EDISON
Lighting Design Manufacturing Service

PLCC Series

ET-3528 1W White Datasheet

Features :

- High luminous Intensity and high efficiency
- Wide viewing angle : 120°
- Excellent performance and visibility
- Suitable for all SMT assembly methods
- IR reflow process compatible
- Environmental friendly; RoHS compliance

Typical Applications :

- General lighting
- Down lights
- Ceiling lights
- Back lighting

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General Information

Introduction

Ultra high luminous efficacy, combined with the flexibility in design due to its slim and miniature size, PLCC LED Series are optimized to be used as general lighting.

Ordering Code Format

2	T	0 3	0 1	x x	x x	0 0 0	x x x
X1	X2	X3-X4	X5-X6	X7-X8	X9-X10	X11-X13	X14-X16

X1		X2		X3-X4		X5-X6		X7-X8	
Type		Component		Series		Wattage		Color	
2	Emitter	T	PLCC	03	3528	01	1W	CW	Cool White
								NW	Neutral White
								WW	Warm White

X9-X10		X11-X13		X14-X16	
Internal code		PCB Board		Serial Number	
06	-	000	-	-	-
11	-				

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Absolute Maximum Ratings

Absolute maximum ratings (T_J=25°C)

Parameter	Symbol	Value	Units
DC Forward Current	I_F	350	mA
Peak Pulsed Current; (tp≤100μs, Duty cycle=0.25)	I_{pulse}	700	mA
Transient Surge Voltage	-	8	V
Reverse Voltage[1]	V_R	Note 1	V
LED Junction Temperature	T_J	150	°C
Operating Temperature	-	-40 ~ +80	°C
Storage Temperature	-	-40 ~ +120	°C
HBM ESD Sensitivity	V_B	2000	V
Allowable Reflow Cycles	-	1	Cycles
Pulse Operating Life (pulse)[2]	-	100,000	Cycles

Notes:
1. LEDs are not designed to drive in reverse bias.
2. Operating current 1,000mA, T_J=90°C.

Characteristics

Parameter		Symbol	Value	Units
Viewing Angle	(Typ.)	$2\Theta_{1/2}$	120	Degree
Forward voltage@350mA	(Typ.)	V_F	3.4	V
Thermal resistance		-	15	°C/W
CRI		-	CW-80 NW-80 WW-80	-
CCT		-	CW 5000-10000 NW 3800-5000 WW 2670-3800	K

Notes:
1. $2\theta_{1/2}$ is the off-axis angle where the luminous intensity is half of the axial luminous intensity.
2. Color rendering index CRI tolerance: ±2

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Luminous Flux Characteristic

Luminous Flux Characteristics, I_F=350mA and T_J=25°C

Color	Group	Min. Luminous Flux(lm)	Max. Luminous Flux(lm)	Forward Current (mA)	Order Code
Cool White	U3	100	110	350	2T0301CW11000001
	V1	110	120		
	V2	120	130		
Neutral White	U3	100	110		2T0301NW11000001
	V1	110	120		
Warm White	U2	90	100		2T0301WW11000001
	U3	100	110		
	V1	110	120		

Calculated Typ. Luminous Flux

Note:

The luminous flux performance is guaranteed within published operating conditions. Edison Opto maintains a tolerance of ±10% on flux measurements.

Voltage Bin Structure

Group	Min. Voltage (V)	Max. Voltage (V)
VC1	3.0	3.1
VA2	3.1	3.2
VB2	3.2	3.3
VC2	3.3	3.4
VA3	3.4	3.5
VB3	3.5	3.6

Note:

Forward voltage measurement allowance is ± 0.1V.

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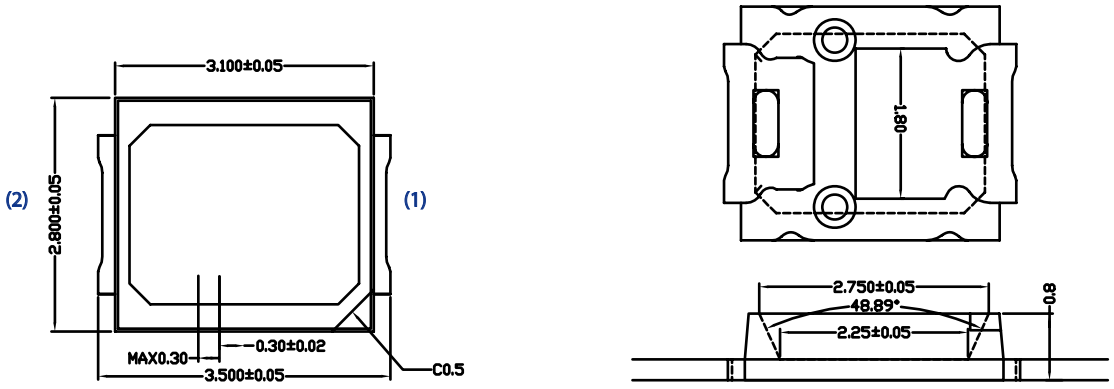
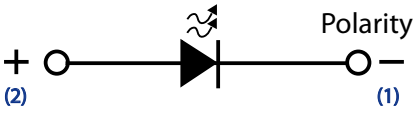
Mechanical Dimensions

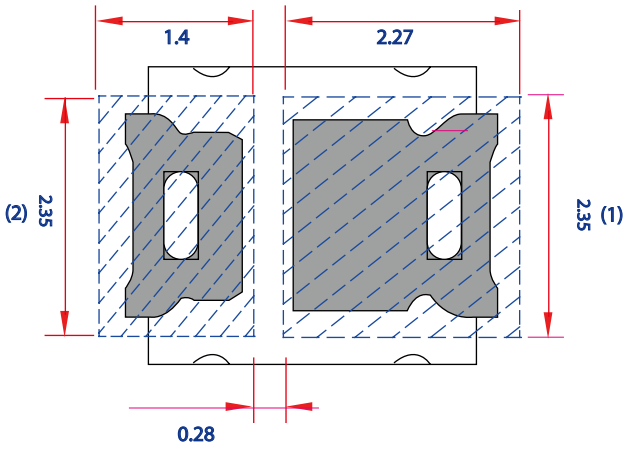
Emitter Type Dimension



Circuit



Solder Pad



Notes:
1. All dimensions are measured in mm.
2. Tolerance : ± 0.2 mm

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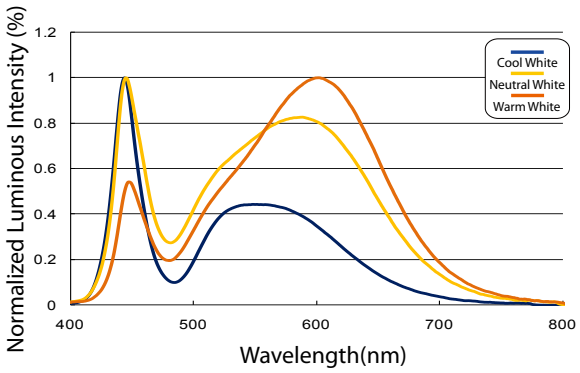
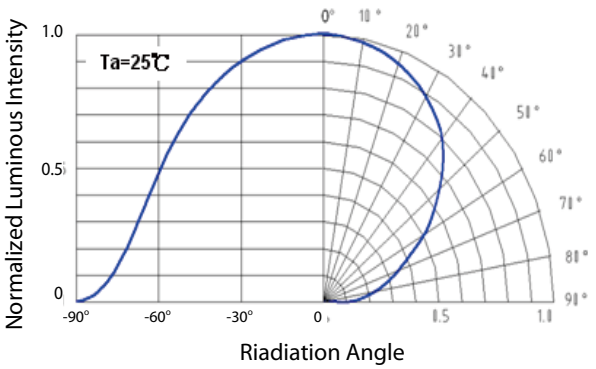
Characteristic Curves

Spectrum



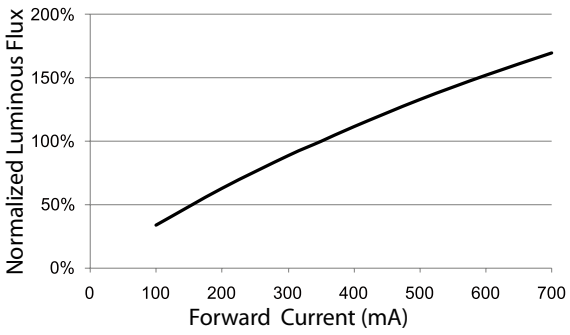
Color Spectrum at a typical CCT for PLCC 3528 series

Radiation Diagram



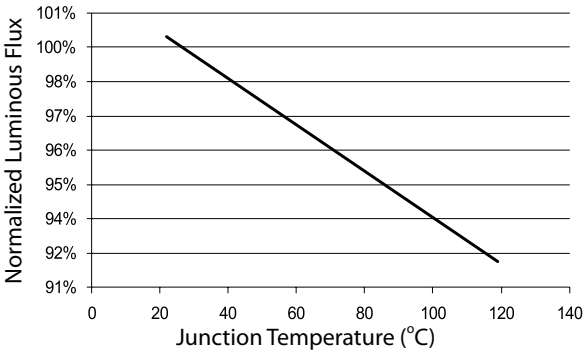
Beam pattern diagram for PLCC 3528 series

Luminous Flux vs. Forward Current



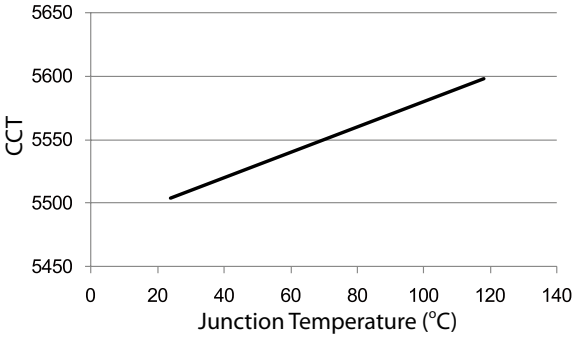
Luminous Flux vs. Forward Current for PLCC 3528 series

Luminous Flux vs. Junction temperature



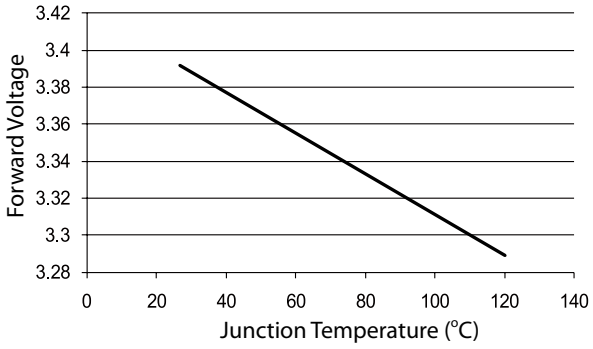
Luminous Flux vs. Junction temperature for PLCC 3528 series

CCT vs. Junction temperature



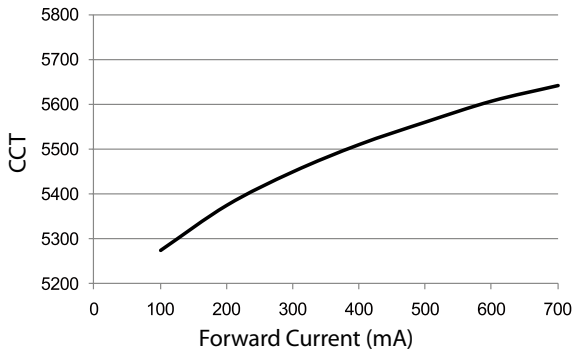
CCT vs. Junction temperature for PLCC 3528 series

Forward voltage vs. Junction temperature



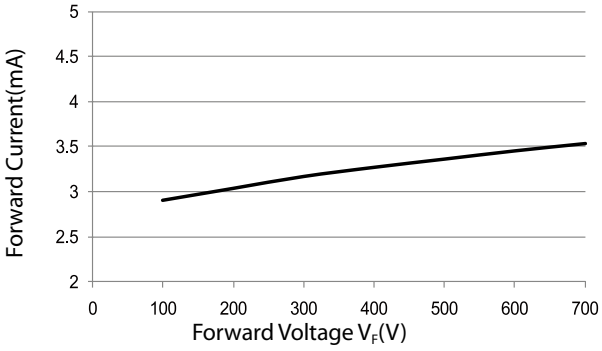
Forward voltage vs. Junction temperature for PLCC 3528 series

CCT vs. Forward Current



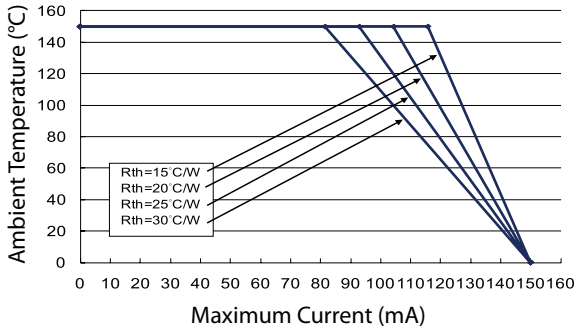
CCT vs. Forward Current for PLCC 3528 series

Forward Current vs. Forward Voltage



Forward Current vs. Forward Voltage for PLCC 3528 series

Ambient Temperature vs. Maximum Current



Ambient Temperature vs. Maximum Current for PLCC 3528 series

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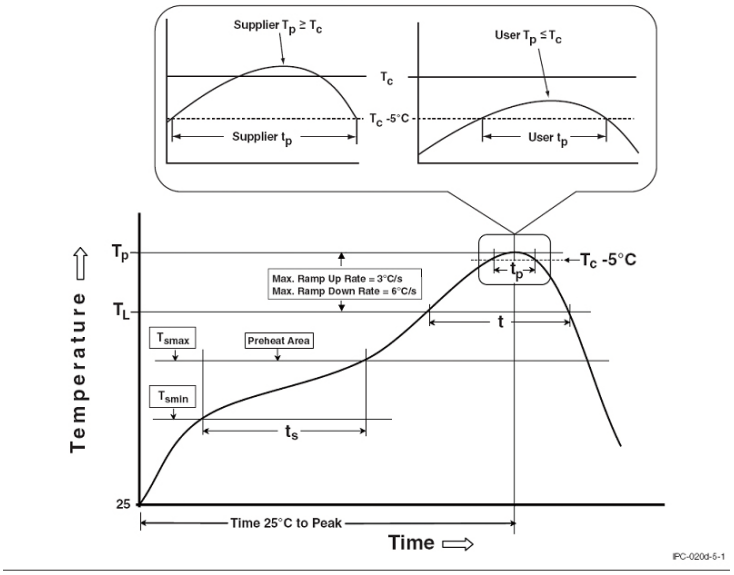
Reflow Profile

The following reflow profile is from IPC/JEDEC J-STD-020D which provided here for reference.



Reflow Profiles

Classification Reflow Profiles

Profile Feature	Pb-Free Assembly
Preheat & Soak Temperature min (Tsmin) Temperature max (Tsmax) Time (Tsmin to Tsmax) (ts)	 150 °C 200 °C 60-120 seconds
Average ramp-up rate (Tsmax to Tp)	3 °C/second max.
Liquidous temperature (TL) Time at liquidous (tL)	217 °C 60-150 seconds
Peak package body temperature (Tp)*	255 °C ~260 °C *
Classification temperature (Tc)	260 °C
Time (tp)** within 5 °C of the specified classification temperature (Tc)	30** seconds
Average ramp-down rate (Tp to Tsmax)	6°C/second max.
Time 25°C to peak temperature	8 minutes max.

Notes:
1. * Tolerance for peak profile temperature (Tp) is defined as a supplier minimum and a user maximum.
2. ** Tolerance for time at peak profile temperature (tp) is defined as a supplier minimum and a user maximum.

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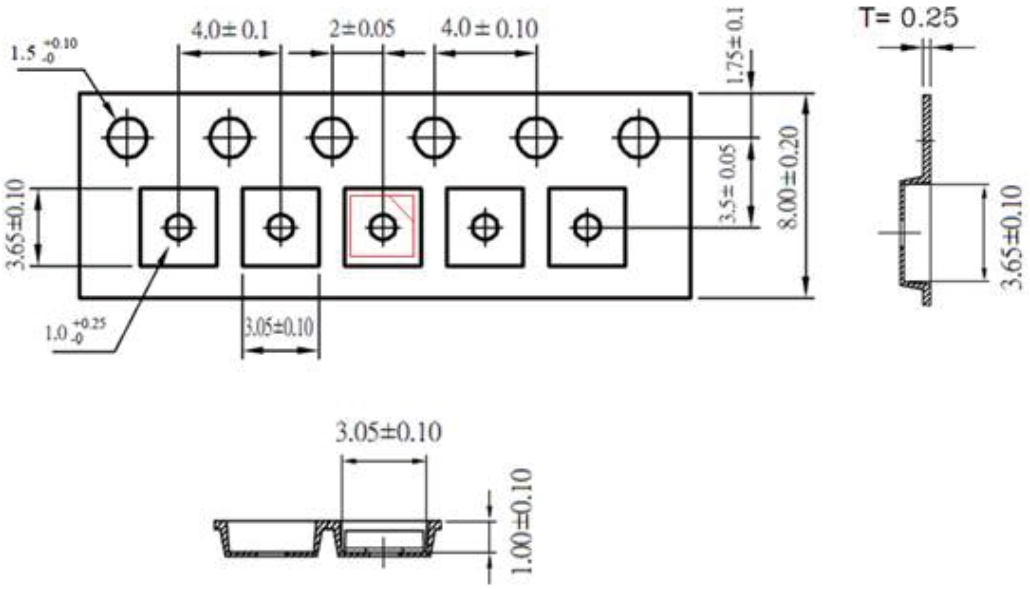
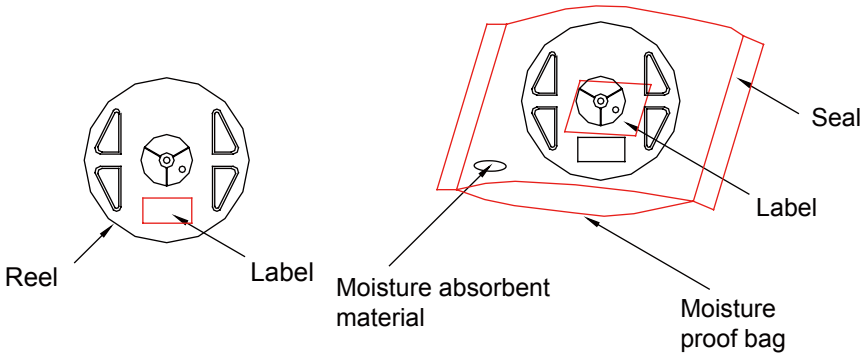
Product Packaging Information





Taping reel dimensions

Package & label

Item	Quantity	Total	Dimensions (mm)
Reel	3,000pcs	3,000pcs	R=178
Box	5 Reels	15,000pcs	240*235*67
Carton	5 boxes	75,000pcs	353*254*256
Starting with 50pcs empty, and 50pcs empty at the last			

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Revision History

Versions	Description	Release Date
1	Establish order code information	2013/04/23
2	1. Add the luminous flux characteristic 2. Update the mechnical dimension and characteristic curve 3. Revise the dimension of carrier tape	2013/10/25

About Edison Opto

Edison Opto is a leading manufacturer of high power LED and a solution provider experienced in LDMS. LDMS is an integrated program derived from the four essential technologies in LED lighting applications- Thermal Management, Electrical Scheme, Mechanical Refinement, Optical Optimization, to provide customer with various LED components and modules. More Information about the company and our products can be found at www.edison-opto.com

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