

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

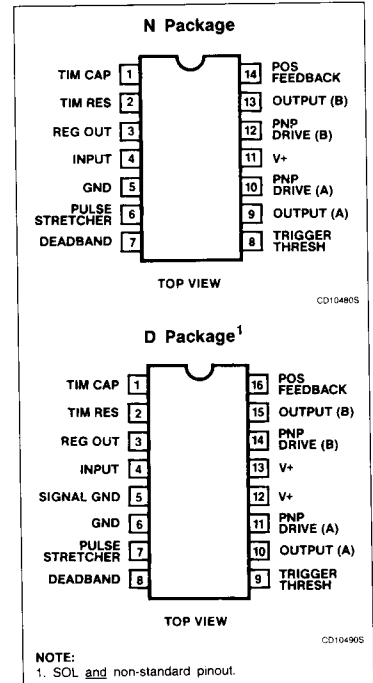
ORDERING INFORMATION

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 D package N package	400 500	mA
T_A	Operating temperature	0 to +70	°C
T_{STG}	Storage temperature	-65 to +150	°C

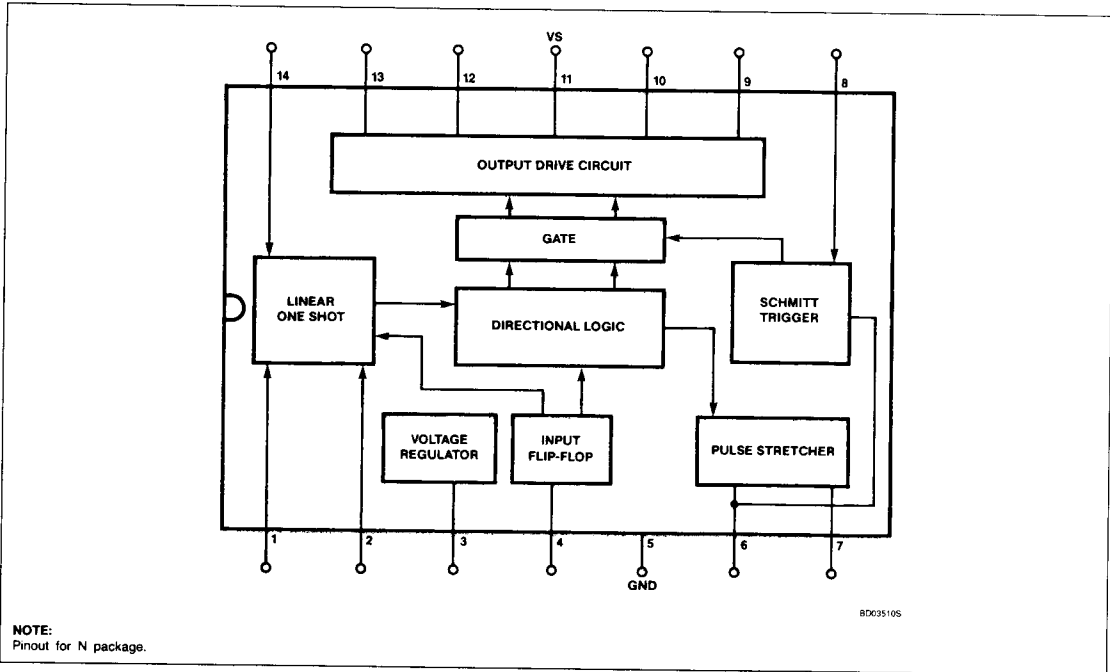
PIN CONFIGURATIONS



Servo Amplifier

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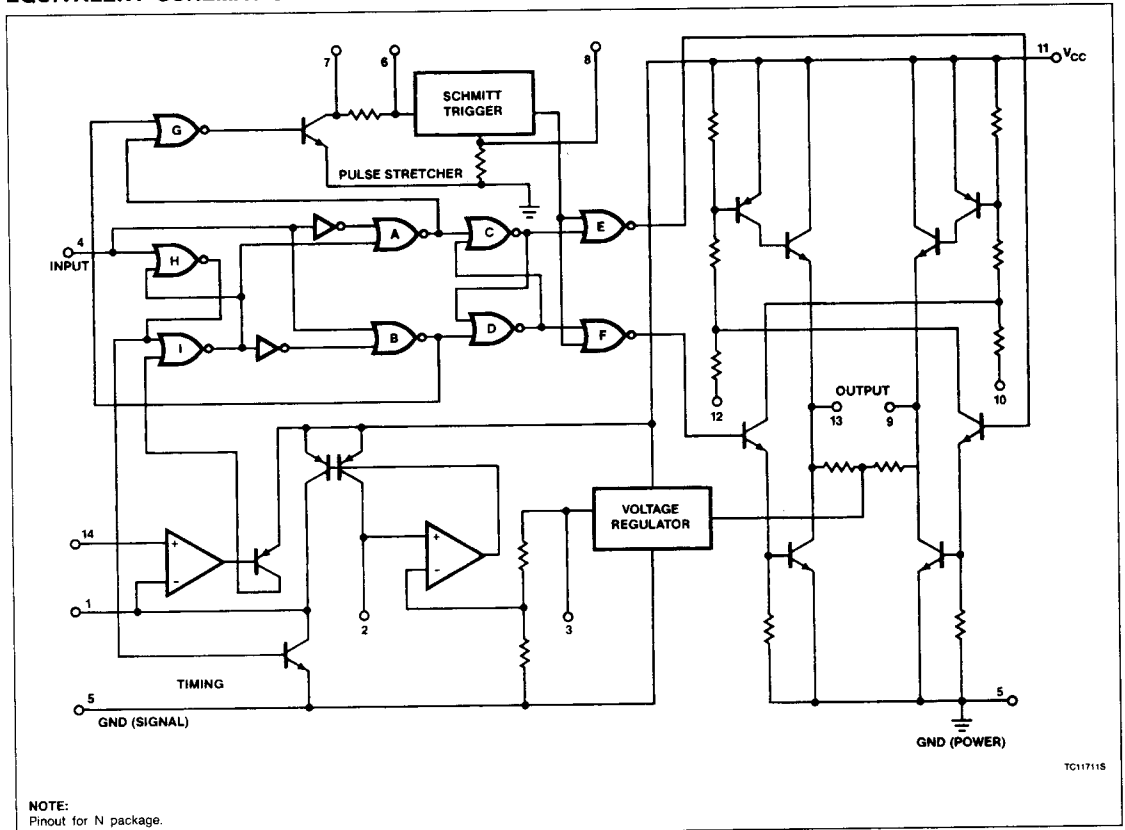
BLOCK DIAGRAM



Servo Amplifier

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EQUIVALENT SCHEMATIC



TC117115

NOTE:
Pinout for N package.

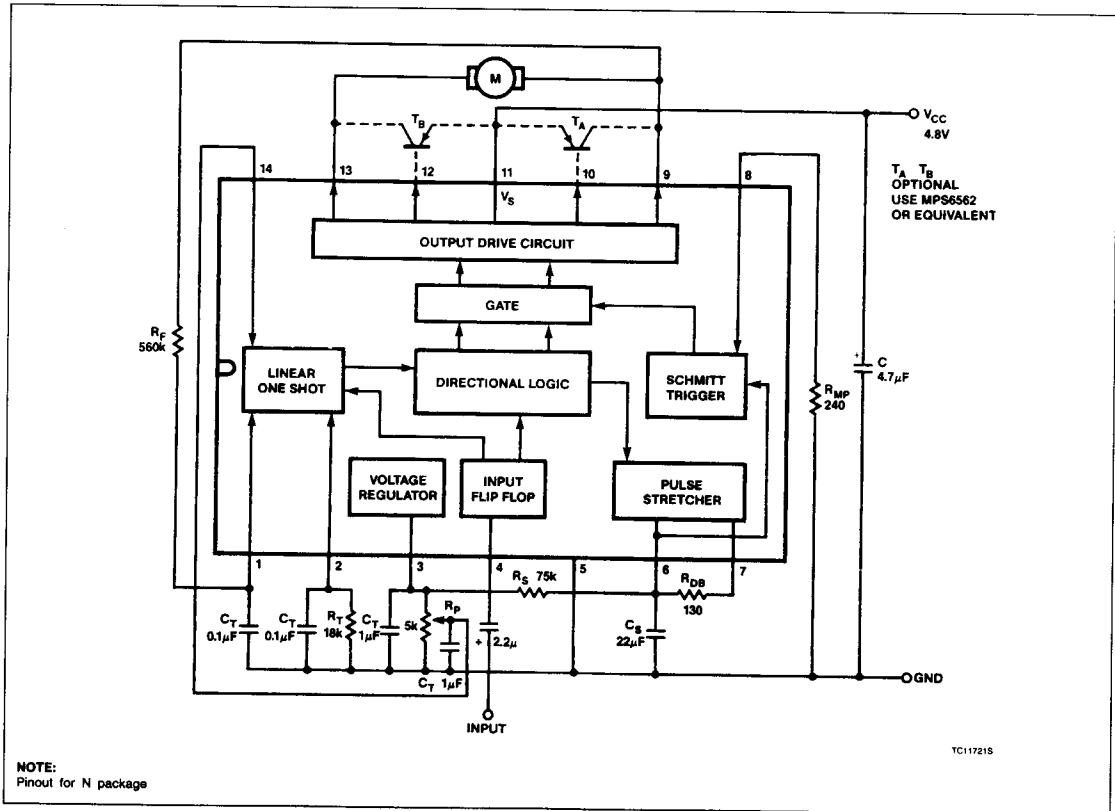
Servo Amplifier

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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 On Off			1.5 1.4		V
Z_{IN}	Input resistance, Pin 4			18		$k\Omega$
V_{OL} V_{OH}	Output voltage Low High	Pin 9 or 13. $I_L = 400\text{mA}$		0.3 3.9		V
V_{REG}	Regulated voltage, Pin 3		2.1	2.5	2.9	V
ΔV_{REG}	Regulation, Pin 3 Minimum deadband, Pin 7 One-shot temperature coefficient	$3.9\text{V} \leq V_{CC} \leq 6\text{V}$ $R_{DB} = 0$		10 1 0.01		mV/V μs $\%/^\circ\text{C}$
	Standby output voltage PNP drive current	Pins 9 and 13 Pins 10 and 12		2.5 20		V mA

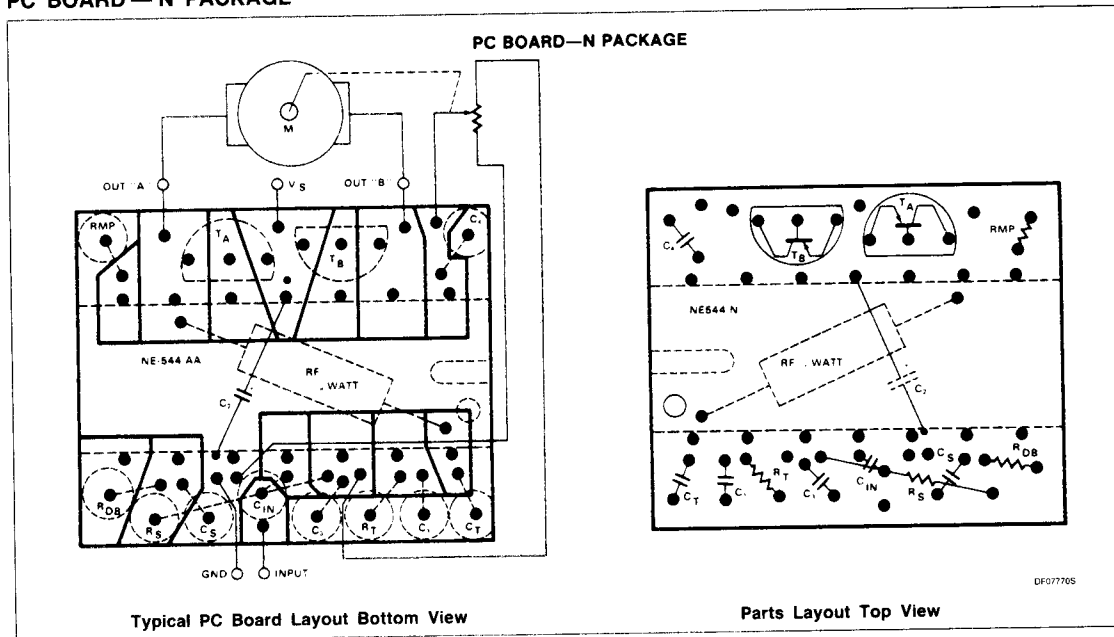
TYPICAL CONNECTION OF NE544N FOR LINEAR ONE-SHOT TIMING



Servo Amplifier

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PC BOARD — N PACKAGE

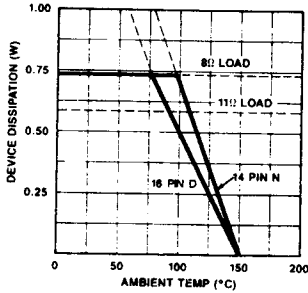


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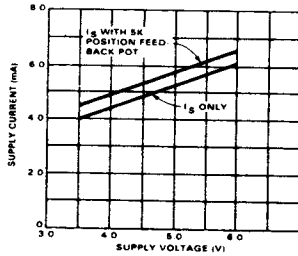
TYPICAL PERFORMANCE CHARACTERISTICS

Maximum Dissipation vs Ambient Temperature



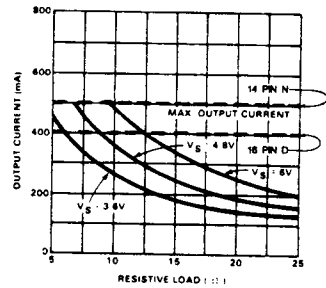
OP194615

Supply Current vs Supply Voltage



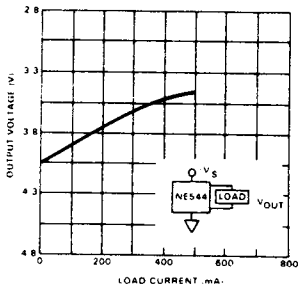
OP194605

Output Current vs Load Resistance



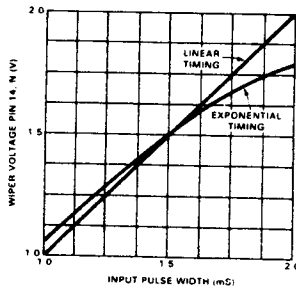
OP196015

Output Voltage vs Load Current



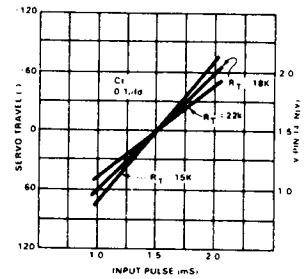
OP195105

Input Pulse Width vs Feedback Pot Output



OP196205

Input Pulse vs Servo Travel



OP196305

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.

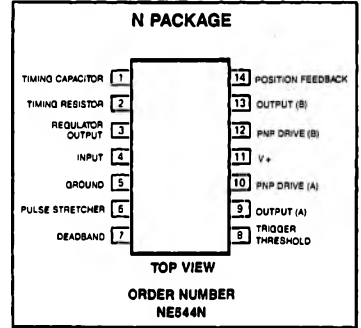
FEATURES

- 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

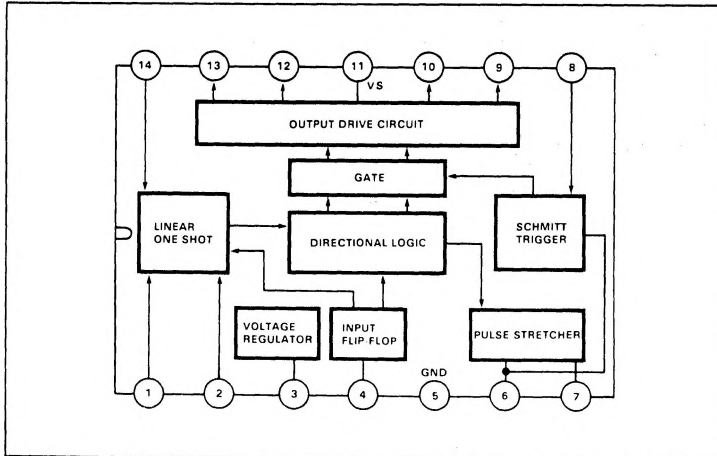
PIN CONFIGURATIONS



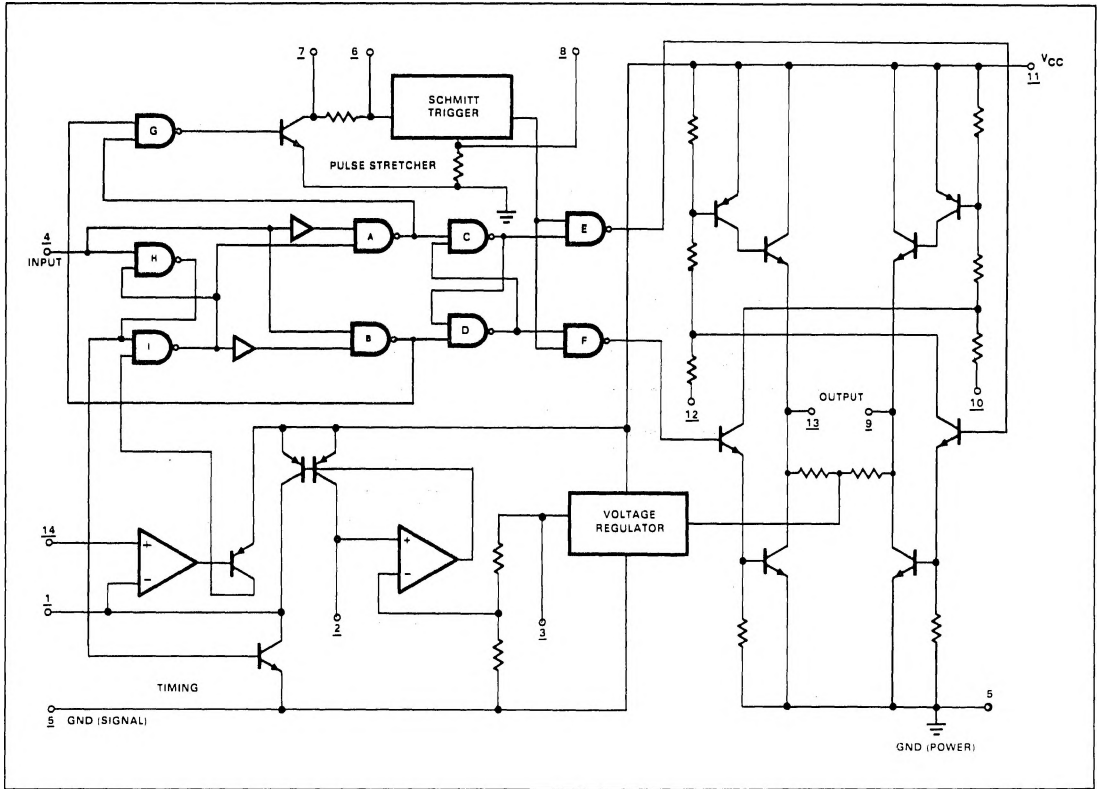
ABSOLUTE MAXIMUM RATINGS $T_A = 25^\circ\text{C}$ unless otherwise specified.

PARAMETER	RATING	UNIT	
V+	Supply voltage	6.0	V
I _O	Output current	500	mA
T _A	Operating temperature	-20 to +75	°C
T _{stg}	Storage temperature	-65 to +150	°C

BLOCK DIAGRAM



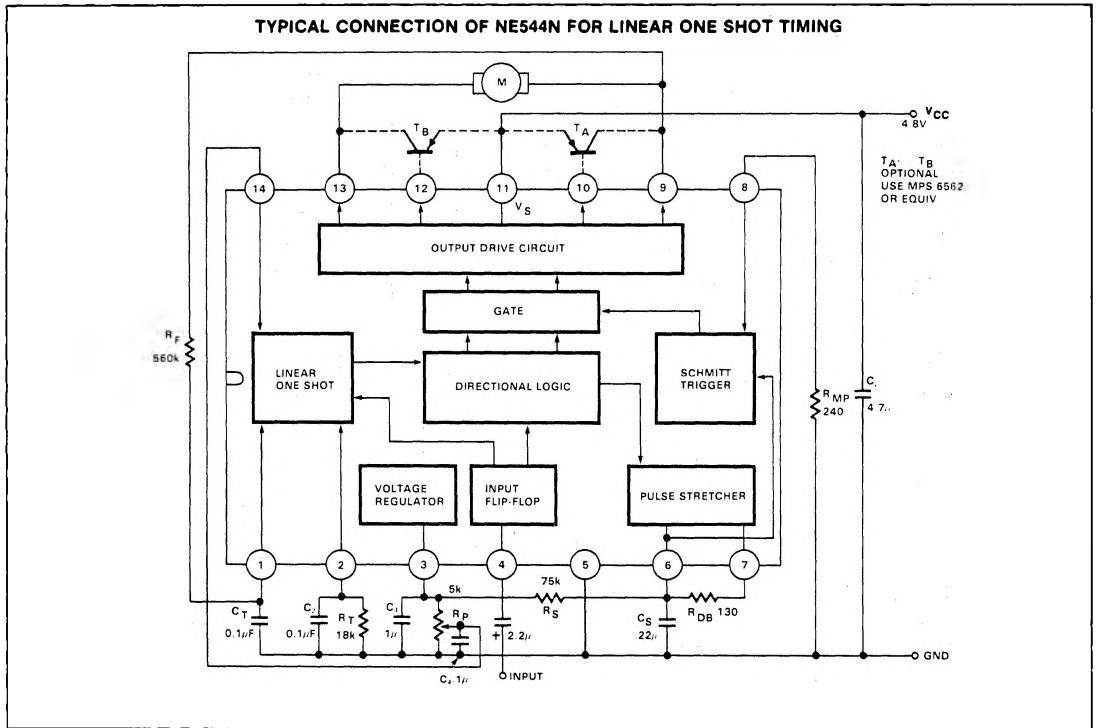
EQUIVALENT CIRCUIT SCHEMATIC

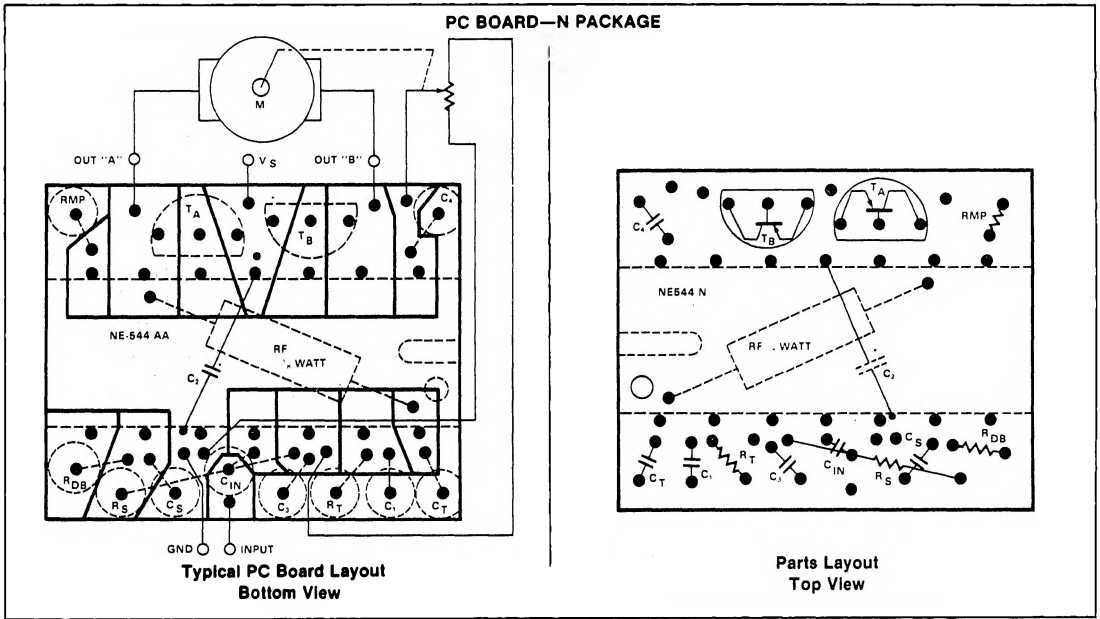


DC ELECTRICAL CHARACTERISTICS $T_A = 25^\circ\text{C}$, $V_S = 4.8\text{V}$ unless otherwise specified.

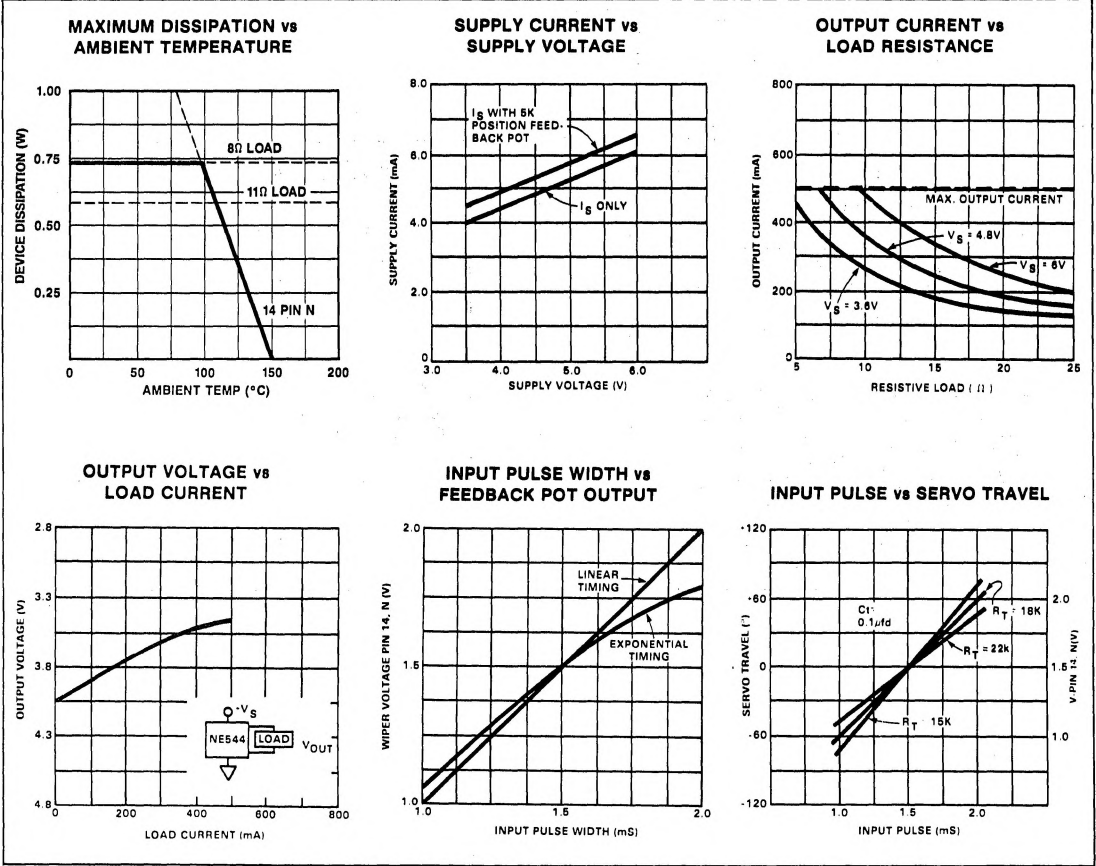
PARAMETER	TEST CONDITIONS	LIMITS			UNIT
		Min	Typ	Max	
V_{CC} Supply voltage		3.2	4.8	6	V
I_{CC} Supply current	Pin 11 Quiescent	4.2	5.5	10	mA
V_{TH} Input threshold	Pin 4		1.5		V
			1.4		
Z_{IN} Input resistance	Pin 4		18		k Ω
V_{OL} Output voltage			0.3		V
V_{OH} Output voltage	Pin 9 or 13, $I_L = 400\text{mA}$		3.9		V
V_{REG} Regulated voltage	Pin 3	2.1	2.5	2.9	V
ΔV_{REG} Regulation	Pin 3 $3.9\text{V} \leq V_{CC} \leq 6\text{V}$ $R_{DB} = 0$		10		mV/V
	Pin 7		1		μs
	One shot temperature coefficient		01		$\% / ^\circ\text{C}$
Standby output voltage	Pin 9 and 13		2.5		V
PNP drive current	Pin 10 and 12		20		mA

TYPICAL CONNECTION OF NE544N FOR LINEAR ONE SHOT TIMING





TYPICAL PERFORMANCE CHARACTERISTICS



*For additional information, consult the Applications Section.