EXTENDED TEMPERATURE RANGE,
-55 °C ÷ +125°C

High performance operational amplifier

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

The L 148 T2 is a high performance monolithic operational amplifier intended for a wide range of analog applications where tailoring of frequency characteristics is desirable. High common mode voltage range and absence of "latch-up" make the L 148 T2 ideal for use as a voltage follower. The high gain and wide range of operating voltages provide superior performance in integrator, summing amplifier and general feedback applications. The L 148 T2 is short-circuit protected and has the same pin configuration as the L 141 operational amplifier. Unity gain frequency compensation is achieved by means of a single 30pF capacitor.

ABSOLUTE MAXIMUM RATINGS

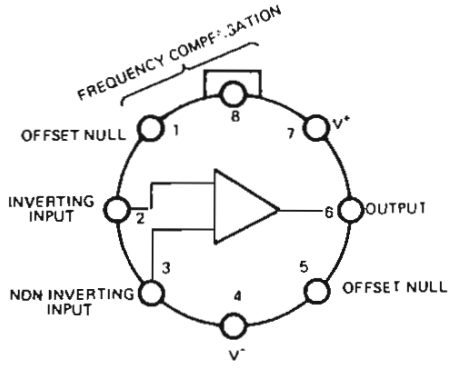
Supply Voltage	± 22 V
Internal Power Dissipation (1)	500 mW
Differential Input Voltage	± 30 V
Input Voltage (2)	± 15 V
Storage Temperature Range	-65°C ÷ 150°C
Operating Temperature Range	-55°C ÷ 125°C
Lead Temperature (Soldering, 60 sec.)	300°C
Output Short-Circuit Duration (3)	Indefinite

Notes on the following page.

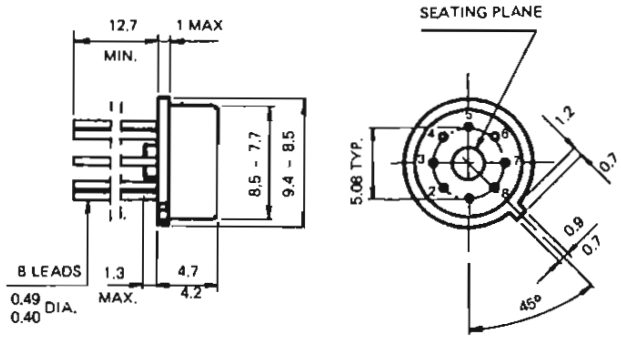
ORDERING NUMBER

L148 T2

CONNECTION DIAGRAM
(Top view)



PHYSICAL DIMENSIONS
in accordance with
JEDEC TO-99 outline



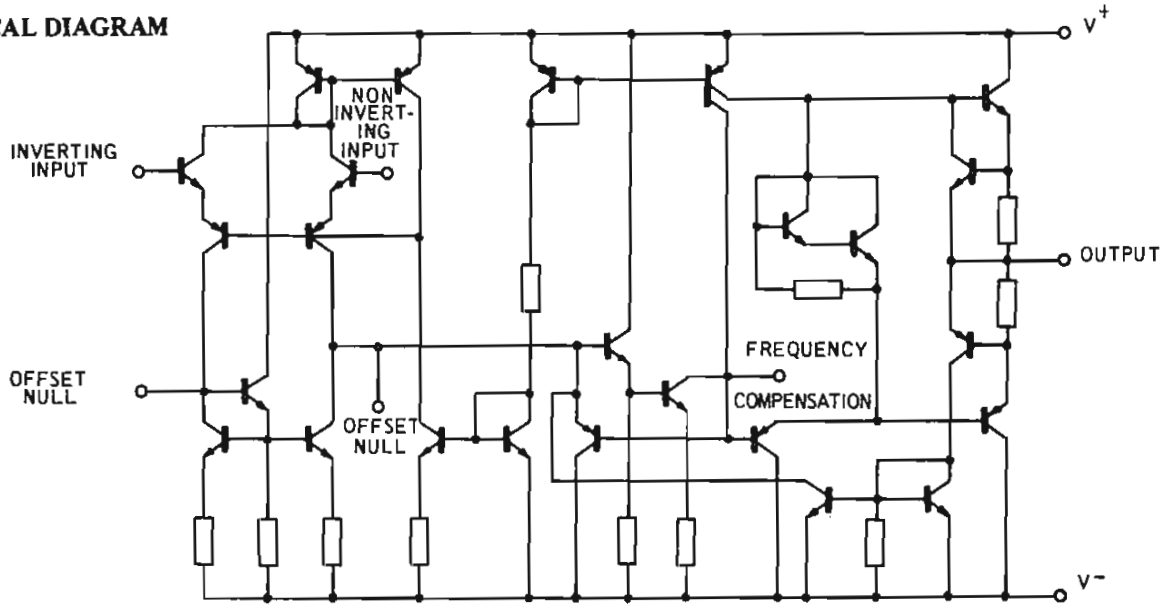
Note : All dimensions in mm.

EXTENDED TEMPERATURE RANGE

ELECTRICAL CHARACTERISTICS ($V_S = \pm 15V$, $T_A = 25°C$ unless otherwise specified)

PARAMETER	CONDITION		Min.	Typ.	Max.	Unit
Input Offset Voltage	$R_S \leq 10\,K\Omega$			1	5	mV
Input Offset Current				20	200	nA
Input Bias Current				80	500	nA
Input Resistance			0.3	2		M Ω
Input Capacitance				1.4		pF
Large-Signal Voltage Gain	$R_L \geq 2K\Omega$	$V_{OUT} = \pm 10V$	50.000	200.000		
Output Resistance				75		Ω
Output Short-Circuit Current				25		mA
Power Consumption				50	85	mW
Transient Response (Unity Gain) :	$V_{in} = 20$ mV	$C_C = 30$ pF				
	$R_L = 2\,K\Omega$	$C_L \leq 100$ pF				
Risetime				0.3		µS
Overshoot				5		%
Slew Rate	$R_L \geq 2\,K\Omega$	$C_C = 30$ pF		0.5		V/µS
The following specification apply for $-55°C \leq T_A \leq +125°C$:						
Input Offset Voltage	$R_S \leq 10\,K\Omega$			1	6	mV
Input Offset Current	$T_A = +125°C$			7	200	nA
	$T_A = -55°C$			85	500	nA
Input Bias Current	$T_A = +125°C$			0.03	0.5	µA
	$T_A = -55°C$			0.3	1.5	µA
Input Voltage Range			± 12	± 13		V
Common Mode Rejection Ratio	$R_S \leq 10\,K\Omega$		70	90		dB
Supply Voltage Rejection Ratio	$R_S \leq 10\,K\Omega$			30	150	µV/V
Large-Signal Voltage Gain	$R_L \geq 2\,K\Omega$	$V_{OUT} = \pm 10V$	25.000			
Output Voltage Swing	$R_L \geq 10K\Omega$		± 12	±14		V
	$R_L \geq 2\,K\Omega$		± 10	± 13		V
Power Consumption	$T_A = +125°C$			45		mW
	$T_A = -55°C$			60		mW

ELECTRICAL DIAGRAM

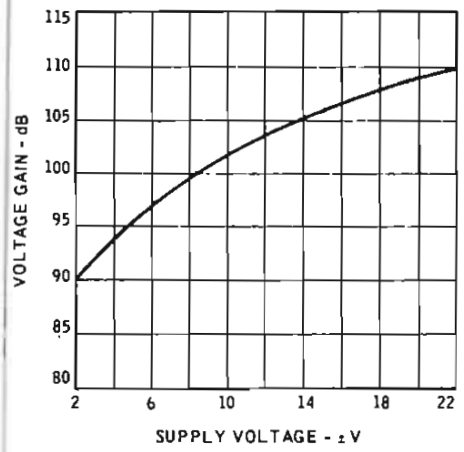


NOTES :

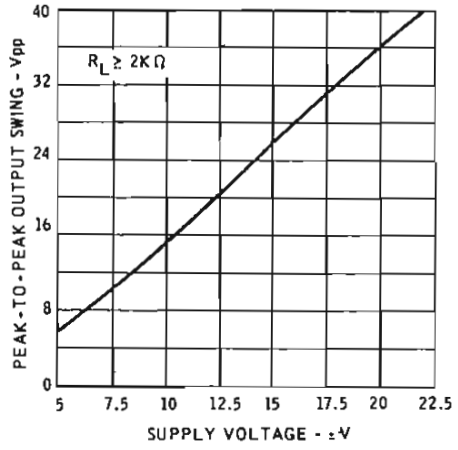
1) Rating applies for case temperatures to 125°C; derate linearly at 10 mW/°C for ambient temperatures above +75°C.
2) For supply voltage less than ± 15V, the absolute maximum input voltage is equal to the supply voltage.
3) Short circuit may be to ground or either supply. Rating applies to +125°C case temperature or +75°C ambient temperature.

TYPICAL ELECTRICAL CHARACTERISTICS (25° C free air temperature unless otherwise noted)

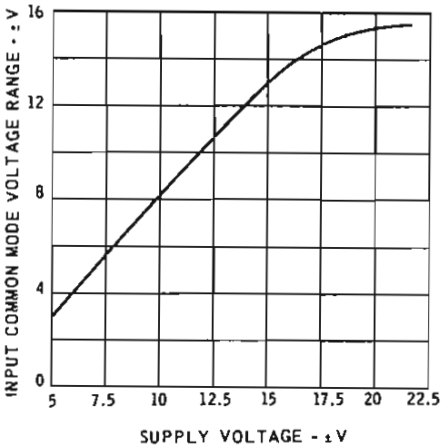
OPEN LOOP VOLTAGE GAIN AS A FUNCTION OF SUPPLY VOLTAGE



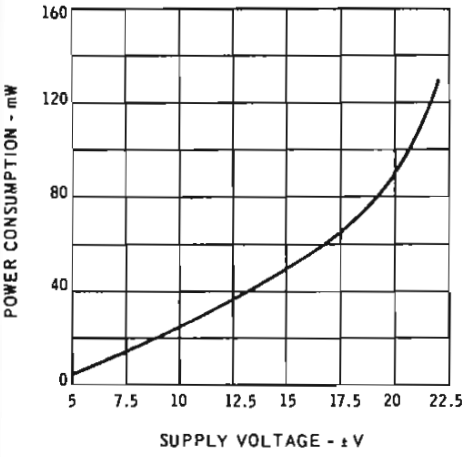
OUTPUT VOLTAGE SWING AS A FUNCTION OF SUPPLY VOLTAGE



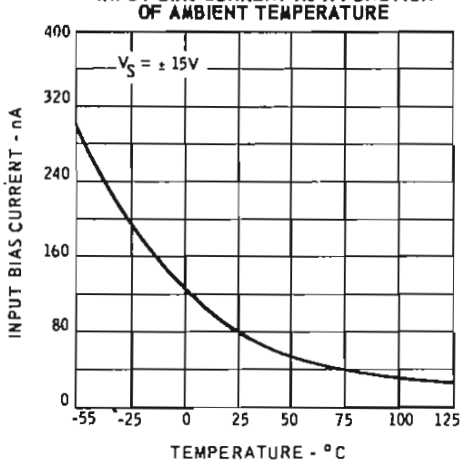
INPUT COMMON MODE VOLTAGE RANGE AS A FUNCTION OF SUPPLY VOLTAGE



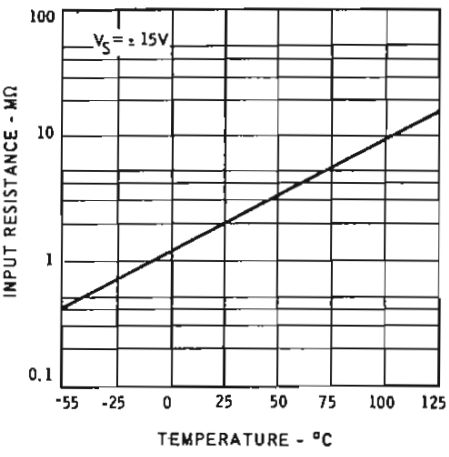
POWER CONSUMPTION AS A FUNCTION OF SUPPLY VOLTAGE



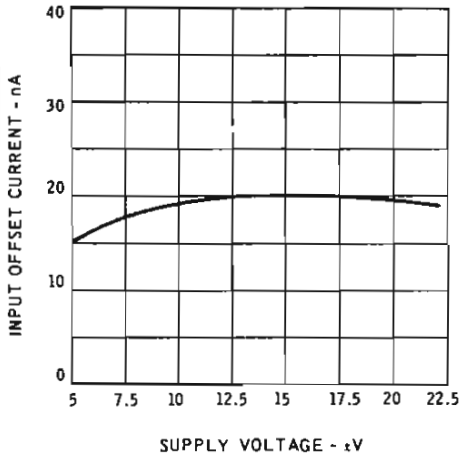
INPUT BIAS CURRENT AS A FUNCTION OF AMBIENT TEMPERATURE



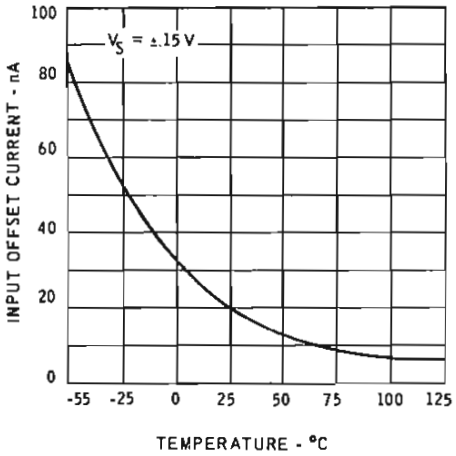
INPUT RESISTANCE AS A FUNCTION OF AMBIENT TEMPERATURE



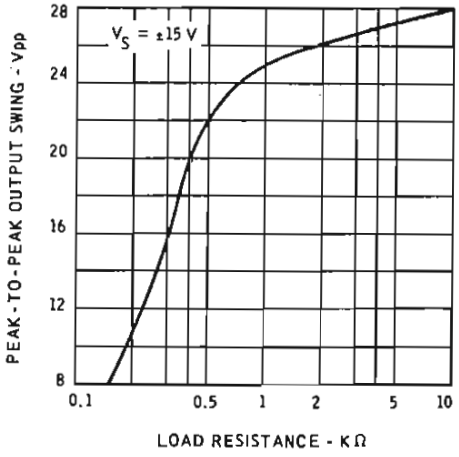
INPUT OFFSET CURRENT AS A FUNCTION OF SUPPLY VOLTAGE



INPUT OFFSET CURRENT AS A FUNCTION OF AMBIENT TEMPERATURE

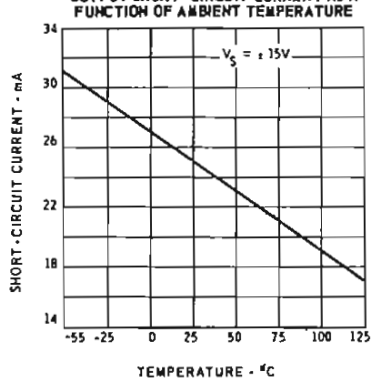


OUTPUT VOLTAGE SWING AS A FUNCTION OF LOAD RESISTANCE

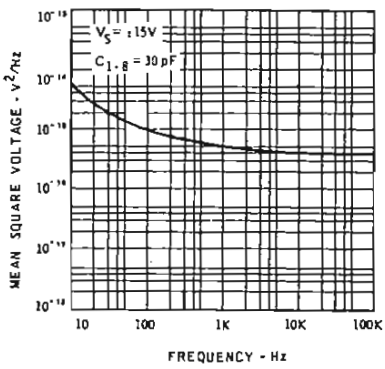


TYPICAL ELECTRICAL CHARACTERISTICS (25° C free air temperature unless otherwise noted)

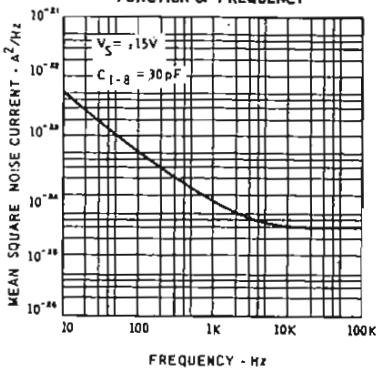
OUTPUT SHORT-CIRCUIT CURRENT AS A FUNCTION OF AMBIENT TEMPERATURE



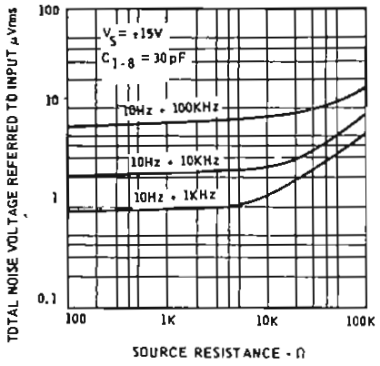
INPUT NOISE VOLTAGE AS A FUNCTION OF FREQUENCY



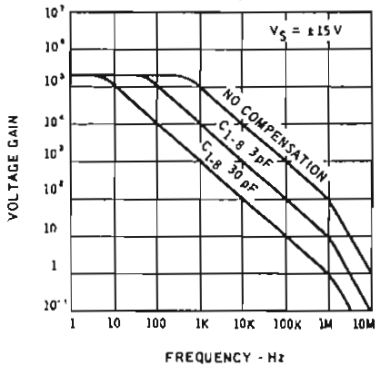
INPUT NOISE CURRENT AS A FUNCTION OF FREQUENCY



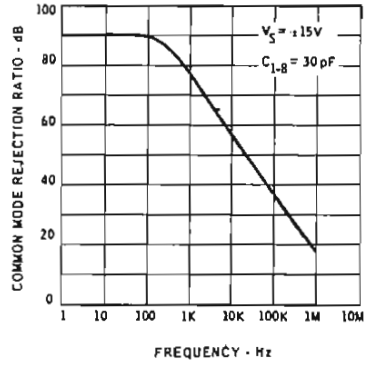
BROADBAND NOISE VOLTAGE AS A FUNCTION OF SOURCE RESISTANCE FOR VARIOUS BANDWIDTH



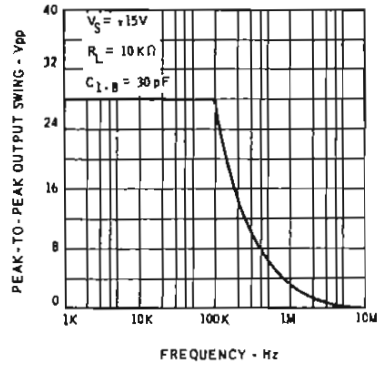
OPEN LOOP VOLTAGE GAIN AS A FUNCTION OF FREQUENCY



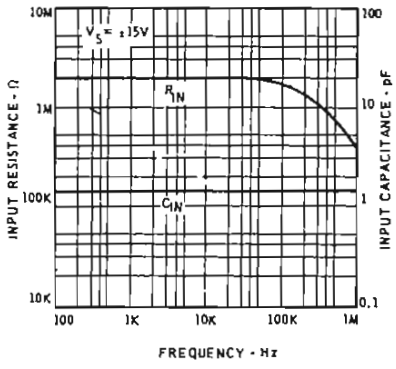
COMMON MODE REJECTION RATIO AS A FUNCTION OF FREQUENCY



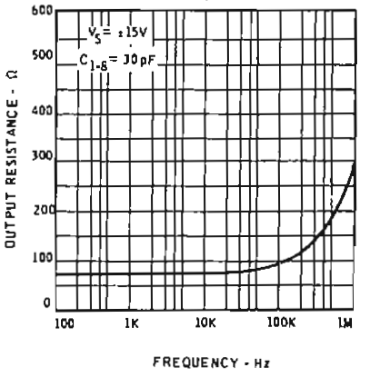
OUTPUT VOLTAGE SWING AS A FUNCTION OF FREQUENCY



INPUT RESISTANCE AND INPUT CAPACITANCE AS A FUNCTION OF FREQUENCY

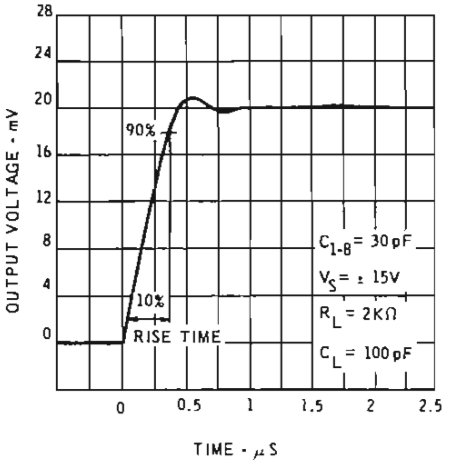


OUTPUT RESISTANCE AS A FUNCTION OF FREQUENCY

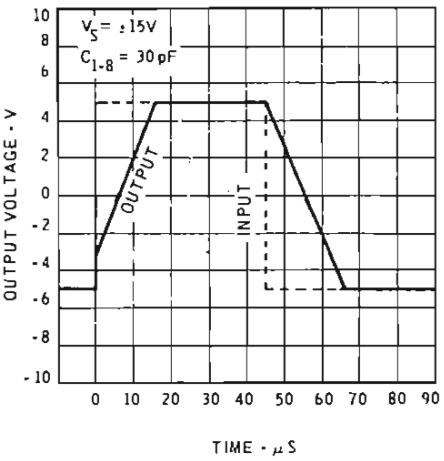


TYPICAL ELECTRICAL CHARACTERISTICS (25° C free air temperature unless otherwise noted)

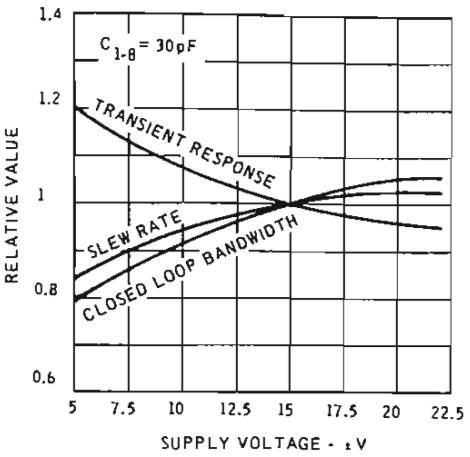
TRANSIENT RESPONSE (UNITY GAIN)



VOLTAGE FOLLOWER
LARGE - SIGNAL PULSE RESPONSE



FREQUENCY CHARACTERISTICS AS A
FUNCTION OF SUPPLY VOLTAGE



FREQUENCY CHARACTERISTICS AS A
FUNCTION OF AMBIENT TEMPERATURE