLTAGE AMPLIFICATION AND PHASE SHIFT versus FREQUENCY**



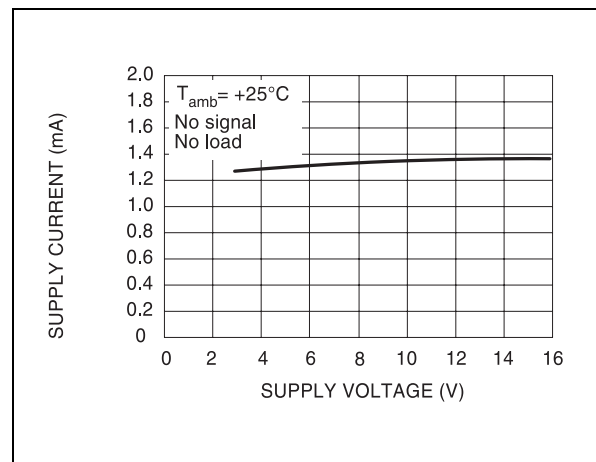
**TOTAL POWER DISSIPATION versus FREE AIR TEMPERATURE**



**SUPPLY CURRENT PER AMPLIFIER versus FREE AIR TEMPERATURE**



**SUPPLY CURRENT PER AMPLIFIER versus SUPPLY VOLTAGE**

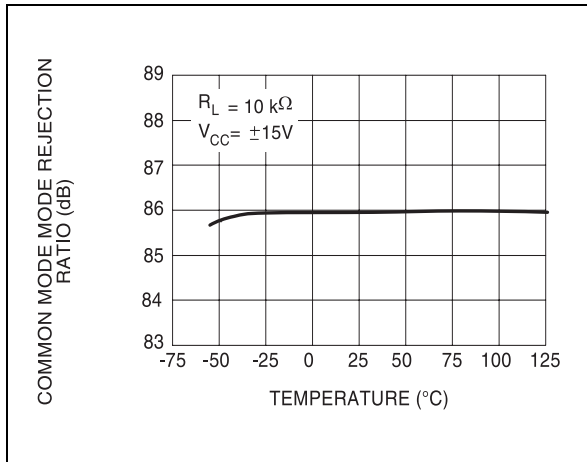


**LARGE SIGNAL DIFFERENTIAL VOLTAGE**

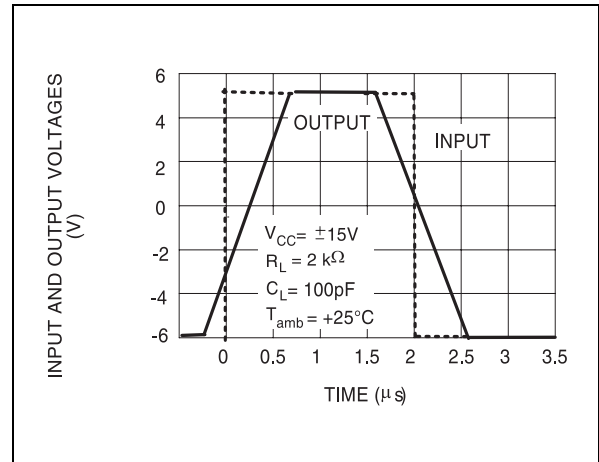


**COMMON MODE REJECTION RATIO versus**

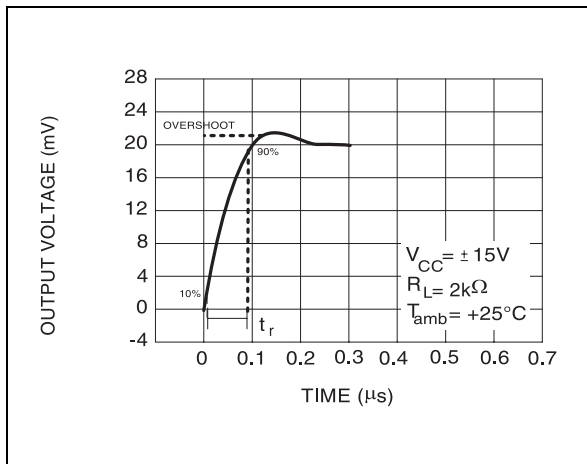
FREE AIR TEMPERATURE



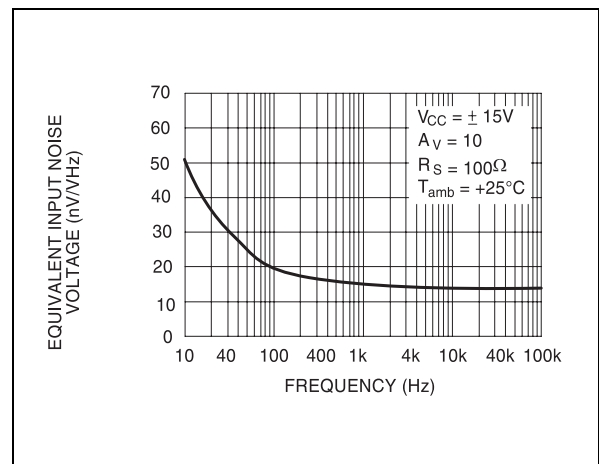
VOLTAGE FOLLOWER LARGE SIGNAL PULSE RESPONSE



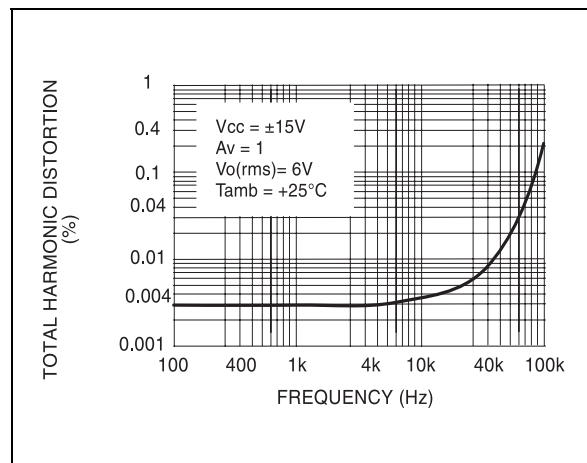
OUTPUT VOLTAGE versus ELAPSED TIME



EQUIVALENT INPUT NOISE VOLTAGE versus FREQUENCY

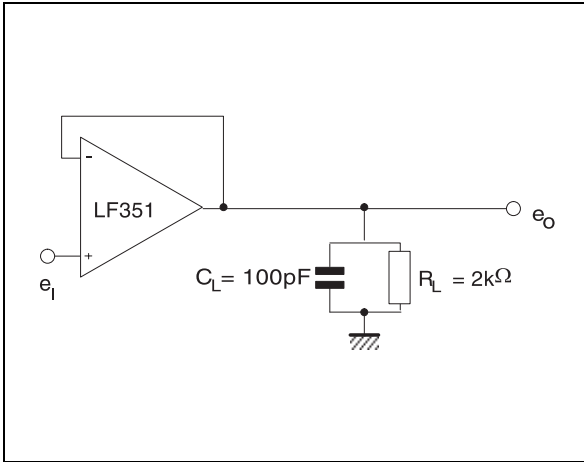


TOTAL HARMONIC DISTORTION versus FREQUENCY

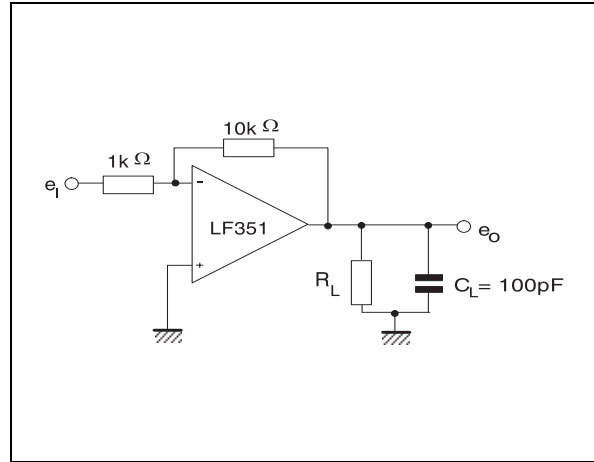


**PARAMETER MEASUREMENT INFORMATION**

**Figure 1 : Voltage Follower**

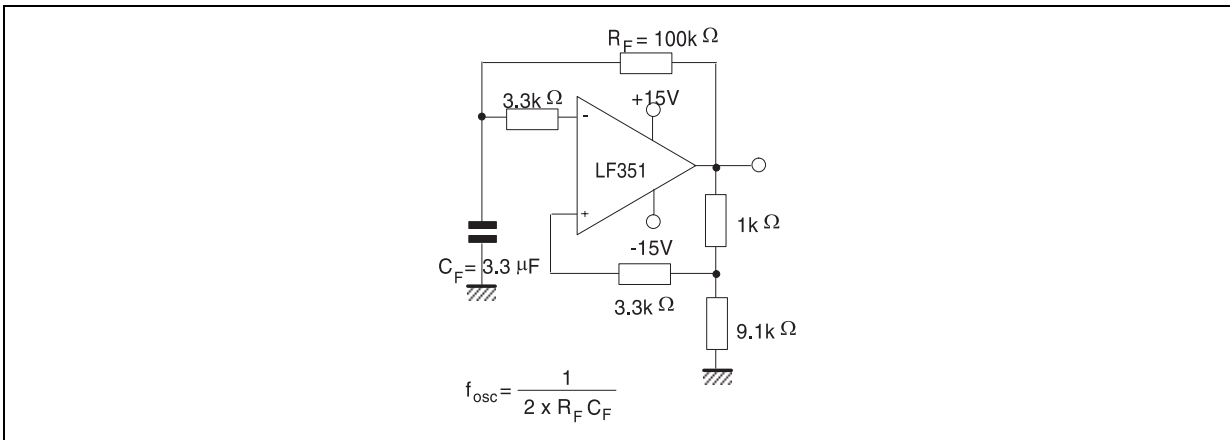


**Figure 2 : Gain-of-10 inverting amplifier**

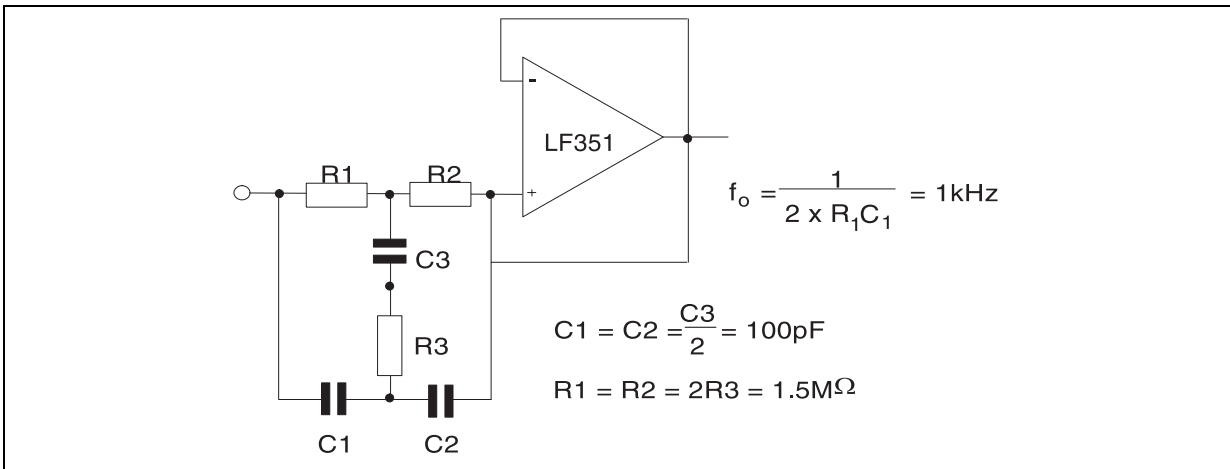


**TYPICAL APPLICATION**

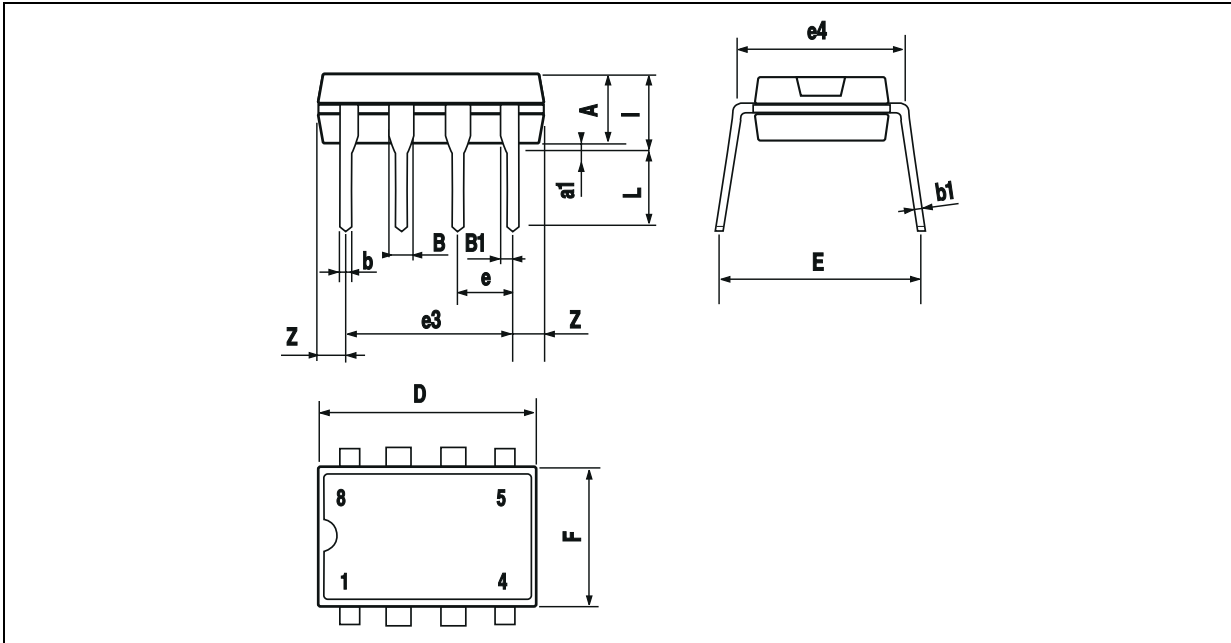
**(0.5Hz) SQUARE WAVE OSCILLATOR**



**HIGH Q NOTCH FILTER**



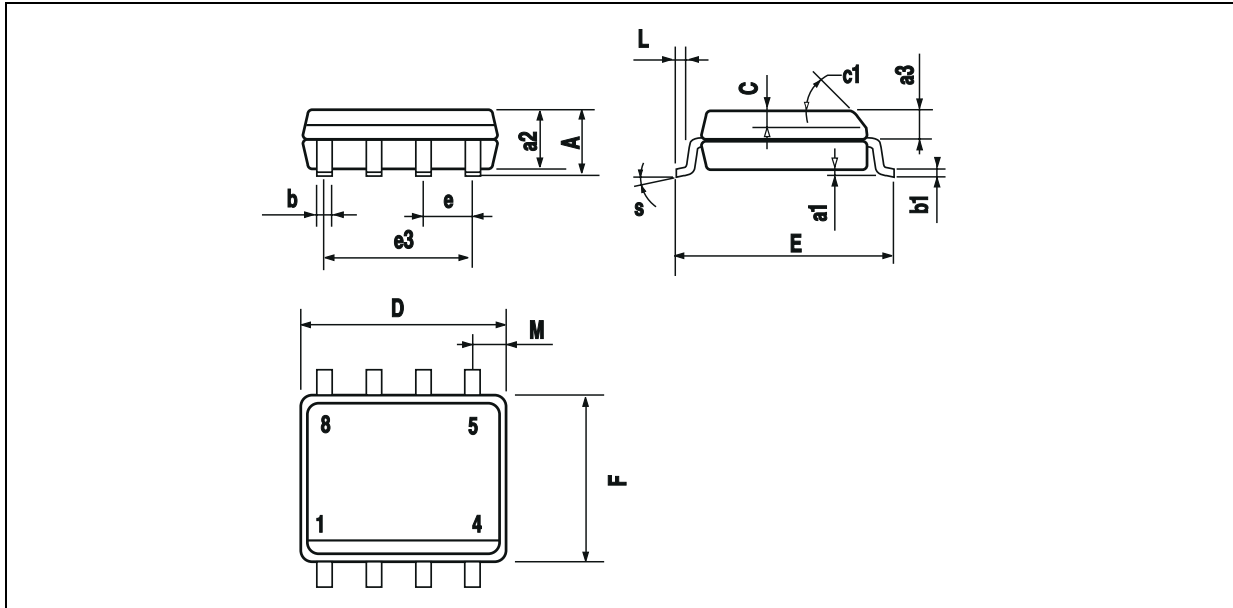
**PACKAGE MECHANICAL DATA**  
8 PINS - PLASTIC DIP



Dim.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A		3.32			0.131	
a1	0.51			0.020		
B	1.15		1.65	0.045		0.065
b	0.356		0.55	0.014		0.022
b1	0.204		0.304	0.008		0.012
D			10.92			0.430
E	7.95		9.75	0.313		0.384
e		2.54			0.100	
e3		7.62			0.300	
e4		7.62			0.300	
F			6.6			0.260
i			5.08			0.200
L	3.18		3.81	0.125		0.150
Z			1.52			0.060



**PACKAGE MECHANICAL DATA**  
**8 PINS - PLASTIC MICROPACKAGE (SO)**



Dim.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			1.75			0.069
a1	0.1		0.25	0.004		0.010
a2			1.65			0.065
a3	0.65		0.85	0.026		0.033
b	0.35		0.48	0.014		0.019
b1	0.19		0.25	0.007		0.010
C	0.25		0.5	0.010		0.020
c1	45° (typ.)					
D	4.8		5.0	0.189		0.197
E	5.8		6.2	0.228		0.244
e		1.27			0.050	
e3		3.81			0.150	
F	3.8		4.0	0.150		0.157
L	0.4		1.27	0.016		0.050
M			0.6			0.024
S	8° (max.)					

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