

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.

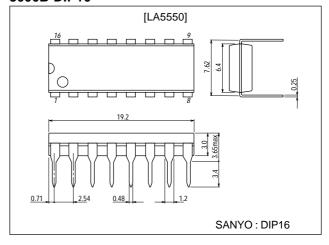
Features

- 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

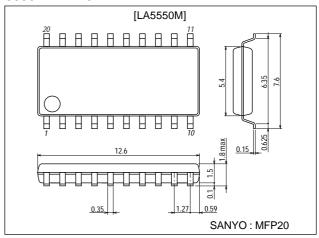
unit:mm

3006B-DIP16



unit:mm

3036B-MFP20



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Specifications

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

Symbol	Conditions	Ratings	Unit
V _{CC} max		8	V
Pd max	LA5550	1	W
	LA5550M	0.42	W
I _m max		1000	mA
Topr		-20 to +80	°C
Tstg		-40 to +150	°C
	V _{CC} max Pd max I _m max Topr	VCC max LA5550 LA5550M LA5550M	VCC max 8 Pd max LA5550 1 LA5550M 0.42 I _m max 1000 Topr -20 to +80

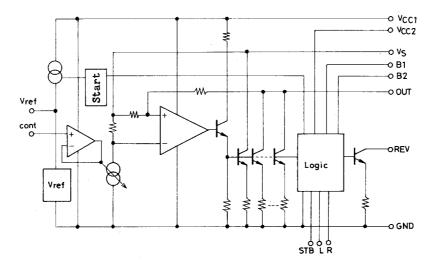
Operating Conditions at $Ta = 25^{\circ}C$

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage range	VCC op		1.8 to 8	V

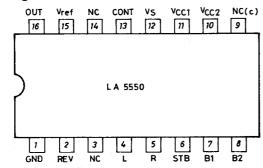
Operating Characteristics at Ta = 25°C

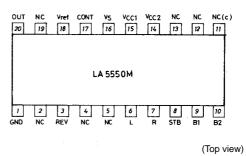
Parameter	O:h l	Conditions	Ratings			1.1
	Symbol		min	typ	max	Unit
[GOVERNOR Mode (G)]	•					
Reference voltage	Vref	V _{CC} =3V, I _m =100mA	1.1	1.2	1.3	V
Quiescent flow-in current dissipation	ld	V _{CC} =3V, motor open		8	15	mA
Shunt ratio	K	V _{CC} =3V, I _m =50mA, 150mA	45	50	55	
Residual voltage	Vsat(G)	V _{CC} =3V, I _m =200mA		0.27	0.5	V
Voltage characteristic of reference voltage	<u>ΔVref</u> /ΔV Vref	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	ld(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

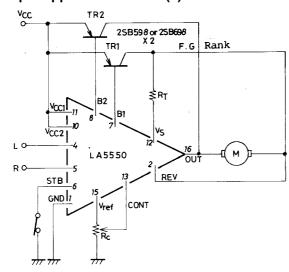


Pin Assignments





Sample Application Circuit (1)

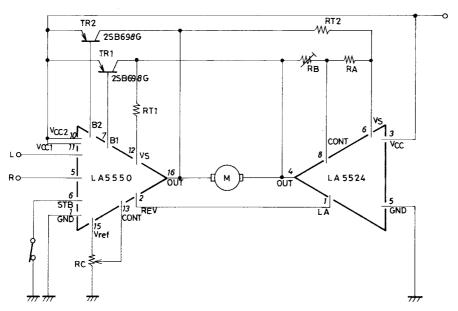


* Assuming $R_T < K \cdot R_m$

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



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

Turning OFF the STB pin causes I_{CC} <100 μ 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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