



LA5550, 5550M

Low-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.

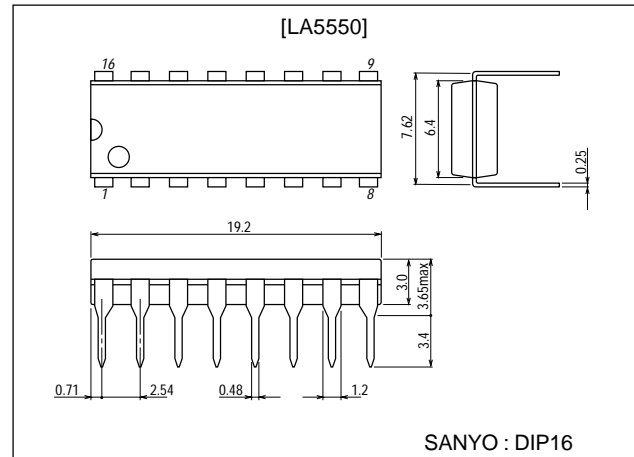
Features

- 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 cause little I_{CC} to flow (100 μ A).
- Large starting torque.

Package Dimensions

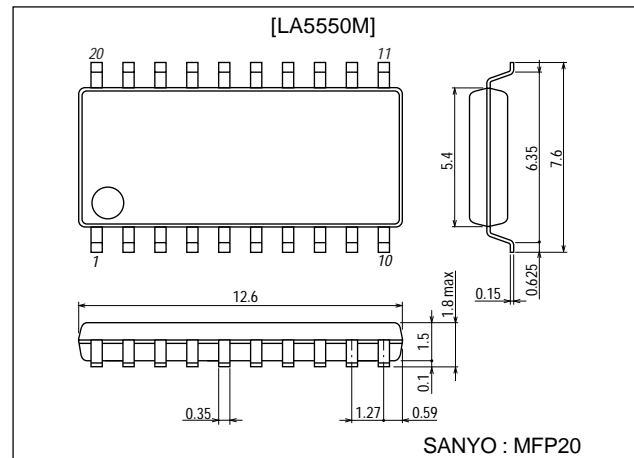
unit:mm

3006B-DIP16



unit:mm

3036B-MFP20



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LA5550, 5550M

Specifications

Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V _{CC} max		8	V
Allowable power dissipation	Pd max	LA5550	1	W
		LA5550M	0.42	W
Maximum motor current	I _m max		1000	mA
Operating temperature	Topr		-20 to +80	°C
Storage temperature	Tstg		-40 to +150	°C

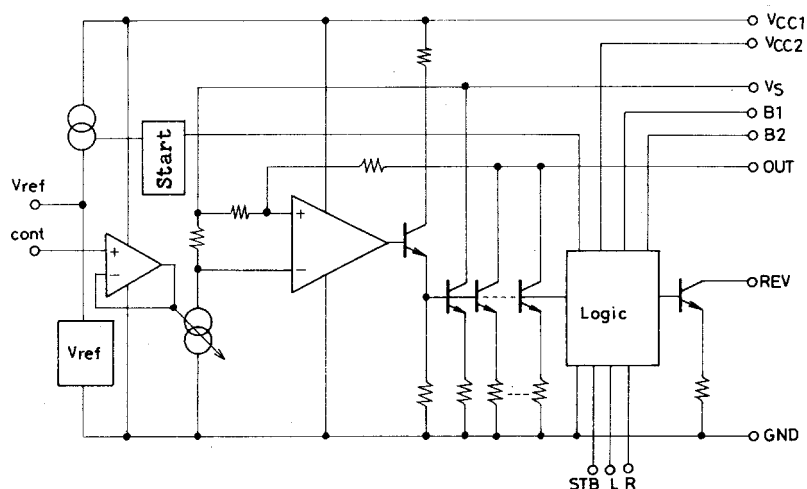
Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage range	V _{CC} op		1.8 to 8	V

Operating Characteristics at Ta = 25°C

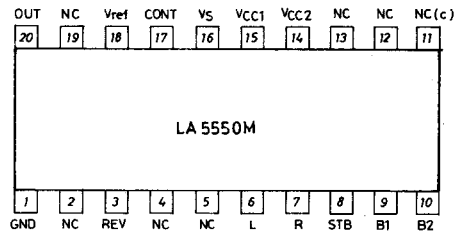
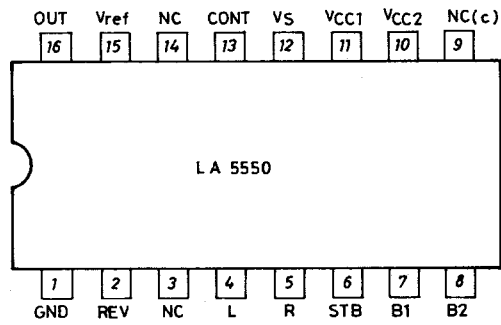
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[GOVERNOR Mode (G)]						
Reference voltage	V _{ref}	V _{CC} =3V, I _m =100mA	1.1	1.2	1.3	V
Quiescent flow-in current dissipation	I _d	V _{CC} =3V, motor open		8	15	mA
Shunt ratio	K	V _{CC} =3V, I _m =50mA, 150mA	45	50	55	
Residual voltage	V _{sat} (G)	V _{CC} =3V, I _m =200mA		0.27	0.5	V
Voltage characteristic of reference voltage	$\frac{\Delta V_{ref}}{V_{ref}} / \Delta V$	V _{CC} =1.8 to 8V, I _m =100mA		0.26	0.5	%/V
Voltage characteristic of shunt ratio	$\frac{\Delta K}{K} / \Delta V$	V _{CC} =1.8 to 8V, I _m =50mA, 150mA		0.45		%/V
Current characteristic of reference voltage	$\frac{\Delta V_{ref}}{V_{ref}} / \Delta I_m$	V _{CC} =3V, I _m =20 to 200mA,		0.05	0.1	%/mA
Current characteristic of shunt ratio	$\frac{\Delta K}{K} / \Delta I_m$	V _{CC} =3V, I _m =50, 100mA to 150, 200mA		-0.02		%/mA
[FF Mode]						
Quiescent current dissipation	I _d (F)	V _{CC} =3V, motor open		18.5	23	mA
Residual voltage	V _{ast} (F)	V _{CC} =3V, I _m =200mA		0.28	0.5	V
[REW Mode]						
Quiescent current dissipation	I _d (R)	V _{CC} =3V, motor open		18.5	23	mA
Residual voltage	V _{ast} (R)	V _{CC} =3V, I _m =200mA		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} , I _{B2}	V _{CC} =3V, Modes other than BRAKE	3.8	4.4	5.8	mA

Equivalent Circuit Block Diagram



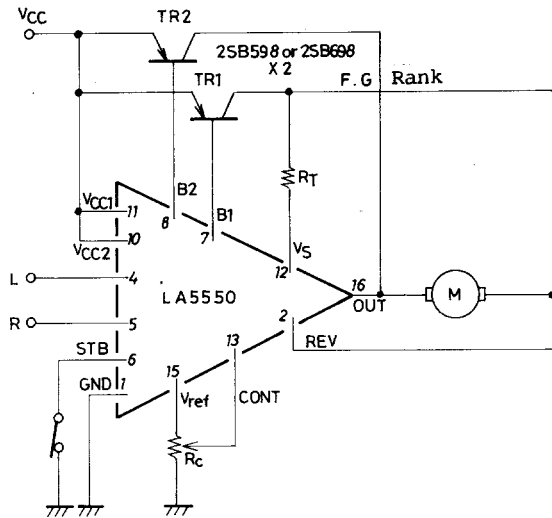
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Pin Assignments



(Top view)

Sample Application Circuit (1)

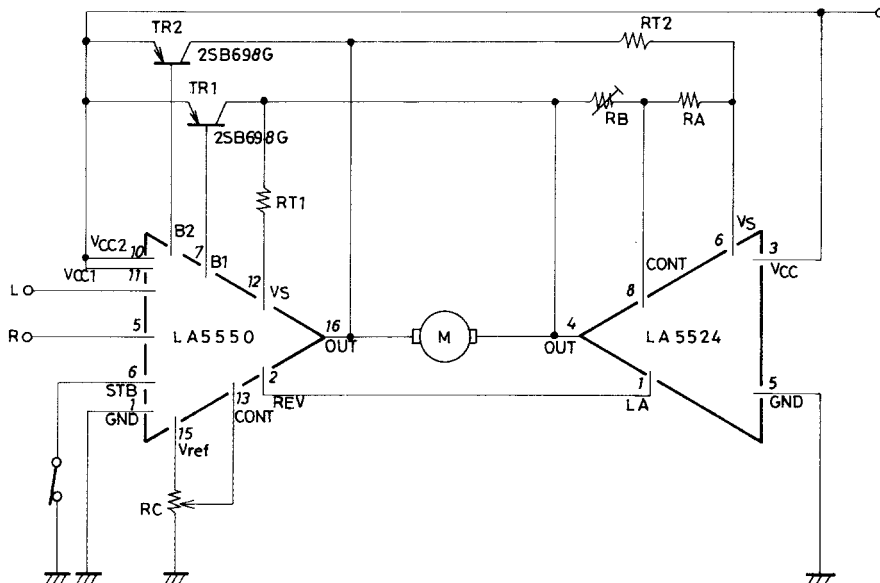


* Assuming $R_T < K \cdot R_m$

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

0 : 0 to 0.3V
1 : 1.8V to V_{CC}

Sample Application Circuit (2) : Bidirectional Governor



$R_A = 2.2k\Omega$
 $R_C = 50k\Omega$, V_R
 $R_C = 30k\Omega$, V_R

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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