

Monolithic Linear IC

SANYO	No.2641A	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

Maximum Ratings at Ta=25°C

			unit
Maximum Supply Voltage	$V_{CC\ max}$	18	V
Allowable Power Dissipation	$Pd\ max$ Ta=25°C	1.0*	W
Operating Temperature	T_{opr}	-20 to +80	°C
Storage Temperature	T_{stg}	-40 to +150	°C
Start Current	$I_m\ max$ 3sec 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

			unit
Supply Voltage Range	$V_{CC\ op}$	3.8 to 16	V
Recommended Operating Temperature	T_{opr}	-20 to +80	°C

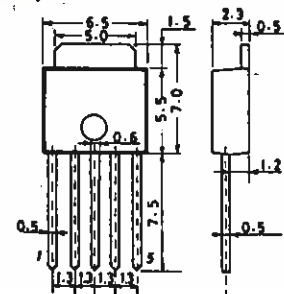
Operating Characteristics at Ta=25°C, See specified Test Circuit.

			min	typ	max	unit
Reference Voltage	V_{ref}	$V_{CC}=12V, I_m=10mA$	1.08	1.21	1.27	V
Quiescent Current	I_d	$V_{CC}=12V, I_m=0$		1.0	1.6	mA
Dissipation						
Shunt Ratio	K	$V_{CC}=12V, I_m=50\ to\ 150mA$	18	20	22	
Saturation Voltage	$V(sat)$	$V_{CC}=4.2V, R_T=4.4ohms$		0.94		V
Voltage Characteristic of Reference Voltage	$\frac{\Delta V_{ref}}{\Delta V_{CC}}$	$V_{CC}=6.3\ to\ 16V, I_m=100mA$		0.06		%/V
Voltage Characteristic of Shunt Ratio	$\frac{\Delta K}{\Delta V_{CC}}$	$V_{CC}=6.3\ to\ 16V, I_m=50\ to\ 150mA$		0.1		%/V
Current Characteristic of Reference Voltage	$\frac{\Delta V_{ref}}{\Delta I_m}$	$V_{CC}=12V, I_m=30\ to\ 200mA$		-0.01		%/mA

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Package Dimensions (unit: mm)

3103



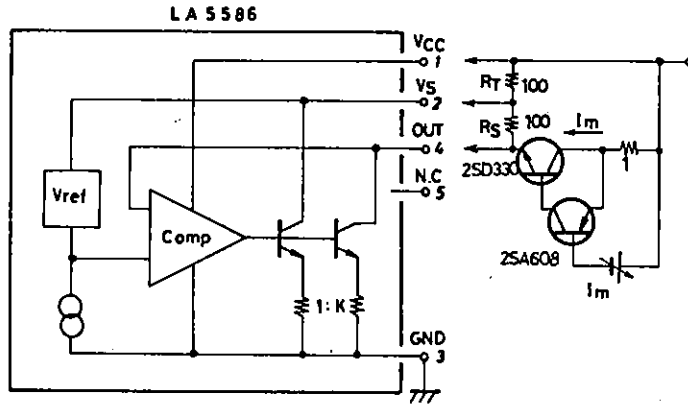
SANYO: TP-5H

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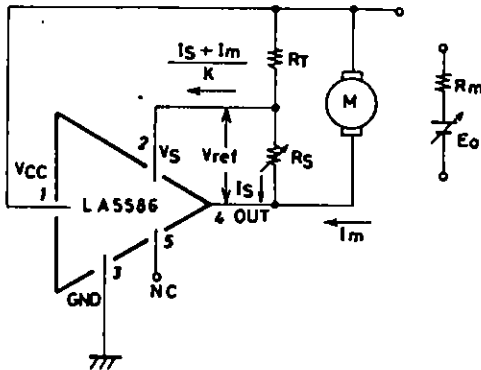
		min	typ	max	unit
Current Characteristic of Shunt Ratio	$\frac{\Delta K}{\Delta I_m}$ $\frac{K}{I_s}$	$V_{CC}=12V,$ $I_m=50-100$ to $150-200mA$	0.02		%/mA
Current Characteristic of Reference Current	$\frac{\Delta I_s}{\Delta V_{CC}}$	$V_{CC}=6$ to $16V, I_m=0$	0.1		%/V
Temperature Characteristic of Reference Voltage	$\frac{\Delta V_{ref}}{\Delta T_a}$	$V_{CC}=12V, I_m=10mA,$ $T_a=-20$ to $+80^\circ C$	-0.01		%/°C
Temperature Characteristic of Shunt Ratio	$\frac{\Delta K}{\Delta T_a}$	$V_{CC}=12V, I_m=50-150mA,$ $T_a=-20$ to $+80^\circ C$	-0.01		%/°C

Equivalent Circuit and Test Circuit



Unit (resistance: Ω)

Sample Application Circuit



$$I_m \cdot R_m + E_o = R_T \left(I_s + \frac{I_s + I_m}{K} \right) + V_{ref}$$

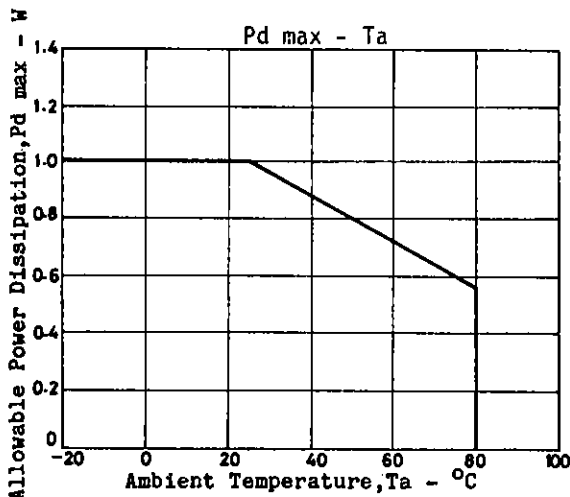
From this equation,

$$E_o = V_{ref} + R_T \left(1 + \frac{1}{K} \right) I_s + \left(\frac{R_T}{K} - R_m \right) I_m$$

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

$$E_o = V_{ref} + R_T \left(1 + \frac{1}{K} \right) I_s$$

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



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