

General-purpose J-FET single operational amplifier

summary

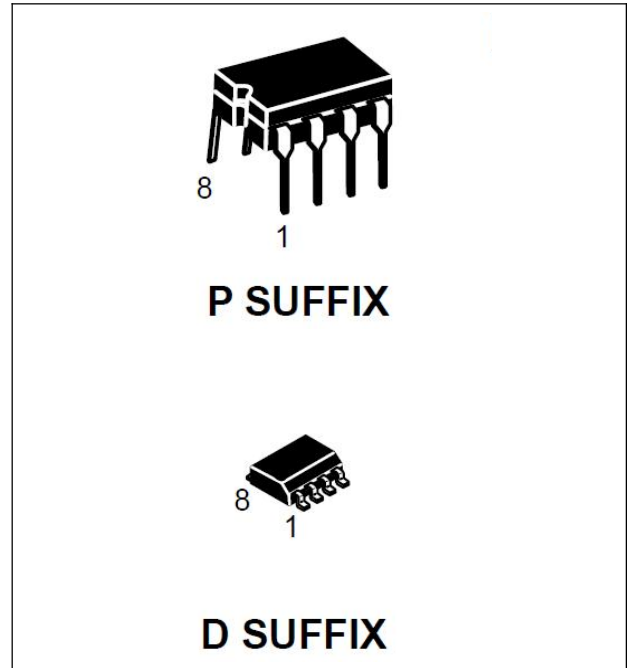
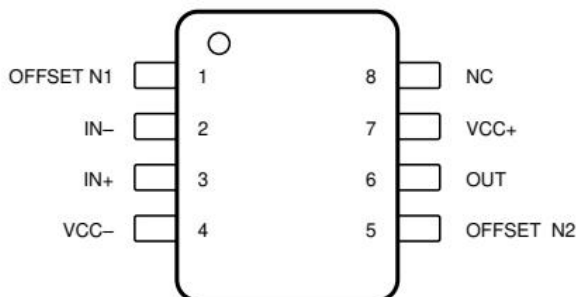
The TL081 is a high speed J-FET single operational amplifier consisting of a high voltage J-FET and a bipolar transistor. It has a high switching rate, low input bias current and offset current, and low offset voltage temperature coefficient.

TL081 Provides DIP8 and SOP8, packaging forms.

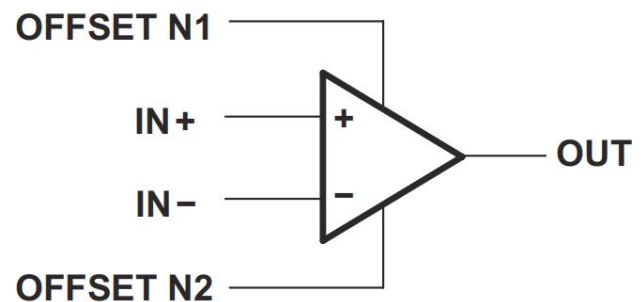
main features

- Lower power consumption
- Wide common and differential mode input voltage range
- Low input bias current and offset current
- Output short circuit current protection
- high input impedance
- Internal frequency compensation
- High conversion rate
- High gain bandwidth product

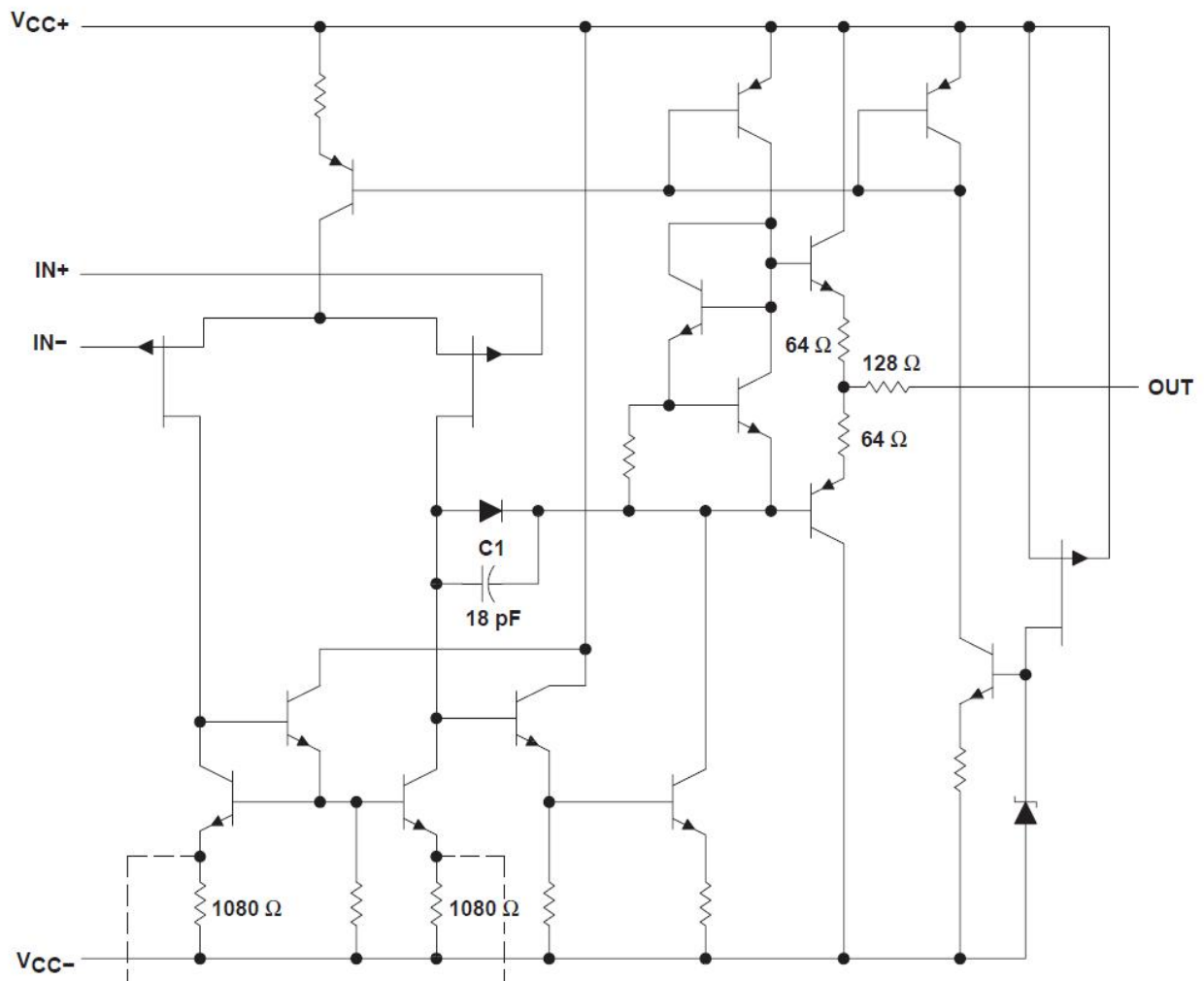
Pin diagram



symbol



Internal block diagram



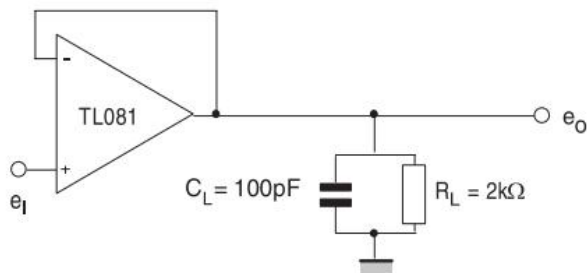
absolute rating

Symbol	Description	Extreme	Unit
Vcc	Supply voltage	± 18	V
Vi	Input voltage	± 15	V
Vid	Is the differential mode input voltage	± 30	V
Ptot	Power dissipation	680	mW
Toper	Working temperature	-20~85	°C
Tstg	Storage temperature	-65~+150	°C

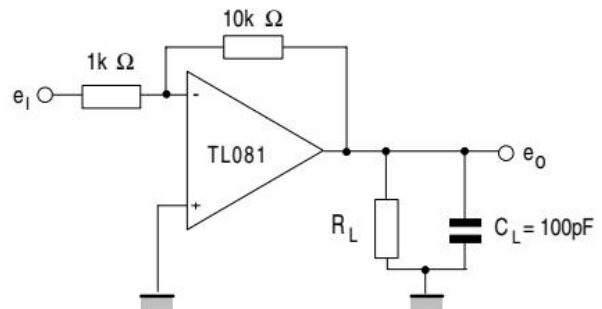
Electrical characteristics ($V_{CC} = \pm 15$, $T_{amp} = 25$, special cases are explained separately)

Symbol	Parameter name	Test condition	Test value			Unit
			Min	Typ	Max	
V_{io}	Offset voltage	$V_o=0V$		± 3	± 5	mV
I_{io}	Input offset current	$V_o=0V$			± 100	pA
I_{ib}	Output bias current	$V_o=0V$			± 200	nA
V_{icm}	Enter the common mode voltage		$(V_{CC-})+1.5$		$(V_{CC+})-0.5$	V
V_{om}	Output voltage peak	$R_L = 10 k\Omega$	± 12	± 13.5		V
AVD	Large signal voltage gain	$R_L \geq 2 k\Omega$, $V_o = \pm 10 V$	80	95		dB
GB	Gain bandwidth product			3		MHz
CMRR	Cmrr	$R_s=50\Omega$	70	85		dB
SVR	Power supply rejection ratio	$V_{CC} = \pm 15 V$ to $\pm 9 V$, $V_o=0V$	80	86		dB
ICC	Quiescent current	$V_{CC} = \pm 15 V$		± 1.8	± 2.8	mA
SR	Slew rate	$V_i = 10 V$	8	20		V/us
t_r	Rise time	$V_{in}=20mV$		0.1		us

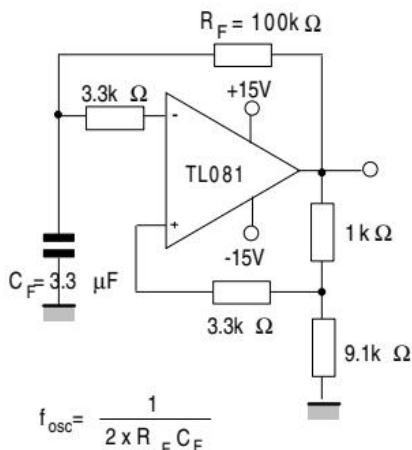
Typical application voltage follower



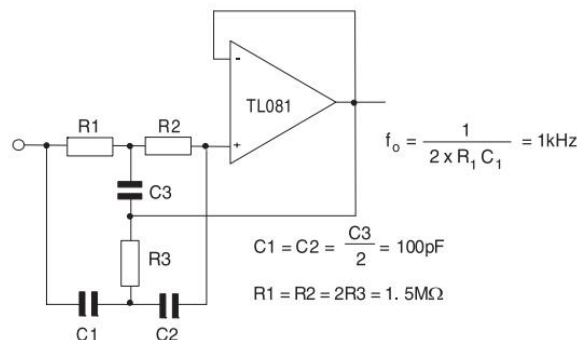
10 times gain inverting amplifier



0.5Hz square wave oscillator

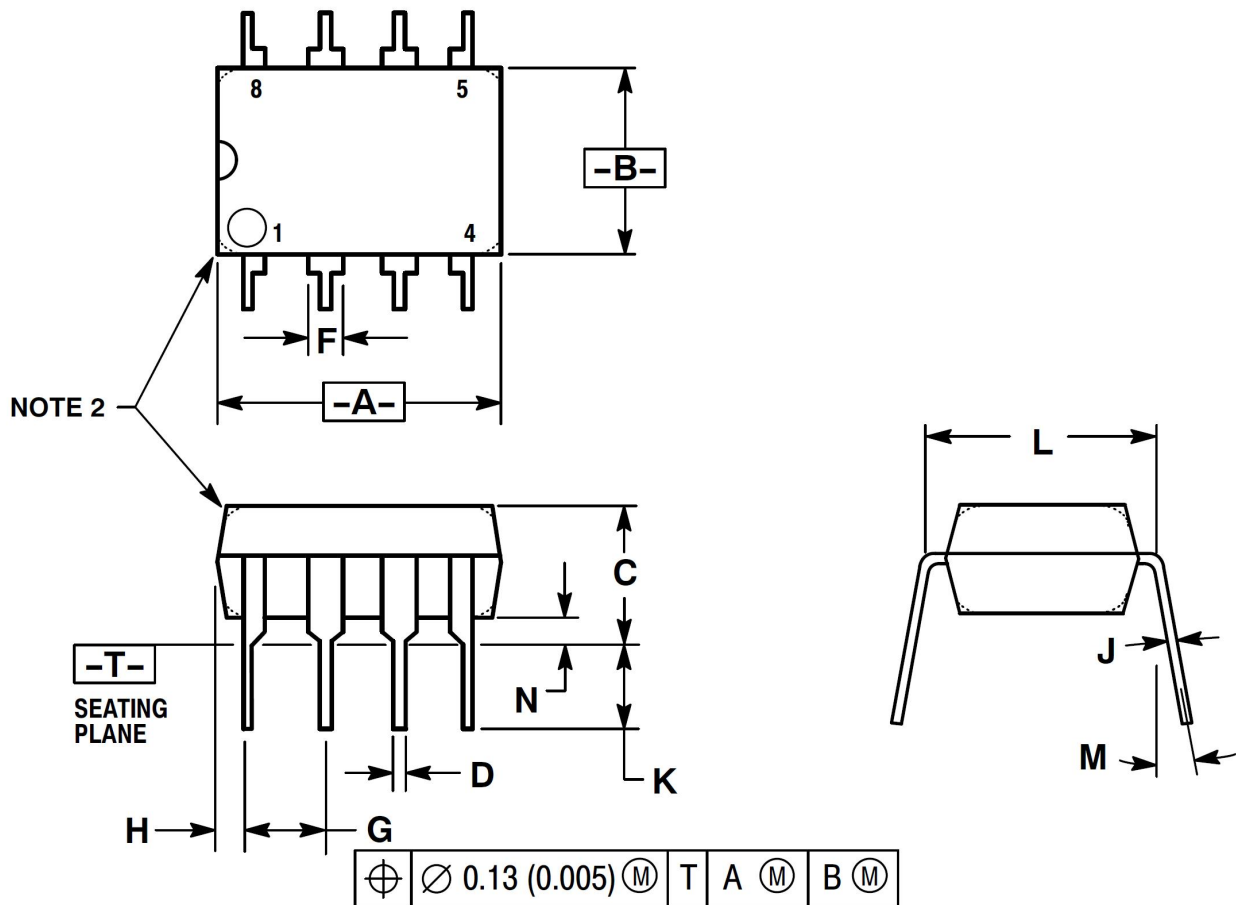


High Q order filter



Packaging mechanical data:

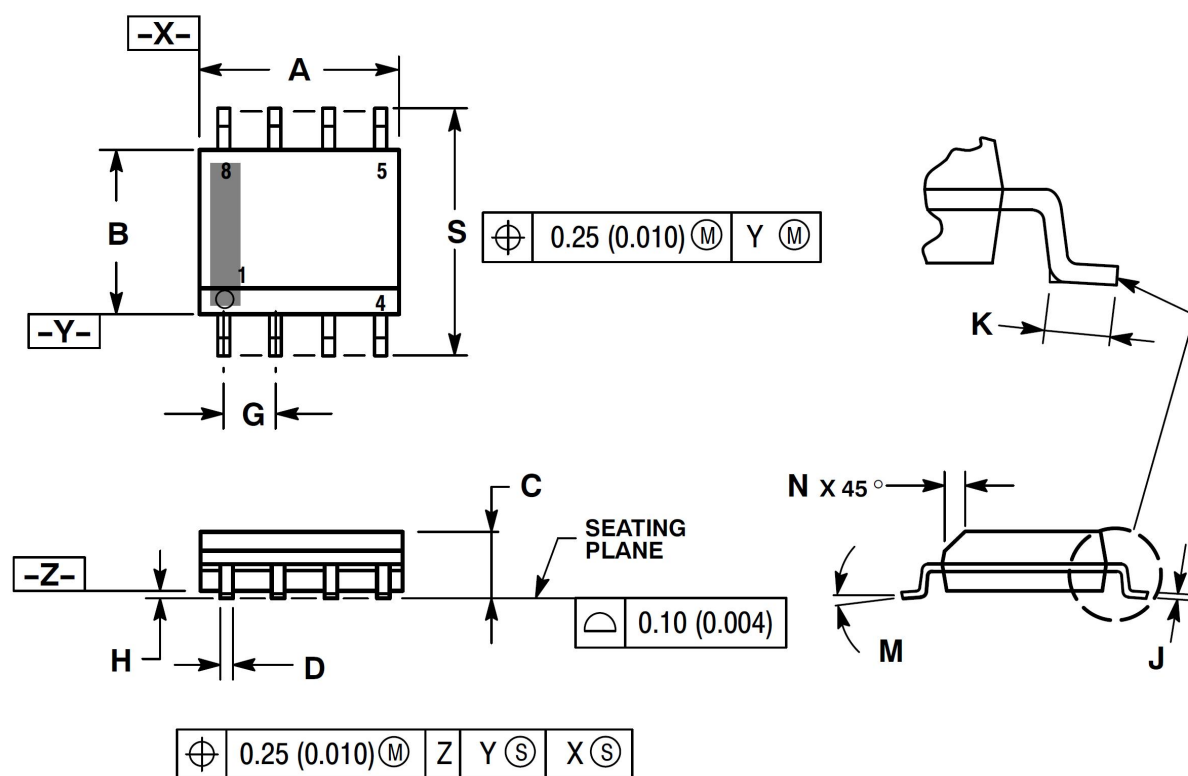
8 Pin plastic DIP



Note: 1. The size of L is the size when the pins are parallel; 2. There are two types of shape: round corner and square corner.

Grade	Millimetre		Inch MIN MAX	
	MIN	MAX	MIN	MAX
A	9.4	10.16	0.37	0.4
B	6.1	6.6	0.24	0.26
C	3.94	4.45	0.155	0.175
D	0.38	0.51	0.015	0.02
F	1.02	1.78	0.04	0.07
G	2.54		0.1	
H	0.76	1.27	0.03	0.05
J	0.2	0.3	0.008	0.012
K	2.92	3.43	0.115	0.135
L	7.62		0.3	
M	---	10°	---	10°
N	0.76	1.01	0.03	0.04

8 Pin plastic SOP



Grade	Millimeters MIN MAX		Inch MIN MAX	
A	4.8	5	0.189	0.197
B	3.8	4	0.15	0.157
C	1.35	1.75	0.053	0.069
D	0.33	0.51	0.013	0.02
G	1.27		0.05	
H	0.1	0.25	0.004	0.01
J	0.19	0.25	0.007	0.01
K	0.4	1.27	0.016	0.05
M	0°	8°	0°	8°
N	0.25	0.5	0.01	0.02
S	5.8	6.2	0.228	0.244