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Ambient Light Sensor

■ GENERAL DESCRIPTION

The NJL7502R is the photo transistor which spectral response is similar to human eye.

■ FEATURES

1. Peak wavelength 590 nm
2. COBP Package size : 1.6 x 1.3 x 0.65 mm
3. Lead-free package

■ APPLICATIONS

Cellular phone, PDA, Note PC, TV, PDP, Clock, Refrigerator, Camera, Toy, Room light, etc.
to adjust the luminance of display
to control ON/OFF
Replacement of CdS

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Collector - Emitter Voltage	V_{CEO}	20	V
Emitter - Collector Voltage	V_{ECO}	5	V
Photocurrent	I_C	10	mA
Power Dissipation	P_D	100	mA
Operating Temperature	Topr	−40 to +85	°C
Storage Temperature	Tstg	−40 to +100	°C
Soldering Temperature	Tsol	260	°C

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

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Photocurrent 1	I_{C1}	V_{CE}=5V, Ev=1,000Lux, Light source A	—	130	—	μA
Photocurrent 2 (Note 1)	I_{C2}	V_{CE}=5V, Ev=1,000Lux, White LED	11	45	79	μA
Dark Current	I_{CEO}	V_{CE}=20V	—	—	0.1	μA
Peak Wavelength	λ_P	—	—	590	—	nm
Collector - Emitter Saturation Current	$I_{CE\ (sat)}$	V_{CE} =0.24V, Ev=1,000Lux White LED	3	—	—	μA
Half Angle	$\Theta_{1/2}$	—	—	±60	—	deg.
Rise Time	tr	V_{CE}=5V, I_C=1mA, R_L=100Ω	—	10	—	μs
Fall Time	tf	V_{CE}=5V, I_C=1mA, R_L=100Ω	—	10	—	μs

(Note 1) In case the selected version is needed, please contact New JRC individually.

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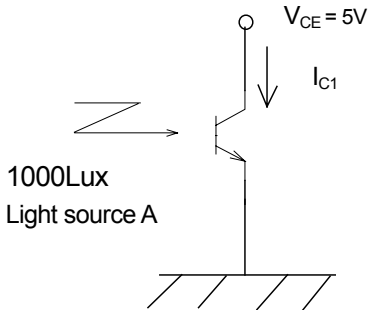
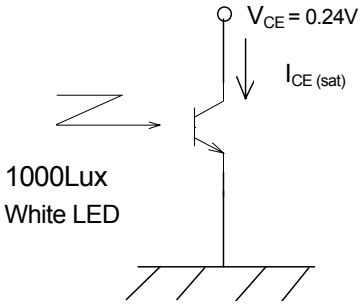
■ TEST CIRCUIT

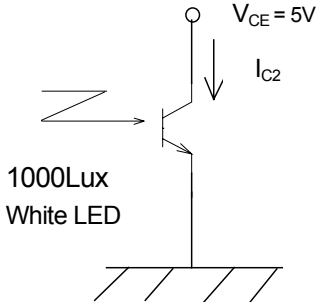
Photocurrent 1 I_{C1}



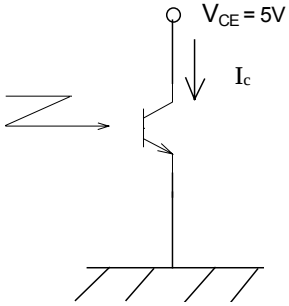
Collector - Emitter Saturation Current $I_{CE(sat)}$



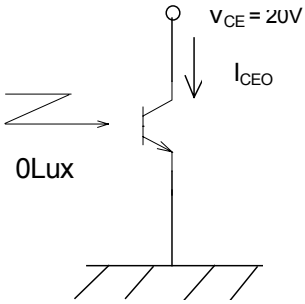
Photocurrent 2 I_{C2}



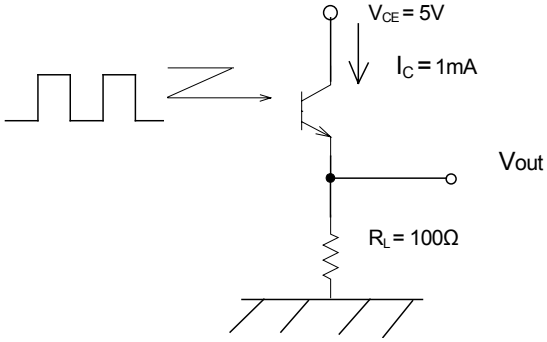
Half Angle $\Theta_{1/2}$



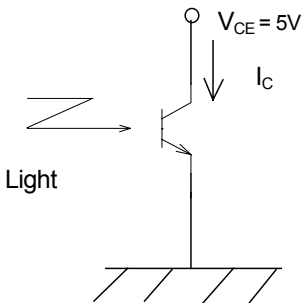
Dark Current I_{CEO}

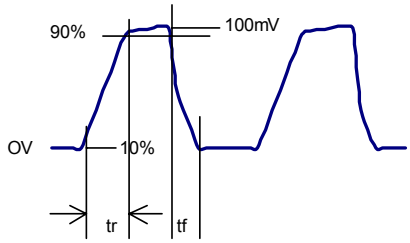


Rise Time tr
Fall Time tf



Peak Wavelength λ_P





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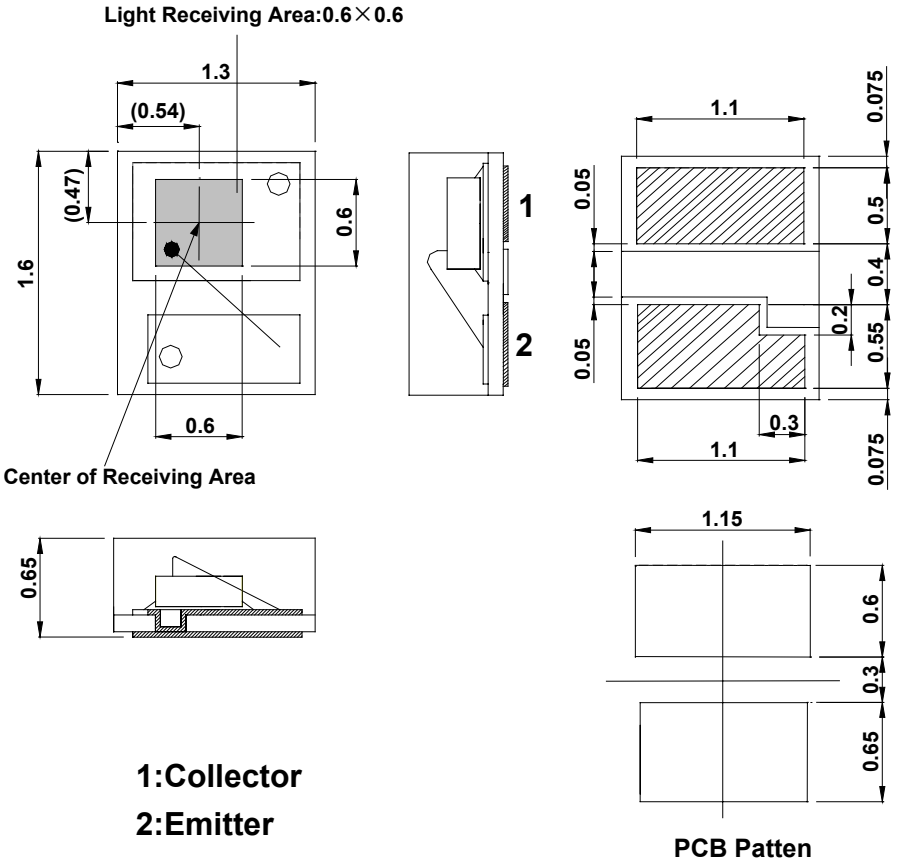
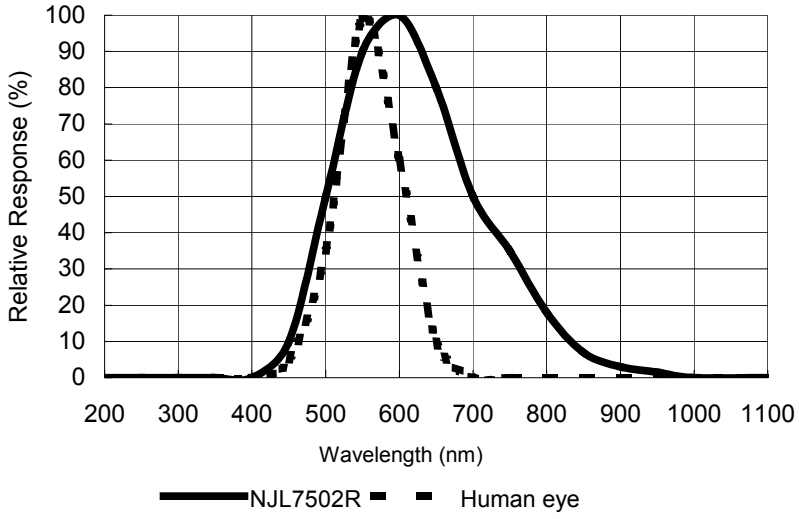
■ OUTLINE (TYP.) UNIT : mm



■ TYPICAL CHARACTERISTICS

Relative Spectral Response
(Ta=25°C)



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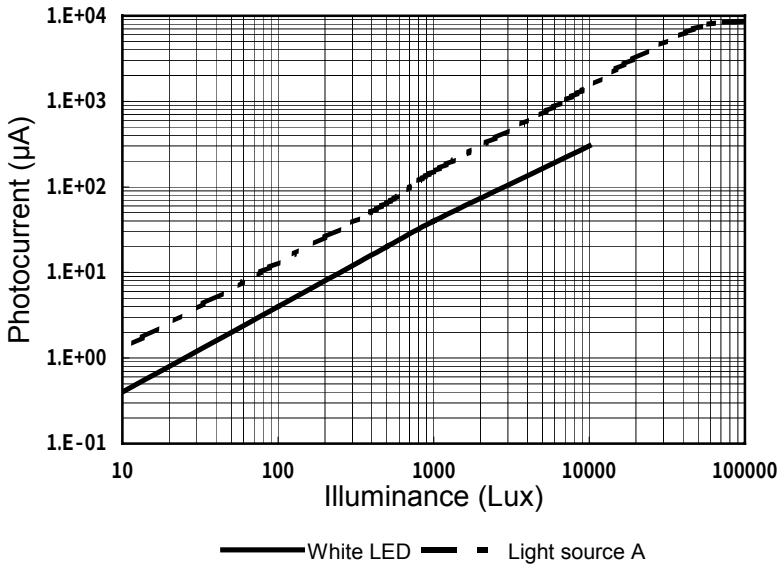
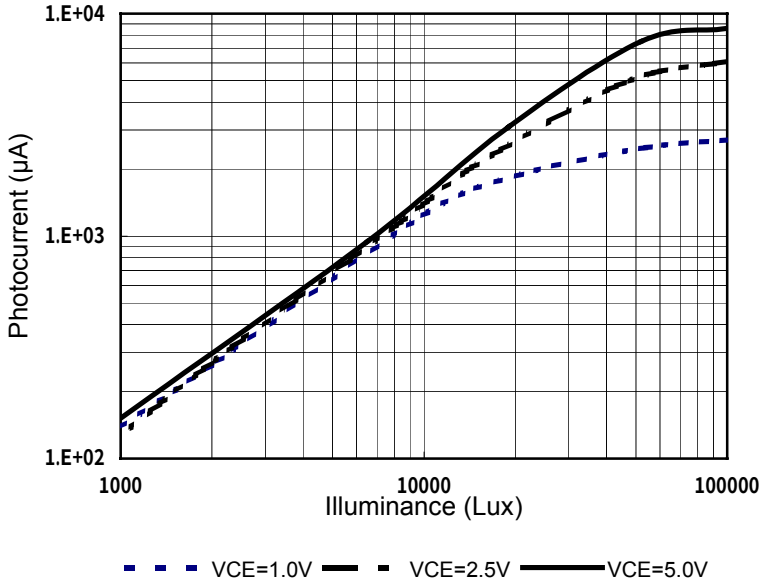
Photocurrent vs. Illuminance
(V_{CE}=5.0V, Ta = 25°C)



Photocurrent vs. Illuminance
(Light source A, Ta = 25°C)



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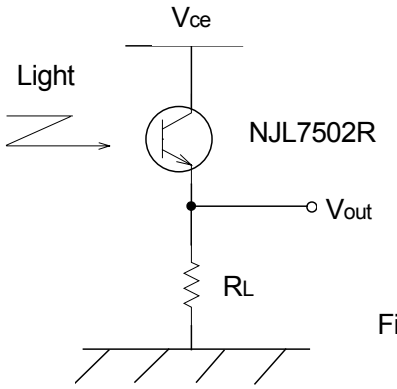
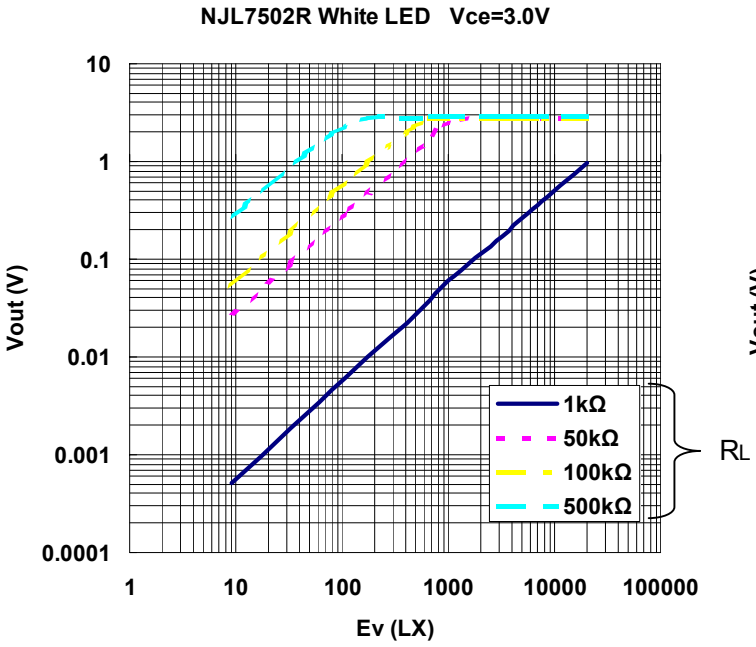
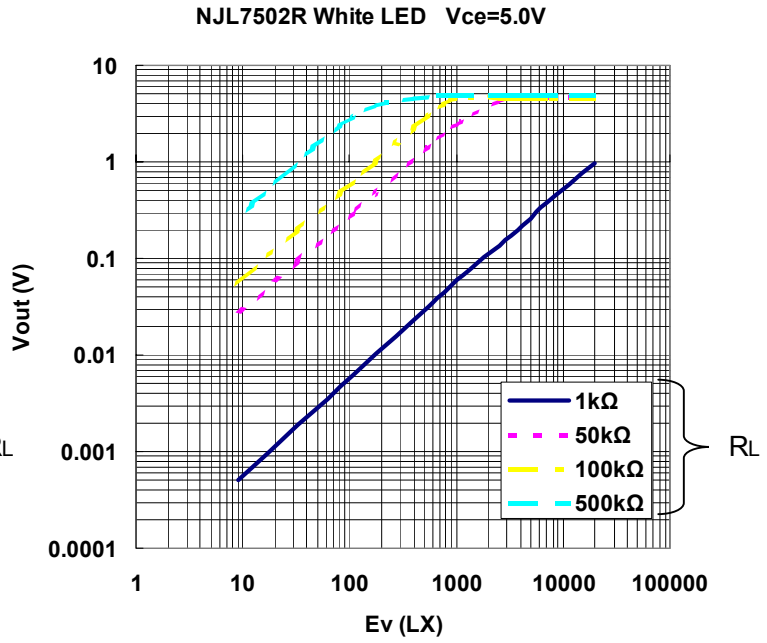
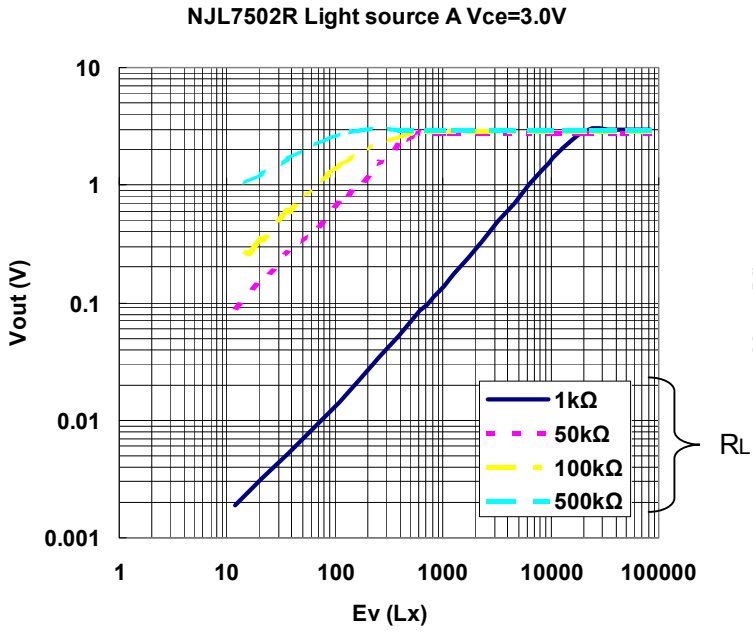
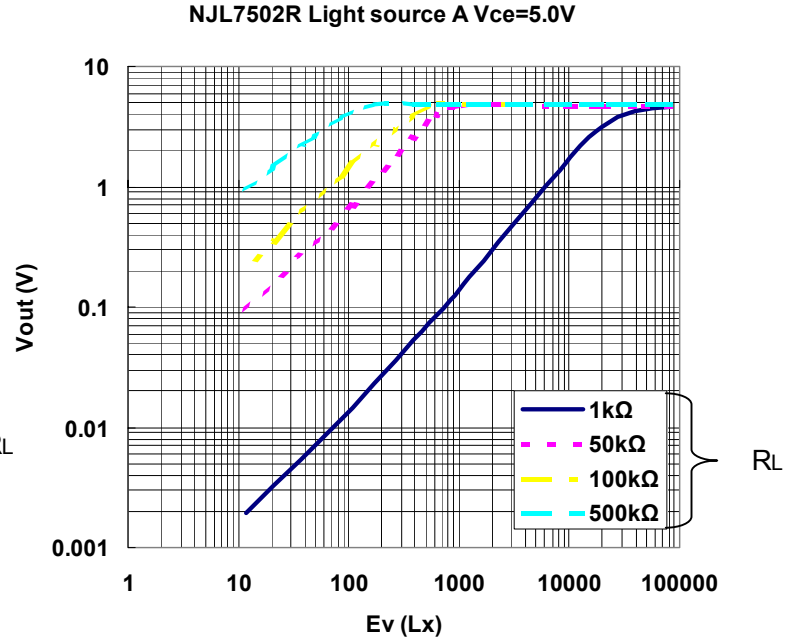


Fig1 Application Circuit









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PRECAUTION FOR HANDLING

1. Soldering to actual circuit board

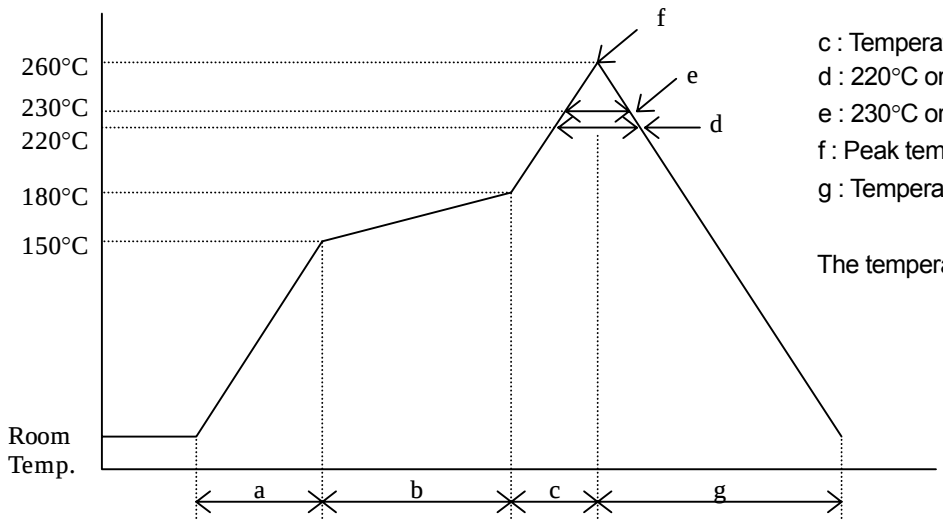
Soldering condition

The surface temperature of plastic package is lower than 260□C.

Soldering Method

1) Reflow Method

Soldering to be done within twice under the recommended condition mentioned below



a : Temperature ramping rate	: 1 to 4°C/s
b : Pre-heating temperature	: 150 to 180°C
time	: 60 to 120s
c : Temperature ramping rate	: 1 to 4°C /s
d : 220°C or higher time	: Shorter than 60s
e : 230°C or higher time	: Shorter than 40s
f : Peak temperature	: Lower than 260°C
g : Temperature ramping rate	: 1 to 6°C /s

The temperature of the surface of mold package

2) Reflow Method (In case of infrared heating)

The temperature profile is same as the above

Avoid direct irradiation to the plastic package because it may absorb the Infrared Radiation and its surface temperature will be higher than the lead.

3) The other method

Avoid rapid heating up like dipping the devices directly into the melting solder or vapor phase method (VPS).

Solder the device in short time as soon as possible.
If the device is heated and kept in high temperature for longer time, its reliability would be affected.

2. Cleaning

Avoid washing the device after soldering by reflow method.

3. Attention in handling

1) Treat not to touch the lens surface.
2) Avoid dust and any other foreign materials on the lens surface such as paint, bonding material, etc.

4. Storage

Mount the device as soon as possible after opening the envelope. In order to prevent from degradation by the moisture at the reflow process, the device is contained in damp proof packaging.

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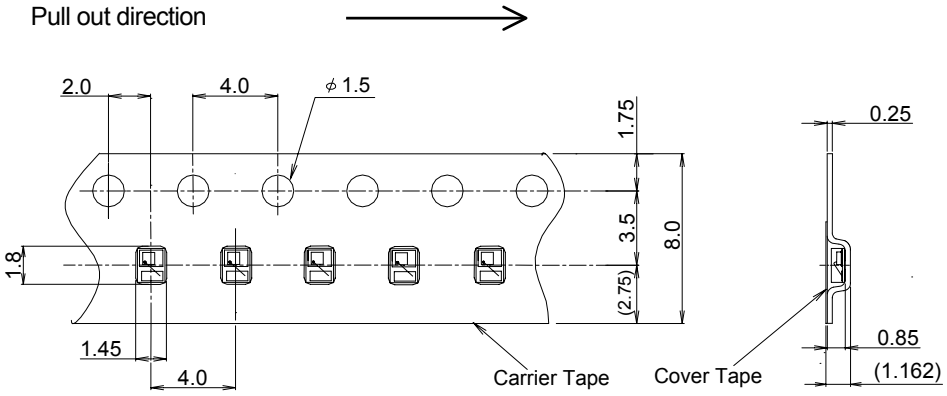
NJL7502R Taping Specification (TE1)

1. Taping Size

1) The material of carrier tape is styrene type plastic with carbon.
2) The cover tape is polyester type with electro statistically prevention.
3) The pull out direction of the tape is as follows.

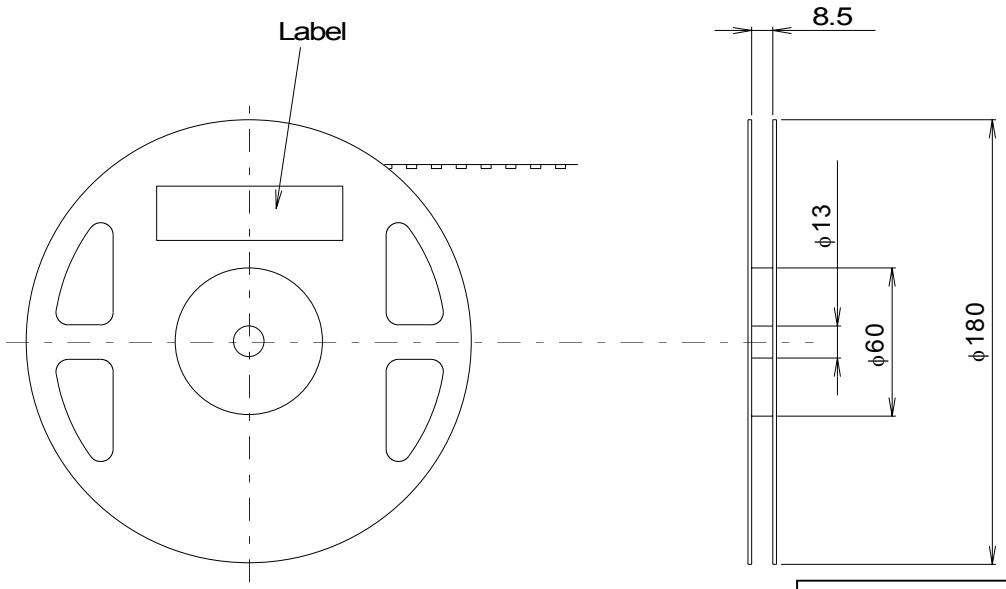


2. Taping Strength

The peeling-off strength is 20 to 70g in case the cover tape is pulled up from the carrier tape with opening angle 10 to 15 degree.

3. Packing

1) The taped products are rolled up on the taping reel as follows.
2) Rolling up specification
   2-1) Start rolling : Carrier tape open space is more than 20 pieces.
   2-2) End of rolling : Carrier tape open space is more than 20 pieces with 2 rounds of cover tape.
3) Taping quantity : 2,000 pieces.
4) Each reel is sealed in a damp proof bag with one bag of silica gel.



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