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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 $|V_{EE}| \geq 15V$ . . . . . ±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 $I_{SET} \leq 30µA$.

Electrical Characteristics: (V_{CC} = +15V, V_{EE} = –15V, I_{SET} = 15µA, T_A = +25°C unless other–wise specified)

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

Pin Connection Diagram