

# SPECIFICATION

# 'a1w“ TT&ü

REFOND P/N 'a1w6 0?

RF-A3E31-WYSG-B6

Î 3 % pG0

ÍMass Production j€'a(Ø™

## Contents naE6

1. Description 'a1w'•}O .....	3.....
1.1 General Description 'a1wL½•£.....	3.....
1.2 Features 'a1wfμE,, .....	3.....
1.3 Application 'a1wC¾k=.....	3.....
1.4 Package Dimension ? '3?o? .....	4.....
1.5 Product Parameters 'a1w/iO" .....	5.....
1.6 Bin Range Of Forward Voltage and Luminous Flux (IF=300mA)kO/"&x+Ōž j€- BIN ... '55 (IF=300mA).....	6.....
1.7 Typical Optical Characteristics Curves ,)6 +Ō=ŌfμF•R<}A.....	8...
2. Packaging 'a1w.«'3 .....	13.....
2.1 Packaging Specification .«'3" TT .....	13.....
2.1.1 Carrier Tape Dimension œžC ?o?.....	13
2.1.2 Reel Dimension /wn9?o? .....	13
2.1.3 Label Form Specification SûvŠ" TT.....	14
2.2 Moisture Resistant Packing "È`Đ.«'3 .....	14.....
2.3 Cardboard Box .«'3}:vò .....	14.....
2.4 Reliability Test Items And Conditions )L™FF•]5— -àna/úRđ'Ý.....	15
2.5 Criteria For Judging Damage 8βOj-<>ASû,¥.....	16...
3. SMT Reflow Soldering Instructions SMT 5 ](cÒ—9PÈ.....	17..
3.1 SMT Reflow Soldering Instructions SMT 5 ](cÒ—9PÈ.....	17..
4. Handling Precautions 'a1w(a'k=\\#H '2-à .....	19...
4.1 Handling Precautions 'a1w(a'k=\\#H '2-à .....	19...



### 1.4 Package Dimension ? '3?o?

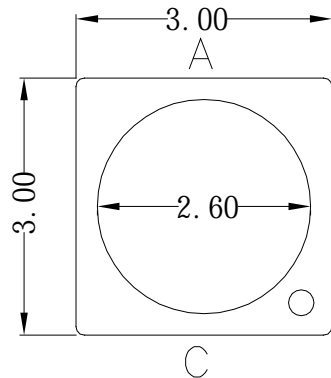


Fig.1-1 Top View 正面视图

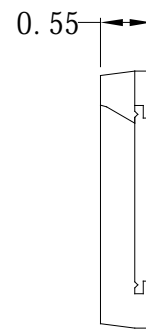


Fig.1-2 Side View 侧面视图

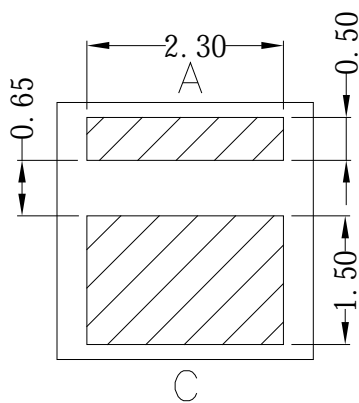


Fig.1-3 Bottom View 背面视图

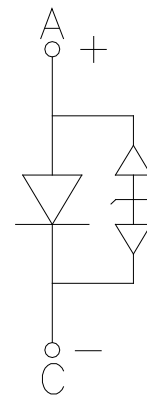


Fig.1-4 Polarity 极性

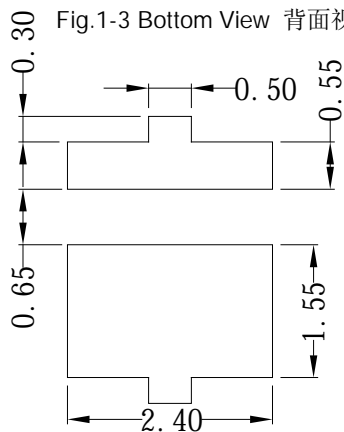


Fig.1-5 Soldering Patterns 推荐焊盘

#### Notes 8Š\ǎö;

All dimensions units are millimeters. J>Rc?o? Sù\¼/@(Y&'[ x)

All dimensions tolerances are ±0.2mm unless otherwise noted.© fμ-FSù\¼8ªæ{J>Rc?o? , Bμ&' p [ x)



Notes 8Š\řö;

- 1/10 Duty cycle, 10ms pulse width. •a>^ N T/Qt\_Zñ
- The above forward voltage measurement allowance tolerance is ±0.1V. 'Ä&sJ>r kO/“]5j€—4Bμ p 7
- The above color coordinates measurement allowance tolerance is ±0.005. 'Ä&sJ>r 5ÂSû]5j€—4Bμ±
- The above luminous flux measurement allowance tolerance ±10%. &s•£+Öž j€m,]5— +È-ý, Bμ&' p
- Care is to be taken that power dissipation does not exceed the absolute maximum rating of the product. (ªk= . hg&v•J™,•B“ >Am,RR8Đ)é o
- All measurements were made under the standardized environment of Refond. J>Rc]5— ÝêPý6Ç'5i°&ªh;Rcm, Sû,¥]5— C,05 o
- When the LEDs are in operation the maximum current should be decided after measuring the package temperature, junction temperature should not exceed the maximum rate - &(ªk=m,RR8ĐkO)](ª='³TOL O”cšRö 'ÝpÁ>Aæ{}U^&v•J™,•BRR8Đ)é o
- At 25 , pulse mode test, photoelectric conversion efficiency ηe=30%. 25 •a,~W·D-]5— æ{+ÖkOæ®L Oj hg&' o
- Thermal resistance values (Rth JS Electrical) measure current is 300mA ,Temperature constant at 25 C. cš“Ö )é 3 U† 4 & M F D]5—SKO]8' M N "æ[]5— ^)CpFĪ>A&' šo

1.6 Bin Range Of Forward Voltage and Luminous Flux (IF= 300mA)kO/“&x+Öž j€  
 - BIN ... '55F=300mA)

Table 1-3

V <sub>F</sub> (V)	G0	H0	I0	
	2.8-3.0	3.0-3.2	3.2-3.4	
φ Im	QA	QB	RA	RB
	67.8-75.3	75.3-83.7	83.7-93.2	93.2-105

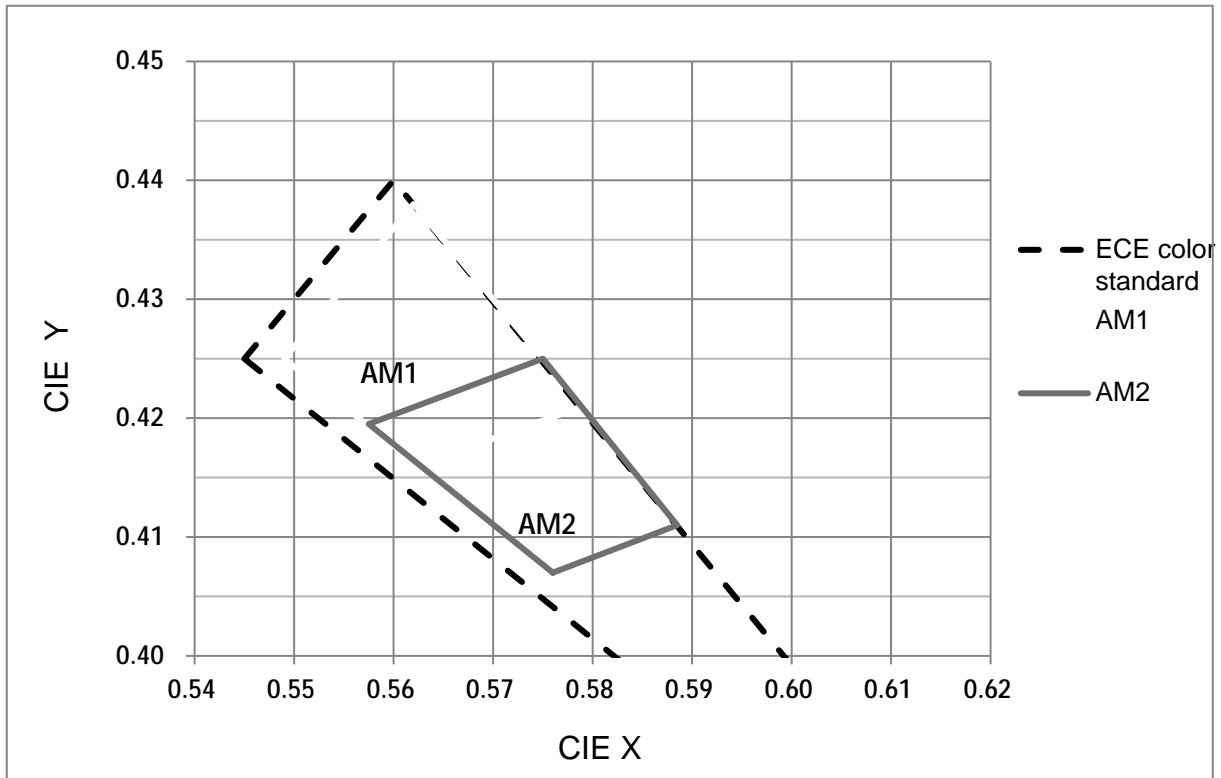


Fig. 1-6 The C.I.E Chromaticity Diagram CIE,€CB5C

Table 1-4

BIN CODE	CIE-X1	CIE-Y1	CIE-X2	CIE-Y2	CIE-X3	CIE-Y3	CIE-X4	CIE-Y4
AM1	0.5625	0.4160	0.5490	0.4250	0.5620	0.4380	0.5790	0.4210
AM2	0.5760	0.4070	0.5575	0.4195	0.5750	0.4250	0.5885	0.4110

### 1.7 Typical Optical Characteristics Curves

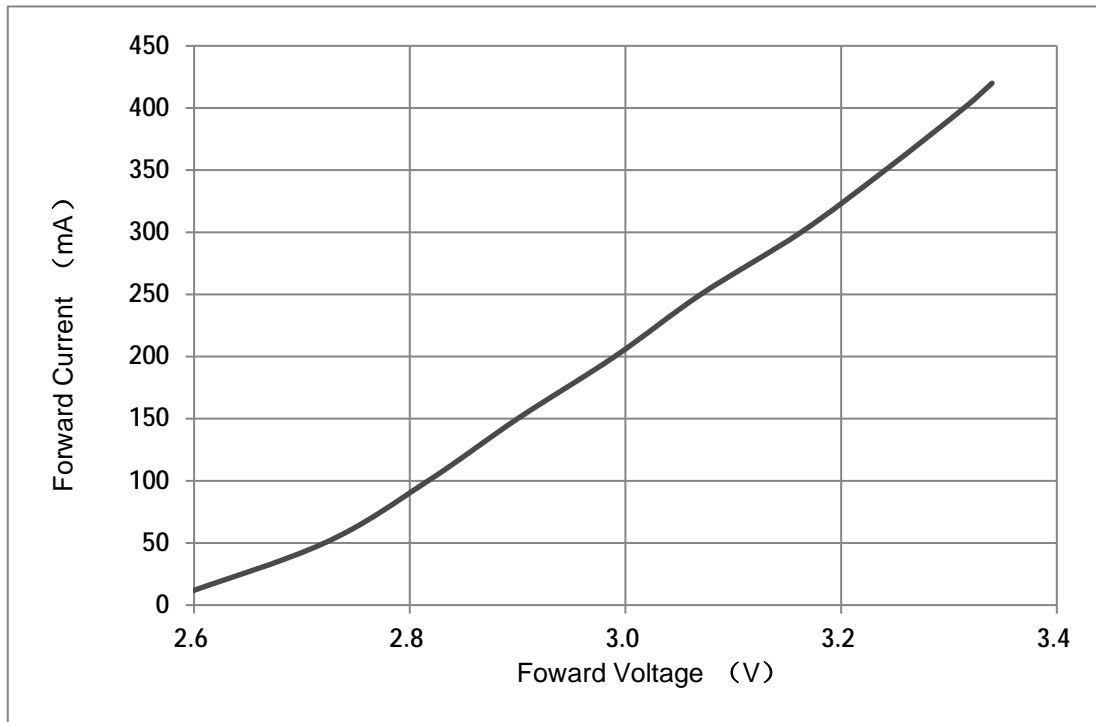


Fig. 1-7 Forward Voltage Vs Forward Current

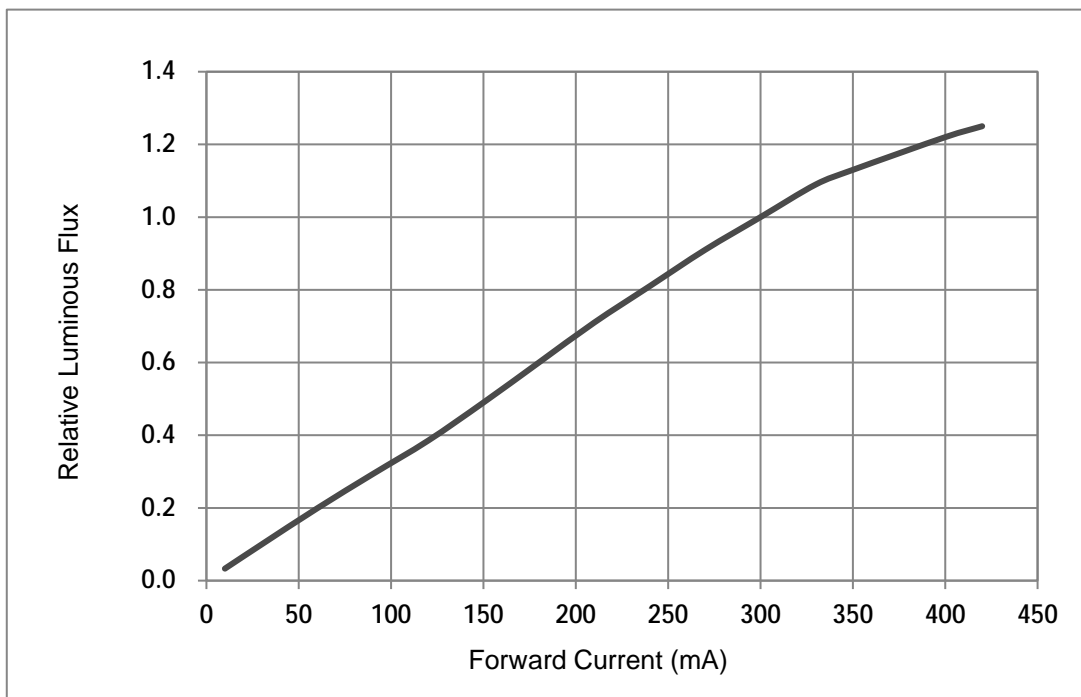


Fig. 1-8 Forward Current Vs Relative Luminous Flux

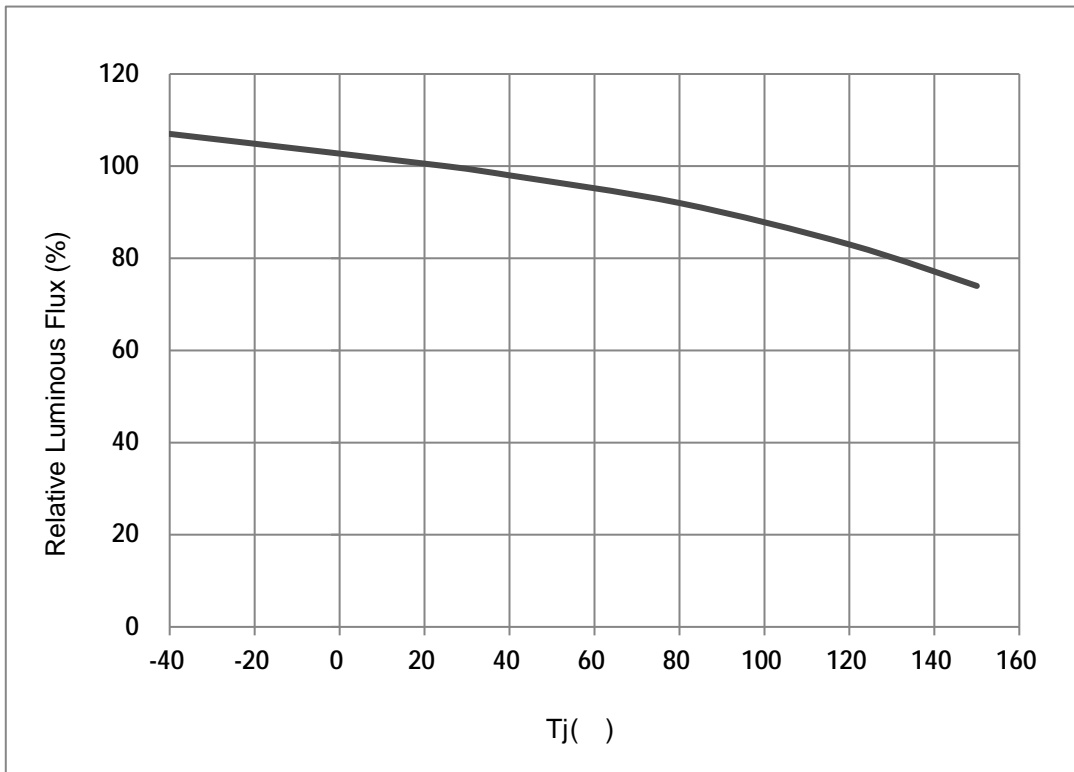


Fig. 1-9 Junction Temperature Vs Relative Luminous Flux

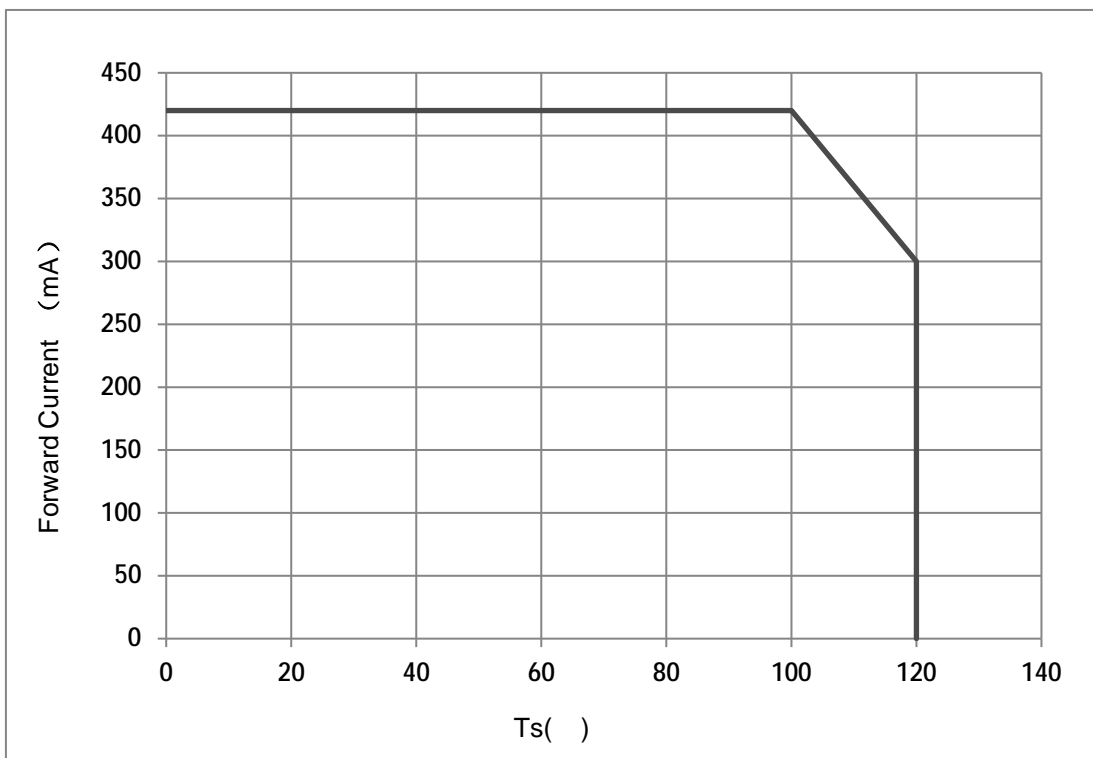


Fig. 1-10 Solder Temperature Vs Forward Current

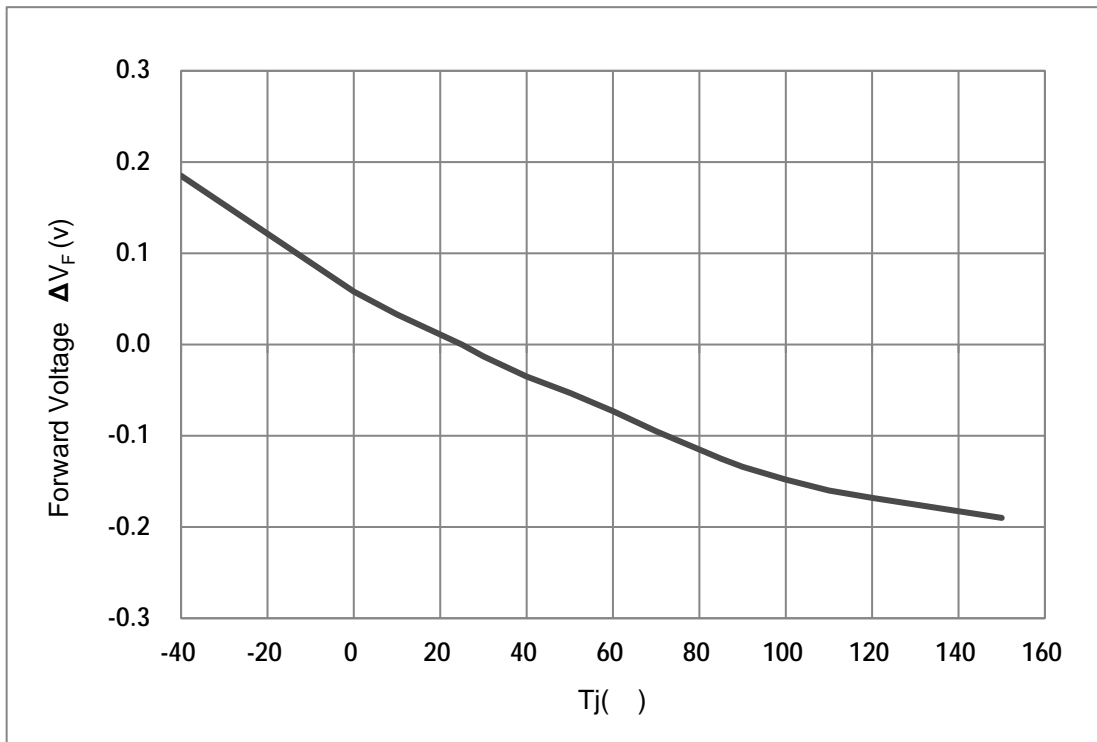


Fig. 1-11 Voltage Shift Vs Junction Temperature

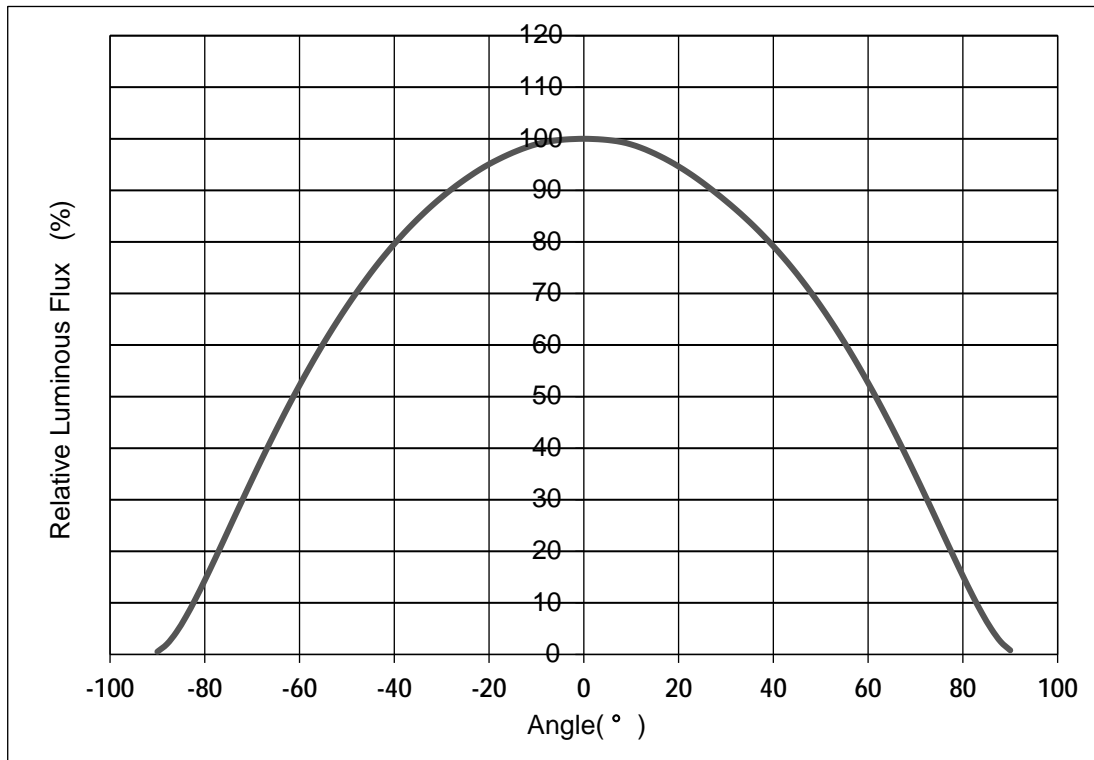


Fig. 1-12 Radiation Diagram

Fig. 1-13 Chromaticity Coordinate Shift Vs Junction Temperature „€5ÂŠú\* st&x}U^>fμF•R<}A

Fig. F

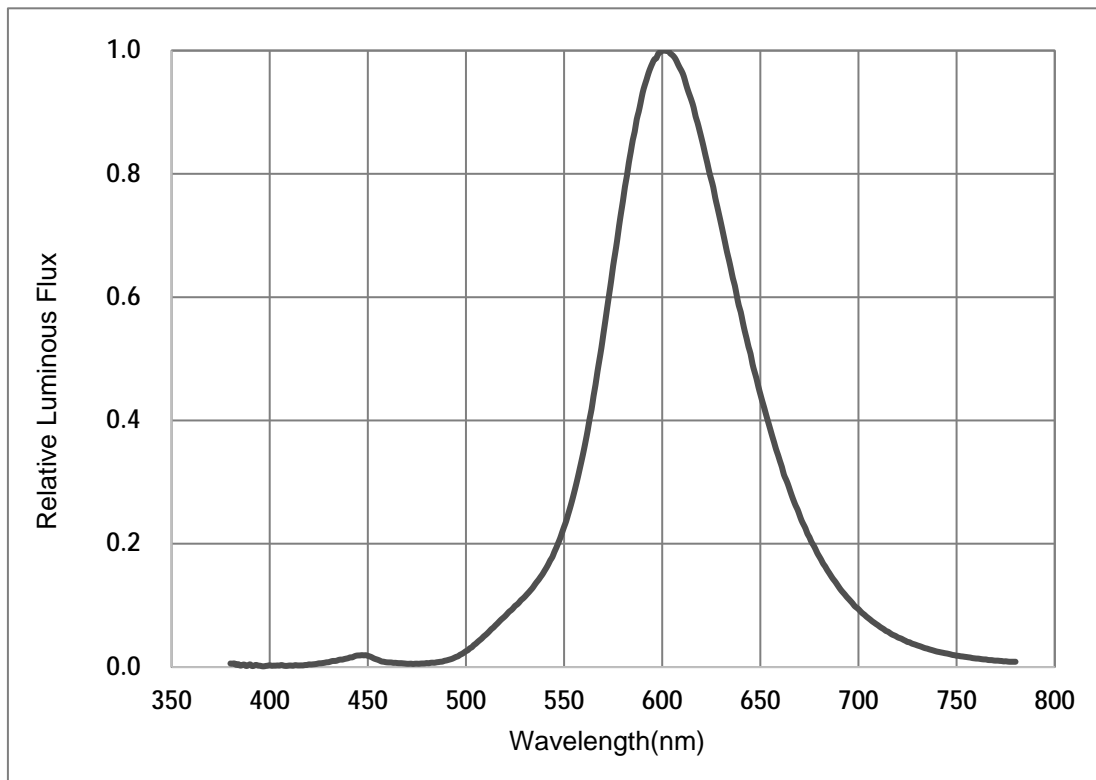


Fig. 1-15 Spectrum Distribution +Ö—v- BÒfµF•R<}A



### 2.1.3 Label Form Specification SûvŠ“ TT

#### B C M F Specification“ TT

PART NO.	Part Number 1w0\
SPEC NO.	Spec Number “ TT
LOT NO.	Lot Number J Yf0?
BIN CODE	Bin Code /iO”¿p&
Φ	Luminous flux +Öž j€
XY	Chromaticity Bin „€/
V <sub>F</sub>	Forward Voltage Yû0bkO/“
WLD	Wavelength \ššË'¿p&
QTY	Packing Quantity O”j€
DATE	Made Date k0'aP^R•

Fig. 2-3 Label Form Specification SûvŠ“ TT

### 2.2 Moisture Resistant Packing “È`Đ.«'3

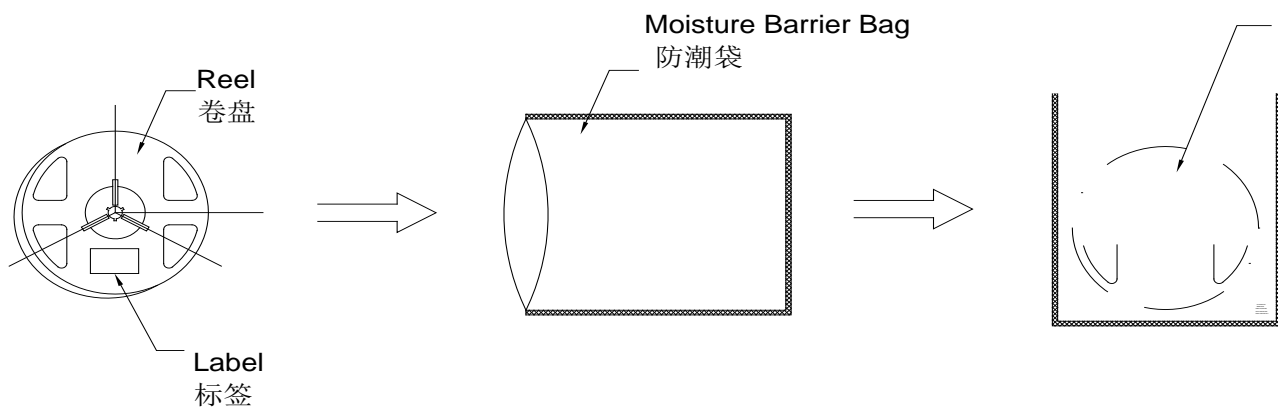


Fig.2-4 Moisture Resistant Packing “È`Đ.«'3

### 2.3 Cardboard Box .«'3}:vò

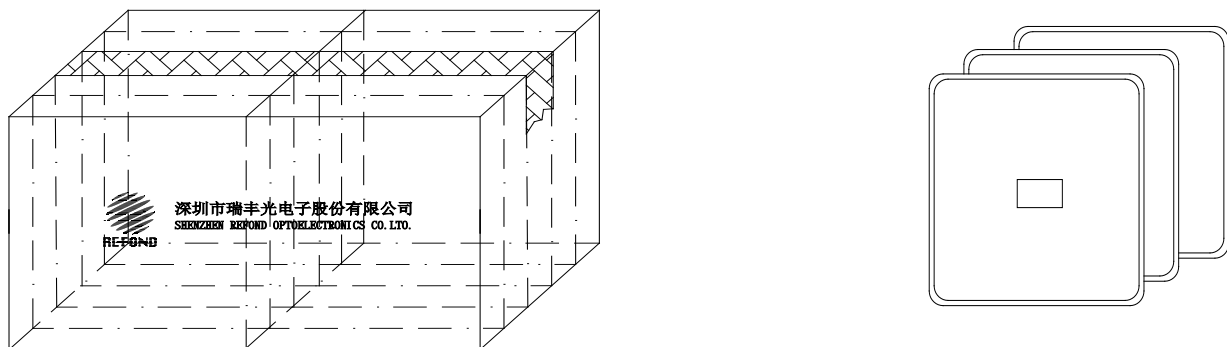


Fig.2-5 Cardboard Box .«'3}:vò

## 2.4 Reliability Test Items And Conditions )L™FF•]5— -àna/úRõ'Ý

Table 2-3 Reliability Test Items And Conditions )L™FF•]5— -àna/úRõ'Ý

Test Items -àna	Ref.Standard /i•LSû,¥	Test Condition ]5— Rõ'Ý	Time Pž",	Quantity O"j€	Ac/Re LyOƆK(OP
Reflow 5 ](cÒ	JESD22-B106	Temp:260 ë max T=10 sec	2times	20pcs.	0/1
MSL2 "È`Đv }}2	JESD22-A113	85 ë/ 60%RH	168 hrs.	20pcs.	0/1
Thermal Shock ,žčš,--	JEITAED-4701 300307	-40 ë 15min ↑↓10s 125 ë 15min	1000 cycle	20pcs.	0/1
Life Test ± ^) ]5—	JESD22-A108	Ta=105 ë IF=300mA	1000hrs.	20pcs.	0/1
High Temperature High Humidity Life Test ± ^)± _* ]5—	JESD22-A101	85 ë/ 85%RH IF=300mA	1000hrs.	20pcs.	0/1

## 2.5 Criteria For Judging Damage 8βOj-<>ASû,¥

Table 2-4Criteria For Judging Damage 8βOj-<>ASû,¥

Test Items -àna	Symbol ux0?	Test Condition ]5— Rô'Ý	Criteria For Judgement -<>ASû,¥	
			Min. RR?-	Max. RR8Đ
Forward Voltage Yû0bkO/“	V <sub>F</sub>	IF=300mA	-	U.S.L*)x1.1
Reverse Current /ÿ0bkO](	I <sub>R</sub>	V <sub>R</sub> = 5V	-	U.S.L*)x2.0
Luminous Flux +Õž i€	Φ	IF=300mA	L.S.L*)x0.7	-

Notes 8Š\œö;

- 1.U.S.L: Upper standard level “ TT&s”ó L.S.L: Lower standard level “ TT&t”ó
- 2.The above reliability tests is based on the verification of a single/strip LED of Refond's existing experimental platform,the reliability experiment was taken under good heat dissipation conditions. when customers applies the LED to the series and parallel circuit, should take consideration of all the factors such as the current, voltage distribution, heat dissipation and others.'Ä&s03« F•]5— Pý6Ç'5i°&ªh|Rc>J°%C,05/@-Rö - & % „{9iO”cš Rô'Ý°%— &tm,)USS o>PJ\*un? & %¾k='5&® nC‡•ë}Aš Pžæ{ª=fH•d— (.kO]( nkO/“ - •nO”cšv “|~ÿ o
- 3.The technical information shown in the data sheets is limited to the typical characteristics and circuit examples of the referenced products. It does not constitute the warranting of industrial property nor the granting of any license. 'Ä&sJ@R©O”L “&'a1wm,)6 )éæ{0+(r&'i•Læ{&v(r&'ã(fC¾k=Rô'Ý/úC¾k=P0D-m,)B— o

### 3. SMT Reflow Soldering Instructions SMT 5 J(cÖ—9PÈ

#### 3.1 SMT Reflow Soldering Instructions SMT 5 J(cÖ—9PÈ

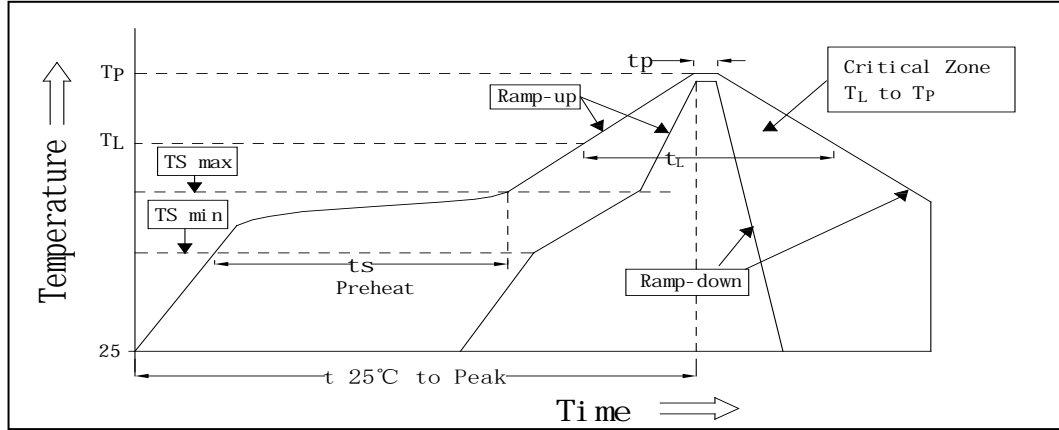


Fig.3-1 SMT Reflow Soldering Instructions SMT 5 J(cÖ—9PÈ

Table 3-1 Reflow parameters 5 J(cÖ/iO"

Average temperature rise speed $C, 5^2 / \wedge \check{z} C p \wedge w T s m a x f [ T p \wedge x$	RR± 3 °C/s2 Max 3 °C/ s
Preheating: minimum temperature $\text{--}\acute{e}c\check{s}\ddot{o}; RR ([ \wedge C p ( T s m i n )$	150 °C
Preheating: Max temperature $\text{--}\acute{e}c\check{s}\ddot{o}; RR \pm \wedge C p ( T s m a x )$	200 °C
Preheating: Time $\text{--}\acute{e}c\check{s}\ddot{o}; P \check{z} \text{, } \wedge w T s m i r f [ T s m a x \wedge x$	60 - 120s2 60s-120s
Time limited to maintain high temperature: the temperature $\acute{o} P \check{z} \} v K o \pm \wedge \ddot{o}; \wedge C p ( T_L )$	217 °C
Time limited to maintain high temperature: The Time $\acute{o} P \check{z} \} v K o \pm \wedge \ddot{o}; P \check{z} \text{, } ( t_L )$	RR860s2 Max 60s
Peak /Classification of temperature: $@ \frac{1}{2} \acute{e} - x \ll \wedge C p ( T_p )$	260 °C
Time limit classification of peak temperature time $\acute{o} P \check{z} @ \frac{1}{2} \acute{e} - x \ll \wedge C p \ddot{o}; P \check{z} \text{, } \wedge w \wedge x$	RR8'10s2 Max 10s
$\& x > J \text{ ' } \hat{a} @ \frac{1}{2} \acute{e} \wedge C p ( T_p ) n q B \mu 5 \text{ } \acute{A} \text{, ; m, ) B K o P \check{z} \text{, } \text{ Hold time within } 5 \text{ } \text{C} \text{ with the actual peak temperature (TP)}$	RR8'30s2 Max 30s
$\text{ ' } \wedge \check{z} C p \text{ Cooling speed}$	RR± 6 °C/s2 Max 6 °C/ s
$25 \text{ } \acute{C} \text{ / . f [ } @ \frac{1}{2} \acute{e} \wedge C p J > \acute{a} = P \check{z} \text{, } \text{ Needed time from } 25 \text{ } \acute{C} \text{ to } T_p$	RR8'8'1æ Max 8 minutes

Notes 8Š\œö;

- (1) Reflow soldering should not be done more than twice. If more than 24 hours between the two solderings, LED will be damaged.
- (2) When soldering, do not put stress on the LEDs during heating.

### 3.1.1 Repairing

Repairing 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 in advance whether the characteristics of LEDs will or not be damaged by repairing.

LED5 [(cÖ0\_&vC¾—\*)]8•æ{E2Eó-â)}8•Pžæ{Eó-â(âk=/ý8âcz§ æ{•\&,'2+ÓC¾pÁ-éYüs+P0D-( &v( L 5ÁR&g% m,fµF• o

### 3.1.2 Cautions

- (1) The encapsulated material of the LEDs is silicone. Therefore the LEDs have a soft surface on the top of package. The pressure to the top surface will be impacted on the reliability of the LEDs. Precautions should be taken to avoid the strong pressure on the encapsulated part. So when use the picking up nozzle, the pressure on the silicone resin should be proper.
- (2) Components should not be mounted on warped (non coplanar) portion of PCB. After soldering, do not warp the circuit board.
- (3) Do not apply mechanical force or excess vibration during the cooling process to normal temperature after

## 4. Handling Precautions 'a1w(a<sub>k</sub>=\aH '2-à

### 4.1 Handling Precautions 'a1w(a<sub>k</sub>=\aH '2-à

(1) LED operating environment and sulfur element composition cannot be over 100PPM in the LED mating usage material. This is provided for informational purposes only and is not a warranty or endorsement. LED B"(r h 7/ú&x - & %Ó •m,RpOñ&¥p»+Ëz /ú.Ê0VfYlí'ç&v03™,•B 1 1 .•o0+Pý&g&jDŠ-óæ{&v(r'ã(f1w™ K )B o

(2) In order to prevent ex-ternal material from getting into the inside of LED, which may cause the malfunction of LED, the single content of Bromine element is required to be less than 900PPM, the single content of Chlorine element is required to be less than 900PPM, the total content of Bromine element and Chlorine element in the external materials of the application products is required to be less than 1500PPM. This is provided for informational purposes only and is not a warranty or endorsement. &'+"ÈYú8akrfY™ •s, - & %ÿÈ'Äž#lí - & % m,L ( æ{J>8...h 7/úJ>k=9 'Ýv v æ{/@&gm, \_f+Ëz 0Ž€'³[ ?-'5 1 1 .æ{/@&g[ ^+Ëz 0Ž€'³[ ?-'5 1 1 .æ{ \_f+Ëz &x[ ^+Ëz Fª0Ž€Eó-â?-'5 1 1 . •o0+Pý&g&jDŠ-óæ{&v(r'ã(f1w™ K )B o

(3) VOCs (Volatile organic compounds) emitted from materials used in the construction of fixtures can penetrate silicone encapsulants of LEDs and discolor when exposed to heat and photonic energy. The result can be a significant loss of light output from the fixture. Knowledge of the properties of the materials selected to be used in the construction of fixtures can help prevent these issues. Refond advises against the use of any chemicals or materials that have been found or are suspected to have an adverse affect on device performance or reliability. To verify compatibility, Refond recommends that all chemicals and materials be tested in the specific application and environment for which they are intended to be used. Attaching LEDs, do not use adhesives that outgas organic vapor. C¾k=9 'Ý&¥m,K!0 F•fY™ ( ^w•ó-L - & %ÿÈæ{5'ž kO'ak0+Õ=©/úcšm,Rõ'Ý &tæ{( ? f] - & % „,€æ{•s•ž#lí&šj~+Õ••æ{L¿-x'+R9 'ÝRpOñ•J8¿ÿ +Ý'ak0•o'H"-ÿ oi°&ª/ÿ? (ªk='ã(f? - & % 4<'Ým,F••Jlô•O03« F•Rc>rm,fY™ lôRpOñæ{&vvx•oHRpOñPýBº)Q— >J'+m,•nPý""FUKßRc>r oiï? fµ>Am,k=ž 1\$ (ªk=h 7 æ{i°&ªDŠ-ó? J>Rcm,fY™ 1\$RpOñ•s•dnq>,F•m,]5— o5^™\$'3& %ž)«æ{&v'³(ªk=•J'ak0RcR¼K!0 F•[^(d m,xè)U-k o

(4) Handle the component along the side surface by using forceps or appropriate tools; Do not directly touch or Handle the silicone lens surface, it may damage the internal circuitry. ž •B(ªk=•ÓE2m,B",('çRpOñ(é« 8ê0 æ{&v03 nllYk=J[lô?:\$Xj,,?©/"•8(d••« æ{> 03•J( L 5Á,;ÿÈkOš o

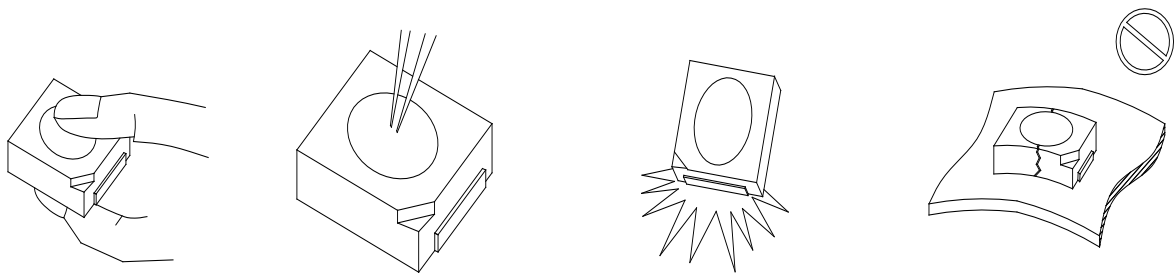


Fig 4-1 Cautions

(5) In designing a circuit, the current through each LED can not exceed the absolute maximum rating specified for each LED. In the mean while, resistors for protection should be applied, other wise slight voltage shift will cause big current change, burn out may happen. The driving circuit must be designed to allow forward voltage only when it is ON or OFF. If the reverse voltage is applied to LED, migration can be generated resulting in LED damage.

(6) Thermal Design is paramount importance because heat generation may result in the Characteristics decline, such as brightness decreased, Color change and so on. Please consider the heat generation of the LEDs when making the system design.

(7) Compared to standard encapsulants, silicone is generally softer, and the surface is more likely to attract dust, requiring special care during processing. In cases where a minimal level of dirt and dust particles cannot be guaranteed, a suitable cleaning solution must be applied to the surface after the soldering of components. Refond suggests using isopropyl alcohol for cleaning. In case other solvents are used, it must be assured that these solvents do not dissolve the package or resin. Ultrasonic cleaning is not recommended. Ultrasonic cleaning may cause damage to the LED.

Table 4-1 Storage \*°=,

Conditions s+x«		Temperature ^CP	Humidity _*CP	Time Pž,
Storage 儲存	Before Opening Aluminum Bag K.«-x	ö030 ë	ö075%	Within 1 Year From Date &gCf,;
	After Opening Aluminum Bag K.«0_	ö030 ë	ö060%	Recommended for use within 24 hours DŠ-ó24?-Pž,;(ak=
Baking cwc•		60 p5 ë	-	ö124hours 8Đ'524?-Pž

(8) If the moisture absorbent material silica gel has faded away or the LEDs have exceeded the storage time, baking treatment should be performed after unpacking and based on the following condition 60 5 for above 24 hours. 9uSSC•e•-klô.«'38ßOjæ{Iô•O'a1w&vux0V'Ä&sRcOj\*°=, Rđ'Ýæ{ª=K.«0\_•s•dcwc•æ{cwc•Rđ'Ýö; p ëæ{8Đ'5 ?-Pž o

If the package is flatulence or damaged, please notify the sales staff to assist. 9uSS.«'3€Æ[¹Iô•OpvL æ{—<ž oušH 2 'f0x/8. 8...i o

(9) Similar to most Solid state devices; LEDs are sensitive to Electro-Static Discharge (ESD) and Electrical Over Stress (EOS). \*ø,&'-m, /1? (dkO=©4<'Ý&gTKæ{ - &?%ýkO•B](- tl« C"OuH-æ{ª='3\* 9i"ÈJá o

(10) Other points for attention, please refer to our relevant information., &> \mH '2-à—</id'i°&ªnq,"™4Oñ o



www.refond.com

Declare kMPÈ

This specification is written both in English and in Chinese and the latter is formal.

'a1w“ TT&ü'Ä&¥...%OÒP0D-8ü,W0Rc,~tr'Ä&¥OÒfR¥&1,¥