

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

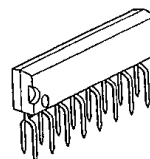
- Operating Voltage (+4.5V~+11V)
- Internal Auto Iris Circuit
- Package Outline DMP16, ZIP16, SSOP16
- Bipolar Technology

■ RECOMMENDED OPERATING CONDITION

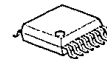
- Operating Voltage 4.5~11V

■ PIN CONFIGURATION

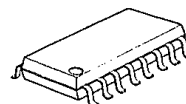
■ PACKAGE OUTLINE



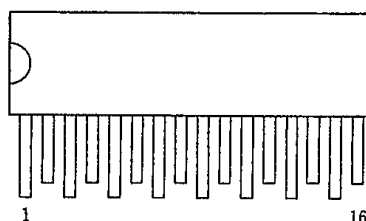
NJM2225S



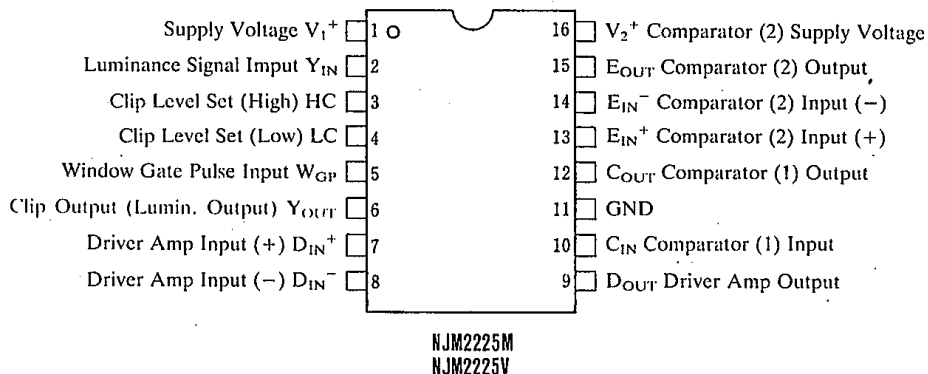
NJM2225V



NJM2225M



NJM2225S



■ 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

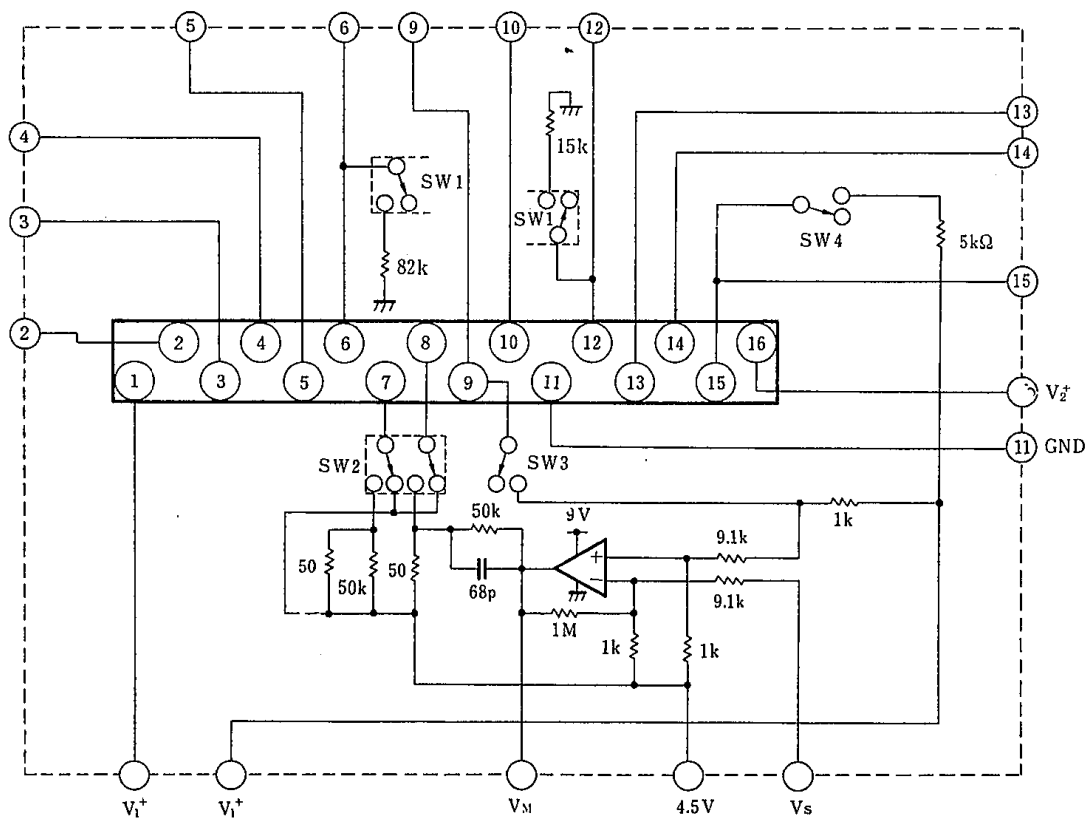
■ ELECTRICAL CHARACTERISTICS

(Ta=25°C, V₁⁺=9V, V₂⁺=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 ₅ =5V	2.82	2.90	2.98	V
Pin 3 Clip LOW Level	V _{CLL}	V ₅ =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

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■ 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	Vs-6V,	VM Value; A
	Vs-3V,	VM Value; B
	O.L.Gain=20LOG [3000/(A-B)]	
Pin 9 Output Operating Voltage	Vs-0.5V	⑨ Voltage Test
	SW3-ON	
(Comparator Circuit)		
Pin 10 DC Level	⑩ Voltage Test	
AGC Clip Level	SW1~SW3-ON	
	Vs-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

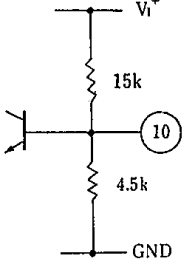
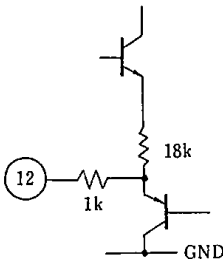
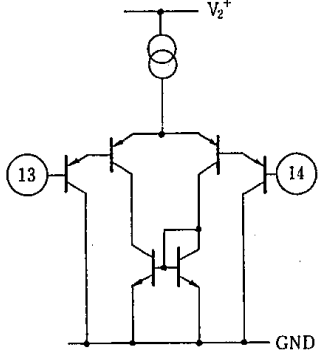
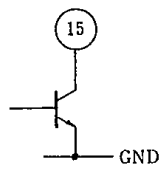
■ TERMINAL FUNCTION

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

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.

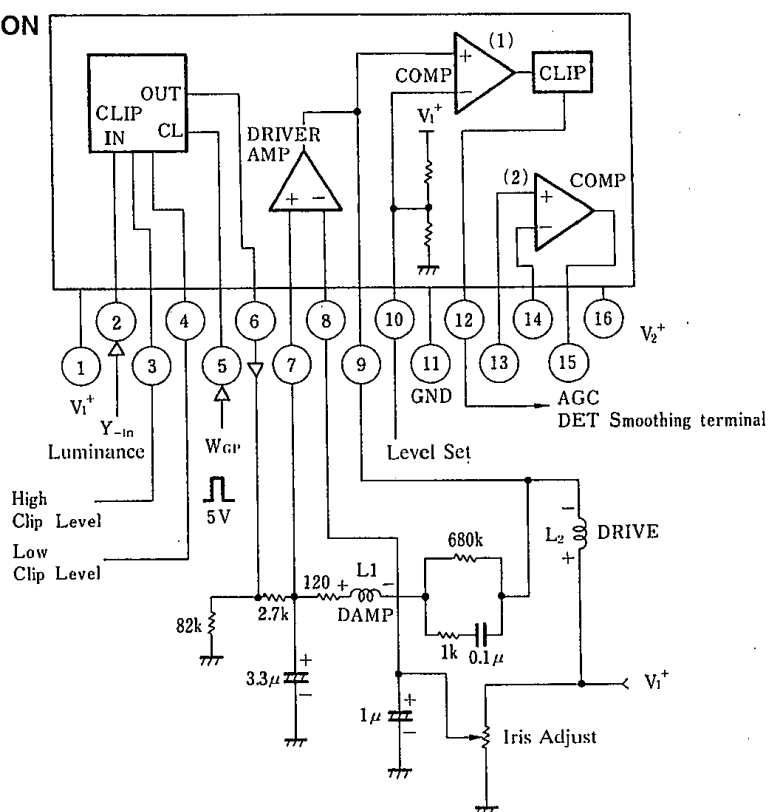
■ TERMINAL FUNCTION

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

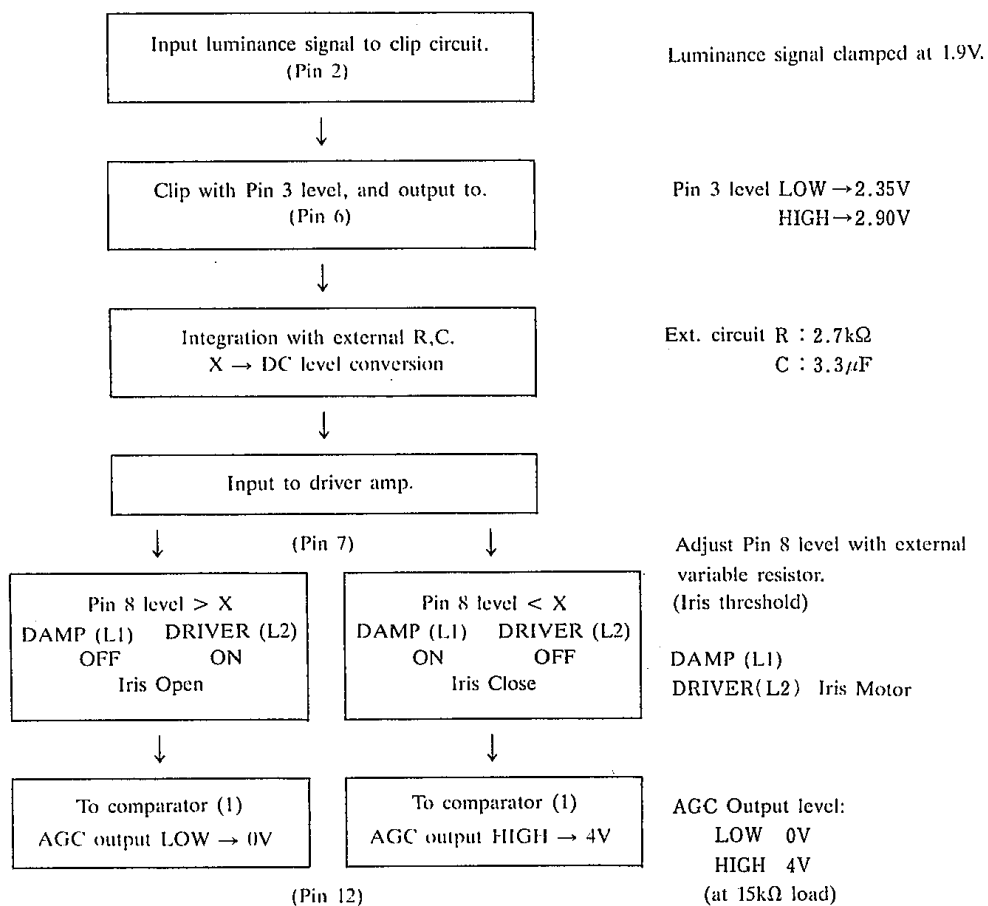
PIN NO.	PIN SYMBOL	EQUIVALENT CIRCUITS	PIN VOLTAGE[V]	PIN DESCRIPTION
10	C_{IN}^-		2.09	Level set of COMP (1) which judges on-off condition of iris. No connect at $V^+ = 9V$.
11	GND	—	0	GND
12	C_{OUT}		0	Comparator (1) output which is signal to AGC circuit. Can drive TTL with 15kΩ load (4V/0V).
13	E_{IN}^+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

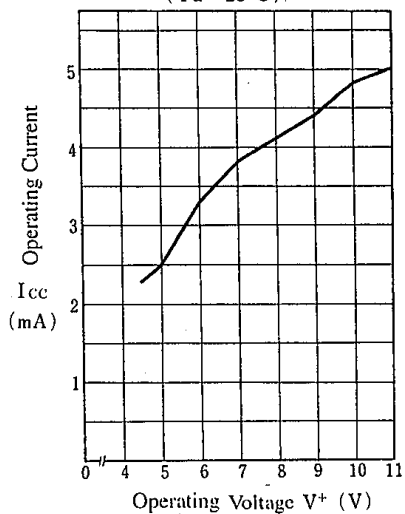
■ NOTE

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

■ TYPICAL CHARACTERISTICS

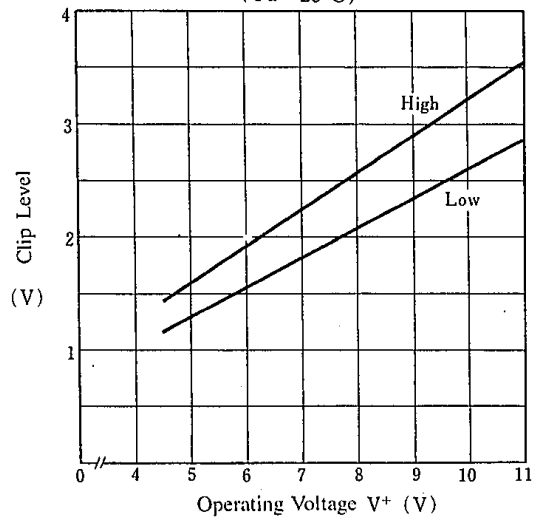
Operating Current

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



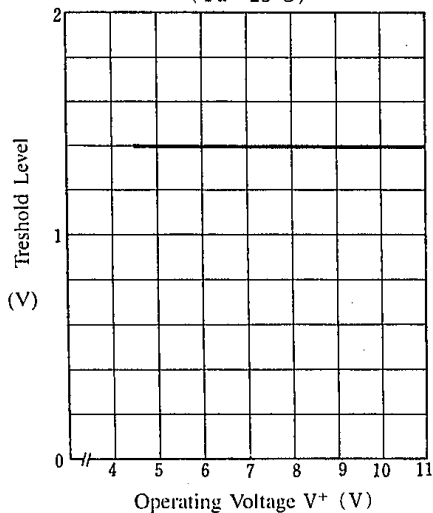
Clip Level (Pin 3)

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



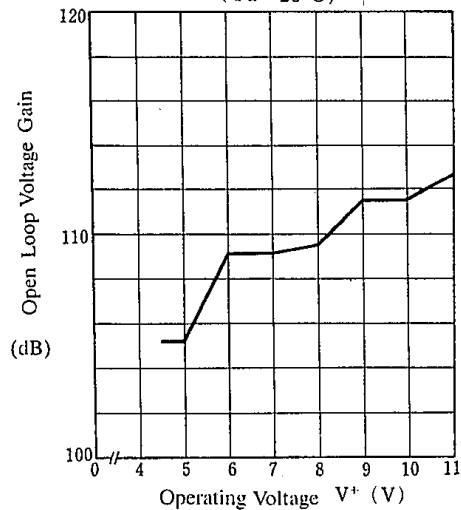
Threshold Level (Pin 5)

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



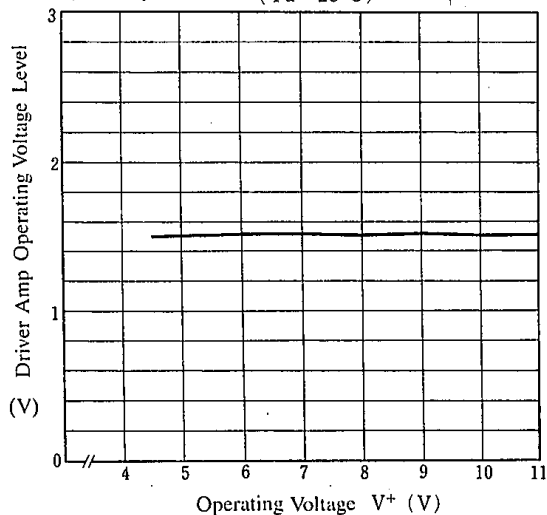
Open Loop Gain (Pin 7-Pin 9)

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



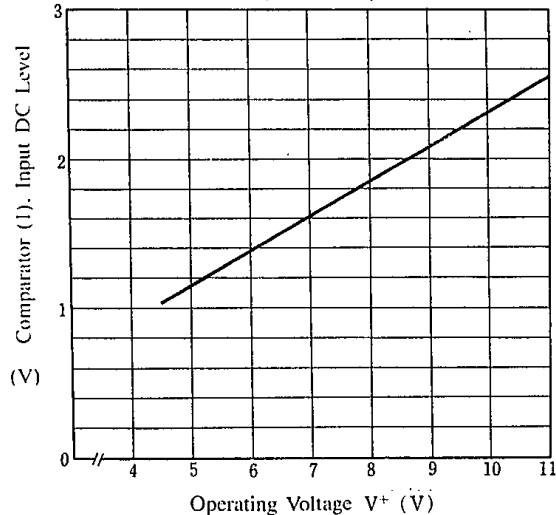
Driver Amp Operating Voltage Level (Pin 9)

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

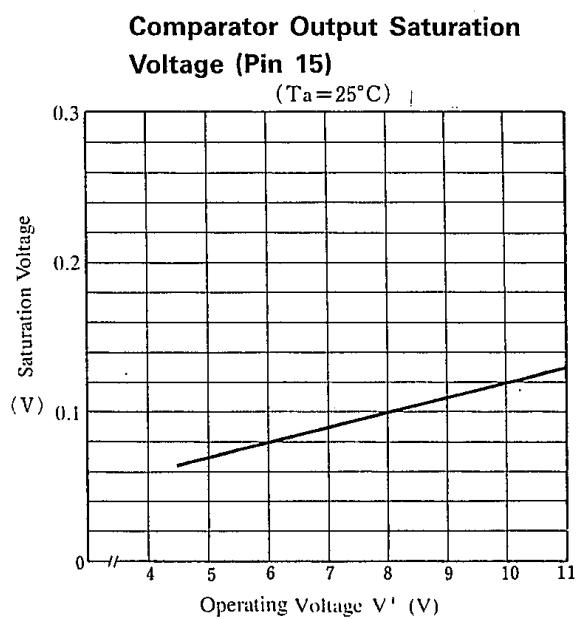
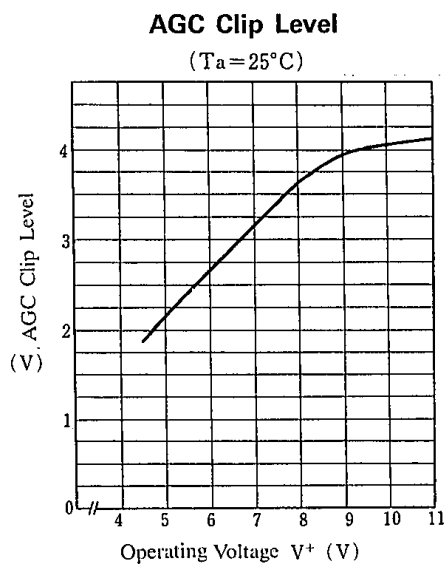


Comparator (1) Input DC Level (Pin 10)

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



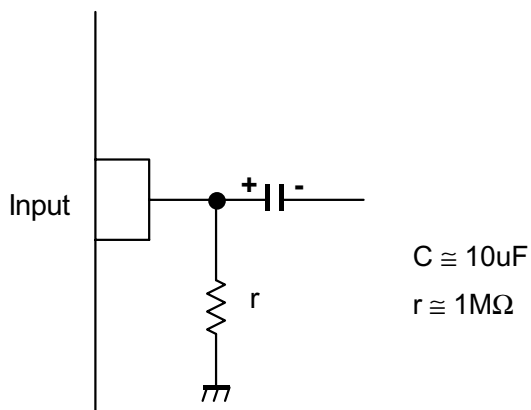
■ TYPICAL CHARACTERISTICS



NJM2225

■APPLICATION

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



[CAUTION]

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