

DIGITAL OUTPUT PHOTO REFLECTOR

■ GENERAL DESCRIPTION

The NJL5809K 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.
- With pull up resistance

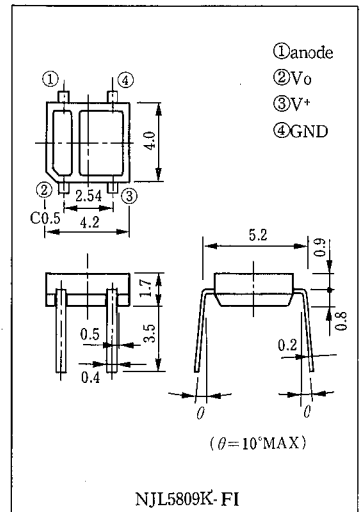
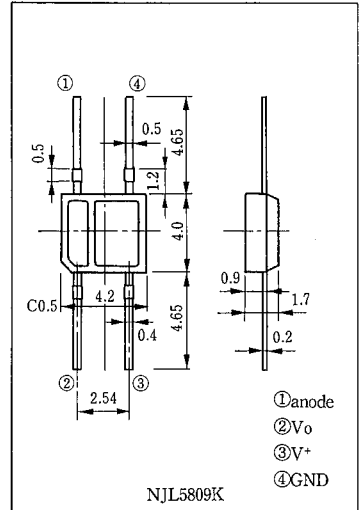
■ APPLICATIONS

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

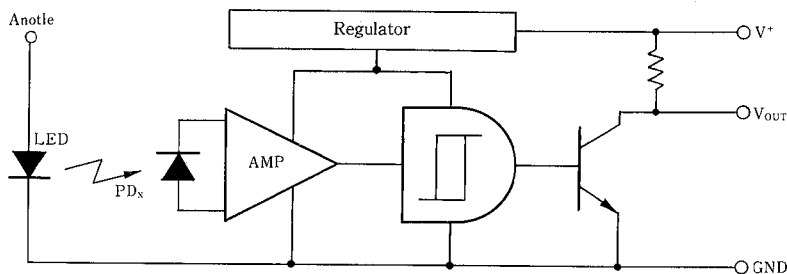
■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
<b>Emitter</b>			
Forward Current (Continuous)	I <sub>F</sub>	30	mA
Reverse Voltage (Continuous)	V <sub>R</sub>	6	V
Power Dissipation	P <sub>D</sub>	45	mW
<b>Detector</b>			
Supply Voltage	V <sup>+</sup>	6	V
High Level Output Voltage	V <sub>OH</sub>	6	V
Low Level Output Current	I <sub>OL</sub>	3	mA
Power Dissipation	P <sub>O</sub>	55	mW
<b>Coupled</b>			
Total Power Dissipation	P <sub>tot</sub>	100	mW
Operating Temperature	T <sub>opr</sub>	-10~+60	°C
Storage Temperature	T <sub>stg</sub>	-30~+100	°C
Soldering Temperature	T <sub>sol</sub>	260	°C
		(5sec. 1.5mm from body)	

■ OUTLINE (typ.) Unit : mm



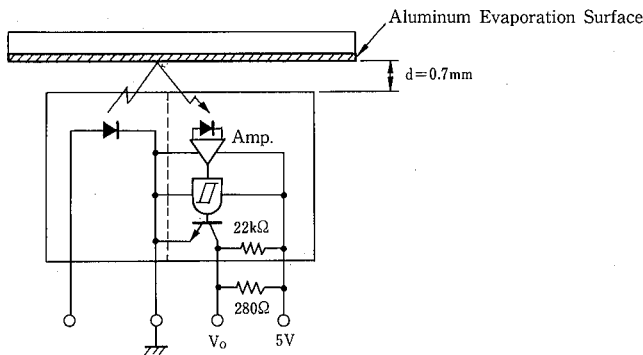
■ BLOCK DIAGRAM



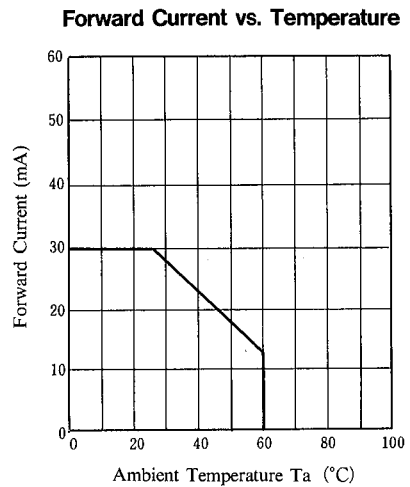
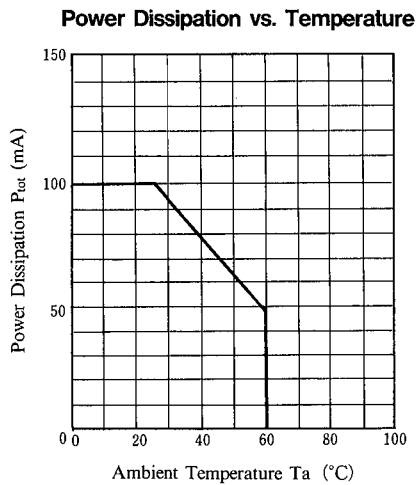
### ■ ELECTRO-OPTICAL CHARACTERISTICS (Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
<b>Emitter</b>						
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> =13.5mA	—	—	1.4	V
Reverse Current	I <sub>R</sub>	V <sub>R</sub> =6V	—	—	1.0	μA
Capacitance	C <sub>t</sub>	V <sub>R</sub> =0V, f=1MHz	—	25	—	pF
<b>Detector</b>						
Supply Voltage Range	V <sup>+</sup>	—	4.5	—	5.5	V
Low Level Output Voltage	V <sub>OL</sub>	I <sub>OL</sub> =3mA, V <sup>+</sup> =5V, I <sub>F</sub> =0mA, d=0.7mm	—	—	0.5	V
High Level Output Voltage	V <sub>OH</sub>	V <sup>+</sup> =5V, I <sub>F</sub> =13.5mA, d=0.7mm	—	—	4.9	V
Low Level Supply Current	I <sub>CCL</sub>	V <sup>+</sup> =5V, I <sub>F</sub> =0mA	—	2	5	mA
High Level Supply Current	I <sub>CCH</sub>	V <sup>+</sup> =5V, I <sub>F</sub> =13.5mA, D=0.7mm	—	2	5	mA
<b>Coupled</b>						
L→H Threshold Input Current	I <sub>FLH</sub>	V <sup>+</sup> =5V, d=0.7mm	—	8	13.5	mA
Hysteresis	I <sub>FHL</sub> /I <sub>FLH</sub>	V <sup>+</sup> =5V, d=0.7mm	—	0.7	—	—
L→H Delay Time	t <sub>pLH</sub>	V <sup>+</sup> =5V, R <sub>L</sub> =280Ω, I <sub>F</sub> =13.5mA, d=0.7mm	—	5	—	μs
H→L Delay Time	t <sub>pHL</sub>	V <sup>+</sup> =5V, R <sub>L</sub> =280Ω, I <sub>F</sub> =13.5mA, d=0.7mm	—	5	—	μs
Rise time	t <sub>r</sub>	V <sup>+</sup> =5V, R <sub>L</sub> =1kΩ, I <sub>F</sub> =13.5mA, d=0.7mm	—	0.1	—	μs
Fall time	t <sub>f</sub>	V <sup>+</sup> =5V, R <sub>L</sub> =1kΩ, I <sub>F</sub> =13.5mA, d=0.7mm	—	0.1	—	μs

### ■ MEASURING SPECIFICATION FOR THRESHOLD INPUT CURRENT

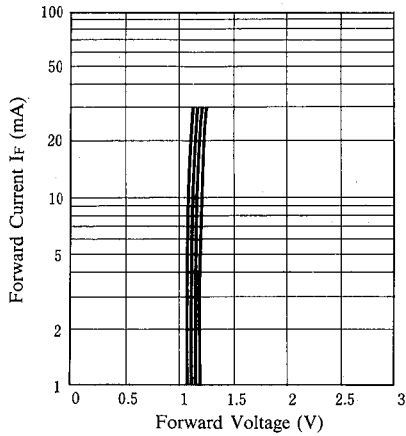


### ■ MAXIMUM RATING CURVES

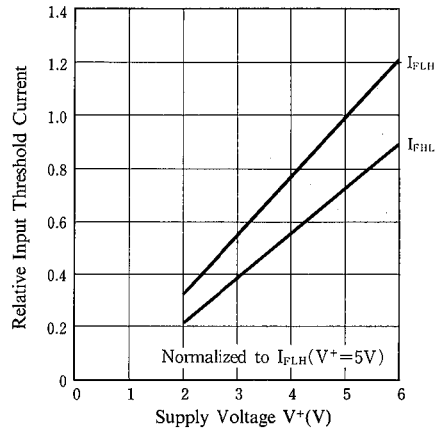


## TYPICAL CHARACTERISTICS

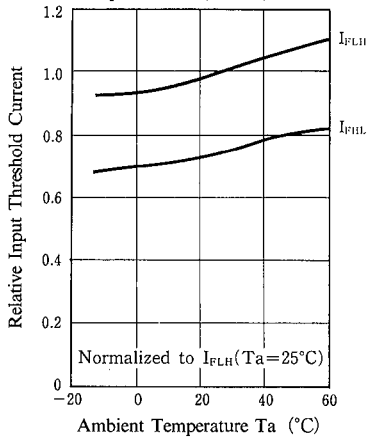
**Forward Current vs. Forward Voltage**  
( $T_a=85^\circ\text{C}, 50^\circ\text{C}, 25^\circ\text{C}, 0^\circ\text{C}, -20^\circ\text{C}$ )



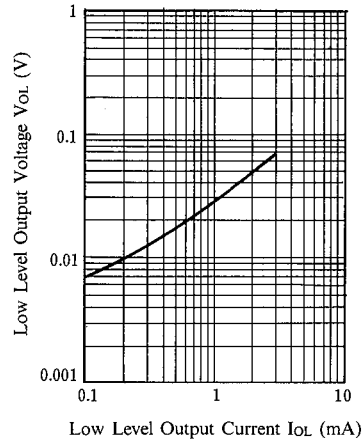
**Input Threshold Current vs. Supply Voltage** ( $T_a=25^\circ\text{C}$ )



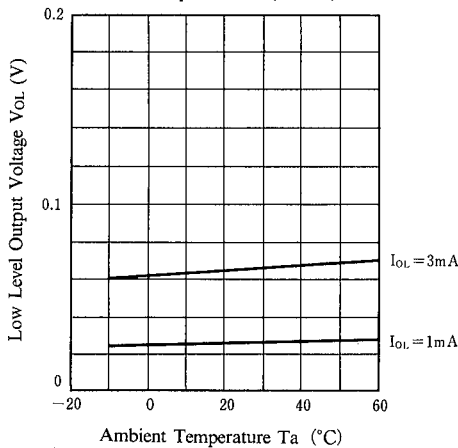
**Input Threshold Current vs. Temperature** ( $V^+=5\text{V}$ )



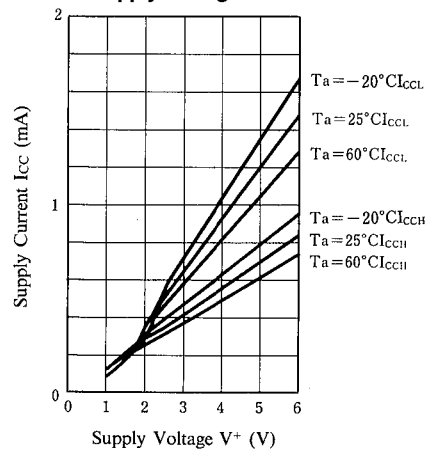
**Low Level Output Voltage vs. Low Level Output Current** ( $V^+=5\text{V}, T_a=25^\circ\text{C}$ )



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

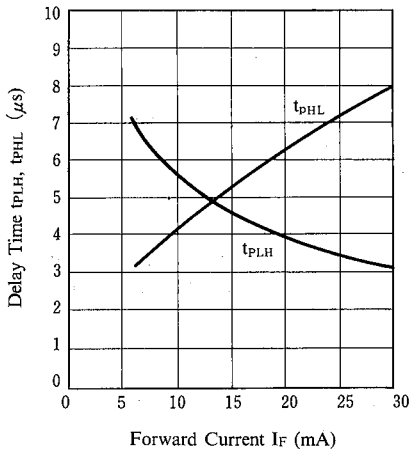


**Supply Current vs. Supply Voltage**



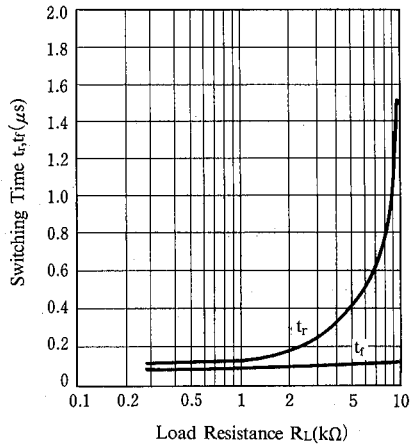
**Delay Time vs. Forward Current**

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



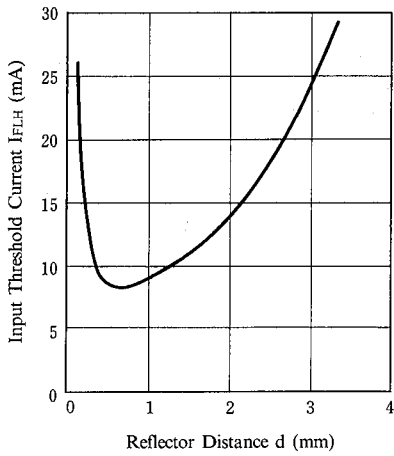
**Switching Time vs. Load Resistance**

( $V^+=5V, I_F=13.5mA, T_a=25^\circ C$ )

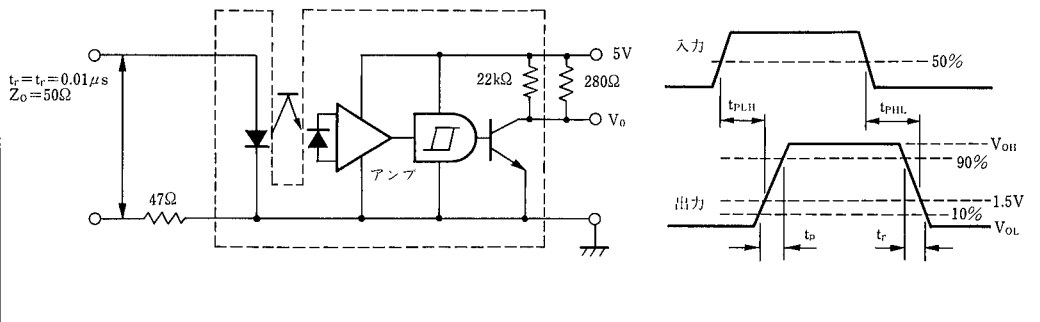


**Input Threshold Current vs. Distance**

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



**Measuring Circuit for Response Time**



## MEMO

[CAUTION]

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