



BRIGHTTEK
BRIGHTTEK (EUROPE) LIMITED

Brighten up The World With LED!



ISO/TS 16949:2009



BS EN ISO 14001:2004



QC 080000 IECQ HSPM

PRODUCT DATASHEET



- ▶ EMC 2-PIN SMD
- ▶ 2016 0.52t Series
- ▶ Red (625nm)

NOR20S37



Release Date: 10 May 2017 Version: A1.1



2016 0.52t Series

2016 0.52t Series

RoHS
Compliant



FEATURES:

- **Package:** TOP View EMC White SMT Package
- **Forward Current:** 40mA
- **Forward Voltage (typ.):** 2.1V
- **Luminous Flux (typ.):** 5.5lm@40mA
- **Colour:** Red
- **Wavelength:** 620-630nm
- **Viewing angle:** 110°
- **Materials:**
 - Die: AlInGaP
 - Resin: Silicon (Water Clear)
 - L/T Finish: Ag plated
- **Operating Temperature:** -40~+85°C
- **Storage Temperature:** -40~+85°C
- **Grouping parameters:**
 - Forward Voltage
 - Luminous Flux
 - Dominant Wavelength
- **Soldering methods:** Reflow
- **Preconditioning:** MSL3 according to J-STD020
- **Packing:** 8mm tape with Max. 5000/reel, ø165mm (6.5")

APPLICATIONS:

- Decorative Lighting
- Portable Lighting
- Outdoor Lighting
- Commercial Lighting
- Architectural Lighting

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
DC Forward Current	I_F	50	mA
Pulse Forward Current (width≤100μS; duty≤1/10)	I_{FP}	60	mA
Power Dissipation	P_D	130	mW
Reverse Voltage	V_R	5	V
Reverse Current @5V	I_R	10	μA
Junction Temperature	T_j	115	°C
Electrostatic Discharge (HBM: MIL-STD-883 C 2)	ESD	1000	V
Operating Temperature	T_{OPR}	-40~+85	°C
Storage Temperature	T_{STG}	-40~+85	°C
Soldering Temperature (10S)	T_{SOL}	260	°C

Electrical & Optical Characteristics (Ta=25°C)

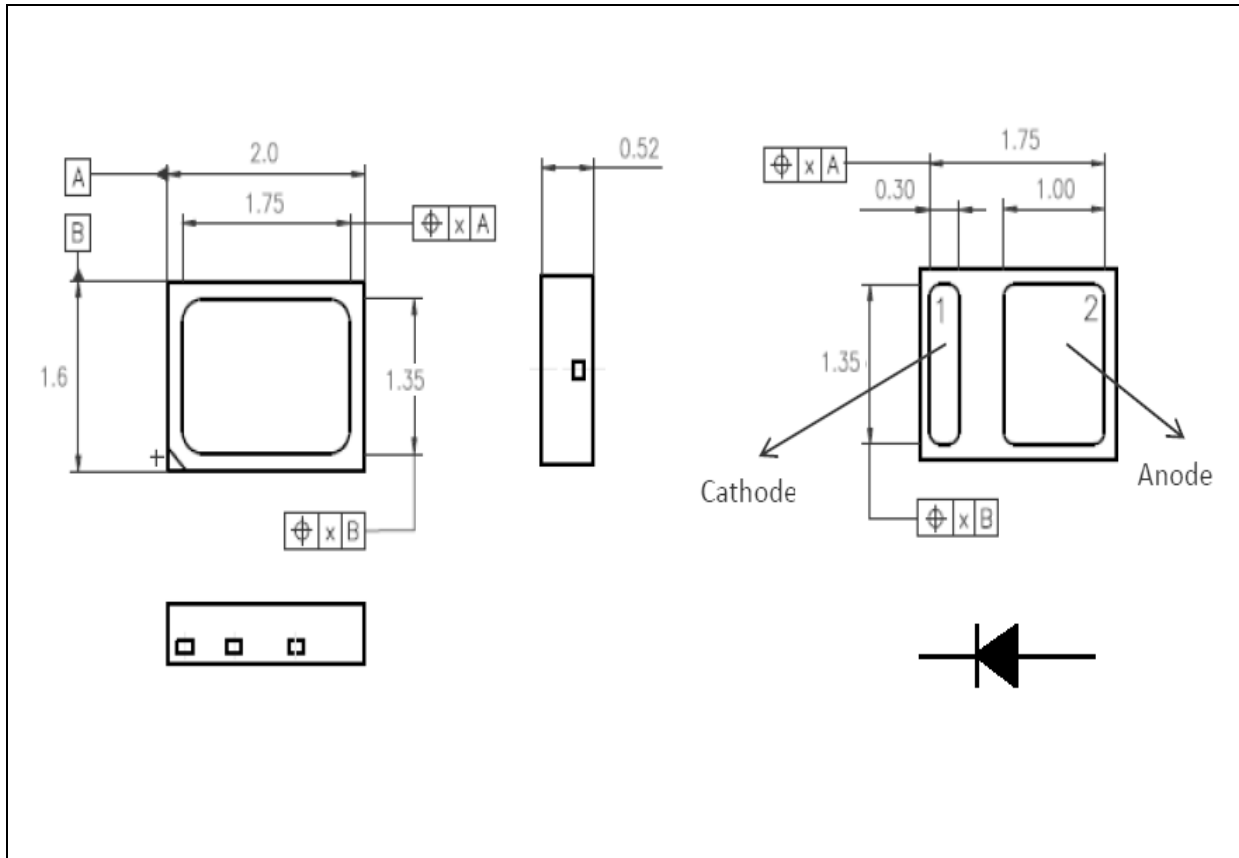
Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	1.8	2.1	2.6	V	$I_F=40mA$
Luminous Flux	Φ_V	2	5.5	8	lm	$I_F=40mA$
Dominant Wavelength	λ_D	620	---	630	nm	$I_F=40mA$
Viewing Angle	$2\theta_{1/2}$	---	110	---	deg	$I_F=40mA$

1. Luminous flux (Φ_V) ±7%, Forward Voltage (V_F) ±0.1V



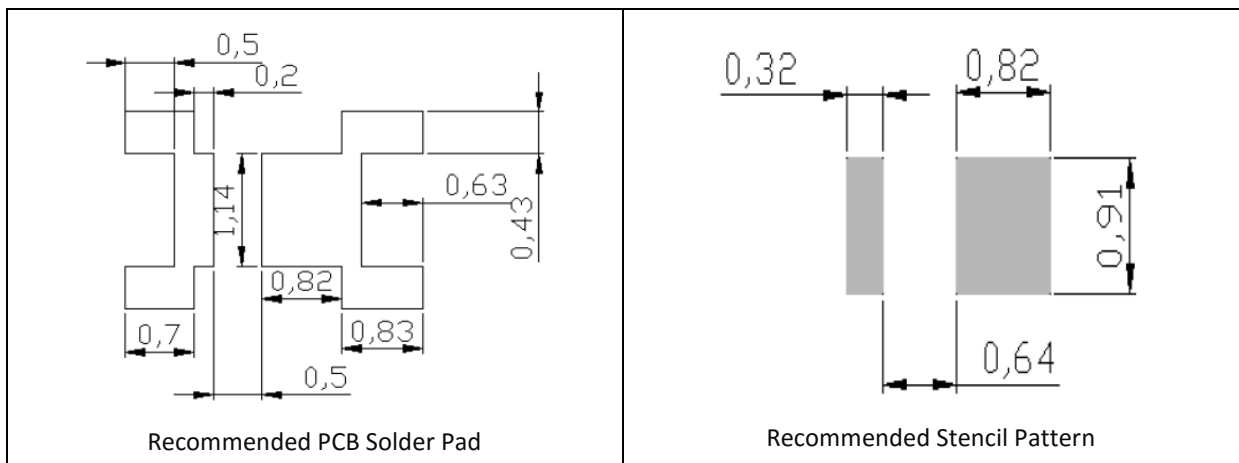
OUTLINE DIMENSION:

Package Dimension:



1. All dimensions are in millimetre (mm).
2. Tolerance $\pm 0.13\text{mm}$, unless otherwise noted.

Recommended Soldering Pad Dimension:



1. Dimensions are in millimetre (mm).
2. Tolerance $\pm 0.1\text{mm}$ with angle tolerance $\pm 0.5^\circ$.

BINNING GROUPS:

Forward Voltage Classifications ($I_F = 40\text{mA}$):

Code	Min.	Max.	Unit
C	1.8	2.0	V
D	2.0	2.2	
E	2.2	2.4	
F	2.4	2.6	

Luminous Flux Classifications ($I_F = 40\text{mA}$):

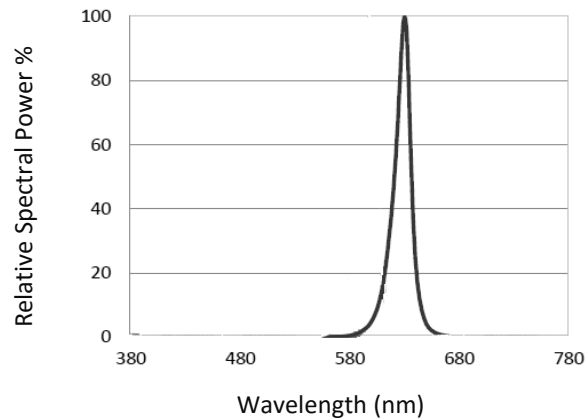
Code	Min.	Max.	Unit
AB	2	4	lm
AC	4	6	
AD	6	8	

Dominant Wavelength Classifications ($I_F = 40\text{mA}$):

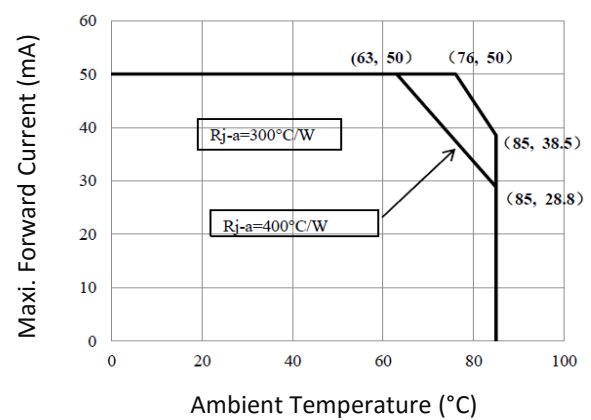
Code	Min.	Max.	Unit
R1	602	625	nm
R2	625	630	

ELECTRO-OPTICAL CHARACTERISTICS:

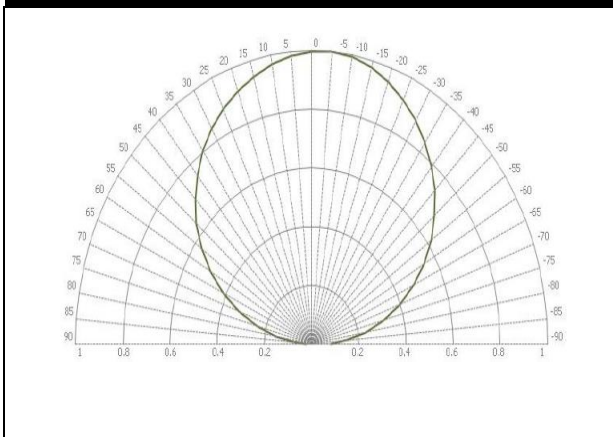
Relative Spectral Power v.s. Wavelength



Forward Current v.s. Forward Voltage

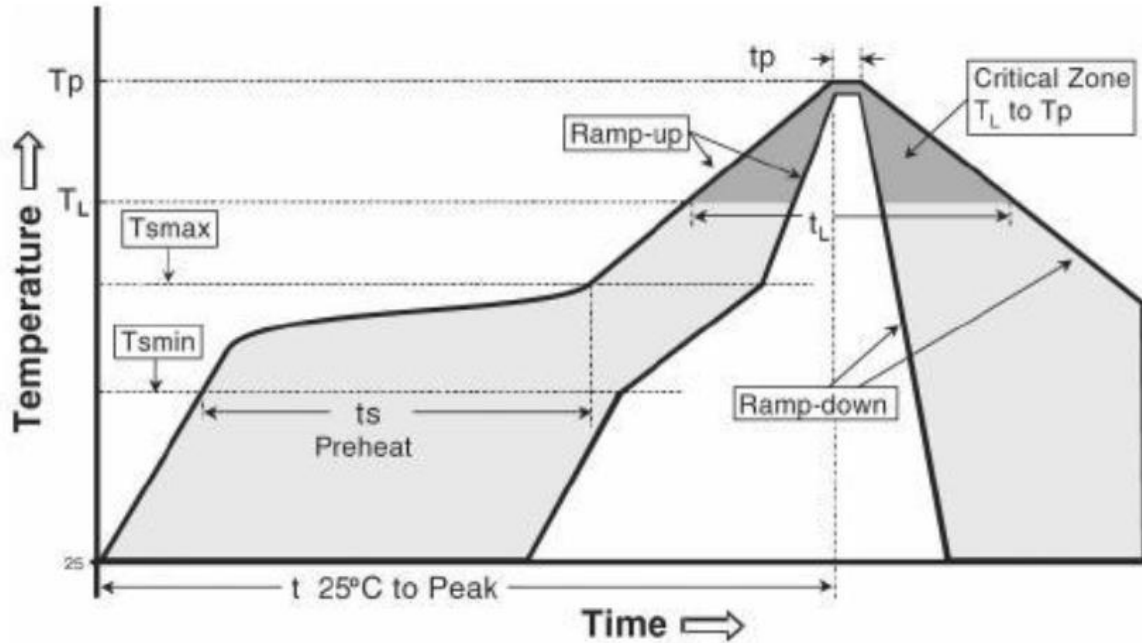


Directive Radiation



RECOMMENDED SOLDERING PROFILE:

Reflow Lead-free Solder:



Temperature Min. (T_{smin})	150°C
Temperature Max. (T_{smax})	200°C
Period from T_{smin} to T_{smax}	60-120 seconds
Ramp-up Rate (T_L to T_p)	Max. 3°C/second
Liquidous Temperature (T_L)	217°C
Time Maintained above T_L	60-150 seconds
Peak Package Temperature (T_p)	Max. 260°C
Time within 5°C of the Specified Classification Temperature T_c	Max. 30 seconds
Ramp-down Rate (T_p to T_L)	Max. 6°C/second
Time from 25°C to Peak Temperature	Max. 8 mins

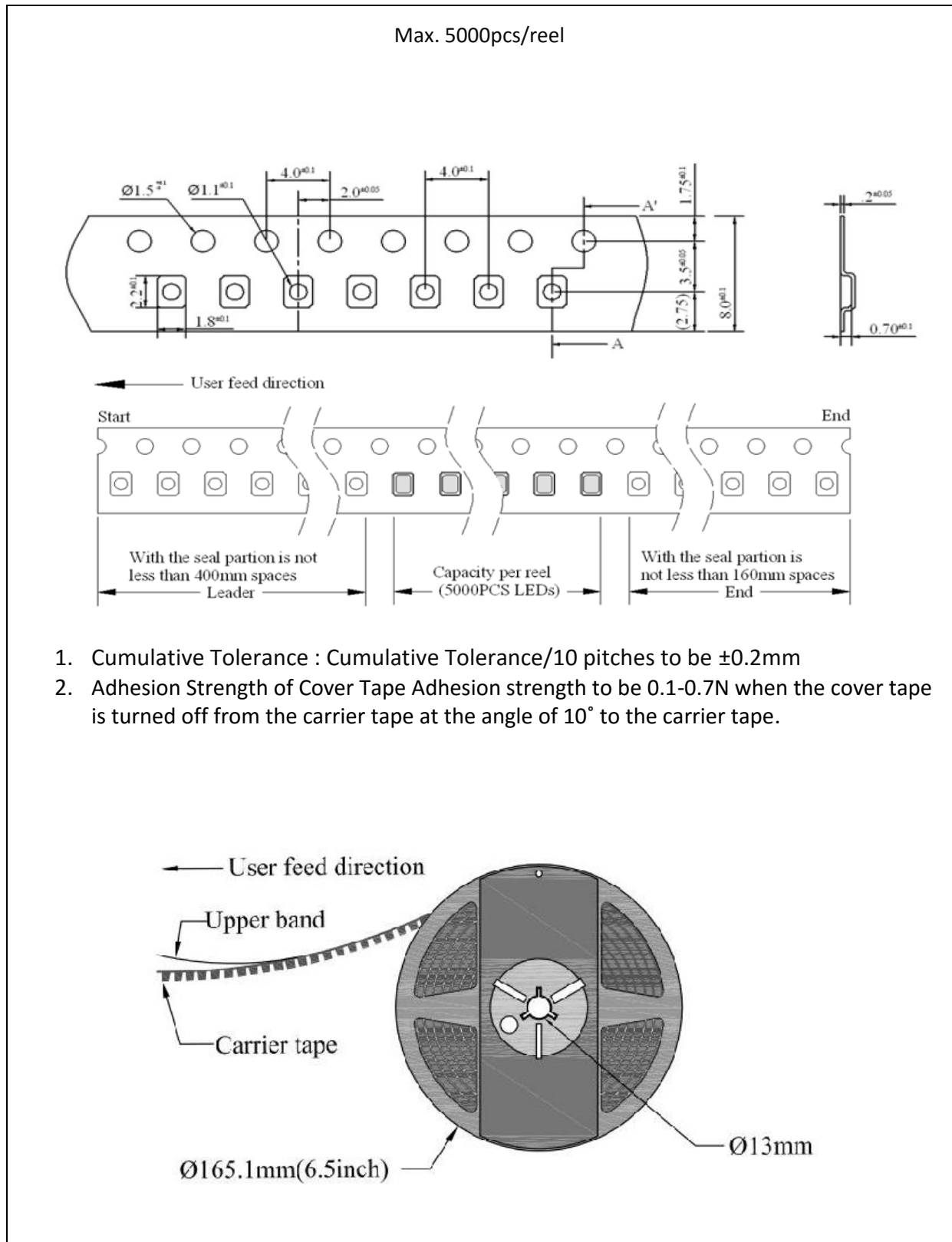
Note:

1. Maximum reflow soldering: 1 time.
2. Before, during, and after soldering, should not apply stress on the components and PCB board.
3. Recommended soldering temperature: 230°C. The maximum soldering temperature should be limited to 260°C for max. 10seconds.



PACKING SPECIFICATION:

Reel Dimension:



PRECAUTIONS OF USE:

Storage:

It is recommended to store the products in the following conditions:

- Humidity: 60% R.H. Max.
- Temperature: 5°C~30°C (41°F ~86°F).

Shelf life in sealed bag: 12 month at 5°C~30°C and <60% R.H.

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 and apply baking at 60°C±5°C for 15hrs before use.

Baking:

It is recommended to bake the LED before soldering if the pack has been unsealed for longer than 24hrs. The suggested baking conditions are as followings:

- 60±3°C x 24hrs and <5%RH, taped / reel package.

It's normal to see slight color fading of carrier (light yellow) after baking in process.

Testing Circuit:



Must apply resistor(s) for protection (over current proof).

Cleaning:

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LED carrier / package. Avoid putting any stress force directly on to the LED lens.

ESD (Electrostatic Discharge):

Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrostatic glove is recommended when handling the LED all time. All devices, equipment, machinery, work tables, and storage racks must be properly grounded.

In the events of manual working in process, make sure the devices are well protected from ESD at any time.

REVISION RECORD:

Version	Date	Summary of Revision
A1.0	14/12/2016	Datasheet set-up.
A1.1	10/05/2017	Revised spectrum graphic.