SPECIFICATIONS FOR REFOND SURFACE MOUNT LED

Model :6M-G12-180RGB

(RF-W2MF24JA)

Company Name: _____

Confirmed By Customer: _____

DATE: _____

深圳市瑞豐光電子有限公司
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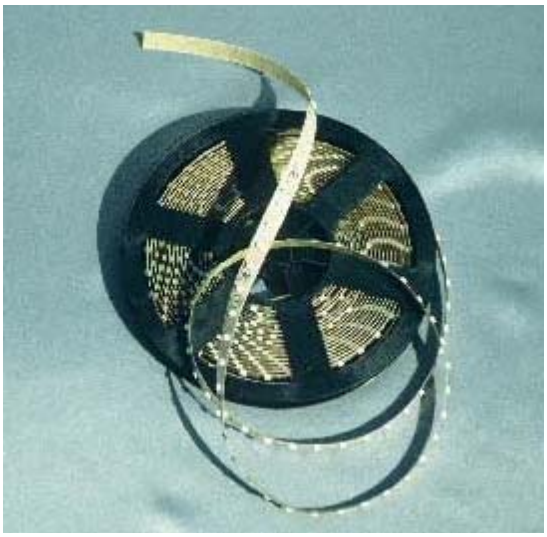


Applications

Linear separable LED strip on flexible printed circuit board with self-adhesive back
Small in size
Available in various colors
Edge-lighting of transparent or diffused materials
Path & contour marking
Illuminated signs

Technical Operating Data(per meter)

Product	Color	Number of LEDs	Voltage [V DC]*	Power [W]*	Current [A]*	Radiance Angle [°]*	Wavelength [nm] Color Temp [K]*	Lum. Flux [lm]*
RF-W2MF24JA-A26	red	30	12	2.4	0.2	120	620 nm	36
RF-W2MF24JA-A26	green	30	12	2.4	0.2	120	525 nm	50
RF-W2MF24JA-A26	blue	30	12	2.4	0.2	120	470 nm	10

All Data are related to the entire module
Due to the special conditions of the manufacturing processes of LED the typical data of technical parameters can only reflect
statistical figures and do not necessarily
correspond to the actual parameters of each single product which could differ from the typical data.

Technical Features

Modules optimized for use with RFEOND OPTOTRONIC power supplies.

Size of printed circiut board (L x W x H) 6000 mm x14 mm x 2,2 mm

Size of smallest unit (L x W): 100 mm x 14 mm
Smallest unit of 3 LEDs can be cut out at regular intervals without damaging the rest of the module

Color control is effected by pulse width modulation

(PWM) of the individual red, green and blue 12V supplies. (Circuit diagram for smallest unit)

Safety Information

The LED module itself and all its components may not be mechanical stressed.

Assembly must not damage or destroy conducting paths on the circuit board.

Installation of LED modules (with power supplies) needs to be made with regard to all applicable electrical and safety standards.

Only qualified personnel should be allowed to perform installations.

The LED Module incorporates no protection against short circuits, overload or overheating. Therefore it is absolutely necessary to operate the modules with a electronically stabilised power supply offering protection against the above mentioned safety risks.

For dimming applications attention should be paid to specific references in "OPTOTRONIC Technical Guide".

REFOND OPTOTRONIC power supplies are specifically designed with protection features for safe operation.

When using power supplies other than OPTOTRONIC the following basic safety features are required, in addition to any other application specific concerns and local safety codes:

Short circuit protection

Overload protection

Overheat protection

Installation of LED modules (with power supplies) needs to be made with regard to all applicable electrical and safety standards.

Only qualified personnel should be allowed to perform installations.

Parallel connection is highly recommended as safe electrical operation mode.

Serial connection is not recommended. Unbalanced voltage drop can cause hazardous overload and demage the LED module.

Correct electrical polarity needs to be observed. Wrong polarity may destroy the module!

Please ensure that the power supply is of adequate power to operate the total load.

When mounting on metallic or otherwise conductive surfaces, there needs to be a electrical isolation at soldering points between module and the mounting surface.

The maximum run length of LINEARlight Flex RF-W2MB24JA-A26 from any power feed should be limited to 4000 mm.

Pay attention to standard ESD precautions when installing the module.

The module, as manufactured, has no conformal coating and therefore offers no inherent protection against corrosion. The ability to customize the length of the module by cutting at specifically marked points is a key feature of the product and hence the reason for no factory installed conformal coating. For these reasons, it is recommended that the user complete all module modifications first (cutting, wiring) and then apply a conformal coating in the final stages of installation.

Damage by corrosion will not be honored as a materials defect claim. It is the user´s responsibility to provide suitable protection against corrosive agents such as moisture and condensation and other harmful elements.

For applications involving exposure to humidity and dust the module must be protected by a fixture or housing with a suitable protection class. The module can be protected against condensation water by treatment with an appropriate circuit board grade conformal coating. The conformal coating should have the following features:

- Optical transparency
- UV-resistance
- low permeability of steam for all climatic conditions
- resistance against corrosive environment

Description

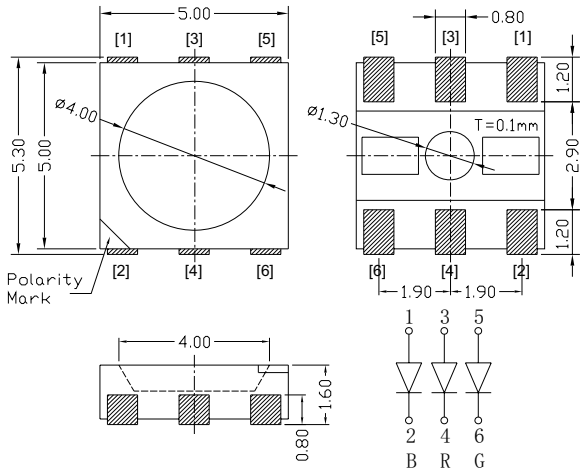
120 degree 5.0×5.0×1.60mm SMT-LED in High Orange ,Green and Blue Color with Water Transparent

Static electricity and surge damage the LEDS.

It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDS.

All device, equipment and machinery must be electrically grounded.

Package Outline



Simple Materials As Follows

ITEM	MATERIALS
Resin	Epoxy
Bonding Wire	Ø 25 μm Au
Lens Tape	Water transparent
Printed circuit board	PPA
Package	Heat-Resistant Polymer

ATTENTION
OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
SENSITIVE DEVICES

NOTES:

1. All dimensions are in millimeters (inches);
2. Tolerances are ±0.3mm (0.012inch) unless otherwise noted.

APPROVED BY:		CHECKED BY:		PREPARED BY:	
DATE:		DATE:		DATE:	

Absolute maximum ratings at Ta=25℃

Parameter	Symbol	Value			Unit
		R	G	B	
Power dissipation	Pd	72	105	105	mW
Forward DC current	If	30			mA
Reverse DC voltage	Vr	5			V
Operating temperature range	Top	-40 ~+85			℃
Storage temperature range	Tstg	-40~+100			℃
Peak pulsing current	Ifp	100			mA

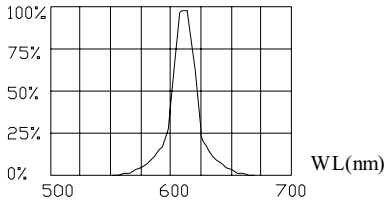
Electro-optical characteristics at Ta=25℃

Parameter	Test Condition	Symbol		Value			Unit
				Min.	Typ.	Max.	
Wavelength at peak emission	If=20mA	λpeak	R	--	--	--	nm
			G	--	--	--	
			B	--	--	--	
Spectral half bandwidth	If=20mA	△λ	R	--	20	--	Nm
			G	--	35	--	
			B	--	30	--	
Forward voltage	If=20mA	Vf	R	1.8	--	2.4	V
			G	2.7	--	3.5	
			B	3.0	--	3.5	
Dominant wavelength	If=20mA	λdom	R	620	--	632	Nm
			G	525	--	535	
			B	465	--	475	
Luminous intensity	If=20mA	Iv	R	--	380	450	Mcd
			G	--	570	600	
			B	--	260	300	
Viewing angle at 50% Iv	If=10mA	2 θ1/2		--	120	--	Deg
Reverse current	Vr=5V	Ir		--	--	10	μA

NOTE: (Tolerance: Iv ±10%, λ_d ±2nm, Vf ±0.05V) IFP Conditions: Pulse Width ≦10msec. and Duty ≦1/10.

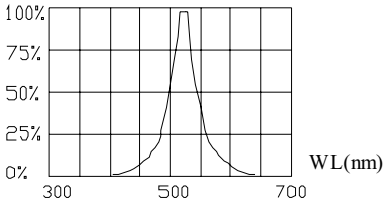
Optical characteristics curves

HALF POWER ΔWL=20nm
DOMI WL=625nm



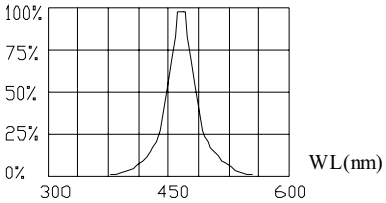
RELATIVE LUMINOUS INTENSITY VS. WAVELENGTH

HALF POWER ΔWL=35nm
DOMI WL=530nm

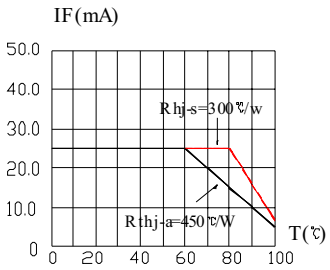


RELATIVE LUMINOUS INTENSITY VS. WAVELENGTH

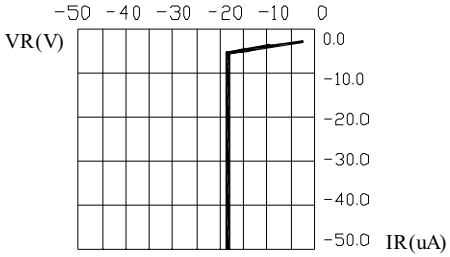
HALF POWER ΔWL=30nm
DOMI WL=470nm



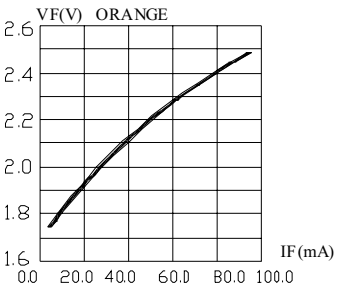
RELATIVE LUMINOUS INTENSITY VS. WAVELENGTH



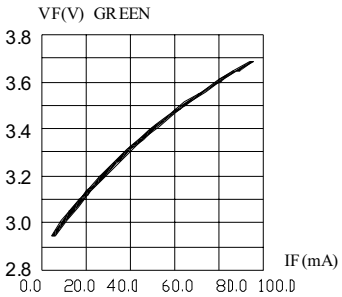
MAXIMUM FORWARD DC CURRENT VS TEMPERATURE DERATING BASED ON Tjmax=110 ℃



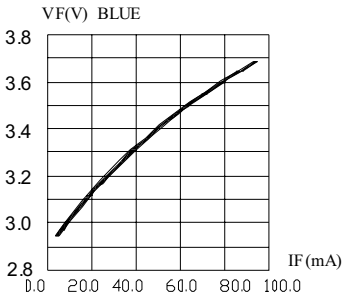
REVERSE CURRENT VS. REVERSE VOLTAGE.



FORWARD VOLTAGE VS. FORWARD CURRENT



FORWARD VOLTAGE VS. FORWARD CURRENT



FORWARD VOLTAGE VS. FORWARD CURRENT

50% POWER ANGLE: 120°

Reflow profile and test circuit

■ Soldering condition

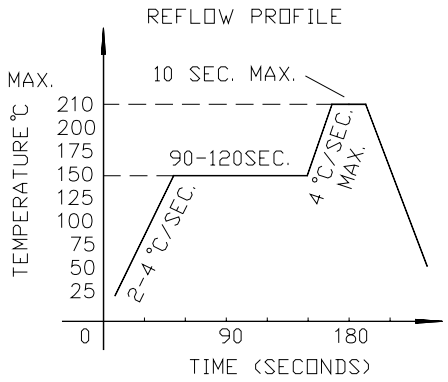
• Recommended soldering conditions

Reflow Soldering		Hand Soldering	
Pre-heat	120～150℃	Temperature	300℃ Max.
Pre-heat time	120 seconds Max.		
Peak temperature	210℃ Max.	Soldering time	3 second Max.
Soldering time	10 seconds Max.		(one time only)
Condition	Refer to Temperature-profile		

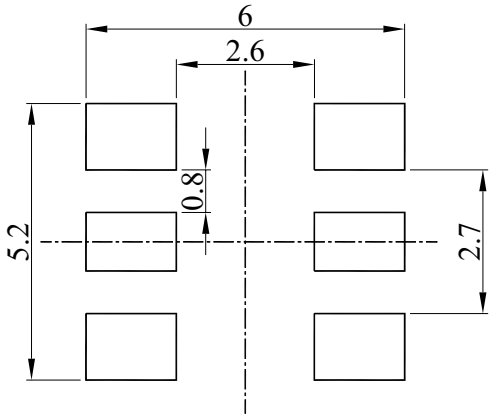
• After reflow soldering rapid cooling should be avoided

[Temperature-profile (Surface of circuit board)]

Use the following conditions shown in the figure.



RECOMMEND PAD LAYOUT (Units: mm)

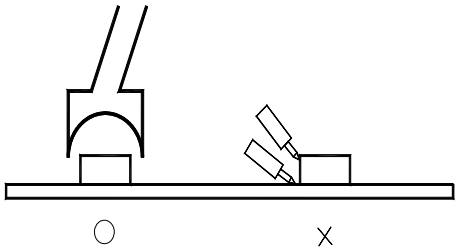


■ Soldering iron

Basic spec is ≤ 5sec when 260℃. If temperature is higher, time should be shorter (+10℃→ -1sec).Power dissipation of iron should be smaller than 15W, and temperatures should be controllable .Surface temperature of the device should be under 210℃

■ Rework

1. Customer must finish rework within 5 sec under 260℃
2. The head of iron can not touch copper foil
3. Twin-head type is preferred.



■ Precautions For use

Over-current-proof

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

Reliability

(1)TEST ITEMS AND RESULTS

Type	Test Item	Test Conditions	Note	Number of Damaged
Environmental Sequence	Resistance to Soldering Heat(Reflow Soldering)	Tsld=210℃,10sec	2 times	0/22
	Temperature Cycle	-20℃ 30min ↑↓5min 80℃ 30min	100 cycle	0/100
	Thermal Shock	-20℃ 15min ↑↓ 80℃ 15min	100 cycle	0/100
	High Temperature Storage	T_a=80℃	1000 hrs	0/100
	Temperature Humidity Storage	T_a=60℃ RH=90%	1000 hrs	0/100
	Low Temperature Storage	T_a=-30℃	1000 hrs	0/100
Operation Sequence	Life Test	T_a=25℃ I_F=20mA	1000 hrs	0/100
	High Humidity Heat Life Test	60℃ RH=90% I_F=20mA	500 hrs	0/100
	Low Temperature Life Test	T_a=-20℃ I_F=20mA	1000 hrs	0/100
	Drop	75cm	3 times	0/10

(2)CRITERIA FOR JUDGING THE DAMAGE

Item	Symbol	Test Conditions	Criteria for Judgement	
			Min.	Max.
Forward Voltage	VF	IF=10mA	_	U.S.L*)×1.1
Reverse Current	IR	VR=5V	_	U.S.L*)×2.0
Luminous Intensity	IV	IF=10mA.	L.S.L**)×0.5	

U.S.L.: Upper Standard Level **L.S.L.: Lower Standard Level**