SPECIFICATIONS FOR T35 SERIES

RGB LED

Model: 3535

Part No: T35CW013A

Features:

* Top View White LEDs (3.7x 3.5 x 2.8 mm)
* Compact Package Size
* Wide viewing angle
* Pb-free Reflow Soldering Application
* The product itself will remain within RoHS compliant version

Applications

*Architecture Lighting
*Outdoor Full-Color Video Screen
* Decorative lighting
*Amusement

Part Numbering System

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X1 X2 X3 X4 X5 X6 X7 X8 X9 X10

Item Number Code	Description	Content
X1	Type code	1S:1010; 1A:1919; 20:2016; 3B:3014; 28:2835 34:3020; 3C:3030; 5C:5050; 7C:7070; 1D:100100; 19:Ceramic 3535; 15:Ceramic 5050; 11:Ceramic 1616. ;04:3804.
X2	CCT code	2700K:27; 3000K:30; 4000K:40; 5000K:50; 5700K:57; 6500K:65; RED:RE;RGB:CW
X3	Color Rendering	Ra70:7; Ra80:8; Ra90;9;Ra>60:6; 单色光: 0
X4	No. of serial chip	1-Z.
X5	No. of parallel chip	1-Z.
X6	Component code	A-Z.
X7	Color Code	M:ANSI; F:ERP; R:85℃ ANSI; T:105℃ ANSI; B:Backlighting; Q:Others;AT:Tospo
X8	Internal code1	\
X9	Internal code2	\
X10	Spare code	\

Absolute Maximum Ratings at Ta=25℃

Item	Symbol	Absolute Maximum Ratings			Unit
		R	G	B	
Forward Current	IF	30	30	30	mA
Peak Forward Current	IFP	150	100	100	mA
Power Dissipation	Pd	66	90	90	mW
Reverse Voltage	VR	5	5	5	V
Operating Temperature	Topr	-40～+85			℃
Storage Temperature	Tstg	-40～+100			℃
Junction Temperature	Tj	115	125	125	℃
Soldering Temperature	Tsld	260℃ for 10sec			
Electrostatic Discharge	ESD	1000V			

* I_{FP} condition with Pulse: Width≤100μs, Duty cycle≤1/10.

* LED's properties might be different from suggested values like above and below tables if operation condition will be exceeded our parameter range. Care is to be taken that power dissipation does not exceed the absolute maximum rating of the product.

* All measurements were made under the standardized environment of Lightning LED.

Electrical Optical Characteristics at Ta=25℃

Item	Condition	Symbol	Value			Unit
			R	G	B	
Dominant Wavelength	IF=15mA(R) IF=10mA(G) IF=10mA(B)	λ D	619~624	520~535	460~480	nm
Forward Voltage	IF=15mA(R) IF=10mA(G) IF=10mA(B)	VF(min)	1.8	2.6	2.6	V
		VF(max)	2.2	3	3	V
Reverse Current	VR=5V	IR	10	10	10	uA
Luminous Intensity	IF=15mA(R) IF=10mA(G) IF=10mA(B)	IV(min)	355	740	140	mcd
		IV(avg)	500	950	240	mcd
Luminous Flux(Reference)	IF=15mA(R) IF=10mA(G) IF=10mA(B)	Φ(avg)	1.7	2.8	0.6	lm
Luminous Intensity(Reference)	IF=20mA(RGB)	IV(avg)	740	1500	350	mcd

* Tolerance of measurements of the Forward Voltage is ±0.1V.

* Tolerance of measurements of the Luminous Intensity is ±7%.

* 2θ1/2 is the off-axis where the luminous intensity is 1/2 of the peak intensity.

* Tolerance of measurements of the chromaticity Coordinate is ±0.01.

* Rth j-sp is the thermal resistance from LED junction to solder point on MCPCB with electrical power.

Bin Structure

Luminous Intensity Ranks, Red IF = 15 mA, Green IF = 10 mA, Blue IF = 10 mA, Ta =25℃

Red

Bin Code	Min.(mcd)	Max.(mcd)
F1	355	450
FA	403	505
F2	450	560
FB	505	635
F3	560	710

Green

Bin Code	Min.(mcd)	Max.(mcd)
H1	710	900
HA	805	1010
H2	900	1120
HB	1010	1260
H3	1120	1400

Blue

Bin Code	Min.(mcd)	Max.(mcd)
J1	140	180
JA	160	202
J2	180	224
JB	202	252
J3	224	280
JC	252	318
J4	280	355

* Tolerance of measurements of the Luminous Flux is ±7%.

Forward Voltage Ranks, Red IF = 15 mA, Green IF = 10 mA, Blue IF = 10 mA, Ta =25℃

Red

Bin Code	Min.(v)	Max.(v)
A5	1.8	2.2

Green

Bin Code	Min.(v)	Max.(v)
B5	2.6	3

Blue

Bin Code	Min.(v)	Max.(v)
B5	2.6	3

* Tolerance of measurements of the Forward Voltage is ±0.1V.

Wavelength Ranks , Red IF = 15 mA, Green IF = 10 mA, Blue IF = 10 mA, Ta =25℃

Red

Bin Code	Min.(nm)	Max.(nm)
RU	619	624
RV	624	629

Green

Bin Code	Min.(nm)	Max.(nm)
GF	520	525
GH	522.5	527.5
GG	525	530
GJ	527.5	532.5
G8	530	535

Blue

Bin Code	Min.(nm)	Max.(nm)
B4	460	465
BJ	462.5	467.5
B5	465	470
BK	467.5	472.5
BG	470	475
BL	472.5	477.5
BH	475	480

* Tolerance of measurements of Wavelength is ±1nm

Fig1. Color Spectrum, Ta=25℃

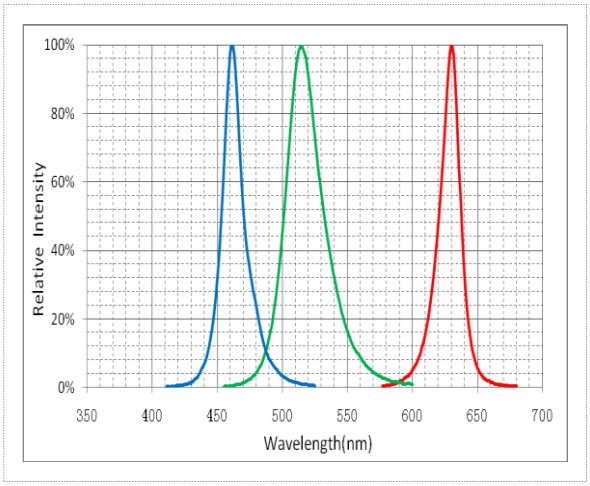


Fig2. Viewing Angle Distribution, Ta=25℃

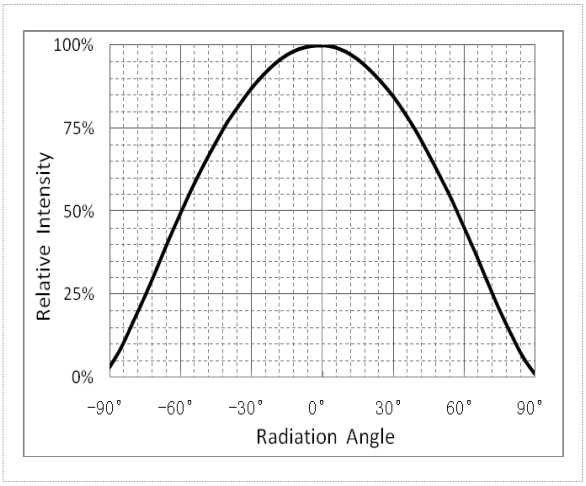


Fig3. Forward Current vs. Relative Intensity, Ta=25℃

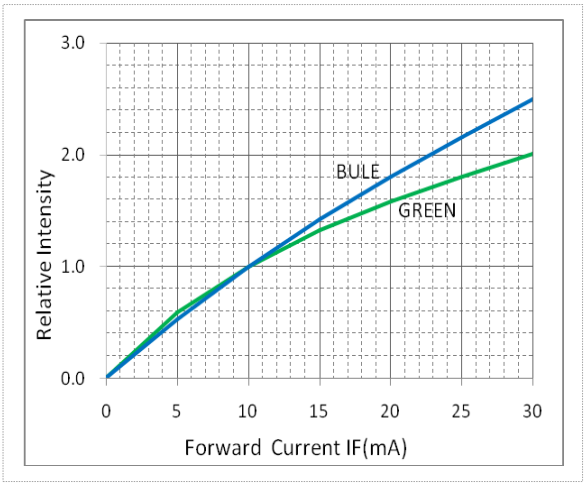


Fig4. Forward Current vs. Relative Intensity, Ta=25℃

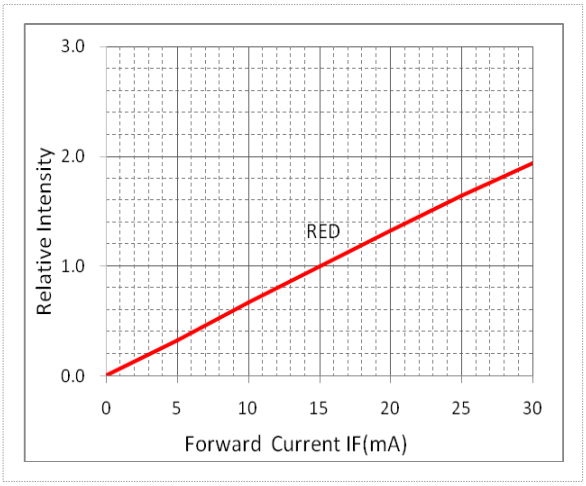


Fig 5. Forward Current vs. Forward Voltage, Ta=25℃

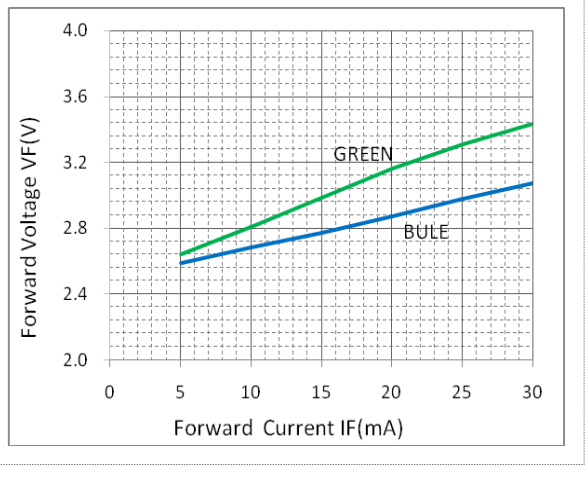
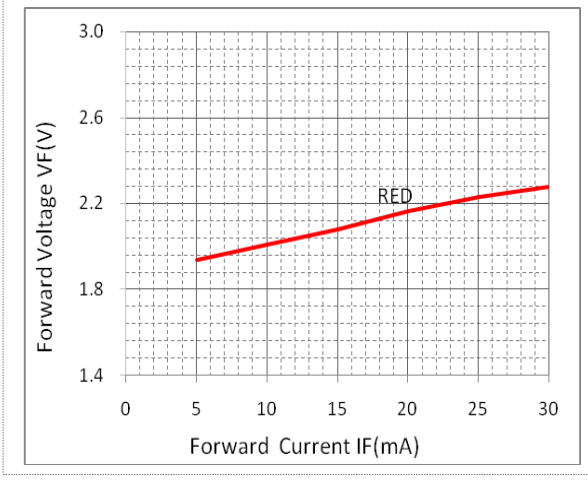
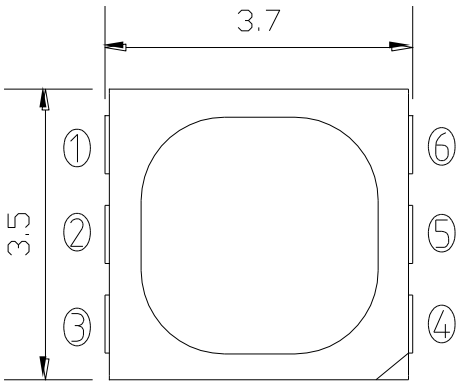
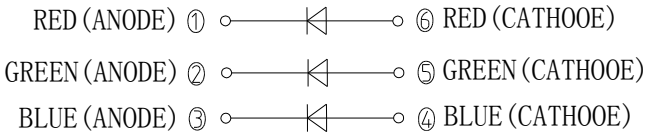


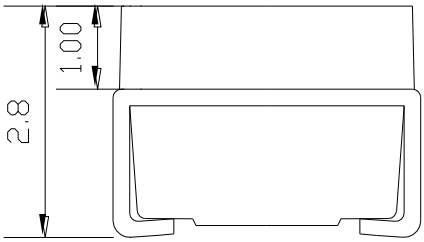
Fig6. Forward Current vs. Forward Voltage, Ta=25℃

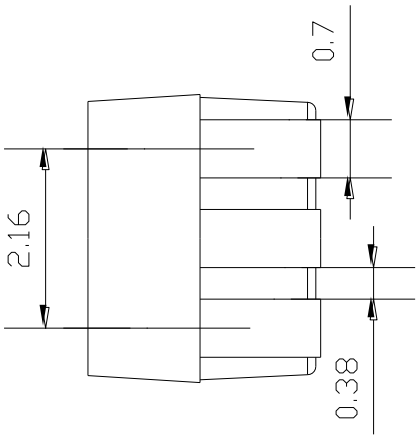


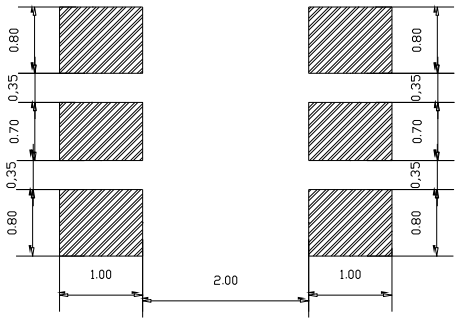
Package Dimensions







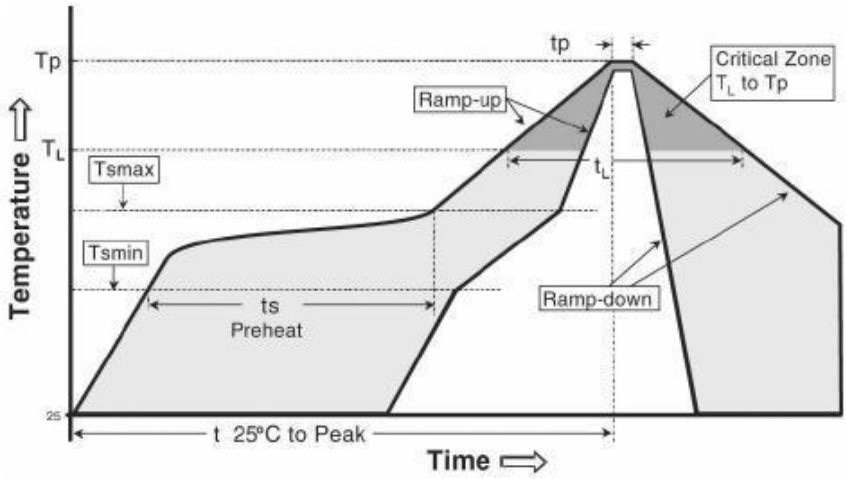




soldering patterns

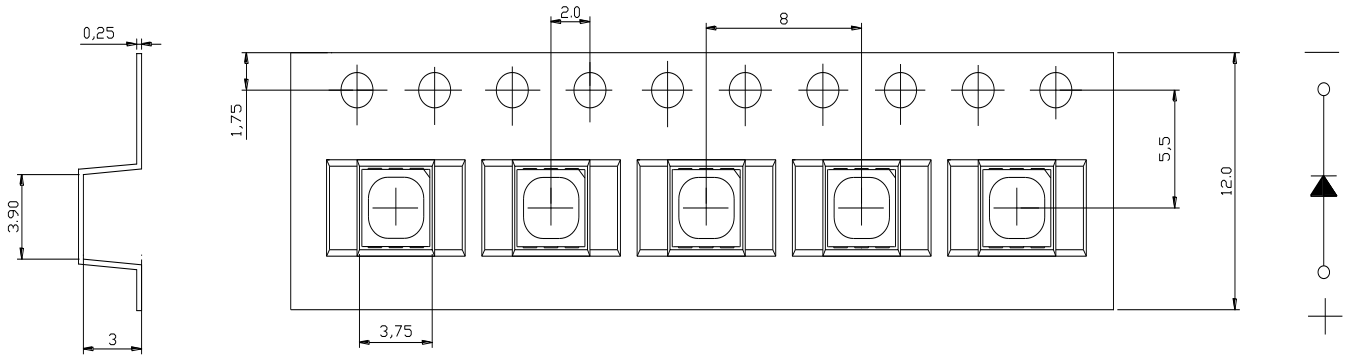
* The tolerance unless mentioned is ±0.1mm, unit = mm

Reflow Soldering Characteristics



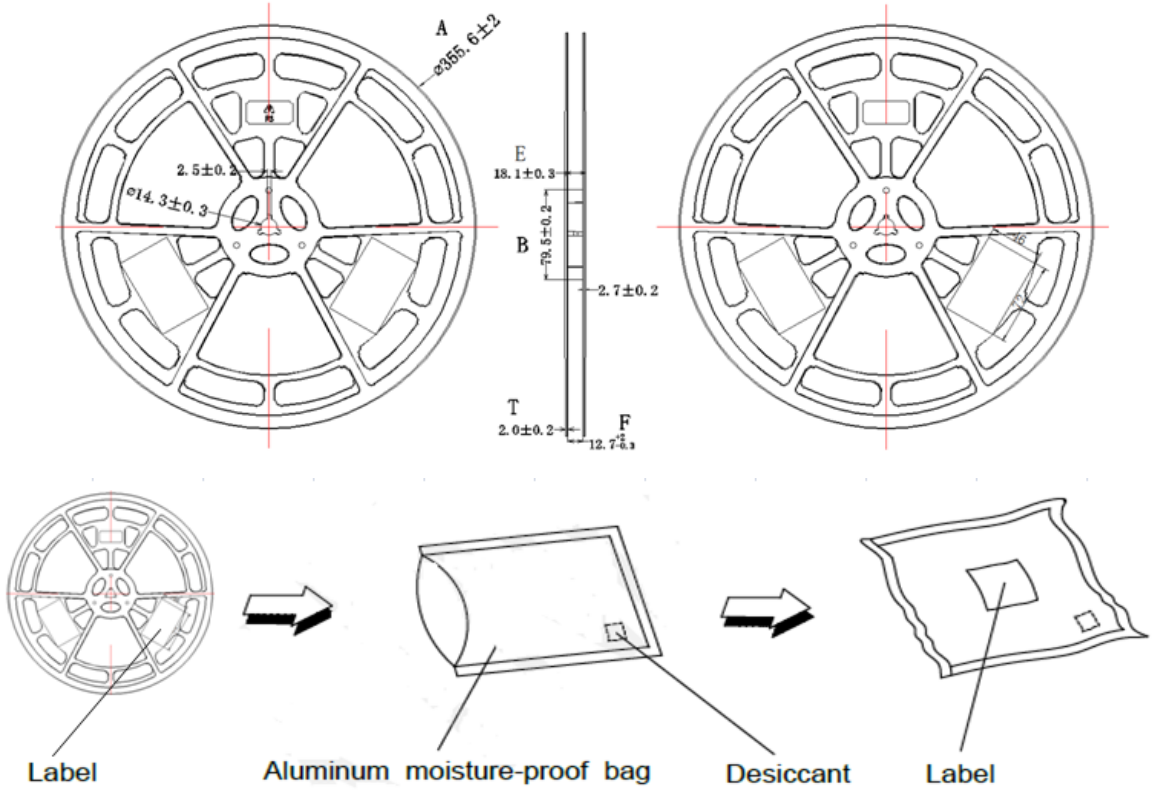
Reflow soldering	
Temperature Min (Tsmin) Temperature Max (Tsmax) Time(ts)from (Tsmin to Tsmax)	150° C 200° C 60-120 seconds.
Ramp-up rate (TL to Tp)	3° C/seconds max.
Liquidous temperature(TL) Time(tL) maintained above TL	217° C 60-150 seconds
Peak package body temperature(Tp)	260° C max
Time (tp) within 5° C of the specified classification temperature (Tc).	30 seconds max
Ramp-down rate (Tp to TL)	6° C/second max
Time 25 ° C to peak temperature	8 min max

Package Dimensions of Tape

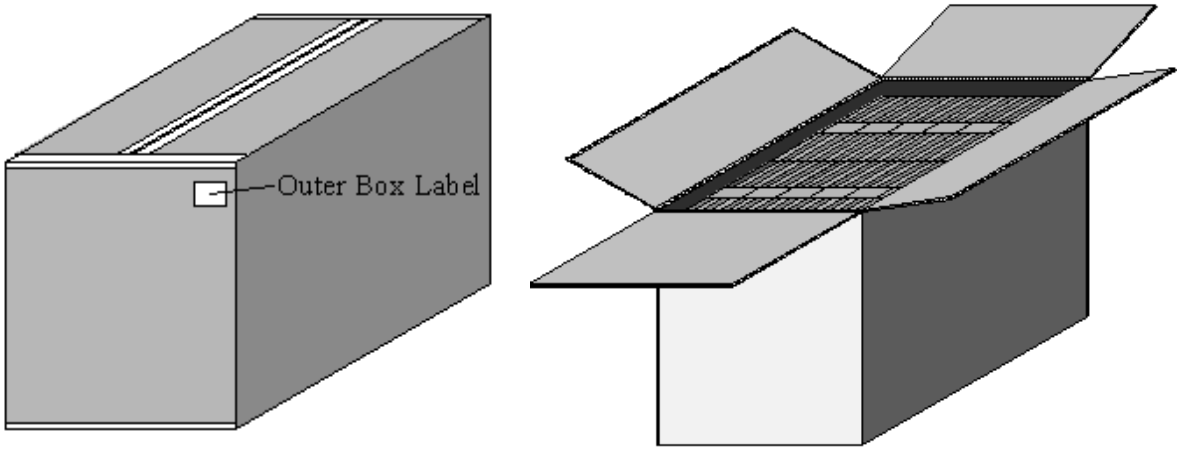


* Quantity : Max 3000pcs/Reel.
* Cumulative Tolerance : Cumulative Tolerance/10 pitches to be ±0.2mm.
* Package : P/N, Manufacturing data Code No. and Quantity to be indicated on a damp proof Package.
* unit = mm.

Package Dimensions of Reel



Outer Box



- Capacity 12 reels per box

Label：

Caution

1. Reflow soldering is recommended not to be done more than two times. In the case of more than 24 hours passed soldering after first, LEDs will be damaged.
2. Repairs should not be done after the LEDs have been soldered. When repair is unavoidable, suitable tools must be used.
3. Die slug is to be soldered.
4. When soldering, do not put stress on the LEDs during heating.
5. After soldering, do not warp the circuit board.

Notes on Lightning EMC Series soldering:

1. Recommend to use reflow machine.
2. Recommend to use heating plate soldering.
3. Manual soldering is not recommended.

Notes on reflow process:

1. To confirm whether the actual temperature curve in the reflow soldering conditions comply with recommended conditions. LEDs are guaranteed for one time reflow.
2. During reflow process do not apply force on LED active area.
3. After reflow process, PCB board should be cooled down before packing or storage.

Precaution for use

Storage

1.Before opening the package: The LED should be kept at 30℃ or less and 90%RH or less.

2.After opening the package: The LED's floor life is 168Hrs under 30℃ or less and 60%RH or less. If unused LED remain, it should be stored in moisture proof packages JEDEC (MSL 3).

3.If the moisture absorbent material(silica gel)has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions：

Baking treatment:60±5℃ for 24 hours.