

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

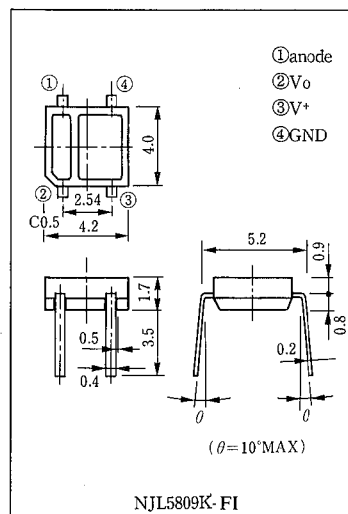
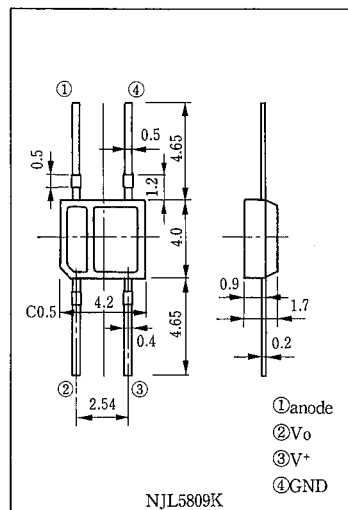
- Tape end sensor
- Reel rotation sensor
- Paper detector, Paper end sensor
- Bar code reader
- Sensor of FDD, Robot, manufacturing installation, etc.

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

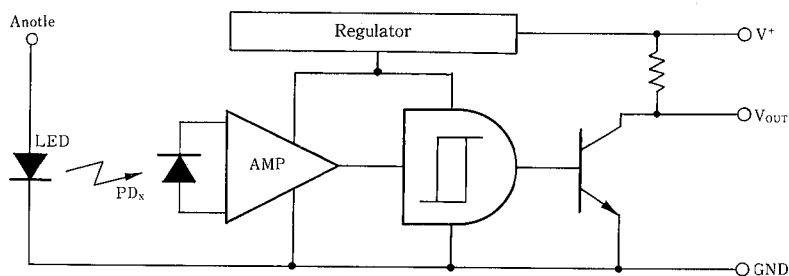
PARAMETER	SYMBOL	RATINGS	UNIT
Emitter			
Forward Current (Continuous)	I_F	30	mA
Reverse Voltage (Continuous)	V_R	6	V
Power Dissipation	P_D	45	mW
Detector			
Supply Voltage	V^+	6	V
High Level Output Voltage	V_{OH}	6	V
Low Level Output Current	I_{OL}	3	mA
Power Dissipation	P_O	55	mW
Coupled			
Total Power Dissipation	P_{tot}	100	mW
Operating Temperature	T_{opr}	$-10 \sim +60$	$^\circ\text{C}$
Storage Temperature	T_{stg}	$-30 \sim +100$	$^\circ\text{C}$
Soldering Temperature	T_{sol}	260	$^\circ\text{C}$

(5sec. 1.5mm from body)

■ OUTLINE (typ.) Unit : mm



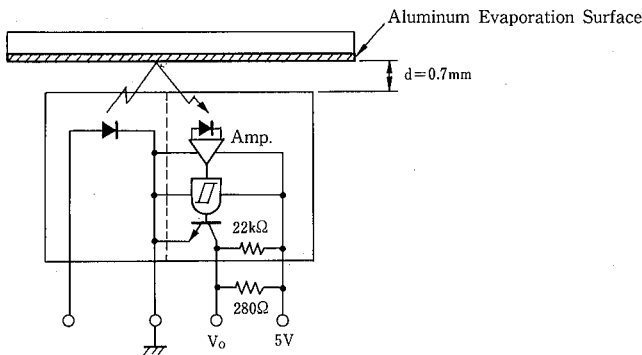
■ BLOCK DIAGRAM



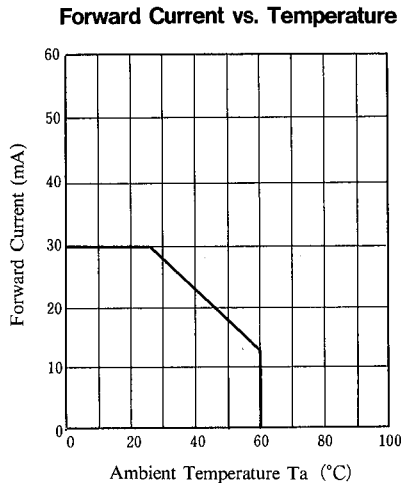
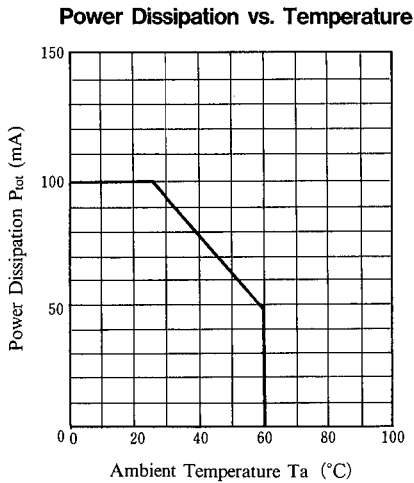
■ ELECTRO-OPTICAL CHARACTERISTICS (Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Emitter						
Forward Voltage	V _F	I _F =13.5mA	—	—	1.4	V
Reverse Current	I _R	V _R =6V	—	—	1.0	μA
Capacitance	C _t	V _R =0v, f=1MHz	—	25	—	pF
Detector						
Supply Voltage Range	V ⁺	—	4.5	—	5.5	V
Low Level Output Voltage	V _{OL}	I _{OL} =3mA, V ⁺ =5V, I _F =0mA, d=0.7mm	—	—	0.5	V
High Level Output Voltage	V _{OH}	V ⁺ =5V, I _F =13.5mA, d=0.7mm	—	—	4.9	V
Low Level Supply Current	I _{CC} L	V ⁺ =5V, I _F =0mA	—	2	5	mA
High Level Supply Current	I _{CC} H	V ⁺ =5V, I _F =13.5mA, D=0.7mm	—	2	5	mA
Coupled						
L→H Threshold Input Current	I _{FLH}	V ⁺ =5V, d=0.7mm	—	8	13.5	mA
Hysteresis	I _{FHL} /I _{FLH}	V ⁺ =5V, d=0.7mm	—	0.7	—	
L→H Delay Time	t _{pLH}	V ⁺ =5V, R _L =280Ω, I _F =13.5mA, d=0.7mm	—	5	—	μs
H→L Delay Time	t _{pHL}	V ⁺ =5V, R _L =280Ω, I _F =13.5mA, d=0.7mm	—	5	—	μs
Rise time	t _r	V ⁺ =5V, R _L =1kΩ, I _F =13.5mA, d=0.7mm	—	0.1	—	μs
Fall time	t _f	V ⁺ =5V, R _L =1kΩ, I _F =13.5mA, d=0.7mm	—	0.1	—	μs

■ MEASURING SPECIFICATION FOR THRESHOLD INPUT CURRENT



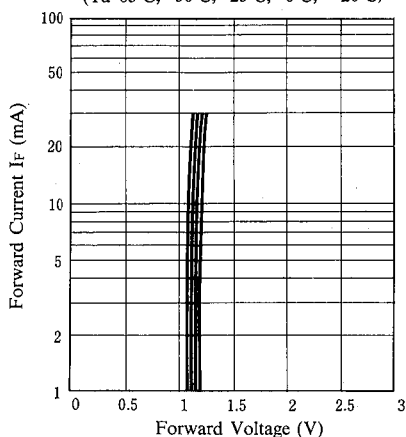
■ MAXIMUM RATING CURVES



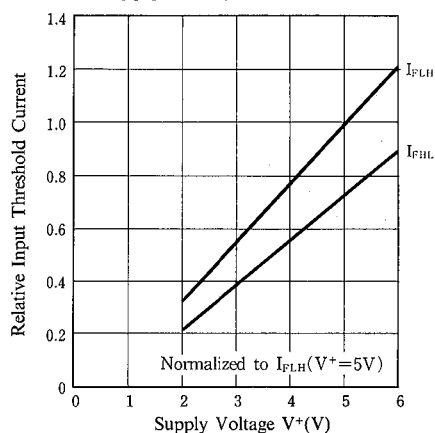
TYPICAL CHARACTERISTICS

Forward Current vs. Forward Voltage

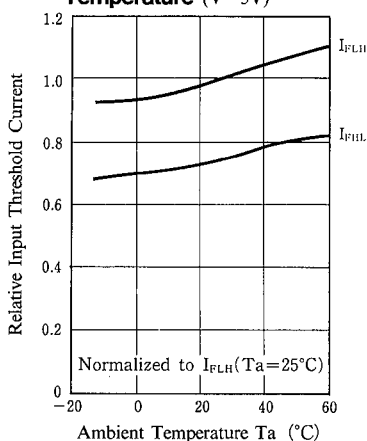
($T_a = 85^\circ\text{C}, 50^\circ\text{C}, 25^\circ\text{C}, 0^\circ\text{C}, -20^\circ\text{C}$)



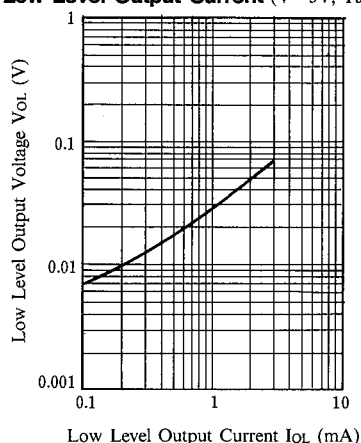
Input Threshold Current vs. Supply Voltage ($T_a = 25^\circ\text{C}$)



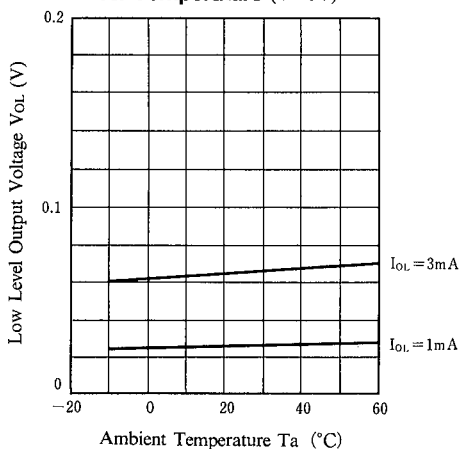
Input Threshold Current vs. Temperature ($V^+ = 5\text{V}$)



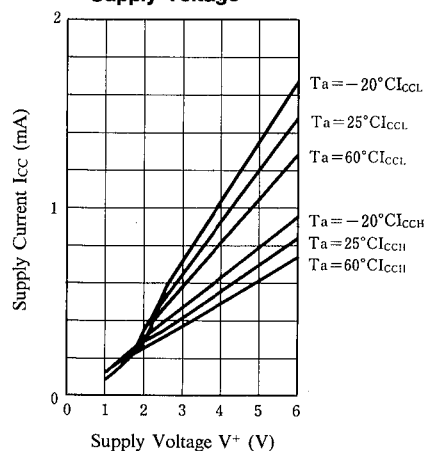
Low Level Output Voltage vs. Low Level Output Current ($V^+ = 5\text{V}, T_a = 25^\circ\text{C}$)



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

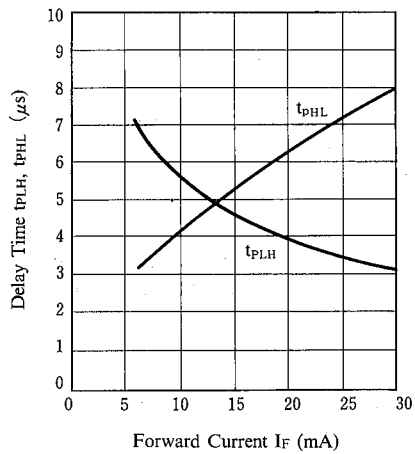


Supply Current vs. Supply Voltage



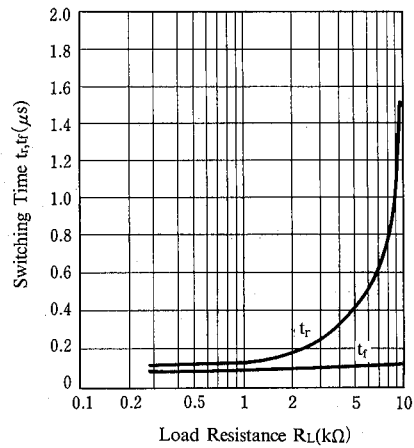
Delay Time vs. Forward Current

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



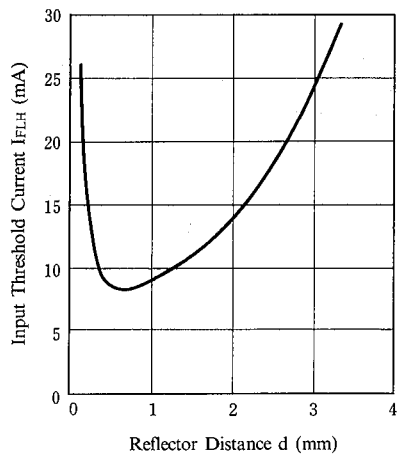
Switching Time vs. Load Resistance

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

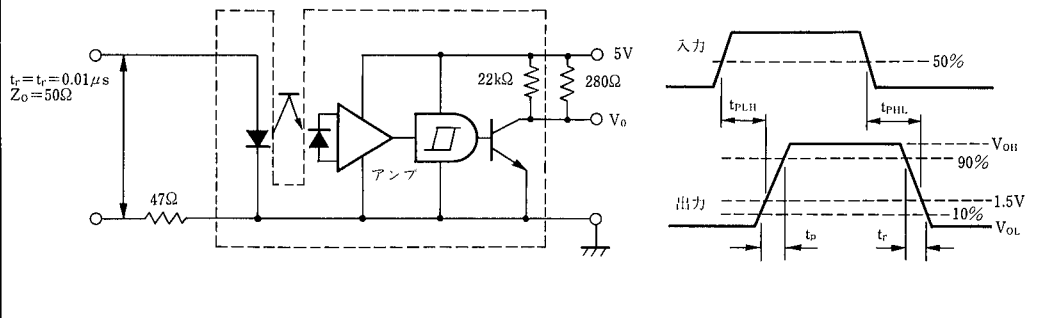


Input Threshold Current vs. Distance

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



Measuring Circuit for Response Time



MEMO

[CAUTION]

The specifications on this databook are only given for information, without any guarantee as regards either mistakes or omissions. The application circuits in this databook are described only to show representative usages of the product and not intended for the guarantee or permission of any right including the industrial rights.