High Luminous Flux Density
Warm White LED Emitter

LZC-00WW00

Key Features

- High Luminous Flux Density 12-die Warm White LED
- More than 40 Watt power dissipation capability
- Ultra-small foot print – 9.0mm x 9.0mm
- Very low Thermal Resistance (0.7°C/W)
- Surface mount ceramic package with integrated glass lens
- Spatial color uniformity across radiation pattern
- Excellent Color Rendering Index
- JEDEC Level 1 for Moisture Sensitivity Level
- Lead (Pb) free and RoHS compliant
- Reflow solderable (up to 6 cycles)
- Emitter available with several MCPCB options
- Recommend use with LL-3T08 lens family to provide standard beam patterns suitable for general lighting applications

Typical Applications

- General lighting
- Down lighting
- Architectural lighting
- Street lighting
- Stage and Studio lighting
- Refrigeration lighting
- Portable lighting

Description

The LZC-series 12-die White LED emitter has an electrical input power dissipation capability of more than 40 Watt electrical power in an extremely small package. With a small 9.0mm x 9.0mm ultra-small footprint, this package provides exceptional luminous flux density. LED Engin's patent-pending thermally insulated phosphor layer provides a spatial color uniformity across the radiation pattern and a consistent CCT over time and temperature. The high quality materials used in the package are chosen to minimize stresses and optimize light output which results in superior reliability and lumen maintenance. The robust product design thrives in outdoor applications with high ambient temperatures and high humidity.

Part number options

Base part number

Part number	Description
LZC-00WW00-xxxx	LZC emitter
LZC-70WW00-xxxx	LZC emitter on 1 channel 1x12 Star MCPCB
LZC-C0WW00-xxxx	LZC emitter on 2 channel 2x6 Star MCPCB
LZC-E0WW00-xxxx	LZC emitter on 1 channel 1x12 Connectorized MCPCB
LZC-F0WW00-xxxx	LZC emitter on 1 channel 2x6 Connectorized MCPCB

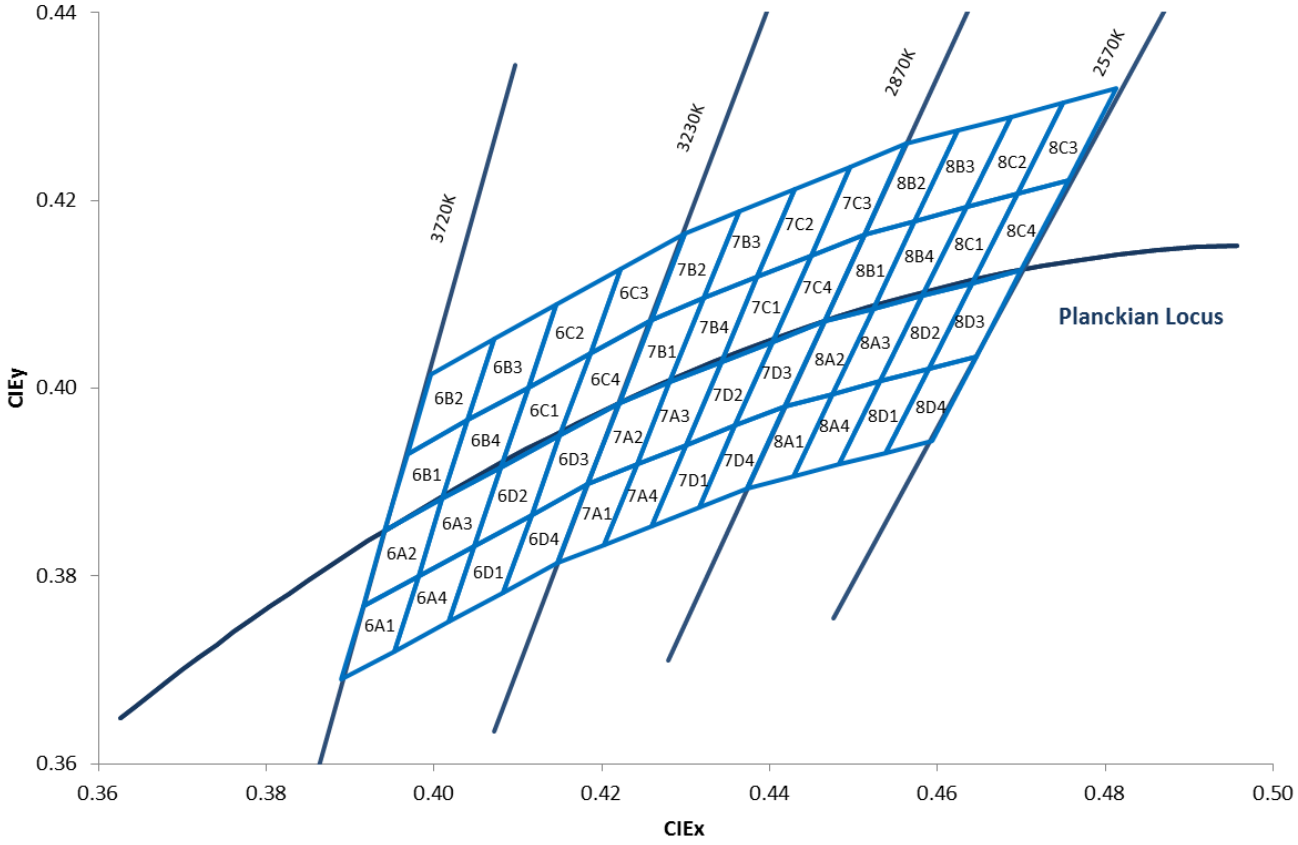
Notes:
1. See “Part Number Nomenclature” for full overview on LED Engin part number nomenclature.

Bin kit option codes:

WW, Warm-White (2700K – 3500K)			
Kit number suffix	**Min flux Bin**	**Color Bin Ranges**	**Description**
0000	X	6A1, 6A2, 6B1, 6B2, 6A4, 6A3, 6B4, 6B3, 6D1, 6D2, 6C1, 6C2, 6D4, 6D3, 6C4, 6C3, 7A1, 7A2, 7B1, 7B2, 7A4, 7A3, 7B4, 7B3, 7D1, 7D2, 7C1, 7C2, 7D4, 7D3, 7C4, 7C3, 8A1, 8A2, 8B1, 8B2, 8A4, 8A3, 8B4, 8B3, 8D1, 8D2, 8C1, 8C2, 8D4, 8D3, 8C4, 8C3	full distribution flux; full distribution CCT
Y000	Y	6A1, 6A2, 6B1, 6B2, 6A4, 6A3, 6B4, 6B3, 6D1, 6D2, 6C1, 6C2, 6D4, 6D3, 6C4, 6C3, 7A1, 7A2, 7B1, 7B2, 7A4, 7A3, 7B4, 7B3, 7D1, 7D2, 7C1, 7C2, 7D4, 7D3, 7C4, 7C3, 8A1, 8A2, 8B1, 8B2, 8A4, 8A3, 8B4, 8B3, 8D1, 8D2, 8C1, 8C2, 8D4, 8D3, 8C4, 8C3	Y minimum flux bin; full distribution CCT
0027	X	8A1, 8A2, 8B1, 8B2, 8A4, 8A3, 8B4, 8B3, 8D1, 8D2, 8C1, 8C2, 8D4, 8D3, 8C4, 8C3	full distribution flux; 2700K ANSI CCT bin
Y027	Y	8A1, 8A2, 8B1, 8B2, 8A4, 8A3, 8B4, 8B3, 8D1, 8D2, 8C1, 8C2, 8D4, 8D3, 8C4, 8C3	Y minimum flux bin; 2700K ANSI CCT bin
0227	X	8A2, 8B1, 8A3, 8B4, 8D2, 8C1, 8D3, 8C4	full distribution flux; 2700K ANSI CCT half bin
Y227	Y	8A2, 8B1, 8A3, 8B4, 8D2, 8C1, 8D3, 8C4	Y min flux bin; 2700K ANSI CCT half bin
0427	X	8A3, 8B4, 8D2, 8C1	full distribution flux; 2700K ANSI CCT quarter bin
Y427	Y	8A3, 8B4, 8D2, 8C1	Y min flux bin; 2700K ANSI CCT quarter bin
0030	X	7A1, 7A2, 7B1, 7B2, 7A4, 7A3, 7B4, 7B3, 7D1, 7D2, 7C1, 7C2, 7D4, 7D3, 7C4, 7C3	full distribution flux; 3000K ANSI CCT bin
Y030	Y	7A1, 7A2, 7B1, 7B2, 7A4, 7A3, 7B4, 7B3, 7D1, 7D2, 7C1, 7C2, 7D4, 7D3, 7C4, 7C3	Y min flux bin; 3000K ANSI CCT bin
0230	X	7A2, 7B1, 7A3, 7B4, 7D2, 7C1, 7D3, 7C4	full distribution flux; 3000K ANSI CCT half bin
Y230	Y	7A2, 7B1, 7A3, 7B4, 7D2, 7C1, 7D3, 7C4	Y min flux bin; 3000K ANSI CCT half bin
0430	X	7A3, 7B4, 7D2, 7C1	full distribution flux; 3000K ANSI CCT quarter bin
Y430	Y	7A3, 7B4, 7D2, 7C1	Y min flux bin; 3000K ANSI CCT quarter bin
0035	X	6A1, 6A2, 6B1, 6B2, 6A4, 6A3, 6B4, 6B3, 6D1, 6D2, 6C1, 6C2, 6D4, 6D3, 6C4, 6C3	full distribution flux; 3500K ANSI CCT bin
Y035	Y	6A1, 6A2, 6B1, 6B2, 6A4, 6A3, 6B4, 6B3, 6D1, 6D2, 6C1, 6C2, 6D4, 6D3, 6C4, 6C3	Y min flux bin; 3500K ANSI CCT bin
0235	X	6A2, 6B1, 6A3, 6B4, 6D2, 6C1, 6D3, 6C4	full distribution flux; 3500K ANSI CCT half bin
Y235	Y	6A2, 6B1, 6A3, 6B4, 6D2, 6C1, 6D3, 6C4	Y min flux bin; 3500K ANSI CCT half bin
0435	X	6A3, 6B4, 6D2, 6C1	full distribution flux; 3500K ANSI CCT quarter bin
Y435	Y	6A3, 6B4, 6D2, 6C1	Y min flux bin; 3500K ANSI CCT quarter bin

Notes:
1. Default bin kit option is -0000

Warm White Chromaticity Groups



Standard Chromaticity Groups plotted on excerpt from the CIE 1931 (2°) x-y Chromaticity Diagram. Coordinates are listed below in the table.

Warm White Bin Coordinates

Bin code	CIEx	CIEy	Bin code	CIEx	CIEy	Bin code	CIEx	CIEy	Bin code	CIEx	CIEy
	0.3889	0.369		0.3915	0.3768		0.3941	0.3848		0.3968	0.393
	0.3915	0.3768		0.3941	0.3848		0.3968	0.393		0.3996	0.4015
6A1	0.3981	0.38	6A2	0.401	0.3882	6B1	0.404	0.3966	6B2	0.4071	0.4052
	0.3953	0.372		0.3981	0.38		0.401	0.3882		0.404	0.3966
	0.3889	0.369		0.3915	0.3768		0.3941	0.3848		0.3968	0.393
	0.3953	0.372		0.3981	0.38		0.401	0.3882		0.404	0.3966
	0.3981	0.38		0.401	0.3882		0.404	0.3966		0.4071	0.4052
6A4	0.4048	0.3832	6A3	0.408	0.3916	6B4	0.4113	0.4001	6B3	0.4146	0.4089
	0.4017	0.3751		0.4048	0.3832		0.408	0.3916		0.4113	0.4001
	0.3953	0.372		0.3981	0.38		0.401	0.3882		0.404	0.3966
	0.4017	0.3751		0.4048	0.3832		0.408	0.3916		0.4113	0.4001
	0.4048	0.3832		0.408	0.3916		0.4113	0.4001		0.4146	0.4089
6D1	0.4116	0.3865	6D2	0.415	0.395	6C1	0.4186	0.4037	6C2	0.4222	0.4127
	0.4082	0.3782		0.4116	0.3865		0.415	0.395		0.4186	0.4037
	0.4017	0.3751		0.4048	0.3832		0.408	0.3916		0.4113	0.4001
	0.4082	0.3782		0.4116	0.3865		0.415	0.395		0.4186	0.4037
	0.4116	0.3865		0.415	0.395		0.4186	0.4037		0.4222	0.4127
6D4	0.4183	0.3898	6D3	0.4221	0.3984	6C4	0.4259	0.4073	6C3	0.4299	0.4165
	0.4147	0.3814		0.4183	0.3898		0.4221	0.3984		0.4259	0.4073
	0.4082	0.3782		0.4116	0.3865		0.415	0.395		0.4186	0.4037
	0.4147	0.3814		0.4183	0.3898		0.4221	0.3984		0.4259	0.4073
	0.4183	0.3898		0.4221	0.3984		0.4259	0.4073		0.4299	0.4165
7A1	0.4242	0.3919	7A2	0.4281	0.4006	7B1	0.4322	0.4096	7B2	0.4364	0.4188
	0.4203	0.3833		0.4242	0.3919		0.4281	0.4006		0.4322	0.4096
	0.4147	0.3814		0.4183	0.3898		0.4221	0.3984		0.4259	0.4073
	0.4203	0.3833		0.4242	0.3919		0.4281	0.4006		0.4322	0.4096
	0.4242	0.3919		0.4281	0.4006		0.4322	0.4096		0.4364	0.4188
7A4	0.43	0.3939	7A3	0.4342	0.4028	7B4	0.4385	0.4119	7B3	0.443	0.4212
	0.4259	0.3853		0.43	0.3939		0.4342	0.4028		0.4385	0.4119
	0.4203	0.3833		0.4242	0.3919		0.4281	0.4006		0.4322	0.4096
	0.4259	0.3853		0.43	0.3939		0.4342	0.4028		0.4385	0.4119
	0.43	0.3939		0.4342	0.4028		0.4385	0.4119		0.443	0.4212
7D1	0.4359	0.396	7D2	0.4403	0.4049	7C1	0.4449	0.4141	7C2	0.4496	0.4236
	0.4316	0.3873		0.4359	0.396		0.4403	0.4049		0.4449	0.4141
	0.4259	0.3853		0.43	0.3939		0.4342	0.4028		0.4385	0.4119
	0.4316	0.3873		0.4359	0.396		0.4403	0.4049		0.4449	0.4141
	0.4359	0.396		0.4403	0.4049		0.4449	0.4141		0.4496	0.4236
7D4	0.4418	0.3981	7D3	0.4465	0.4071	7C4	0.4513	0.4164	7C3	0.4562	0.426
	0.4373	0.3893		0.4418	0.3981		0.4465	0.4071		0.4513	0.4164
	0.4316	0.3873		0.4359	0.396		0.4403	0.4049		0.4449	0.4141
	0.4373	0.3893		0.4418	0.3981		0.4465	0.4071		0.4513	0.4164
	0.4418	0.3981		0.4465	0.4071		0.4513	0.4164		0.4562	0.426
8A1	0.4475	0.3994	8A2	0.4523	0.4085	8B1	0.4573	0.4178	8B2	0.4624	0.4274
	0.4428	0.3906		0.4475	0.3994		0.4523	0.4085		0.4573	0.4178
	0.4373	0.3893		0.4418	0.3981		0.4465	0.4071		0.4513	0.4164
	0.4428	0.3906		0.4475	0.3994		0.4523	0.4085		0.4573	0.4178
	0.4475	0.3994		0.4523	0.4085		0.4573	0.4178		0.4624	0.4274
8A4	0.4532	0.4008	8A3	0.4582	0.4099	8B4	0.4634	0.4193	8B3	0.4687	0.4289
	0.4483	0.3919		0.4532	0.4008		0.4582	0.4099		0.4634	0.4193
	0.4428	0.3906		0.4475	0.3994		0.4523	0.4085		0.4573	0.4178
	0.4483	0.3919		0.4532	0.4008		0.4582	0.4099		0.4634	0.4193
	0.4532	0.4008		0.4582	0.4099		0.4634	0.4193		0.4687	0.4289
8D1	0.4589	0.4021	8D2	0.4641	0.4112	8C1	0.4695	0.4207	8C2	0.475	0.4304
	0.4538	0.3931		0.4589	0.4021		0.4641	0.4112		0.4695	0.4207
	0.4483	0.3919		0.4532	0.4008		0.4582	0.4099		0.4634	0.4193
	0.4538	0.3931		0.4589	0.4021		0.4641	0.4112		0.4695	0.4207
	0.4589	0.4021		0.4641	0.4112		0.4695	0.4207		0.475	0.4304
8D4	0.4646	0.4034	8D3	0.47	0.4126	8C4	0.4756	0.4221	8C3	0.4813	0.4319
	0.4593	0.3944		0.4646	0.4034		0.47	0.4126		0.4756	0.4221
	0.4538	0.3931		0.4589	0.4021		0.4641	0.4112		0.4695	0.4207

Luminous Flux Bins

Table 1:

Bin Code	Minimum Luminous Flux (Φ_V) @ I_F = 700mA [1,2] (lm)	Maximum Luminous Flux (Φ_V) @ I_F = 700mA [1,2] (lm)
X	1,085	1,357
Y	1,357	1,696
Z	1,696	2,120

Notes for Table 1:
1. Luminous flux performance guaranteed within published operating conditions. LedEngin maintains a tolerance of ± 10% on flux measurements.
2. Luminous Flux typical value is for all 12 LED dice operating concurrently at rated current.

Forward Voltage Bins

Table 2:

Bin Code	Minimum Forward Voltage (V_F) @ I_F = 700mA [1,2] (V)	Maximum Forward Voltage (V_F) @ I_F = 700mA [1,2] (V)
0	38.40	47.04

Notes for Table 2:
1. LedEngin maintains a tolerance of ± 0.04V for forward voltage measurements.
2. Forward Voltage is binned with 12 LED dice connected in series. The actual LED is configured with two strings of 6 dice in series.

Absolute Maximum Ratings

Table 5:

Parameter	Symbol	Value	Unit
DC Forward Current at T_{jmax}=130C[1]	I_F	1200	mA
DC Forward Current at T_{jmax}=150C[1]	I_F	1000	mA
Peak Pulsed Forward Current[2]	I_{FP}	1500	mA
Reverse Voltage	V_R	See Note 3	V
Storage Temperature	T_{stg}	-40 ~ +150	°C
Junction Temperature	T_J	150	°C
Soldering Temperature[4]	T_{sol}	260	°C
Allowable Reflow Cycles		6	
ESD Sensitivity[5]		> 8,000 V HBM Class 3B JESD22-A114-D	

Notes for Table 5:
1. Maximum DC forward current (per die) is determined by the overall thermal resistance and ambient temperature. Follow the curves in Figure 10 for current derating.
2: Pulse forward current conditions: Pulse Width ≤ 10msec and Duty cycle ≤ 10%.
3. LEDs are not designed to be reverse biased.
4. Solder conditions per JEDEC 020D. See Reflow Soldering Profile Figure 5.
5. LedEngin recommends taking reasonable precautions towards possible ESD damages and handling the LZC-00WW00 in an electrostatic protected area (EPA). An EPA may be adequately protected by ESD controls as outlined in ANSI/ESD S6.1.

Optical Characteristics @ T_C = 25°C

Table 6:

Parameter	Symbol	Typical	Unit
Luminous Flux (@ I_F = 700mA)[1]	Φ_V	1400	lm
Luminous Flux (@ I_F = 1000mA)[1]	Φ_V	1800	lm
Luminous Efficacy (@ I_F = 350mA)		65	lm/W
Correlated Color Temperature[2]	CCT	3100	K
Chromaticity Coordinates	x,y	0.430, 0.402	
Color Rendering Index (CRI / R9)	R_a	85	
Viewing Angle[3]	$2\Theta_{1/2}$	110	Degrees

Notes for Table 6:
1. Luminous flux typical value is for all 12 LED dice operating concurrently at rated current.
2. Viewing Angle is the off-axis angle from emitter centerline where the luminous intensity is ½ of the peak value.

Electrical Characteristics @ T_C = 25°C

Table 7:

Parameter	Symbol	Typical	Unit
Forward Voltage (@ I_F = 700mA)[1]	V_F	42.0	V
Forward Voltage (@ I_F = 1000mA)[1]	V_F	43.8	V
Temperature Coefficient of Forward Voltage[1]	$\Delta V_F/\Delta T_J$	-33.6	mV/°C
Thermal Resistance (Junction to Case)	$R\Theta_{J-C}$	0.7	°C/W

Notes for Table 7:
1. Forward Voltage is binned with 12 LED dice connected in series. The actual LED is configured with two strings of 6 dice in series.

IPC/JEDEC Moisture Sensitivity Level

Table 4 - IPC/JEDEC J-STD-20.1 MSL Classification:

			Soak Requirements			
	Floor Life		Standard		Accelerated	
Level	Time	Conditions	Time (hrs)	Conditions	Time (hrs)	Conditions
1	unlimited	≤ 30°C/ 85% RH	168 +5/-0	85°C/ 85% RH	n/a	n/a

Notes for Table 4:

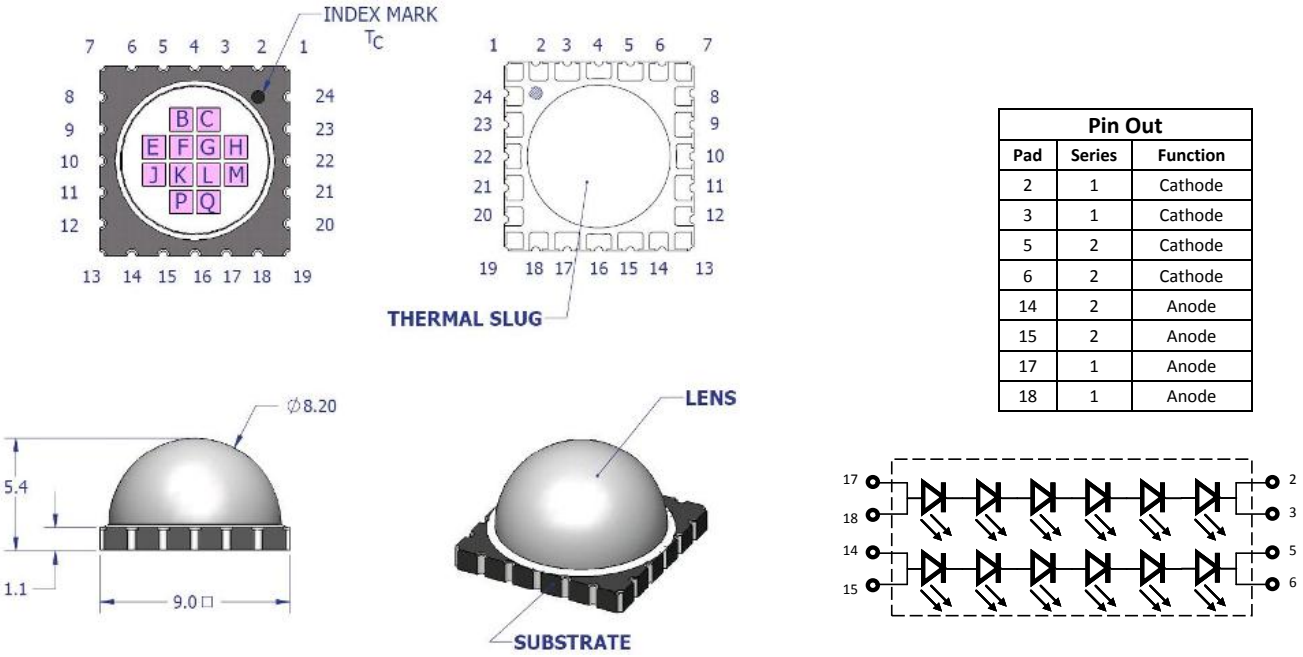
1. The standard soak time includes a default value of 24 hours for semiconductor manufacturer's exposure time (MET) between bake and bag and includes the maximum time allowed out of the bag at the distributor's facility.

Average Lumen Maintenance Projections

Lumen maintenance generally describes the ability of a lamp to retain its output over time. The useful lifetime for solid state lighting devices (Power LEDs) is also defined as Lumen Maintenance, with the percentage of the original light output remaining at a defined time period.

Based on long-term WHTOL testing, LedEngin projects that the LZ Series will deliver, on average, 70% Lumen Maintenance at 100,000 hours of operation at a forward current of
700 mA per die. This projection is based on constant current operation with junction temperature maintained at or below 125°C.

Mechanical Dimensions (mm)



Pin Out		
Pad	Series	Function
2	1	Cathode
3	1	Cathode
5	2	Cathode
6	2	Cathode
14	2	Anode
15	2	Anode
17	1	Anode
18	1	Anode

Figure 1: Package outline drawing.

Notes for Figure 1:
1. Unless otherwise noted, the tolerance = ± 0.20 mm.
2. Thermal contact, Pad is electrically neutral.

Recommended Solder Pad Layout (mm)

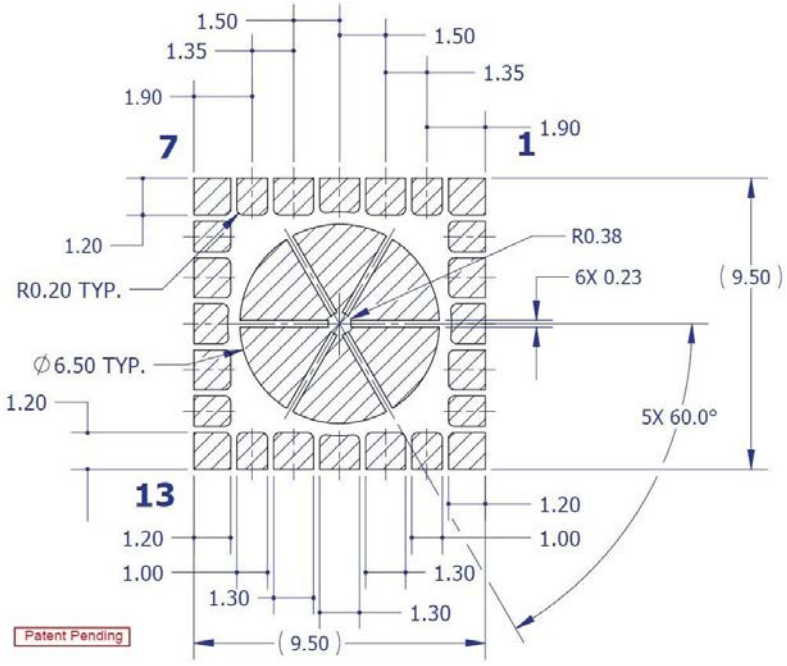


Figure 2a: Recommended solder pad layout for anode, cathode, and thermal pad.

Note for Figure 2a:
1. Unless otherwise noted, the tolerance = ± 0.20 mm.

Recommended Solder Mask Layout (mm)

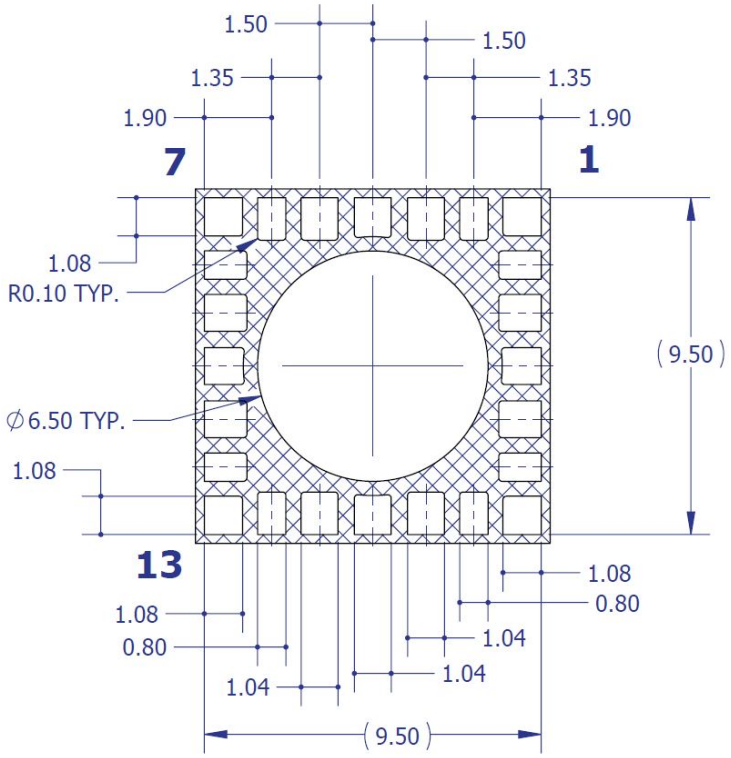


Figure 2b: Recommended solder mask opening (hatched area) for anode, cathode, and thermal pad.

Note for Figure 2b:

1. Unless otherwise noted, the tolerance = ± 0.20 mm.

Reflow Soldering Profile

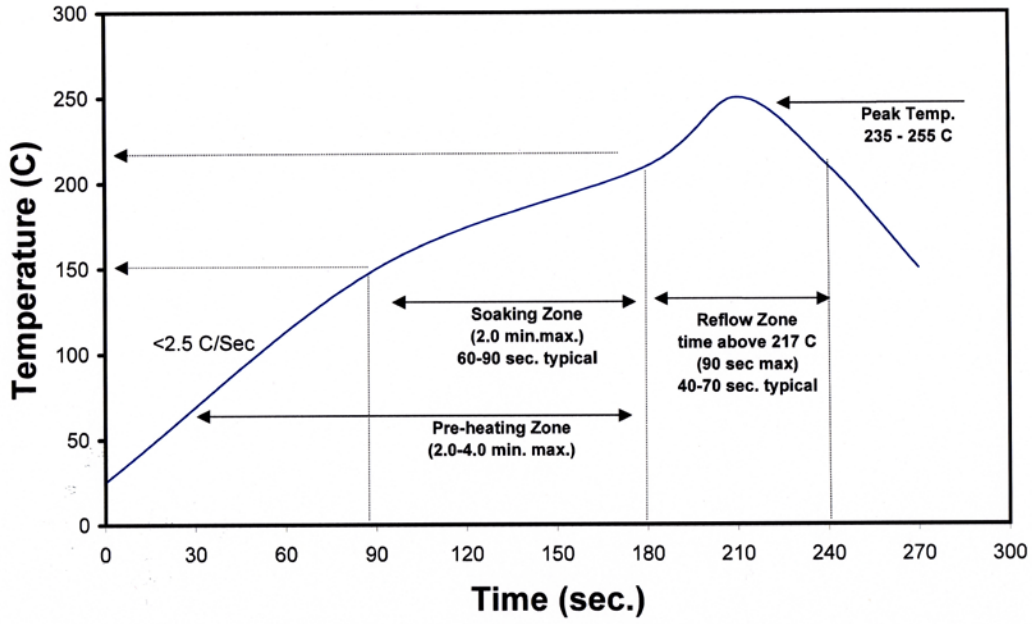


Figure 5: Reflow soldering profile for lead free soldering.

Typical Radiation Pattern

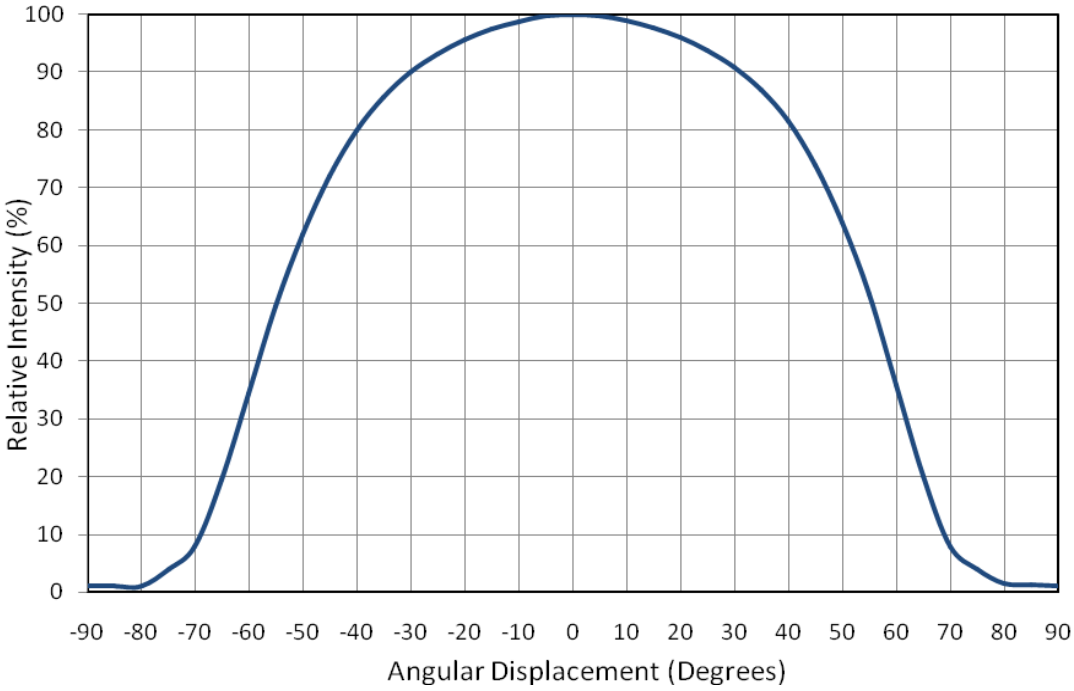


Figure 2: Typical representative spatial radiation pattern.

Typical Relative Spectral Power Distribution

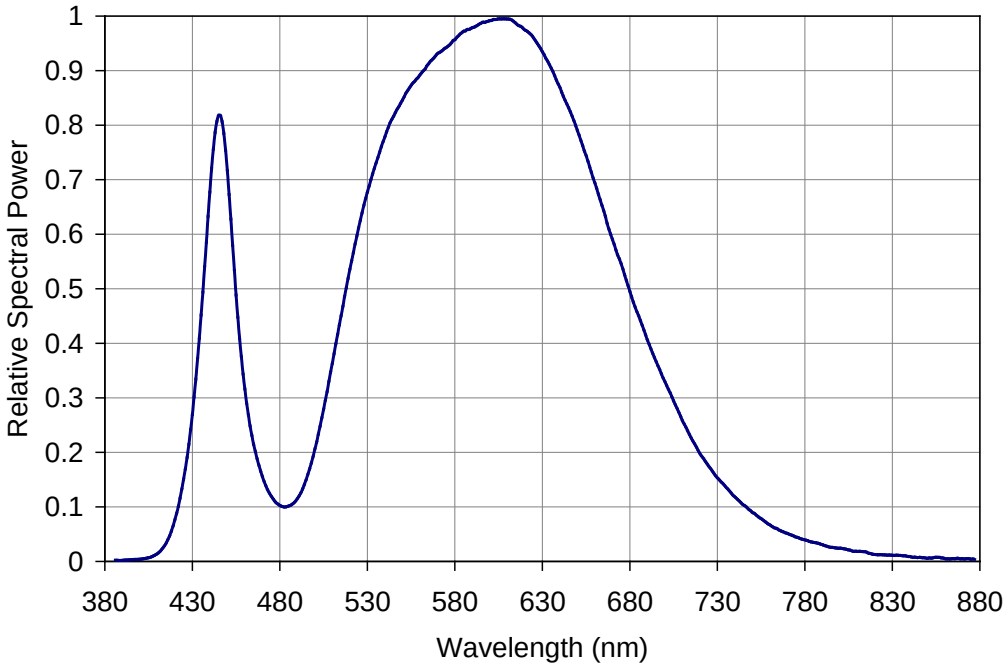


Figure 6: Typical relative spectral power vs. wavelength @ T_C = 25°C.

Typical Relative Light Output

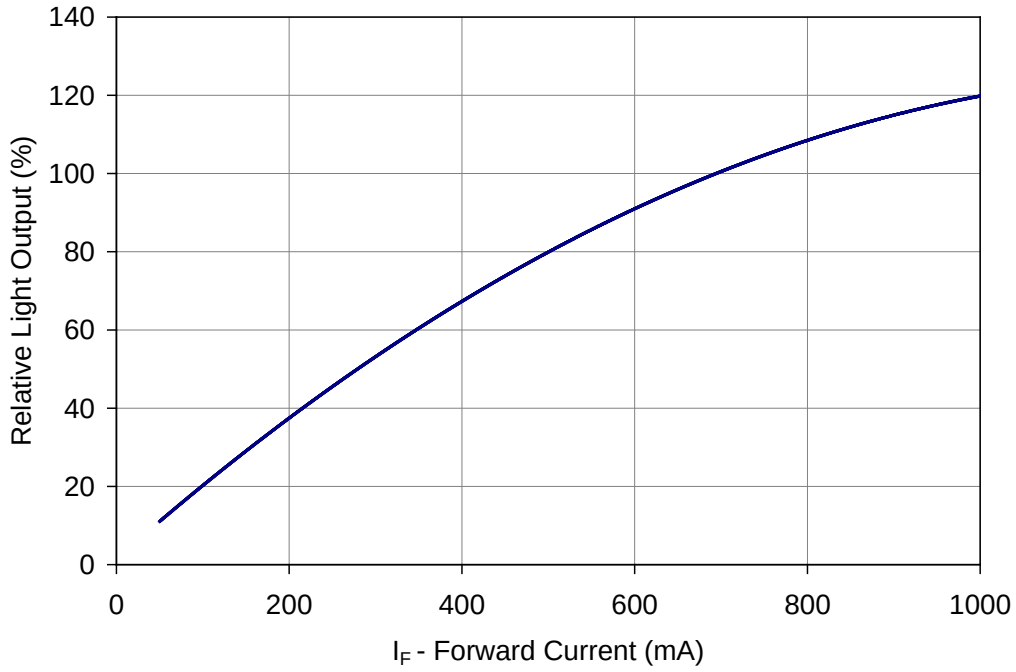


Figure 7: Typical relative light output vs. forward current @ T_C = 25°C.

Notes for Figure 7:

1. Luminous Flux typical value is for all 12 LED dice operating concurrently at rated current.

Typical Relative Light Output over Temperature

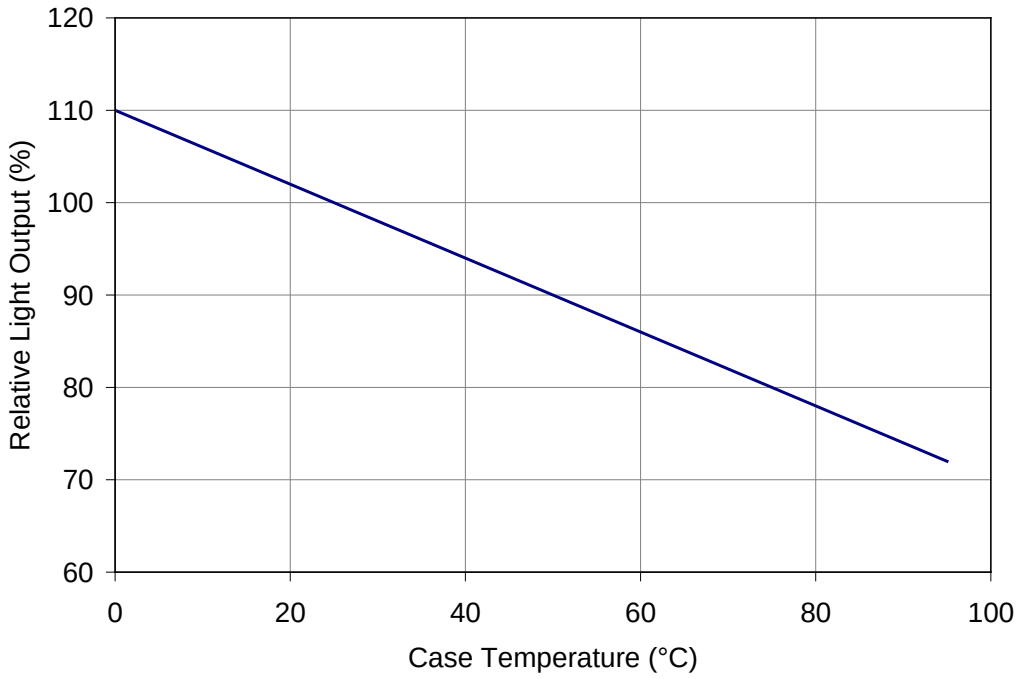


Figure 8: Typical relative light output vs. case temperature.

Notes for Figure 8:

1. Luminous Flux typical value is for all 12 LED dice operating concurrently at rated current.

Typical Forward Current Characteristics

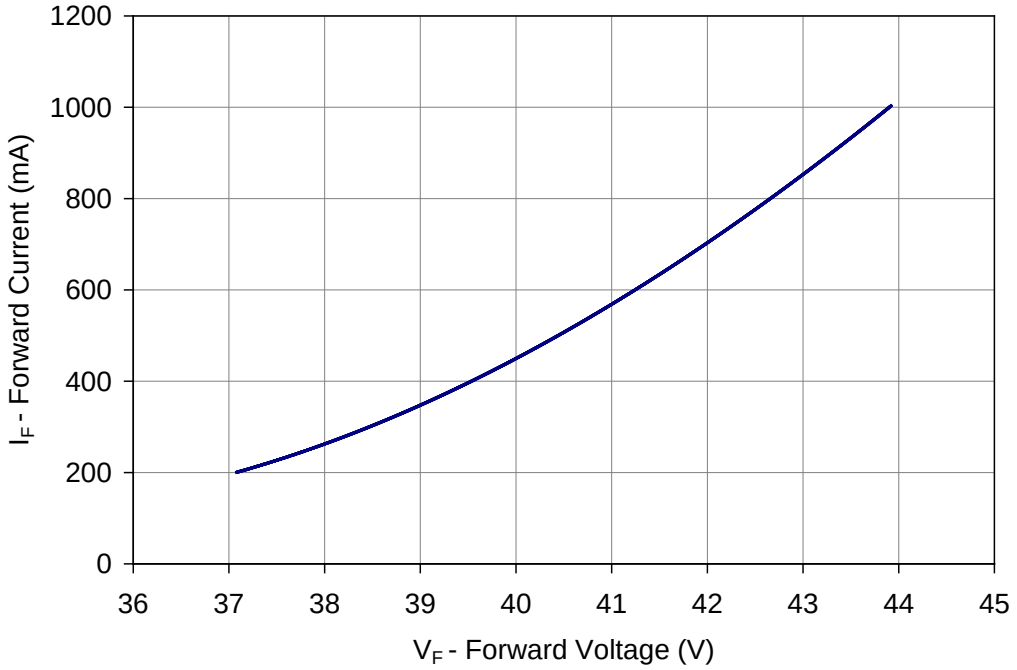


Figure 9: Typical forward current vs. forward voltage @ T_C = at 25°C.

Note for Figure 9:

1. Forward Voltage assumes 12 LED dice connected in series. The actual LED is configured with two strings of 6 dice in series.

Current De-rating

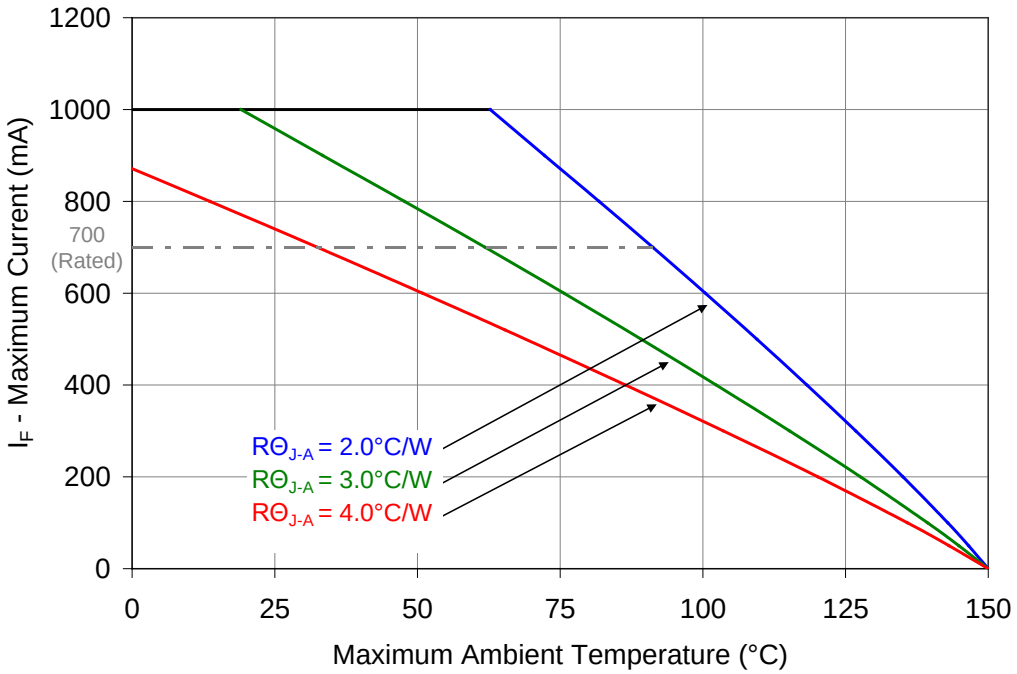


Figure 10: Maximum forward current vs. ambient temperature based on $T_{J(MAX)}$ = 150°C.

Notes for Figure 10:

1. Maximum current assumes that all LED dice are operating concurrently at the same current.
2. $R\Theta_{J-C}$ [Junction to Case Thermal Resistance] for the LZC-00xx00 is typically 0.7°C/W.
3. $R\Theta_{J-A}$ [Junction to Ambient Thermal Resistance] = $R\Theta_{J-C}$ + $R\Theta_{C-A}$ [Case to Ambient Thermal Resistance].

Part-number Nomenclature

The LZ Series base part number designation is defined as follows:

L Z A – B C D E F G – H I J K

A – designates the number of LED die in the package

- 1 for single die emitter package
- 4 for 4-die emitter package
- C for 12-die emitter package
- P for 25-die emitter package

B – designates the package level

- 0 for Emitter only
- Other letters indicate the addition of a MCPCB. See appendix “MCPCB options” for details

C – designates the radiation pattern

- 0 for Clear domed lens (Lambertian radiation pattern)
- 1 for Flat-top
- 3 for Frosted domed lens

D and E – designates the color

- U6 Ultra Violet (365nm)
- UA Violet (400nm)
- DB Dental Blue (460nm)
- B2 Blue (465nm)
- G1 Green (525nm)
- A1 Amber (590nm)
- R1 Red (623nm)
- R2 Deep Red (660nm)
- R3 Far Red (740nm)
- WW Warm White (3100K)
- NW Neutral White (4100K)
- CW Cool White (5500K)
- W2 Warm & Cool White mixed dies
- MC RGB
- MA RGBA
- MD RGBW (6500K)

F and G – designates the package options if applicable

- See “Base part number” on page 2 for details. Default is “00”

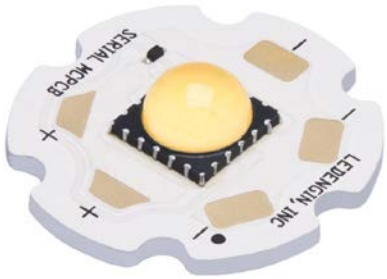
H, I, J, K – designates kit options

- See “Bin kit options” on page 2 for details. Default is “0000”

Ordering information:
For ordering LedEngin products, please reference the base part number above. The base part number represents our standard full distribution flux and wavelength range. Other standard bin combinations can be found on page 2. For ordering products with custom bin selections, please contact a LedEngin sales representative or authorized distributor.

LZC Emitter on
1 channel star MCPCB (1x12)

LZC-7xxxxx



Key Features

- Supports 12 LED dies in series
- Very low thermal Resistance for MCPCB adds only 0.6°C/W
- Multiple mounting and attachment options
- 1-channel configuration allows for easy driver control
- MCPCB contains Zener Diode for ESD protection
- LED Engin LZC Lens family (8 to 45deg) aligns with the MCPCB cutouts
- 28.3mm diameter star MCPCB

Description

The LZC-7xxxxx Standard MCPCB option provides a convenient method to mount LED Engin's LZC emitters. The six recessed features allow the use of M3 or #4 screws to attach the MCPCB to a heat sink. The MCPCB has three sets of "+" (Anode) and "-" (Cathode) solder pads for electrical connections. The MCPCB also contains a Zener diode for enhanced ESD protection.

RΘJ-B Lookup Table

Product	**Emitter Θ_{J-C}**		**MCPCB $R\Theta_{C-B}$**		**Emitter + MCPCB $R\Theta_{J-B}$**
LZC	0.7°C/W	+	0.6°C/W	=	1.3°C/W

Note for table 1:

- RΘJ-B is the combined thermal resistance from the LED die junction to the Aluminum core on MCPCB (RΘJ-C + RΘC-B = RΘJ-B).

LZC emitter on
2 channel star MCPCB (2x6)

LZC-Cxxxxx

Key Features

- Supports 6 LED dies in series twice
- Very low thermal Resistance for MCPCB adds only 0.6°C/W
- Multiple mounting and attachment options
- 2-channel configuration allows for easy driver control
- MCPCB contains Zener Diode for ESD protection
- LED Engin LZC Lens family (8 to 45deg) aligns with the MCPCB cutouts
- 28.3mm diameter star MCPCB

Description

The LZC-Cxxxxx Standard MCPCB option provides a convenient method to mount LED Engin's LZC emitters. The six recessed features allow the use of M3 or #4-40 screws to attach the MCPCB to a heat sink. The MCPCB has three sets of "+" (Anode) and "-" (Cathode) solder pads for electrical connections. The MCPCB also contains a Zener diode for enhanced ESD protection.

RΘJ-B Lookup Table

Product	Emitter Θ_{J-C}		MCPCB $R\Theta_{C-B}$		Emitter + MCPCB $R\Theta_{J-B}$
LZC-Cxxxxx	0.7°C/W	+	0.6°C/W	=	1.3°C/W

Note for table 1

- RΘJ-B is the combined thermal resistance from the LED die junction to the Aluminum core on MCPCB (RΘJ-C + RΘC-B = RΘJ-B).

LZC emitter on
1 channel 1x12 connectorized MCPCB with thermistor

LZC-ExxxT1

Key Features

- Supports 12 LED dies in series
- Very low thermal Resistance for MCPCB adds only 0.6°C/W
- Multiple mounting and attachment options
- 1-channel configuration allows for easy driver control
- MCPCB contains Zener Diodes for ESD protection
- LED Engin LZC Lens family (8 to 45deg) aligns with the MCPCB cutouts
- One poke-home/in connectors already mounted on the MCPCB for easy connections
- Including thermistor to control max MCPCB temperatures
- 49.9mm diameter star MCPCB

Description

The LZC-ExxxT1 MCPCB with two 2-pin poke-in connectors provides a convenient method to mount LED Engin's LZC emitters. The four recessed features allow the use of M3 or #4-40 screws to attach the MCPCB to a heat sink. The MCPCB has a 2 pin poke-home connector for electrical connections as well as a 2 pin poke-in connector for control of the thermistor. The MCPCB also contains a Zener diode for enhanced ESD protection.

RΘJ-B Lookup Table

Product	**Emitter Θ_{J-C}**		**MCPCB $R\Theta_{C-B}$**		**Emitter + MCPCB $R\Theta_{J-B}$**
LZC-Exxxxx	0.7°C/W	+	0.6°C/W	=	1.3°C/W

Note for table 1

- $R\Theta_{J-B}$ is the combined thermal resistance from the LED die junction to the Aluminum core on MCPCB ($R\Theta_{J-C}$ + $R\Theta_{C-B}$ = $R\Theta_{J-B}$).

LZC emitter on
1 channel 2x6 connectorized MCPCB with thermistor

LZC-FxxxT1

Key Features

- Supports 6 LED dies in series twice, connected in parallel
- Very low thermal Resistance for MCPCB adds only 0.6°C/W
- Multiple mounting and attachment options
- 1-channel configuration for 2x6 allows for easy driver connection
- MCPCB contains Zener Diodes for ESD protection
- LED Engin LZC Lens family (8 to 45deg) aligns with the MCPCB cutouts
- One poke-home/in connectors already mounted on the MCPCB for easy connections
- One poke-home/in connector for the on board thermistor
- 49.9mm diameter star MCPCB

Description

The LZC-FxxxT1 MCPCB with two 2-pin poke-in connectors provides a convenient method to mount LED Engin's LZC emitters. The four recessed features allow the use of M3 or #4-40 screws to attach the MCPCB to a heat sink. The MCPCB has a 2 pin poke-home connector for electrical connections as well as a 2 pin poke-in connector for control of the thermistor. The MCPCB also contains a Zener diode for enhanced ESD protection.

RΘJ-B Lookup Table

Product	**Emitter Θ_{J-C}**		**MCPCB $R\Theta_{C-B}$**		**Emitter + MCPCB $R\Theta_{J-B}$**
LZC-Fxxxxx	0.7°C/W	+	0.6°C/W	=	1.3°C/W

Note for table 1

- $R\Theta_{J-B}$ is the combined thermal resistance from the LED die junction to the Aluminum core on MCPCB ($R\Theta_{J-C}$ + $R\Theta_{C-B}$ = $R\Theta_{J-B}$).

Company Information

LED Engin, based in California's Silicon Valley, specializes in ultra-bright, ultra compact solid state lighting solutions allowing lighting designers & engineers the freedom to create uncompromised yet energy efficient lighting experiences.

Our LuxiGen™ Platform— an emitter and lens combination or integrated module solution, delivers superior flexibility in light output, ranging from 3w to 90w, a wide spectrum of available colors, including whites, multi-color and UV, and the ability to deliver upwards of 4,600 high quality lumens to a target. The small size, yet remarkably powerful output, allows for a previously unobtainable freedom of design wherever high-flux density, directional light is required.

Our LuxiLamp™_ Series of PAR and MR16 replacement lamps and SPOT lighting modules leverage our LuxiGen emitters and lenses to deliver quality, control and high density white light solutions for a broad range of recessed and downlighting applications. www.ledengin.com

Please contact Sales@ledengin.com or (408) 492-0620 for more information.

* LedEngin reserves the right to make changes to improve performance without notice.