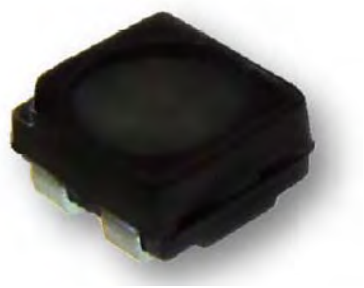
EVERLIGHT AMERICAS

DATASHEET

SMD ▪ REFLECTOR
EAPL2121RGBA0



Features

- Compatible with automatic placement equipment
- Various Compatible with infrared and vapor phase reflow solder process
- 4 Pins for separate control of each chip and better thermal management
- Good color fidelity and brightness uniformity across the viewing angle
- RoHS compliant.
- Compliance with EU REACH
- Compliance Halogen Free .(Br <900 ppm ,Cl <900 ppm , Br+Cl < 1500 ppm)

Description

- The EAPL2121RGBA0 SMD LED package provides a perfect solution when users need a clear view of signage Display with any size board with 3 in 1 full color SMD LEDs which offer smaller pixel pitch between two LEDs to create a high resolution and better contrast with its black surface design.

Applications

- Indoor signage display applications
- Indicator and backlighting for all consumer electronics.
- Gaming equipment.
- General use.

Device Selection Guide

Chip Materials	Emitted Color	Resin Color
AlGaInP	Brilliant Red	White Diffuse
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	20	mA
		G	20	
		B	20	
Peak Forward Current (Duty 1/10 @1KHz)	I_{FP}	40		mA
Power Dissipation	Pd	R	48	mW
		G	68	
		B	68	
Operating Temperature	T_{opr}	-40 ~ +85		℃
Storage Temperature	Tstg	-40 ~ +90		℃
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	185	-----	408	mcd	I_F=15mA
		G	255	-----	562		I_F=8mA
		B	35	-----	76		I_F=5mA
Viewing Angle	$2\theta_{1/2}$	-	-----	110	-----	deg	I_F=20mA
Dominant Wavelength	Λd	R	615	-----	630	nm	I_F=15mA
		G	517		535		I_F=8mA
		B	465		480		I_F=5mA
Spectrum Radiation Bandwidth	Δλ	R	-----	20	-----	nm	I_F=15mA
		G		35			I_F=8mA
		B		25			I_F=5mA
Forward Voltage	V_F	R	1.6	-----	2.4	V	I_F=15mA
		G	2.4		3.4		I_F=8mA
		B	2.4		3.4		I_F=5mA
Reverse Current	I_R	-	-----	-----	10	μA	V_R=5V

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	185	241	mcd	I_F =15mA
RB	241	314		
RC	314	408		

Bin Range of Dominant Wavelength

Bin Code	Min.	Max.	Unit	Condition
R1	615	620	nm	I_F =15mA
R2	620	625		
R3	625	630		

Floating Bin(Green)
Bin Range of Luminous Intensity

Bin Code	Min.	Max.	Unit	Condition
GA	255	332	mcd	I_F =8mA
GB	332	432		
GC	432	562		

Bin Range of Dominant Wavelength

Bin Code	Min.	Max.	Unit	Condition
G1	517	520	nm	I_F =8mA
G2	520	523		
G3	523	526		
G4	526	529		
G5	529	532		
G6	532	535		

Floating Bin(Blue)
Bin Range of Luminous Intensity

Bin Code	Min.	Max.	Unit	Condition
BA	35	45	mcd	I_F =5mA
BB	45	58		
BC	58	76		

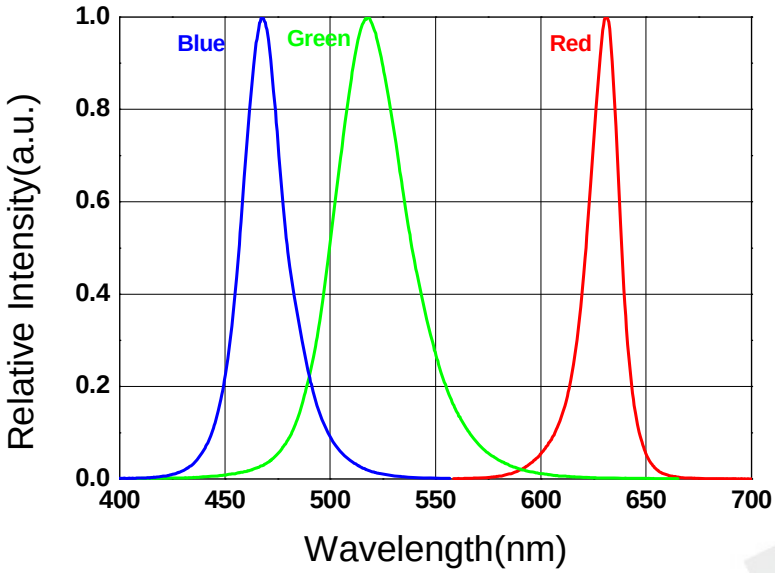
Bin Range of Dominant Wavelength

Bin Code	Min.	Max.	Unit	Condition
B1	465	468	nm	I_F =5mA
B2	468	471		
B3	471	474		
B4	474	477		
B5	477	480		

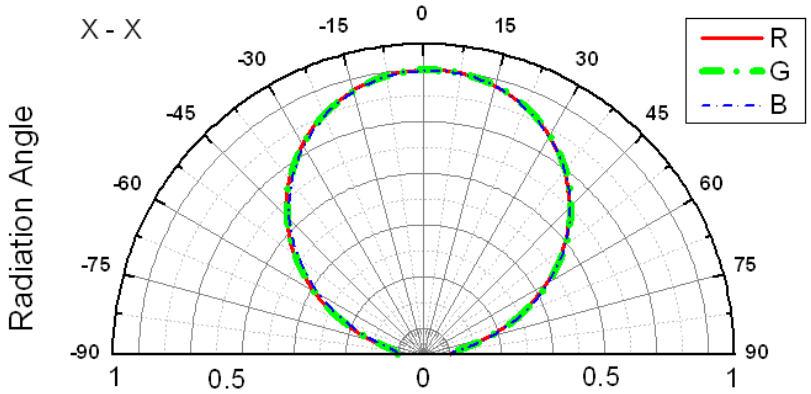
Note:
1. Tolerance of Luminous Intensity: ±10%
2. Tolerance of Dominant Wavelength: ±1nm

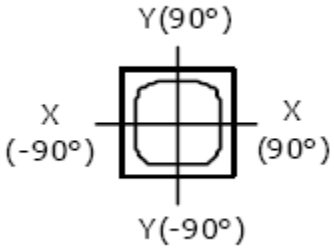
Typical Electro-Optical Characteristics Curves

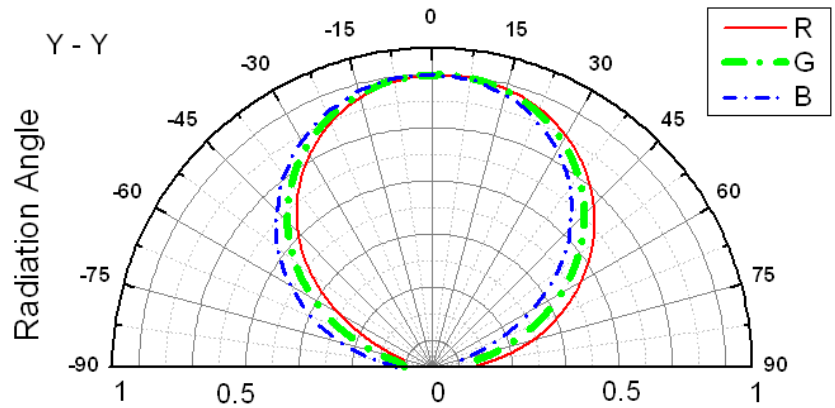
Relative Intensity vs. Wavelength (Ta=25℃)



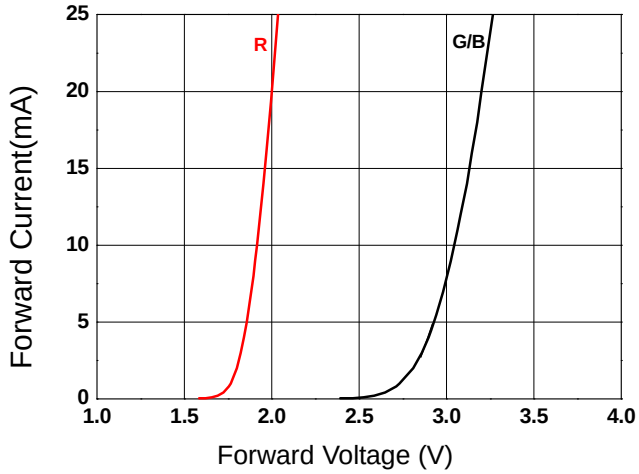
Directivity (Ta=25℃)







Forward Current vs. Forward Voltage (Ta=25℃)



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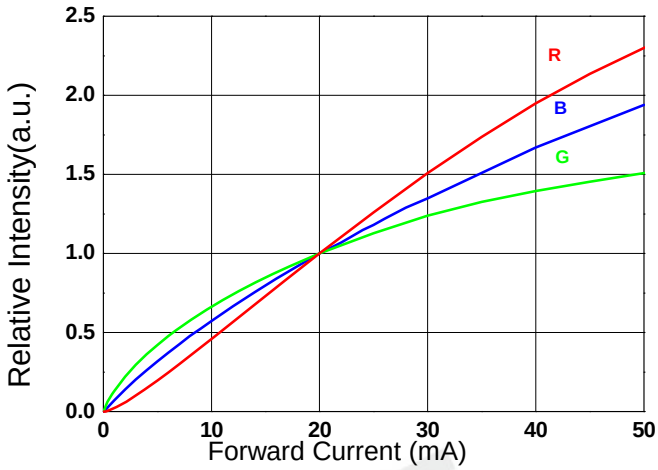
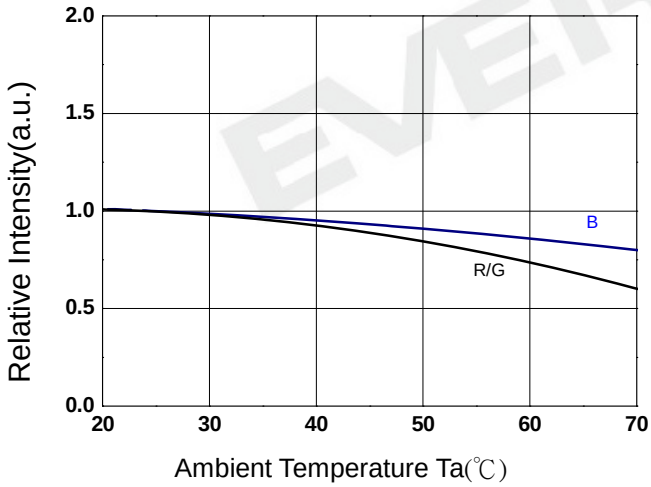
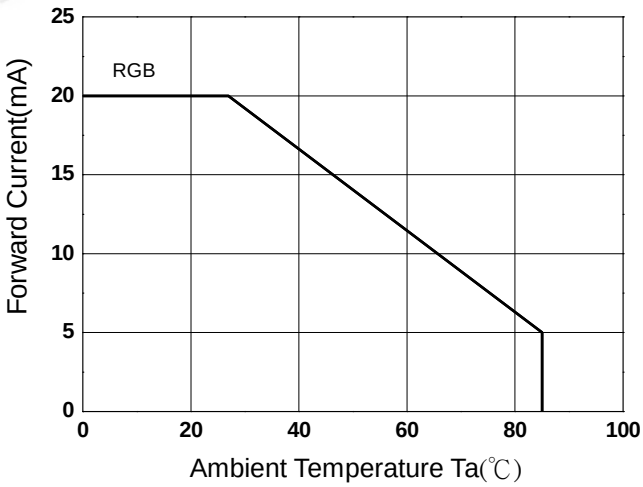


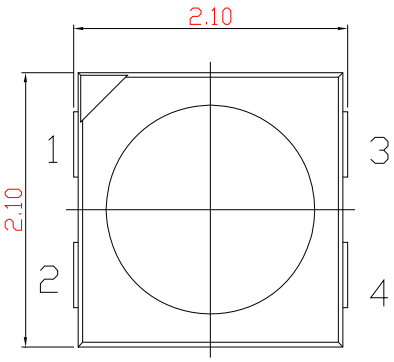
Relative Intensity vs. Ambient Temp.

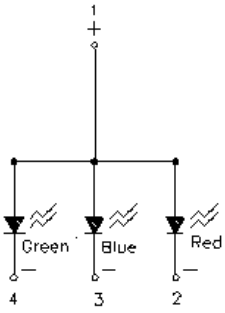


Forward Current vs. Ambient Temp.

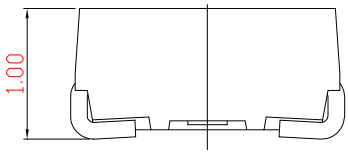


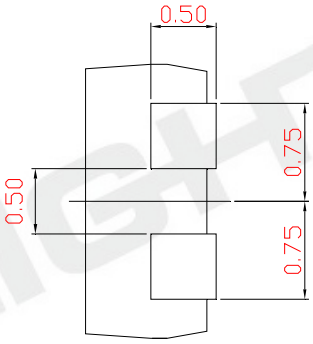
Package Dimension

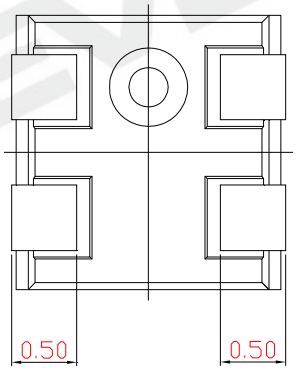




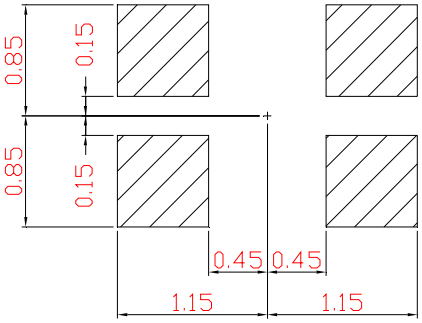
Polarity







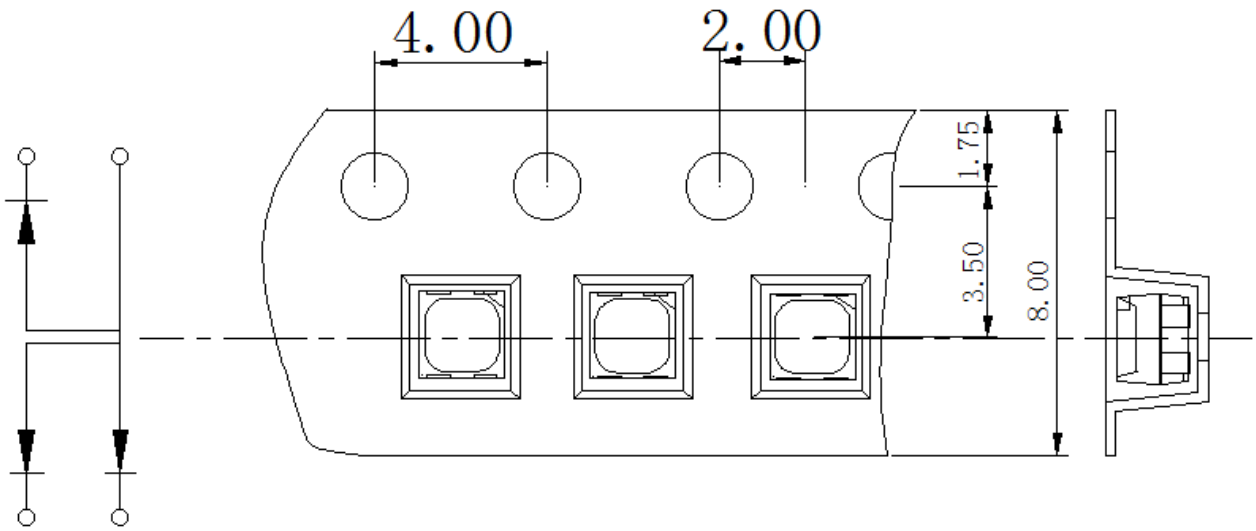
Bot. view



Soldering patterns

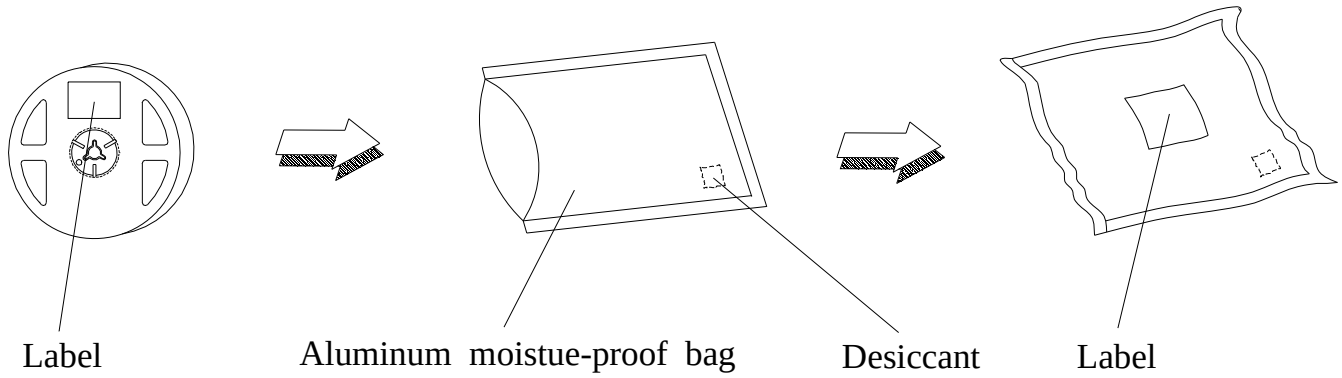
Note:
1. Dimensions are in millimeters.
2. Tolerances for fixed dimensions are ±0.1mm.

Carrier Tape Dimensions: Loaded Quantity 17000 pcs Per Reel



Note:
1. Dimensions are in millimeters.
2. Tolerances for fixed dimensions are ±0.1mm.

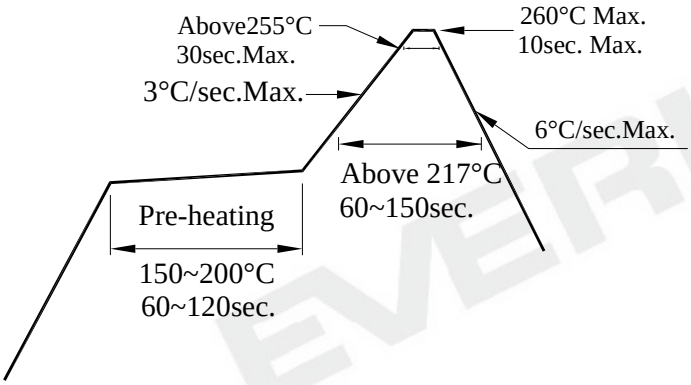
Moisture Resistant Packing Process



Note:
1. Dimensions are in millimeters.
2. Tolerances for fixed dimensions are ±0.1mm.

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
   - Do not open moisture proof bag before the products are ready to use.
   - Before opening the package: The LEDs should be kept at 30℃ or less and 90%RH or less.
   - 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.
   - 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
   - Pb-free solder temperature profile

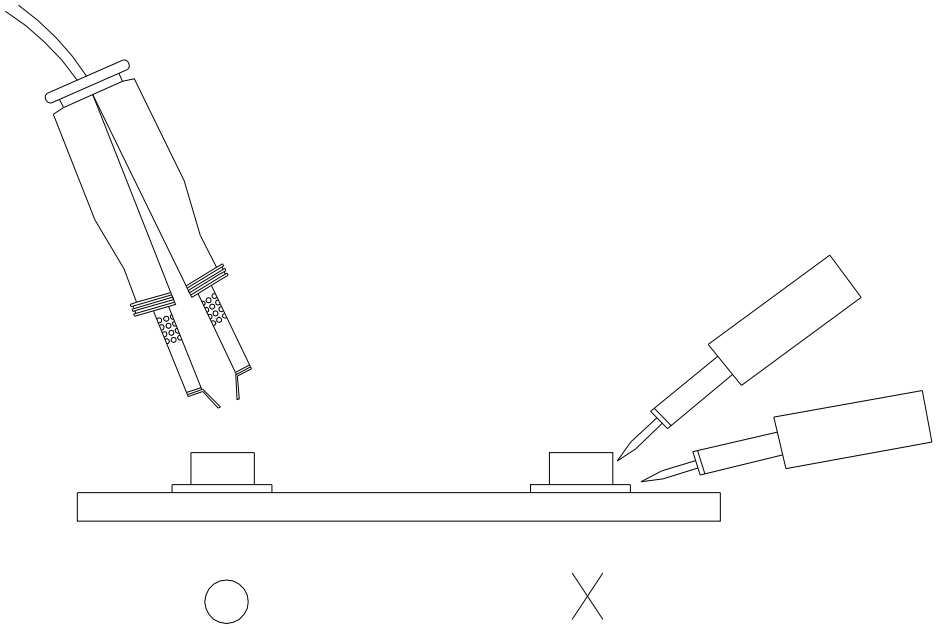


   - Reflow soldering should not be done more than two times.
   - When soldering, do not put stress on the LEDs during heating.
   - After soldering, do not warp the circuit board.

4. Soldering Iron
   - Each terminal is to go to the tip of soldering iron temperature less than 350℃ 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. ESD (Electrostatic Discharge)

- The products are sensitive to static electricity or surge voltage. ESD can damage a die and its reliability. When handling the products, the following measures against electrostatic discharge are strongly recommended:
  - Eliminating the charge
  - Grounded wrist strap, ESD footwear, clothes, and floors
  - Grounded workstation equipment and tools
  - ESD table/shelf mat made of conductive materials
- Proper grounding is required for all devices, equipment, and machinery used in product assembly. Surge protection should be considered when designing of commercial products.
- If tools or equipment contain insulating materials such as glass or plastic, the following measures against electrostatic discharge are strongly recommended:
  - Dissipating static charge with conductive materials
  - Preventing charge generation with moisture
  - Neutralizing the charge with ionizers.

7. 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.

DISCLAIMER

1. EVERLIGHT reserves the right(s) on the adjustment of product material mix for the specification.
2. The product meets EVERLIGHT published specification for a period of twelve (12) months from date of shipment.
3. The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.
4. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from the use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
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