Ordering number:ENN1402D

Monolithic Linear IC

LA5550, 5550M

Low-Voltage DC Motor Speed Controller with Logic Circiuit

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.

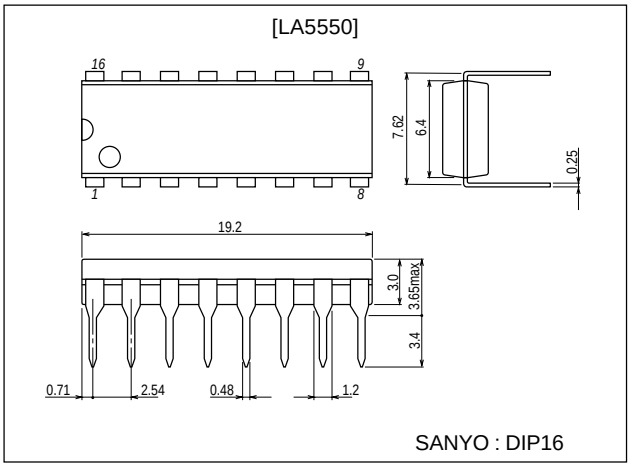
Features

- 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 (100μA).
- Large starting torque.

Package Dimensions

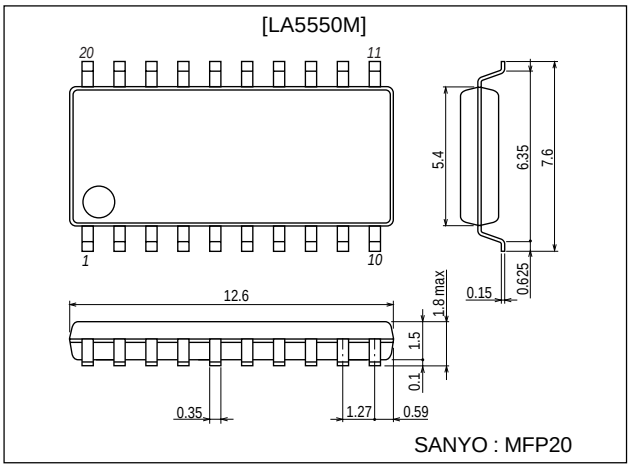
unit:mm

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

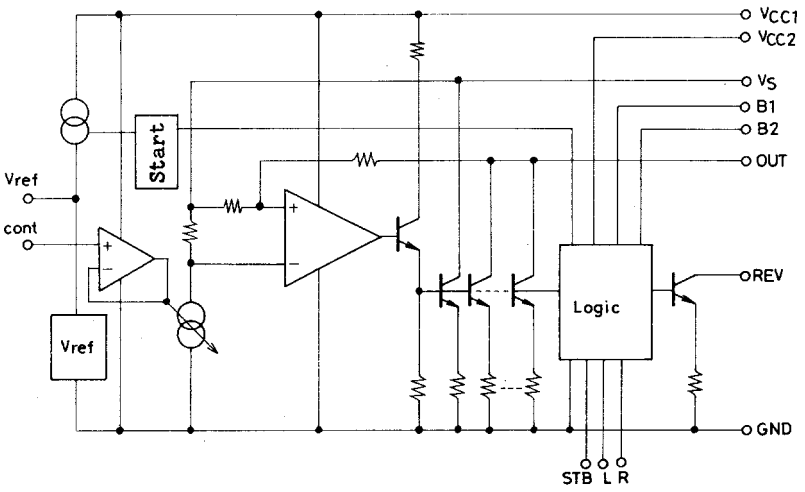
Operating Conditions at Ta = 25˚C

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

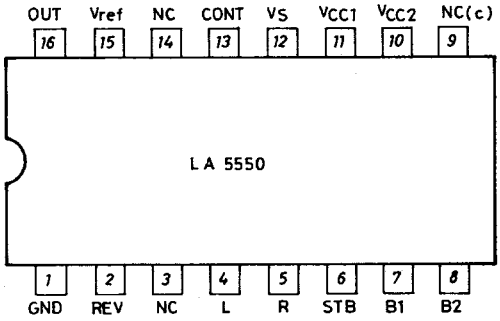
Operating Characteristics at Ta = 25˚C

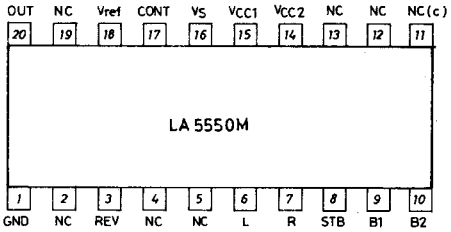
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[GOVERNOR Mode (G)]						
Reference voltage	Vref	V_{CC}=3V, I_m=100mA	1.1	1.2	1.3	V
Quiescent flow-in current dissipation	Id	V_{CC}=3V, motor open		8	15	mA
Shunt ratio	K	V_{CC}=3V, I_m=50mA, 150mA	45	50	55	
Residual voltage	Vsat(G)	V_{CC}=3V, I_m=200mA		0.27	0.5	V
Voltage characteristic of reference voltage	$\frac{\Delta Vref}{Vref}/\Delta V$	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	$\frac{\Delta Vref}{Vref}/\Delta I_m$	V_{CC}=3V, I_m=20 to 200mA,		0.05	0.1	%/mA
Current chacacteristic 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	Id(F)	V_{CC}=3V, 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, 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 (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



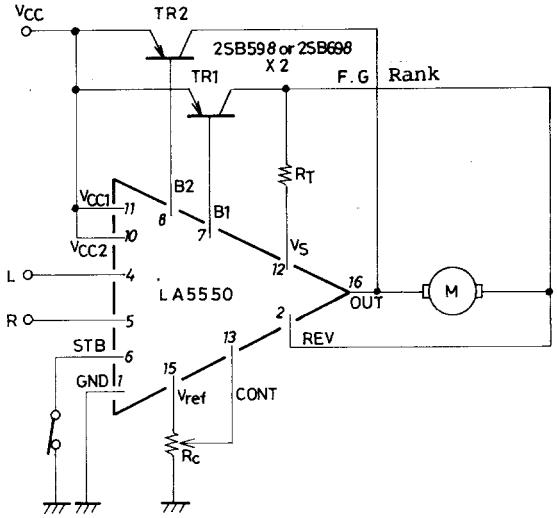
Pin Assignments





(Top view)

Sample Application Circuit (1)

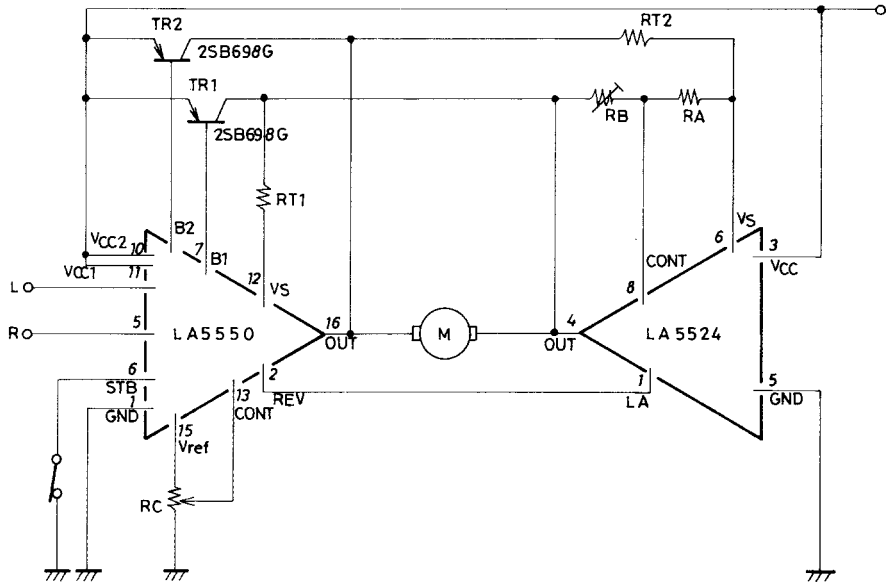


* Assuming $R_T<K \cdot R_m$

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=2.2kΩ
R_C=50kΩ, V_R
R_C=30kΩ, V_R

Turning OFF the STB pin causes I_{CC}<100μA (at 3V).

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