

PU21S31

Product Specification

Updated on 2017/04/27

Preli

Approval Sheet

PU21S31 UVA Emitter
Product Specification

RoHS

Product	2016 Emitter
Part Number	95.U2016.ZVD100Z
Customer	
Issue Date	2017/4/27

■ Feature

- ✓ UVA LED Emitter
- ✓ Compact dimensions: 2.0 mm × 1.6 mm × 0.7 mm
- ✓ View angle: $\theta = 110^\circ$
- ✓ Environmental friendly ; RoHS compliance

■ Applications

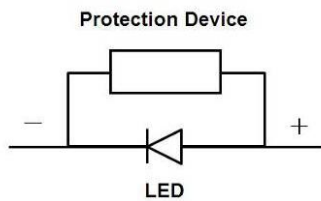
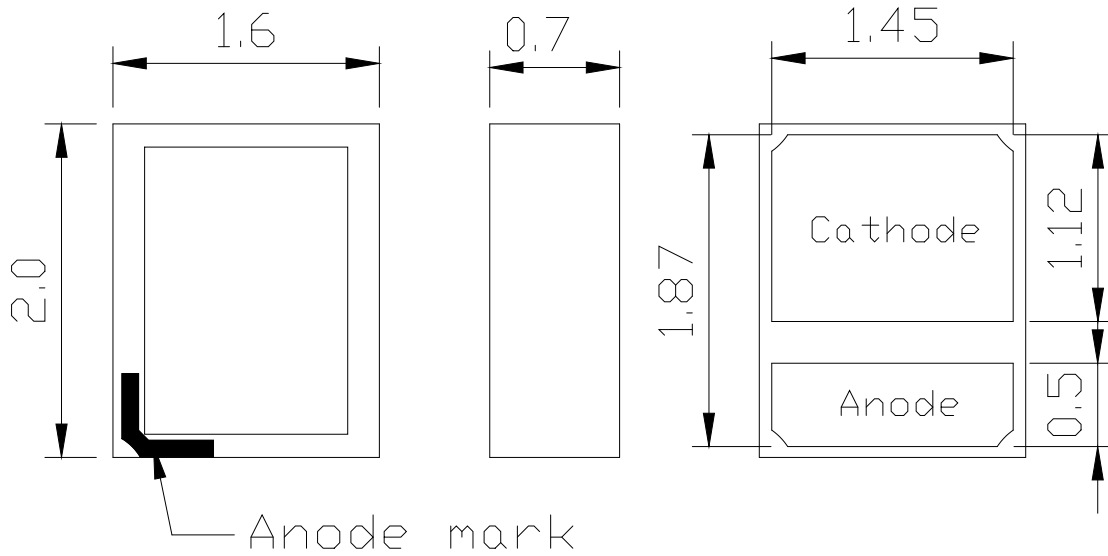
- ✓ UV curing
- ✓ Counterfeit banknote detection
- ✓ Photo catalytic purification
- ✓ Medical lights
- ✓ Indicators
- ✓ Clinical/ Telemedicine
- ✓

MAKER			CUSTOMER		
Prepared	Checked	Approved			
SP Lin	HW Huang	Sherry Chiu			

Outline Dimension

PU21S31 UVA Emitter
Product Specification

Outline Dimension



Unit: mm

Tolerance: ± 0.15 mm

Performance

PU21S31 UVA Emitter
 Product Specification

Optical Electrical Characteristics

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage ^{*(1)}	V_F	$I_F=20\text{mA}$	3.0	3.6	4.0	V
Wavelength ^{*(2)}	W_P	$I_F=20\text{mA}$	365	367	370	nm
View Angle	θ	$I_F=20\text{mA}$	--	110	--	deg
Radiant Power ^{*(4)}	P_O	$I_F=20\text{mA}$	13	16.5	25	mW

- (1).The Forward Voltage tolerance is $\pm 0.1\text{V}$
 (2).Peak Wavelength tolerance is $\pm 3\text{nm}$
 (3).Thermal resistance is calculated from junction to solder
 (4).The Radiant Power tolerance $\pm 10\%$

Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
DC Forward Current	I_F	40	mA
Surge Forward Current ^{*(1)}	I_{FS}	80	mA
ESD	V_{ESD}	8000	V
Power Dissipation	P_d	160	mW
Soldering Temperature ^{*(2)}	T_S	260	$^{\circ}\text{C}$
Junction Temperature	T_J	100	$^{\circ}\text{C}$
Storage Temperature	T_{Stg}	-40~+100	$^{\circ}\text{C}$
Operation Temperature	T_{Op}	-30~+85	$^{\circ}\text{C}$

- (1) Frequency Duty $<10\%$, $t_p=100\mu\text{s}$.
 (2) JEDEC STD-020 latest version compliant.
 (3) Proper current rating must be observed to maintain junction temperature below T_J max.

Binning

PU21S31 UVA Emitter
Product Specification

Wavelength Rank (Ta=25°C)

W _P Rank	Min.	Max.	Unit	Condition
U0365	365	370	nm	I _F =20mA

Radiant Power Rank (Ta=25°C)

P _O Rank	Min.	Max.	Unit	Condition
01	13	15	mW	I _F =20mA
02	15	20	mW	I _F =20mA
03	20	25	mW	I _F =20mA

Forward Voltage Rank (Ta=25°C)

V _F Rank	Min.	Max.	Unit	Condition
A	3.0	3.2	V	I _F =20mA
B	3.2	3.4	V	I _F =20mA
C	3.4	3.6	V	I _F =20mA
D	3.6	3.8	V	I _F =20mA
E	3.8	4.0	V	I _F =20mA

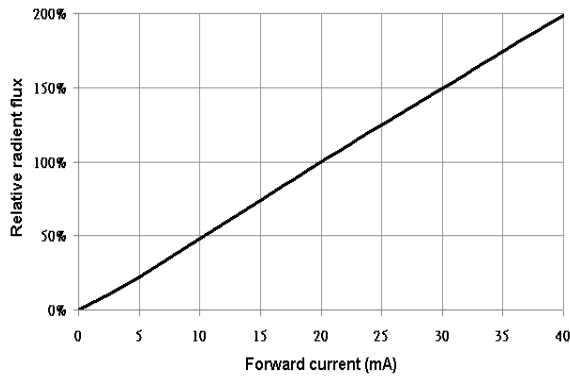
Bin code definition (for example)

W _P Rank	P _O Rank	V _F Rank
U0365	02	C

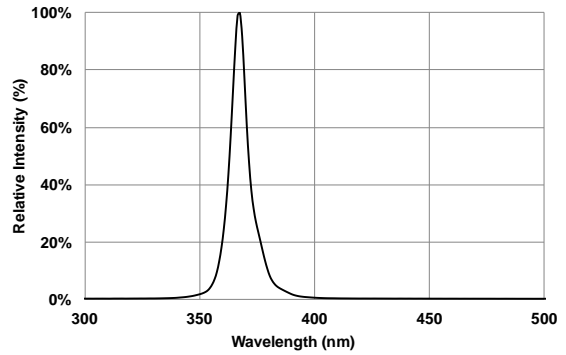
Characteristics

PU21S31 UVA Emitter
Product Specification

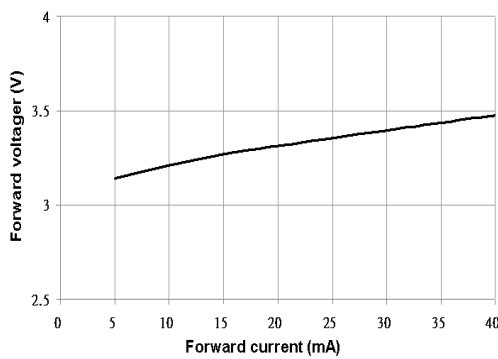
■ **Relative Radiant Flux vs. Forward Current**



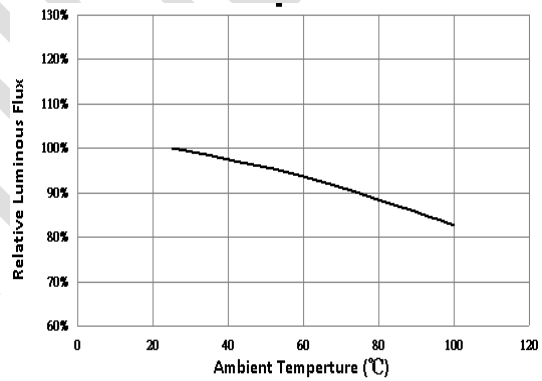
■ **Relative Spectral Distribution vs. Wavelength at 25°C, I_F=20mA**



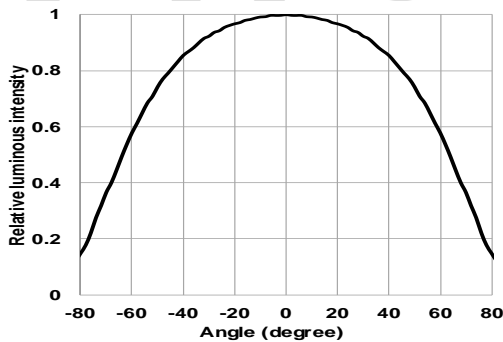
■ **Forward Current vs. Forward Voltage at 25°C**



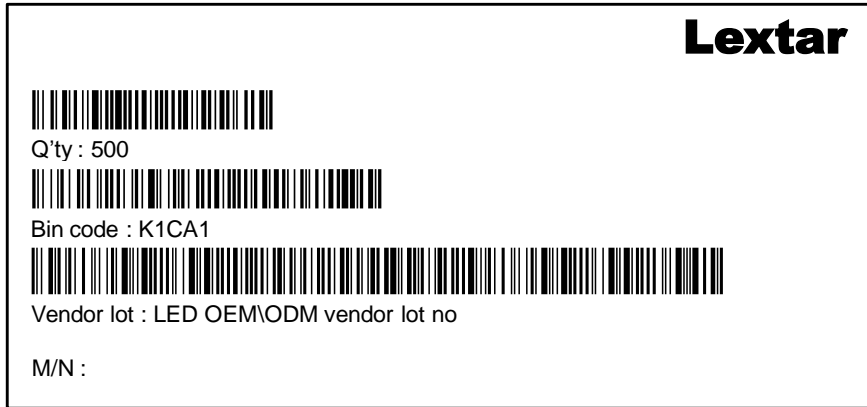
■ **Relative Radiant Flux vs. Ambient Temperature**



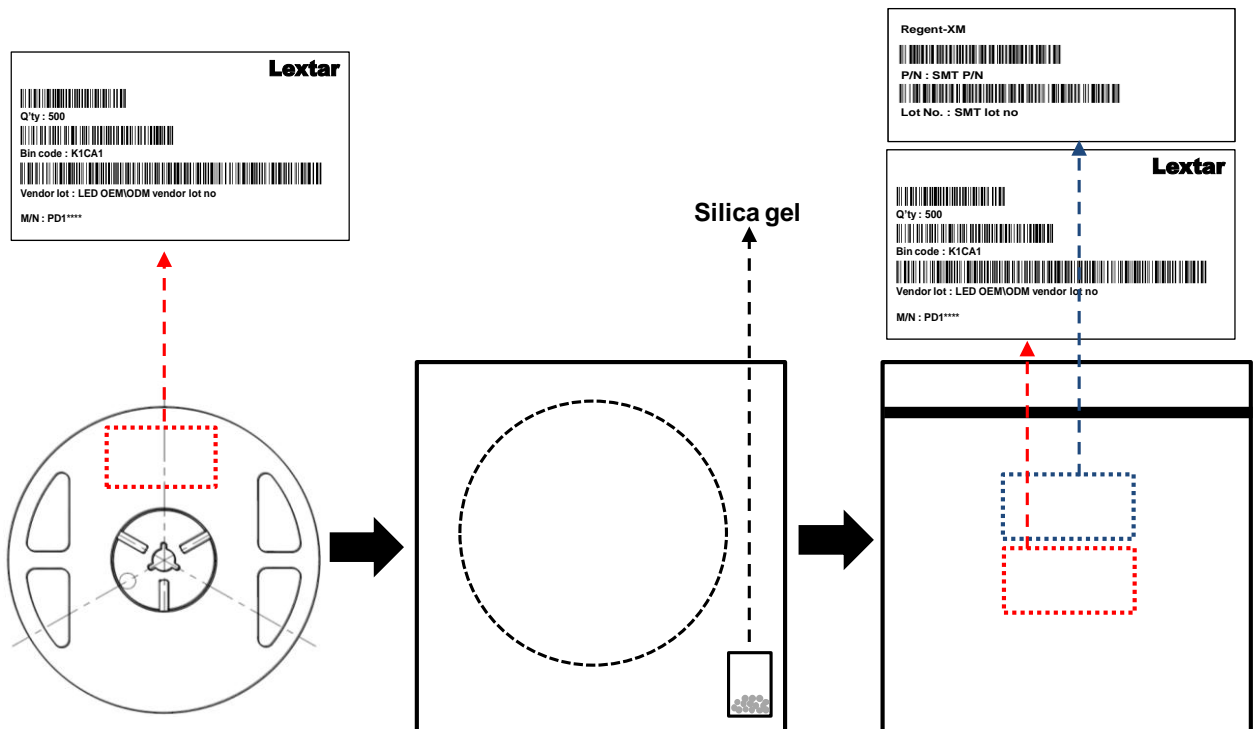
■ **Directivity**



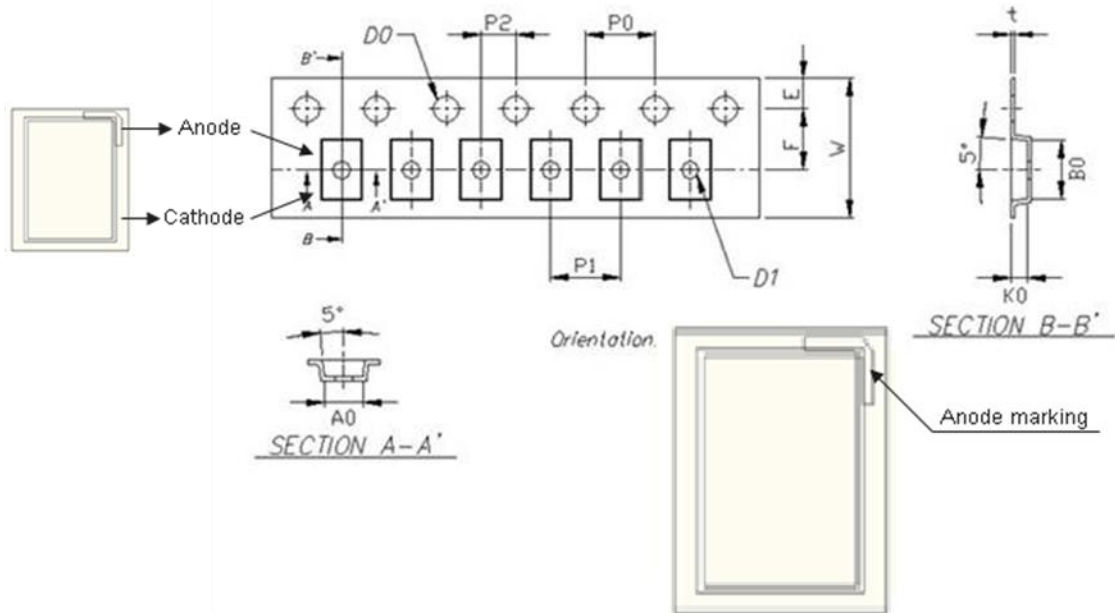
Label



Packing Process



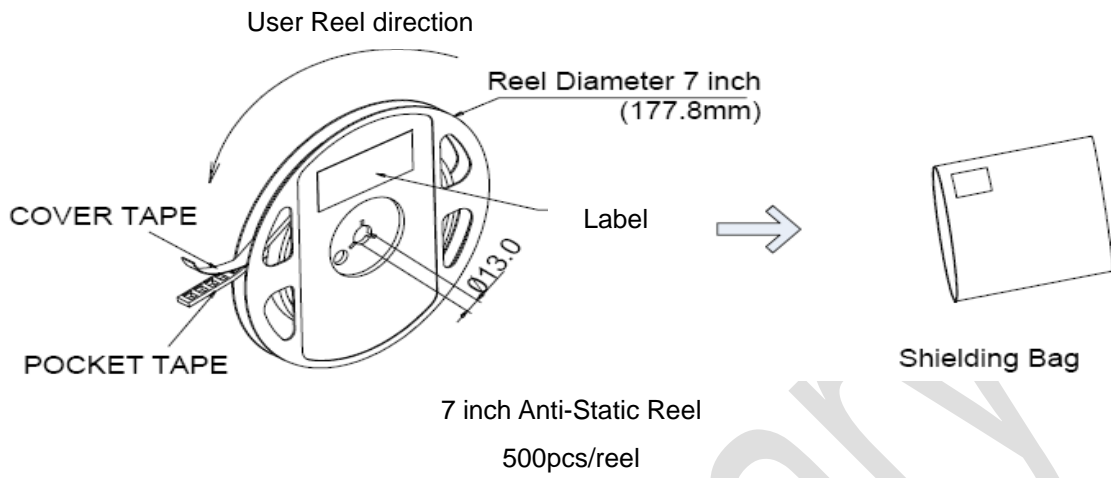
■ Packing Carrier



Unit: mm

Item	Spec	Tol.(+/-)	Item	Spec	Tol.(+/-)
W	8.00	±0.25	P2	2.00	±0.10
E	1.75	±0.15	P0 × 10	40.00	±0.15
F	3.50	±0.10	t	0.23	±0.10
D0	1.50	±0.15	A0	1.90	±0.15
D1	1.50	±0.30	B0	2.30	±0.15
P0 · P1	4.00	±0.15	K0	0.85	±0.15

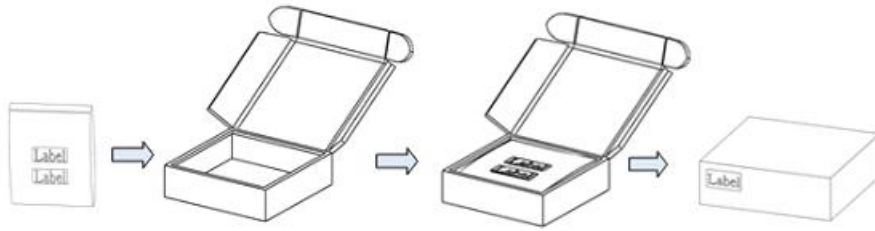
■ Reel Dimensions



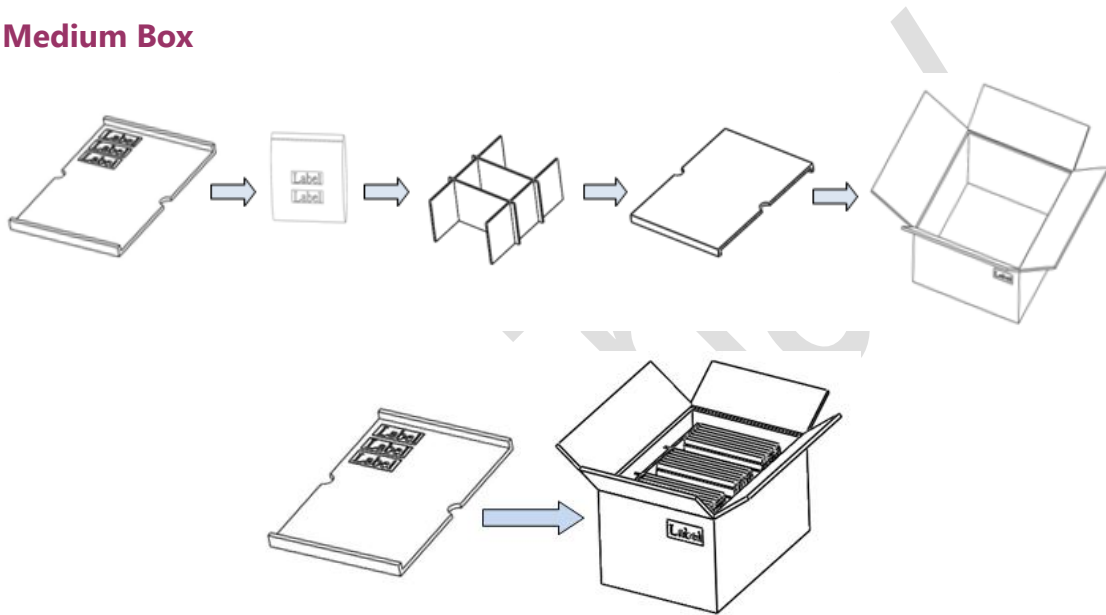
Packing

PU21S31 UVA Emitter
Product Specification

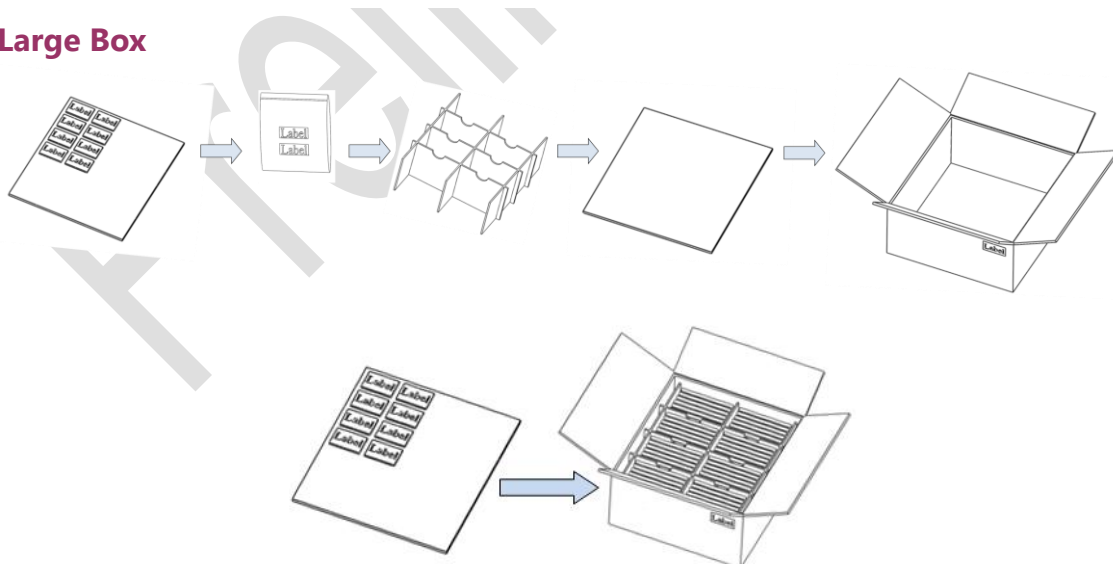
■ **Small Box**



■ **Medium Box**



■ **Large Box**



■ **Reliability**

Test	Reference Standard	Test Conditions	Test Duration	Units Failed/Tested
Resistance to Soldering Heat (Reflowing soldering)	JEITA ED-4701 300 301	$T_{sld}=260^{\circ}\text{C}$, 10sec, 2 Reflows, Precondition: 30°C , 70%RH, 168hr		0/22
Temperature Cycle	JEITA ED-4701 100 105	-40°C (30min)~ 25°C (5min)~ 100°C (30min)~ 25°C (5min)	100 cycles	0/22
High Temperature Storage	JEITA ED-4701 200 201	$T_a=100^{\circ}\text{C}$	1000 hours	0/22
Low Temperature Storage	JEITA ED-4701 200 202	$T_a=-40^{\circ}\text{C}$	1000 hours	0/22
Room Temperature Operating Life		$T_a=25^{\circ}\text{C}$, $I_f=40\text{mA}$	1000 hours	0/22
High Temperature Operating Life		$T_a=85^{\circ}\text{C}$, $I_f=40\text{mA}$	1000 hours	0/22
Low Temperature Operating Life		$T_a=-40^{\circ}\text{C}$, $I_f=40\text{mA}$	1000 hours	0/22

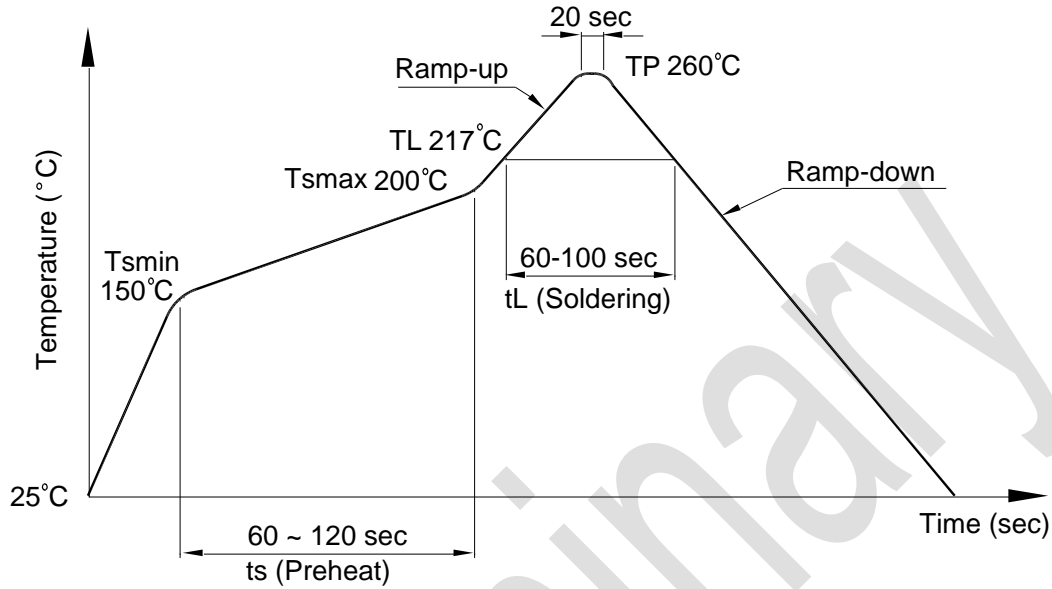
■ **Failure Criteria**

Items	Conditions	Failure Criteria
Forward Voltage (V_f)	$I_f=20\text{mA}$	$>\text{Initial value}\times 1.1$
Radiant Flux (Φ_E)	$I_f=20\text{mA}$	$<\text{Initial value}\times 0.7$

Application Notes

PU21S31 UVA Emitter
 Product Specification

■ **Recommended Reflow Soldering Profile (JEDEC-STD-020 latest version compliant)**



Profile Items	Conditions
Preheat	
-Temperature Min.(T_{Smin})	150°C
-Temperature Max.(T_{Smax})	200°C
-Time(Min. to Max.)(t_S)	90±30 sec
Soldering Zone	
-Temperature(T_L)	217°C
-Time	60~100 sec
Peak Temperature(T_P)	260°C
Ramp-up rate	3°C / sec max.
Ramp-down rate	3~6°C / sec

Note:

1. One time soldering is recommended; do not exceed 3 times reflow process.
2. The recommended peak temperature is 245°C. The maximum soldering temperature should be controlled under 260°C.