HIGH V_{CE} MINI PHOTO COUPLER

■ GENERAL DESCRIPTION

The NJL5155D/M are small package dual-in-line photo couplers which consist of high power infrared emitting diode and high sensitve, high collector emitter voltage Si photo transistor.

UL standards (File No.E82561)

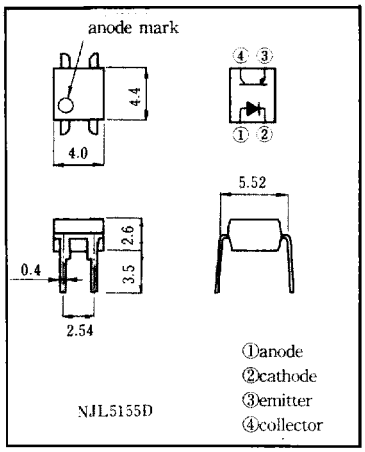
■ FEATURES

- High collector emitter voltage
- Small package
- High isolation voltage
- Compatible for TTL

■ APPLICATIONS

- Interface of computer
- Noise rejection in system circuit
- Signal transfer between the different electric potentials or impedance of circuit.
- Copy machine, autmatic vending machine.
- Telephone units, home appliances

■ OUTLINE (typ.) Unit: mm



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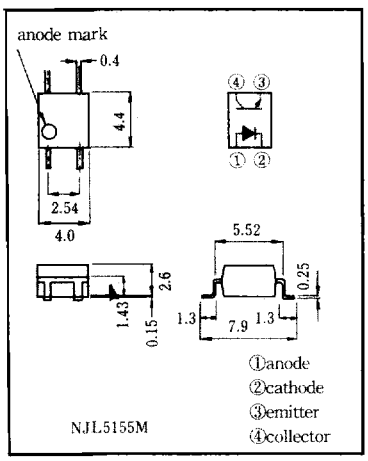
■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Emitter			
Forward Current (Continuous)	I_F	70	mA
Pulse Forward Current	I_{FP}	1(note 1)	A
Reverse Voltage (Continuous)	V_R	6	V
Detector			
Collector Emitter Voltage	V_{CEO}	70	V
Emitter Collector Voltage	V_{ECO}	6	V
Collector Current	I_C	50	mA
Collector Power Dissipation	P_C	150	mW
Coupler			
Total Power Dissipation	P_{tot}	200	mW
Isolation Voltage	V_{iso}	4000(note 2)	V
Operating Temperature	T_{opr}	−30～+100	°C
Storage Temperature	T_{stg}	−40～+125	°C
Soldering Temperature	T_{sol}	260 (10sec. 1.5mm from body)	°C

(note 1) Pulse Width≦100μs Duty Ratio 0.01

(note 2) R.H.=40～60% for AC 1 minute

■ OUTLINE (typ.) Unit: mm



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

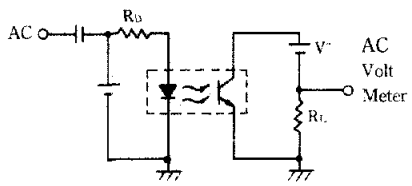
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Emitter						
Forward Voltage	V_F	I_F =20mA	—	1.2	1.5	V
Pulse Forward Voltage	V_{FP}	I_{FP}=1A	—	1.8	—	V
Reverse Current	I_R	V_R=6V	—	—	1	μA
Capacitance	C_t	V_R=0V, f=1MHz	—	35	—	pF
Detector						
Dark Current	I_{CEO}	V_{CE}=10V	—	—	100	nA
Collector-Emitter Voltage	V_{CEO}	I_{CE}=100μA	120	—	—	V
Emitter-Collector Current	I_{ECO}	V_{EC}=6V	—	—	100	μA
Coupled						
Isolation Capacitance	C_f	V_{CE}=0V, f=1MHz	—	0.6	—	pF
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_F =10mA, I_C =1mA	—	0.1	0.3	V
Current Transfer Ratio	C.T.R.	V_{CE}=5V, I_F =5mA	40	—	480	%
Cut-off Frequuency	f_C	V^+=5V, I_C=2mA, R_L=100Ω	—	80	—	kHz
Rise Time	t_r	〃	—	3	—	μs
Fall Time	t_f	〃	—	3.5	—	μs
Delay Time	t_d	〃	—	3	—	μs

■ RANK OF CURRENT TRASFER RATIO (Unit: %)

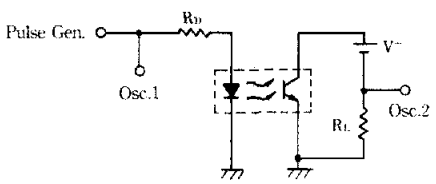
Rank	A	B	C	D	E	F
C.T.R.	160~480	80~240	40~120	80~480	40~240	40~480

■ TEST CIRCUIT

1. Test Circuit for Cut-off Frequency

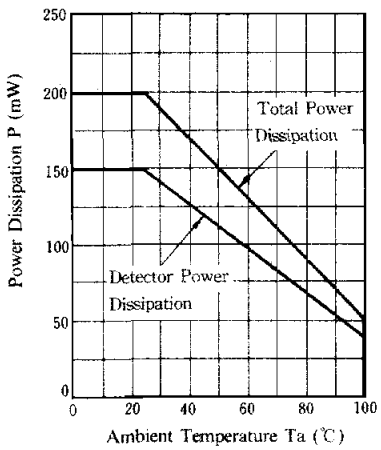


2. Test Circuit for Switching Time

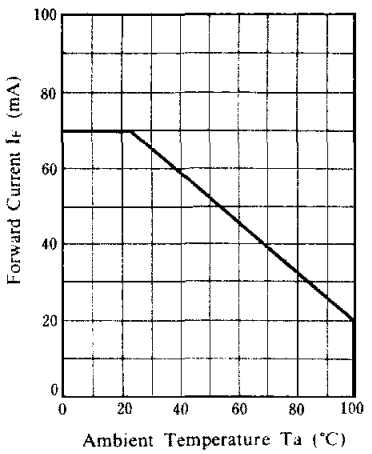


■ MAXIMUM RATING CURVES

Power Dissipation vs. Temperature

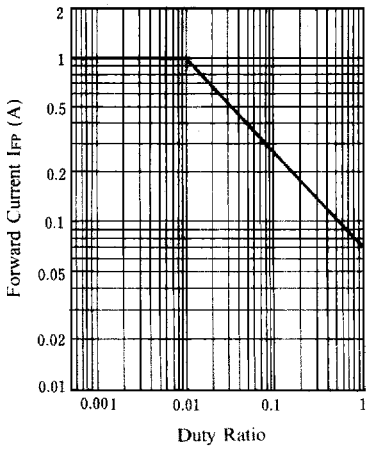


Forward Current vs. Temperature



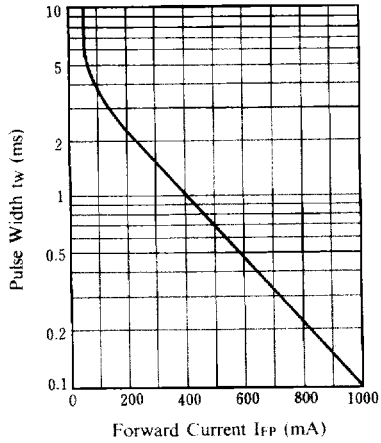
Pulse Forward Current vs. Duty Ratio

(Ta = 25°C, t_W = 100μs max.)



Pulse Width vs. Forward Current

(Ta = 25°C, Duty Ratio 0.01 max.)



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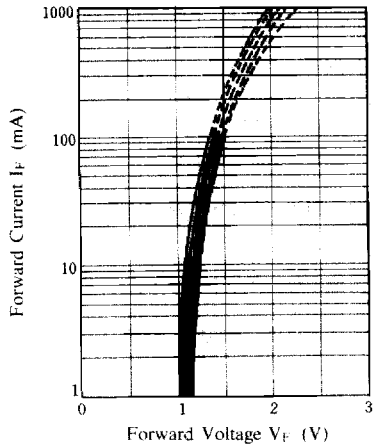
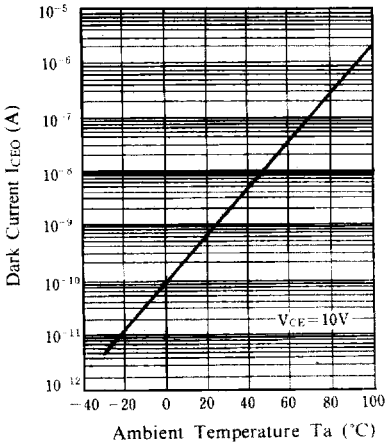
■ TYPICAL CHARACTERISTICS

Forward Current vs. Forward Voltage

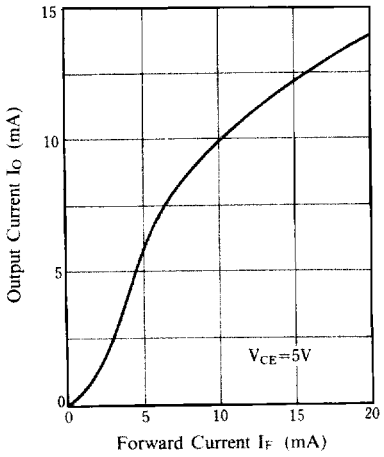
(Ta = 70, 50, 25, 0, −25°C)



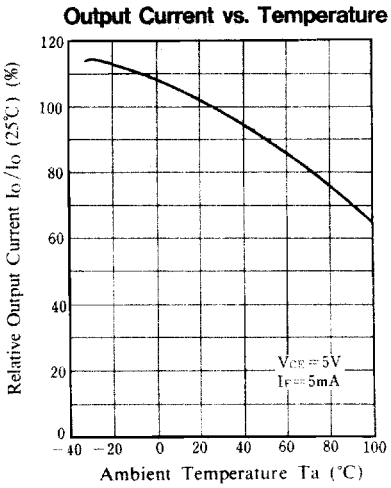
Dark Current vs. Temperature



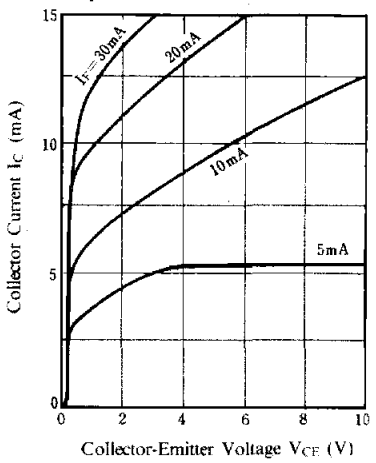
Output Current vs. Forward Current (Ta=25°C)



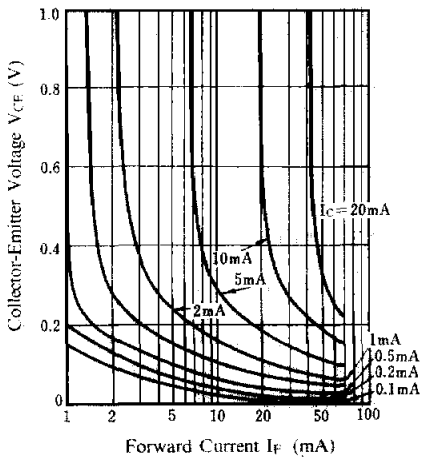
Output Current vs. Temperature



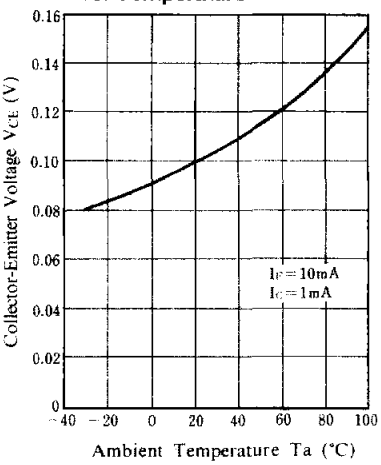
Output Characteristics (Ta=25°C)



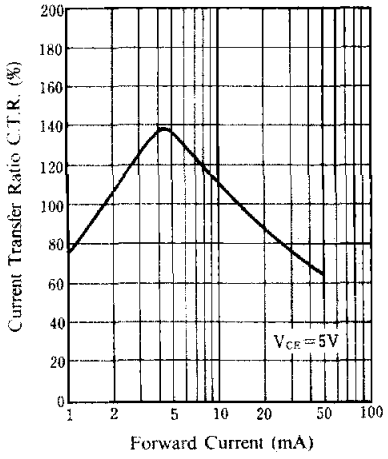
V_{CE} Saturation (Ta=25°C)



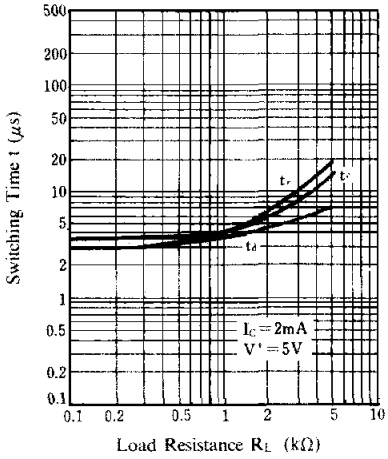
V_{CE} Saturation vs. Temperature (Ta=25°C)



Current Transfer Ratio vs. Forward Current (Ta=25°C)



Switching Time vs. Load Resistance (Ta=25°C)



Current Transfer Ratio vs. Frequency (Ta=25°C)