ELECTRONICS, INC.
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NTE903
Integrated Circuit
Operational Amplifier

Description:

The NTE903 is an operational amplifier in a 12–Lead TO5 type metal can having all the desirable features and chatacteristics of its prototypes plus a lower noise figure and improved characteristics for offset voltage, offset current, bias current, and impedance.

Typical Applications:

- Narrow–Band and Band–Pass Amplifier
- Operational Functions
- Feedback Amplifier
- DC and Video Amplifier
- Multivibrator
- Oscillator
- Comparator
- Servo Driver
- Scaling Adder
- Balanced Modulator–Driver

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

Maximum Signal Voltage . . . . . –8V to +1V
Maximum Device Dissipation 600mW
Operating Temperature Range, T_{opr} . . . . . –55° to +125°C
Storage Temperature Range, T_{stg} . . . . . –65° to +200°C
Lead Temperature (During Soldering, 1/16” from case, 10sec max.), T_L . . . . . +265°C

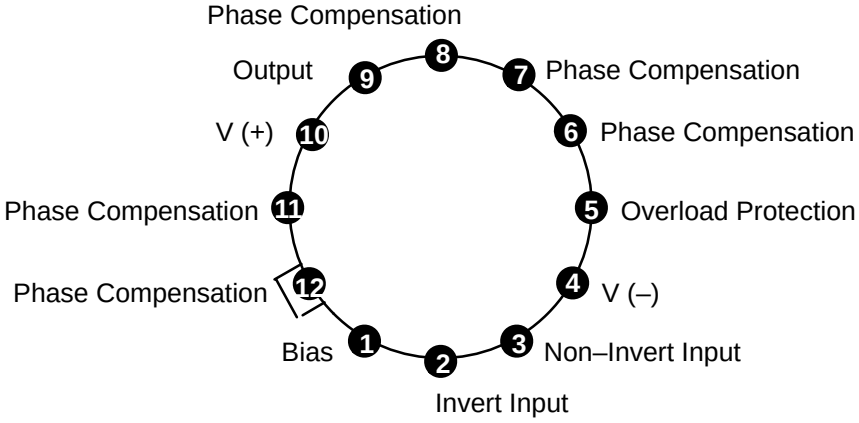
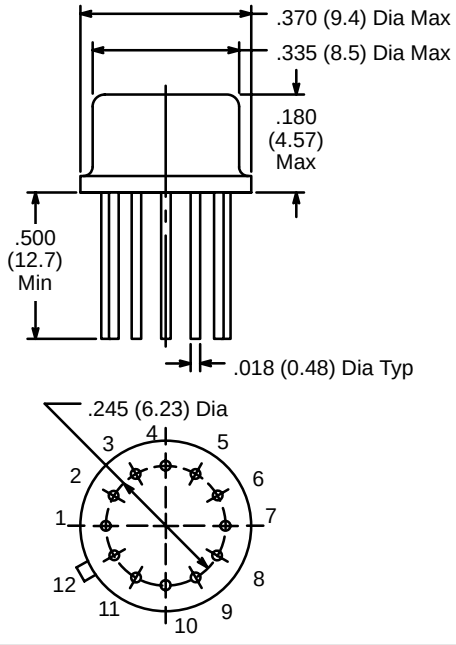
Electrical Characteristics: (T_A = +25°C, V_{CC} = ±12V, Note 1 unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Input Offset Voltage	V_{IO}		–	1	2	mV
Input Offset Current	I_{IO}		–	0.5	1.6	µA
Input Bias Current	I_{IB}		–	4.7	6.0	µA
Input Offset Voltage Sensitivity, Positive			–	0.096	0.5	mV/V
Input Offset Voltage Sensitivity, Negative			–	0.156	0.5	mV/V
Device Dissipation	P_D		–	175	–	mW
		Pin8 shorted to Pin12	–	500	–	mW

Note 1. Pin5 not connected unless otherwise specified

Electrical Characteristics: (T_A = +25°C, V_{CC} = ±12V, Note 1 unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Dynamic Characteristics (All tests at f = 1kHz except BW_{OL})						
Open–Loop Differential Voltage Gain	A_{OL}		66	70	–	dB
Open–Loop Bandwidth	BW_{OL}	–3dB Point	200	320	–	kHz
Slew Rate	SR	R_S = 1kΩ	–	7	–	V/μs
Common–Mode Rejection Ratio	CMRR		80	103	–	dB
Maximum Output–Voltage Swing	V_O(P–P)		12	14	–	$V_{P–P}$
Input Impedance	Z_{IN}		7.5	10	–	kΩ
Output Impedance	Z_{OUT}		–	85	–	Ω
Common–Mode Input–Voltage Range	V_{ICR}		+0.65 to –8			V
Noise Figure	NF	V_{CC} = ±3V, R_S = 1kΩ	–	6.3	9.0	dB
		V_{CC} = ±6V, R_S = 1kΩ	–	8.3	12	dB
		V_{CC} = ±9V, R_S = 1kΩ	–	10	14	dB
		V_{CC} = ±12V, R_S = 1kΩ	–	11	16	dB

Note 1. Pin5 not connected unless otherwise specified

Pin Connection Diagram
(Top View)