

# PHILIPS LIGHTOLIER

## Downlighting

### Calculite LED gen 3

6" square downlight,  
1000-6000lm



Project: \_\_\_\_\_

Location: \_\_\_\_\_

Cat.No: \_\_\_\_\_

Type: \_\_\_\_\_

Lamps: \_\_\_\_\_ Qty: \_\_\_\_\_

Notes: \_\_\_\_\_

Calculite LED 6" generation 3 features industry leading visual comfort, excellent uniform illumination over time, and patented installation flexibility.

Complete luminaire = Frame + Engine + Trim + Accessories (optional)

#### Frame

example: C6SN

Series	Aperture	Installation	Voltage/Options
<b>C6</b>	<b>S</b>		
<b>C6</b> Calculite LED 6" aperture	<b>S</b> Square	<b>N</b> New construction <sup>1</sup> <b>R</b> Remodeler	— Universal 120 V/277 V (specify for Power Over Ethernet configurations) <b>3</b> 347 V (not compatible with ELV dimming) <b>EM</b> Emergency <sup>1,2</sup> <b>LC</b> Chicago Plenum <sup>1</sup>

#### Engine

example: C6L20835MZ10U

Series	Lumens	CRI	CCT	Beam <sup>4</sup>	Dimming	Voltage
<b>C6L</b>						
<b>C6L</b> Calculite LED 6" aperture	<b>10</b> 1000lm <b>15</b> 1500lm <b>20</b> 2000lm <b>25</b> 2500lm <b>35</b> 3500lm <b>48</b> 4800lm <sup>3</sup> <b>60</b> 6000lm <sup>3</sup>	<b>8</b> 80 CRI <b>9</b> 90 CRI	<b>27</b> 2700 K <b>30</b> 3000 K <b>35</b> 3500 K <b>40</b> 4000 K	<b>N</b> Narrow <b>M</b> Medium & Wide	<b>Z10</b> 0-10 V 1% <sup>3</sup> <b>SOL</b> EldoLED Solo 0-10 V 0.1% <b>D</b> Dali <b>L</b> Lutron LDE1 EcoSystem (fade-to-black) <b>E</b> ELV (120V dimming only) <sup>5</sup> <b>P</b> Power over Ethernet Only compatible with 1000 (10) to 2500 (25) lumen configurations.	<b>U</b> Universal 120 V/277 V/347 V <b>1</b> Universal 120 V/277 V <b>E</b> Ethernet 48 V DC

#### Trim

example: C6SDLNMCCP

Series	Aperture	Style	Beam <sup>4</sup>	Finish	Flange
<b>C6</b>	<b>S</b>	<b>DL</b>			
<b>C6</b> Calculite LED 6" aperture	<b>S</b> Square	<b>DL</b> Downlight	<b>NM</b> Narrow & Medium <b>W</b> Wide	<b>CL</b> Specular clear <b>CC</b> Comfort clear <b>CD</b> Comfort clear diffuse <b>WH</b> White (matte)	— White (matte) <b>P</b> Polished <b>F</b> Flangeless — White (matte) <b>F</b> Flangeless

#### Beam options

Trim	Narrow engine	Medium engine
<b>Narrow &amp; Medium</b>	37° (0.6 s.c.)	56° (0.9 s.c.)
<b>Wide</b>	Not recommended	65° (1.1 s.c.)

#### Accessories

<b>CA6SFT</b>	Mud-in ring for use with flangeless installations (ordered with a flangeless trim)
<b>CAEM</b>	Field installable EM pack
<b>AMS</b>	ActiLume multi-sensor (optional accessory for Power Over Ethernet configurations)
<b>SWZDT</b>	SpaceWise wireless controller with dwell time functionality, compatible with all 0-10V configurations (for details see "SWZDT" spec sheet)

- Emergency (EM) and Chicago Plenum (LC) options are only available with New construction (N) installations.
- Emergency (EM) frame comes with emergency battery pack and ceiling mountable test switch. Reflector mounted test switch requires above ceiling access. For reflector mounted test switch, order emergency frame and add "EM" suffix to reflector (example: C6S DLCCEM).
- The 4800lm (48) and 6000lm (60) packages are only available with 0-10V (Z10) dimming and have marked spacing requirements (see page 3).
- See Beam Options table to the left for light engine and trim combination spacing criterion.
- ELV (E) dimming is only compatible with up to 2500lm (25) configurations.

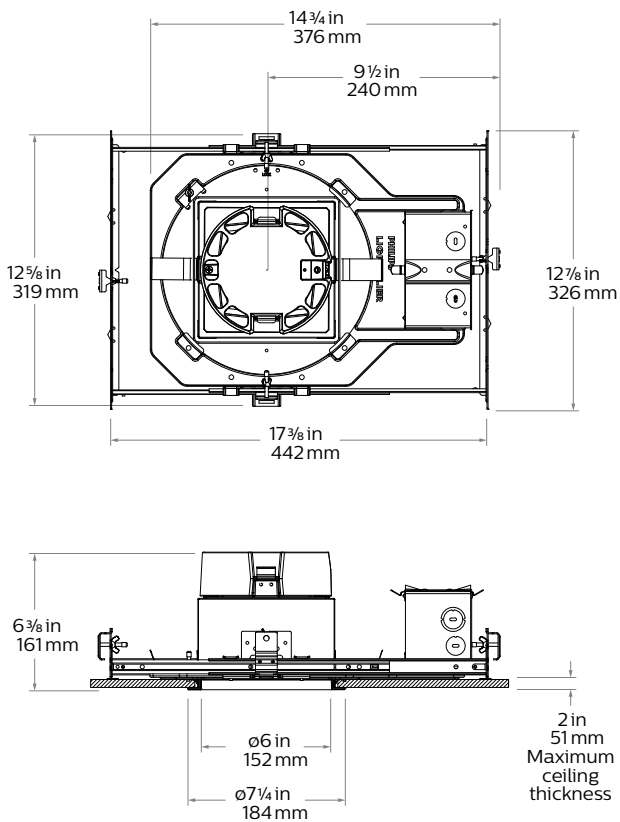
CalculiteLEDgen3\_6in\_Downlight\_C6SDL



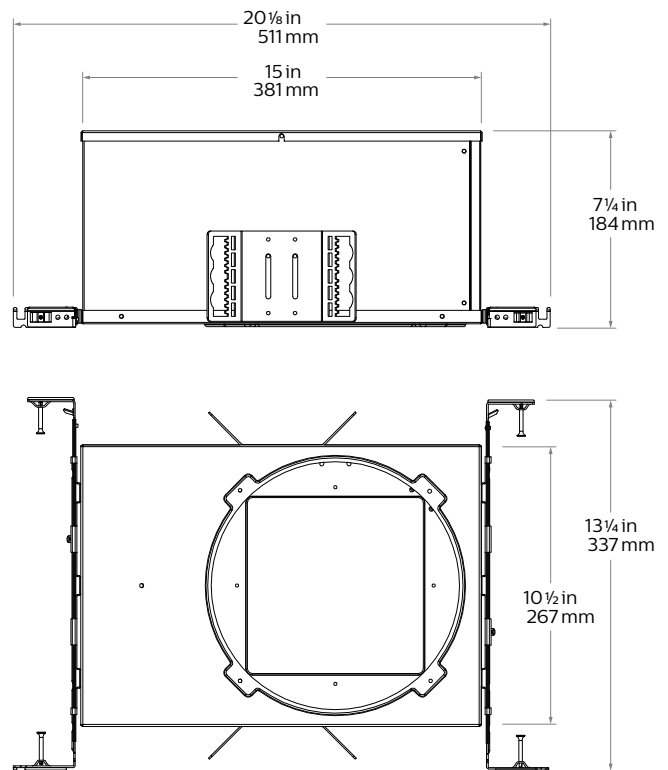
# C6SDL Calculite LED generation 3

## 6" square downlight

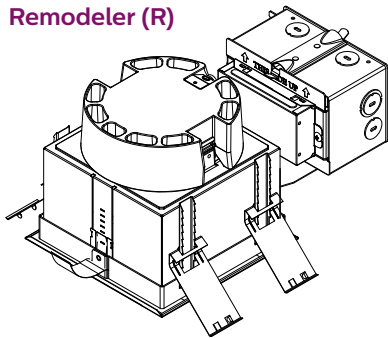
### New Construction (N)



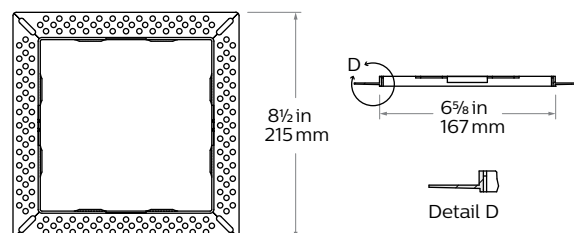
### Chicago Plenum (LC)



### Remodeler (R)

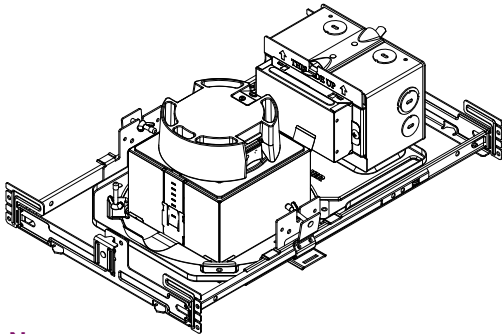


### Flangeless mud-in ring (CA6SFT) accessory



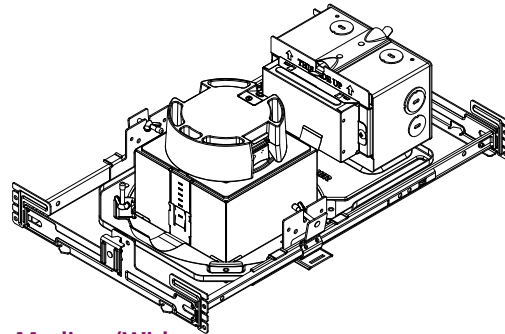
# C6SDL Calculite LED generation 3

## 6" square downlight



### Narrow

Light engine	Input volts	Input freq	Input current	Drive current	Input power	LED power	THD power	Power factor
<b>C6L10_NZ10U</b>	120V	50/60Hz	0.08	230 mA	9W	8W	<15%	>0.95
	277V		0.04				<20%	>0.95
<b>C6L15_NZ10U</b>	120V	50/60Hz	0.11	340 mA	15W	11W	<10%	>0.95
	277V		0.05				<15%	>0.95
<b>C6L20_NZ10U</b>	120V	50/60Hz	0.16	460 mA	22W	16W	<10%	>0.95
	277V		0.08				<15%	>0.95
<b>C6L25_NZ10U</b>	120V	50/60Hz	0.20	590 mA	25W	21W	<10%	>0.95
	277V		0.10				<15%	>0.95
<b>C6L35_NZ10U</b>	120V	50/60Hz	0.30	900 mA	36W	30W	<10%	>0.95
	277V		0.14				<15%	>0.95
<b>C6L48_NZ10U</b>	120V	50/60Hz	0.42	1250 mA	51W	44W	<10%	>0.95
	277V		0.19				<15%	>0.95
<b>C6L60_NZ10U</b>	120V	50/60Hz	0.48	1400 mA	57W	50W	<10%	>0.95
	277V		0.21				<15%	>0.95



### Medium/Wide

Light engine	Input volts	Input freq	Input current	Drive current	Input power	LED power	THD power	Power factor
<b>C6L10_MZ10U</b>	120V	50/60Hz	0.08	210 mA	9W	8W	<15%	>0.95
	277V		0.04				<20%	>0.95
<b>C6L15_MZ10U</b>	120V	50/60Hz	0.11	320 mA	15W	11W	<10%	>0.95
	277V		0.05				<15%	>0.95
<b>C6L20_MZ10U</b>	120V	50/60Hz	0.15	430 mA	19W	15W	<10%	>0.95
	277V		0.07				<15%	>0.95
<b>C6L25_MZ10U</b>	120V	50/60Hz	0.19	550 mA	23W	19W	<10%	>0.95
	277V		0.09				<15%	>0.95
<b>C6L35_MZ10U</b>	120V	50/60Hz	0.25	570 mA	30W	25W	<10%	>0.95
	277V		0.11				<15%	>0.95
<b>C6L48_MZ10U</b>	120V	50/60Hz	0.36	810 mA	40W	34W	<10%	>0.95
	277V		0.16				<15%	>0.95
<b>C6L60_MZ10U</b>	120V	50/60Hz	0.50	1130 mA	57W	50W	<10%	>0.95
	277V		0.22				<15%	>0.95

### Narrow (Power over Ethernet)

Light engine	Input				
	Volts <sup>1</sup>	Voltage <sup>2</sup>	Freq	Current	Power
<b>C6L10___NPE</b>	53V	51-54V	DC	160 mA	8.9 W
<b>C6L15___NPE</b>	53V	51-54V	DC	250 mA	13.7 W
<b>C6L20___NPE</b>	53V	51-54V	DC	330 mA	17.7 W
<b>C6L25___NPE</b>	53V	51-54V	DC	420 mA	22.8 W

### Medium (Power over Ethernet)

Light engine	Input				
	Volts <sup>1</sup>	Voltage <sup>2</sup>	Freq	Current	Power
<b>C6L10___MPE</b>	53V	51-54V	DC	160 mA	8.4 W
<b>C6L15___MPE</b>	53V	51-54V	DC	230 mA	12.5 W
<b>C6L20___MPE</b>	53V	51-54V	DC	310 mA	16.7 W
<b>C6L25___MPE</b>	53V	51-54V	DC	390 mA	21.4 W

### Wide (Power over Ethernet)

Light engine	Input				
	Volts <sup>1</sup>	Voltage <sup>2</sup>	Freq	Current	Power
<b>C6L10___WPE</b>	53V	51-54V	DC	160 mA	8.4 W
<b>C6L15___WPE</b>	53V	51-54V	DC	230 mA	12.5 W
<b>C6L20___WPE</b>	53V	51-54V	DC	310 mA	16.7 W
<b>C6L25___WPE</b>	53V	51-54V	DC	390 mA	21.4 W

1. Nominal input volts.  
2. Preferred volt range.

### Marked spacing applications

Light engine	4800lm	6000lm
<b>C6L_Z10U series</b>	X	X
<b>C6L_LU series</b>	—	—
<b>C6L_DU series</b>	—	—

Modules marked with an X require marked spacing:  
 - Center-to-center of adjacent luminaires: 24" (610mm)  
 - Luminaire center to side building member: 12" (305mm)

### Lifetime (TM-21) data

Lumens	Narrow beam	Medium/Wide beam*
<b>1000lm</b> <b>1500lm</b> <b>2000lm</b> <b>2500lm</b> <b>3500lm*</b> <b>4800lm</b>	L90 @ 60,000hrs.	L90 @ 60,000hrs.
<b>6000lm</b>	L90 @ 60,000hrs.	L80 @ 60,000hrs.

\* Lutron 3500lm with Medium/Wide beam is L85 @ 60,000hrs.

# C6SDL Calculite LED generation 3

## 6" square downlight

### Frame-in-kits

#### New Construction

Galvanized stamped steel for dry or plaster ceilings. Preinstalled telescoping mounting bars from 13" to 24". For 4' distances, use 1/2" EMT, 1-1/2" x 1/2" U or C channel.

**Max ceiling thickness is 2" (51 mm). Including PoE frame 4-7/8" (124 mm).**

#### Patented install Mounting frame

With no driver attached, this versatile frame is independent of driver accommodating a wide range of lumen packages, driver types and CCTs, including 120V and 277V inputs.

Pre-installed mounting bars allow for fast and tool-less installation into T-grid and hat channel ceilings.

Close-cut aperture design eliminates the possibility of undesired gap between ceiling opening and reflector flange.

Separate wiring compartment for wiring frame to building allows inspection prior to light engine installation.

Simple plug-and-play connection between the frame and light engine from below the ceiling eliminates the need for wiring between frame and LED driver, and also saves time during installation and future replacements/upgrades. Plug-and-play receptacle accommodates technology upgrade of light engines and replacements for the life of the building.

Features easy alignment of fixtures and present locking at 0°, 45°, and 90°. 360° rotation with tool-less locking.

### Dimming

- Advance 0-10V 1% dimming
- Lutron Hi-lume EcoSystem H Series 1% dimming
- EldoLED ECOdrive Dali 1% dimming
- EldoLED SOLOdrive 0-10V 0.1% dimming
- ELV dimming

### Power over Ethernet

**Powered via Philips PoE lighting controller:** complies with FCC rules per Title 47 part 15 (Class A) for EMI / RFI (conducted & radiated). PoE lighting controller accessible from below ceiling.

**Rated life:** 60,000 hrs at 70% lumen maintenance based on IES LM-80-08 and TM-21-11.

### Optical systems

#### Comfort throughout the space:

Patented optical system combines primary and secondary optics to provide a true 50° physical cutoff and 45° reflected cutoff virtually eliminating the view of the light source and bright spots in the reflector. A new reflector curve reduces reflector brightness by up to 50% compared to existing products, allowing for the use of higher lumen packages in smaller apertures without creating bright spots in the ceiling.

**Quality of light:** 2 SDCM ensures color consistency from fixture to fixture and over the luminaire's long lifetime. Proprietary optical grade silicone lens with patterned surface provides soft, even beam diffusion without hotspots or dark rings.

### Light Engine

Quick connect power pack comprised of light source and driver allow for easy installation and replacement from below ceiling with no need for additional wiring. This allows for:

- Frame and ceiling installation to be performed while still finalizing details such as lumen packages, CCT and control type.
- Easy replacement of electronics at end of life with minimal wasted material and labor required.
- Ease and upgradability of technology.

### Options and Accessories

**Flangeless mud-in ring:** Use **CA4RFT** for use with flangeless plaster installations.

### ENERGY STAR® exceptions

90 CRI configurations  
347V and Emergency configurations  
Dali & EldoLED Solo dimming  
Power over Ethernet driver

### Labels and Listings

cULus listed for wet location  
ENERGY STAR®  
CCEA (frames with \*LC suffix)  
IBEW Union made (light engines & reflectors)  
RoHS compliant

### Warranty

5 year warranty on complete system.

Complete warranty available at: [http://images.philips.com/is/content/PhilipsConsumer/PDFDownloads/United%20States/ODLI20150930\\_003-UPD-en\\_US-Philips-warranty-indoor-PLS-us.pdf](http://images.philips.com/is/content/PhilipsConsumer/PDFDownloads/United%20States/ODLI20150930_003-UPD-en_US-Philips-warranty-indoor-PLS-us.pdf)

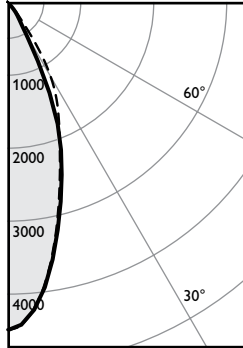


# C6SDL Calculite LED generation 3

## 6" square downlight

Narrow beam, 2500lm Engine, 89.3 lm/w at 23.9W or 93.6 lm/W at 22.8W (Power over Ethernet)

Candela Curve



Frame: **C6SN**  
Engine: **C6L25835NZ10U**  
Trim: **C6SDLNMCL**  
CCT<sup>1</sup>: 3500K  
Output lumens: 2133 lms  
Input watts: 23.9 W (±5%)  
CRI: 80 min  
Spacing Crit.: 0.6  
Beam Angle: 37°

Zonal summary

Zone	Lumens	%Luminaire
0-30	1802	84.5%
0-40	2053	96.3%
0-60	2132	99.9%
0-90	2133	100.0%

Angle	0°	45°	Lms
0	4487	4487	380
5	4220	4210	
10	3570	3525	
15	2822	2741	764
20	2148	2098	
25	1366	1643	658
30	559	1189	
35	284	570	251
40	175	209	
45	80	103	72
50	15	39	
55	2	8	6
60	1	1	
65	1	1	1
70	1	1	
75	1	0	0
80	0	0	
85	1	1	1
90	0	0	

Single unit data

Height to lighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	179	3.0'
6'	125	3.6'
7'	92	4.2'
8'	70	4.8'
9'	55	5.4'

\* Beam diameter is where foot-candles drop to 50% of maximum.

Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq. ft.
5'	98.9	1.06
6'	64.9	0.70
7'	46.3	0.50
8'	38.6	0.41
9'	30.9	0.33

38' x 38' x 10' Room, Workplane 2.5'  
above floor, 80/50/20% Reflectances

**Efficacy: 89.3 lm/w**  
Report#: F37156

Adjustment factors

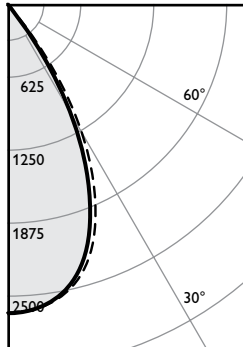
Finish	CCT	Lumens
CL = 100%	80CRI 4000K = 103%	6000lm = 202%
CCL = 95%	80CRI 3500K = 100%	4800lm = 192%
CCD = 87%	80CRI 3000K = 95%	3500lm = 140%
CCZ = 63%	80CRI 2700K = 93%	2500lm = 100%
WH = 87%	90CRI 3000K = 83%	2000lm = 80%
BK = 57%	90CRI 2700K = 78%	1500lm = 60%
		1000lm = 40%

Coefficients of utilization

Celling	80%				70%				50%				30%				0%
Wall	70	50	30	10	50	10	50	10	50	10	50	10	50	10	50	10	0
RCR	Zonal cavity method - Effective floor reflectance = 20%																
Room Cavity Ratio	0	119	119	119	119	116	116	111	111	106	106	100	106	106	100	100	100
1	114	112	109	107	110	106	106	102	102	99	99	95	102	99	95	95	95
2	109	105	101	98	103	97	100	95	97	93	93	90	97	93	90	90	90
3	105	99	95	91	98	90	95	89	93	88	85	85	93	88	85	85	85
4	100	94	89	85	93	85	90	84	89	83	80	80	89	83	80	80	80
5	96	89	84	80	88	80	86	79	85	78	76	76	85	78	76	76	76
6	92	84	79	75	84	75	82	75	81	74	72	72	81	74	72	72	72
7	88	80	75	71	80	71	78	71	77	70	69	69	77	70	69	69	69
8	85	76	71	68	76	68	75	67	74	67	66	66	74	67	66	66	66
9	81	73	68	64	73	64	72	64	71	64	63	63	71	64	63	63	63
10	78	70	65	61	69	61	69	61	68	61	60	60	68	61	60	60	60

Medium beam, 2500lm Engine, 101.6 lm/w at 21.3W or 101.1 lm/W at 21.4W (Power over Ethernet)

Candela Curve



Frame: **C6SN**  
Engine: **C6L25835MZ10U**  
Trim: **C6SDLNMCL**  
CCT<sup>1</sup>: 3500K  
Output lumens: 2164 lms  
Input watts: 21.3 W (±5%)  
CRI: 80 min  
Spacing Crit.: 0.9  
Beam Angle: 55°

Zonal summary

Zone	Lumens	%Luminaire
0-30	1647	76.1%
0-40	2058	95.1%
0-60	2162	99.9%
0-90	2164	100.0%

Angle	0°	45°	Lms
0	2647	2647	247
5	2624	2620	
10	2539	2530	
15	2382	2348	654
20	2088	2101	
25	1615	1730	745
30	1058	1222	
35	563	723	411
40	249	326	
45	88	133	97
50	16	43	
55	3	9	7
60	2	1	
65	1	1	1
70	1	1	
75	1	0	1
80	1	0	
85	1	1	1
90	0	0	

Single unit data

Height to lighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	106	4.5'
6'	74	5.4'
7'	54	6.3'
8'	41	7.2'
9'	33	8.1'

\* Beam diameter is where foot-candles drop to 50% of maximum.

Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq. ft.
5'	99.1	0.94
6'	65.0	0.62
7'	46.5	0.44
8'	38.7	0.37
9'	31.0	0.30

38' x 38' x 10' Room, Workplane 2.5'  
above floor, 80/50/20% Reflectances

**Efficacy: 101.6 lm/w**  
Report#: F37167

Adjustment factors

Finish	CCT	Lumens
CL = 100%	80CRI 4000K = 102%	6000lm = 240%
CCL = 95%	80CRI 3500K = 100%	4800lm = 192%
CCD = 87%	80CRI 3000K = 97%	3500lm = 140%
CCZ = 63%	80CRI 2700K = 87%	2500lm = 100%
WH = 87%	90CRI 3000K = 77%	2000lm = 80%
BK = 57%	90CRI 2700K = 73%	1500lm = 60%
		1000lm = 40%

Coefficients of utilization

Celling	80%				70%				50%				30%				0%
Wall	70	50	30	10	50	10	50	10	50	10	50	10	50	10	50	10	0
RCR	Zonal cavity method - Effective floor reflectance = 20%																
Room Cavity Ratio	0	119	119	119	119	116	116	111	111	106	106	100	106	106	100	100	100
1	114	111	109	107	109	105	105	102	102	99	99	94	101	99	94	94	94
2	108	104	100	97	102	96	99	93	96	91	88	88	96	91	88	88	88
3	103	97	92	89	96	88	93	86	91	85	82	82	91	85	82	82	82
4	98	91	86	82	90	81	88	80	86	79	77	77	86	79	77	77	77
5	94	86	80	76	85	75	83	75	81	74	72	72	81	74	72	72	72
6	89	81	75	71	80	70	78	70	77	69	68	68	77	69	68	68	68
7	85	76	70	66	75	66	74	66	73	65	64	64	73	65	64	64	64
8	81	72	66	62	71	62	70	62	69	61	60	60	69	61	60	60	60
9	77	68	62	58	67	58	66	58	66	58	56	56	66	58	56	56	56
10	74	64	59	55	64	55	63	55	62	55	53	53	62	55	53	53	53

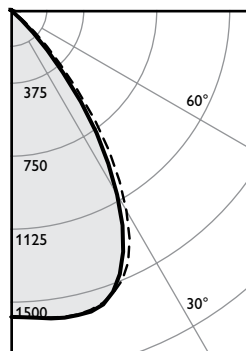
1. Correlated Color Temperature within specs as defined in ANSI\_NEMA\_ANSI C78.377-2008: Specifications for the Chromaticity of Solid State Lighting Products.
2. Tested using absolute photometry as specified in LM79: IESNA Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products.

# C6SDL Calculite LED generation 3

## 6" square downlight

Wide beam, 2500lm Engine, 90.0 lm/w at 21.3W or 89.6 lm/W at 21.4W (Power over Ethernet)

Candela Curve



Frame: **C6SN**  
 Engine: **C6L25835MZ10U**  
 Trim: **C6SDLWCL**

CCT<sup>1</sup>: 3500K  
 Output lumens: 1917 lms  
 Input watts: 21.3 W (±5%)  
 CRI: 80 min  
 Spacing Crit.: 1.1  
 Beam Angle: 68°

Zonal summary

Zone	Lumens	%Luminaire
0-30	1225	63.9%
0-40	1726	90.1%
0-60	1914	99.9%
0-90	1917	100.0%

Angle	0°	45°	Lms
0	1573	1573	151
5	1584	1581	
10	1602	1603	
15	1601	1592	447
20	1538	1544	
25	1368	1428	627
30	1095	1190	
35	771	883	502
40	419	531	
45	165	266	176
50	23	96	
55	4	15	12
60	2	2	
65	1	1	1
70	1	1	
75	1	1	1
80	1	0	
85	1	1	1
90	0	0	

Single unit data

Height to lighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	63	5.5'
6'	44	6.6'
7'	32	7.7'
8'	25	8.8'
9'	19	9.9'

\* Beam diameter is where foot-candles drop to 50% of maximum.

Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq. ft.
5'	86.6	0.94
6'	56.8	0.62
7'	40.6	0.44
8'	33.8	0.37
9'	27.1	0.30

38' x 38' x 10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances

**Efficacy: 90.0 lm/w**  
 Report#: F37139

Adjustment factors

Finish	CCT	Lumens
CL = 100%	80CRI 4000K = 102%	6000lm = 240%
CCL = 95%	80CRI 3500K = 100%	4800lm = 192%
CCD = 87%	80CRI 3000K = 97%	3500lm = 140%
CCZ = 63%	80CRI 2700K = 87%	2500lm = 100%
WH = 87%	90CRI 3000K = 77%	2000lm = 80%
BK = 57%	90CRI 2700K = 73%	1500lm = 60%
		1000lm = 40%

Coefficients of utilization

Celling	80%				70%				50%				30%				0%
Wall	70	50	30	10	50	10	50	10	50	10	50	10	50	10	50	10	0
RCR	Zonal cavity method - Effective floor reflectance = 20%																
0	119	119	119	119	116	116	111	111	106	106	100	98	93				
1	113	110	108	106	108	104	104	101	100	98	93						
2	107	102	98	95	101	94	97	91	94	89	86						
3	102	95	90	86	93	85	91	83	88	82	79						
4	96	88	82	78	87	77	85	77	83	76	73						
5	91	82	76	71	81	71	79	70	78	70	68						
6	86	76	70	66	76	65	74	65	73	65	63						
7	81	71	65	61	71	60	69	60	68	60	58						
8	77	67	61	56	66	56	65	56	64	56	54						
9	73	63	56	52	62	52	61	52	60	52	50						
10	69	59	53	49	58	49	58	49	57	48	47						

1. Correlated Color Temperature within specs as defined in ANSI\_NEMA\_ANSLG C78.377-2008: Specifications for the Chromaticity of Solid State Lighting Products.  
 2. Tested using absolute photometry as specified in LM79: IESNA Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products.

