

## REMOTE-CONTROL INTERFACE

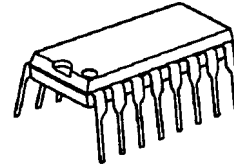
### ■ GENERAL DESCRIPTION

The **NJM2145** is a remote-control Interface for television, VCR, receiver, and others.

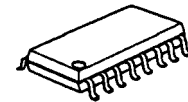
Some items are connected through the OUT2 (two-way) terminal, then all of items are controlled when the control signal from any remote-control commander is transmitted to one of items.

If a few OUT2 terminals are open, the **NJM2145** operates normally by its error protection circuit.

### ■ PACKAGE OUTLINE



**NJM2145D**

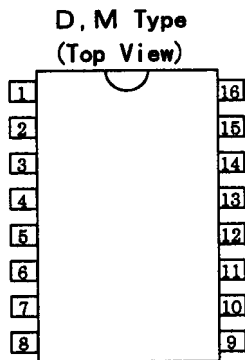


**NJM2145M**

### ■ FEATURES

- Operating Voltage (4.75V to 5.25V)
- Internal Error Protection Circuit against open OUT2 terminal
- OUT2 (Tow-Way) x 3
- Internal Output Short Protection
- Bipolar Technology
- Package Outline DIP16, DMP16

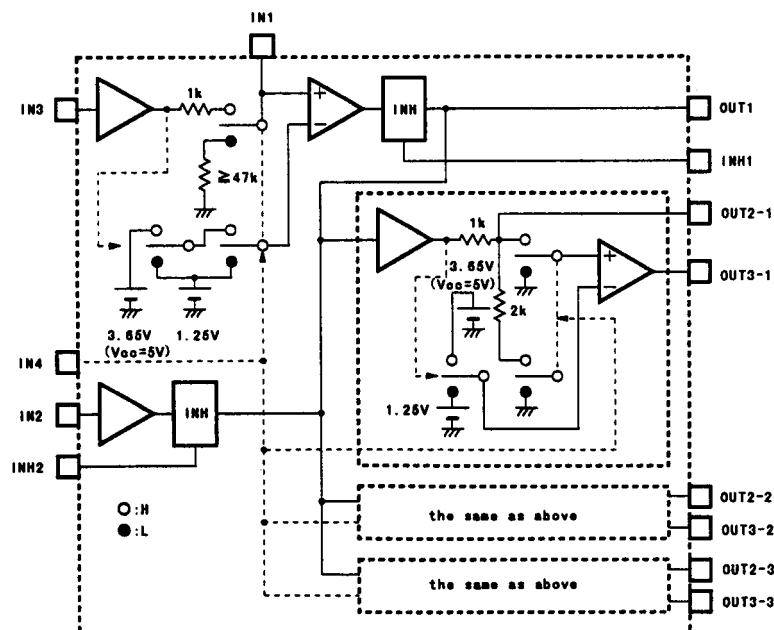
### ■ PIN CONFIGURATION



#### PIN FUNCTION

1. $V^+$	9. OUT2-3
2. OUT1	10. OUT2-2
3. IN4	11. OUT2-1
4. IN3	12. NC
5. IN2	13. IN1
6. OUT3-1	14. INH2
7. OUT3-2	15. INH1
8. OUT3-3	16. GND

### ■ BLOCK DIAGRAM



# NJM2145

## ■ ABSOLUTE MAXIMUM RATINGS

(T<sub>a</sub> = 25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sup>+</sup>	7	V
Power Dissipation	P <sub>D</sub>	(DIP16) 700 (DMP16) 300	mW
Operating Temperature Range	T <sub>opr</sub>	-20 to +75	°C
Storage Temperature Range	T <sub>stg</sub>	-40 to +125	°C

## ■ ELECTRICAL CHARACTERISTICS (V<sup>+</sup> = 5V, T<sub>a</sub> = 25°C)

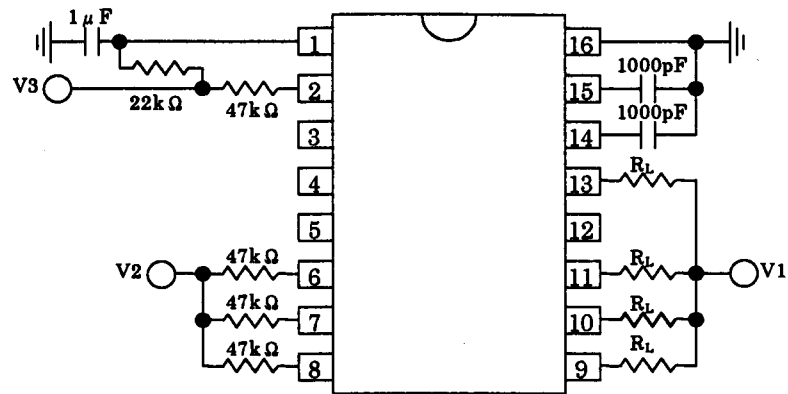
PARAMETER	SYMBOL	TEST CONDITION							MIN.	TYP.	MAX.	UNIT
		IN2	IN3	IN4	V1	V2	V3	RL				
Operating Supply Voltage	V <sub>opr</sub>	-	-	-	-	-	-	-	4.75	5.0	5.25	V
Operating Current 1	I <sub>cc1</sub>	1.5	1.5	1.5	0.0	0.0	Open	47kΩ	-	2.0	4.0	mA
Operating Current 2	I <sub>cc2</sub>	3.5	3.5	3.5	0.0	0.0	Open	1kΩ	-	10	13	mA
IN1-High Electric Potential Output Voltage1	IN1-H1	-	3.5	3.5	5.0	-	-	1kΩ	3.5	-	5.0	V
IN1-Low Electric Potential Output Voltage1	IN1-L1	-	1.5	3.5	5.0	-	-	1kΩ	2.0	2.5	3.0	V
IN1-High Electric Potential Output Voltage2	IN1-H2	-	3.5	3.5	0.0	-	-	1kΩ	2.0	2.5	3.0	V
IN1-Low Electric Potential Output Voltage2	IN1-L2	-	1.5	3.5	0.0	-	-	1kΩ	0.0	-	1.5	V
IN1-Input Impedance	IN1-imp	-	3.5	1.5	5.0	-	-	47kΩ	47	80	120	kΩ

■ **ELECTRICAL CHARACTERISTICS** ( $V^+ = 5V, T_a = 25^\circ C$ )

PARAMETER	SYMBOL	TEST CONDITION							MIN.	TYP.	MAX.	UNIT
		IN2	IN3	IN4	V1	V2	V3	RL				
OUT1-High Electric Potential Output Voltage1	OUT1-H1	-	3.5	3.5	1.0	-	Open	1k $\Omega$	3.5	-	5.0	V
OUT1-High Electric Potential Output Voltage2	OUT1-H2	-	1.5	3.5	INH*	-	0.0	1k $\Omega$	3.5	-	5.0	V
OUT1-Low Electric Potential Output Voltage	OUT1-L	-	3.5	3.5	4.0	-	Open	1k $\Omega$	0.0	-	1.5	V
OUT2-High Electric Potential Output Voltage1	OUT2-H1	INH*	-	3.5	-	5.0	Open	1k $\Omega$	3.5	4.0	4.5	V
OUT2-Low Electric Potential Output Voltage1	OUT2-L1	1.5	-	3.5	-	5.0	Open	1k $\Omega$	1.5	2.0	2.5	V
OUT2-High Electric Potential Output Voltage2	OUT2-H2	INH*	-	3.5	-	0.0	Open	1k $\Omega$	1.5	2.0	2.5	V
OUT2-Low Electric Potential Output Voltage2	OUT2-L2	1.5	-	3.5	-	0.0	Open	1k $\Omega$	0.0	-	1.5	V
OUT2-High Electric Potential Output Voltage3	OUT2-H3	1.5	-	1.5	-	0.0	1.5	47k $\Omega$	3.5	-	5.0	V
OUT2-Low Electric Potential Output Voltage3	OUT2-L3	1.5	-	1.5	-	5.0	Open	47k $\Omega$	0.0	-	1.5	V
OUT3-High Electric Potential Output Voltage	OUT3-H	3.5	-	3.5	4.0	0.0	Open	47k $\Omega$	3.5	-	5.0	V
OUT3-Low Electric Potential Output Voltage1	OUT3-L1	1.5	-	3.5	1.0	5.0	Open	47k $\Omega$	0.0	-	1.5	V
OUT3-Low Electric Potential Output Voltage2	OUT3-L2	3.5	-	1.5	1.0	5.0	Open	47k $\Omega$	0.0	-	1.5	V
IN1, OUT2 Input Threshold Voltage1	V <sub>TH1-1</sub>	-	-	1.5	-	-	-	-	1.0	1.3	2.0	V
IN1, OUT2 Input Threshold Voltage2	V <sub>TH1-2</sub>	-	3.5	3.5	-	-	-	-	3.0	3.65	4.5	V
IN2, IN3, IN4 Input Threshold Voltage	V <sub>TH2</sub>	-	-	-	-	-	-	-	2.0	2.5	3.0	V
Inhibit Time1 (IN1→OUT1)	INH1	-	1.5	3.5	INH*	-	0.0	1k $\Omega$	20	60	100	msec
Inhibit Time2 (IN2→OUT2)	INH2	INH*	-	3.5	-	5.0	0.0	1k $\Omega$	20	60	100	msec
Slew Switch	SS	V <sup>+</sup> = 0V, IN1 = 3.5V						47k $\Omega$	3.5	-	4.0	V

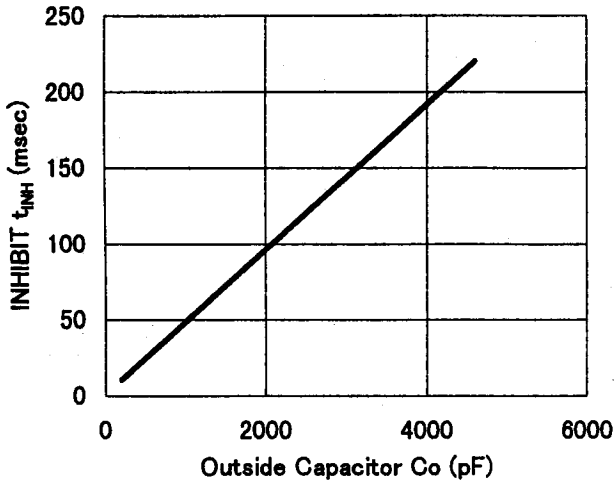
# NJM2145

## ■ TEST CIRCUIT

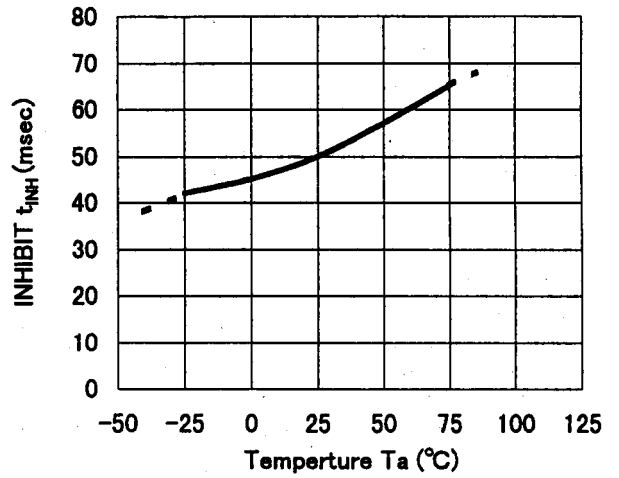


## ■ TYPICAL CHARACTERISTICS

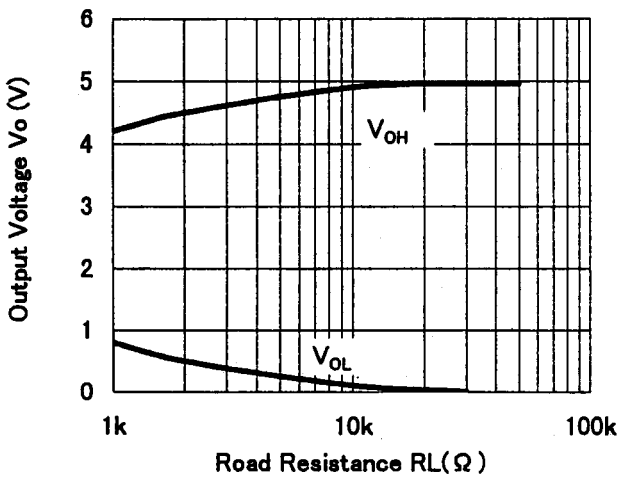
INHIBIT Time vs. Outside Capacitor  
( $V_{cc1}=5V, T_a=25^\circ C$ )



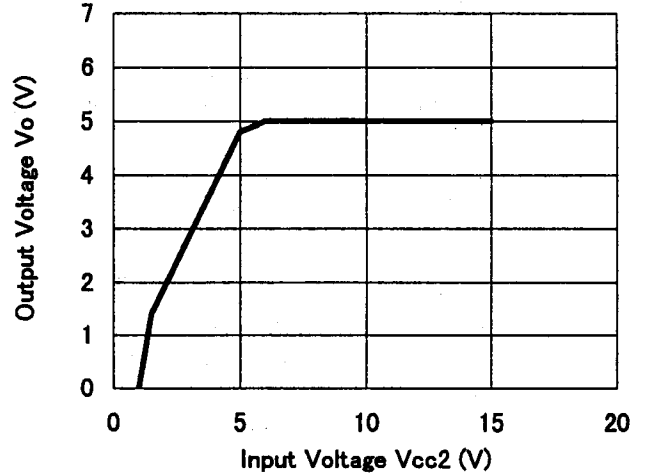
INHIBIT Time vs. Temperature  
( $V_{cc1} = 5V, C = 1000pF$ )



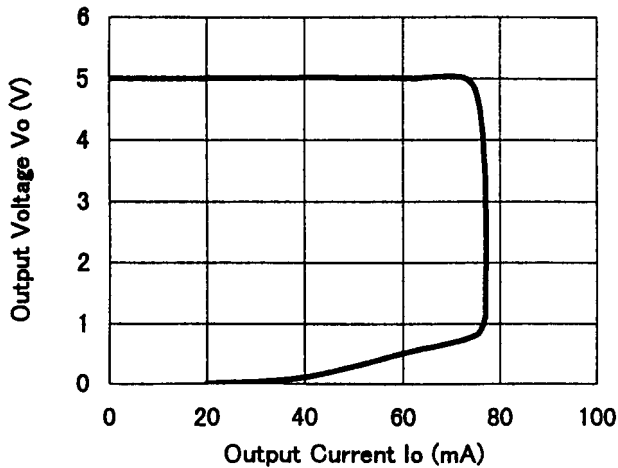
Out 2 Output Voltage vs. Load Resistance  
( $V_{cc1}=IN2=5V, T_a=25^\circ C$ )



Regulator Output Characteristics  
( $V_{cc1}=5V, R_L=100\Omega, T_a=25^\circ C$ )

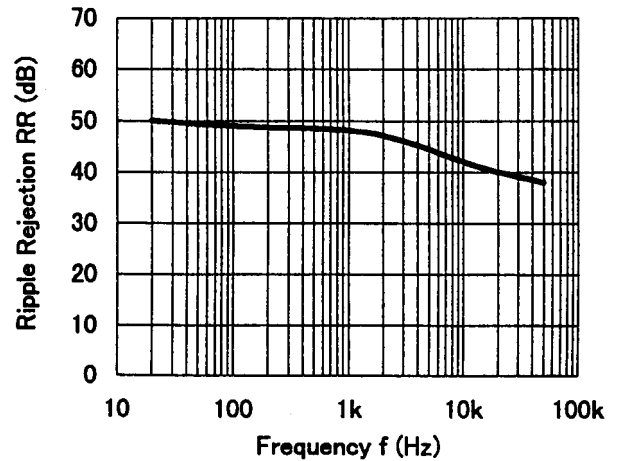


Regulator Load Characteristics  
( $V_{cc1}=5V, V_{cc2}=5.9V, T_a=25^\circ C$ )



Ripple Rejection

( $V_{cc1}=5V, V_{cc2}=5.9V+300mV_{rms}, R_L=100\Omega, T_a=25^\circ C$ )



**[CAUTION]**

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