

DESCRIPTION

The M51660L is a semiconductor integrated circuit for use in servo motor control in radio control applications.

Housed in a 14-pin molded plastic zig-zag inline package (ZIP), the M51660L contributes to the miniaturization of the set.

The built-in voltage regulating circuit, and the differential comparator used in the comparator circuit provide the M51660L with extremely stable power supply voltage fluctuation characteristics and temperature change characteristics.

FEATURES

- Small circuit current 3.5mA typ.
(When output is off)
- Excellent power supply and temperature stability
- Simple setting of dead band
- Includes protection circuit for continuous "H" level input

APPLICATION

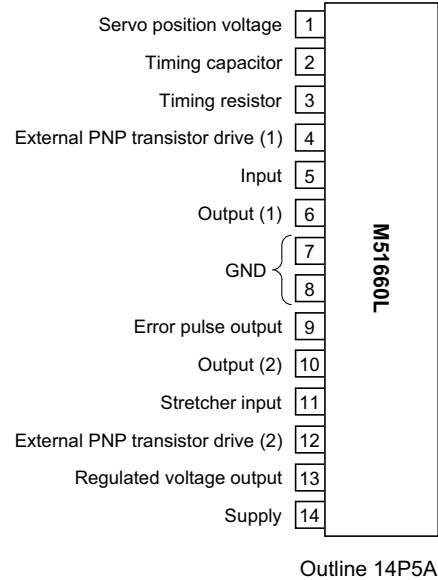
Digital proportional system for radio control, and servo motor control circuit, etc.

RECOMMENDED OPERATING CONDITIONS

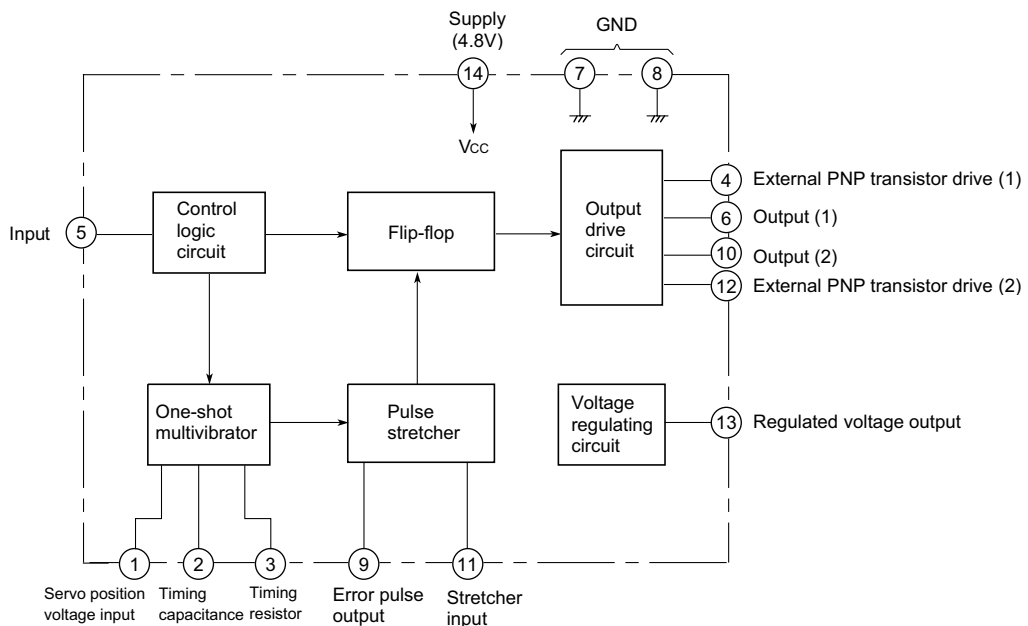
Supply voltage range 3.5 – 7V

Rated supply voltage 4.8V

PIN CONFIGURATION (TOP VIEW)



BLOCK DIAGRAM



SERVO MOTOR CONTROL FOR RADIO CONTROL

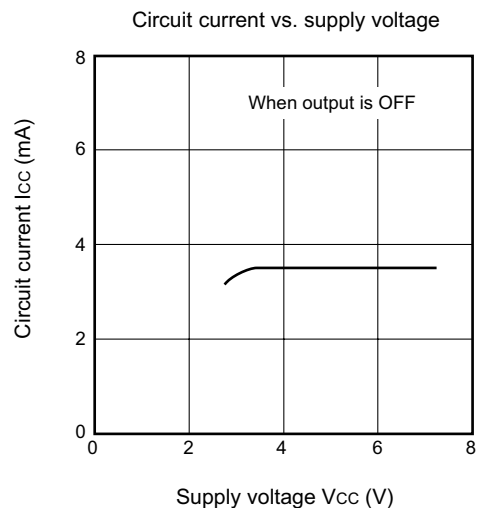
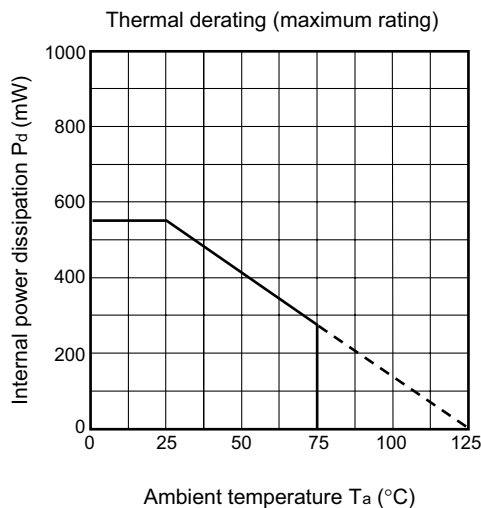
ABSOLUTE MAXIMUM RATINGS (Ta = 25°C, unless otherwise noted)

Symbol	Parameter	Conditions	Ratings	Unit
VCC	Supply voltage		7.5	V
IO SINK	Output sink current		500	mA
IO SOURCE	Output source current		200	mA
Pd	Power dissipation		550	mW
Kθ	Thermal derating range	Ta ≥ 25°C	5.5	mW/°C
Topr	Operating temperature		-20 – +75	°C
Tstg	Storage temperature range		-40 – +125	°C

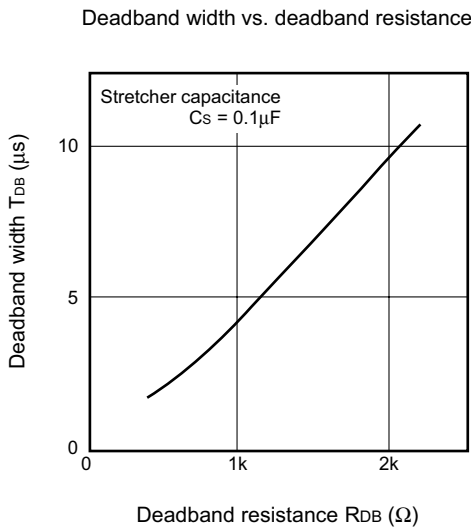
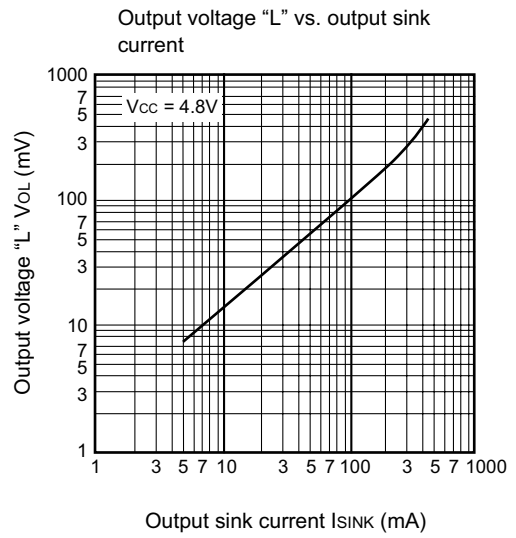
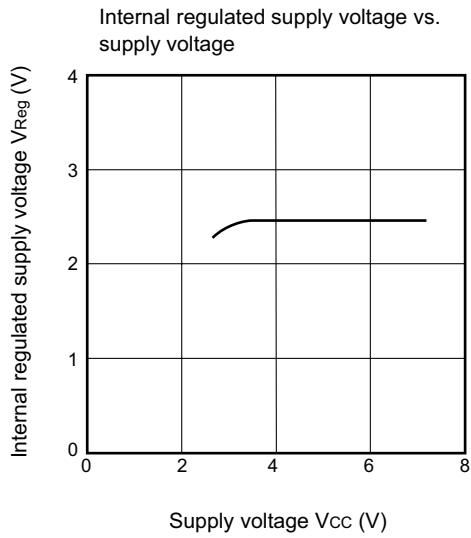
ELECTRICAL CHARACTERISTICS (Ta = 25°C and VCC = 4.8V, unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
Icc	Circuit current	When output is OFF		3.5	5	mA
		When output is ON		20		
VOL	Output voltage "L"	IO SINK = 100mA		0.1	0.2	V
		IO SINK = 400mA		0.4	0.7	
VOH	Output voltage "H"	IO SOURCE = 100mA	3.4	3.8		V
IPNP	External PNP transistor Drive current		30			mA
VReg	Internal regulated supply voltage		2.3	2.45	2.6	V
IReg	Internal regulated supply output current				3.0	mA
TDB	Minimum dead band width	RDB = 510Ω, Cs = 0.1μF			1.5	μs

TYPICAL CHARACTERISTICS (Ta = 25°C, unless otherwise noted)

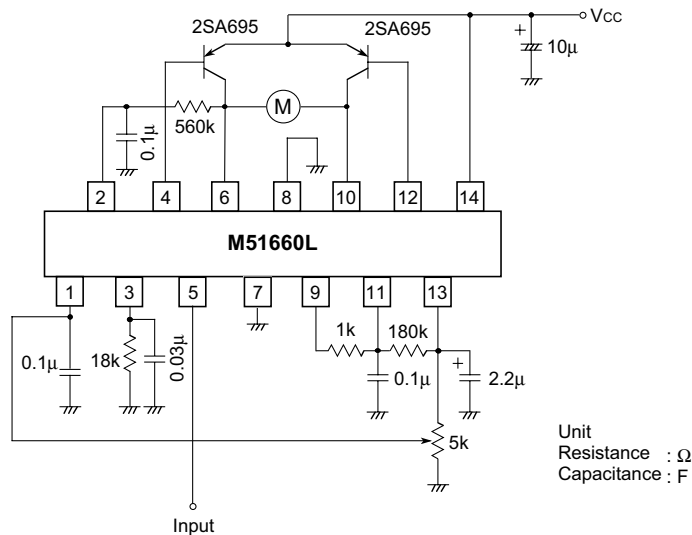


SERVO MOTOR CONTROL FOR RADIO CONTROL



APPLICATION EXAMPLE

Servo motor control circuit for radio-controlled



TECHNICAL APPLICATION NOTES**PIN DESCRIPTION**

- 1. Servo Position Voltage Input Pin (Pin ①)**
Connect the potentiometer terminal for position detection that follows the output axis. Compare this voltage with the voltage of the triangular wave of pin ② and drive the motor. A capacitor of approximately 0.1 μ F should be connected for noise prevention.
 - 2. Timing Capacitor Pin (Pin ②)**
Connect a capacitor that will generate a triangular wave by constant current charging. A typical value is 0.1 μ F. Also connect a feedback resistor from the output here.
 - 3. Timing Resistor (Pin ③)**
Connect a resistor that will determine the value of the constant current of pin ②. A resistor of 18k Ω will yield a current of 1.0mA. A capacitor of approximately 0.03 μ F should be connected in parallel with the resistor to increase stability.
 - 4. External PNP Transistor Drive ① (Pin ④)**
Connect to the base of the external PNP transistor.
 - 5. Input Pin (Pin ⑤)**
Operate with a positive pulse of peak value 3V or greater.
 - 6. Output ① Pin (Pin ⑥)**
Connect a feedback resistor between this pin and pin ②.
 - 7. Ground (pins ⑦ and ⑧)**
 - 8. Error Pulse Output pin (Pin ⑨)**
Connect a resistor between this pin and pin ⑪. The dead band will change according to the value of this resistor.
 - 9. Output ② pin (Pin ⑩)**
This is the output ② pin.
 - 10. Stretcher Input Pin (Pin ⑪)**
Connect the capacitor and resistor of the pulse stretcher section.
 - 11. External PNP Transistor Drive ② (Pin ⑫)**
Connect to the base of the external PNP transistor.
 - 12. Regulated Voltage Output Pin (Pin ⑬)**
This is the output of the internal regulated supply voltage. Make connections from this pin to a potentiometer or pulse stretcher resistor. Connect a capacitor of approximately 2.2 μ F for stability.
 - 13. Supply Voltage (Pin ⑭)**
The supply voltage exhibits uniform characteristics from 3.5V to 7V. Connect a capacitor of approximately 10 μ F.
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