DESCRIPTION

The LM101 and LM201 are high performance operational amplifiers featuring high gain, short circuit protection, simplified compensation and excellent temperature stability.

FEATURES

- SHORT CIRCUIT PROTECTION
- OFFSET VOLTAGE NULL CAPABILITY
- LARGE COMMON-MODE AND DIFFERENTIAL VOLTAGE RANGES
- LOW POWER CONSUMPTION
- NO LATCH UP

ABSOLUTE MAXIMUM RATINGS

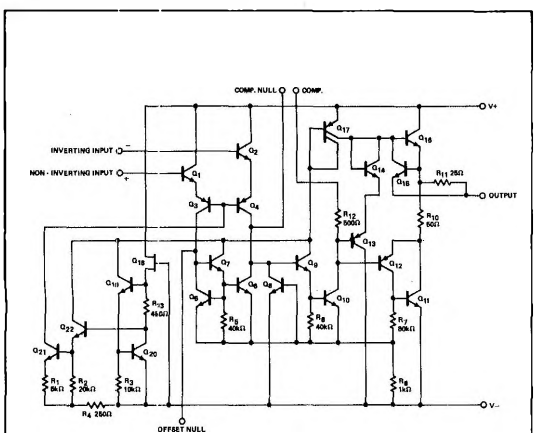
Supply Voltage		±22V
Power Dissipation (Note 1)		500mW
Differential Input Voltage		±30V
Input Voltage (Note 2)		±15V
Output Short Circuit Duration		Indefinite
Operating Temperature Range	LM101	−55°C to 125°C
	LM201	0°C to 70°C
Storage Temperature Range		−65°C to 150°C
Lead Temperature (Soldering, 60 sec.)		300°C

NOTES

1. Absolute maximum rating holds for all packages. The maximum junction temperature is 150°C for the LM101 and 100°C for the LM201. For operation at elevated temperatures, derate according to appropriate thermal resistances given under package information.

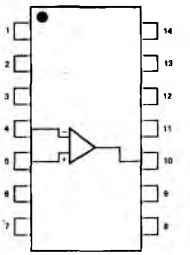
2. For supply voltages less than ±15V, the absolute maximum input voltage is equal to the supply voltage.

EQUIVALENT CIRCUIT



PIN CONFIGURATIONS

A & I PACKAGE (Top View)

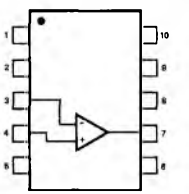


1. NC
2. NC
3. Freq. Comp./Offset Null
4. Inverting Input
5. Noninverting Input
6. V^-
7. NC
8. NC
9. Offset Null
10. Output
11. V^+
12. Freq. Comp.
13. NC
14. NC

ORDER PART NOS.

LM101N-14, LM201N-14 } Silicone — LM101D, LM201D } Ceramic

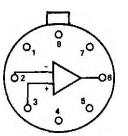
Q PACKAGE



1. NC
2. Bal/Comp
3. Input
4. Input
5. V^-
6. Bal
7. Output
8. V^+
9. Comp
10. NC

ORDER PART NOS.
LM101Q/LM201Q

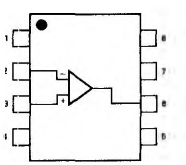
T PACKAGE



1. Freq. Comp/Offset Null
2. Inverting Input
3. Noninverting Input
4. V^-
5. Offset Null
6. Output
7. V^+
8. Freq. Comp.

ORDER PART NOS.
LM101H/LM201H

V PACKAGE



1. Freq. Comp./Offset Null
2. Inverting Input
3. Noninverting Input
4. V^-
5. Offset Null
6. Output
7. V^+
8. Freq. Comp.

ORDER PART NO. LM201N

ELECTRICAL CHARACTERISTICS ($-55°C \leq T_A \leq 125°C$, $\pm 15V \leq V_S \leq \pm 20V$ and $C_1 = 30$ pF unless otherwise specified).

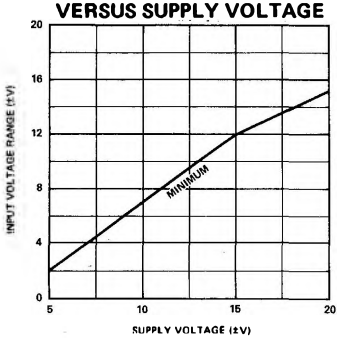
LM101 PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Input Offset Voltage	$T_A = 25°C$, $R_s \leq 10k\Omega$		1.0	5.0	mV
Input Offset Current	$T_A = 25°C$		40	200	nA
Input Bias Current	$T_A = 25°C$		120	500	nA
Input Resistance	$T_A = 25°C$	300	800		kΩ
Supply Current	$T_A = 25°C$, $V_s = \pm 20V$		1.8	3.0	mA
Large Signal Voltage Gain	$T_A = 25°C$, $V_s = \pm 15V$ $V_{OUT} = \pm 10V$, $R_L \geq 2k\Omega$	50	160		V/mV
Input Offset Voltage	$R_s \leq 10k\Omega$			6.0	mV
Average Temperature Coefficient of Input Offset Voltage	$R_s \leq 50\Omega$		3.0		μV/°C
	$R_s \leq 10k\Omega$		6.0		μV/°C
Input Offset Current	$T_A = +125°C$		10	200	nA
	$T_A = -55°C$		100	500	nA
Input Bias Current	$T_A = -55°C$		0.28	1.5	μA
Supply Current	$T_A = +125°C$, $V_s = \pm 20V$		1.2	2.5	mA
Large Signal Voltage Gain	$V_s = \pm 15V$, $V_{OUT} = \pm 10V$ $R_L \geq 2k\Omega$	25			V/mV
Output Voltage Swing	$V_s = \pm 15V$, $R_L = 10k\Omega$	±12	±14		V
	$R_L = 2k\Omega$	±10	±13		V
Input Voltage Range	$V_s = \pm 15V$	±12			V
Common Mode Rejection Ratio	$R_s \leq 10k\Omega$	70	90		dB
Supply Voltage Rejection Ratio	$R_s \leq 10k\Omega$	70	90		dB

LM201 PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Input Offset Voltage	$T_A = 25°C$, $R_s \leq 10k\Omega$		2.0	7.5	mV
Input Offset Current	$T_A = 25°C$		100	500	nA
Input Bias Current	$T_A = 25°C$		0.25	1.5	μA
Input Resistance	$T_A = 25°C$	100	400		kΩ
Supply Current	$T_A = 25°C$, $V_s = \pm 20V$		1.8	3.0	mA
Large Signal Voltage Gain	$T_A = 25°C$, $V_s = \pm 15V$ $V_{OUT} = \pm 10V$, $R_L \geq 2k\Omega$	20	150		V/mV
Input Offset Voltage	$R_s \leq 10k\Omega$			10	mV
Average Temperature Coefficient of Input Offset Voltage	$R_s \leq 50\Omega$		6		μV/°C
	$R_s \leq 10k\Omega$		10		μV/°C
Input Offset Current	$T_A = +70°C$		50	400	nA
	$T_A = 0°C$		150	750	nA
Input Bias Current	$T_A = 0°C$		0.32	2.0	μA
Large Signal Voltage Gain	$V_s = \pm 15V$, $V_{OUT} = \pm 10V$ $R_L \geq 2k\Omega$	15			V/mV
Output Voltage Swing	$V_S = \pm 15V$, $R_L = 10k\Omega$	±12	±14		V
	$R_L = 2k\Omega$	±10	±13		V
Input Voltage Range	$V_s = \pm 15V$	±12			V
Common Mode Rejection Ratio	$R_s \leq 10k\Omega$	65	90		dB
Supply Voltage Rejection Ratio	$R_s \leq 10k\Omega$	70	90		dB

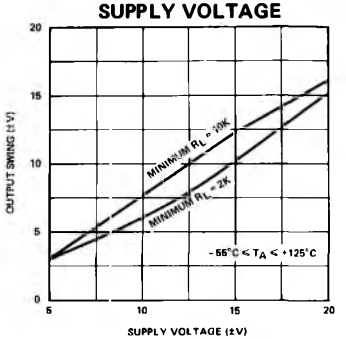
TYPICAL CHARACTERISTIC CURVES

LM101

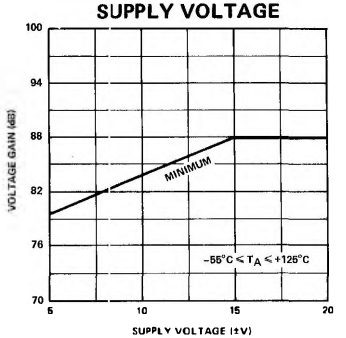
INPUT VOLTAGE RANGE VERSUS SUPPLY VOLTAGE



OUTPUT SWING VERSUS SUPPLY VOLTAGE

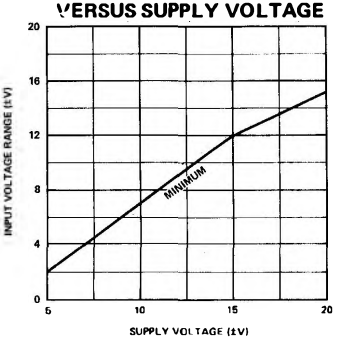


VOLTAGE GAIN VERSUS SUPPLY VOLTAGE

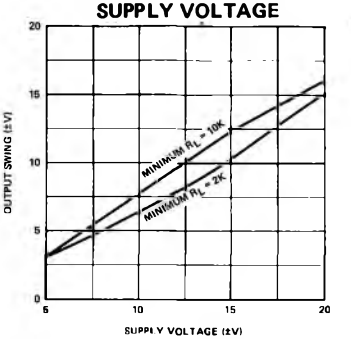


LM201

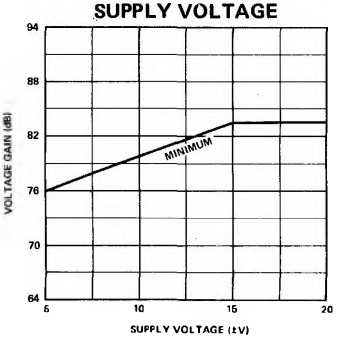
INPUT VOLTAGE RANGE VERSUS SUPPLY VOLTAGE



OUTPUT SWING VERSUS SUPPLY VOLTAGE



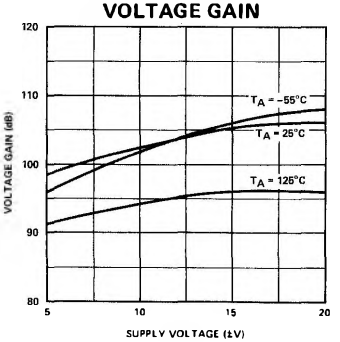
VOLTAGE GAIN VERSUS SUPPLY VOLTAGE



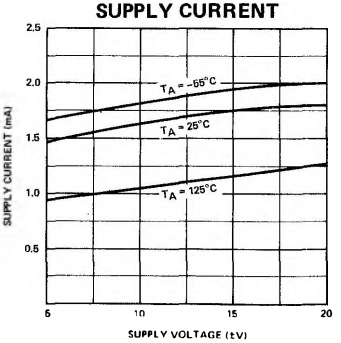
TYPICAL CHARACTERISTIC CURVES (Cont'd.)

LM101

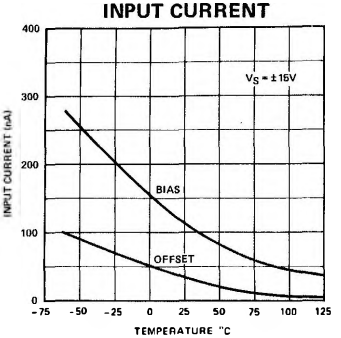
VOLTAGE GAIN



SUPPLY CURRENT

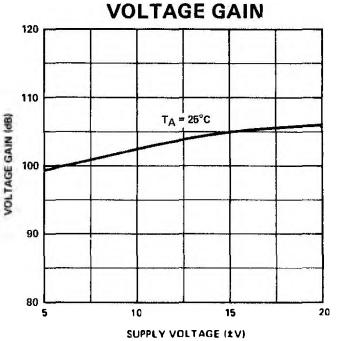


INPUT CURRENT

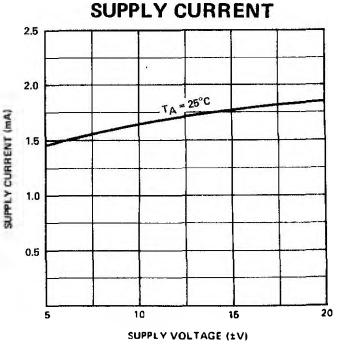


LM201

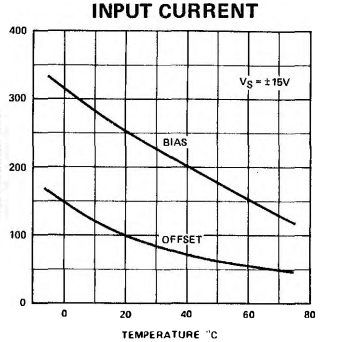
VOLTAGE GAIN



SUPPLY CURRENT



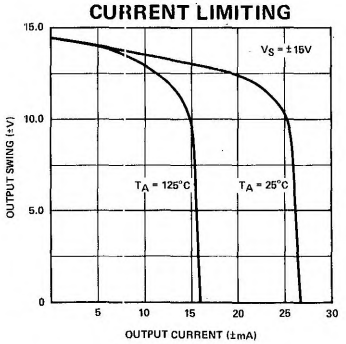
INPUT CURRENT



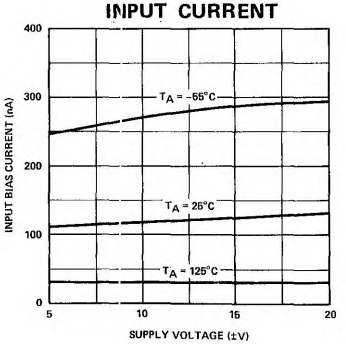
TYPICAL CHARACTERISTIC CURVES (Cont'd.)

LM101

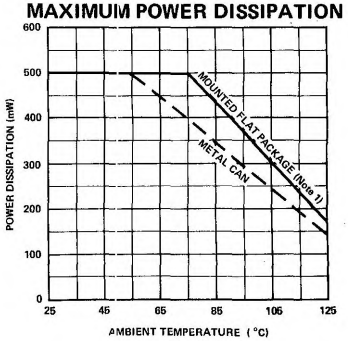
CURRENT LIMITING



INPUT CURRENT

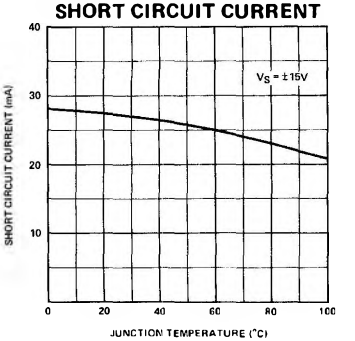


MAXIMUM POWER DISSIPATION

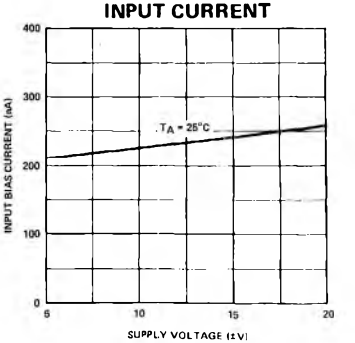


LM201

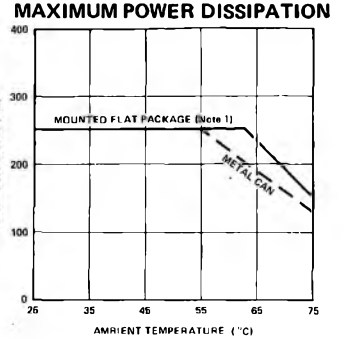
SHORT CIRCUIT CURRENT



INPUT CURRENT

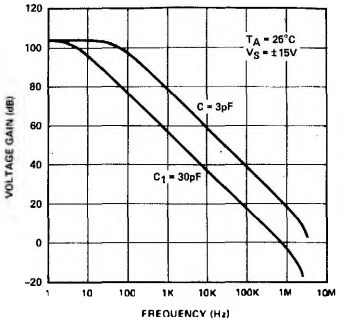


MAXIMUM POWER DISSIPATION

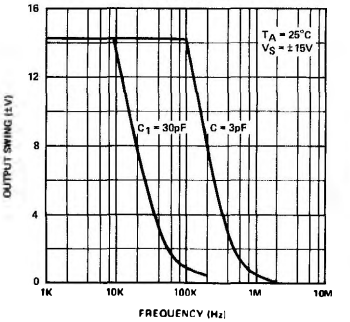


TYPICAL CHARACTERISTIC CURVES (Cont'd.)

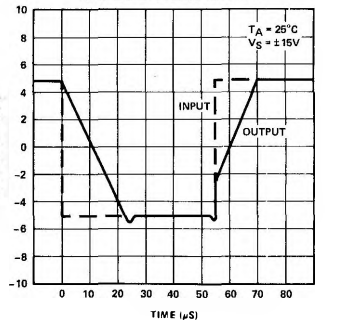
OPEN LOOP FREQUENCY RESPONSE



LARGE SIGNAL FREQUENCY RESPONSE

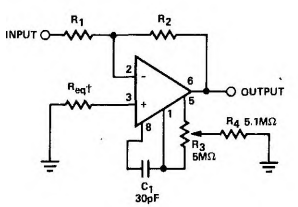


VOLTAGE FOLLOWER PULSE RESPONSE



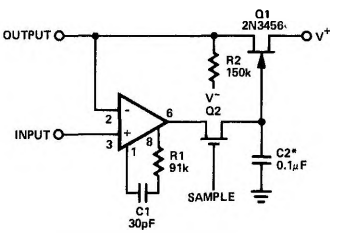
TYPICAL APPLICATIONS (Pin numbers shown refer to T or V package only)

INVERTING AMPLIFIER WITH BALANCING CIRCUIT



†May be zero or equal to parallel combination of R_1 and R_2 for minimum offset.

LOW DRIFT SAMPLE AND HOLD



*POLYCARBONATE DIELECTRIC CAPACITOR