DATASHEET

SMD

19-037A/RSGHBHW1-S03/2T

Features

- Package in 8mm tape on 7″ diameter reel
- Compatible with automatic placement equipment
- Compatible with infrared and vapor phase reflow
- Solder process
- Full-color type
- Pb-free
- Component solderable surface finish is Gold
- Component weight is 4.2 mg
- RoHS compliant

Description

- The 19-037A SMD chip LED is much smaller than lead frame type components, thus enable smaller board size, higher packing density, reduced storage space and finally smaller equipment to be obtained.
- Moreover, with its black PCB, the 19-037A possess an ideal solution for high-contract and high-resolution indoor signage display.

Applications

- Indoor signage display applications
- Indoor decorating and entertainment design
- Flat backlight for LCD, switch and symbol
- Indicator and backlighting for all consumer electronics

Device Selection Guide

Chip Materials	Emitted Color	Resin Color
AlGaInP	Brilliant Red	White Diffused
InGaN	Brilliant Green	
InGaN	Brilliant Blue	

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating	Unit
Reverse Voltage	V_R	5	V
Forward Current	I_F	R:25 G:20 B:20	mA
Peak Forward Current (Duty 1/10 @1KHz)	I_{FP}	R:60 G:50 B:50	mA
Power Dissipation	Pd	R:60 G:70 B:70	mW
Junction Temperature	T_j	100	℃
Operating Temperature	T_{opr}	-40 ~ +85	℃
Storage Temperature	Tstg	-40 ~ +90	℃
ESD (Classification acc. AEC Q101)	ESD_{HBM}	R:2000 G:200 B:200	V
Soldering Temperature	T_{sol}	Reflow Soldering : 260 ℃ for 10 sec. Hand Soldering : 350 ℃ for 3 sec.	

Electro-Optical Characteristics (Ta=25℃)

Parameter	Symbol		Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	Iv	R	75		186	mcd	I_F=20mA
		G	188		465		
		B	58		144		
Viewing Angle	$2\theta_{1/2}$		-----	120	-----	deg	I_F=20mA
Peak Wavelength	Λp	R		632		nm	I_F=20mA
		G	-----	518	-----		
		B		468			
Dominant Wavelength	Λd	R	618		630	nm	I_F=20mA
		G	516.5	-----	529		
		B	461.5		474		
Spectrum Radiation Bandwidth	Δλ	R		20		nm	I_F=20mA
		G	-----	25	-----		
		B		25			
Forward Voltage	V_F	R	1.7	2.0	2.4	V	I_F=20mA
		G	2.5	3.3	3.7		
		B	2.5	3.3	3.7		
Reverse Current	I_R		-----	-----	1.2	μA	V_R=7V

Note:

1. Tolerance of Luminous Intensity: ±10%
2. Tolerance of Dominant Wavelength: ±1nm
3. Tolerance of Forward Voltage: ±0.1V

Floating Bin(Red)

Bin Range of Luminous Intensity

Bin Code	Min.	Max.	Unit	Condition
RA	75	90	mcd	I_F =20mA
RB	90	108		
RC	108	130		
RD	130	155		
RE	155	186		

Bin Range of Dominant Wavelength

Bin Code	Min.	Max.	Unit	Condition
R1	618	621	nm	I_F =20mA
R2	621	624		
R3	624	627		
R4	627	630		

Floating Bin(Green)

Bin Range of Luminous Intensity

Bin Code	Min.	Max.	Unit	Condition
GA	188	225	mcd	I_F =20mA
GB	225	270		
GC	270	324		
GD	324	388		
GE	388	465		

Note:
1. Tolerance of Luminous Intensity: ±10%
2. Tolerance of Dominant Wavelength: ±1nm
3. Tolerance of Forward Voltage: ±0.1V

Bin Range of Dominant Wavelength

Bin Code	Min.	Max.	Unit	Condition
G1	516.5	519	nm	I_F =20mA
G2	519	521.5		
G3	521.5	524		
G4	524	526.5		
G5	526.5	529		

Floating Bin(Blue)

Bin Range of Luminous Intensity

Bin Code	Min.	Max.	Unit	Condition
BA	58	70	mcd	I_F =20mA
BB	70	84		
BC	84	100		
BD	100	120		
BE	120	144		

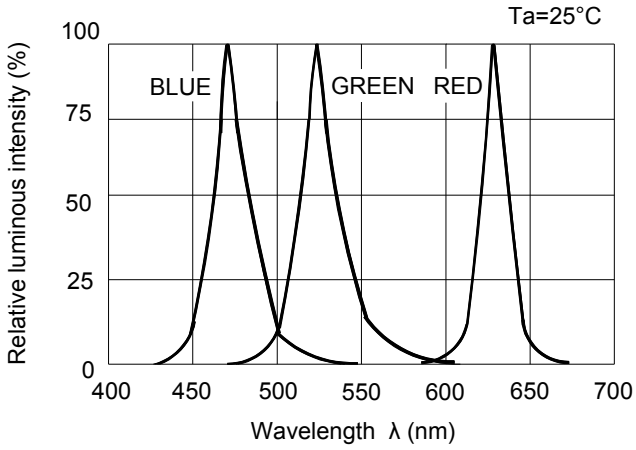
Bin Range of Dominant Wavelength

Bin Code	Min.	Max.	Unit	Condition
B1	461.5	464	nm	I_F =20mA
B2	464	466.5		
B3	466.5	469		
B4	469	471.5		
B5	471.5	474		

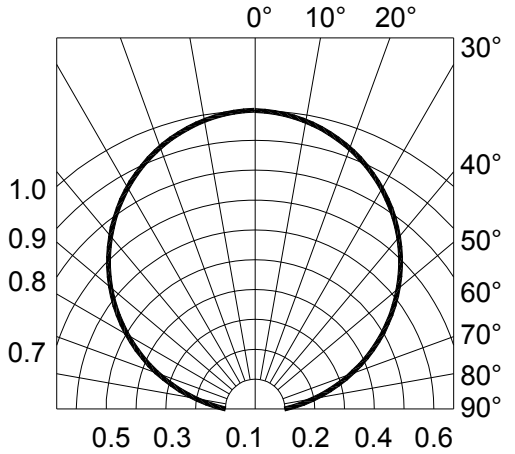
Note:
1. Tolerance of Luminous Intensity: ±10%
2. Tolerance of Dominant Wavelength: ±1nm
3. Tolerance of Forward Voltage: ±0.1V

Typical Electro-Optical Characteristics Curves

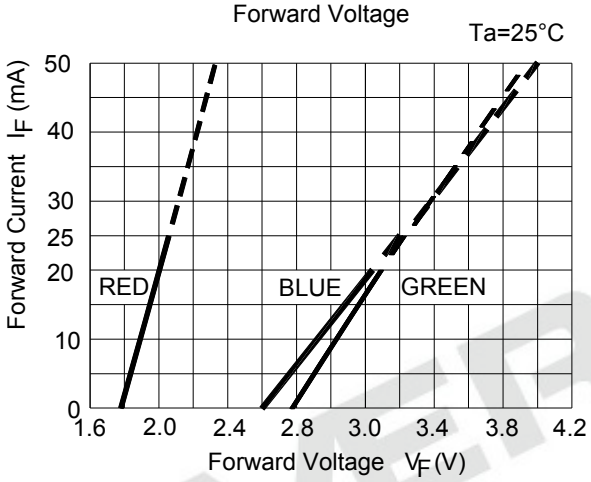
Spectrum Distribution



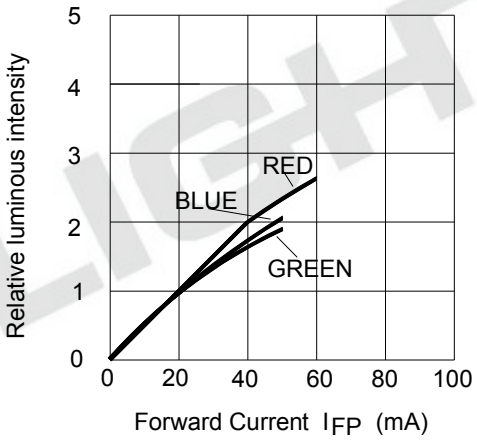
Radiation Diagram Ta=25°C



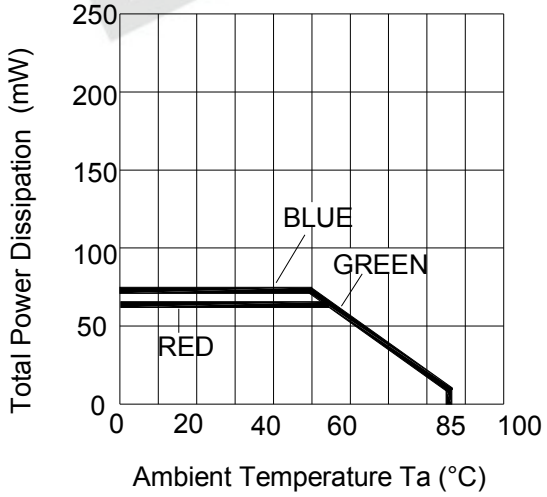
Forward Current vs. Forward Voltage



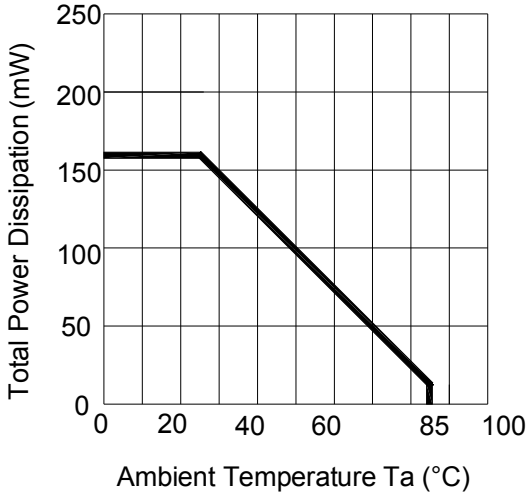
Forward Current Derating Curve



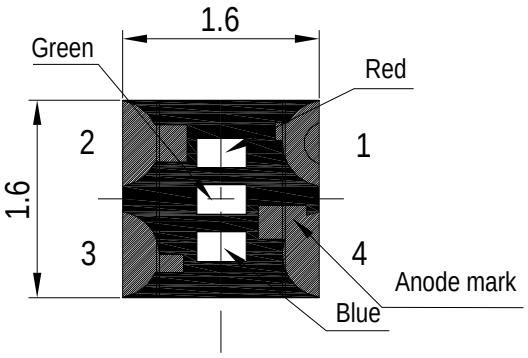
Ambient Temperature vs. Power Dissipation

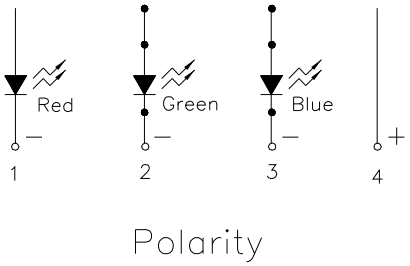


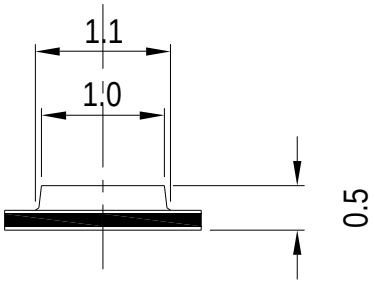
Ambient Temperature vs. Total Power Dissipation

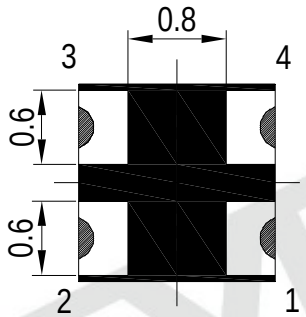


Package Dimension

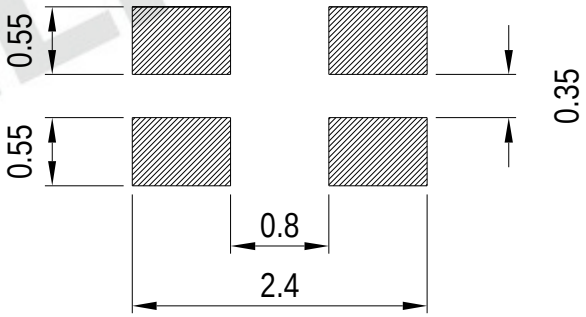








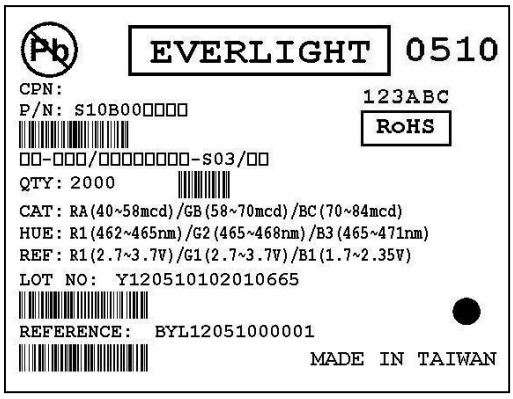
For reflow soldering (propose)



Note: Tolerances unless mentioned ±0.1mm. Unit = mm

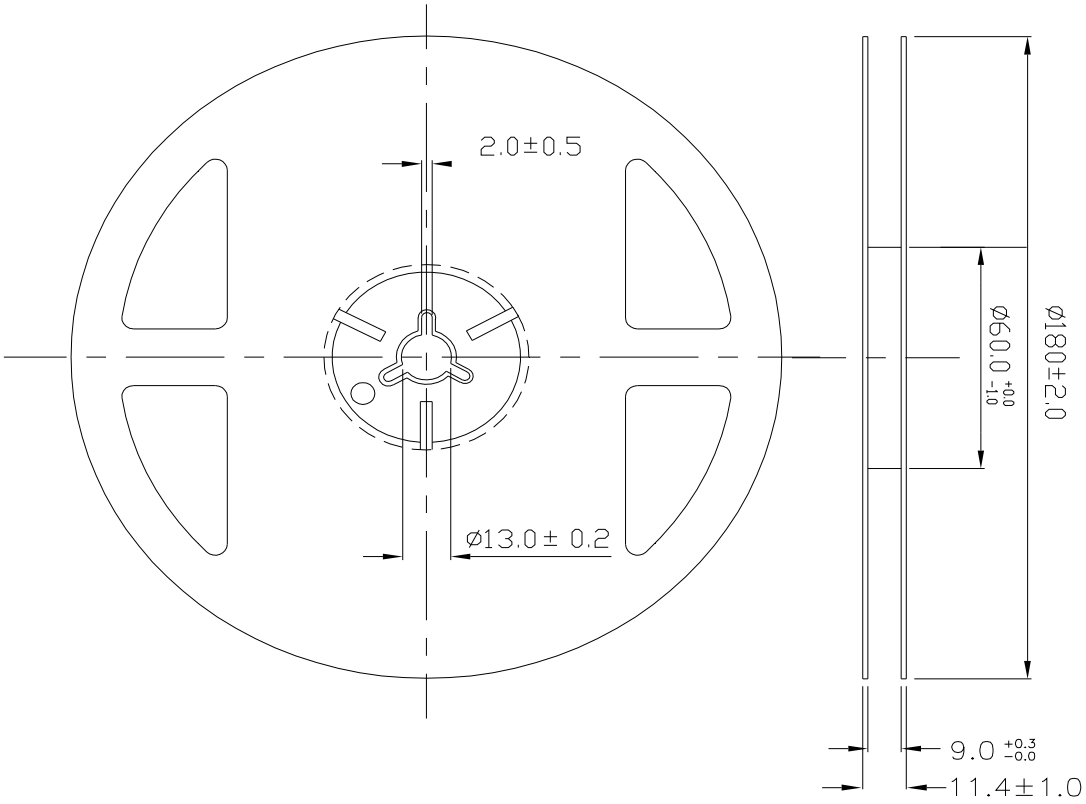
Moisture Resistant Packing Materials

Label Explanation

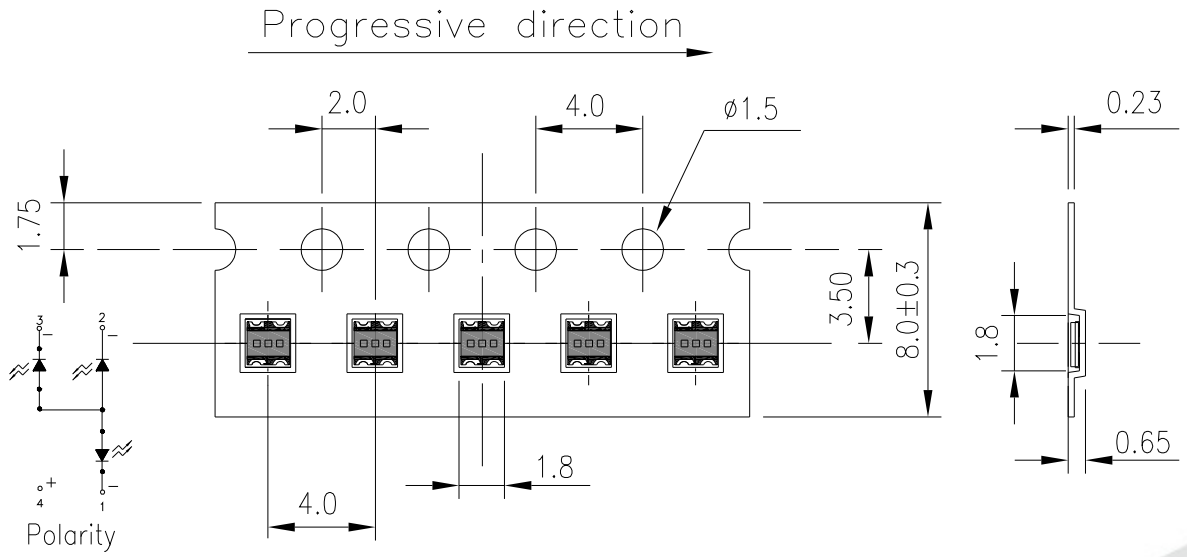


- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank (by R/G/B order)
- HUE: Dom. Wavelength Rank (by R/G/B order)
- REF: Forward Voltage Rank (by R/G/B order)
- LOT No: Lot Number

Reel Dimensions

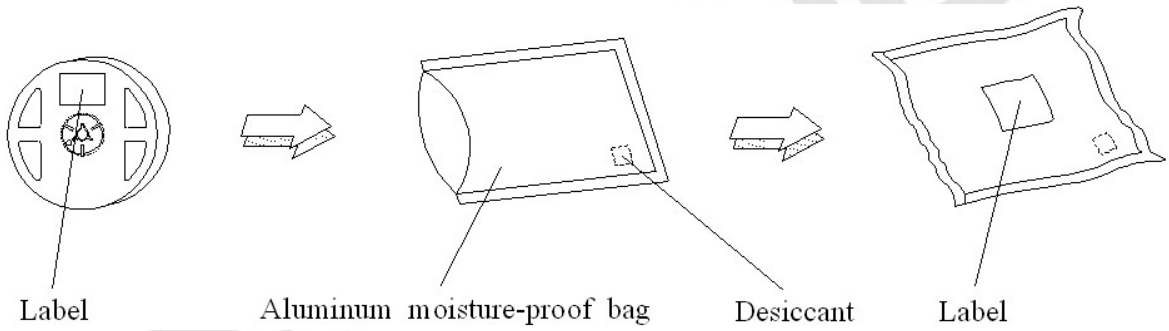


Carrier Tape Dimensions: Loaded Quantity 2000 pcs Per Reel



Note: Tolerances unless mentioned ±0.1mm. Unit = mm

Moisture Resistant Packing Process



Note: Tolerances unless mentioned ±0.1mm. Unit = mm

Precautions for Use

1. Over-current-proof

   Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen).

2. Storage

   2.1 Do not open moisture proof bag before the products are ready to use.

   2.2 Before opening the package: The LEDs should be kept at 30℃ or less and 90%RH or less.

   2.3 After opening the package: The LED's floor life is 168Hrs under 30℃ or less and 60% RH or less.

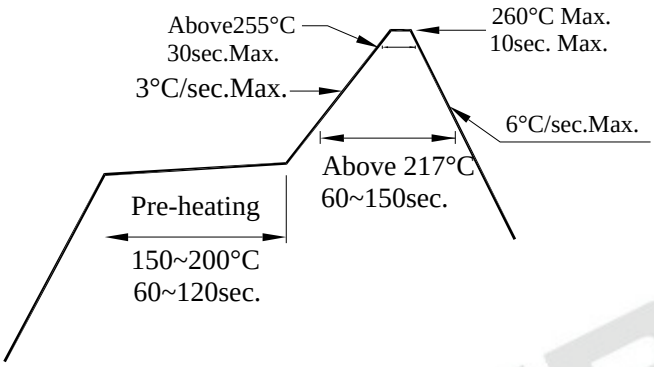
   If unused LEDs remain, it should be stored in moisture proof packages.

   2.4 If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions.

   Baking treatment : 60±5℃ for 24 hours.

3. Soldering Condition

   3.1 Pb-free solder temperature profile



   3.2 Reflow soldering should not be done more than two times.

   3.3 When soldering, do not put stress on the LEDs during heating.

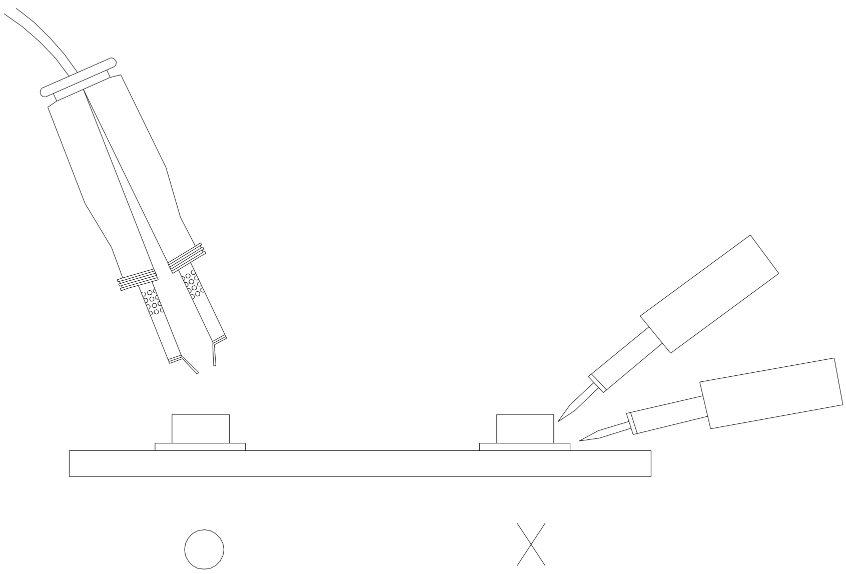
   3.4 After soldering, do not warp the circuit board.

4. Soldering Iron

   Each terminal is to go to the tip of soldering iron temperature less than 350°C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

5.Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.



6.Directions for use

The LEDs should be operated with forward bias. The driving circuit must be designed so that the LEDs are not subjected to forward or reverse voltage while it is off. If reverse voltage is continuously applied to the LEDs, It may cause migration resulting in LED damage.

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