SCM-014TB

Data Sheet

■ Features

- Surface mount Lens Phototransistors

■ Outline

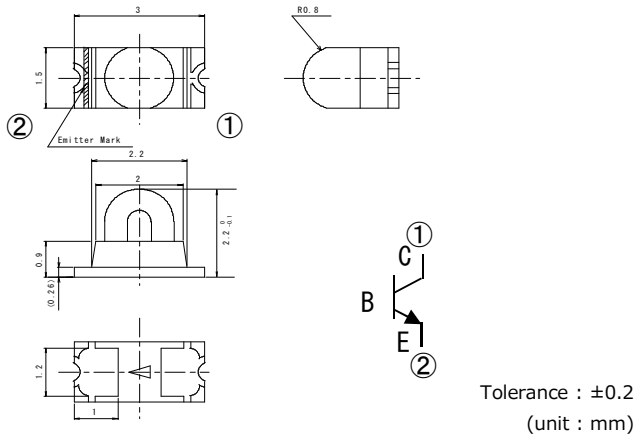


■ Size

3015 (1206)
3.0 × 1.5mm (t=2.2mm)

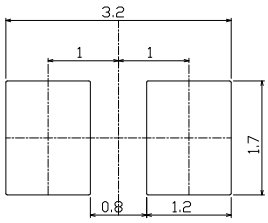
Color **TB**

■ Dimensions



Tolerance : ±0.2
(unit : mm)

■ Recommended Solder Pattern



(unit : mm)

■ Moisture sensitivity level(MSL) : Level 3

■ Specifications

Part No.	LED Chip	Absolute Maximum Ratings (Ta=25ºC)						Electrical and Optical Characteristics (Ta=25ºC)									
		Collector Emitter Voltage(V)	Emitter-Collector Voltage(V)	Collector Current (mA)	Collector Power Dissipation (mW)	Operating Temp. T_{opr}(ºC)	Storage Temp. T_{stg}(ºC)	Light Current			Dark Current		Sensitivity Wavelength	Collector-emitter Saturation Voltage			
								Min. (mA)	Max. (mA)	V_{CE} I_E(Lx)	Max. (μA)	V_{CE} (V)	λ_P Typ.(nm)	Min. (V)	Typ. (V)	Max. (V)	I_C(mA) I_E(Lx)
☐ SCM-014TB	Si	32	5	30	100	-40 ～ +85	-40 ～ +100	0.3	3.8	5/500	0.5	10	800	-	-	0.4	0.1/500

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■ Electrical Characteristics Curves

Reference

Fig.1 Response Time - Load Resistance

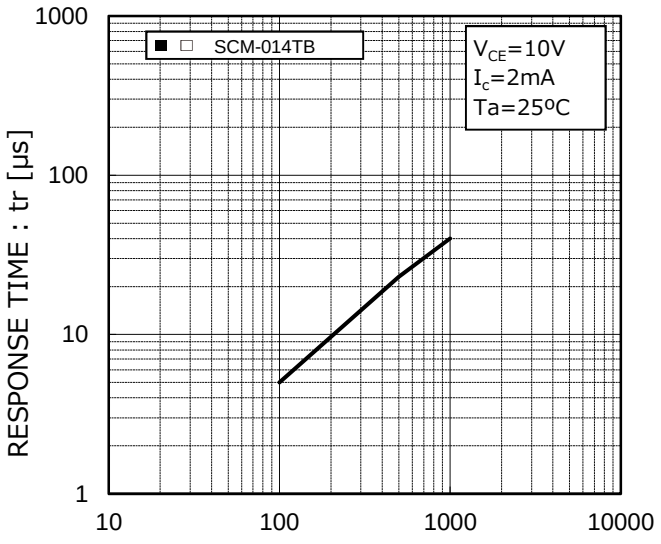


Fig.2 Relative Collector Current - Ambient Temperature

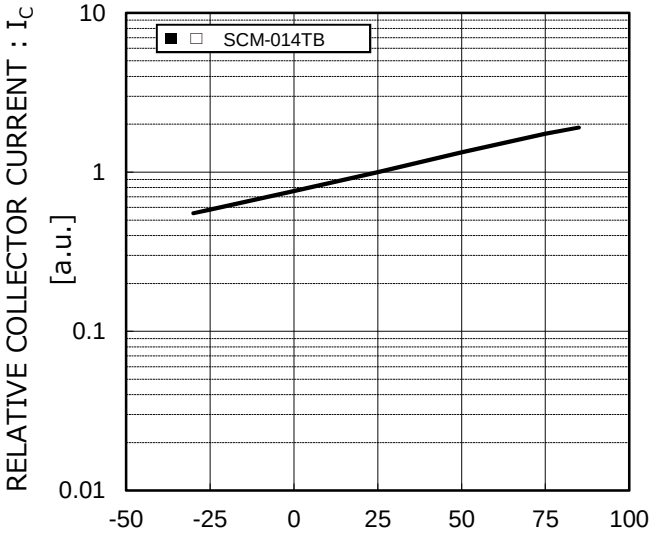


Fig.3 Relative Collector Current - IL luminace

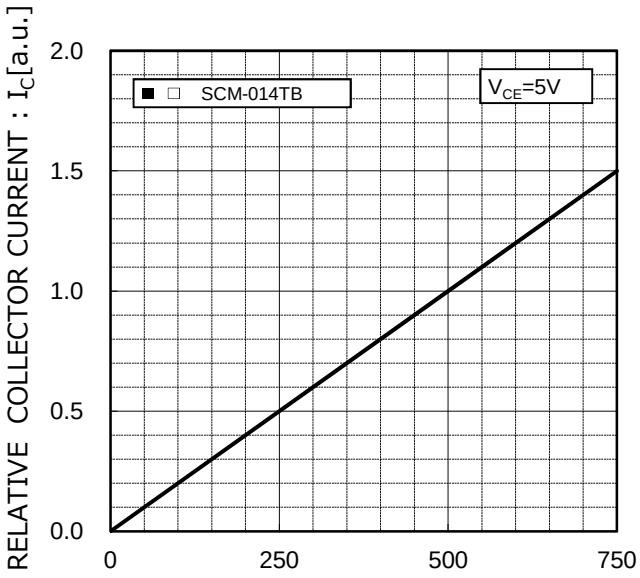
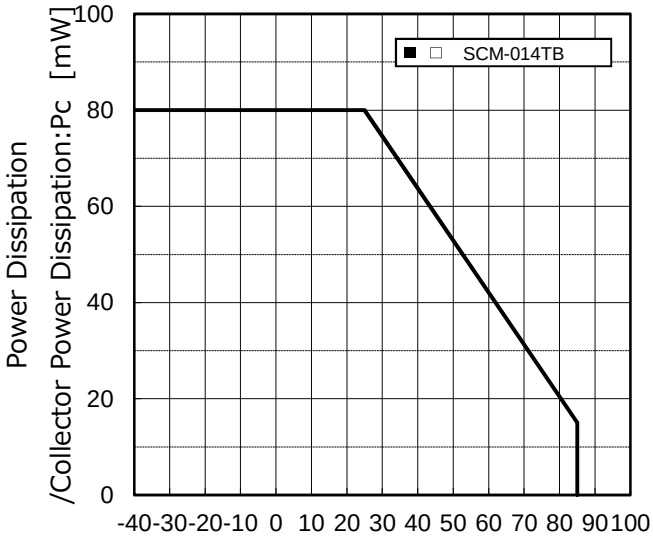


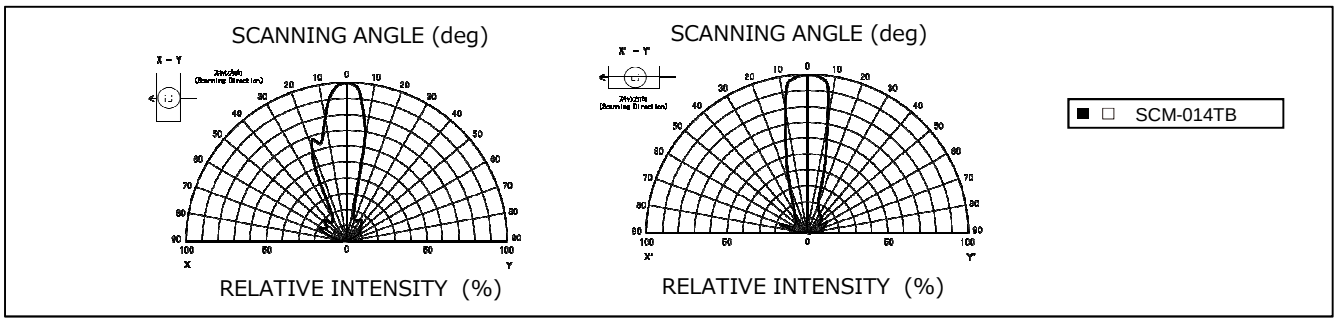
Fig.4 Power Dissipation/ Collector Power Dissipation - Ambient Temperature



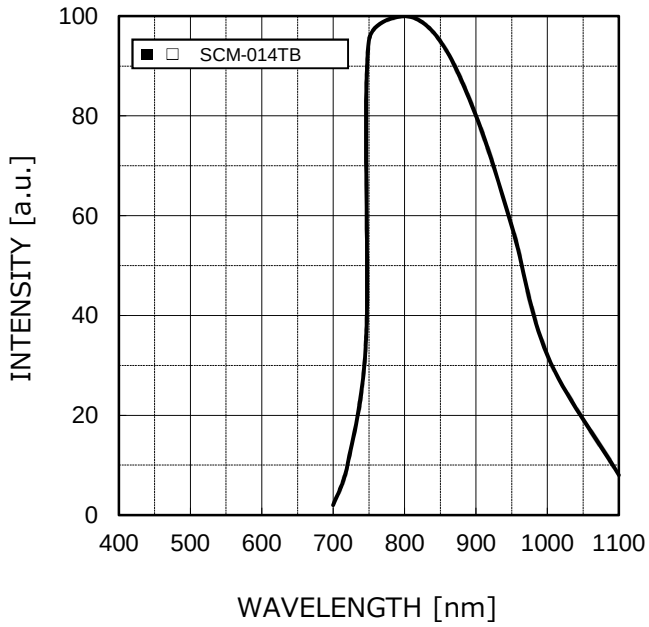
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■Viewing Angle

Reference



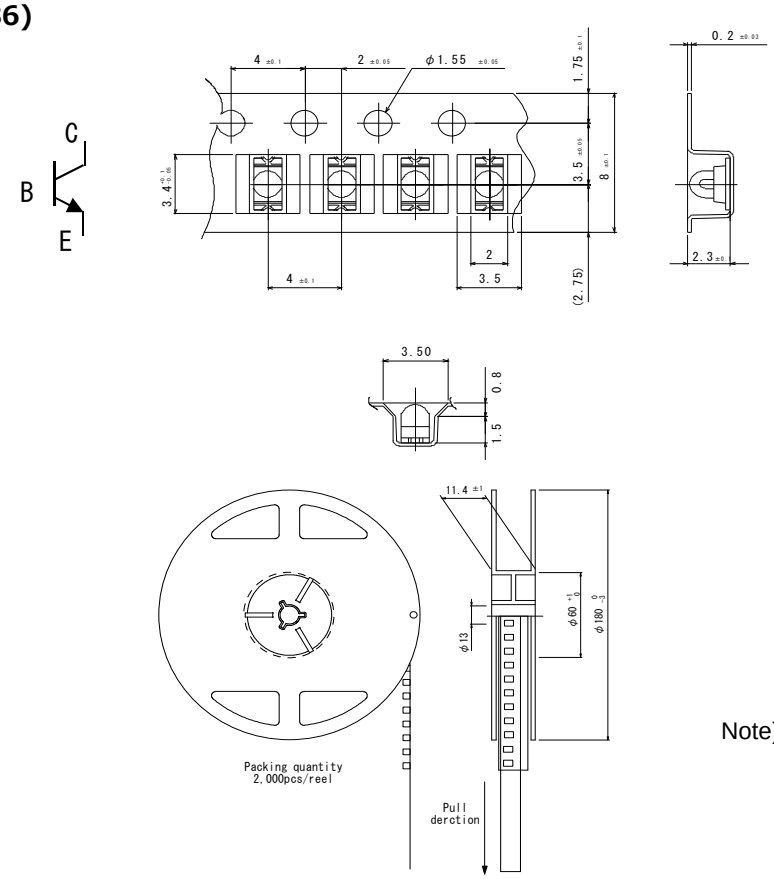
■Spectrum Data



* Please take this data as a reference data for the samples are measured randomly.

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■Taping(T86)



Unit:mm

Note)Tolerance is within ±0.2mm unless otherwise specified.

■Part No. Construction

*"-"will be taken out for emitting color WB/B/E series.

Special Code will be applied for Emitting color WB/B/E series.

Chromaticity rank (for white LED)

Rank sign (Brightness Rank)*

S	C	M	–	0	1	4	T		B	T	8	6		B

Series name / Package Type / Chip type / Emitting Color / Resin Color / Taping Specification

SML	Chip LED
SCM	Chip LED

P1	1.0x0.6 t=0.2mm
E1	1.6x0.8 t=0.36mm
D1	1.6x0.8 t=0.55mm
H1 / M1	2.0x1.25 t=0.8mm
01	3.0x2.0 t=1.3mm
Z1/ZN	3.5x2.8 t=1.9mm
A1	1.6x1.15 t=0.55mm
81/82	3.4x1.25 t=1.1mm
K1	4.5x2.0 t=0.6mm
S1	3.2x1.6 t=1.85mm
P2	1.0x1.0 t=0.2mm
52	1.3x1.5 t=0.6mm
P34	1.0x1.0 t=0.2mm
P36	1.5x1.0 t=0.2mm
VN	3.5x2.8 t=0.6mm
01	3.0x1.5 t=2.2mm

0	Standard Type
1	Low Current Type
2	High Brightness type
3	Ultra High Brightness type
4	
5	
6	
7	
8	

V	Red
U	Red
U2	Red
D	Orange
Y3	Yellow
Y2	Yellow
Y	Yellow
W	Yellow
M2	Yellowish green
M	Yellowish green
F	Green
P	Green
E	Green
B	Blue
WB	White
T	Phototransistors
RGB	Red/Green/Blue

T	Transparent Colorless
W	Milky White
B	Black

T86	Cathode at sprocket hole side(the top)

*Concerning the Brightness rank.
*Part name is individual for each rank.
*When shipped as sample,the part name will be a representative part name.
General products are free of ranks.
Please contact sales if rank appointment is needed.

■Packing Specification

Complying with IPC/JEDEC J-STD-033.

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■Precaution (Surface Mount Device)

1．Storage

If the product is heated during the reflow under the condition of hygroscopic state, it may vaporize and expand which will influence the performance of the product. Therefore, the package is waterproof. Please use the product following the conditions:

・Using Conditions

Classification	Temperature	Humidity	Expiration Date	Remark
①Before using	5～30℃	30～70%RH	Within 1 year from Receiving	Storage with waterproof package
②After opening package	5～30℃	Below 70%RH	Within 168h	Please storing in the airtight container with our desiccant (silica gel)

・Baking

Bake the product in case of below:
①The expiration date is passed.
②The color of 5% and 10% on humidity indicator card is not green.
(Even if the product is before expiration date.)

・Baking Conditions

Temperature	Time	Humidity
60±3℃	12～24h	Below 20%RH
Remark	・Bake products in reel. ・Reel and embossed tape are easy to be deformed when baking, so please try not to apply stress on it. ・Recommend bake once.	

2．Application Methods

2－1．Precaution for Drive System and Off Mode

Design the circuit without the electric load exceeding the ABSOLUTE MAXIMUM RATING that applies on the products. If drive by constant voltage, it may cause current deviation of the LED and result in deviation of luminous intensity, so we recommend to drive by constant current. (Deviation of VF Value will cause deviation of current in LED.) Furthermore, for off mode, please do not apply voltage neither forward nor reverse. Especially, for the products with the Ag-paste used in the die bonding, there's high possibility to cause electro migration and result in function failure.

2－2．About product life

Depending on operating conditions and environment(applied current, ambient temperature and humidity, corrosive gas), decreasing of luminosity and change of chromaticity may occur even within the specification conditions.
Please contact our sales office if you use it for the following applications.
①It requires long luminosity life
②It is always lit

2－3．Applied Stress on Product

No resin hardening agent such as filler is used in the sealing resin of the product. Therefore, please pay attention to the overstress on it which may influence its reliability.

2－4．Usage

The Product is LED. We are not responsible for the usage as the diode such as Protection Chip, Rectifier, Switching and so on.

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3. Others

3 – 1. Surrounding Gas

Notice that if it is stored under the condition of acid gas (chlorine gas, sulfured gas) or alkali gas (ammonia), it may result in low soldering ability (caused by the change in quality of the plating surface) or optical characteristics changes (light intensity, chrominance) and change in quality of cause die bonding (Ag-paste) materials. All of the above will function failure of the products.
Therefore, please pay attention to the storage environment for mounted product (concern the generated gas of the surrounding parts of the products and the atmospheric environment).

3 – 2. Electrostatic Damage

The product is part of semiconductor and electrostatic sensitive, there's high possibility to be damaged by the electrostatic discharge. Please take appropriate measures to avoid the static electricity from human body and earthing of production equipment. Especially, InGaN type LEDs have lower resistance value of electrostatic discharge and it is recommended to introduce the ESD protection circuit.
The resistance values of electrostatic discharge (actual values) vary with products, therefore, please call our Sales staffs for inquiries.

3 – 3. Electromagnetic Wave

Applications with strong electromagnetic wave such as, IH cooker, will influence the reliability of LED, therefore please evaluate before using it.

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4．Mounting

4－1．Soldering

・No resin hardening agent such as filler is used in the sealing resin of the product. Therefore, resin expansion and moisture absorption at humidity will cause heat stress during soldering process and finally has bad influence on the product's reliability.

・The product is not guaranteed for flow soldering.

・Do not expose the product in the environment of high temperature (over 100℃) or rapid temperature shift (within 3℃/sec. of temperature gradient) during the flow soldering of surrounding parts. In case of carrying out flow soldering of surrounding parts without recommended conditions, please contact us for inquiries.

・Please set appropriate reflow temperature based on our product usage conditions and specification.

・The max for reflowing is 2 times, please finish the second reflow soldering and flow soldering with other parts within the usage limitation after open the moistureproof package.

・Compare with N2 reflow, during air reflow, because of the heat and surrounding conditions, it may cause the discoloration of the resin.

・For our product that has no solder resist, because of its solder amount and soldering conditions, one of its specific characteristics is that solder will penetrate into LED. Thus, there's high possibility that will influence its reliability.Therefore, please be informed, concerning it before using it.

4－2．Automatic Mounting

4-2-1．Suction nozzle

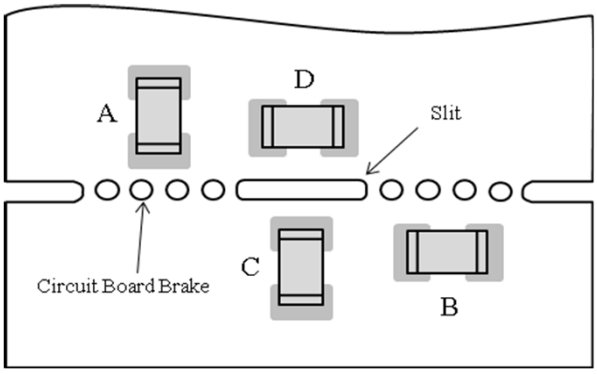
Excessive load may cause damage inside the LED product, so select an optimal suction nozzle according to the material and shape of the LED product.

4-2-2．Mini Package (Smaller than 1608 size)

・Vibration may result in low mounting rate since it will cause the static electricity of product and adhere to top cover tape. Therefore, the magnet should be set on parts feeder cassette of the mounter to control the product stabilization. In addition, it is recommended to set ionizer to prevent electrostatic charge.

4－3．Mounting Location

The stress like bending stress of circuit board dividing after mounting, may cause LED package crack or damage of LED internal junction, therefore, please concern the mounting direction and position to avoid bending or screwing with great stress of the circuit board.



Stress strength according to he mounting position:
A＞B＞C＞D

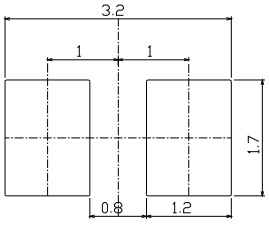
4—4．Mechanical Stress after Mounting

The mechanical stress may damage the LED after Circuit Mounting, so please pay attention to the touch on product.

4－5．Soldering Pattern for Recommendation

We recommend the soldering pattern that shows on the right.
It will be different according to mounting situation of circuit board, therefore, please concern before designing.

※The product has adopted the electrode structure that it should solder with back electrode of the product.
Thus, please be informed that the shape of electrode pin of solder fillet formation is not guaranteed.
The through hole on electrode surface is for conduction of front and rear electrodes but not for formation of solder fillet.



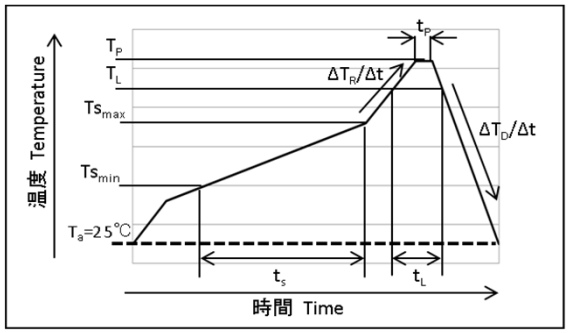
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4 – 6. Reflow Profile

For reflow profile, please refer to the conditions below:(※)

■Meaning of marks, Conditions

Mark	Meanings	Conditions
Ts_{max}	Maximum of pre-heating temperature	180℃
Ts_{min}	Minimum of pre-heating temperature	140℃
t_s	Time from Tsmin to Tsmax	Over 60sec.
T_L	Reference temperature	230～260℃
t_L	Retention time for TL	Within 40sec.
T_P	Peak temperature	260℃(Max)
t_P	Time for peak temperature	Within 10sec.
$\Delta T_R/\Delta t$	Temperature rising rate	Under 3℃/sec.
$\Delta T_D/\Delta t$	Temperature decreasing rate	Over -3℃/sec.



※Above conditions are for reference. Therefore, evaluate by customer's own circuit boards and reflow furnaces before using, because stress from circuit boards and temperature variations of reflow furnaces vary by customer's own conditions.

4 – 7. Attention Points in Soldering Operation

This product was developed as a surface mount LED especially suitable for reflow soldering.
So reflow soldering is recommended. In case of implementing manual soldering,
please take care of following points.

①SOLDER USED

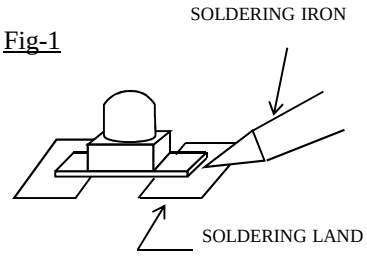
Sn-Cu, Sn-Ag-Cu, Sn-Ag-Bi-Cu

②HAND SOLDERING CONDITION

LED products do not contain reinforcement material such as a glass fillers.
So thermal stress by soldering greatly influence its reliability.
Please keep following points for manual soldering.

	ITEM	RECOMMENDED CONDITION
a)	Heating method	Condition) Temp. of iron top less than 350℃ within 3 sec. Heating on PCB pattern, not direct to the LED. (Fig-1)
b)	Handling after soldering	Please handle after the part temp. goes down to room temp.

Fig-1



4 – 8. Cleaning after Soldering

Please follow the conditions below if the cleaning is necessary after soldering.

Solvent	We recommend to use alcohols solvent such as, isopropyl alcohols
Temperature	Under 30℃ within 3 minutes
Ultrasonic Cleaning	15W／Below 1 liter (capacity of tank)
Drying	Under 100℃ within 3 minutes

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ESR18EZPF2002 ESR18EZPF1302 RBR5L40ADDTE25 RRH050P03GZETB YQ3RSM10SDTFTL1
YQ8RSM10SDTL1 BD9702T-V5 LTR100LJZPFSR036 RB060MM-30TR BD2232G-GTR BD5291GWL-E2
RGW50TK65DGVC11 SML-D12M8WT86 2SD2701TL BD90640UEFJ-CE2 BD00GC0WEFJ-E2
R6524KNX3C16 BU18TD2WNVX-TL BD14220G-CTR ESR18EZPF6R80 ESR25JZPF3R00
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