BLOCK DIAGRAM

radio controlled operation. Wide range of operating voltage, and the **NJM2611** has the feature of internal circuit of maintaining constant voltage which helps stabilizing from fluctuation caused by voltage source and the ambient temperature.

The NJM2611 is an integrated circuit to be applied on servo motor of

■ FEATURES

Wide Operating Voltage

■ GENERAL DESCRIPTION

- Setting up the dead band by the internal constant
- Internal Output NPN Power Transistor
- Internal Constant Voltage Circuit
- Package Outline
- Bipolar Technology



DIP16, DMP16

SERVO MOTOR CONTROLLER

NJM2611D/M



■ PACKAGE OUTLINE

NJM2611D

NJM2611M

- 1 -

■ ABSOLUTE MAXIMUM RATINGS			(V ⁺ =6V, T _a =25°C)
PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V ⁺	10.0	V
Power Dissipation	PD	(DIP16) 700 (DMP16) 350	mW
Output Sink Current	I _{sink}	600(note)	mA
Operating Temperature Range	T _{opr}	-20 to +75	C°
Storage Temperature Range	T _{stg}	-40 to +125	C°
	•		•

(note) Due to the pulse driving, the peak current must be maintained within the range of the maximum ratings.

■ ELECTRICAL CHARACTERISTICS

(V⁺=6V, T_a=25°C) PARAMETER SYMBOL TEST CONDITION MIN. TYP MAX. UNIT. V⁺ V **Operating Voltage** 2.5 7.5 -**Operating Current** 10.0 Icc _ 7.5 mΑ Minimum Input Pulse Voltage Range V_{IN} At the balanced output 1.85 V _ _ V **Regulator Voltage** 2.0 2.15 2.3 V_{reg} V⁺=2.5 to 8.5V Line Regulation 30 Vlin mV _ _ Load 12Ω V **Output Saturation Voltage** Vsat 0.5 _ -Dead Band T_{DB} 4.0 -_ μs

PIN NO.	PIN FUNCTION	DESCRIPTION	INSIDE EQUIVALENT CIRCUIT
1	ViN	Input the positive pulse of more than 1.85V.	1 14kΩ 28kΩ GND 1
2	R _{REF}	Constant output voltage of 1.25V (typical). Through the resistor which is connected to this pin, and setting up the constant current to make the saw tooth sweep at pin 14. Connect the capacitor of approximately 1000pF with the resistor on paralel.	2.15V 2.15V 400Ω 400Ω 6.4kΩ GND 1

■ PIN DESCRIPTION

PIN NO.	PIN FUNCTION	DESCRIPTION	INSIDE EQUIVALENT CIRCUIT
3	Vreg	Connect the resistors along to the motor inter-locking potentiometer pulse stretcher. Connect the capacitor of more than 0.1µF.	V ⁺ 7.5k0 3 7.5k0 10.4k0 GND 1
4	PS1	Connect the resistor between Vref. The pulse gain can be decided by this resistor and the capacitor connected to pin 5.	2.15V 1.5kΩ 1.4kΩ 150Ω 4 GND 1
5	PS2	Connect the capacitor between GND. The pulse gain can be decided by this condensor and the resistor connected to pin 4.	2.15V

PIN NO.	PIN FUNCTION	DESCRIPTION	INSIDE EQUIVALENT CIRCUIT
6	PSV	Nomally, this pin is used on the open state of operation. Especially, when it is reguired to make the adjustment of the dead band, connect the resistor between GND and then the dead band can be made it's expansion. (Refere to, dead band pin 6 voltage vs. pin 6 sink current characteristic)	2.15V 1.9k0 6 1.7k0 5.4k0 3k0 GND 1
7	NC	No connect	
8	GND1	System GND.	
9	PNP1	Connect the external PNP transistor (Q2) base.	V ⁺ 9 13 1.1 kΩ 9 13 130 Ω 1.1 kΩ GND 1 10
10	GND2	Power GND Large pulse current is running therefore, connect the line by separating from the system GND	

PIN NO.	PIN FUNCTION	DESCRIPTION	INSIDE EQUIVALENT CIRCUIT
11	OUT1	Connect the collector of the external PNP transistor, the base of which is connected to pin 9. Connect the motor between pin 13.	V ⁺ 1.1 kΩ 12 (1) 130Ω 1.1 kΩ GND 1 10
12	PNP2	Connect the external PNP transistor (Q1) base.	V+ 1.1 kΩ 130 Ω 1.1 kΩ GND 1 10
13	OUT2	Connect the collector of the external PNP transistor, the base of which is connected to pin 12. Connect the motor between pin 11	V ⁺ 1.1kΩ 9 13 130Ω 1.1kΩ GND 1 10

PIN NO.	PIN FUNCTION	DESCRIPTION	INSIDE EQUIVALENT CIRCUIT
14	CP	Connect the sawtooth wave generating capacitor. The motor's position shall be decided at the peak point of sawtooth wave, so that it is advisabled to select the higher precision capacitor as well as the resistor connected to pin 2.	V ⁺ 7.4kΩ 14 360Ω GND 1
15	COMP	The center part of potentiometer of motor motion is to be connected. The capacitor of about 0.1μ F is to be connected between GND for preventing noise. The center location can be adjusted by putting the resistor in series with the potentiometer.	V ⁺ 7.4 kΩ 14 360Ω 15 GND 1
16	V+	Power Supply	

TYPICAL APPLICATION



Notes

- (1) VR_1 : Potentiometer coupled mechanically to the servo motor
- (2) VR_2 : Adjusting the motor center location
- (3) Hunching prevention

 0.01μ F Capacitor between pin 11 and GND 0.01 μ F Capacitor between pin 13 and GND Diode between pin 11 and power supply Diode between pin 13 and power supply 100 Ω Resistor between pin 11 and pin 13 680k Ω Resistor between pin 11 and GND

■ TYPICAL CHARACTERISTICS



Dead Band Pin 6 Voltage vs. Pin 6 Sink Current







[CAUTION]

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