

VIDEO CAMERA AUTO-IRIS FUNCTION

■ GENERAL DESCRIPTION

The NJM2225 are bipolar integrated circuits of motor drive for video camera. The NJM2225 have function of auto iris by video luminance signal and external information input to AGC circuit. They are composed of clipping circuit of video luminance signal, amplifier for driving motor and comparator for AGC circuits.

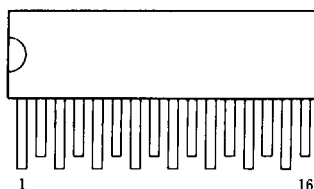
■ FEATURES

- Operating Voltage (+4.5V ~ +11V)
- Internal Auto Iris Circuit
- Package Outline DMP16, ZIP16, SSOP16
- Bipolar Technology

■ RECOMMENDED OPERATING CONDITION

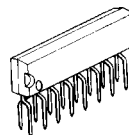
- Operating Voltage 4.5 ~ 11V

■ PIN CONFIGURATION



NJM2225S

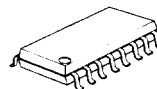
■ PACKAGE OUTLINE



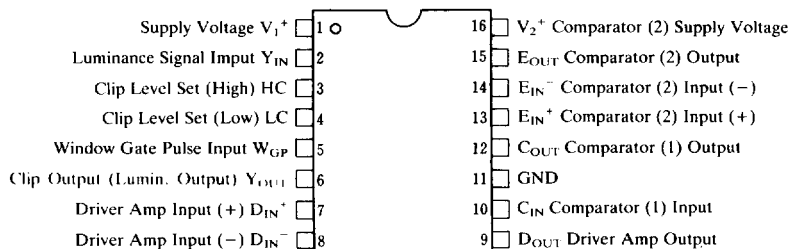
NJM2225S



NJM2225V



NJM2225M

NJM2225M
NJM2225V



■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

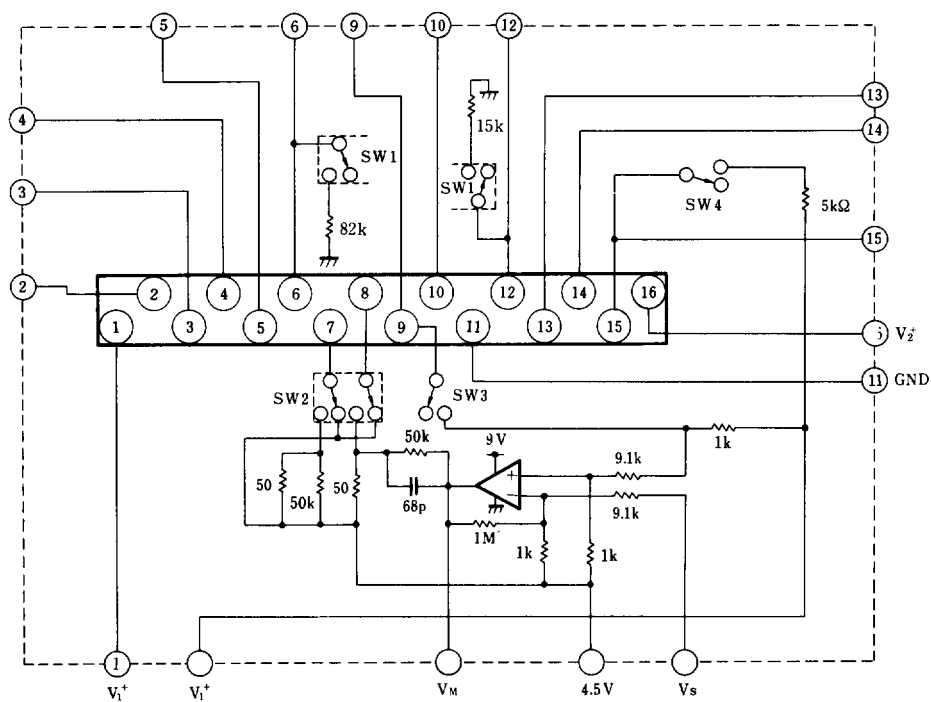
PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V*	12	V
Motor Drive Current	I _o	30	mA(PIN.9)
Power Dissipation	P _D	(ZIP16) 500	mW
		(DMP16) 350	mW
		(SSOP16) 350	mW
Operating Temperature Range	T _{opr}	-20 ~ +75	°C
Storage Temperature Range	T _{stg}	-40 ~ +125	°C

■ ELECTRICAL CHARACTERISTICS

(Ta=25°C, V_{I1}=9V, V_{I2}=9V)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current	I _{CC}		—	5.0	8.0	mA
Pin 3 Clip HIGH Level	V _{CLH}	V _S =5V	2.82	2.90	2.98	V
Pin 3 Clip LOW Level	V _{CLL}	V _S =0V	2.27	2.35	2.43	V
Pin 5 Threshold Level	V _{TH}		0.7	1.4	2.1	V
7-9 Open Loop Gain	G ₀	R _{L1} =1kΩ (Pin 9-V*)	80	90	—	dB
Pin 9 Output Operating Voltage	V _{9L}	R _{L1} =1kΩ (Pin 9-V*)	1.4	1.5	1.6	V
Pin 10 DC Level	V ₁₀		1.9	2.1	2.3	V
AGC Clip Level	V _{12CL}	R _{L2} =15kΩ	3.80	4.00	4.20	V
Pin 15 Saturation Level	V _{15L}	E _{IN} ⁺ =2V, E _{IN} ⁻ =2.1V, R _{L3} =5kΩ	—	0.2	0.4	V
Pin 15 OFF Level	V _{15H}	E _{IN} ⁺ =2V, E _{IN} ⁻ =1.9V, R _{L3} =5kΩ	8.9	9.0	—	V

■ TEST CIRCUIT





■ TEST CONDITION

PARAMETER	TEST CONDITION
Operating Current	$V_1^+ = V_2^+ = 9V$ ⑤-GND, ⑬⑭-4.5V SW1~SW4-OFF Other Pins-OPEN
(Clip Circuit)	SW1~SW4-OFF
Pin 3 Clip HIGH Level	⑤-5V ③ Voltage Test
Pin 3 Clip LOW Level	⑤-0V ③ Voltage Test
Pin 5 Threshold Level	⑤-0.8V ③ Voltage Test Clip Level 1 ⑤-2.0V ③ Voltage Test Clip Level 2
(Driver-Amp Circuit)	SW2, SW3-ON
7-9 Open Loop Gain	$V_s=6V$, VM Value; A $V_s=3V$, VM Value; B $O.L. Gain = 20 \log [3000 / (A - B)]$
Pin 9 Output Operating Voltage	$V_s=0.5V$ ⑨ Voltage Test SW3-ON
(Comparator Circuit)	
Pin 10 DC Level	⑩ Voltage Test
AGC Clip Level	SW1~SW3-ON $V_s=8V$ ⑫ Voltage Test
(External Comparator Circuit)	
Pin 15 Saturation Level	SW4-ON ⑬-2V ⑭-2.1V ⑮ Voltage Test
Pin 15 OFF Level	⑬-2V ⑭-1.9V ⑮ Voltage Test



■ TERMINAL FUNCTION

($V_1^+ = 9V$, $V_2^+ = 9V$)

PIN NO.	PIN SYMBOL	EQUIVALENT CIRCUITS	PIN VOLTAGE[V]	PIN DESCRIPTION
1	V_1^+	—	9.0	Operating Voltage
2	Y_{IN}		2.38	Luminance signal input. Lum. sig. level: 0.5Vp-p.
3	HC		2.35	Setting clip level (High). No connect at $V^+ = 9V$.
4	LC		0.6	Setting clip level (Low). No connect at $V^+ = 9V$.
5	W_{GP}		0	Input window gate pulse. The pulse:
6	Y_{OUT}		2.35	Clipped luminance signal Output.
7	D_{IN}^+		—	Input driver amp signal (+) of luminance converted to DC level.
8	D_{IN}^-		—	Input driver amp signal (-) of iris motor threshold voltage.
9	D_{OUT}		—	Driver amp output which drive driver coil of iris motor.



■ TERMINAL FUNCTION

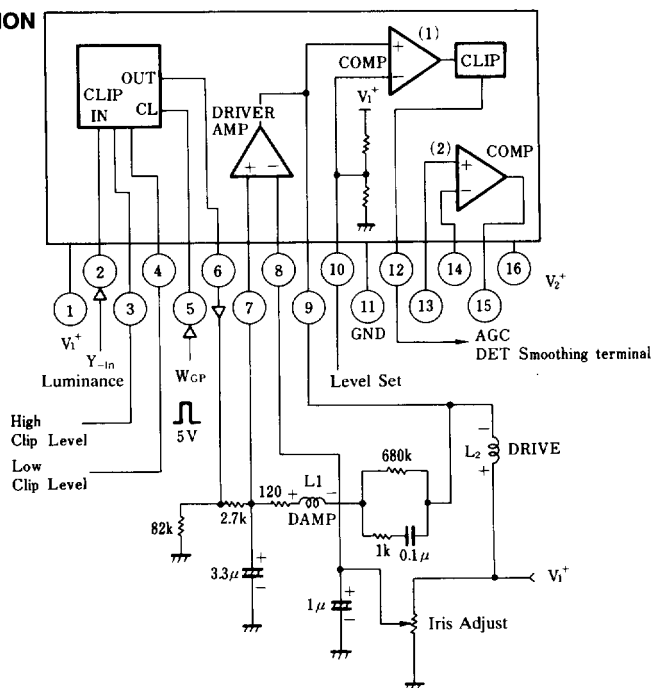
($V_1^+ = 9V$, $V_2^+ = 9V$)

PIN NO.	PIN SYMBOL	EQUIVALENT CIRCUITS	PIN VOLTAGE[V]	PIN DESCRIPTION
10	C_{IN}^-		2.09	Level set of COMP (1) which judges on-off condition of iris. No connect at $V_1^+ = 9V$.
11	GND	—	0	GND
12	C_{OUT}		0	Comparator (1) output which is signal to AGC circuit. Can drive TTL with 15kΩ load (4V/0V).
13	E_{IN}^+		—	Comparator (2) input (+)
14	E_{IN}^-		—	Comparator (2) input (-)
15	E_{OUT}		—	Comparator (2) output
16	V_2^+	—	9.0	Supply terminal to comparator (2)

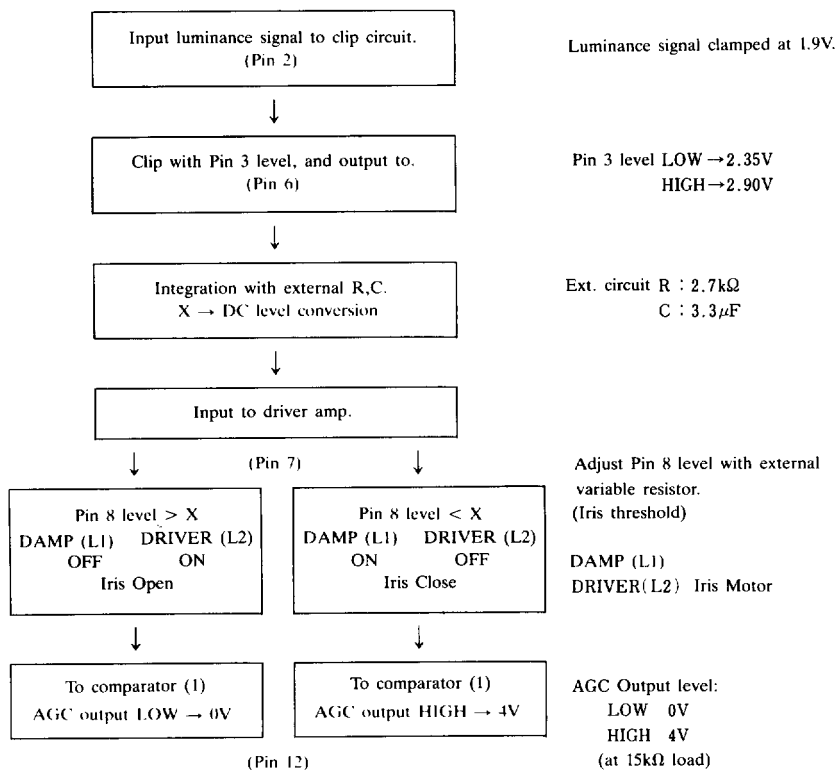
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■ TYPICAL APPLICATION



■ BRIEF OPERATION PRINCIPLE



**■ EXTERNAL CIRCUIT**

EXTERNAL DEVICE	OPERATION DESCRIPTION
Pin6-Pin7 resistor 2.7k Ω Pin7-GND capacitor 3.3 μ F	Integrating video luminance signal, and convert to DC level.
Pin7-L1 resistor 120 Ω	Control iris motor speed.
Pin8 -Pin9 RC 680k Ω , 1k Ω , 0.1 μ F	To prevent miss operation of motor by vertical synchronous signal, low-pass filter acts as negative feedback circuit.
Pin8-GND capacitor 1 μ F	AC ground
V _I ⁺ -GND Variable resistor	Set threshold value of iris-motor start.

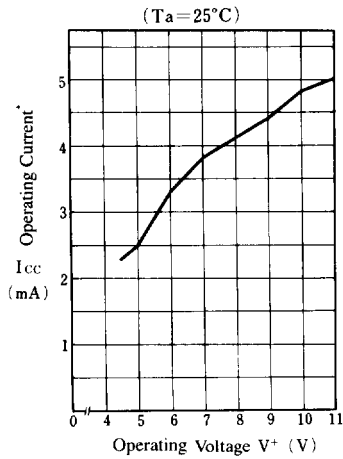
■ NOTE

- When used at V_I⁺=9V, not connect pin3, pin4, pin10.

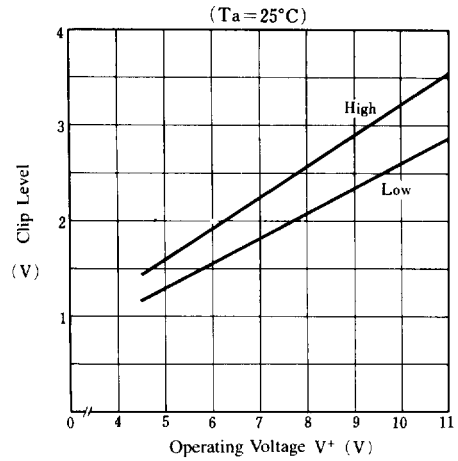


■ TYPICAL CHARACTERISTICS

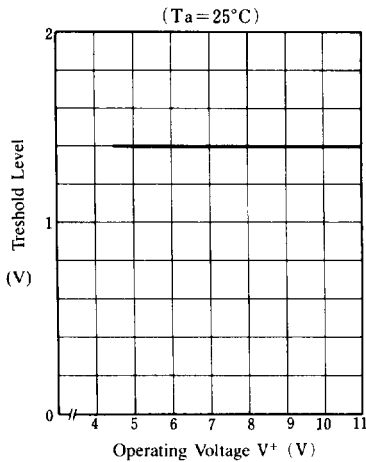
Operating Current



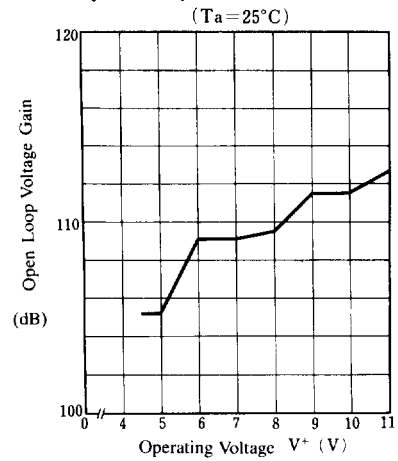
Clip Level (Pin 3)



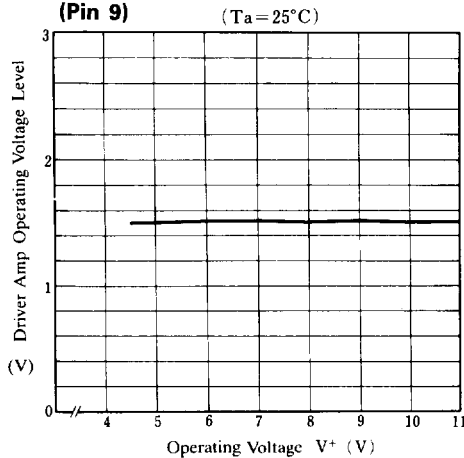
Threshold Level (Pin 5)



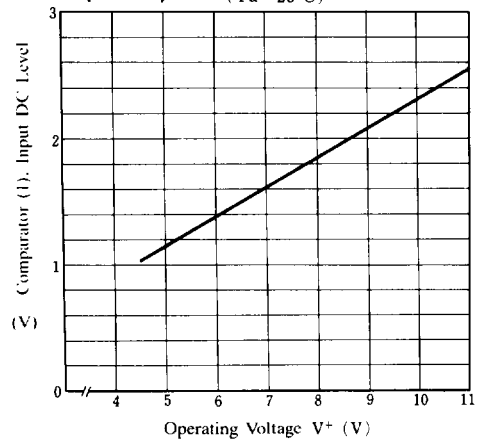
Open Loop Gain (Pin 7-Pin 9)



Driver Amp Operating Voltage Level (Pin 9)



Comparator (1) Input DC Level (Pin 10)





■ TYPICAL CHARACTERISTICS

