

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

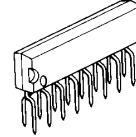
- Operating Voltage (+4.5V to +11V)
- Internal Auto Iris Circuit
- Package Outline DMP16, ZIP16, SSOP16
- Bipolar Technology

■ RECOMMENDED OPERATING CONDITION

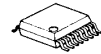
- Operating Voltage 4.5 to 11V

■ PIN CONFIGURATION

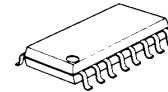
■ PACKAGE OUTLINE



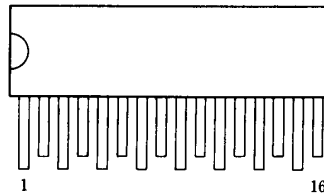
NJM2225S



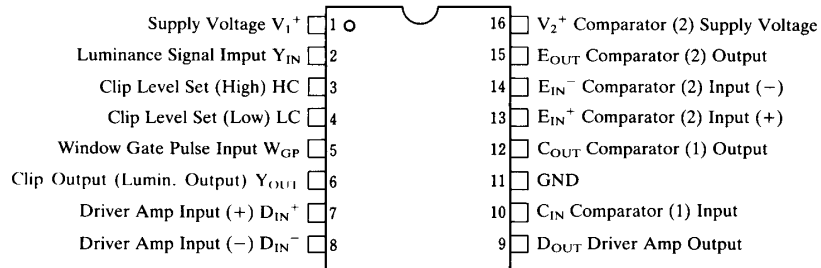
NJM2225V



NJM2225M



NJM2225S



NJM2225M

NJM2225V

NJM2225

■ ABSOLUTE MAXIMUM RATINGS

($T_a=25^\circ\text{C}$)

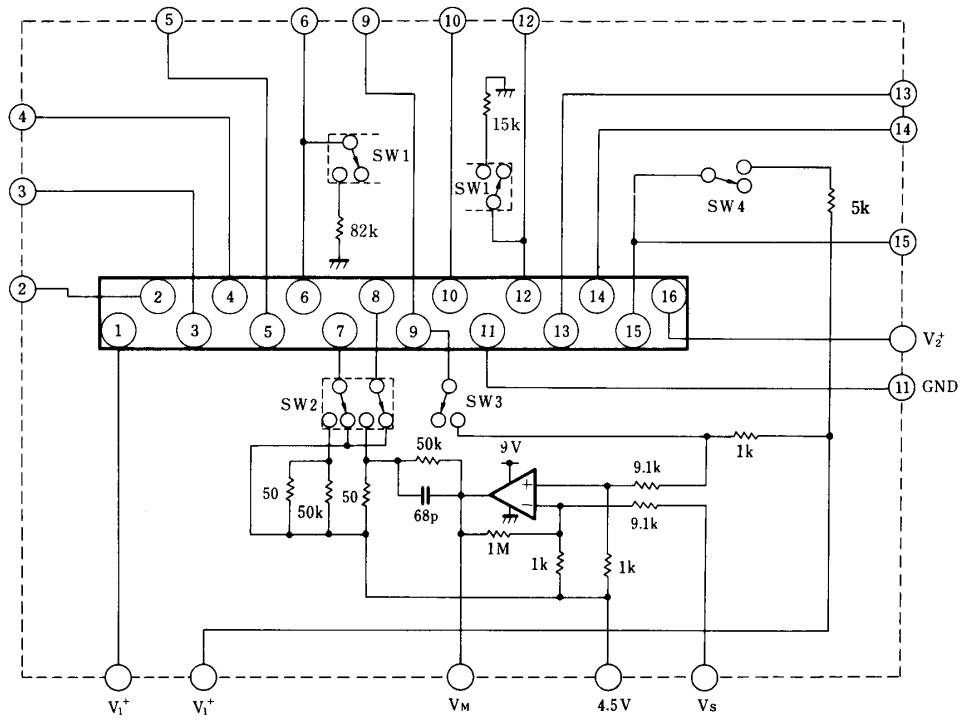
PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	12	V
Motor Drive Current	I_o	30	mA(PIN.9)
Power Dissipation	P_D	(ZIP16) 500 (DMP16) 350 (SSOP16) 350	mW mW mW
Operating Temperature Range	T_{opr}	-20 to +75	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-40 to +125	$^\circ\text{C}$

■ ELECTRICAL CHARACTERISTICS

($T_a=25^\circ\text{C}$, $V_1^+=9\text{V}$, $V_2^+=9\text{V}$)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current	I_{CC}		-	5.0	8.0	mA
Pin 3 Clip HIGH Level	V_{CLH}	$V_5=5\text{V}$	2.82	2.90	2.98	V
Pin 3 Clip LOW Level	V_{CLL}	$V_5=0\text{V}$	2.27	2.35	2.43	V
Pin 5 Clip Threshold Level	V_{TH}		0.7	1.4	2.1	V
7-9 Open Loop Gain	G_0	$R_{L1}=1\text{k}\Omega$ (Pin 9- V^+)	80	90	-	dB
Pin 9 Output Operating Voltage	V_{9L}	$R_{L1}=1\text{k}\Omega$ (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}	$R_{L2}=15\text{k}\Omega$	3.80	4.00	4.20	V
Pin 15 Saturation Level	V_{15L}	$E_{IN}^+=2\text{V}$, $E_{IN}^-=2.1\text{V}$, $R_{L3}=5\text{k}\Omega$	-	0.2	0.4	V
Pin 15 OFF Level	V_{15H}	$E_{IN}^+=2\text{V}$, $E_{IN}^-=1.9\text{V}$, $R_{L3}=5\text{k}\Omega$	8.9	9.0	-	V

■ TEST CIRCUIT



■ TEST CONDITION

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

■ TERMINAL FUNCTION

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.

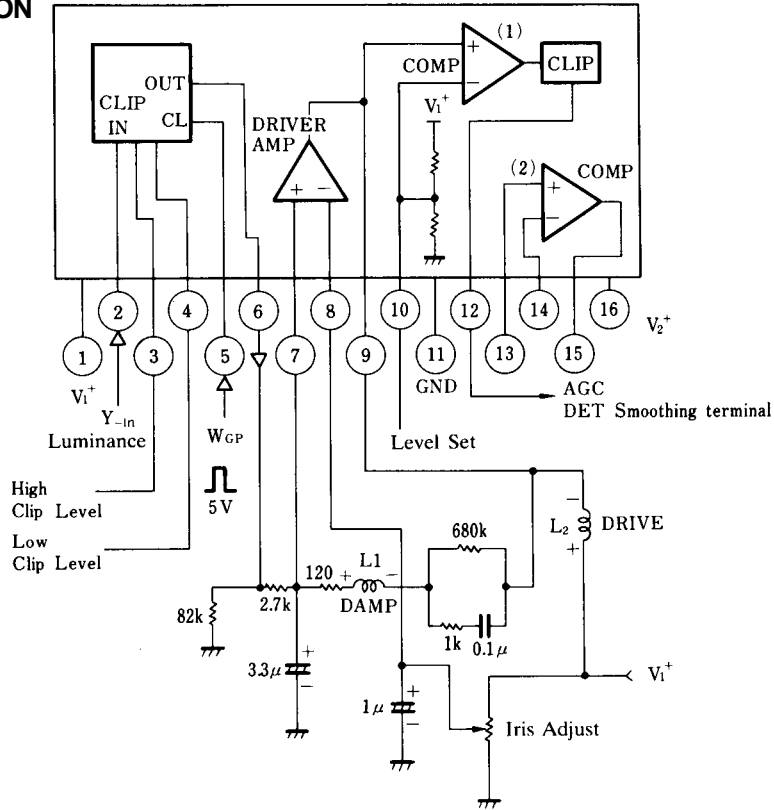
NJM2225

■ TERMINAL FUNCTION

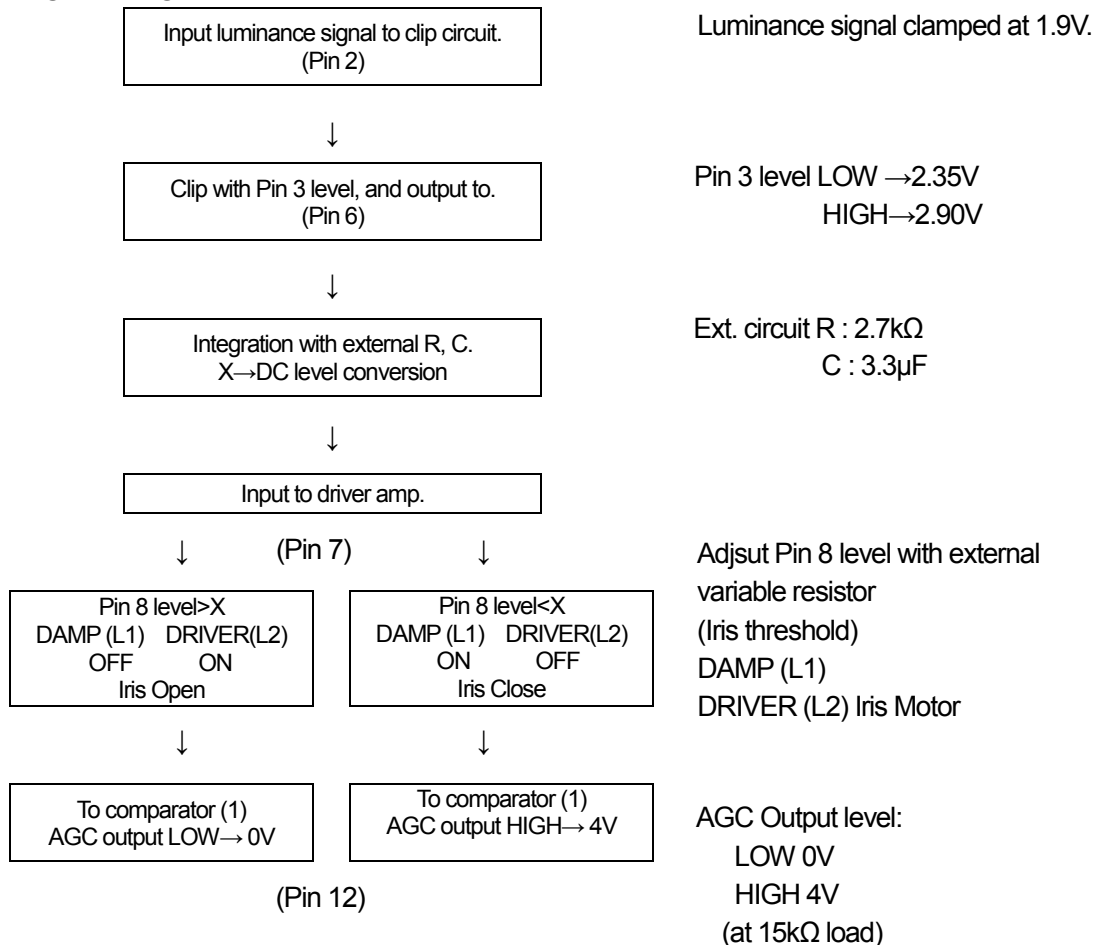
($V_1^+ = 9V, V_2^+ = 9V$)

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 $V^+ = 9V$.
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)

■ TYPICAL APPLICATION



■ BRIEF OPERATION PRINCIPLE



NJM2225

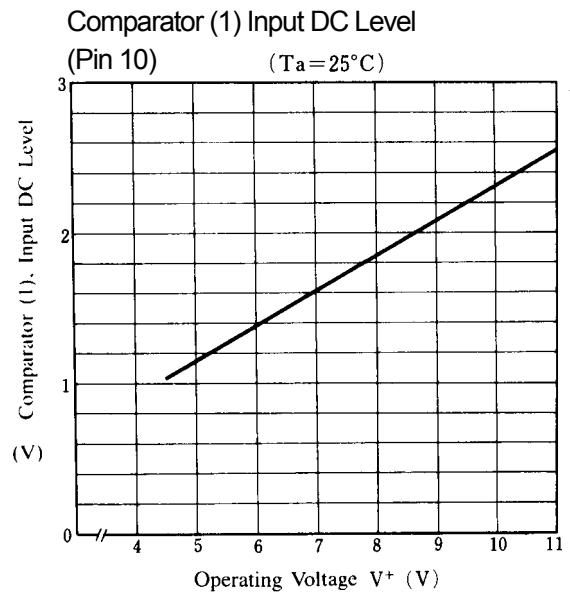
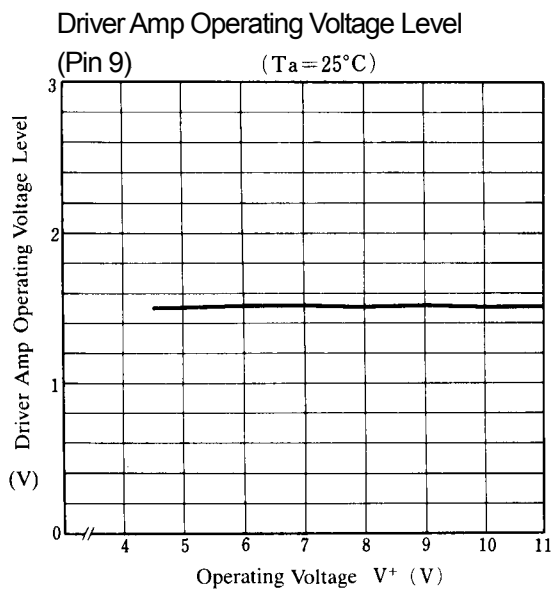
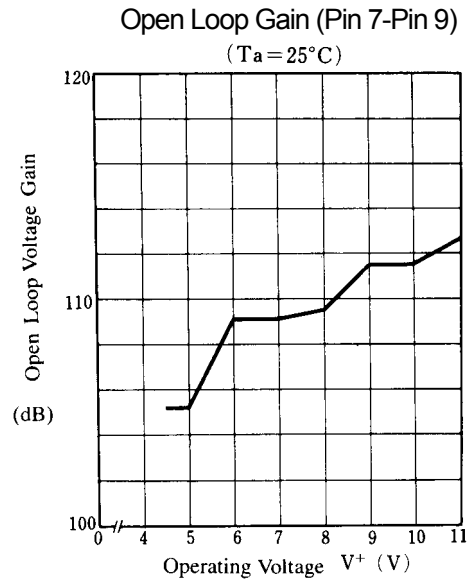
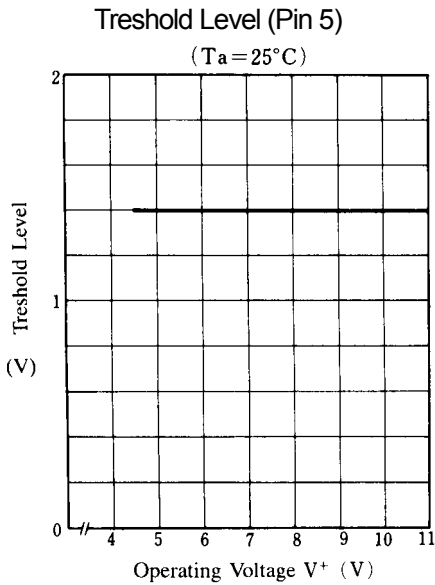
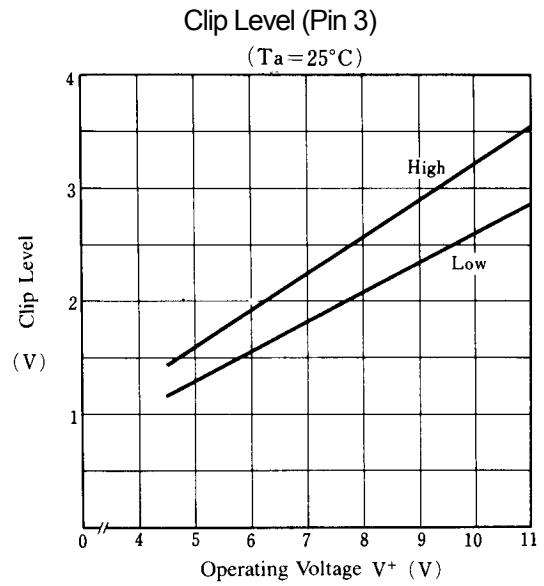
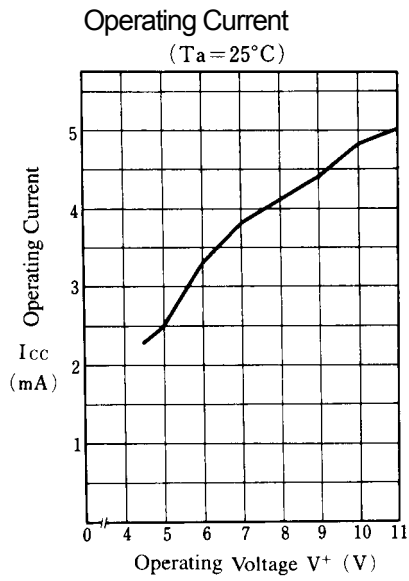
■ EXTERNAL CIRCUIT

EXTERNAL DEVICE	OPERATION DESCRIPTION
Pin6-Pin7 resistor 2.7k Ω Pin 7-GND capacitor 3.3 μ F	Integrating video luminance signal, and convert to DC level.
Pin 7-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 ₁ ⁺ -GND Variable resistor	Set threshold value of iris-motor start.

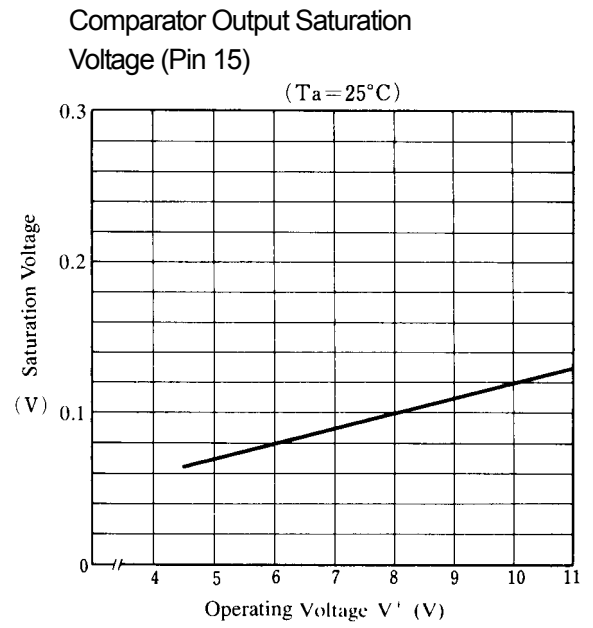
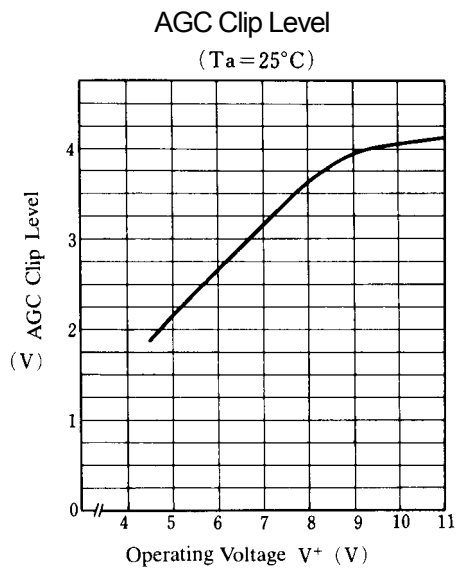
■ NOTE

- When used at V₁⁺=9V, not connect pin3, pin4, pin10.

■ TYPICAL CHARACTERISTICS

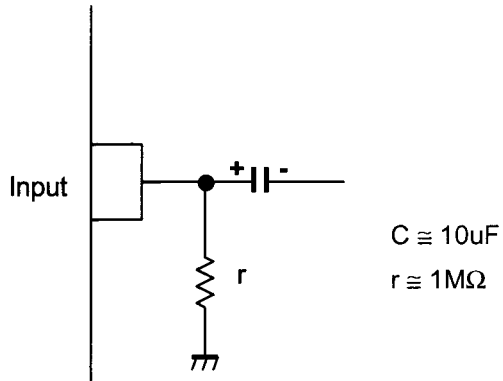


■ TYPICAL CHARACTERISTICS



■ APPLICATION

This IC requires $1M\Omega$ resistance between INPUT and GND pin for clamp type input since the minute current causes an unstable pin voltage.



[CAUTION]

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