



# SPECIFICATION

REFOND P/N

RF-OMRI32TS-CE-J

D<sup>6</sup>

Mass Product





# Contents

1. Description	3
1.1 General Description	3
1.2 Features	3
1.3 Application	3
1.4 Package Dimension	4
1.5 Product Parameters	5
1.6 Bin Range Of Forward Voltage and Luminous Intensity and Dominant wavelength (IF=150mA)	
BIN (IF=150mA)	6
1.7 Typical Optical Characteristics Curves	7
2. Packaging	11
2.1 Packaging Specification	11
2.1.1 Carrier Tape Dimension	11
2.1.2 Reel Dimension	11
2.1.3 Label Form Specification	12
2.2 Moisture Resistant Packing	12
2.3 Cardboard Box	13
2.4 Reliability Test Items And Conditions	13
2.5 Criteria For Judging Damage	14
3. SMT Reflow Soldering Instructions SMT	15
3.1 SMT Reflow Soldering Instructions SMT	15
4. Handling Precautions	17
4.1 Handling Precautions	17



# 1. Description

## 1.1 General Description



The Red source color devices are made with AlGaInP on Substrate Light Emitting Diode  
Product Package:2.80mmX3.50mmX0.70mm

>76 3'9S;` B

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## 1.2 Features

PLCC2 Package.B>55\$

Extremely wide viewing angle.

Suitable for all SMT assembly and solder process. E? F

Available on tape and reel.

Moisture sensitivity level: Level 2. >VWV\$

Compliance with RoHS and REACH. Da: E D735:

Qualifications: The product qualification test plan is based on the guidelines of AEC-Q101  
Stress Test Qualification for Automotive Grade Discrete Semiconductors.

375ZC#" #

## 1.3 Application

Automotive Lighting Interior and Exted[ač



## 1.4 Package Dimension

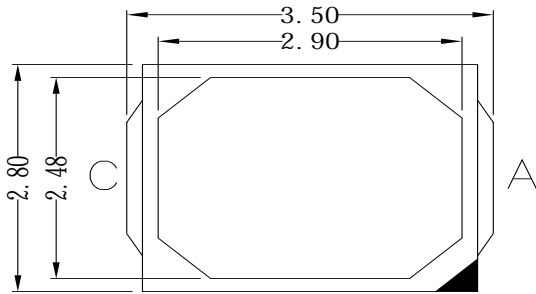


Fig.1-1 Top View

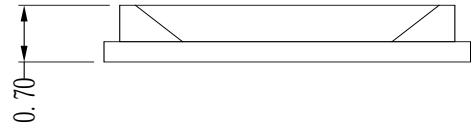


Fig.1-2 Side View

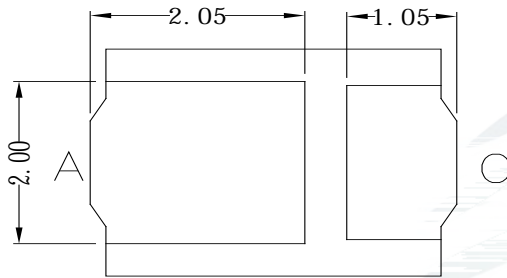


Fig.1-3 Bottom View

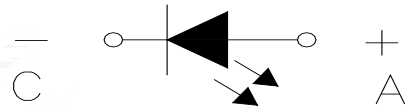


Fig.1-4 Polarity

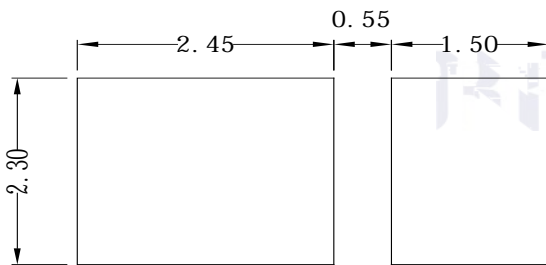


Fig.1-5 Soldering Patterns

### Notes

#ž All dimensions units are millimeters.

\$ž All dimensions tolerances are  $\pm 0.05\text{mm}$  unless otherwise noted.





## 1.5 Product Parameters

Table 1-1 Electrical / Optical Characteristics at Ts=25°C

Item	Symbol	Test Condition	Value			Unit
			Min.	Typ.	Max.	
Forward Voltage	$V_F$	$I_F=150mA$	1.8	---	2.5	V
Reverse Current	$I_R$	$V_R=5V$	---	---	10	$\mu A$
Luminous Flux		$I_F=150mA$	19.6	22	26.9	lm
Dominant wavelength	$\lambda_d$	$I_F=150mA$	617.5	620	625	nm
Viewing Angle		$I_F=150mA$	---	120	---	deg
Thermal Resistance.	$R_{THJ-S}$	$I_F=150mA$	---	---	55	/W

Table 1-2 Absolute Maximum Ratings at Ts=25°C

Parameter	Symbol	Rating	Units
Power Dissipation	$P_D$	450	mW
Forward Current	$I_F$	180	mA
Peak Forward Current	$I_{FP}$	240	mA
Reverse Voltage	$V_R$	5	V
Electrostatic Discharge (HBM)	$E_{SD}$	2000	V
Operating Temperature	$T_{OPR}$	-40 ~ +110	
Storage Temperature	$T_{STG}$	-40 ~ +110	
Junction Temperature	$T_J$	125	



Notes

1. 1/10 Duty cycle, 10ms pulse width. 10ms, 1/10.
2. The above forward voltage measurement allowance tolerance is  $\pm 0.1V$ .  $\pm 0.1V$ .
3. The above color coordinates measurement allowance tolerance is  $\pm 0.005$ .  $\pm 0.005$ .
4. The above luminous intensity measurement allowance tolerance  $\pm 10\%$ .  $\pm 10\%$ .
5. Care is to be taken that power dissipation does not exceed the absolute maximum rating of the product.
6. All measurements were made under the standardized environment of Refond.
7. 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  $>76$ .
8. ESD yield is over 90% at 2000V ESD (HBM). ESD protection during products handing is needed.  $>76$ .

**1.6 Bin Range Of Forward Voltage and Luminous Intensity and Dominant wavelength (IF=150mA) BIN (IF=**



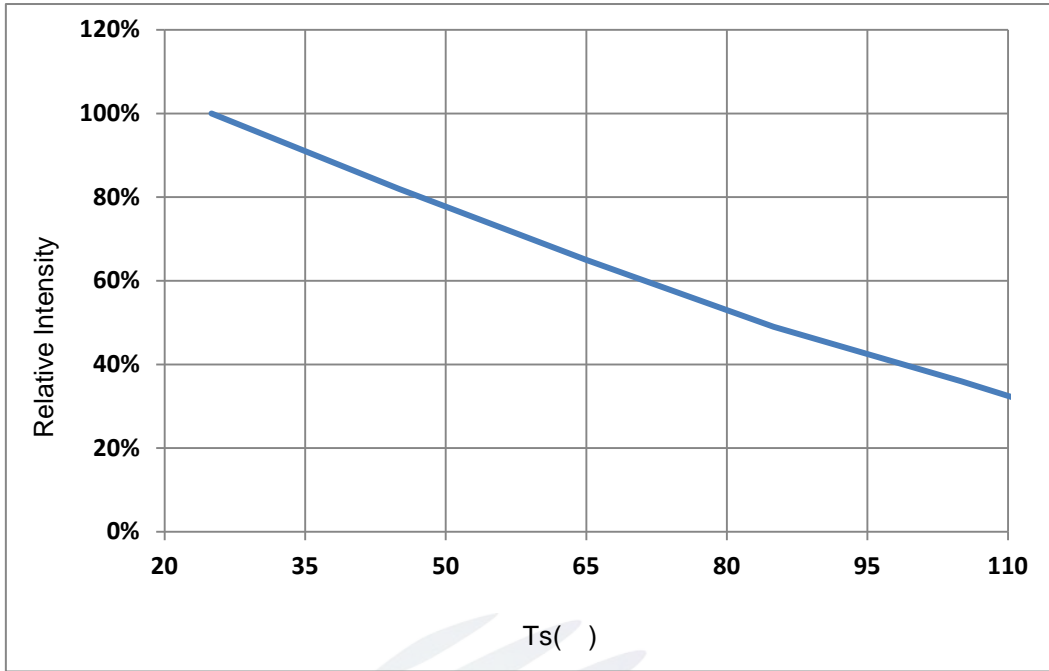


Fig. 1-8 Solder Temperature Vs Relative Intensity

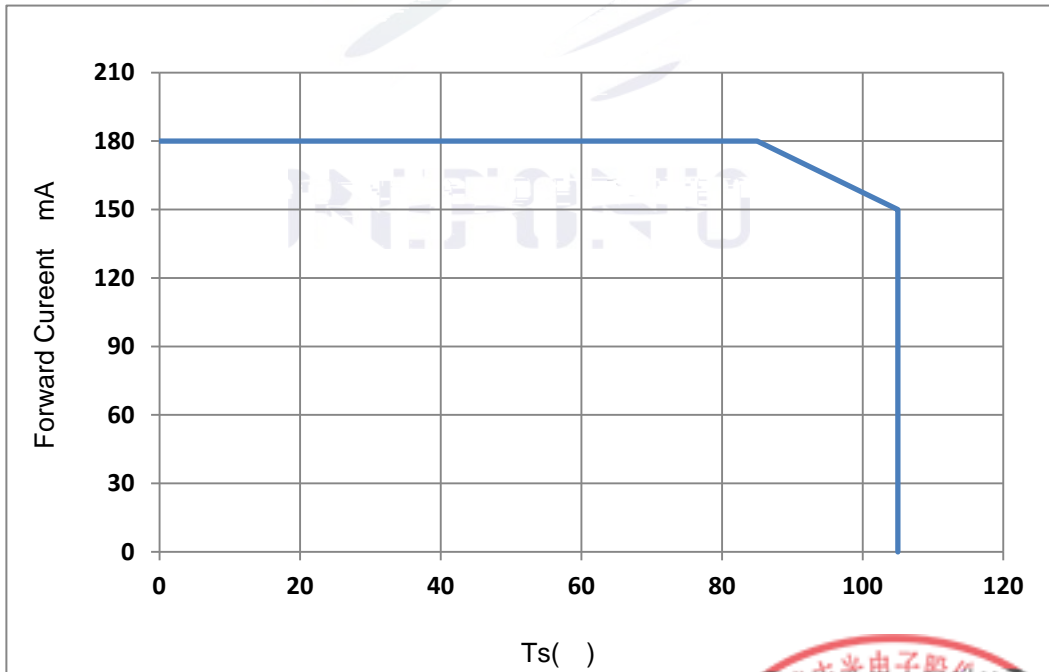


Fig. 1-9 Solder Temperature Vs Forward Current





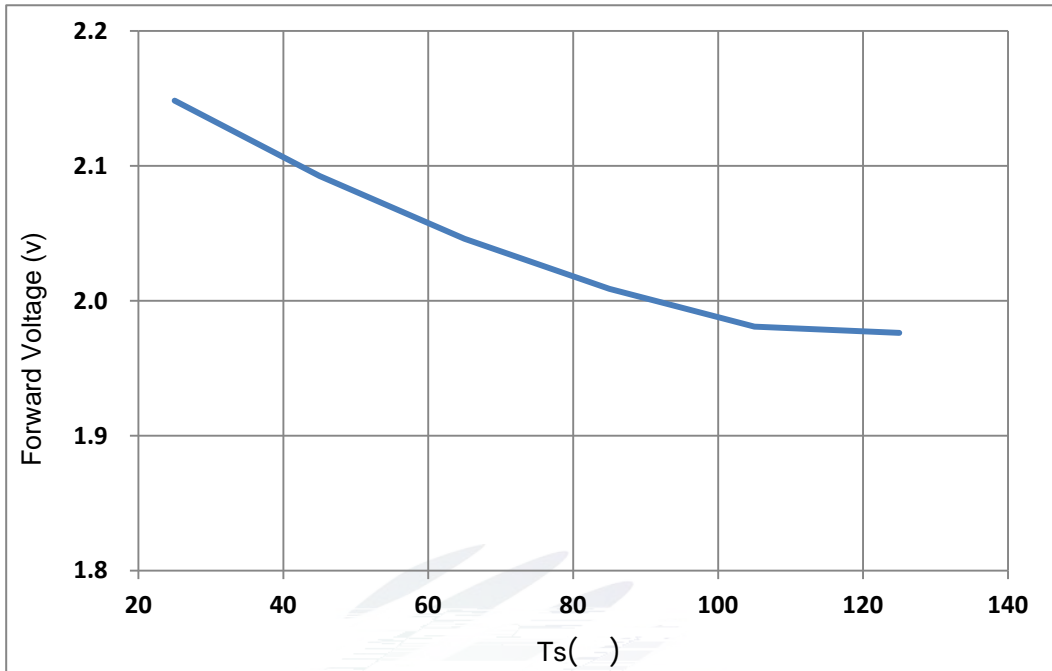


Fig. 1-10 Forward Voltage Vs Solder Temperature

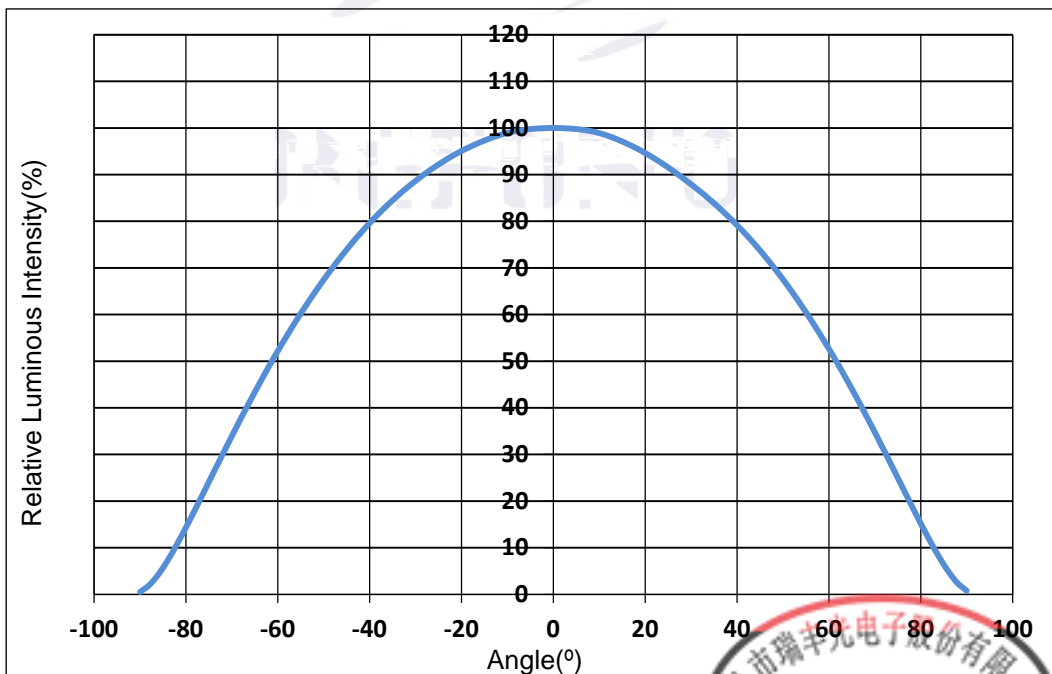


Fig. 1-11 Radiation diagram







## 2.1.3 Label Form Specification

### FST WLS Specification

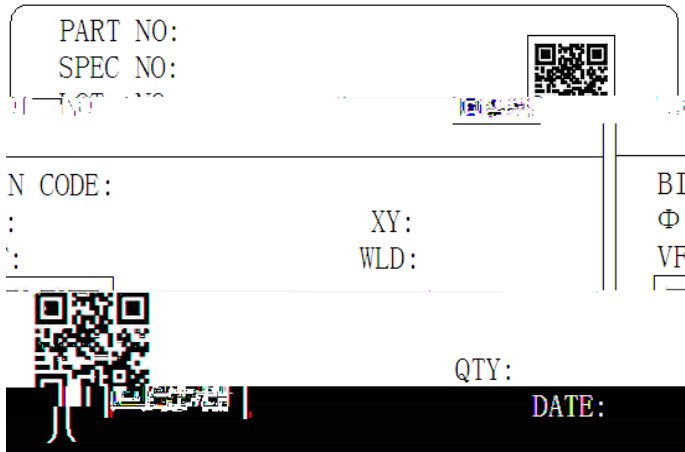


Fig. 2-3 Label

PART NO.	Part Number
SPEC NO.	Spec Number
LOT NO.	Lot Number
BIN CODE	Bin Code
	Luminous flux
XY	Chromaticity Bin
V <sub>F</sub>	Forward Voltage
WLD	Wavelength
QTY	Packing Quantity
DATE	Made Date

## 2.2 Moisture Resistant Packing

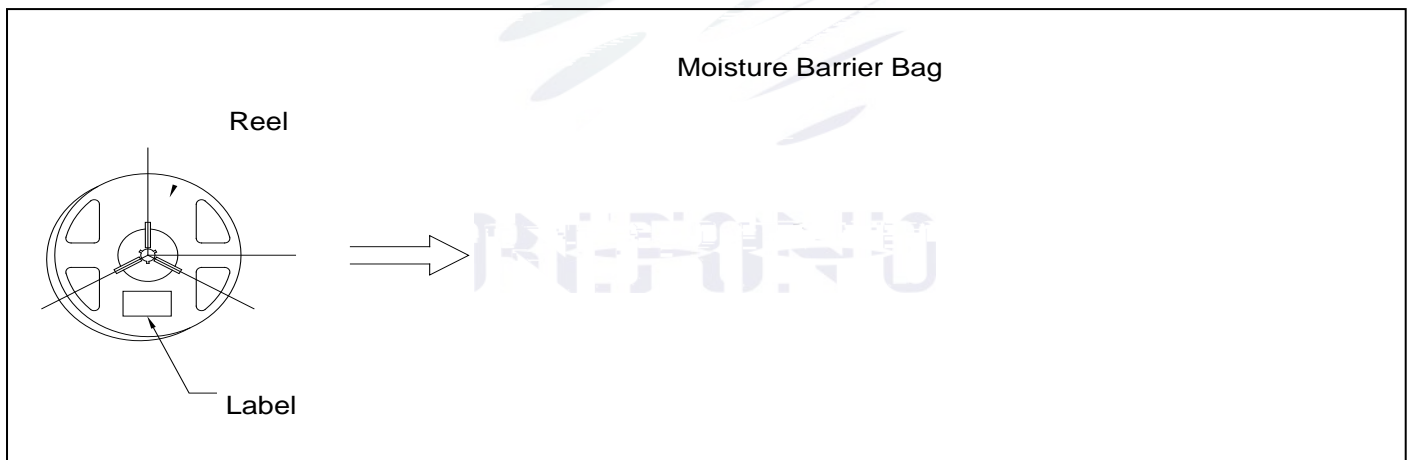


Fig.2-4 Moisture Resistant Packing





### 3. SMT Reflow Soldering Instructions SMT

#### 3.1 SMT Reflow Soldering Instructions SMT

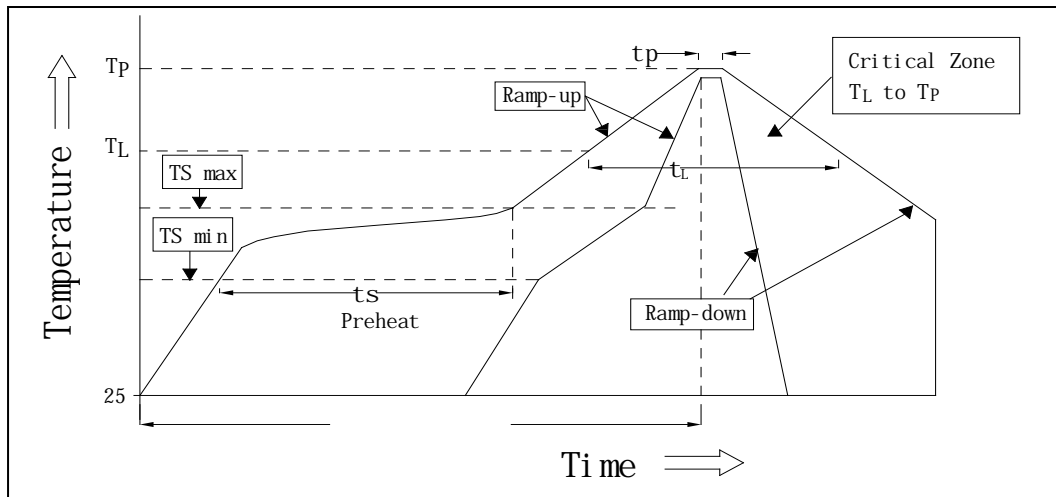
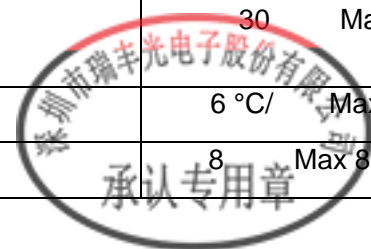


Fig.3-1 SMT Reflow Soldering Instructions SMT

Table 3-1 Reflow parameters

Average temperature rise speed	$T_{smax}$ $T_P$	3 °C/	Max 3 °C/ s
Preheating: minimum temperature	( $T_{smin}$ )	150 °C	
Preheating: Max temperature	( $T_{smax}$ )	200 °C	
Preheating: Time	$T_{smin}$ $T_{smax}$	60 - 120	60s-120s
Time limited to maintain high temperature: the temperature ( $T_L$ )		217 °C	
Time limited to maintain high temperature: The Time ( $t_L$ )		60	Max 60s
Peak /Classification of temperature:	/ ( $T_P$ )	260 °C	
Time limit classification of peak temperature time	$t_p$	10	Max 10s
Hold time within 5 , C with the actual peak temperature ( $T_P$ ) ( $T_P$ ) 5 °C		30	Max 30s
Cooling speed		6 °C/	Max 6 °C/ s
Needed time from 25 °C to $T_P$	25 °C	8	Max 8 minutes





## Notes

(1)Reflow soldering should not be done more than twice. If more than 24 hours between the two solderings, LED will be damaged. \$& >76

(2)When soldering, do not put stress on the LEDs during heating.

### 3.1.1 Soldering Iron

(1) When do soldering by hand, keep the temperature of iron below less 300







## 4. Handling Precautions

### 4.1 Handling Precautions

(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 >76 # " " BB? ž

(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.

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(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.

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(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.







Table 4-1 Storage

Conditions		Temperature	Humidity	Time
Storage	Before Opening Aluminum Bag	30	75%	Within 1 Year From Date
	After Opening Aluminum Bag	30	60%	Recommended for use within 24 hours 24
Baking		60±5	-	24hours 24

(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.

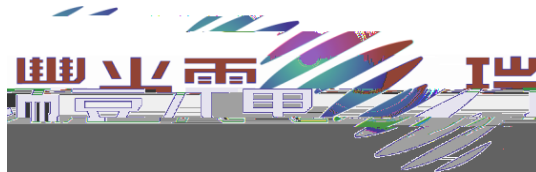
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Date	Reviser	Version	Verifier	Remarks
2017/06/26	5ZSa 6S[S`	E0	LZS` Y EZ[ [ ` Y	@7I
2021/04/25	: gS` Y @[S` ZgS	E1	LZg K[ [ ` Y	Template update
2022/08/10	LZag J[S`	E2	LZg K[ [ ` Y	Template update
2023/05/05	LZag J[S`	E3	LZg K[ [ ` Y	Template update





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Declare

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