



Technical Data Sheet

Full Color Chip LED (Chip LED with Right Angle Lens)

12-23A/S2GHBHC-A01/2D

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
- The product itself will remain within RoHS compliant version.



Descriptions

- The 12-23A SMD Taping 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.
- Besides, lightweight makes them ideal for miniature applications. etc.

Applications

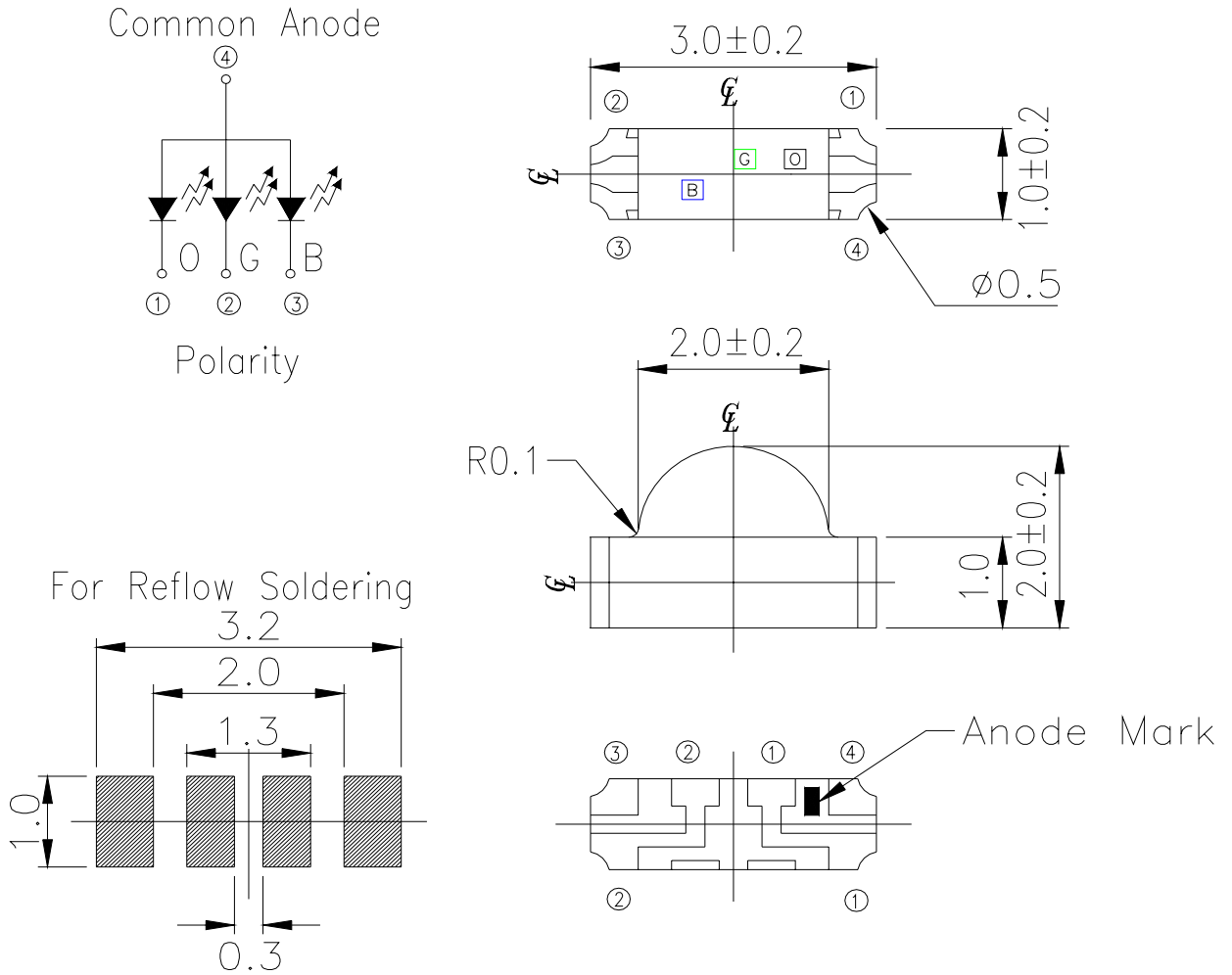
- Automotive: backlighting in dashboard and switch.
- Telecommunication: indicator and backlighting in telephone and fax.
- Flat backlight for LCD, switch and symbol.
- General use.

Device Selection Guide

Chip			Lens Color
Type	Material	Emitted Color	
S2	AlInGaN	Brilliant Orange	Water Clear
GH	InGaN	Brilliant Green	
BH	InGaN	Blue	

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Package Outline Dimensions



Note: The tolerances unless mentioned is $\pm 0.1\text{mm}$, Angle $\pm 0.5^\circ$, Unit = mm

12-23A/S2GHBHC-A01/2D**Absolute Maximum Ratings (Ta=25°C)**

Parameter	Symbol	Rating	Unit
Reverse Voltage	V _R	5	V
Forward Current	I _F	S2:25 GH:25 BH:25	mA
Operating Temperature	T _{opr}	-40 ~ +85	°C
Storage Temperature	T _{stg}	-40 ~ +90	°C
Soldering Temperature	T _{sol}	260 (for 5 seconds)	°C
Electrostatic Discharge	ESD	S2:2000 GH:150 BH:150	V
Power Dissipation	P _d	S2:60 GH:110 BH:110	mW
Peak Forward Current (Duty 1/10 @1KHz)	I _F (Peak)	S2:60 GH:100 BH:100	mA

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Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	S2	50	80			If=20mA
	Iv GH	125	160	-----	mcd	
	BH	25	40			
Viewing Angle	2 θ 1/2	-----	120	-----	deg	If=20mA
Peak Wavelength	S2		611			If=20mA
	λ p GH	-----	518	-----	nm	
	BH		468			
Dominant Wavelength	S2		605			If=20mA
	λ d GH	-----	525	-----	nm	
	BH		470			
Spectrum Radiation Bandwidth	S2		17			If=20mA
	Δ λ GH	-----	35	-----	nm	
	BH		35			
Forward Voltage	S2		2.0	2.4		If=20mA
	VF GH	-----	3.5	3.9	V	
	BH		3.5	3.9		
Reverse Current	S2			10		VR=5V
	IR GH	-----	-----	50	μ A	
	BH			50		

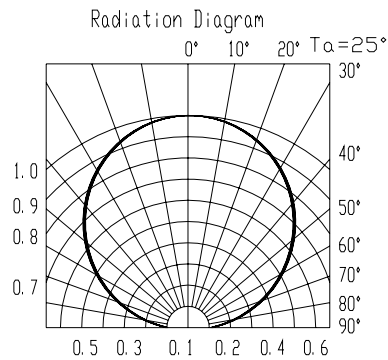
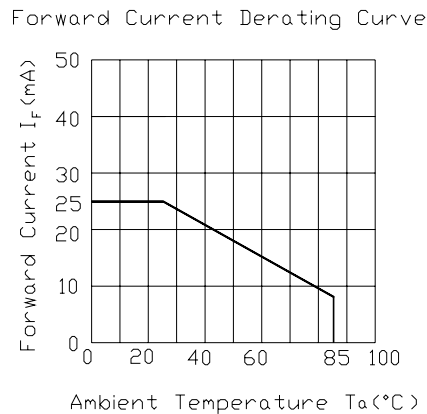
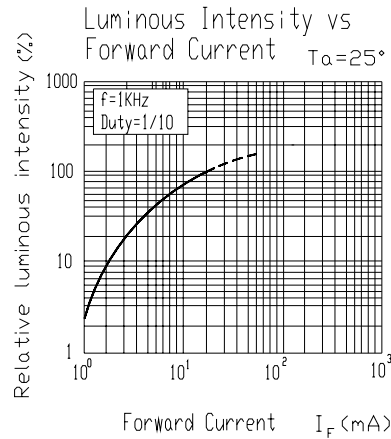
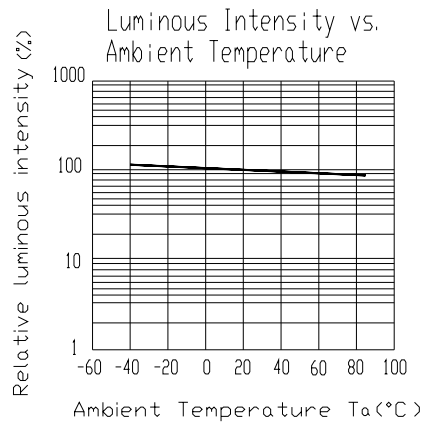
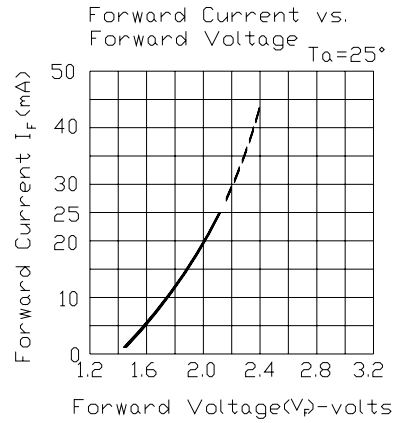
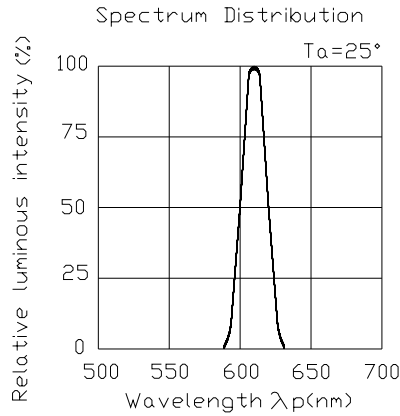
Notes:

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

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Typical Electro-Optical Characteristics Curves

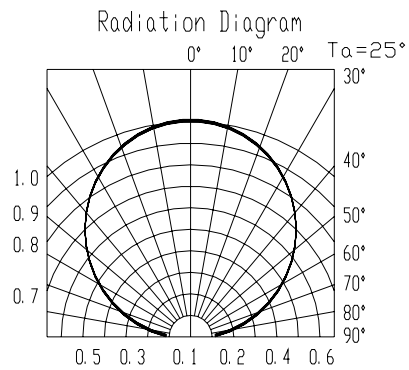
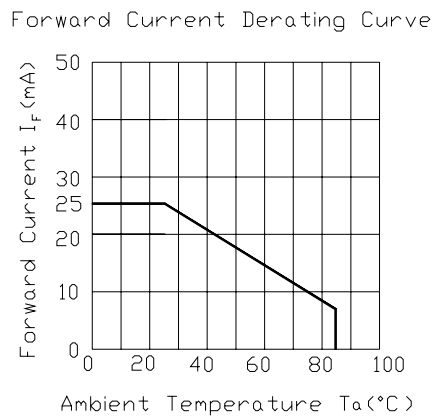
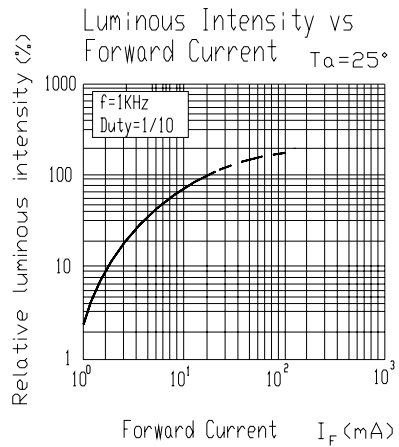
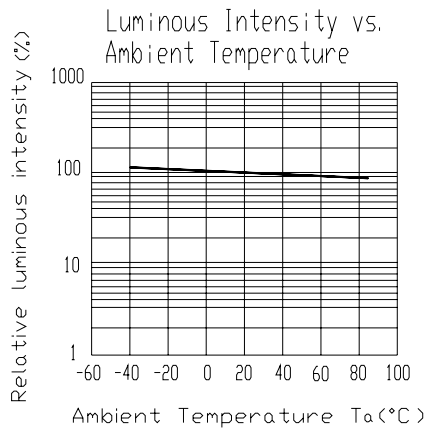
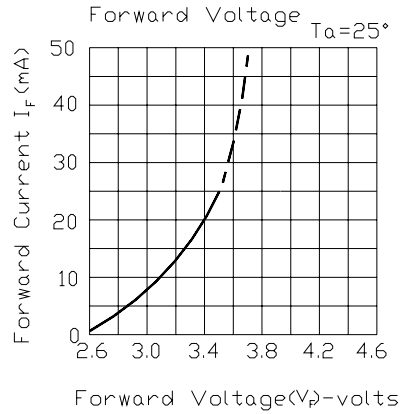
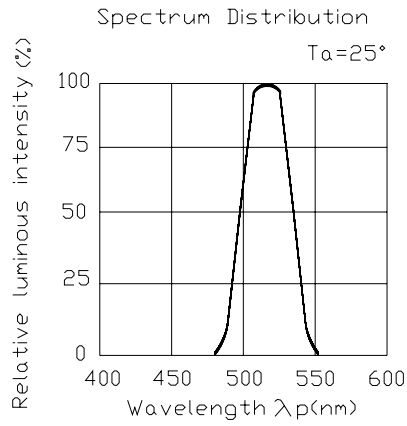
S2



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Typical Electro-Optical Characteristics Curves

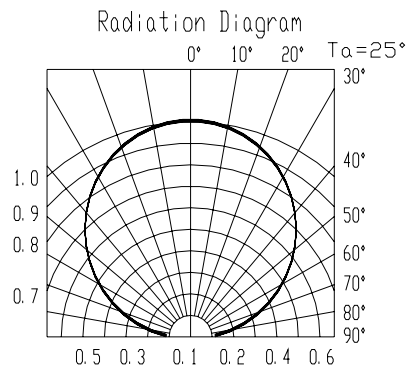
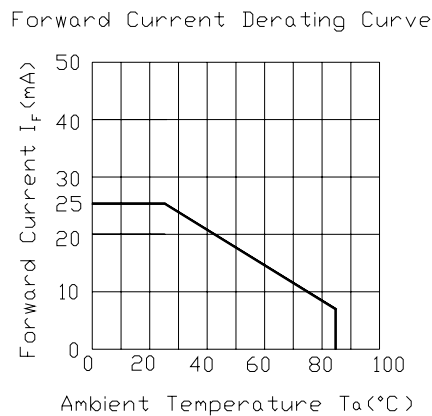
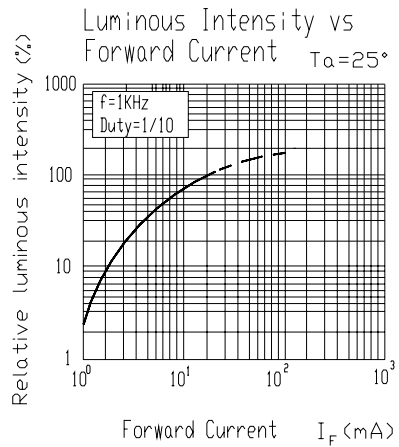
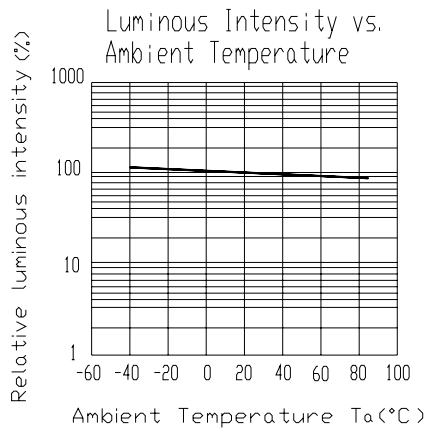
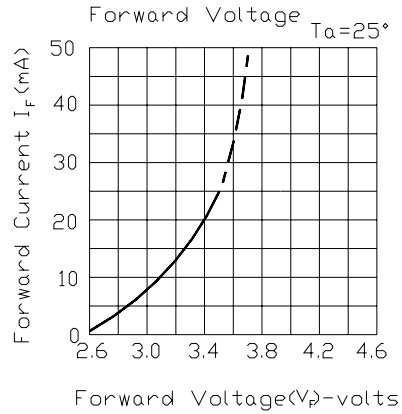
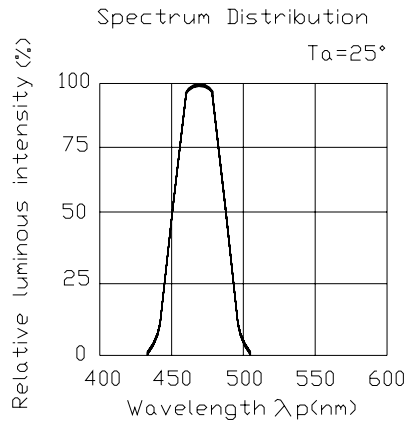
GH



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Typical Electro-Optical Characteristics Curves

BH



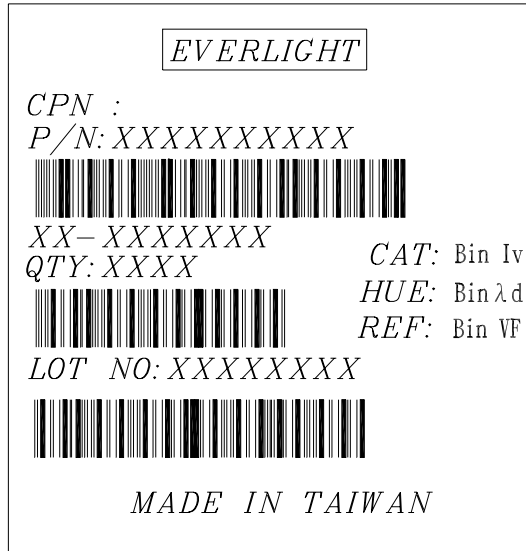
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■ **Label explanation**

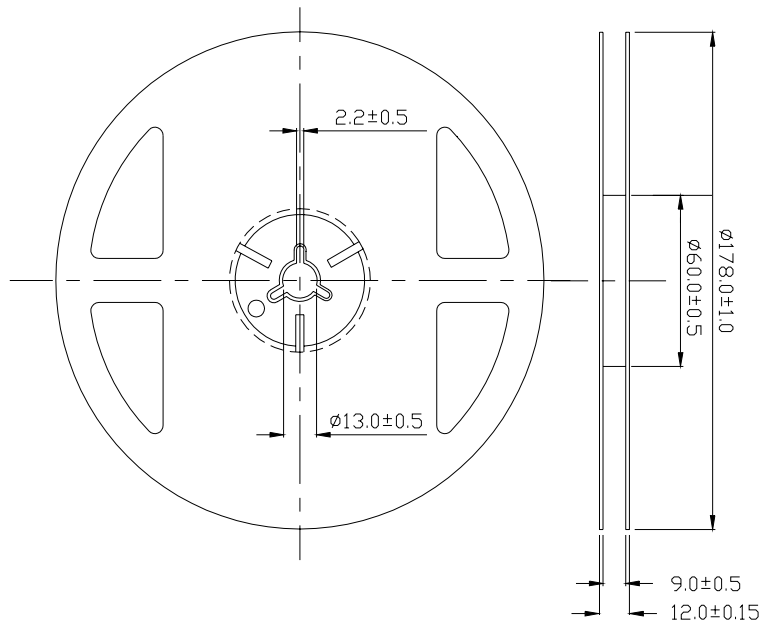
CAT: Luminous Intensity (mcd)

HUE: Dom. Wavelength (nm)

REF: Forward Voltage (V)



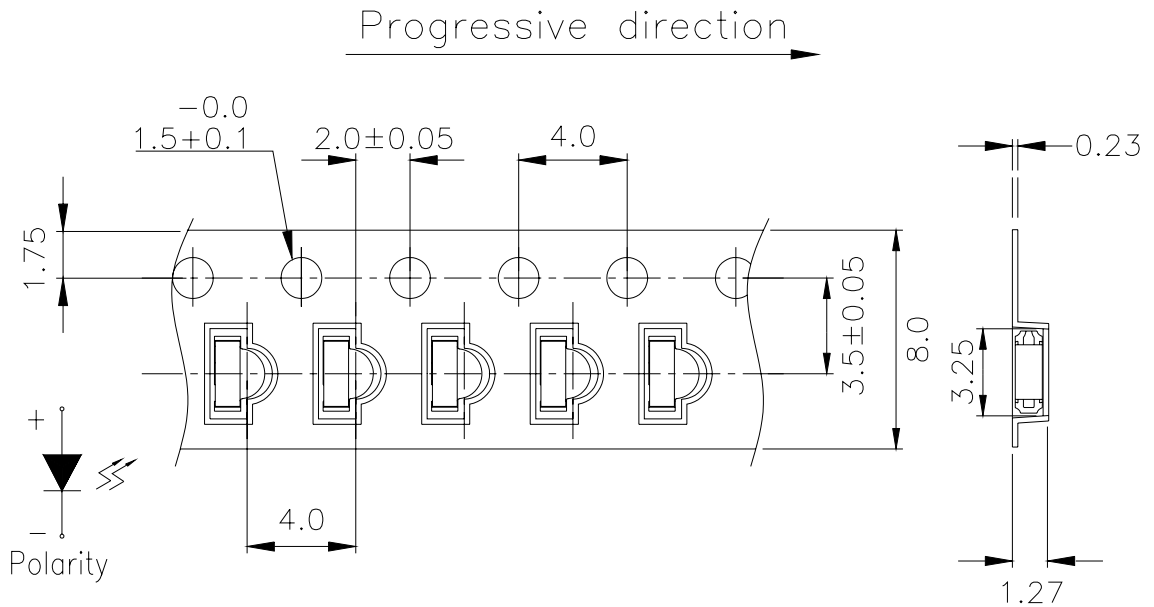
■ **Reel Dimensions**



Note: The tolerances unless mentioned is $\pm 0.1\text{mm}$, Angle $\pm 0.5^\circ$,Unit = mm

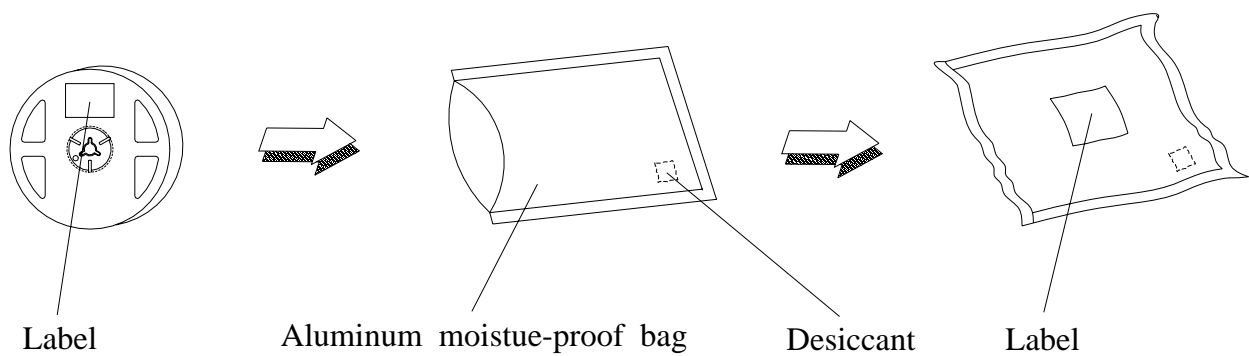
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■ **Carrier Tape Dimensions: Loaded quantity 2000 PCS per reel**



Note: The tolerances unless mentioned is $\pm 0.1\text{mm}$, Angle $\pm 0.5^\circ$,Unit = mm

■ **Moisture Resistant Packaging**



Reliability Test Items And Conditions

12-23A/S2GHBHC-A01/2D

The reliability of products shall be satisfied with items listed below.

Confidence level : 90 %

LTPD : 10 %

No.	Items	Test Condition	Test Hours/Cycles	Sample Size	Ac/Rc
1	Reflow	Temp. : 240°C±5°C Min. 5 sec.	6 min.	22 Pcs.	0/1
2	Temperature Cycle	H : +100°C 15min. ∫ 5 min. L : -40°C 15min.	300 Cycles	22 Pcs.	0/1
3	Thermal Shock	H : +100°C 5min. ∫ 10 sec. L : -10°C 5min.	300 Cycles	22 Pcs.	0/1
4	High Temperature Storage	Temp. : 100°C	1000 Hrs.	22 Pcs.	0/1
5	Low Temperature Storage	Temp. : -55°C	1000 Hrs.	22 Pcs.	0/1
6	DC Operating Life	I _F = 20 mA	1000 Hrs.	22 Pcs.	0/1
7	High Temperature / High Humidity	85°C/R.H85%	1000 Hrs.	22 Pcs.	0/1

Precautions For Use

12-23A/S2GHBHC-A01/2D

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 time

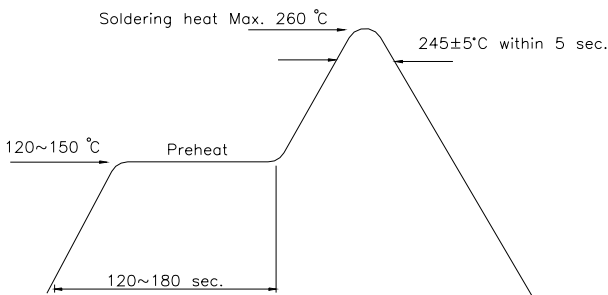
2.1 The operation of Temperature and RH are : 5°C~35°C , RH60%.

2.2 Once the package is opened, the products should be used within a week. Otherwise, they should be kept in a damp proof box with desiccating agent. Considering the tape life , we suggest our customers to use our products within a year(from production date).

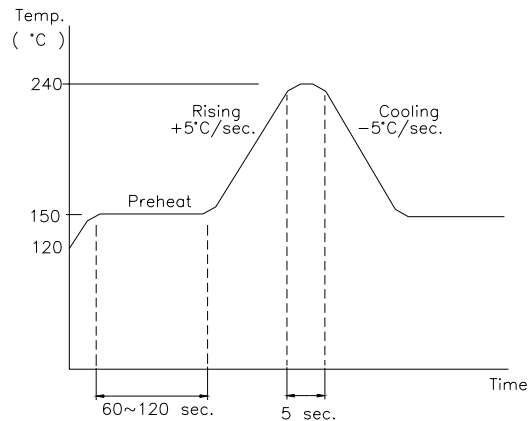
2.3 If opened more than one week in an atmosphere 5°C~35°C , RH 60% , they should be treated at 60°C±5°C for 15hrs.

2.4 When you discover that the desiccant in the package has a pink color (Normal = blue) , you should treat them in the same conditions as 2.3.

Soldering heat



Reflow Temp / Time



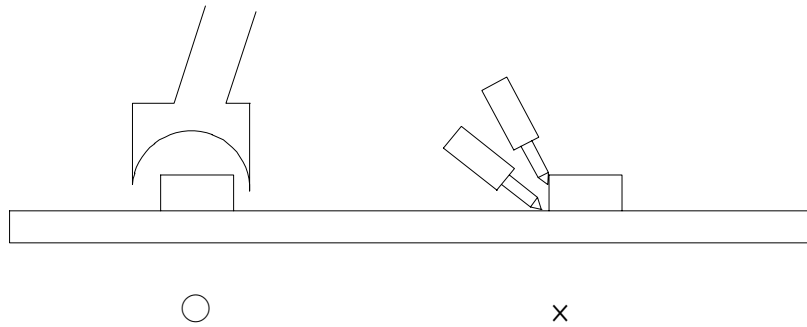
Soldering Iron

Basic spec is ≤ 5 sec when 260°C. If temperature is higher, time should be shorter (+10°C → -1sec). Power dissipation of Iron should be smaller than 15 W , and temperature should be controllable. USOface temperature of the device should be under 230 °C.

Rework

12-23A/S2GHBHC-A01/2D

1. Customer must finish rework within 5 sec under 245°C.
2. The head of iron can not touch copper foil.
3. Twin-head type is preferred.



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