

## DIGITAL OUTPUT PHOTO REFLECTOR

## ■ GENERAL DESCRIPTION

The NJL5805K is a thin package photo reflectors designed for car-audio applications. Durability under the temperature cycle has been greatly improved by applying a newly developed resin, (Compared to our conventional products, the durability has been doubled.)

## ■ APPLICATIONS

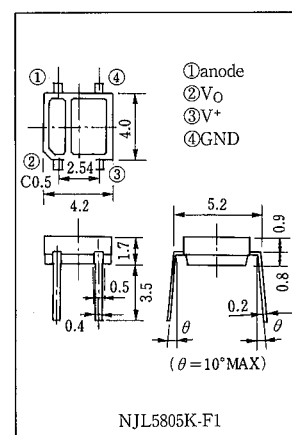
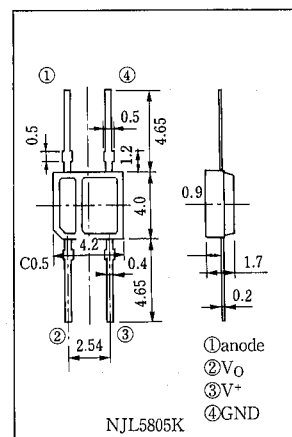
- The end detector for car-video or audio tape etc.
- Rotation detection and control to be applied for car audio turntable

■ ABSOLUTE MAXIMUM RATINGS ( $T_a=25^{\circ}\text{C}$ )

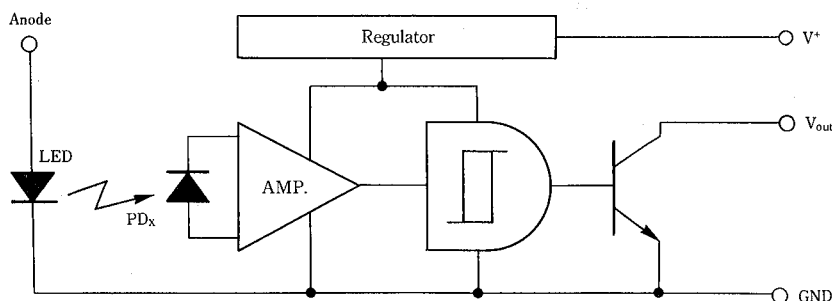
PARAMETER	SYMBOL	RATINGS	UNIT
<b>Emitter</b>			
Forward Current (Continuous)	$I_F$	25	mA
Reverse Voltage (Continuous)	$V_R$	6	V
Power Dissipation	$P_D$	45	mW
<b>Detector</b>			
Supply Voltage	$V^+$	16	V
High Level Output Voltage	$V_{OH}$	16	V
Low Level Output Current	$I_{OL}$	16	mA
Power Dissipation	$P_O$	110	mW
<b>Coupler</b>			
Total Power Dissipation	$P_{tot}$	130	mW
Operating Temperature	$T_{opr}$	$-20 \sim +75$	$^{\circ}\text{C}$
Storage Temperature	$T_{stg}$	$-40 \sim +85$	$^{\circ}\text{C}$
Soldering Temperature	$T_{sol}$	260	$^{\circ}\text{C}$

(5sec. 1.5mm from body)

## ■ OUTLINE (typ.) Unit: mm



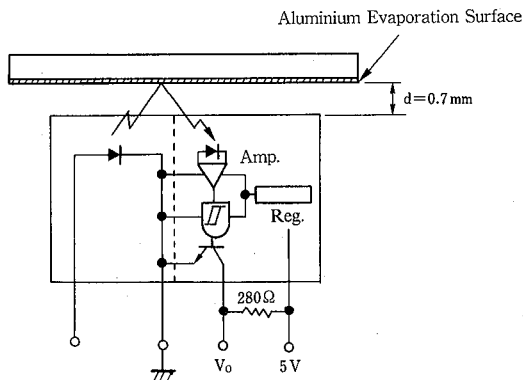
## ■ BLOCK DIAGRAM



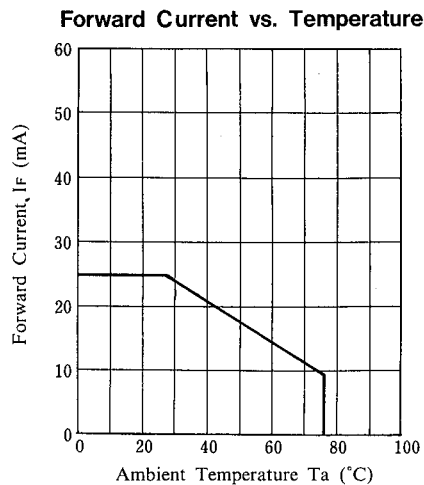
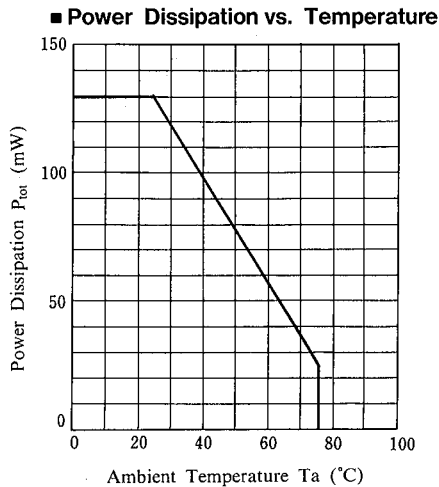
■ ELECTRO-OPTICAL CHARACTERISTICS (Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Emitter						
Forward Voltage	$V_F$	$I_F = 10\text{mA}$	—	—	1.3	V
Reverse Current	$I_R$	$V_R = 6\text{V}$	—	—	10	$\mu\text{A}$
Capacitance	$C_t$	$V_R = 0\text{V}, f = 1\text{MHz}$	—	25	—	pF
Detector						
Supply Voltage Range	$V^+$		4.5	—	15	V
Low Level Output Voltage	$V_{OL}$	$I_{OL} = 16\text{mA}, V^+ = 5\text{V}, I_F = 10\text{mA}, d = 0.7\text{mm}$	—	0.2	0.5	V
High Level Output Current	$I_{OH}$	$V_O = V^+ = 6\text{V}, I_F = 10\text{mA}, d = 0.7\text{mm}$	—	—	100	$\mu\text{A}$
Low Level Supply Current	$I_{CCL}$	$V^+ = 5\text{V}, I_F = 0\text{mA}$	—	4.5	10	mA
High Level Supply Current	$I_{CCH}$	$V^+ = 5\text{V}, I_F = 10\text{mA}, d = 0.7\text{mm}$	—	3	10	mA
Coupled						
L-H Threshold Input Current	$I_{FLH}$	$V^+ = 5\text{V}, R_L = 280\Omega, d = 0.7\text{mm}$	—	5	10	mA
Hysteresis	$I_{FHL}/I_{FLH}$	$V^+ = 5\text{V}, R_L = 280\Omega, d = 0.7\text{mm}$	—	0.8	—	
L→H Delay Time	$t_{PLH}$	$V^+ = 5\text{V}, I_F = 10\text{mA}, R_L = 280\Omega, d = 0.7\text{mm}$	—	10	—	$\mu\text{s}$
H→L Delay Time	$t_{PHL}$	$V^+ = 5\text{V}, I_F = 10\text{mA}, R_L = 280\Omega, d = 0.7\text{mm}$	—	5	—	$\mu\text{s}$
Rise Time	$t_r$	$V^+ = 5\text{V}, I_F = 10\text{mA}, R_L = 280\Omega, d = 0.7\text{mm}$	—	0.2	—	$\mu\text{s}$
Fall Time	$t_f$	$V^+ = 5\text{V}, I_F = 10\text{mA}, R_L = 280\Omega, d = 0.7\text{mm}$	—	0.1	—	$\mu\text{s}$

■ MEASURING SPECIFICATION FOR THRESHOLD INPUT CURRENT

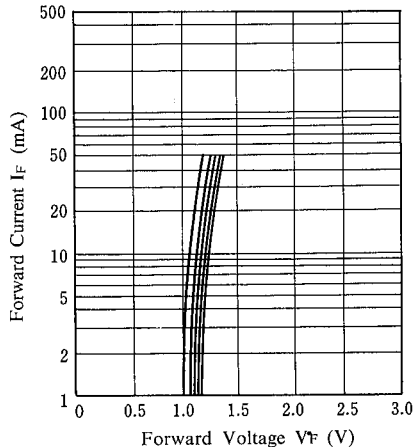


■ MAXIMUM RATING CURVES

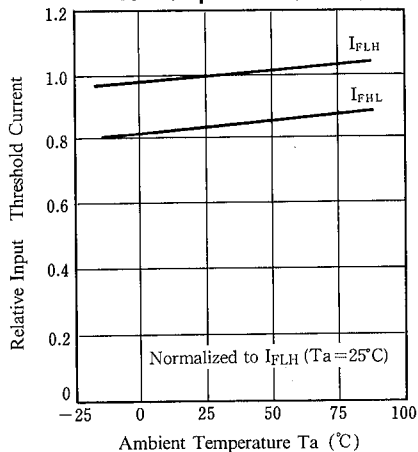


## TYPICAL CHARACTERISTICS

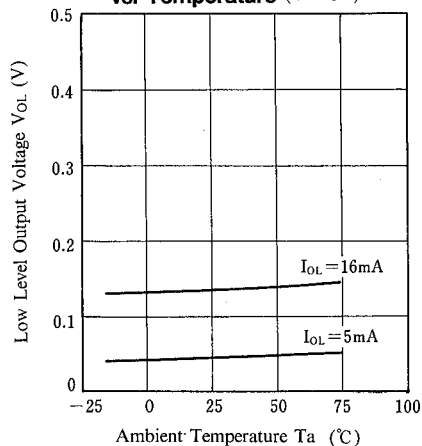
**Forward Current vs. Forward Voltage**  
( $T_a = 85^\circ\text{C}, 50^\circ\text{C}, 25^\circ\text{C}, 0^\circ\text{C}, -20^\circ\text{C}$ )



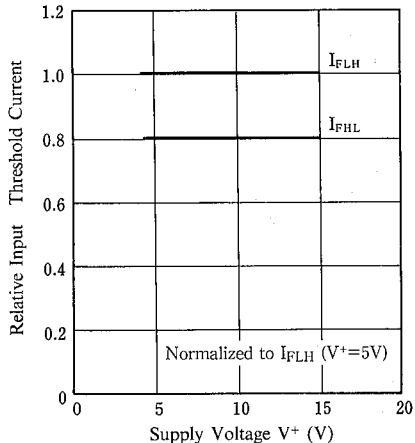
**Input Threshold Current vs. Temperature** ( $V^+ = 5\text{V}$ )



**Low Level Output Voltage vs. Temperature** ( $V^+ = 5\text{V}$ )

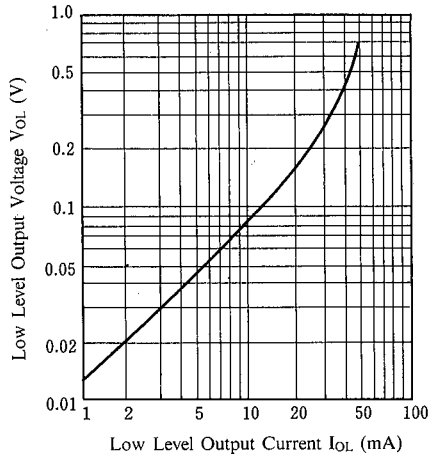


**Input Threshold Current vs. Supply Voltage** ( $T_a = 25^\circ\text{C}$ )

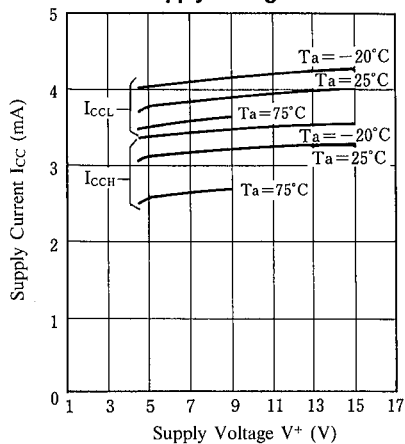


**Low Level Output Voltage vs.**

**Low Level Output Current** ( $V^+ = 5\text{V}, T_a = 25^\circ\text{C}$ )

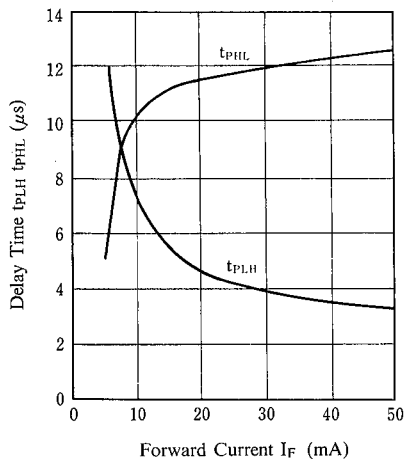


**Supply Current vs. Supply Voltage**



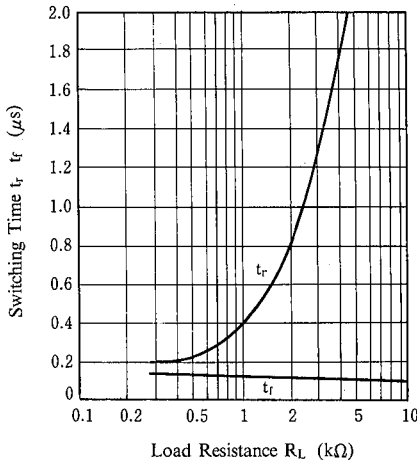
Delay Time vs. Forward Current

( $V^+=5V$ ,  $R_L=280\Omega$ ,  $T_a=25^\circ C$ )



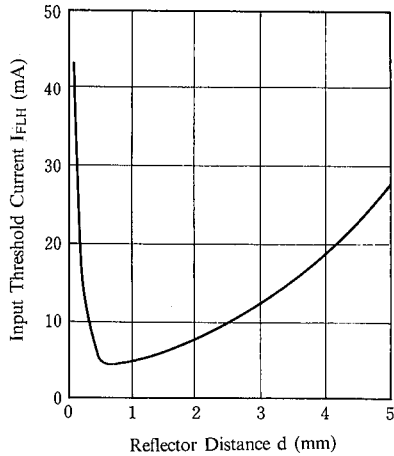
Switching Time vs. Load Resistance

( $V^+=5V$ ,  $I_F=10mA$ ,  $T_a=25^\circ C$ )

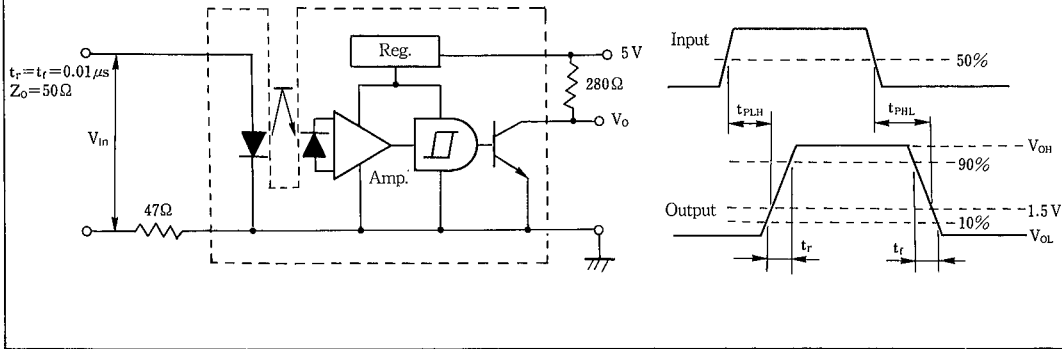


Input Threshold Current vs. Distance

( $V^+=5V$ ,  $R_L=280\Omega$ ,  $T_a=25^\circ C$ )



Measuring Circuit for Response Time



## MEMO

**[CAUTION]**

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