

SANYO

No. 1402C

LA5550, 5550MLOW-VOLTAGE DC MOTOR SPEED CONTROLLER
WITH LOGIC CIRCUIT**Applications**

The LA5550, 5550M are low-voltage (3V min.) DC motor speed control IC with bidirectional driver and logic circuit. Speed control, function control of DC motor for cassette tape recorder, tape deck, telephone answering machine.

Features

- Wide operating voltage range: 1.8 to 8V.
- Has a logic circuit which operates in such a manner as 2 logic inputs cause FF, REW, GOVERNOR, BRAKE mode to occur.
- Easy to vary speed at the GOVERNOR mode.
- Turning OFF the strobe pin causes little I_{CC} to flow (100uA).
- Large starting torque.

Maximum Ratings at $T_a=25^{\circ}\text{C}$

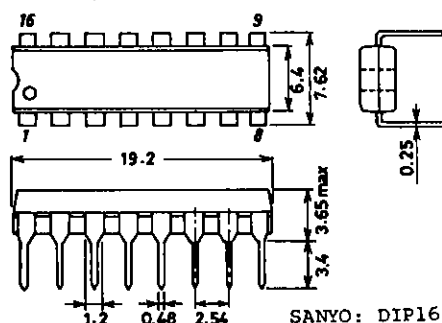
Maximum Supply Voltage	$V_{CC\text{max}}$	8	unit	V
Allowable Power Dissipation	$P_d \text{ max}$	LA5550 LA5550M	1 0.42	W
Maximum Motor Current	$I_m \text{ max}$	1000	mA	
Operating Temperature	T_{opr}	-20 to +80	$^{\circ}\text{C}$	
Storage Temperature	T_{stg}	-40 to +150	$^{\circ}\text{C}$	

Operating Conditions at $T_a=25^{\circ}\text{C}$

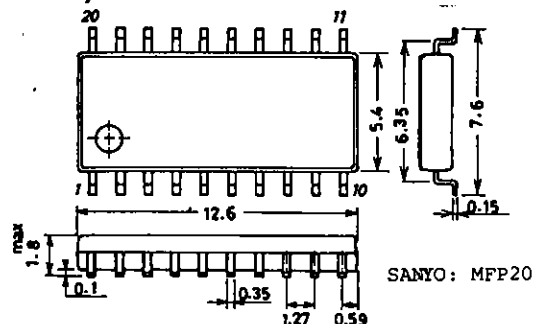
Supply Voltage Range	V_{CCop}	1.8 to 8	unit	V
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LA5550

Package Dimensions 3006B-D16IC
(unit: mm)

**LA5550N**

Package Dimensions 3036B-M20IC
(unit: mm)



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Operating Characteristics at $T_a=25^{\circ}\text{C}$

GOVERNOR Mode (G)		min	typ	max	unit
Reference Voltage	Vref	V _{CC} =3V, I _m =100mA	1.1	1.2	1.3 V
Quiescent Current Dissipation	I _d	V _{CC} =3V, motor open		8	15 mA
Shunt Ratio	K	V _{CC} =3V, I _m =50-150mA	45	50	55
Residual Voltage	V _{sat} (G)	V _{CC} =3V, I _m =200mA		0.27	0.5 V
Voltage Characteristic of Reference Voltage	$\frac{\Delta V_{ref}}{V_{ref}}$	V _{CC} =1.8to8V, I _m =100mA		0.26	0.5 %/V
Voltage Characteristic of Shunt Ratio	$\frac{K/\Delta V}{K}$	V _{CC} =1.8to8V, I _m =50-150mA		0.45	%/V
Current Characteristic of Reference Voltage	$\frac{\Delta V_{ref}}{V_{ref}}/\Delta I_m$	V _{CC} =3V, I _m =20to200mA		0.05	0.1 %/mA
Current Characteristic of Shunt Ratio	$\frac{\Delta K/\Delta I_m}{K}$	V _{CC} =3V, I _m =50-100to150-200mA		-0.02	%/mA

FF Mode

Quiescent Current	$I_d(F)$	$V_{CC}=3V, \text{motor open}$	18.5	23	mA
Residual Voltage	$V_{sat}(F)$	$V_{CC}=3V, I_m=200mA$	0.28	0.5	V

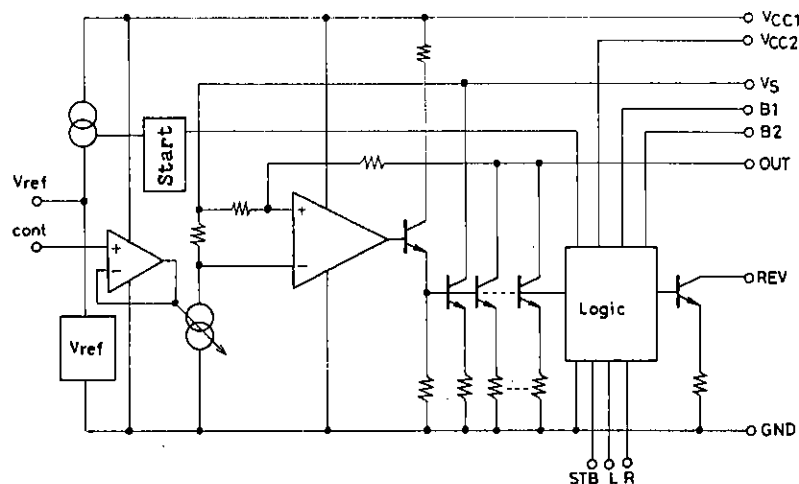
REW Mode

Quiescent Current	$I_d(R)$	$V_{CC}=3V, \text{motor open}$	18.5	23	mA
Residual Voltage	$V_{sat}(R)$	$V_{CC}=3V, I_m=200\text{mA}$	0.30	0.5	V

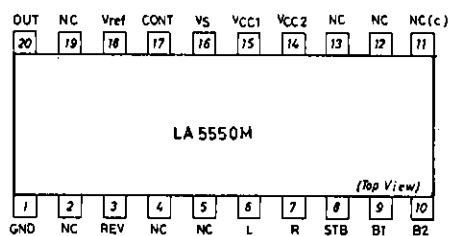
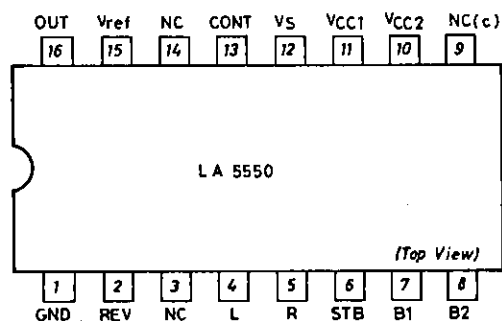
STOP Mode

Quiescent Current Dissipation	$I_d(S)$	$V_{CC}=3V$ (STB-ON)	26	30	mA
Strobe Current	I_{STB}	$V_{CC}=3V$ (STB-OFF)	100	200	μA
Base Pull-in Current	$I_{B1,2}$	$V_{CC}=3V$, Modes other than BRAKE	3.8	4.4	5.8 mA

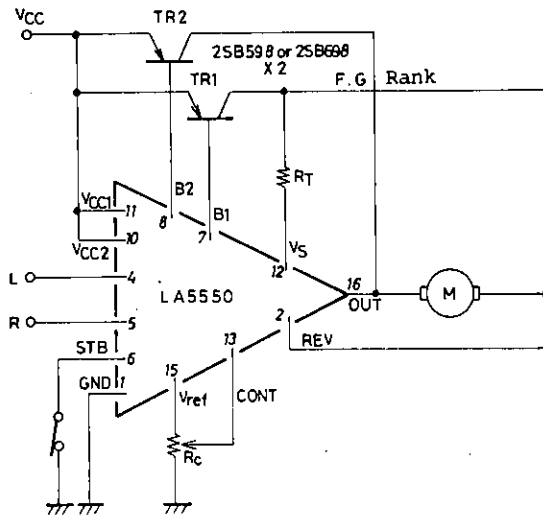
Equivalent Circuit Block Diagram



Pin Assignment



Sample Application Circuit (I)



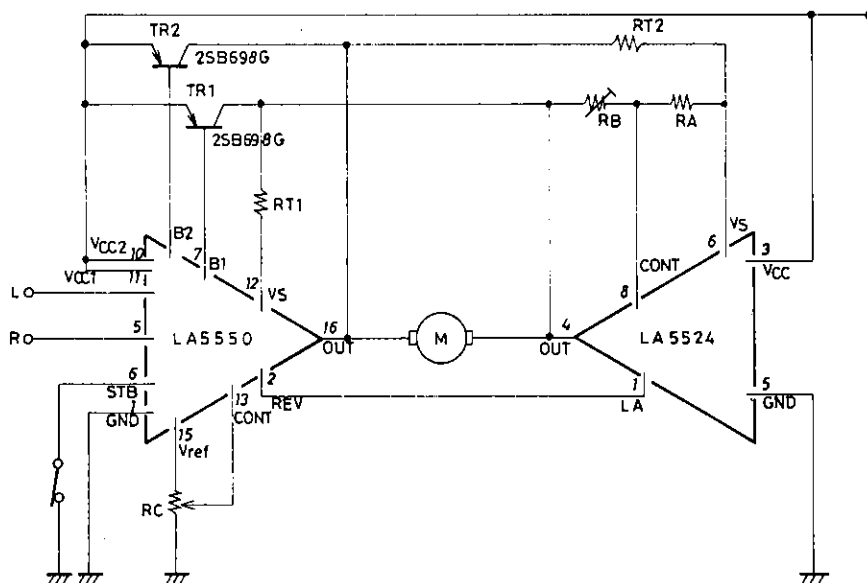
* Assuming $R_T < K \cdot R_m$

Mode	L	R
High-speed FF	0	0
GOVERNOR FF	0	1
High-speed REW	1	0
BRAKE	1	1

0 : 0~0.3V

1 : 1.8V~V_{CC}

Sample Application Circuit (II): Bidirectional Governor



$R_A = 2.2k\Omega$

$R_B = 50k\Omega$ VR

$R_C = 30k\Omega$ VR

Turning OFF the STB pin causes $I_{CC} < 100\mu A$ (at 3V).

Mode	L	R
High-speed FF	0	0
FF control	0	1
REW control	1	0
BRAKE	1	1

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