

AN6650, AN6650S

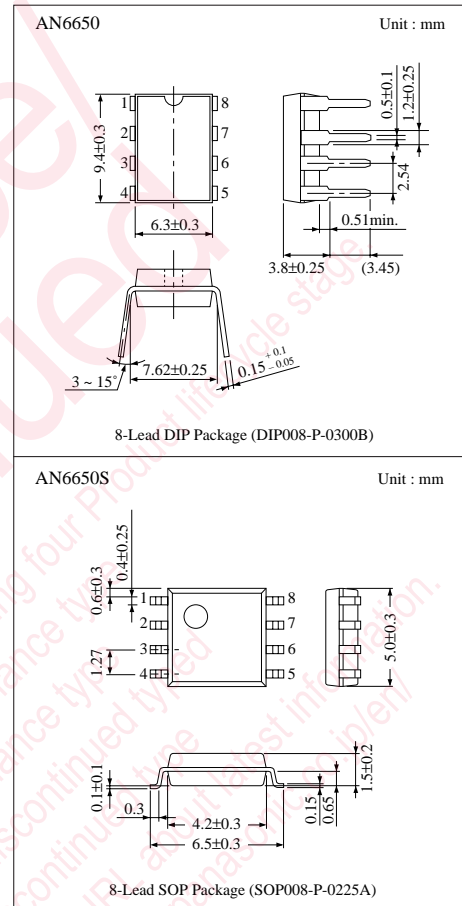
Motor Control Circuits

■ Overview

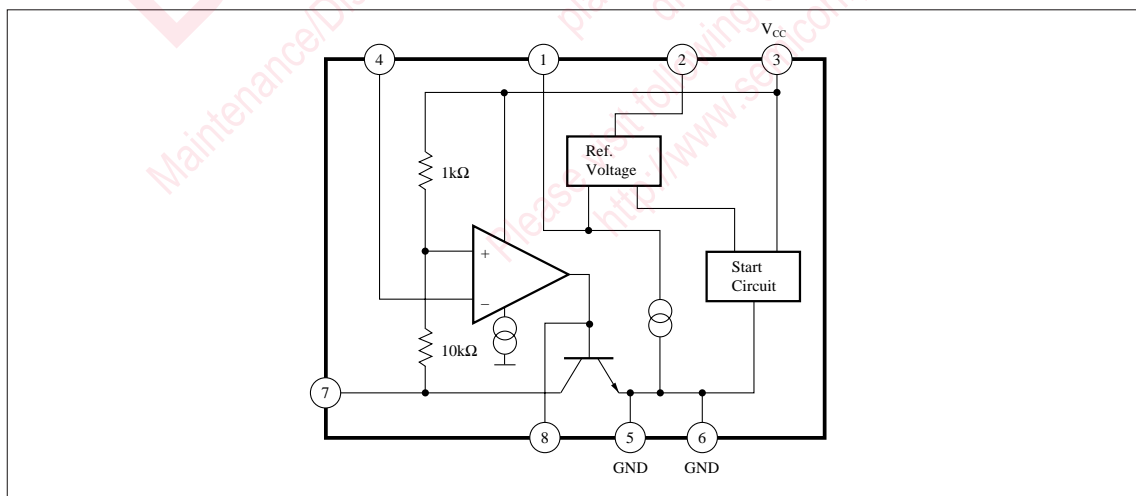
The AN6650 and the AN6650S are the electronic governors suitable for a low-voltage and compact DC motor which is used for a tape recorder, etc.

■ Features

- Wide range of operating voltage : $V_{CC(opr)} = 1.8V \sim 7V$
 AN6650 : $V_{CC(opr)} = 1.8V \sim 7V$
 AN6650S : $V_{CC(opr)} = 1.8V \sim 3.6V$
- 2 package types
- Fewer external parts
- Speed control in steps with linear fine control



■ Block Diagram



Pin Descriptions

Pin No.	Pin Name	Pin No.	Pin Name
1	V _{REF} ⊖	5	GND
2	V _{REF} ⊕	6	GND
3	V _{CC}	7	Motor Pin
4	Comparator Input	8	Phase Compensation

Absolute Maximum Ratings (Ta= 25°C)

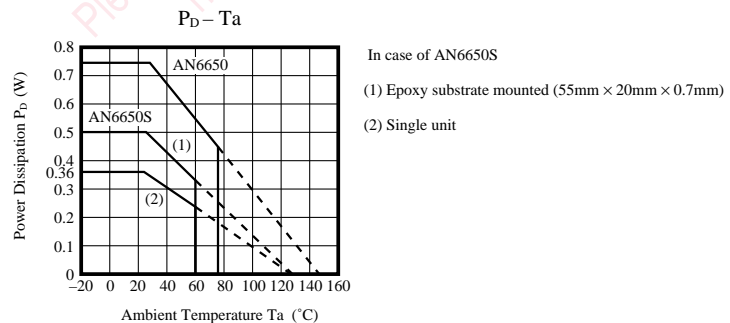
Parameter	Symbol	Rating	Unit
Supply Voltage	AN6650	7.5	V
	AN6650S	4	
Circuit Voltage	AN6650	-0.5	V
	AN6650S	4	
Circuit Voltage	V _{n-5,6} (n = 1, 2, 3, 4)	-0.5	1
Supply Current	I _{CC} *	1000	mA
Circuit Current	I ₇	—	1000
Power Dissipation	AN6650	750	mW
	AN6650S	360	
Operating Ambient Temperature	AN6650	-20 ~ +75	°C
	AN6650S	-20 ~ +60	
Storage Temperature	AN6650	-40 ~ +150	°C
	AN6650S	-40 ~ +125	

* AN6650 : t ≤ 5μs, AN6650S : t ≤ 1μs

Electrical Characteristics (Ta = 25°C)

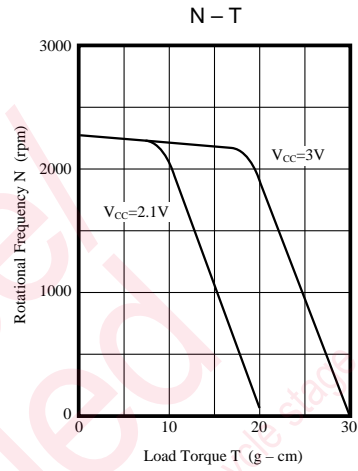
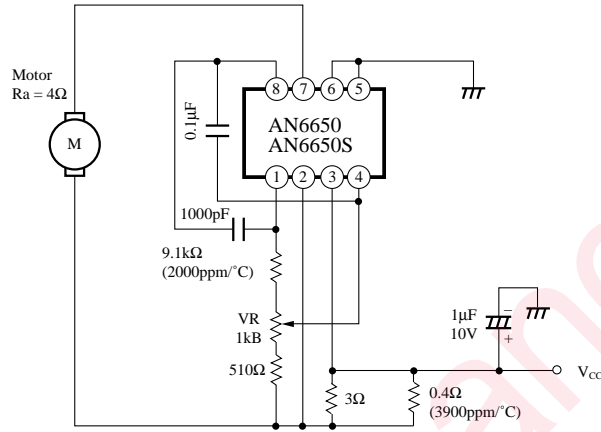
Parameter	Symbol	Condition	min.	typ.	max.	Unit	
Supply Current	I _{CC}	V _{CC} = 3V,	—	2	3	mA	
Reference Voltage	V _{ref}	V _{CC} = 3V, V ₂₋₁ > 10kΩ	1.20	1.28	1.35	V	
Starting Voltage	V _{CC(S)}	Supply voltage in which 30mA current flows to Ra	—	1.0	1.2	V	
Saturation Voltage	V _{sat}	V _{CC} = 1.8V, Ra = 4.7Ω	—	0.2	0.5	V	
Voltage Characteristics 1	AN6650	$\frac{\Delta V_{ref}}{V_{ref}} / \Delta V_{CC}$	V _{CC} = 1.8V ~ 7.0V	-1.25	0.1	1.25	%/V
	AN6650S		V _{CC} = 1.8V ~ 3.6V				
Voltage Characteristics 2	AN6650	$\frac{\Delta V_a}{V_a} / \Delta V_{CC}$	V _{CC} = 1.8V ~ 7.0V	-1.2	0.1	1.2	%/V
	AN6650S		V _{CC} = 1.8V ~ 3.6V				
Current Characteristics	$\frac{\Delta V_{ref}}{V_{ref}} / \Delta I_7$	I ₇ = 1mA ~ 20mA	-0.2	0.01	0.2	%/mA	
Temperature Current Characteristics	$\frac{\Delta V_{ref}}{V_{ref}} / \Delta T_a$	Ta = -20°C ~ +60°C, V _{CC} = 3.0V	—	0.01	—	%/°C	

Note) Operating Supply Voltage Range : V_{CC(oper)} = 1.8V ~ 3.6V



■ Application Circuit

Speed Control Circuit with 3V Core Motor



- Motor Constants
- { R_a : Internal resistor = 4Ω
 - { K_a : Electromotive force constant = $0.4\text{mV}/\text{rpm}$
 - { K_T : Torque constant = $30\text{g} \cdot \text{cm}/\text{A}$

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 maintenance type
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