



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.

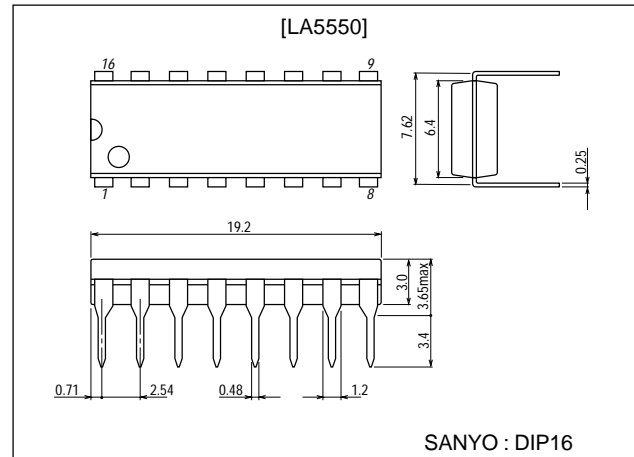
Features

- 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

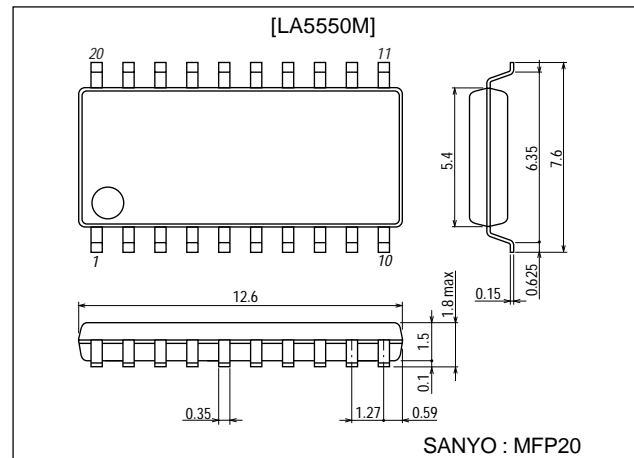
unit:mm

3006B-DIP16



unit:mm

3036B-MFP20



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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

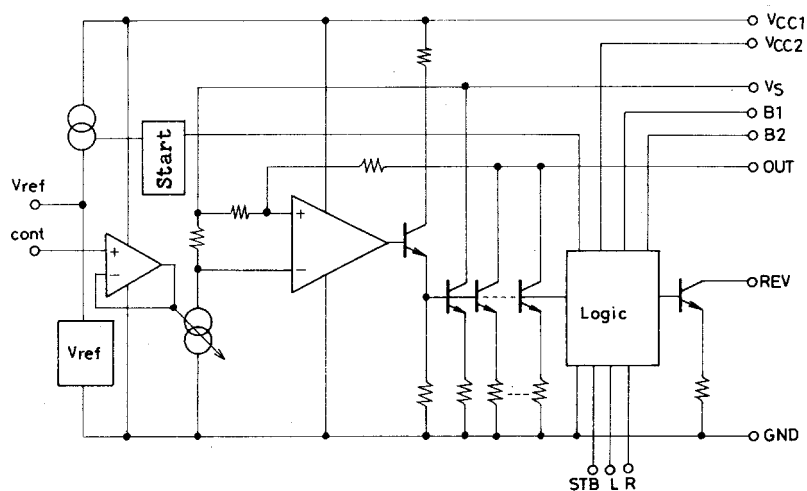
Operating Conditions at Ta = 25°C

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

Operating Characteristics at Ta = 25°C

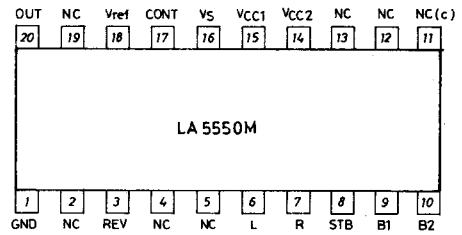
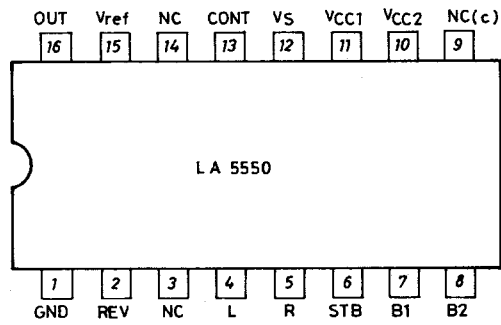
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[GOVERNOR Mode (G)]						
Reference voltage	Vref	$V_{CC}=3V, I_m=100mA$	1.1	1.2	1.3	V
Quiescent flow-in current dissipation	Id	$V_{CC}=3V, \text{motor open}$		8	15	mA
Shunt ratio	K	$V_{CC}=3V, I_m=50mA, 150mA$	45	50	55	
Residual voltage	Vsat(G)	$V_{CC}=3V, I_m=200mA$		0.27	0.5	V
Voltage characteristic of reference voltage	$\frac{\Delta V_{ref}}{V_{ref}} / \Delta V$	$V_{CC}=1.8 \text{ to } 8V, I_m=100mA$		0.26	0.5	%/V
Voltage characteristic of shunt ratio	$\frac{\Delta K}{K} / \Delta V$	$V_{CC}=1.8 \text{ to } 8V, I_m=50mA, 150mA$		0.45		%/V
Current characteristic of reference voltage	$\frac{\Delta V_{ref}}{V_{ref}} / \Delta I_m$	$V_{CC}=3V, I_m=20 \text{ to } 200mA,$		0.05	0.1	%/mA
Current characteristic of shunt ratio	$\frac{\Delta K}{K} / \Delta I_m$	$V_{CC}=3V, I_m=50, 100mA \text{ to } 150, 200mA$		-0.02		%/mA
[FF Mode]						
Quiescent current dissipation	Id(F)	$V_{CC}=3V, \text{motor open}$		18.5	23	mA
Residual voltage	Vast(F)	$V_{CC}=3V, I_m=200mA$		0.28	0.5	V
[REW Mode]						
Quiescent current dissipation	Id(R)	$V_{CC}=3V, \text{motor open}$		18.5	23	mA
Residual voltage	Vast(R)	$V_{CC}=3V, I_m=200mA$		0.30	0.5	V
[STOP Mode]						
Quiescent current dissipation	Id(S)	$V_{CC}=3V \text{ (STB-ON)}$		26	30	mA
Strobe current	I_{STB}	$V_{CC}=3V \text{ (STB-OFF)}$		100	200	μA
Base Pull-in current	I_{B1}, I_{B2}	$V_{CC}=3V, \text{Modes other than BRAKE}$	3.8	4.4	5.8	mA

Equivalent Circuit Block Diagram



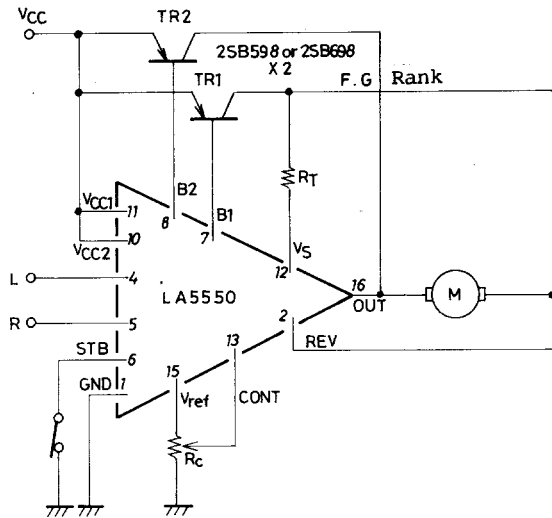
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Pin Assignments



(Top view)

Sample Application Circuit (1)

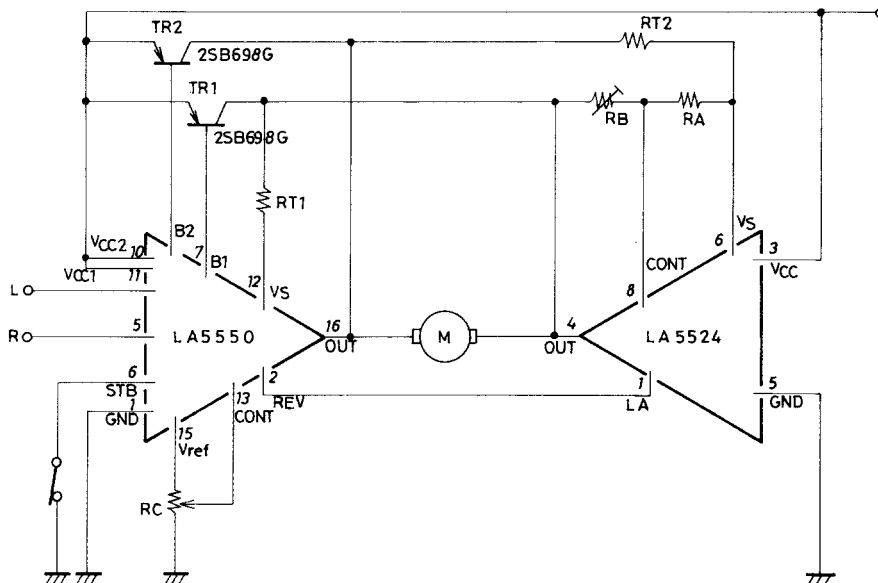


* Assuming $R_T < K \cdot R_m$

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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