

NTE888M Integrated Circuit Low Power Programmable Operational Amplifier

Description:

The NTE888M is an operational amplifier in an 8-Lead DIP type package featuring low power consumption and high input impedance. In addition, the quiescent currents within this device may be programmed by the choice of an external resistor value or current source applied to the I_{SET} input. This allows the NTE888M's characteristics to be optimized for input current and power consumption despite wide variations in operating power supply voltages.

Features:

- ±1.2V to ±18V Operation
- Wide Programming Range
- Offset Null Capability
- No Frequency Compensation Required
- Low Input Bias Currents
- Short-Circuit Protection

Maximum Ratings: (T_A = +25°C unless otherwise noted)

Power Supply Voltages, V _{CC} , V _{EE}	±18V
Differential Input Voltage, V _{ID}	±30V
Common-Mode Input Voltage, V _{ICM}	
V _{CC} and V _{EE} < 15V	V _{CC} , V _{EE}
V _{CC} and V _{EE} ≥ 15V	±15V
Offset Null to V _{EE} Voltage, V _{off} - V _{EE}	±0.5V
Programming Current, I _{set}	500µA
Programming Voltage, V _{SET}	
Voltage from I _{SET} terminal to GND	(V _{CC} - 2V) to V _{CC}
Output Short-Circuit Duration (Note 1), t _s	Indefinite
Operating Temperature Range, T _A	0° to +70°C
Storage Temperature Range, T _{stg}	-55° to +125°C
Junction Temperature, T _J	+150°C

Note 1. May be to GND or either Supply Voltage. Rating applies up to a case temperature of +125°C or ambient temperature of +70°C and I_{SET} ≤ 30µA.

Electrical Characteristics: ($V_{CC} = +15V$, $V_{EE} = -15V$, $I_{SET} = 15\mu A$, $T_A = +25^\circ C$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Offset Voltage	V_{IO}	$R_S \leq 10k\Omega$	–	2	6	mV
		$0^\circ \leq T_A \leq +70^\circ C$	–	–	7.5	mV
Offset Voltage Adjustment Range	V_{IOR}		–	18	–	mV
Input Offset Current	I_{IO}		–	2	25	nA
		$T_A = +70^\circ C$	–	–	25	nA
		$T_A = 0^\circ C$	–	–	40	nA
Input Bias Current	I_{IB}		–	15	50	nA
		$T_A = +70^\circ C$	–	–	50	nA
		$T_A = 0^\circ C$	–	–	100	nA
Input Resistance	r_i		–	5	–	M Ω
Input Capacitance	c_i		–	2	–	pF
Input Voltage Range	V_{ID}	$0^\circ \leq T_A \leq +70^\circ C$	± 10	–	–	V
Large Signal Voltage Gain	A_{VOL}	$R_L \geq 5k\Omega$, $V_O = \pm 10V$	50k	400k	–	V/V
		$R_L \geq 75k\Omega$, $V_O = \pm 10V$, $0^\circ \leq T_A \leq +70^\circ C$	50k	–	–	V/V
Output Voltage Swing	V_O	$R_L \geq 5k\Omega$	± 10	± 13	–	V
		$R_L \geq 75k\Omega$, $0^\circ \leq T_A \leq +70^\circ C$	± 10	–	–	V
Output Resistance	r_o		–	1	–	k Ω
Output Short-Circuit Current	I_{os}		–	12	–	mA
Common-Mode Rejection Ratio	CMRR	$R_L \leq 10k\Omega$, $0^\circ \leq T_A \leq +70^\circ C$	70	90	–	dB
Supply Voltage Rejection Ratio	PSRR	$R_L \leq 10k\Omega$, $0^\circ \leq T_A \leq +70^\circ C$	–	25	200	$\mu V/V$
Supply Current	I_{CC} , I_{EE}		–	160	190	μA
		$0^\circ \leq T_A \leq +70^\circ C$	–	–	200	μA
Power Dissipation	P_D		–	–	5.7	mW
		$0^\circ \leq T_A \leq +70^\circ C$	–	–	6.0	mW
Transient Response (Unity Gain) Rise Time	t_{TLH}	$V_{in} = 20mV$, $R_L \geq 5k\Omega$, $C_L = 100pF$	–	0.35	–	μs
Overshoot			OS	–	10	–
Slew Rate	S_R	$R_L \geq 5k\Omega$	–	0.8	–	V/ μs

Pin Connection Diagram

