NJL5127D

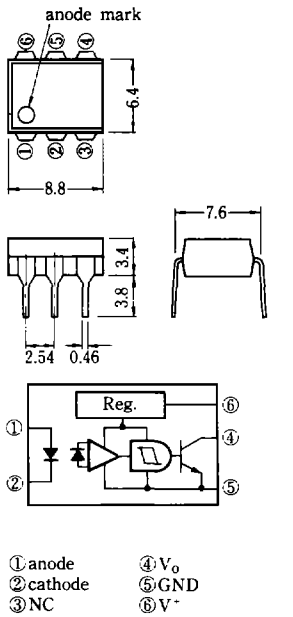
New JRC NJL5127D is a digital output photo coupler coupled with GaAs infrared emitting diode and Si detector in which photo diode and signal processing circuit are on chip. The amplifier, schumidt trigger and constant voltage circuit are in the signal processing circuit. Output becomes low level when the current is on the input. The device is the most suitable for isolation between logic circuits, substitution for relay and transformer, and noise cut-off.

■ Absolute Maximum Ratings (Ta=25°C)

Emitter		
Forward Current (Continuous)	I_F	50mA
Pulse Forward Current	I_{FP}	1A (note 1)
Reverse Voltage (Continuous)	V_R	6V
Power Dissipation	P_D	70mW
Detector		
Supply Voltage	V^+	16V
High Level Output Voltage	V_{OH}	16V
Low Level Output Current	I_{OL}	50mA
Power Dissipation	P_D	150mW
Coupled		
Total Power Dissipation	Ptot	170mW
Isolation Voltage	Viso	3500V (note 2)
Operating Temperature	Topr	−25~+85°C
Storage Temperature	Tstg	−30~+100°C

(note 1) Pulse Width ≦100 μs, Duty Ratio: 0.01
(note 2) R.H.=40 to 60% for AC one minute

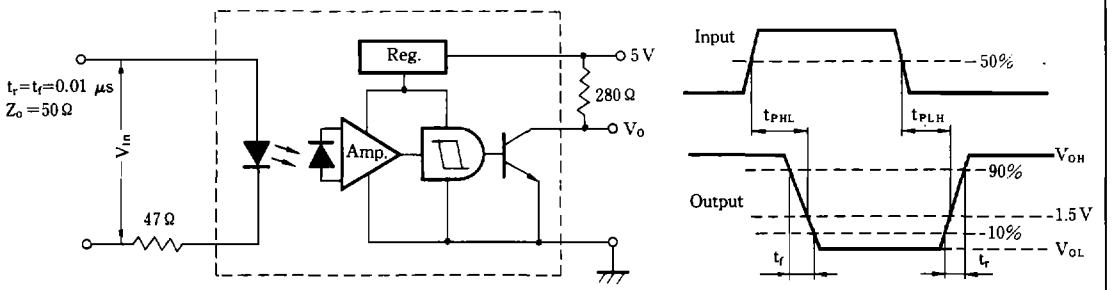
Outline (typ.) Unit : mm



■ Electro-Optical Characteristics (0°C≦Ta≦70°C)

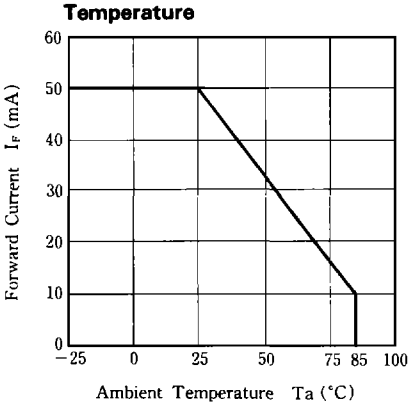
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Emitter						
Forward Voltage	V_F	I_F=4mA	—	1.1	1.4	V
		I_F=0.3mA	0.7	1.0	—	V
Reverse Current	I_R	V_F=3V, Ta=25°C	—	—	10	μA
Capacitance	Ct	V_F=0V, f=1kHz, Ta=25°C	—	50	—	pF
Detector						
Supply Voltage Range	V^+		3	—	15	V
Low Level Output Voltage	V_{OL}	I_O=16mA, V^+=5V, I_F=4mA	—	0.2	0.4	V
High Level Output Current	I_{OH}	V_O=V^+=15V, I_F=0mA	—	—	100	μA
Low Level Supply Current	I_{CCL}	V^+=5V, I_F=4mA	—	2.5	5	mA
High Level Supply Current	I_{CCH}	V^+=5V, I_F=0mA	—	1.0	5	mA
Coupled						
H→L Threshold Input Current	I_{FHL}	V^+=5V, R_L=280Ω, Ta=25°C	—	1.1	2.0	mA
		V^+=5V, R_L=280Ω	—	—	4.0	mA
L→H Threshold Input Current	I_{FLH}	V^+=5V, R_L=280Ω, Ta=25°C	0.4	0.8	—	mA
		V^+=5V, R_L=280Ω	0.3	—	—	mA
Hysteresis		V^+=5V, R_L=280Ω	0.5	0.7	0.9	
H→L Delay Time	t_{PHL}	V^+=5V, R_L=280Ω, I_F=4mA, Ta=25°C	—	1	—	μs
L→H Delay Time	t_{PLH}	V^+=5V, R_L=280Ω, I_F=4mA, Ta=25°C	—	2	—	μs
Fall Time	t_f	V^+=5V, R_L=280Ω, I_F=4mA, Ta=25°C	—	0.05	—	μs
Rise Time	t_r	V^+=5V, R_L=280Ω, I_F=4mA, Ta=25°C	—	0.1	—	μs

Measuring Circuit for Response Time

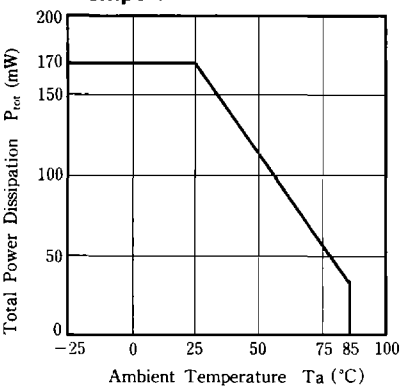


■ Maximum Rating Curves

Maximum Forward Current v.s. Temperature

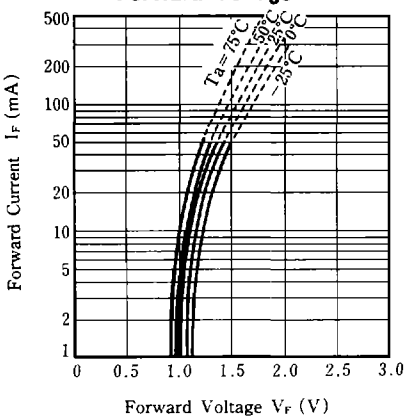


Total Power Dissipation v.s. Temperature

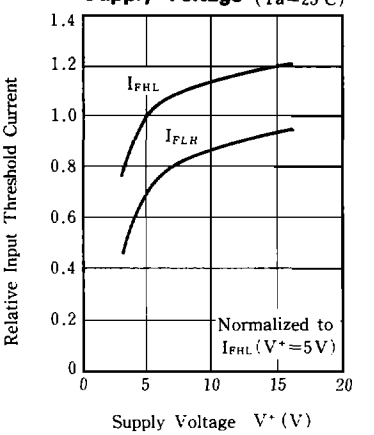


■ Typical Characteristics

Forward Current v.s. Forward Voltage



Input Threshold Current v.s. Supply Voltage (Ta=25°C)



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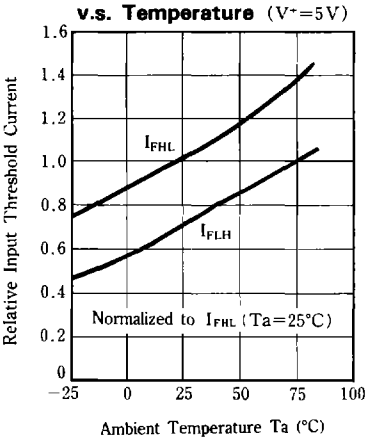
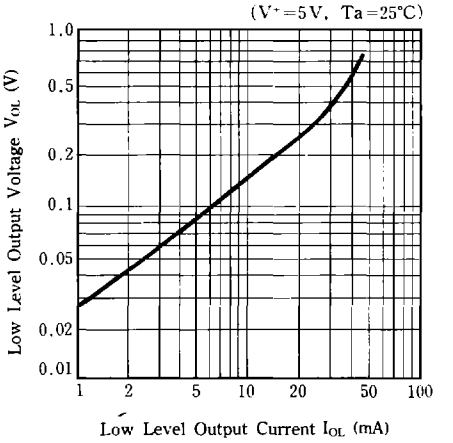
Input Threshold Current v.s. Temperature (V^+=5V)

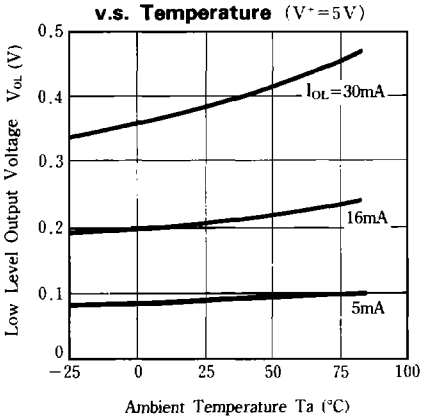


Low Level Output Voltage v.s. Low Level Output Current

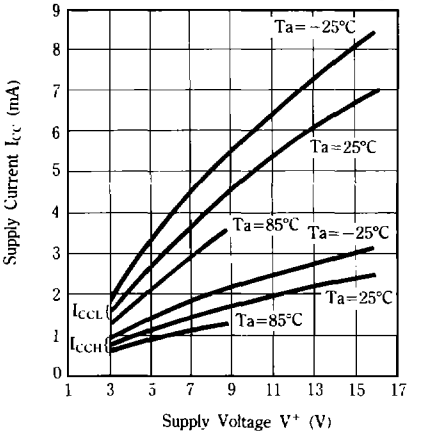
(V^+=5V, Ta=25°C)



Low Level Output Voltage v.s. Temperature (V^+=5V)

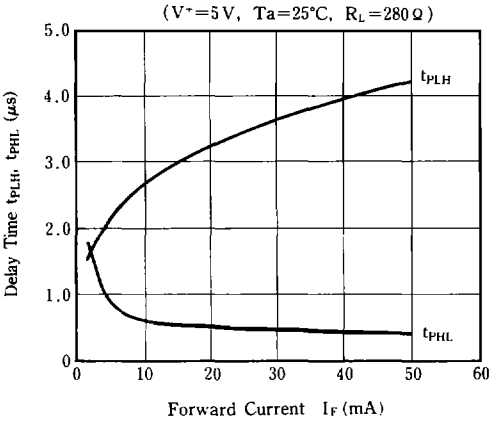


Supply Current v.s. Supply Voltage



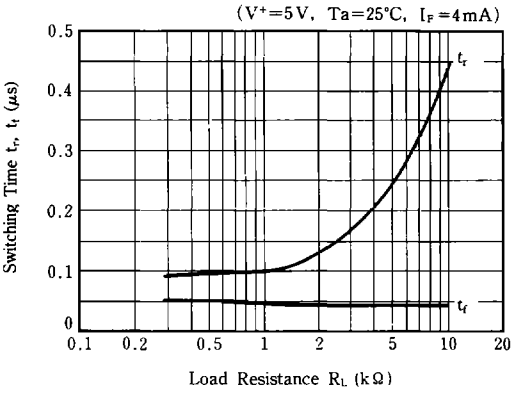
Delay Time v.s. Forward Current

(V^+=5 V, Ta=25°C, R_L=280 Ω)



Swithing Time v.s. Load Resistance

(V^+=5 V, Ta=25°C, I_F=4 mA)



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