

# NE544 Servo Amplifier

## Product Specification

### DESCRIPTION

The NE544 is a servo amplifier and pulse-width demodulator with internal motor drive transistors. It is designed for remote control applications in digital proportional systems but can be used in many other closed-loop position control applications. It incorporates a linear one-shot for improved positional accuracy and outputs for external PNP motor drive transistors.

### FEATURES

- 500mA load current capability
- Bidirectional bridge output with single power supply
- Low standby power drain
- Adjustable deadband and trigger thresholds
- High linearity, 0.5% maximum error
- Output drive for external PNP transistors (optional)
- Wide supply voltage range

### APPLICATIONS

- Miniature position servo
- Robotics
- Control devices
- Remote positioning

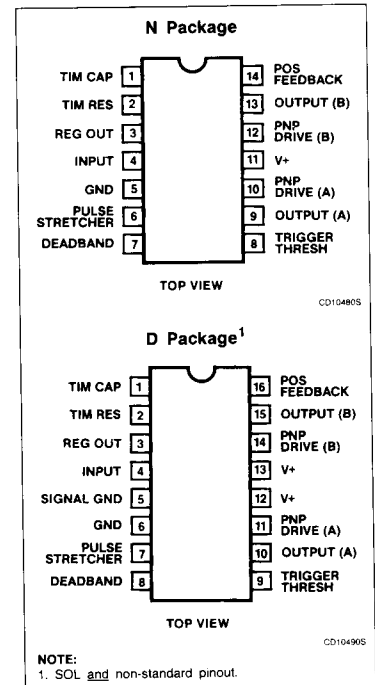
### ORDERING INFORMATION

| DESCRIPTION                | TEMPERATURE RANGE | ORDER CODE |
|----------------------------|-------------------|------------|
| 14-Pin Plastic DIP         | 0 to +70°C        | NE544N     |
| 16-Pin Plastic SOL Package | 0 to +70°C        | NE544D     |

### ABSOLUTE MAXIMUM RATINGS $T_A = 25^\circ\text{C}$ unless otherwise specified.

| SYMBOL    | PARAMETER                                | RATING      | UNIT |
|-----------|--|-------------|------|
| V+        | Supply voltage                           | 6.0         | V    |
| $I_O$     | Output current<br>D package<br>N package | 400<br>500  | mA   |
| $T_A$     | Operating temperature                    | 0 to +70    | °C   |
| $T_{STG}$ | Storage temperature                      | -65 to +150 | °C   |

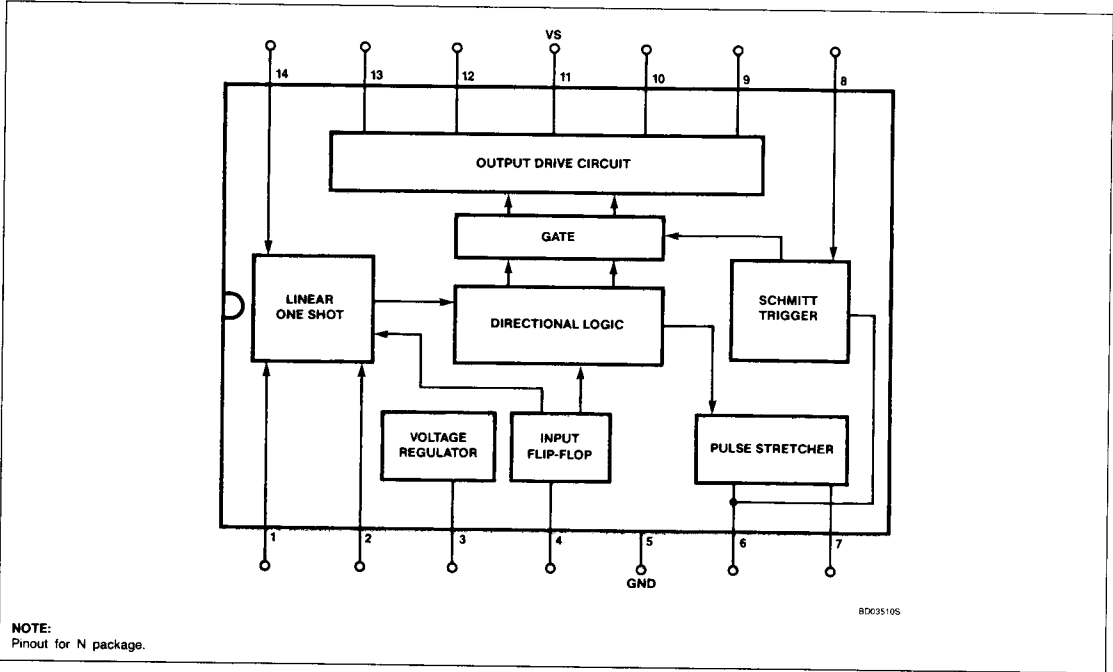
### PIN CONFIGURATIONS



Servo Amplifier

NE544

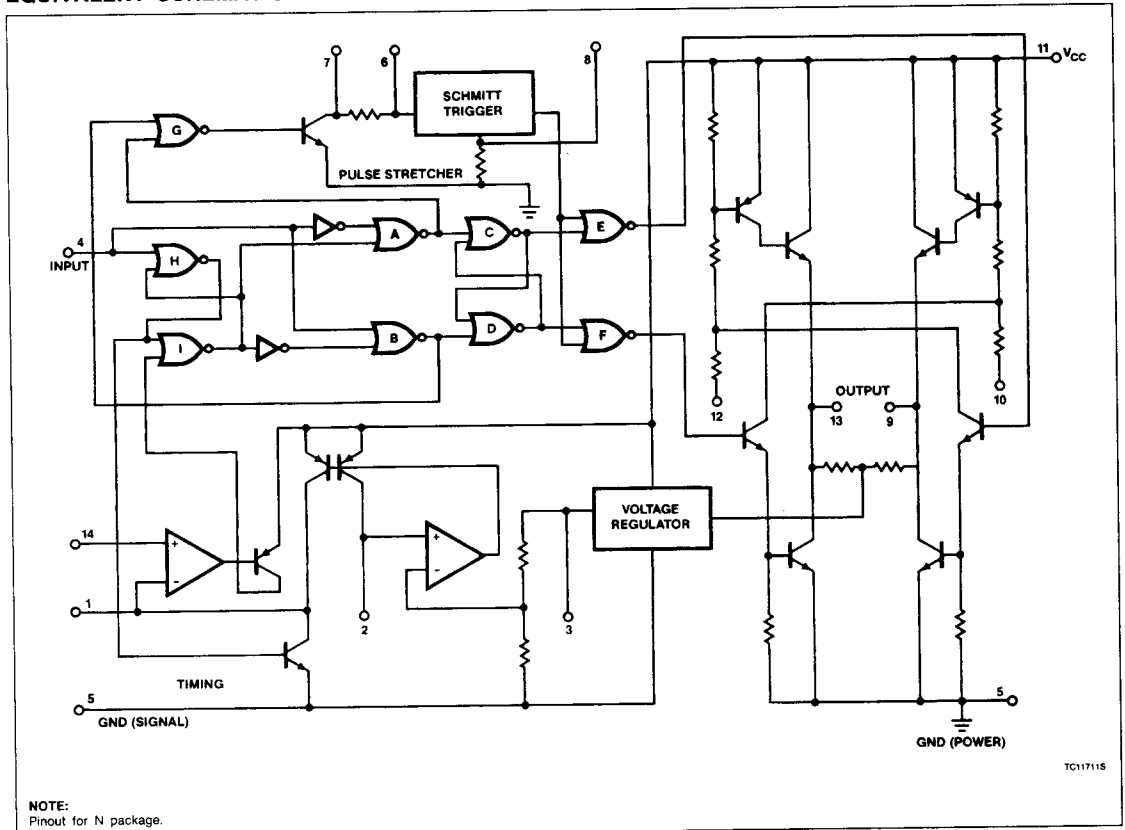
BLOCK DIAGRAM



# Servo Amplifier

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## EQUIVALENT SCHEMATIC



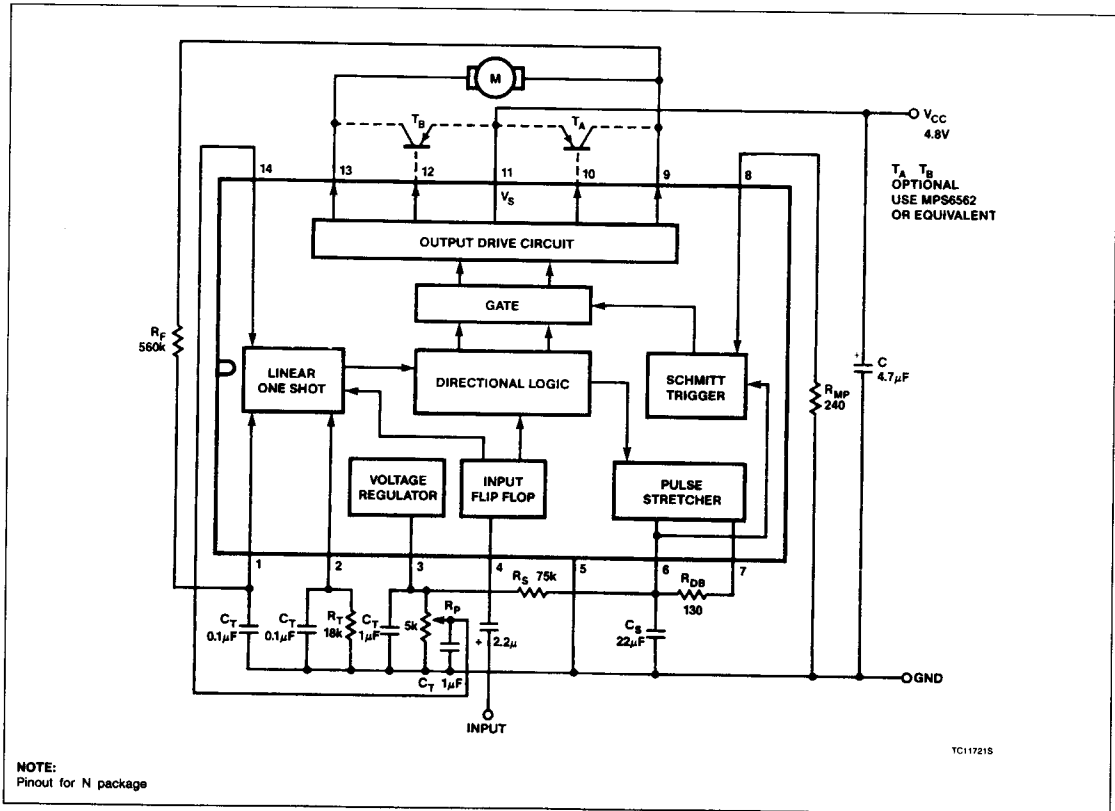
# Servo Amplifier

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## DC ELECTRICAL CHARACTERISTICS $T_A = 25^\circ\text{C}$ , $V_S = 4.8\text{V}$ unless otherwise specified.

| SYMBOL               | PARAMETER  | TEST CONDITIONS  | LIMITS |                 |     | UNIT   |
|----------------------|--|--|--------|-----------------|-----|--|
|                      |  |  | MIN    | TYP             | MAX |  |
| $V_{CC}$             | Supply voltage   | Quiescent  | 3.2    | 4.8             | 6   | V  |
| $I_{CC}$             | Supply current, Pin 11   |  | 4.2    | 5.5             | 10  | mA   |
| $V_{TH}$             | Input threshold, Pin 4<br>On<br>Off  |  |        | 1.5<br>1.4      |     | V  |
| $Z_{IN}$             | Input resistance, Pin 4  |  |        | 18              |     | $k\Omega$                                    |
| $V_{OL}$<br>$V_{OH}$ | Output voltage<br>Low<br>High  | Pin 9 or 13. $I_L = 400\text{mA}$                        |        | 0.3<br>3.9      |     | V  |
| $V_{REG}$            | Regulated voltage, Pin 3   |  | 2.1    | 2.5             | 2.9 | V  |
| $\Delta V_{REG}$     | Regulation, Pin 3<br>Minimum deadband, Pin 7<br>One-shot temperature coefficient | $3.9\text{V} \leq V_{CC} \leq 6\text{V}$<br>$R_{DB} = 0$ |        | 10<br>1<br>0.01 |     | mV/V<br>$\mu\text{s}$<br>$\%/^\circ\text{C}$ |
|                      | Standby output voltage<br>PNP drive current                                      | Pins 9 and 13<br>Pins 10 and 12                          |        | 2.5<br>20       |     | V<br>mA                                      |

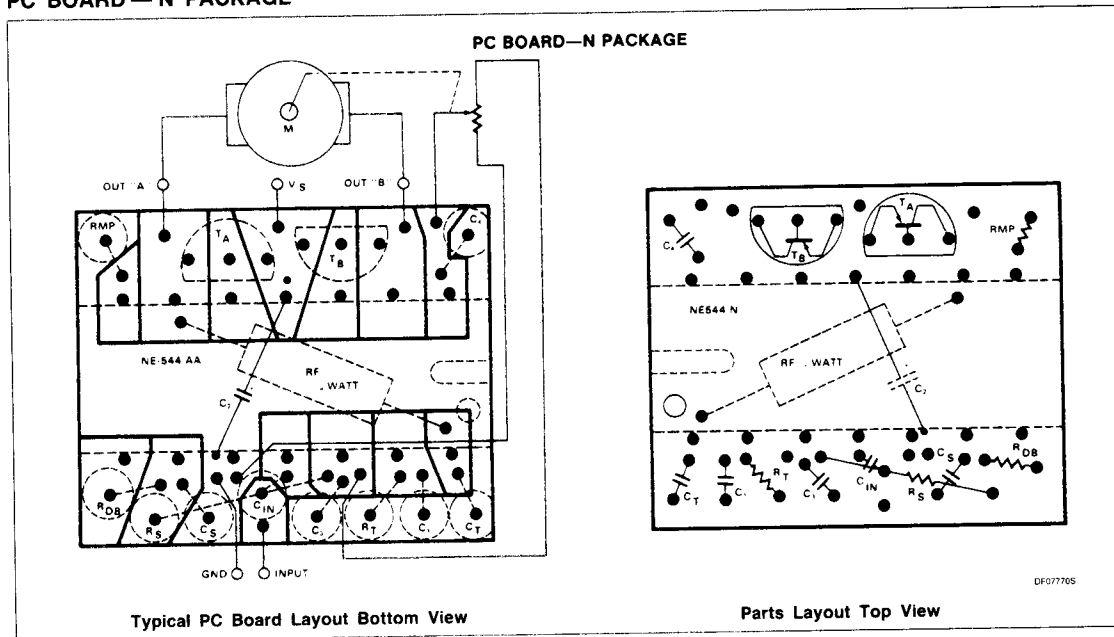
## TYPICAL CONNECTION OF NE544N FOR LINEAR ONE-SHOT TIMING



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## NE544

### PC BOARD — N PACKAGE

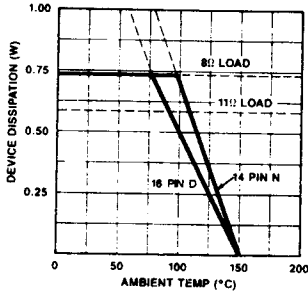


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## NE544

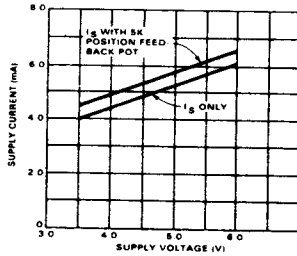
### TYPICAL PERFORMANCE CHARACTERISTICS

**Maximum Dissipation vs Ambient Temperature**



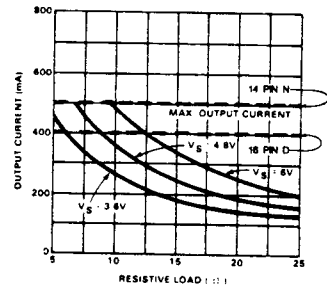
OP194615

**Supply Current vs Supply Voltage**



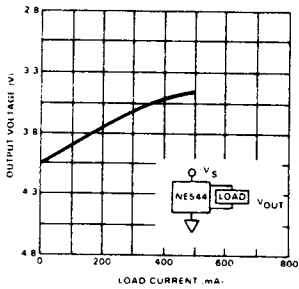
OP194605

**Output Current vs Load Resistance**



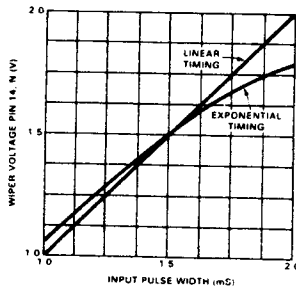
OP196015

**Output Voltage vs Load Current**



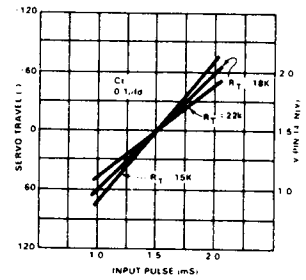
OP195105

**Input Pulse Width vs Feedback Pot Output**



OP196205

**Input Pulse vs Servo Travel**



OP196305