

## DIGITAL OUTPUT PHOTO REFLECTOR

### GENERAL DESCRIPTION

The NJL5801K is thin package digital output type photo reflector which consist of New JRC original designed one chip photo receiving IC and high output LED.

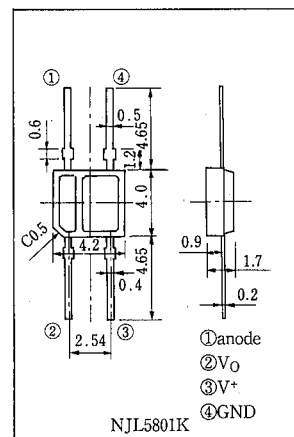
### FEATURES

- Normally on type
- With schmitt trigger circuit
- TTL Compatible
- Built-in visible light cut-off filter.

### APPLICATIONS

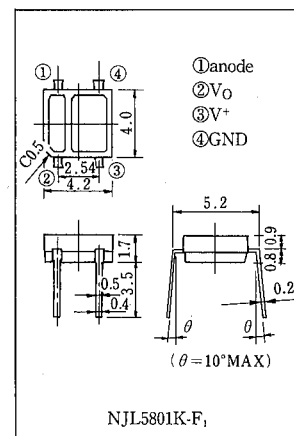
- Tape end sensor
- Reel rotation sensor
- Paper detector, Paper end sensor
- Bar code reader
- Sensor of FDD, Robot, manufacturing installation, etc.

### OUTLINE (typ.) Unit: mm

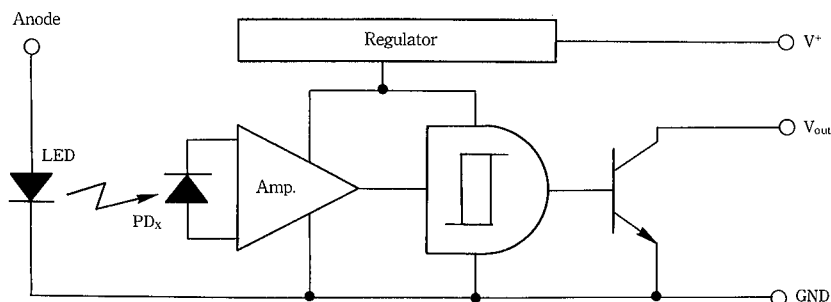


### ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
<b>Emitter</b>			
Forward Current (Continuous)	I <sub>F</sub>	50	mA
Reverse Voltage (Continuous)	V <sub>R</sub>	6	V
Power Dissipation	P <sub>D</sub>	75	mW
<b>Detector</b>			
Supply Voltage	V <sup>+</sup>	16	V
High Level Output Voltage	V <sub>OH</sub>	16	V
Low Level Output Current	I <sub>OL</sub>	50	mA
Power Dissipation	P <sub>O</sub>	110	mW
<b>Coupler</b>			
Total Power Dissipation	P <sub>tot</sub>	130	mW
Operating Temperature	T <sub>opr</sub>	-20~+85	°C
Storage Temperature	T <sub>stg</sub>	-30~+100	°C
Soldering Temperature	T <sub>sol</sub>	260	°C
		(5sec. 1.5mm from body)	



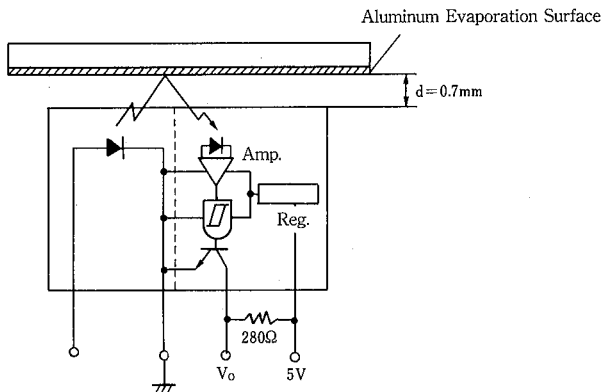
### BLOCK DIAGRAM



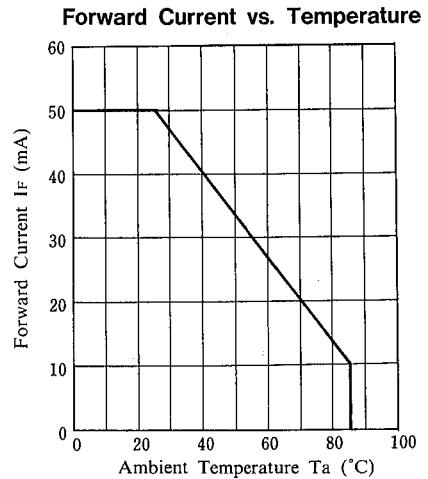
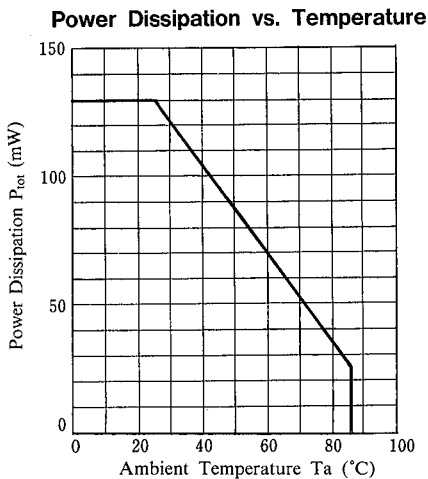
## ■ ELECTRO-OPTICAL CHARACTERISTICS (Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
<b>Emitter</b>						
Forward Voltage	$V_F$	$I_F = 10\text{mA}$	—	1.1	1.3	V
Reverse Current	$I_R$	$V_R = 6\text{V}$	—	—	1.0	$\mu\text{A}$
Capacitance	$C_t$	$V_R = 0\text{V}, f = 1\text{MHz}$	—	25	—	pF
<b>Detector</b>						
Supply Voltage Range	$V^+$		3.5	—	15	V
Low Level Output Voltage	$V_{OL}$	$I_{OL} = 16\text{mA}, V^+ = 5\text{V}, I_F = 0\text{mA}$	—	0.2	0.5	V
High Level Output Current	$I_{OH}$	$V_O = V^+ = 15\text{V}, I_F = 10\text{mA}, d = 0.7\text{mm}$	—	—	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
<b>Coupled</b>						
L→H Threshold Input Current	$I_{FLH}$	$V^+ = 5\text{V}, R_L = 280\Omega, d = 0.7\text{mm}$	—	—	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	$t_{PLH}$	$V^+ = 5\text{V}, R_L = 280\Omega, I_F = 10\text{mA}, d = 0.7\text{mm}$	—	10	—	$\mu\text{s}$
H→L Delay Time	$t_{PHL}$	$V^+ = 5\text{V}, R_L = 280\Omega, I_F = 10\text{mA}, d = 0.7\text{mm}$	—	5	—	$\mu\text{s}$
Rise Time	$t_r$	$V^+ = 5\text{V}, R_L = 280\Omega, I_F = 10\text{mA}, d = 0.7\text{mm}$	—	0.1	—	$\mu\text{s}$
Fall Time	$t_f$	$V^+ = 5\text{V}, R_L = 280\Omega, I_F = 10\text{mA}, d = 0.7\text{mm}$	—	0.1	—	$\mu\text{s}$

## ■ MEASURING SPECIFICATION FOR THRESHOLD INPUT CURRENT



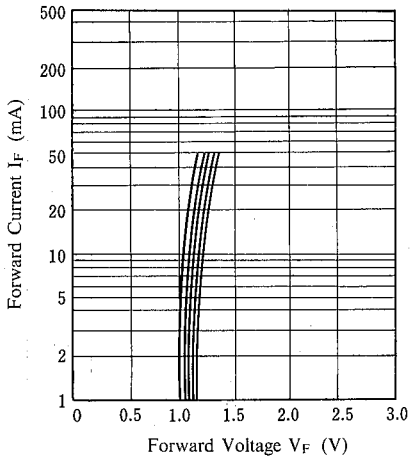
## ■ MAXIMUM RATING CURVES



## TYPICAL CHARACTERISTICS

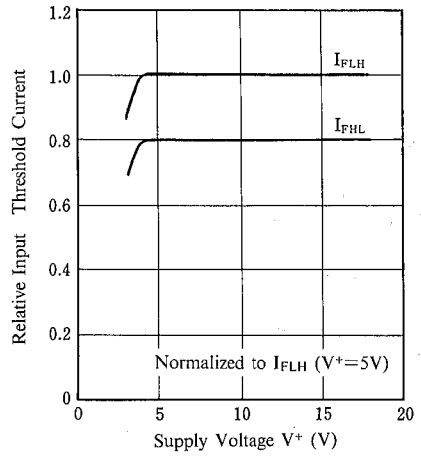
### Forward Current vs. Forward Voltage

( $T_a = 85^\circ\text{C}, 50^\circ\text{C}, 25^\circ\text{C}, 0^\circ\text{C}, -20^\circ\text{C}$ )



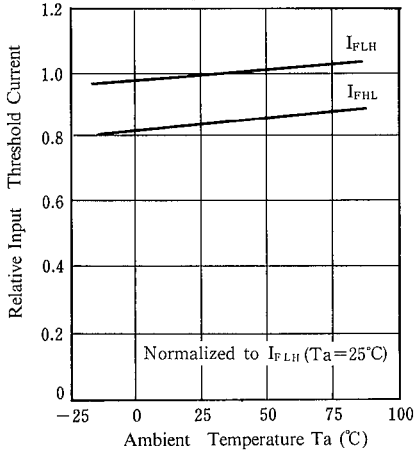
### Input Threshold Current vs. Supply Voltage

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



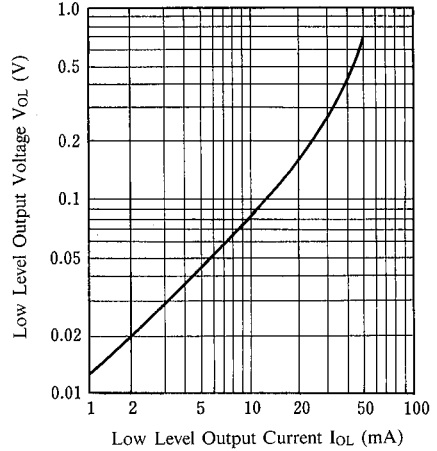
### Input Threshold Current vs. Temperature

( $V^+ = 5\text{V}$ )



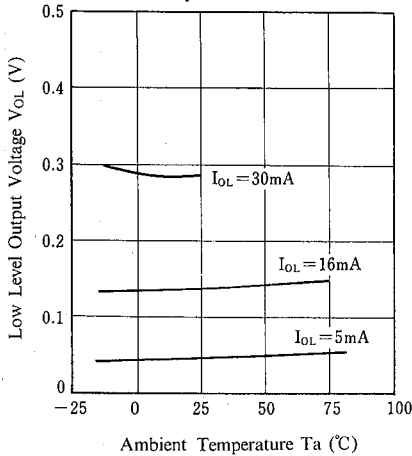
### Low Level Output Voltage vs. Low Level Output Current

( $V^+ = 5\text{V}, T_a = 25^\circ\text{C}$ )

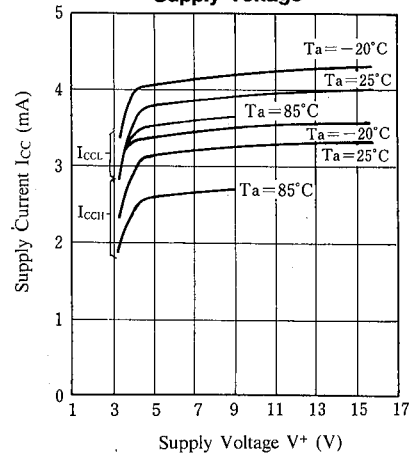


### Low Level Output Voltage vs. Temperature

( $V^+ = 5\text{V}$ )

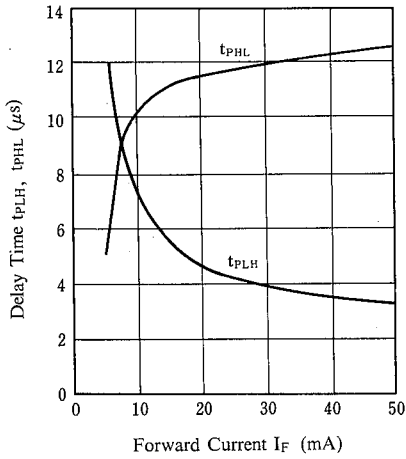


### Supply Current vs. Supply Voltage



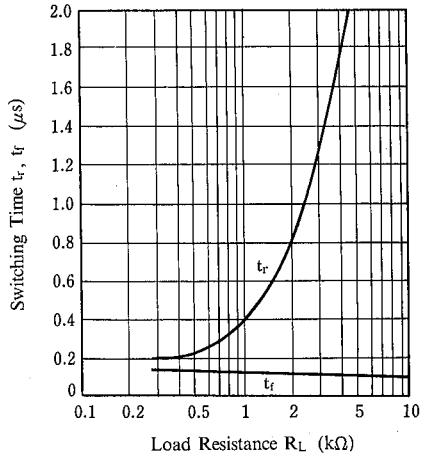
**Delay Time vs. Forward Current**

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



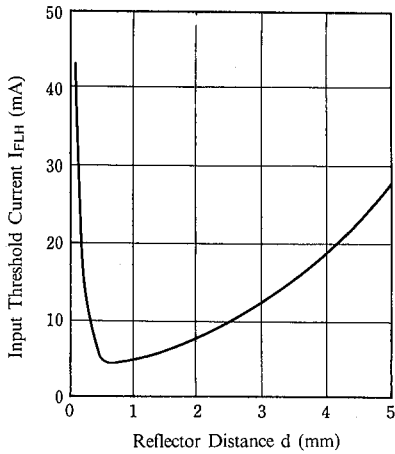
**Switching Time vs. Resistance**

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

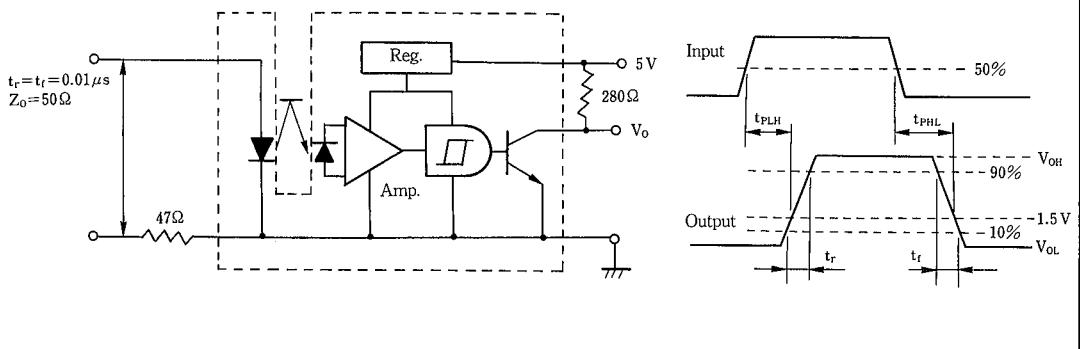


**Input Threshold Current vs. Distance**

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



**Measuring Circuit for Response Time**



## MEMO

[CAUTION]

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