



APPROVAL SHEET

CUSTOMER : _____
 DEVICE NAME : IR RECEIVER MODULE
 CODE No. : _____
 ITEM No. : ROM-TC338MV-R
 ISSUED DATE : 2012. 04. 16

[CUSTOMER APPROVAL]





ACCEPT No.				
ACCEPT DATE				
	INSPECTER	CHECK	APPROVAL	COMMENT
ACCEPT				

	ISSUE	REVIEW	REVIEW	APPR'D
ISSUED DEPT.				

레이트론 (주)	Tel : 82-42-863-2840 Fax : 82-42-861-0843 http://www.raytron.co.kr
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CUSTOMER :

RECORD OF REVISION				DATE		2012. 04. 16			
				MODEL NAME					
PART NAME		IR RECEIVER MODULE		TYPE No.		ROM-TC338MV-R			
PART No.				APPROVAL DATE		2012. . .			
No.	DATE	PAGE	REVISED CLAUSE	REVISION DETAILS			Ma	Ch	AP
1	'12.04.16		Initial				Park	Jang	Jung

 RAYTRON CO., LTD. HEAD OFFICE & FACTORY (KOREA) 104-6, Moonji-Dong, Yusung-Gu, Daejeon, KOREA TEL : +82-42-863-2840 FAX : +82-42-861-0843 FACTORY (CHINA) 6/F, BlockA, Huafeng GongYeYuan, Bao'an72, Shenzhen, CHINA TEL : +86-755-2744-7373 FAX : +86-755-2744-7235	MANAGER	CHECK	APPROVAL
			
	FILE No.	RIS-120416-01	

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		DATE	2012. 04. 16
PART NAME	IR RECEIVER MODULE	MODEL NAME	
PART No.		TYPE No.	ROM-TC338MV-R

1. Description

The ROM-TC3xx Series are miniaturized receiver for infrared remote control system. The Pin Photodiode and preamplifier are assembled on lead frame. The epoxy package is designed as IR filter.

The module has excellent performance even in disturbed ambient light application and provides protection against uncontrolled output pulses.

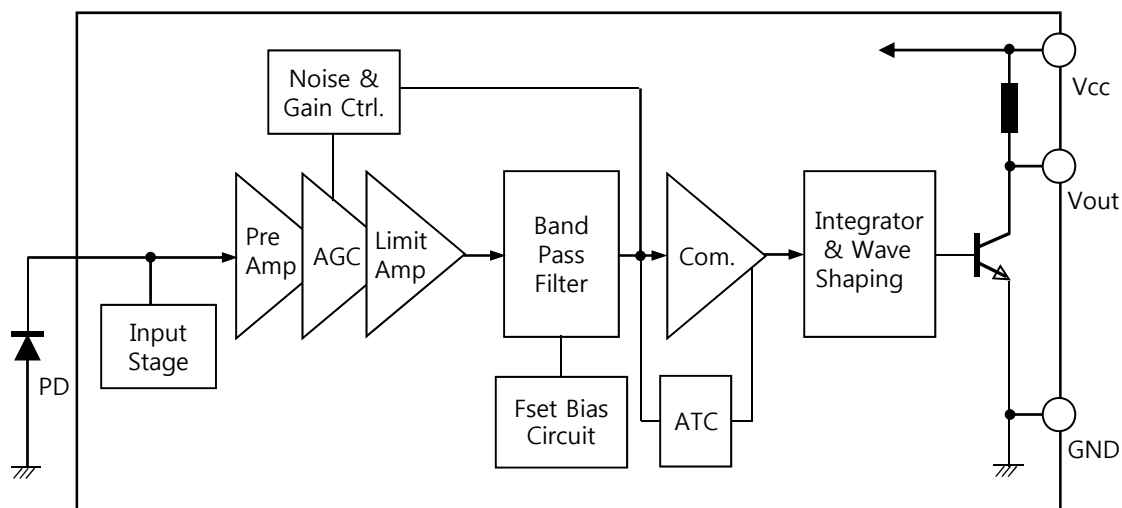
2. Features

- 1) Transfer mold package.
- 2) Wide operating supply voltage 2.7V ~ 5.5V
- 3) Supply current : 3.3V(0.27mA), 5.0V(0.35mA)
- 4) Band pass filter center frequency : 37.9Khz
- 5) Epoxy IR filter characteristic : 940nm
- 6) Maximum interference safety against optical and electrical disturbance.
- 7) Internal filter for a high frequency lighting fluorescent lamp.
- 8) Internal Pull-Up output.
- 9) Lead(Pb)-free component.

3. Application

- 1) AV instruments (DVD, TV, SVR, Audio, CD player)
- 2) Home appliances (Air conditioner, Computer, Camera)
- 3) Remote control for wireless equipment.
- 4) Infrared remote control Toys.

4. Block Diagram



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5. Electro-Optical Characteristics

1) Absolute Maximum Ratings (at 25°C Unless otherwise note)

Parameter	Symbol	Ratings	Unit
Supply Voltage	Vcc	6.0	V
Output Current	Iout	2.0	mA
Operating Temperature	Topr	-20 ~ +80	°C
Storage Temperature	Tstg	-25 ~ +85	°C
Soldering Temperature (*1)	Tsol	260, t<10sec	°C

(*1) For 10sec (at mounting on PCB with thickness of 1.6mm)

2) Recommended Operating Conditions

Parameter	Symbol	Ratings	Unit
Operating Voltage	Vcc	2.7 ~ 5.5	V
Input Frequency	fin	30 ~ 60	kHz

3) Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Supply Voltage	Vcc		2.7	-	5.5	V
Supply Current	Icc	N/signal (3.0V)	0.15	0.27	0.4	mA
		N/signal (5.0V)	0.2	0.35	0.45	mA
Peak Wavelength (※1)	λ_p		-	940	-	nm
B.P.F Center Frequency (※2)	fo		-	37.9	-	kHz
High Level Output Voltage (※1)	VOH		Vcc-0.5	-	-	V
Low Level Output Voltage (※1)	VOL		-	0.2	0.4	V
High Level Output Pulse Width (※1)	tWH	Burst Wave =600μs Period = 1.2ms	400	-	800	μs
Low Level Output Pulse Width (※1)	tWL		400	-	800	μs
Internal Pull-up Resistance	Rout			40		kΩ
Arrival Distance (※1)	D	±0°	-	13	-	m
		±30°	-	11	-	m
Output Form	Active Low Output					

※1. Distance between emitter and detector specifies maximum distance that output wave form satisfies the standard (fig.2, fig3) under the conditions below against the standard transmitter. ON/OFF pulse width is to be satisfied within 0.3m~ arrival distance length.

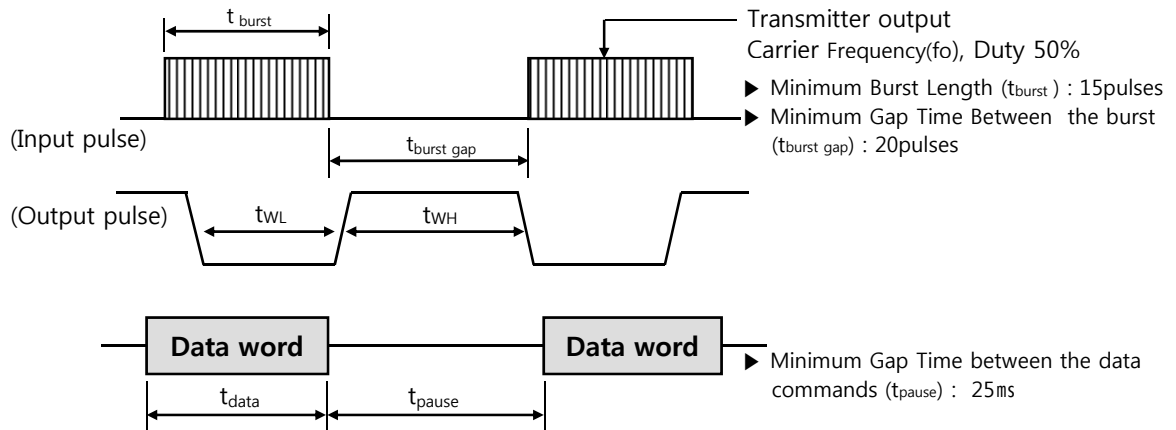
※2. The following band pass frequencies are available (32.7kHz/36kHz/37.9kHz/40kHz/56.7kHz) carrier frequencies are adjusted by zener-diode fusing method.

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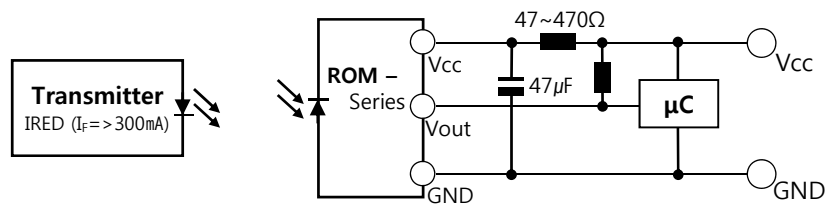
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4) Measurement Conditions

① Fig.1 Burst wave, Output wave

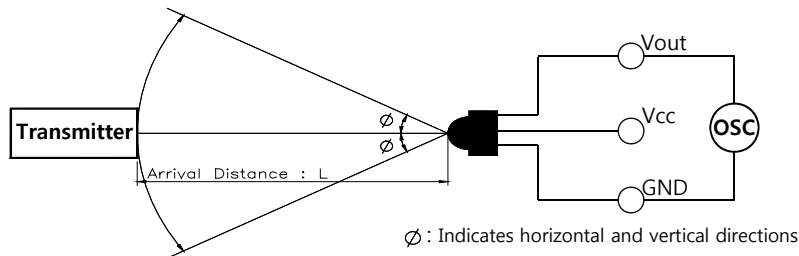


② Fig.2 Application Circuit



Please add the RC filter, resistor(40~470Ω) to Vcc line and , Condenser(47μF~470μF) between Vcc and GND, in order to reduce the noise from power supply line.
In addition, infrared LED used in the transmitter is set to $\lambda_{peak}=940nm$ and current ($I_f = >300mA$)

③ Fig.3 Test Condition of Arrival Distance



Ambient light source : Detecting surface's illumination shall be 100Lux under ordinary white fluorescence lamp without high frequency lighting.

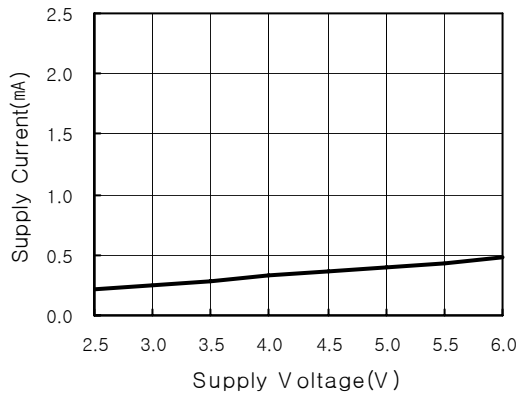
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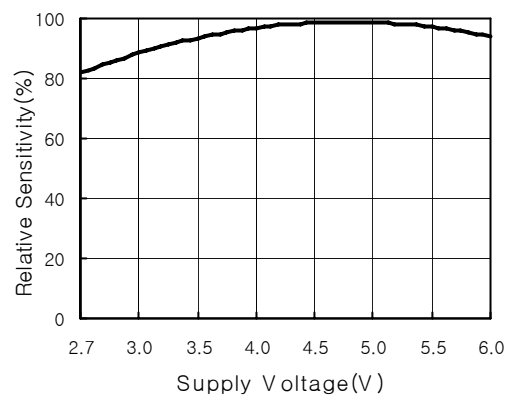
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5) Graph of Electrical/Optical Characteristics

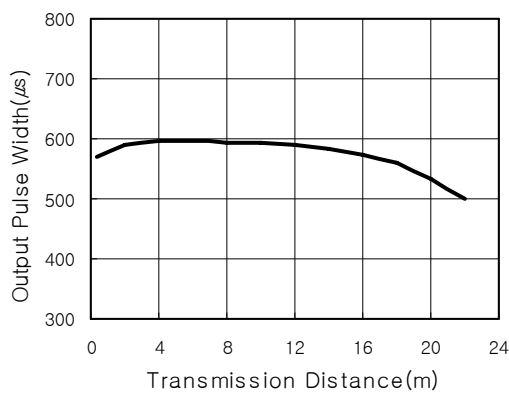
[Fig.1] Supply Current vs. Voltage



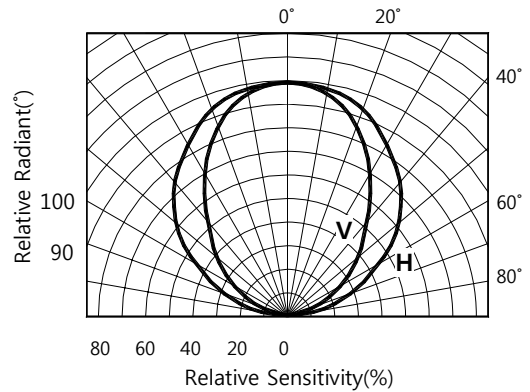
[Fig.2] Sensitivity vs. Supply Voltage



[Fig.3] Output Pulse Width vs. Distance



[Fig.4] Relative Sensitivity vs. Direction



6) Standard Inspection

All output products shall be inspected based on following items.

- ① Detecting distance.
- ② Current consumption.
- ③ High level output voltage.
- ④ Low level output voltage.
- ⑤ Output Pulse width.

7) Others

In case any trouble or question arise, both parties agree to make full discussion covering the said problem.

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6. Reliability Test Item and Standard.

- 1) All output products shall satisfy below Reliability test items.
- 2) Related sampling quantity and acceptance/failure judgment standard accordance with MIL standard MIL-STD-883 is as listed below.

- ① Confidence level : 90%
 ② LTPD : 10% / 20%

No.	Test Item	Test Conditions	Judgment Standard	Fail(c) / Samples(n)
1	High Temp. Storage (※2)	Ta=+85°C, t=500hr	1. V _{OH} (V _{CC} =5.0V) High level output voltage V _{OH} > 4.5V 2. V _{OL} (V _{CC} =5.0V) Low level output voltage V _{OL} < 0.4V 3. I _{CC} (V _{CC} =5.0V) Consumption current I _{CC} < 1.0mA 4. D (V _{CC} =5.0V) Arrival Distance D > 10m	C=0 / n=22
2	Low Temp. Storage (※2)	Ta=-25°C, t=500hr		C=0 / n=22
3	High Temp. Operating (※1,※2)	Ta=+80°C, V _{CC} =5.0V t=500hr		C=0 / n=22
4	Low Temp. Operating (※1,※2)	Ta=-20°C, V _{CC} =5.0V t=500hr		C=0 / n=22
5	High Temp./ High Hum. Bias (※1,※2)	Ta=+85°C, 85%RH V _{CC} =5.0V, t=500hr		C=0 / n=22
6	Temperature Cycle (※2, ※3)	Ta=-20°C(0.5h) to +85°C(0.5h) 20cycle		C=0 / n=22
7	P.C.T (※2)	Ta=+121°C 100%RH, P=1atm, t=4hr		C=0 / n=22
8	Solder Heat (※2)	Ta=+350±5°C, 3s		C=0 / n=11
9	Variable frequency Vibration (※2)	Frequency range : 10 to 55Hz/sweep 1min Overall amplitude : 1.5mm X,Y,Z/2h each		C=0 / n=11
10	Falling (※4)	Height=75cm, 3 times		C=0 / n=11
11	Solderability (※5)	Soldering Temp.: +260±5°C, 10s Pb free solder : Sn/3.0Ag/0.5Cu		Leads shall be covered By solder more than 95%

- ※1. Supply voltage of load test is 5V.(Standard Jig of Raytron)
 ※2. Electro-optical characteristics shall be satisfied after leaving 2 hours in the normal condition.
 ※3. Temperature cycle test shall repeat above condition 20 times under no load.
 ※4. The test devices shall be dropped three time on the hard wooden board from a height of 75cm.
 ※5. Reflow Soldering.

☞ In cased any trouble or question arises related to above test items, both parties agree to make full discussion and covering the said matters.

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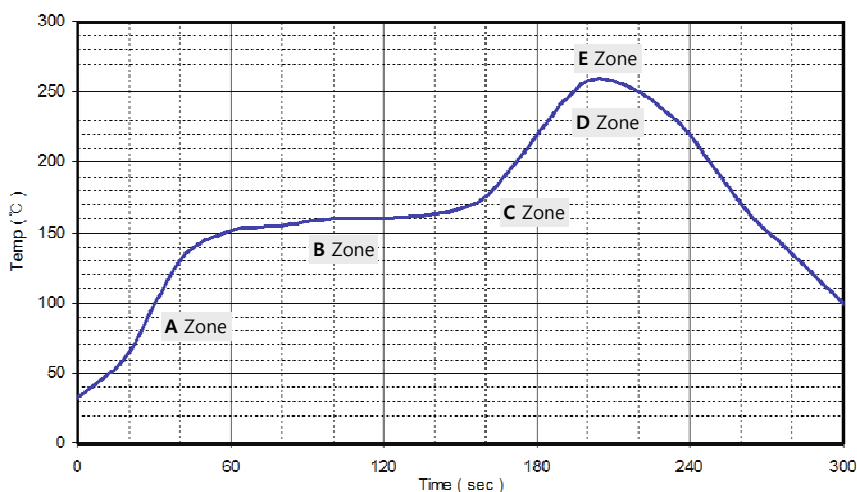
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7. Precautions to be taken on mounting

1) Reflow Soldering

- ① Following soldering paste recommended.
 - Melting temperature : 245 ~ 260°C
 - Composition : Pb-Free
- ② Recommended thickness of metal mask is between 0.12mm and 0.2mm for screen printing.
- ③ The below illustrated temperature profile at the top surface of the product is requested for soldering.



Zone	Time	Temperature
A	70 ~ 100sec	4°C/s max.
B	60 ~ 120sec	140 ~ 160°C
C	50 ~ 70sec	4°C/s max.
D	60sec max.	210 ~ 230°C
E	10sec max.	260°C max.


☞ Reflow System : Japan pulse Laboratories Inc.(RF-430)
 Temp. Profile : SEF Eltronic GmbH (Mesh 3.0)

2) Manual Soldering

- ① Use the Pb-Free solder or the solder containing silver.
- ② Use a soldering iron of 25W or smaller.
Adjust the temperature of the soldering iron below 270°C
- ③ Finish soldering within 3 seconds.
- ④ Handle products only after the temperature is cooled off.

3) Mounting Precautions

- ① Do not apply stress to the resin at high temperature.
- ② The resin part is easily scratched, so avoid friction with hard materials.
- ③ When installing the assembly board in equipment, ensure that this product does not come into contact with other components.

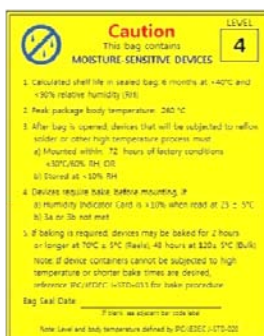
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4) Moisture-Proof Packing

- ① To avoid moisture absorption by the resin, the product the product is packed in an aluminum envelope with silica gel.
- ② Since the optical characteristics of the device may be affected by exposure to moisture in the air before soldering and they should therefore be stored after opening the moisture proof bag under the following conditions.
 - Temperature : 10 to 30°C
 - Humidity : 60% RH or less
 - Time : 72hours **(MSL Level 4)**




5) Baking

product that has been in a condition of moisture resistant packaging for 6 months or longer. or for which 72 hours or longer have elapsed since the moisture resistant packaging was opened. should be baked according to the following conditions prior to use.

- ① Baking conditions
 - 60°C, 48 hours or longer (Reels)
 - 100°C, 4 hours or longer (Bulk)
 - 125°C, 2 hours or longer (Bulk)
 - 150°C, 1 hours or longer (Bulk)

6) Mounting Precautions

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- ③ When installing the assembly board in equipment, ensure that this product does not come into contact with other components.

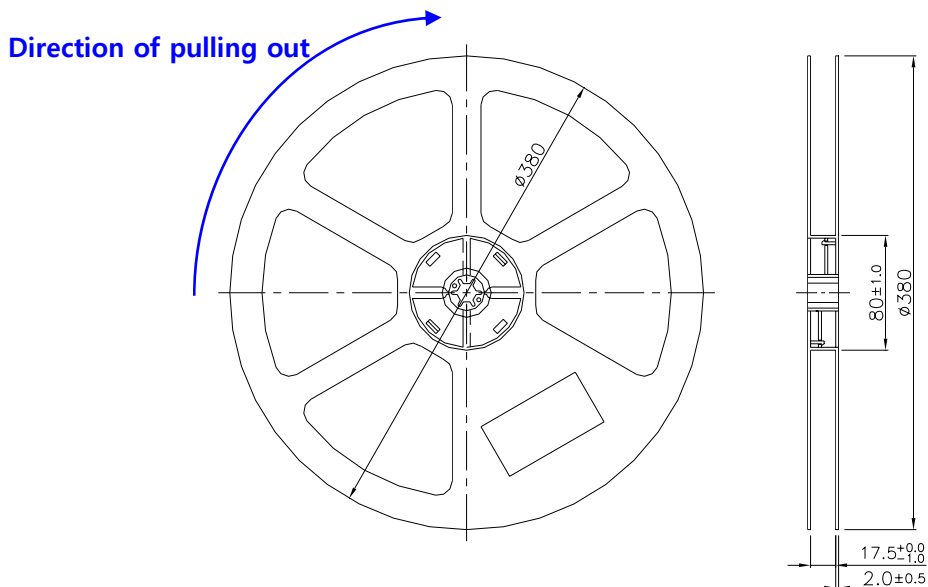
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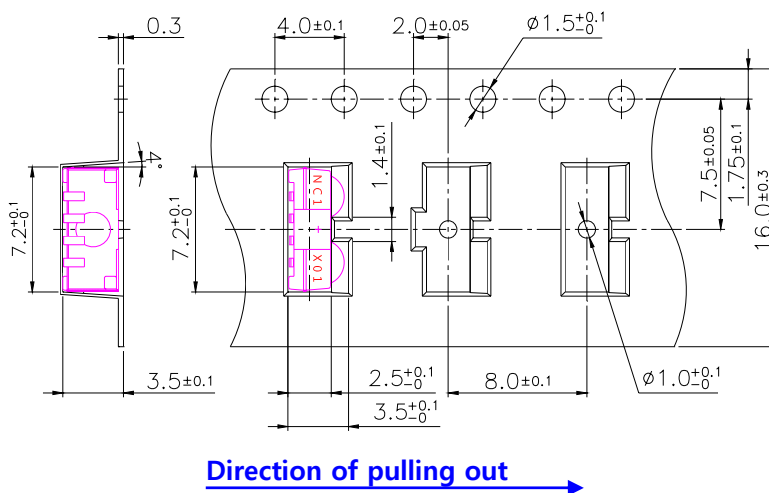
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8. Tape and Reel Packing Specifications

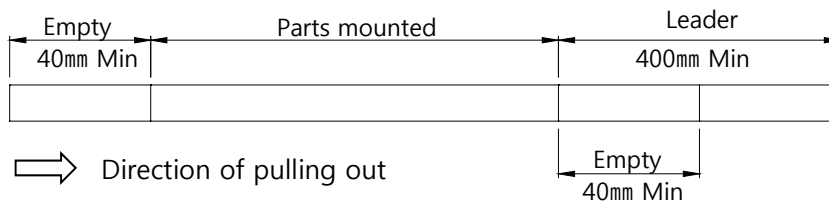
1) Shape and dimension of reels



2) Dimension of tapes



3) Configuration of tapes



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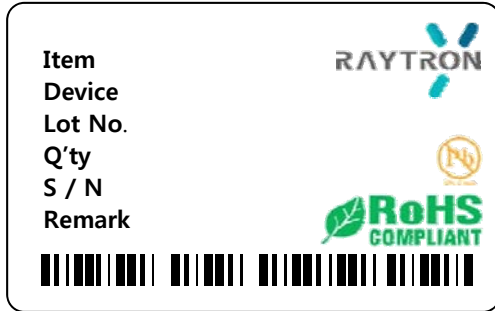
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9. Packing Specifications

1) Label Specification (Bar Code Sticker)



Label Dimensions (Unit : mm)

Label Type	L	W	Remark
Label #1	65	40	

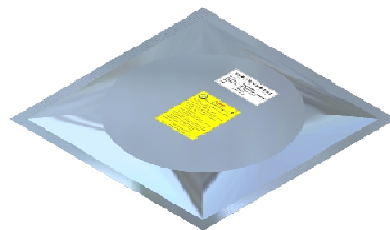
2) Box Specifications & Packing Method

(Unit : mm)

Packing Type	Materials	L x W x H	Quantity
Plastic Reel	Plastic	15" -16mm	3,400 pcs
Al Shielding Bag	Aluminum	420 x 530 x 0.1	3,400 pcs
RS-#2N	Corrugated Cardboard	395 x 300 x 240	34,000 pcs
RS-#3N	Corrugated Cardboard	660 x 425 x 430	68,000 pcs



1. Put 4,000pcs of products in a reel.



2. Vacuum packing of the reel with Al-shielding bag.(Silica : 10g x 2ea)



4. Put 2pcs of #2N packing boxes in a #3N packing box.



3. Put them(10pcs of reel) in a #2N packing box.



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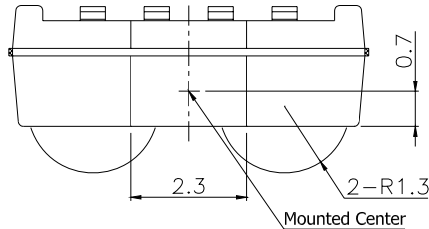
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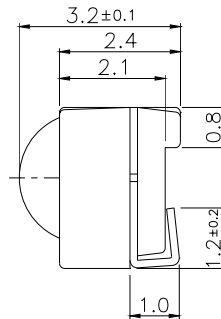
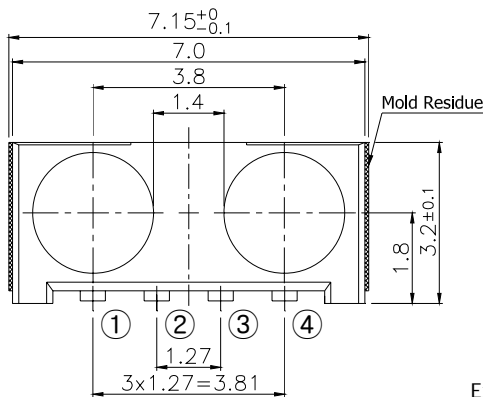
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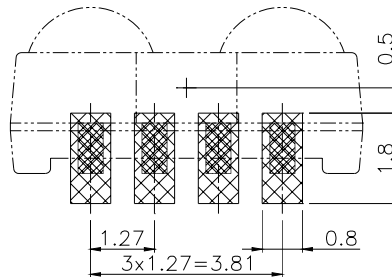
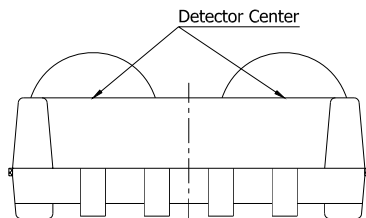
10. Appearance & Dimensions (mm)



1. Pin Config.
 - ① GND
 - ② Vcc
 - ③ Vout
 - ④ GND
2. G.T : ±0.15



Example of Mounting drawing from Solder Side (Reference)



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