Kingbright

5.0mm x 5.0mm FULL-COLOR SURFACE MOUNT LED LAMP

ATTENTION
OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
DISCHARGE
SENSITIVE
DEVICES

Part Number: AAAF5051-04

Blue
Reddish-Orange
Green

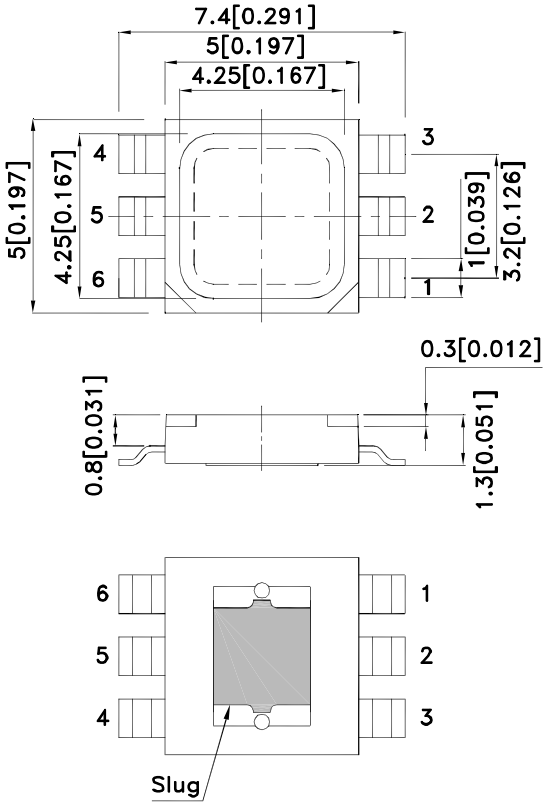
Features

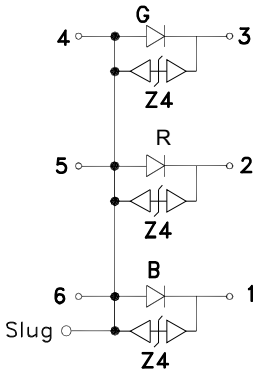
- Chips can be controlled separately.
- Suitable for all SMT assembly and solder process.
- Available on tape and reel.
- White SMD package, silicone resin.
- Package: 500pcs / reel.
- Moisture sensitivity level : level 3.
- RoHS compliant.

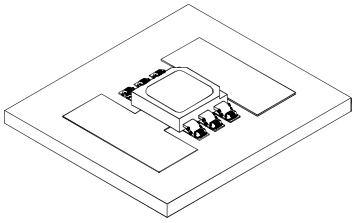
Descriptions

- The Blue source color devices are made with InGaN on Al_2O_3 substrate Light Emitting Diode.
- The Reddish-Orange source color devices are made with AlGaInP on AlN substrate Light Emitting Diode.
- The Green source color devices are made with InGaN on Al_2O_3 substrate Light Emitting Diode.
- Electrostatic discharge and power surge could damage the LEDs.
- It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs.
- All devices, equipments and machineries must be electrically grounded.

Package Dimensions





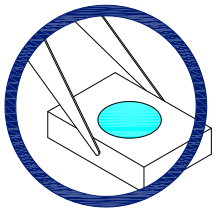


Notes:
1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.15[±0.006]unless otherwise noted.
3. The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice.
4. The device has a single mounting surface. The device must be mounted according to the specifications.

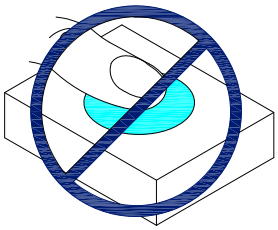
Handling Precautions

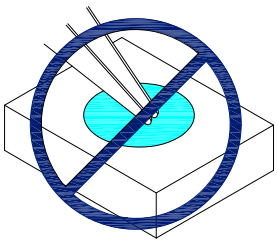
Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force.
As a result, special handling precautions need to be observed during assembly using silicone encapsulated LED products. Failure to comply might lead to damage and premature failure of the LED.

1. Handle the component along the side surfaces by using forceps or appropriate tools.

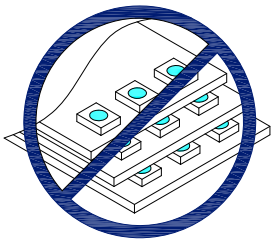


2. Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry.

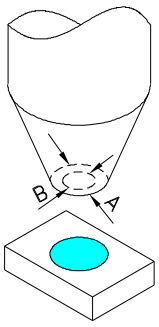




3. Do not stack together assembled PCBs containing exposed LEDs. Impact may scratch the silicone lens or damage the internal circuitry.



4.1. The inner diameter of the SMD pickup nozzle should not exceed the size of the LED to prevent air leaks.
4.2. A pliable material is suggested for the nozzle tip to avoid scratching or damaging the LED surface during pickup.
4.3. The dimensions of the component must be accurately programmed in the pick-and-place machine to insure precise pickup and avoid damage during production.



5. As silicone encapsulation is permeable to gases, some corrosive substances such as H_2S might corrode silver plating of leadframe. Special care should be taken if an LED with silicone encapsulation is to be used near such substances.

Selection Guide

Part No.	Dice	Lens Type	Iv (mcd) [2] @ 150mA		Φv (lm) [2] @ 150mA*		Viewing Angle [1]
			Min.	Typ.	Min.	Typ.	2θ1/2
AAAF5051-04	Blue (InGaN)	Water Clear	1000	1500	4.2	6	120°
	Reddish-Orange (AlGaInP)		2700	3200	10	12	
	Green (InGaN)		5000	6300	17	20	

Notes:
1. θ1/2 is the angle from optical centerline where the luminous intensity is 1/2 of the optical peak value.
2. Luminous intensity/ luminous Flux: +/-15%.*LEDs are binned according to their luminous flux.
3. Luminous intensity/ luminous Flux value is traceable to the CIE127-2007 compliant national standards.

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Device	Value	Unit	Test Conditions
Power dissipation	P_D	Blue	0.6	W	I_F=150mA
		Reddish-Orange	0.45		I_F=150mA
		Green	0.6		I_F=150mA
Junction temperature	T_J	Blue	110	°C	I_F=150mA
		Reddish-Orange	110		I_F=150mA
		Green	110		I_F=150mA
Operating Temperature	Top	Blue	-40 To +85	°C	I_F=150mA
		Reddish-Orange			I_F=150mA
		Green			I_F=150mA
Storage Temperature	Tstg	Blue	-40 To +85	°C	I_F=150mA
		Reddish-Orange			I_F=150mA
		Green			I_F=150mA
DC Forward Current [1]	I_F	Blue	150	mA	I_F=150mA
		Reddish-Orange	150		I_F=150mA
		Green	150		I_F=150mA
Peak Forward Current [2]	I_{FM}	Blue	300	mA	I_F=150mA
		Reddish-Orange	300		I_F=150mA
		Green	300		I_F=150mA
Thermal resistance	Rth j-a	Blue	220	°C/W	I_F=150mA
		Reddish-Orange	270		I_F=150mA
		Green	200		I_F=150mA
Thermal resistance	$R_{th\ j\text{-}s}$	Blue	25	°C/W	I_F=150mA
		Reddish-Orange	40		I_F=150mA
		Green	33		I_F=150mA
Reverse Current	I_R	Blue	10	uA	V_R=5V
		Reddish-Orange	10		
		Green	10		

Notes:
1. Results from mounting on Aluminum Board.
2. 1/10 Duty Cycle, 0.1ms Pulse Width.

Electrical / Optical Characteristics at T_a=25°C

Parameter	Symbol	Device	Value			Unit
			Min.	Typ.	Max.	
Wavelength at peak emission I_F=150mA	λ peak	Blue		452		nm
Wavelength at peak emission I_F=150mA		Reddish-Orange		635		
Wavelength at peak emission I_F=150mA		Green		515		
Dominant Wavelength I_F=150mA	λ dom [1]	Blue		460		nm
Dominant Wavelength I_F=150mA		Reddish-Orange		624		
Dominant Wavelength I_F=150mA		Green		525		
Spectral Line Half-width I_F=150mA	Δλ1/2	Blue		25		nm
Spectral Line Half-width I_F=150mA		Reddish-Orange		20		
Spectral Line Half-width I_F=150mA		Green		30		
Forward Voltage I_F=150mA	V_F [2]	Blue	3.0	3.5	4.0	V
Forward Voltage I_F=150mA		Reddish-Orange	2.0	2.5	3.0	
Forward Voltage I_F=150mA		Green	3.0	3.5	4.0	
Reverse Voltage	V_R	Blue		5		V
		Reddish-Orange		5		
		Green		5		
Temperature coefficient of λ peak I_F=150mA, -10 ° C≤ T≤100 ° C	TC λ peak	Blue		0.12		nm/° C
Temperature coefficient of λ peak I_F=150mA, -10 ° C≤ T≤100 ° C		Reddish-Orange		0.09		
Temperature coefficient of λ peak I_F=150mA, -10 ° C≤ T≤100 ° C		Green		0.13		
Temperature coefficient of λ dom I_F=150mA, -10 ° C≤ T≤100 ° C	TC λ dom	Blue		0.1		nm/° C
Temperature coefficient of λ dom I_F=150mA, -10 ° C≤ T≤100 ° C		Reddish-Orange		0.03		
Temperature coefficient of λ dom I_F=150mA, -10 ° C≤ T≤100 ° C		Green		0.11		
Temperature coefficient of V_F I_F=150mA, -10 ° C≤ T≤100 ° C	TC_V	Blue		-2.3		mV/° C
Temperature coefficient of V_F I_F=150mA, -10 ° C≤ T≤100 ° C		Reddish-Orange		-2.7		
Temperature coefficient of V_F I_F=150mA, -10 ° C≤ T≤100 ° C		Green		-3.9		

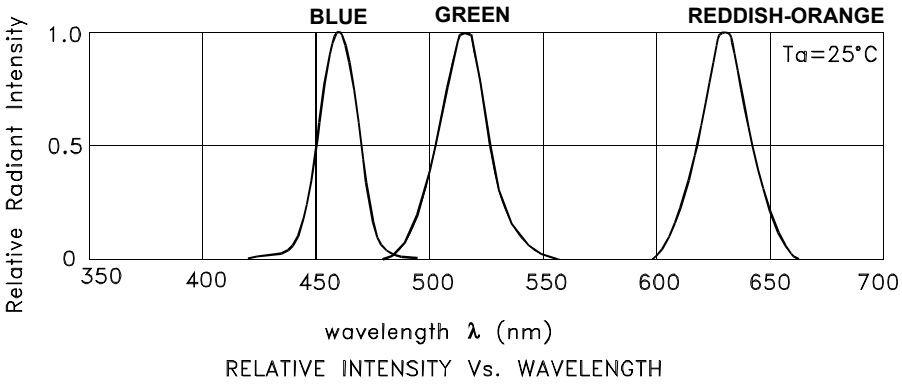
Notes:

1.Wavelength: +/-1nm.

2.Forward Voltage: +/-0.2V.

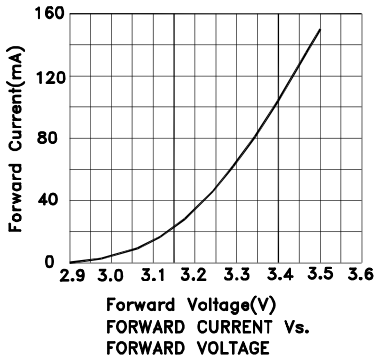
3.Wavelength value is traceable to the CIE127-2007 compliant national standards.

4.Excess driving current and/or operating temperature higher than recommended conditions may result in severe light degradation or premature failure.

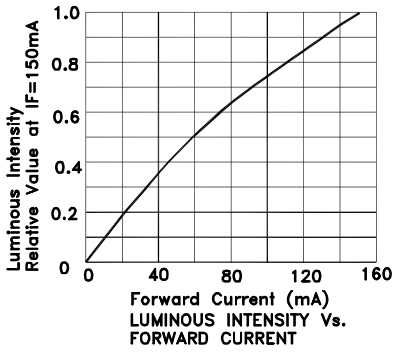


RELATIVE INTENSITY Vs. WAVELENGTH

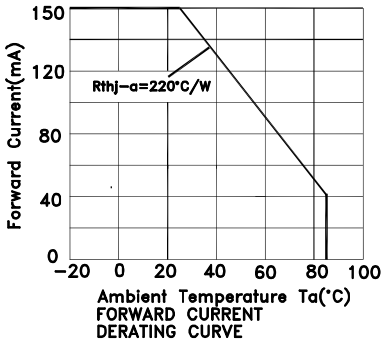
AAAF5051-04
Blue



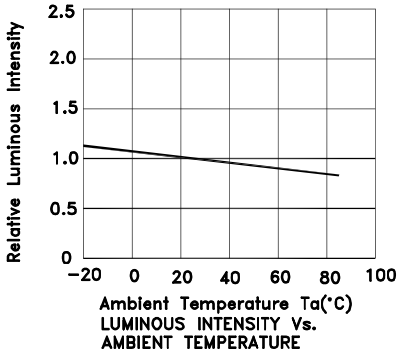
FORWARD CURRENT Vs.
FORWARD VOLTAGE



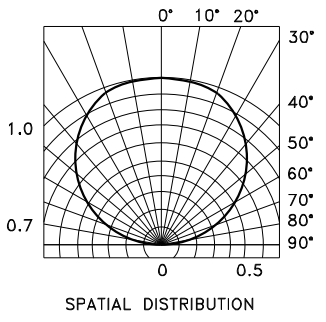
LUMINOUS INTENSITY Vs.
FORWARD CURRENT



FORWARD CURRENT
DERATING CURVE

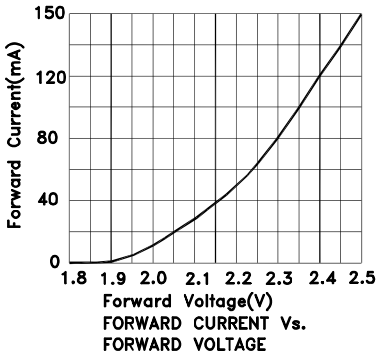


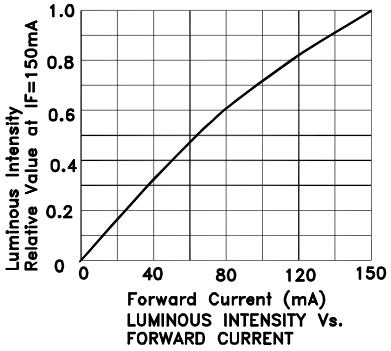
LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

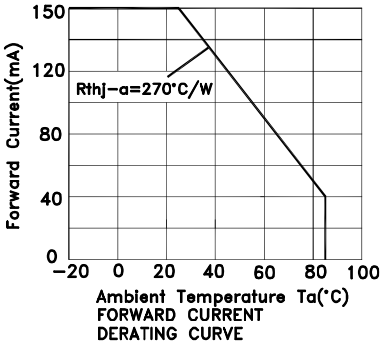


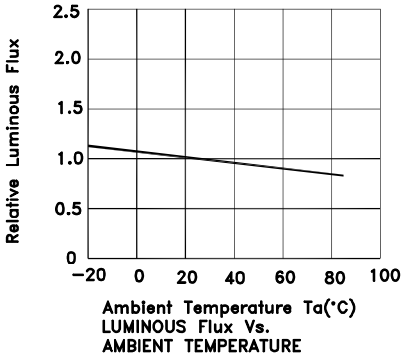
SPATIAL DISTRIBUTION

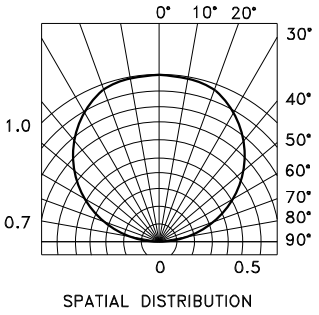
Reddish-orange





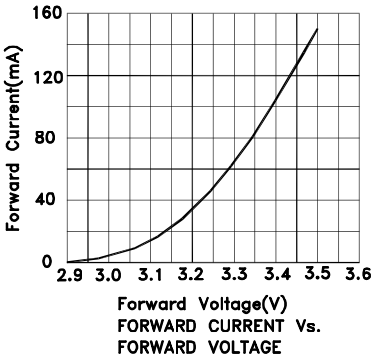


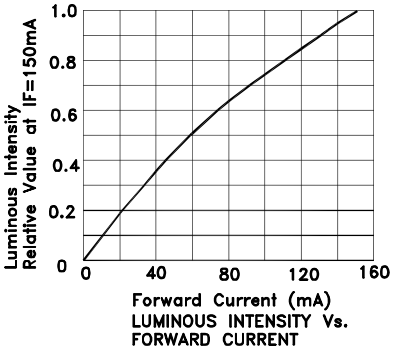


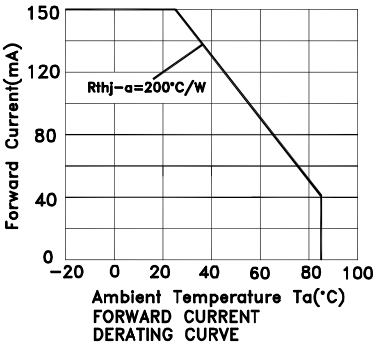


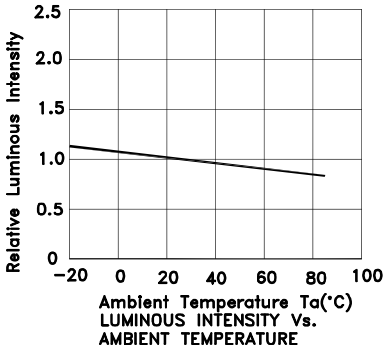
SPATIAL DISTRIBUTION

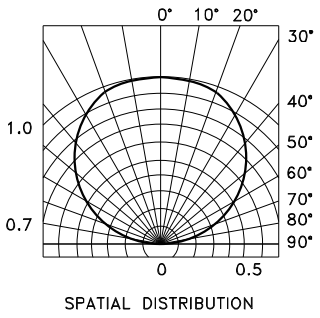
Green









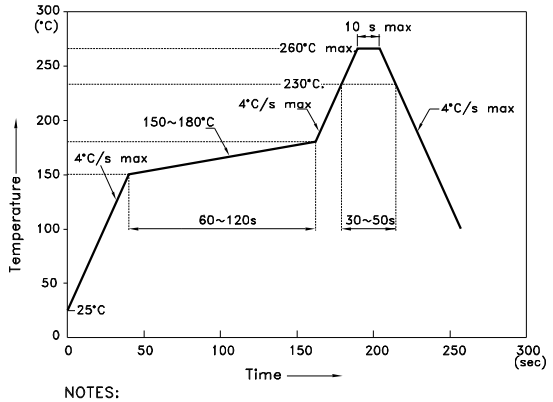


SPATIAL DISTRIBUTION

AAAF5051-04

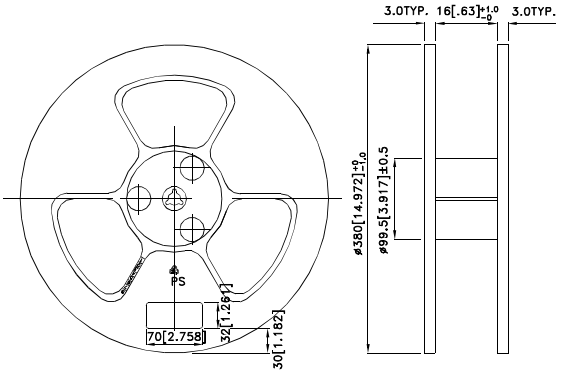
Reflow soldering is recommended and the soldering profile is shown below.
Other soldering methods are not recommended as they might cause damage to the product.

Reflow Soldering Profile For Lead-free SMT Process.

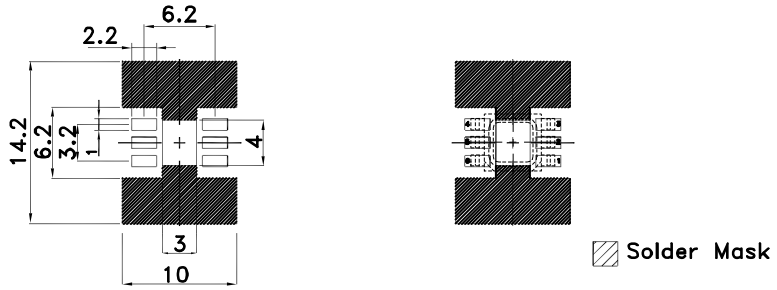


NOTES:
1. We recommend the reflow temperature 245°C(+/-5°C).The maximum soldering temperature should be limited to 260°C.
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

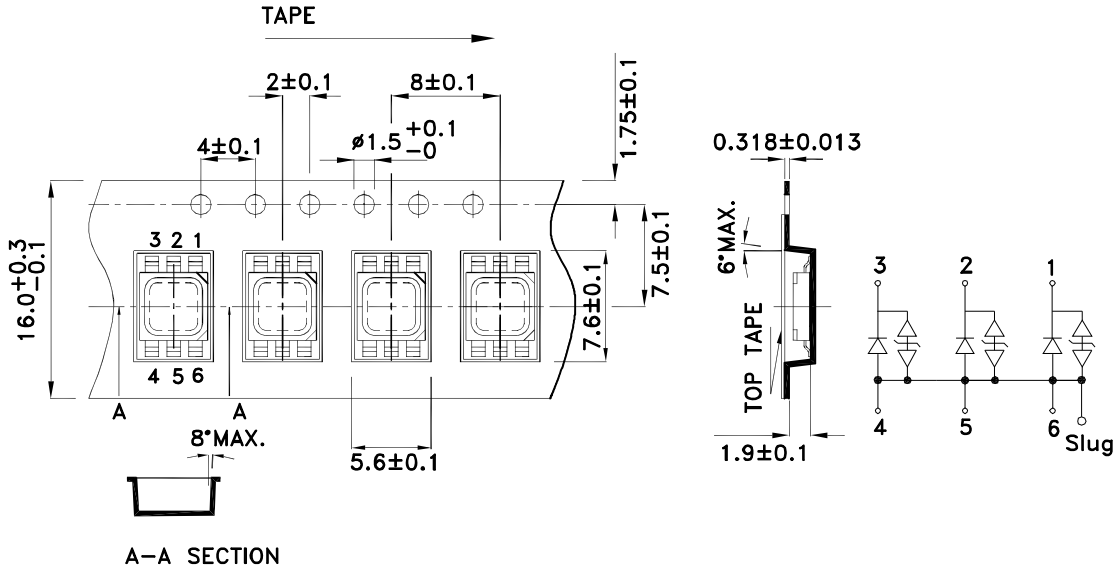
Reel Dimension



Recommended Soldering Pattern
(Units : mm; Tolerance: ± 0.1)



Tape Specifications
(Units : mm)



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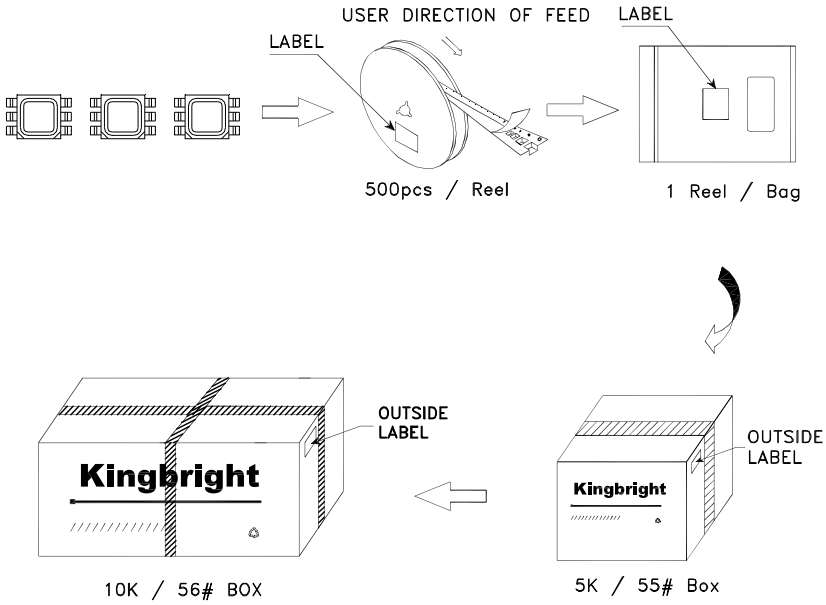
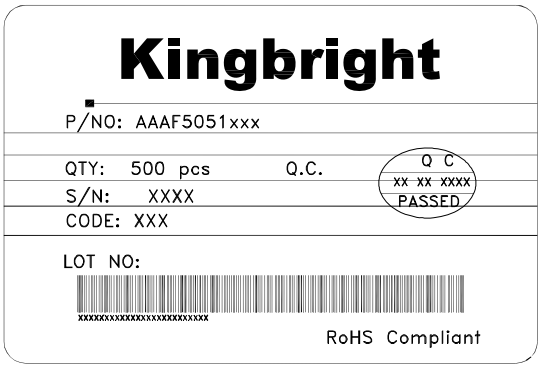
PACKING & LABEL SPECIFICATIONS **AAAF5051-04**





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Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

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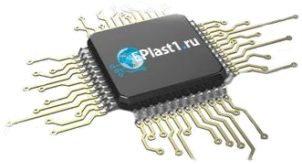
- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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