Ordering number:EN2641A

Monolithic Linear IC

LA5586

General-Purpose Compact DC Motor Speed Controller

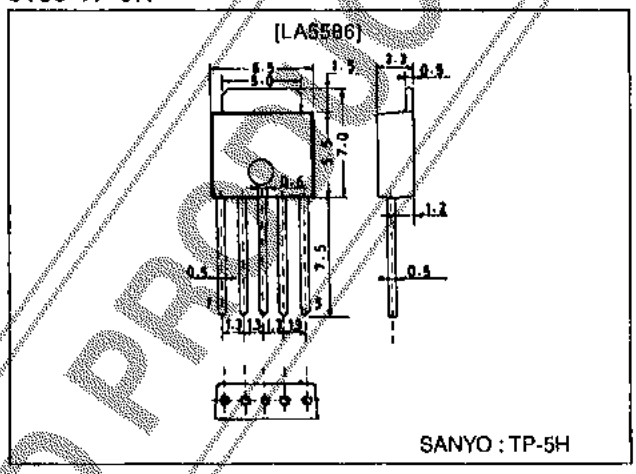
Features

- Wide operating voltage range (3.8 to 16V).
- Possible to make the equipment compact because of minimum number of external parts required and small-sized package.
- Easy to change the speed.
- Easy to increase the power dissipation because of the use of a fin.
- Various lead formings available for making the equipment compact.
- On-chip protector against inverted connection of power supply.

Package Dimensions

unit:mm

3103-TP-5H



Specifications

Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max		18	V
Allowable power dissipation	Pd max	Ta=25°C	1.0*	W
Operating temperature	Topr		-20 to +80	°C
Storage temperature	Tstg		-40 to +150	°C
Start current	I_m max	3s at SW-ON or lock mode	1.4	A

*1.7W (heat of fin is radiated to 1cm² Cu foil) at Ta=25°C

Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage range	V_{CC} op		3.8 to 16	V
Recommended operating temperature	Topr		-20 to +80	°C

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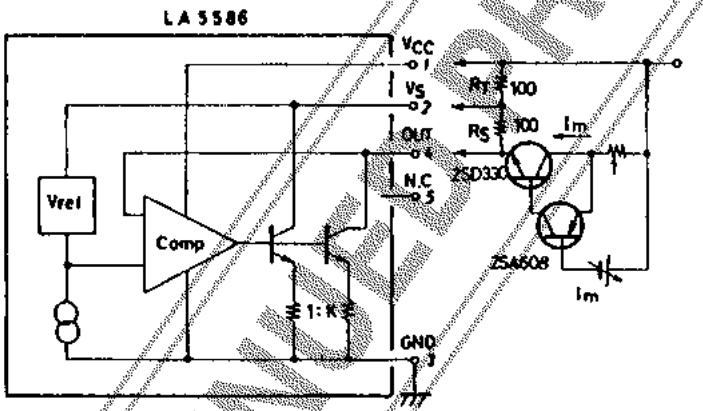
Operating Characteristics at Ta = 25°C, See specified test circuit.

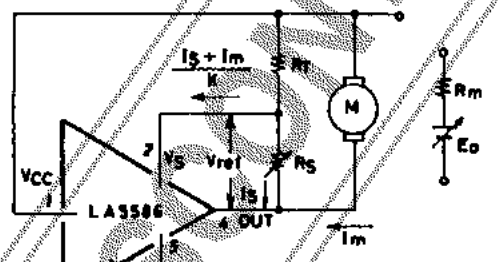
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Reference voltage	Vref	V_{CC}=12V, I_m=10mA	1.08	1.21	1.27	V
Quiescent flow-in current	Id	V_{CC}=12V, I_m=0		1.0	1.6	mA
Shunt ratio	K	V_{CC}=12V, I_m=50mA, 150mA	18	20	22	
Saturation voltage	Vsat	V_{CC}=4.2V, R_T=4.4Ω		0.94		V
Voltage of characteristic of reference voltage	$\frac{\Delta Vref}{Vref}/\Delta V_{CC}$	V_{CC}=6.3 to 16V, I_m=100mA		0.06		%/V
Voltage of characteristic of shunt ratio	$\frac{\Delta K}{K}/\Delta V_{CC}$	V_{CC}=6.3 to 16V, I_m=50mA, 150mA		0.1		%/V
Current characteristic of reference voltage	$\frac{\Delta Vref}{Vref}/\Delta I_m$	V_{CC}=12V, I_m=30 to 200mA		-0.01		%/mA
Current characteristic of shunt ratio	$\frac{\Delta K}{K}/\Delta I_m$	V_{CC}=12V, I_m=50mA, 100 to 150mA, 200mA		0.02		%/mA
Current characteristic of reference current	$\frac{\Delta I_S}{I_S}/\Delta V_{CC}$	V_{CC}=6 to 16V, I_m=0		0.1		%/V
Temperature characteristic of reference voltage	$\frac{\Delta Vref}{Vref}/\Delta Ta$	V_{CC}=12V, I_m=10mA, Ta=-20 to +80°C		-0.01		%/°C
Temperature characteristic of shunt ratio	$\frac{\Delta K}{K}/\Delta Ta$	V_{CC}=12V, I_m=50mA, 150mA, Ta=-20 to +80°C		-0.01		%/°C

Equivalent Circuit and Test Circuit



Unit (resistance: Ω)

Sample Application Circuit



$$Im \cdot Rm + E_0 = R_T\left(Is + \frac{Is+Im}{K}\right) + Vref$$

From this equation,

$$E_0 = Vref + R_T\left(1+\frac{1}{K}\right)Is + \left(\frac{R_T}{K} - Rm\right)Im$$

Assuming $K \cdot Rm = R_T$
The number of revolutions is determined by

$$E_0 = Vref + R_T\left(1+\frac{1}{K}\right)Is$$

Unless $R_T(max) < K \cdot Rm(min)$ in the Sample Application Circuit, the operation becomes unstable.