

UPEC UE-PT440 Series (120°)

Data Sheet

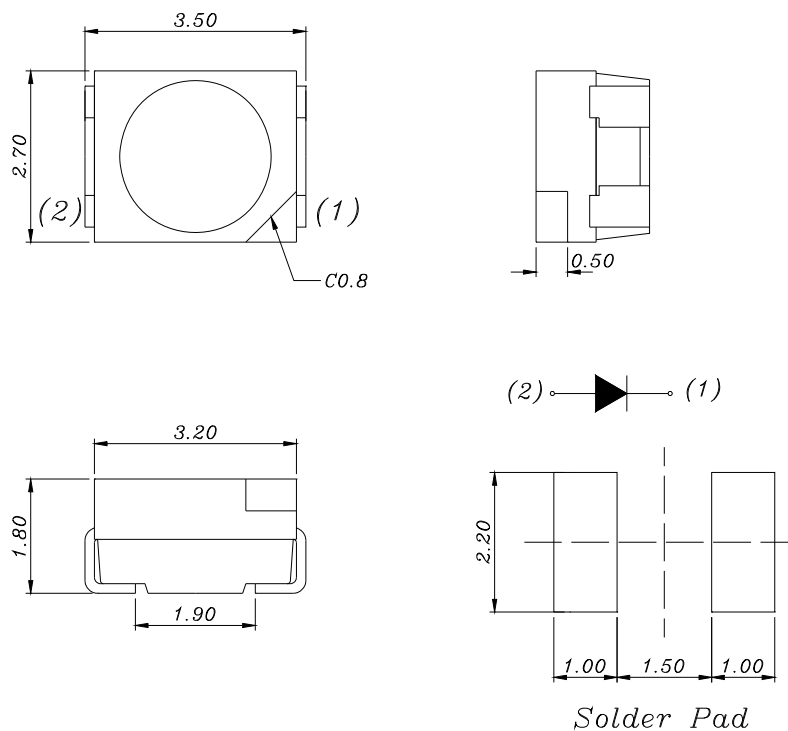
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Features

- PLCC-2 package
- LYellowtian Emitter (120°)
- IR reflow soldering
- Available on tape and reel (8mm Tape)
- RoHS compliance

Package Dimensions



Notes:

1. Drawings not to scale.
2. All dimensions are in millimeters.
3. Tolerance is ± 0.1 mm unless otherwise noted.
4. Protruded resin under flange is 1.0 mm max.
5. Lead spacing is measured where the leads emerge from the package.
6. This data sheet only valid for six months.
7. Precautions for ESD: STATIC SHIELD Electricity and surge damages the LED. It is recommended to use a wrist band or anti-electrostatic glove when handling the LED. All devices, equipment and machinery must be properly grounded.
8. Specifications are subject to change without notice.

Absolute Maximum Ratings at $T_A = 25^\circ\text{C}$

Parameter	Symbol	Max	Unit
Power Dissipation	P_d	120	mW
Pulse Forward Current	I_{PF}	100	mA
Forward Current	I_F	30	mA
Reverse Voltage	V_R	5	V
Operating Temperature Range	T_{opr}	- 40 to +85	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	- 40 to +100	$^\circ\text{C}$
Junction Temperature	T_j	125	$^\circ\text{C}$
View angle	$2\theta_{1/2}$	120	Deg ($^\circ$)

Intensity Characteristics at 20mA , Junction Temperature, $T_j = 25^\circ\text{C}$

Color	Model	Min. (mcd)	Typ. (mcd)
White	UE-PT440NW0-10T	1000	1600
Warm White	UE-PT440WW0-10T	1000	1400
Blue	UE-PT440NB0-10T	210	270
Pure Green	UE-PT440PG0-10T	460	700
Yellow	UE-PT440NY0-10T	210	270
Red	UE-PT440NR0-10T	210	270

Notes:

- I_V is measured with an optical detector and filter combination that approximates the CIE eye-response curve.
- I_V list above should have tolerance of $\pm 15\%$.

Optical Characteristics at 20mA , Junction Temperature, $T_j = 25^{\circ}\text{C}$

Color	CCT / λ_D			$\lambda_{1/2}$ Typical Half-width (nm)	$\Delta\lambda_D / \Delta T_A$ Temperature coefficient of Dominant wavelength (nm/°C)
	Min.	Typ.	Max.		
White	4500 K	6000 K	30000 K	--	--
Warm White	2800 K	3200 K	3800 K	--	--
Blue	460 nm	465 nm	470 nm	25	0.04
Pure Green	515 nm	520 nm	535 nm	35	0.04
Yellow	585 nm	590 nm	600 nm	20	0.05
Red	615 nm	625 nm	635 nm	20	0.05

Electrical Characteristics at 20mA , Junction Temperature, $T_j = 25^{\circ}\text{C}$

Color	Forward Voltage		
	Min. (V)	Typ. (V)	Max. (V)
White	2.8	3.2	3.8
Warm White	2.8	3.2	3.8
Blue	2.8	3.2	3.8
Pure Green	2.8	3.2	3.8
Yellow	1.8	2.0	2.4
Red	1.8	2.0	2.4

Notes:

Voltage maintains a tolerance of $\pm 0.1\text{V}$ on forward voltage measurements.

Luminous Intensity Bins

BIN CODE	Intensity Min.	Intensity Max.	BIN CODE	Intensity Min.	Intensity Max.
LA	0	4	LL	210	310
LB	4	6	LM	310	460
LC	6	9	LN	460	690
LD	9	13	LO	690	1000
LE	13	19	LP	1000	1500
LF	19	28	LQ	1500	2200
LG	28	42	LR	2200	3300
LH	42	63	LS	3300	4900
LI	63	94	LT	4900	7300
LJ	94	140	LU	7300	11000
LK	140	210	LV	11000	16500

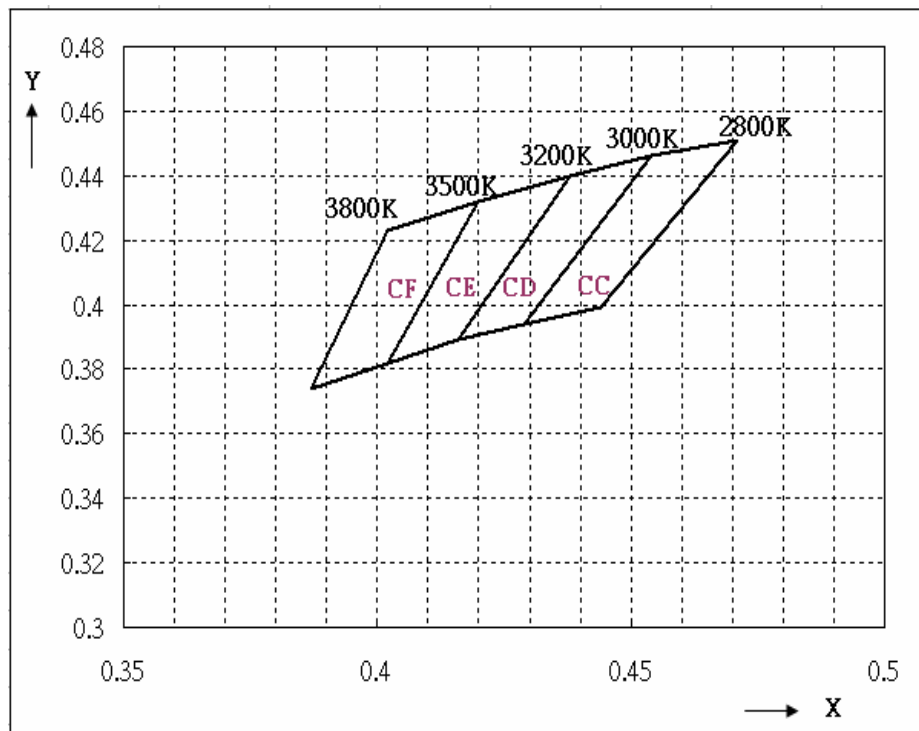
Color	BIN CODE
White	LP/LQ
Warm White	LP/LQ
Blue	LL/LM
Pure Green	LO/LP
Yellow	LL/LM
Red	LL/LM

Forward Voltage Bins

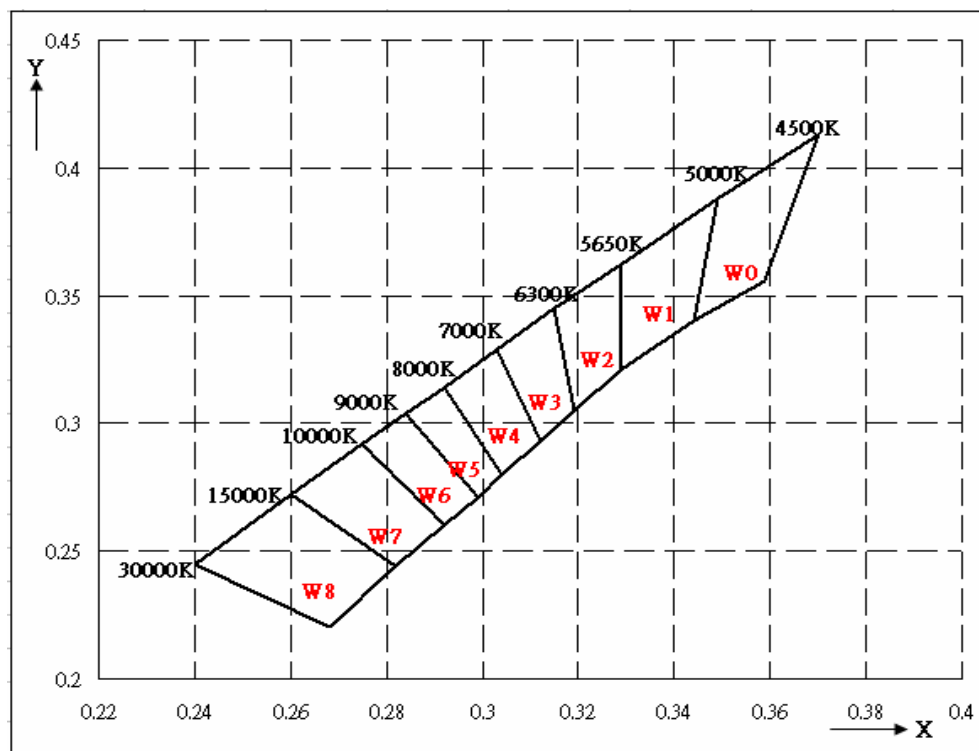
BIN CODE	Voltage Min.	Voltage Max.	BIN CODE	Voltage Min.	Voltage Max.
DA	1.6	1.8	DH	3	3.2
DB	1.8	2	DI	3.2	3.4
DC	2	2.2	DJ	3.4	3.6
DD	2.2	2.4	DK	3.6	3.8
DE	2.4	2.6	DL	3.8	4
DF	2.6	2.8	DM	4	4.2
DG	2.8	3	--	--	--

Color Temperature Bin code

Warm White



Normal White



Warm White Bin Coordinates

BIN CODE	CIE 1931		Typ. CCT	BIN CODE	CIE 1931		Typ. CCT	BIN CODE	CIE 1931		Typ. CCT
	x	y			x	y			x	y	
CC	0.454	0.446	2900	CD	0.438	0.44	3100	CE	0.42	0.432	3300
	0.429	0.394			0.416	0.389			0.402	0.382	
	0.444	0.399			0.429	0.394			0.416	0.389	
	0.471	0.451			0.454	0.446			0.438	0.44	
CF	0.42	0.432	3600								
	0.402	0.382									
	0.387	0.374									
	0.402	0.423									

Normal White Bin Coordinates

BIN CODE	CIE 1931		Typ. CCT	BIN CODE	CIE 1931		Typ. CCT	BIN CODE	CIE 1931		Typ. CCT
	x	y			x	y			x	y	
W0	0.344	0.34	4750	W1	0.329	0.321	5300	W2	0.319	0.305	5900
	0.349	0.388			0.329	0.362			0.315	0.345	
	0.37	0.413			0.349	0.388			0.329	0.362	
	0.359	0.356			0.344	0.34			0.329	0.321	
W3	0.312	0.293	6600	W4	0.304	0.28	7500	W5	0.299	0.271	8500
	0.303	0.329			0.292	0.314			0.284	0.304	
	0.315	0.345			0.303	0.329			0.292	0.314	
	0.319	0.305			0.312	0.293			0.304	0.28	
W6	0.292	0.26	9500	W7	0.282	0.244	12500	W8	0.268	0.22	20000
	0.275	0.292			0.26	0.272			0.24	0.245	
	0.284	0.304			0.275	0.292			0.26	0.272	
	0.299	0.271			0.292	0.26			0.282	0.244	

Color Bin Coordinates

BIN CODE	NB		PG		NY		NR	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
A1	460.0	462.5	515.0	517.5	585.0	587.5	615.0	617.5
B1	462.5	465.0	517.5	520.0	587.5	590.0	617.5	620.0
C1	465.0	467.5	520.0	522.5	590.0	592.5	620.0	622.5
D1	467.5	470.0	522.5	525.0	592.5	595.0	622.5	625.0
E1			525.0	527.5			625.0	627.5
F1			527.5	530.0			627.5	630.0
G1			530.0	532.5			632.5	635.0
H1			532.5	535.0				

Notes

1. Dominant wavelength should have tolerance of ± 1 nm.
2. $\theta_{1/2}$ is the off-axis angle at which the luminous intensity is half the axial luminous intensity.
3. The dominant wavelength (λ_D) is derived from the CIE chromaticity diagram the color of the device .Tolerance of measurement of the Color Temperature is $\pm 5\%$.

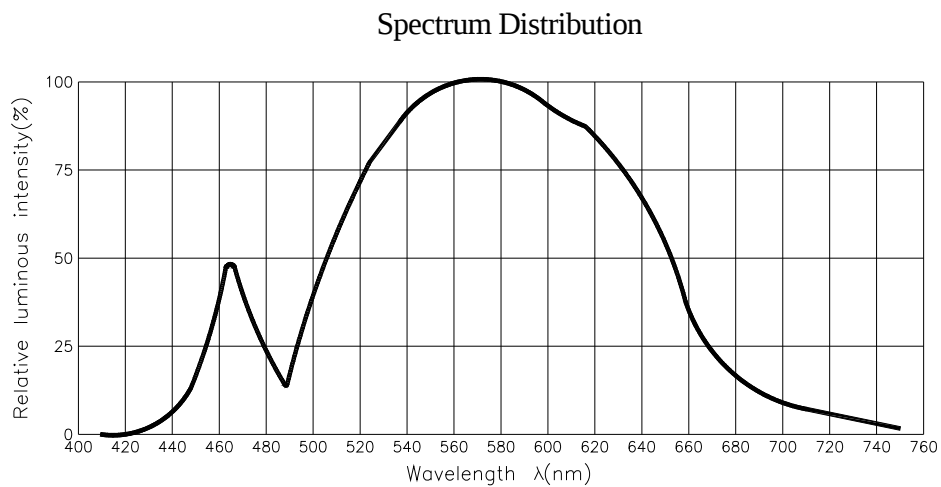
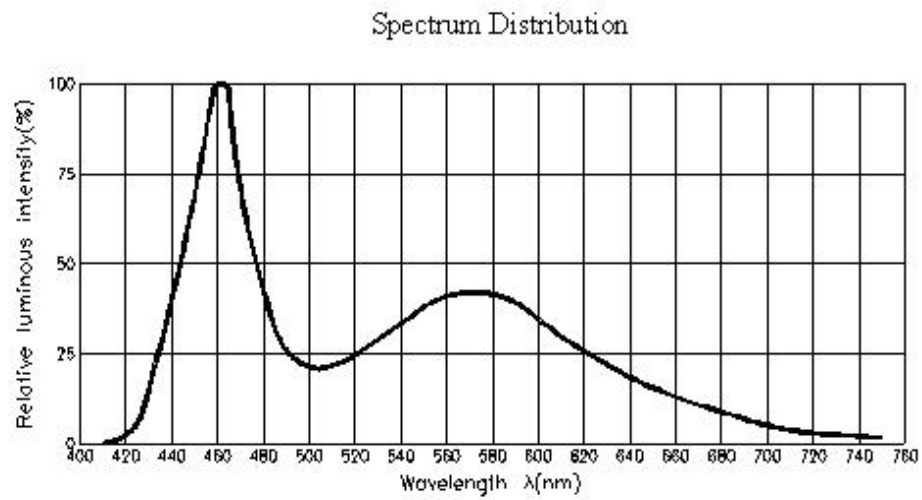
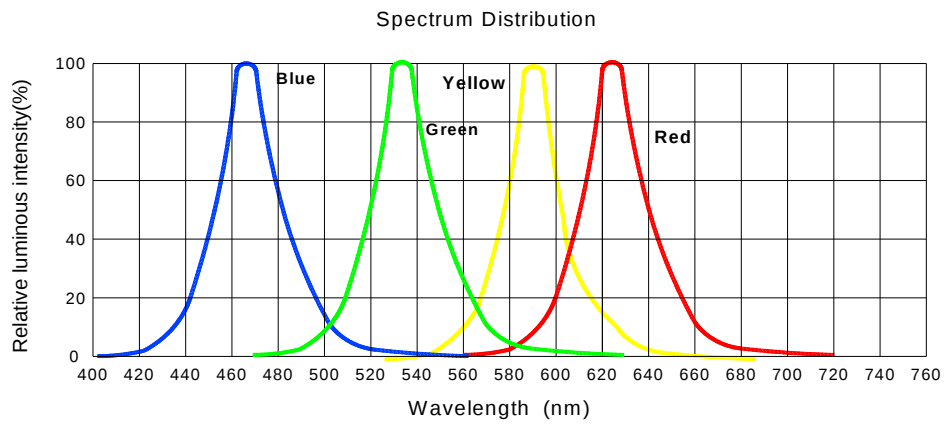
Reliability Test Items and Conditions

No.	Item	Test Conditions				Test time	Ac/Re
1	Solder Heat	260±5 °C				5 sec	0/1
2	Temperature Cycle	-40 °C	25 °C	105 °C	25 °C	700 cycle	0/1
		30 min	5 min	30 min	5 min		
3	Thermal Shock	-40 °C		105 °C		700 cycle	0/1
		5 min		5 min			
4	High Temperature Storage	100 °C				1000 hrs	0/1
5	Low Temperature Storage	-40 °C				1000 hrs	0/1
6	DC Operating Life	I _F = 20 mA				1000 hrs	0/1
7	High Temperature / High Humidity	Ta 85°C · R.H 85%.				1000 hrs	0/1
Judgment Criteria		Forward Voltage V _F			V _F max Increase <1.2x		
		Reverse Current I _R			I _R max Increase <2x		
		Luminous Intensity			I _v Decay < 30%		

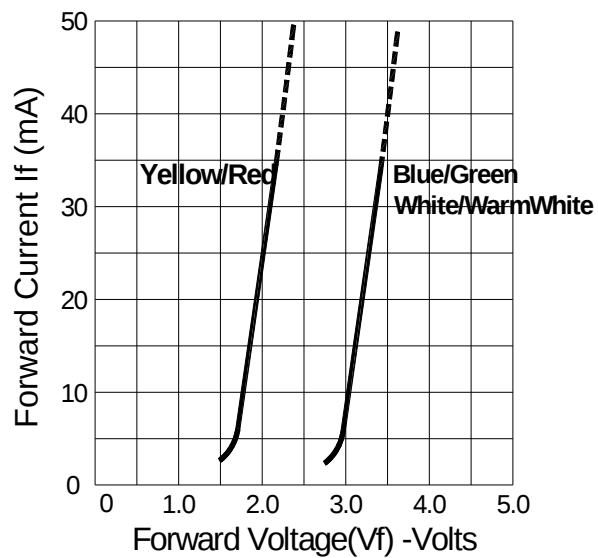
Notes:

1. Measurement were taken after the tested samples were returned to normal ambient conditions (generally after two hours).
2. Max sample quantity is 30 pcs.

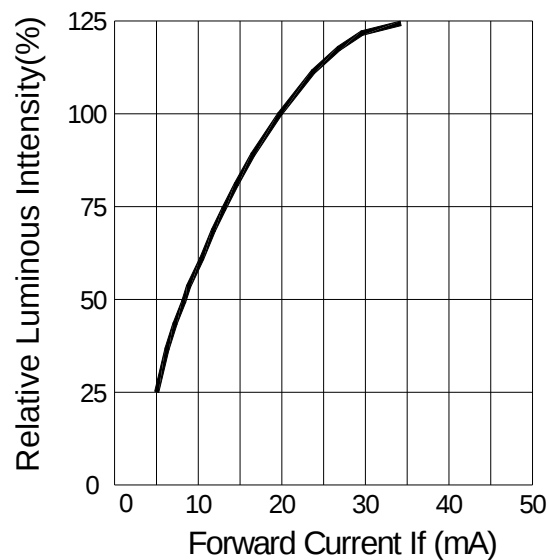
Typical Electrical / Optical Characteristics Curves



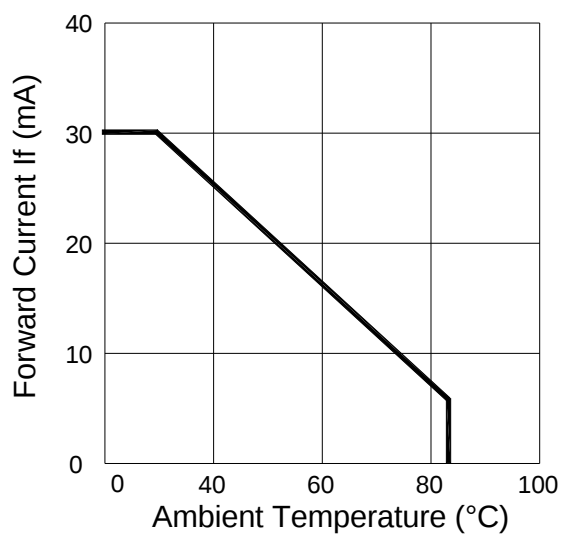
Forward Current VS. Forward Voltage



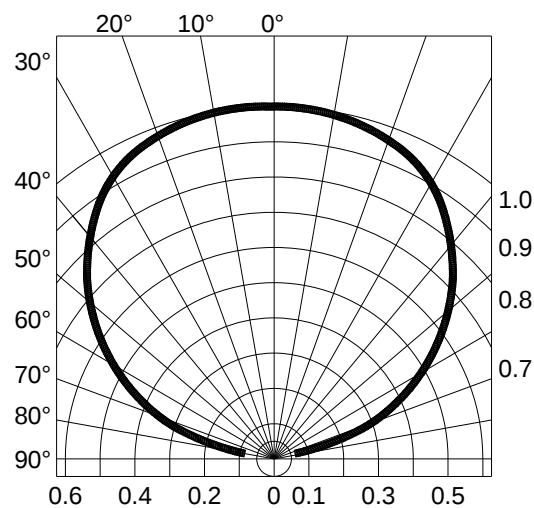
Luminous Intensity VS. Forward Current



Forward Current VS. Ambient Temperature

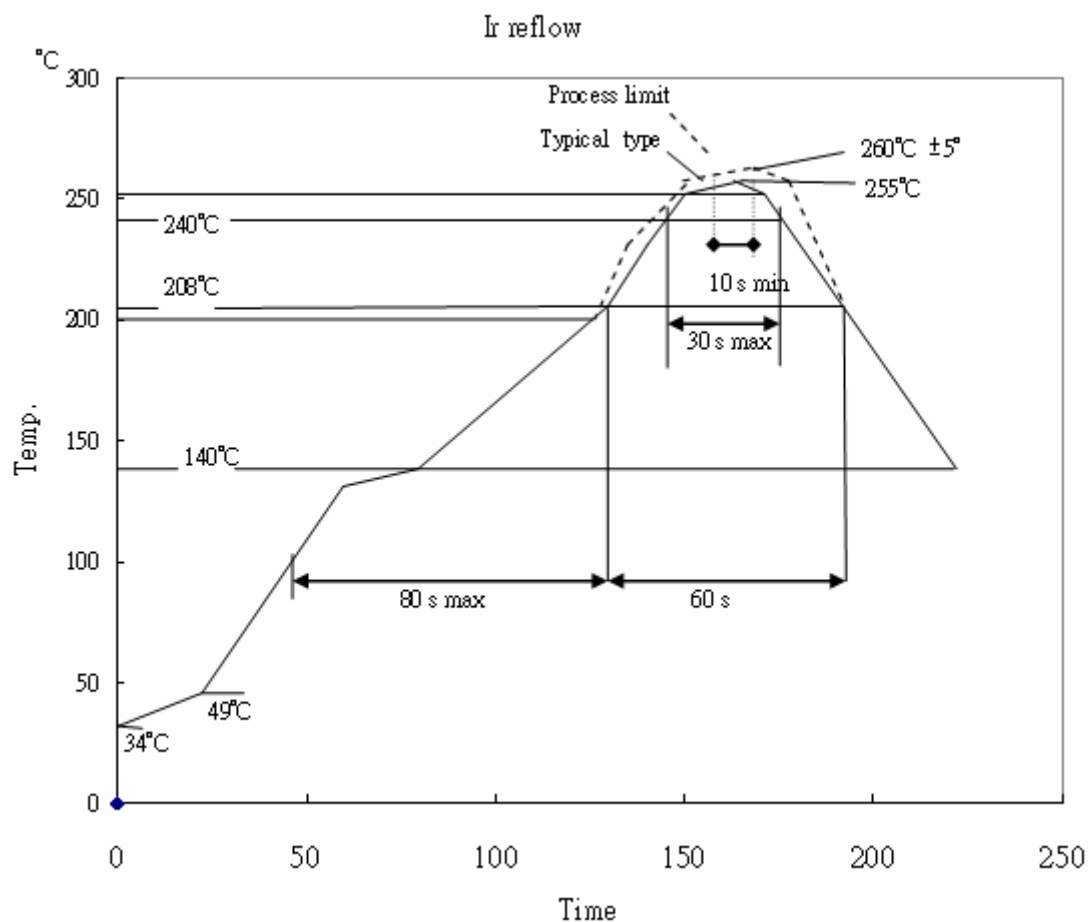


Radiation Diagram



Soldering Conditions

Reflow Soldering			Hand Soldering	
	Lead Solder	Lead – Free Solder	Soldering Temp.	20 °C Max.
Pre-Heat	120~150 °C	100~208 °C	Soldering Time.	3 sec. Max.
Pre-Heat time	120 sec. Max.	80 sec. Max.		
Peak Temperature	240 °C. Max.	255 °C. Max.		
Soldering Time	10 sec. Max.	10 sec. Max.		



Notes:

1. Occasionally there is a brightness decrease caused by the influence of heat or ambient atmosphere during air reflow. It is recommended that the User use the nitrogen reflow method.
2. Repairing should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used. It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.
3. Reflow soldering should not be done more than two times.
4. When soldering, do not put stress on LEDs during heating.
5. After soldering, do not warp the circuit board.

Precautions For Use

Overcurrent-proof

Customer must apply resistors for protection, otherwise slight voltage shift will cause a large current change which can result in a burn out.

Storage

1. The operation of temperature and R.H. are $-20\sim 80\text{ }^{\circ}\text{C}$ and 60% R.H. Max.
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 1.5 year from production date.

It is recommended to bake before soldering when the package is unsealed after 72 hrs.

The condition is : $60\pm 5\text{ }^{\circ}\text{C}$ for 15 hrs.