

SERVO AMPLIFIER

NE544/644

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.

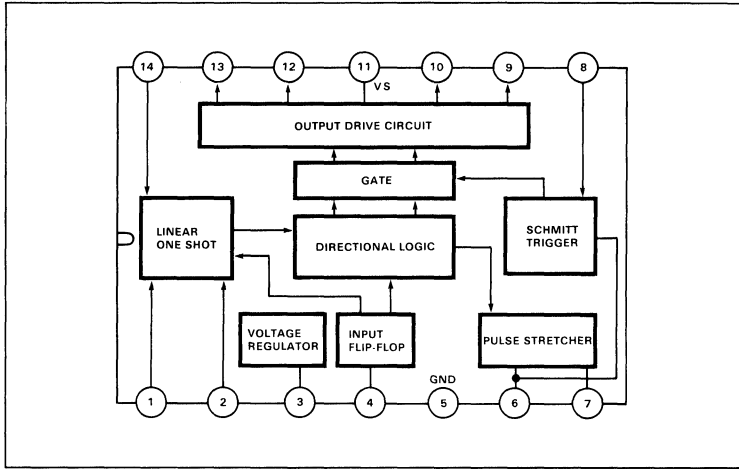
FEATURES

- 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

ABSOLUTE MAXIMUM RATINGS T_A = 25°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



PIN CONFIGURATIONS

N PACKAGE

Timing Resistor	1	16	Timing Capacitor
Regulator Output	2	15	Position Feedback
Input	3	14	Output (B)
Ground (Signal)	4	13	PNP Drive (B)
Ground (Power)	5	12	V-
Pulse Stretcher	6	11	V-
Deadband	7	10	PNP Drive (A)
Trigger Threshold	8	9	Output (A)

TOP VIEW
ORDER NUMBER
NE644N

N PACKAGE

Timing Capacitor	1	14	Position Feedback
Timing Resistor	2	13	Output (B)
Regulator Output	3	12	PNP Drive (B)
Input	4	11	V-
Ground	5	10	PNP Drive (A)
Pulse Stretcher	6	9	Output (A)
Deadband	7	8	Trigger Threshold

TOP VIEW
ORDER NUMBER
NE544N

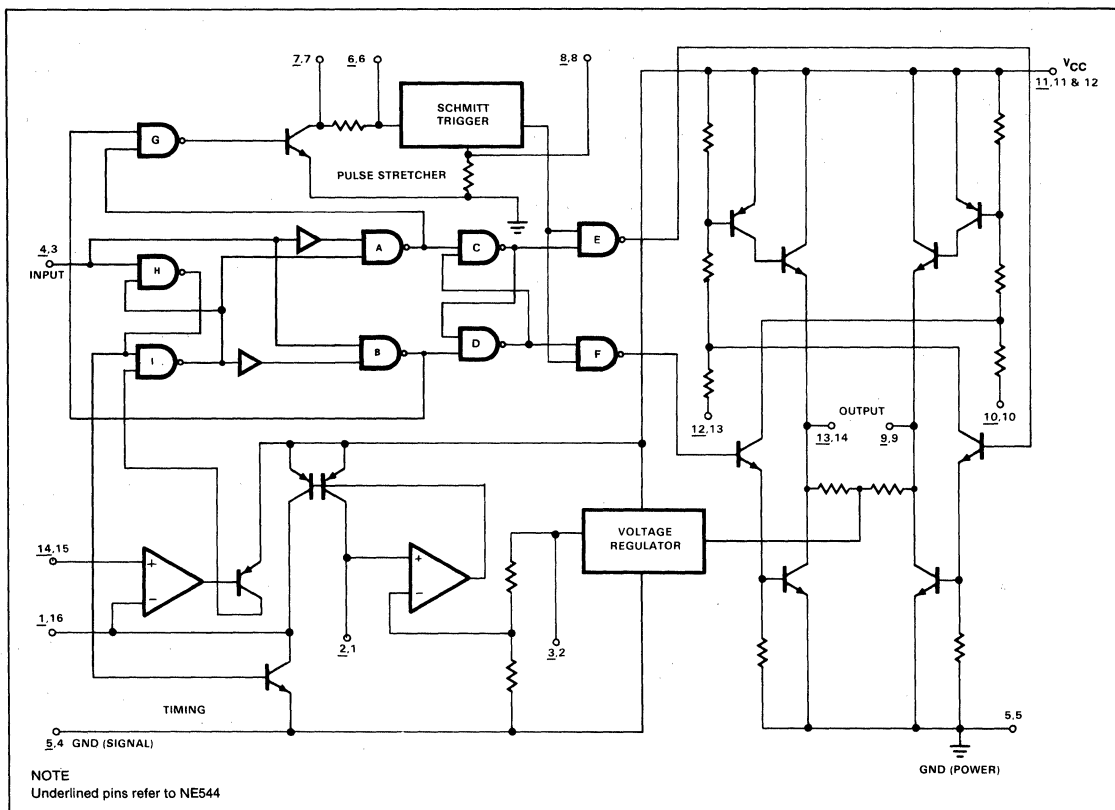
W PACKAGE*

*Pinout same as 644N package
Order part no. NE644W

SERVO AMPLIFIER

NE544/644

EQUIVALENT CIRCUIT SCHEMATIC

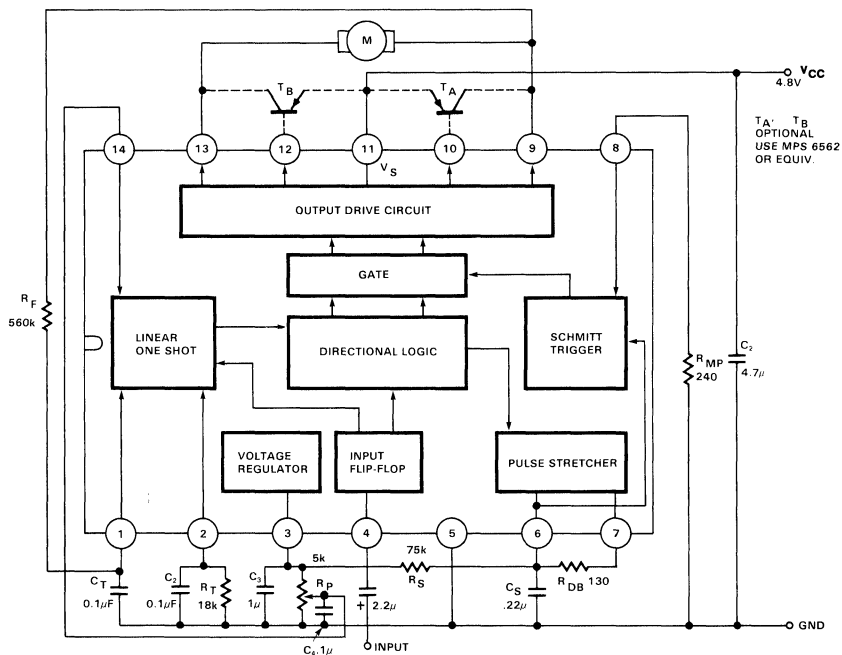
DC ELECTRICAL CHARACTERISTICS $T_A = 25^\circ\text{C}$, $V_S = 4.8\text{V}$ unless otherwise specified.

PARAMETER		TEST CONDITIONS	LIMITS			UNIT
			Min	Typ	Max	
V_{CC}	Supply voltage	Quiescent	3.2	4.8	6	V
I_{CC}	Supply current		4.2	5.5	10	mA
V_{TH}	Input threshold	Pin 4		1.5		V
	On			1.4		
Z_{IN}	Input resistance	Pin 4		18		k Ω
V_{OL}	Output voltage	Pin 9 or 13, $I_L = 400\text{mA}$		0.3		V
V_{OH}	Low			3.9		
V_{REG}	Regulated voltage	Pin 3	2.1	2.5	2.9	V
ΔV_{REG}	Regulation	Pin 3		10		mV/V
	Minimum dead band	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

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NE544/644

TYPICAL CONNECTION OF NE544N FOR LINEAR ONE SHOT TIMING

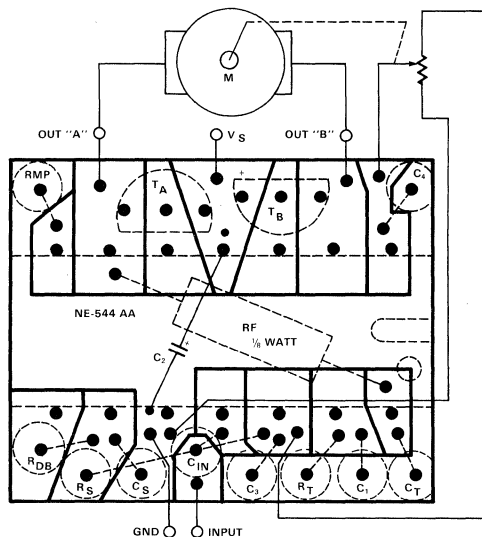
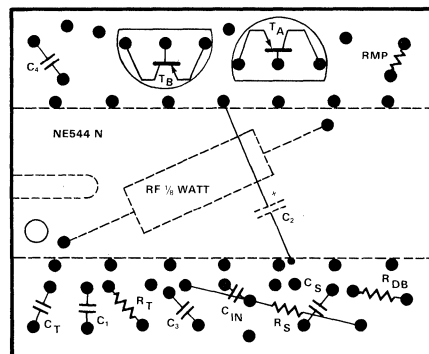


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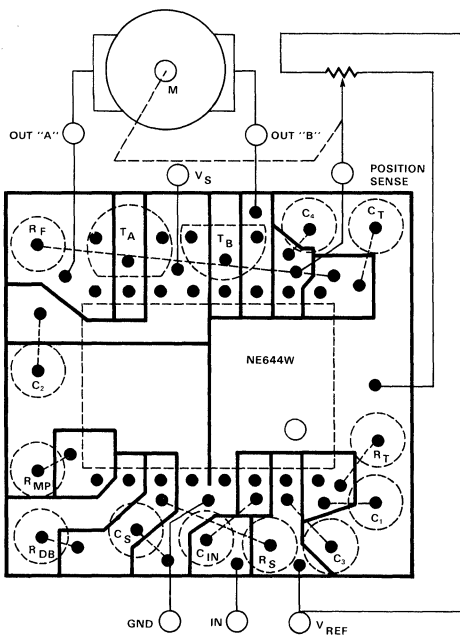
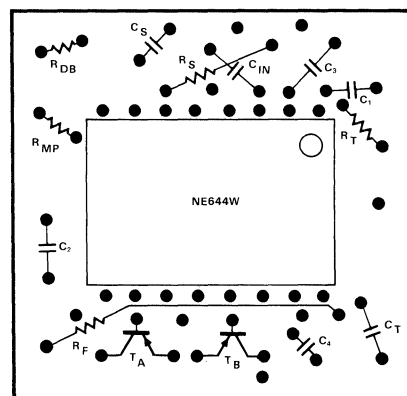
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NE544/644

PC BOARD—N PACKAGE

Typical PC Board Layout
Bottom View—4XParts Layout
Top View

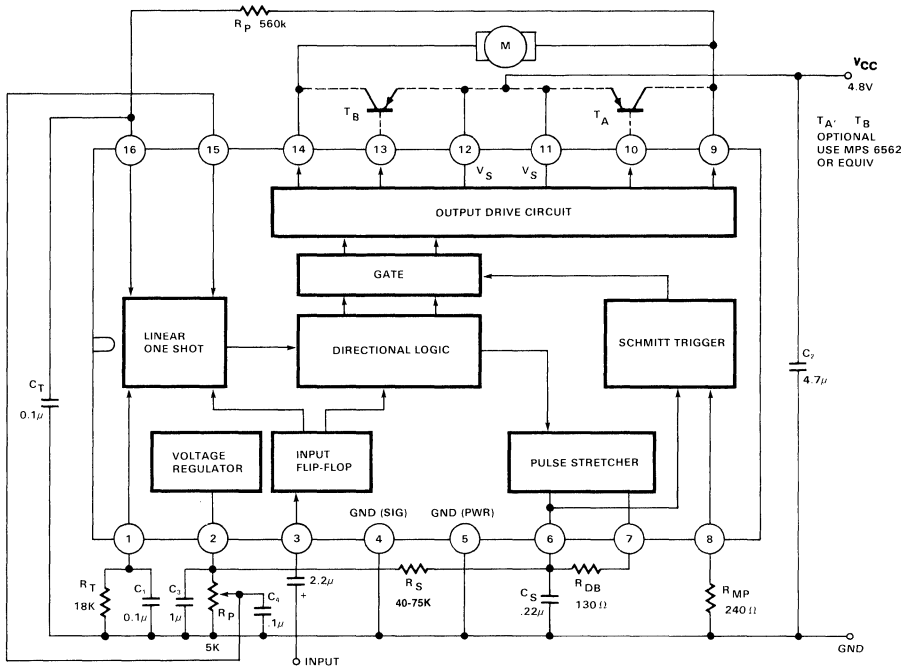
PC BOARD—W PACKAGE

PC Board Layout
Bottom View—4XParts Layout
Top View

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NE544/644

TYPICAL CONNECTION OF NE644W AND NE644N FOR LINEAR ONE SHOT TIMING

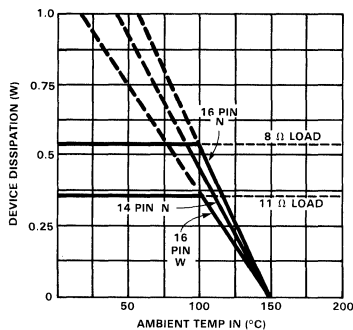
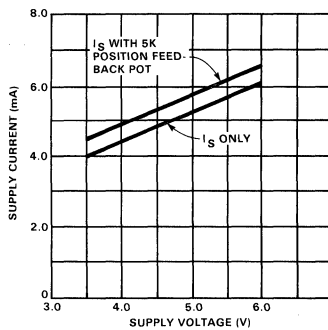
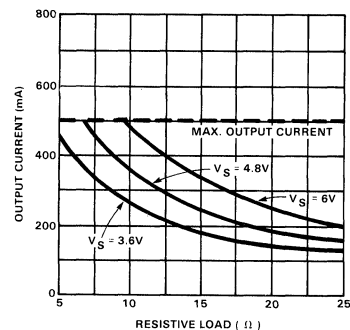
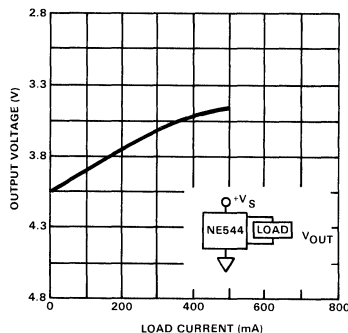
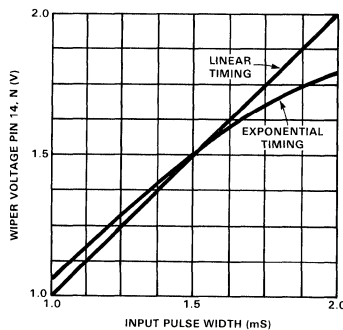


7

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NE544/644

TYPICAL PERFORMANCE CHARACTERISTICS

MAXIMUM DISSIPATION vs
AMBIENT TEMPERATURESUPPLY CURRENT vs
SUPPLY VOLTAGEOUTPUT CURRENT vs
LOAD RESISTANCEOUTPUT VOLTAGE vs
LOAD CURRENTINPUT PULSE WIDTH vs
FEEDBACK POT OUTPUT

INPUT PULSE vs SERVO TRAVEL

