

# 304 Series™

LED Interior Recessed Luminaire

## Product Description

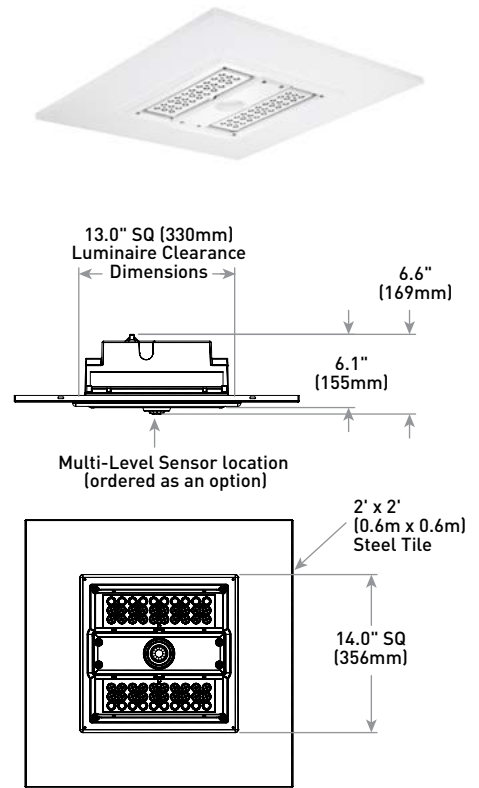
High performance energy efficient LED down light, designed for use in drop ceilings with 20-24" (508-610mm) on center building construction. Luminaire mounts to 2' x 2' (0.6m x 0.6m) heavy gauge steel tile allowing it to be mounted directly into grid ceiling systems. Tile includes mounting slots to allow for bailing wire, as required by local code. Slim, low profile design. Luminaire is constructed from die cast and extruded aluminum components. LED driver is mounted in a sealed weather-tight center chamber that allows for access from below the luminaire. High performance heat sinks specifically designed for LED recessed applications

**Applications:** Interior high-bay or low-bay, convenience stores, warehouses and gymnasiums

## Performance Summary

- Patented NanoOptic® Product Technology
- Made in the U.S.A. of U.S. and imported parts
- CRI:** Minimum 70 CRI
- CCT:** 4000K (+/- 300K), 5700K (+/- 500K) standard
- Limited Warranty\*:** 10 years on luminaire/10 years on Colorfast DeltaGuard® finish

\*See <http://lighting.cree.com/warranty> for warranty terms



LED Count (x10)	Weight
04	22.0 lbs. (10.0kg)
06	22.0 lbs. (10.0kg)

## Ordering Information

Example: INT 304 5M RM 04 E UL WH 350 IC

INT 304		RM		E				
Product	Optic	Mounting	LED Count (x10)	Series	Voltage	Color Options	Drive Current	Options
INT 304	<b>5M</b> Type V Medium <b>5S</b> Type V Short <b>PS</b> Petroleum Symmetric <b>SL</b> Sparkle Petroleum <b>40</b> 40° Flood	RM Recessed	<b>04</b> <b>06</b> - Available on Non-IC rated product only	E	<b>UL</b> Universal 120-277V - Available on IC rated product only <b>UH</b> Universal 347-480V - Available on IC rated product only <b>12</b> 120V - Available on Non-IC rated product only <b>27</b> 277V - Available on Non-IC rated product only	<b>BK</b> Black <b>BZ</b> Bronze <b>SV</b> Silver <b>WH</b> White	<b>350</b> 350mA <b>525</b> 525mA - Available on Non-IC rated product only <b>700</b> 700mA - Available on Non-IC rated product only - Available with 40 LEDs	<b>40K 4000K Color Temperature</b> - Minimum 70 CRI - Color temperature per luminaire <b>DIM 0-10V Dimming</b> - Control by others - Refer to Dimming spec sheet for details - Can't exceed specified drive current <b>F Fuse</b> - When code dictates fusing, use time delay fuse - Refer to ML spec sheet for availability with ML options - Available with UL voltage only <b>IC Type IC Rated</b> <b>ML Multi-Level</b> - Refer to ML spec sheet for details <b>PML Programmable Multi-Level</b> - Refer to PML spec sheet for details - Intended for downlight applications at 0° tilt



**Product Specifications**

**CONSTRUCTION & MATERIALS**

- High performance energy efficient LED down light, designed for use in drop ceilings with 20-24" (508-610mm) on center building construction
- Luminaire mounts to 2' x 2' (0.6m x 0.6m) heavy gauge steel tile allowing it to be mounted directly into grid ceiling systems
- Tile includes mounting slots to allow for bailing wire, as required by local code
- Slim, low profile design
- Luminaire constructed from rugged die cast and extruded aluminum components
- LED driver is mounted in a sealed weathertight center chamber allowing access from below the luminaire
- High performance heat sinks specifically designed for LED recessed applications
- Exclusive Colorfast DeltaGuard® finish features an E-Coat epoxy primer with an ultradurable powder topcoat, providing excellent resistance to corrosion, ultraviolet degradation and abrasion. Black, bronze, silver, and white are available
- **Weight:** See Weight Chart on page 1

**ELECTRICAL SYSTEM**

- **Input Voltage:** 120-277V or 347-480V, 50/60Hz, Class 1 drivers
- **Power Factor:** > 0.9 at full load
- **Total Harmonic Distortion:** < 20% at full load
- Integral 10kV surge suppression protection standard
- To address inrush current, slow blow fuse or type C/D breaker should be used
- **10V Source Current:** 0.15mA
- **Operating Temperature Range:** IC: 350mA: -40°C - +30°C (-40°F - +86°); Non-IC: 350mA: -40°C - +50°C (-40°F - +122°); 525mA: -40°C - +40°C (-40°F - +104°); 700mA: -40°C - +30°C (-40°F - +86°)

**REGULATORY & VOLUNTARY QUALIFICATIONS**

- cULus Listed
- Suitable for wet locations
- Suitable for through wiring
- Meets FCC Title 47 CFR Part 15, Non-Consumer EMI and RFI emission levels
- 10kV surge suppression protection tested in accordance with IEEE/ANSI C62.41.2
- Luminaire and finish endurance tested to withstand 5,000 hours of elevated ambient salt fog conditions as defined in ASTM Standard B 117
- Meets Buy American requirements within ARRA
- RoHS compliant. Consult factory for additional details

Electrical Data*							
LED Count (x10)	System Watts 120-480V	Total Current					
		120V	208V	240V	277V	347V	480V
350mA							
04	46	0.39	0.24	0.22	0.21	0.15	0.12
06	69	0.57	0.34	0.30	0.27	0.21	0.16
525mA							
04	71	0.59	0.35	0.31	0.28	0.21	0.16
06	101	0.84	0.49	0.43	0.38	0.30	0.22
700mA							
04	94	0.79	0.46	0.40	0.36	0.28	0.21

\* Electrical data at 25°C (77°F)

Recommended 304 Series™ Lumen Maintenance Factors (LMF) <sup>1</sup>						
Ambient	Drive Current	Initial LMF	25K hr Projected <sup>2</sup> LMF	50K hr Projected <sup>2</sup> LMF	75K hr Projected <sup>2</sup> LMF	100K hr Calculated <sup>3</sup> LMF
5°C (41°F)	350mA	1.04	0.99	0.97	0.95	0.93
	525mA					
	700mA					
10°C (50°F)	350mA	1.03	0.98	0.96	0.94	0.92
	525mA					
	700mA					
15°C (59°F)	350mA	1.02	0.97	0.95	0.93	0.91
	525mA					
	700mA					
20°C (68°F)	350mA	1.01	0.96	0.94	0.92	0.90
	525mA					
	700mA					
25°C (77°F)	350mA	1.00	0.95	0.93	0.91	0.89
	525mA					
	700mA					

<sup>1</sup> Lumen maintenance values at 25°C (77°F) are calculated per TM-21 based on LM-80 data and in-situ luminaire testing

<sup>2</sup> In accordance with IESNA TM-21-11, Projected Values represent interpolated value based on time durations that are within six times (6X) the IESNA LM-80-08 total test duration (in hours) for the device under testing (DUT) i.e. the packaged LED chip

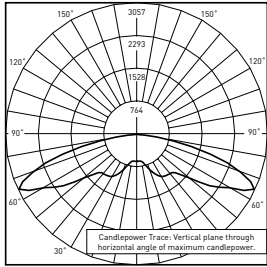
<sup>3</sup> In accordance with IESNA TM-21-11, Calculated Values represent time durations that exceed six times (6X) the IESNA LM-80-08 total test duration (in hours) for the device under testing (DUT) i.e. the packaged LED chip



**Photometry**

All published luminaire photometric testing performed to IESNA LM-79-08 standards by a NVLAP accredited laboratory. To obtain an IES file specific to your project consult: <http://lighting.cree.com/products/indoor/high-bay-low-bay/304-series>

**5M**



INT 304 5M \*\* 06 E UL 525 40K  
Based on ITL Test Report #: 78147  
Initial Delivered Lumens: 12,508

Coefficients Of Utilization - Zonal Cavity Method				
RC %:	80			
RW %:	70	50	30	10
RCR: 0	119	119	119	119
1	104	97	91	85
2	90	79	69	61
3	79	65	54	45
4	70	55	43	34
5	63	47	35	27
6	57	41	30	22
7	53	36	26	18
8	49	32	22	15
9	45	29	20	13
10	42	27	18	11

Effective Floor Cavity Reflectance: 20%

Average Luminance Table (cd/m <sup>2</sup> )			
Vertical Angle	Horizontal Angle		
	0°	45°	90°
45°	30,415	35,525	30,060
55°	61,800	64,775	62,412
65°	121,907	98,868	119,948
75°	117,516	124,206	115,285
85°	40,599	22,027	31,817

Type V Medium Distribution		
LED Count (x10)	4000K	5700K
	Initial Delivered Lumens*	Initial Delivered Lumens*
350mA IC Rated		
04	4,291	4,456
350mA Non-IC Rated		
04	4,516	4,690
06	6,651	6,907
525mA Non-IC Rated		
04	6,323	6,566
06	9,311	9,669
700mA Non-IC Rated		
04	7,678	7,973

\* Initial delivered lumens at 25°C (77°F)

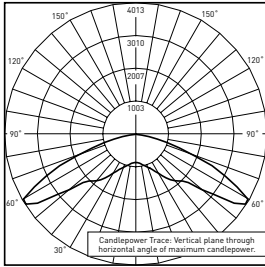
Zonal Lumen Summary			
Zone	Lumens	% Lamp	Luminaire
0-30	732	N/A	7.9%
0-40	1479	N/A	16.0%
0-60	4473	N/A	48.0%
0-90	9311	N/A	100%
0-180	9311	N/A	100%



**Photometry**

All published luminaire photometric testing performed to IESNA LM-79-08 standards by a NVLAP accredited laboratory. To obtain an IES file specific to your project consult: <http://lighting.cree.com/products/indoor/high-bay-low-bay/304-series>

55



INT 304 5S \*\* 06 E UL 525 40K  
Based on ITL Test Report #: 77876  
Initial Delivered Lumens: 12,738

Coefficients Of Utilization - Zonal Cavity Method				
RC %:	80			
RW %:	70	50	30	10
RCR: 0	119	119	119	119
1	107	101	96	92
2	94	84	76	69
3	83	71	61	53
4	74	60	49	41
5	67	51	41	33
6	60	45	34	26
7	55	39	29	22
8	51	35	25	18
9	47	31	22	16
10	44	29	20	14

Effective Floor Cavity Reflectance: 20%

Average Luminance Table (cd/m <sup>2</sup> )				
Vertical Angle	Horizontal Angle			
	0°	45°	90°	
	45°	50,299	48,441	
55°	89,959	108,814	84,851	
65°	118,658	121,962	115,321	
75°	25,442	65,219	31,419	
85°	2,356	4,712	1,414	

Type V Short Distribution		
LED Count (x10)	4000K	5700K
	Initial Delivered Lumens*	Initial Delivered Lumens*
350mA IC Rated		
04	4,768	4,952
350mA Non-IC Rated		
04	5,018	5,211
06	7,390	7,674
525mA Non-IC Rated		
04	7,025	7,295
06	10,346	10,744
700mA Non-IC Rated		
04	8,859	8,531

\* Initial delivered lumens at 25°C (77°F)

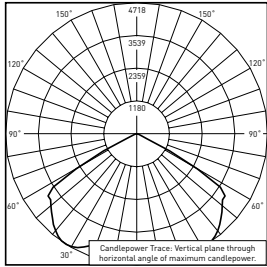
Zonal Lumen Summary			
Zone	Lumens	% Lamp	Luminaire
0-30	941	N/A	9.1%
0-40	1,983	N/A	19.2%
0-60	6,577	N/A	63.6%
0-90	10,346	N/A	100%
0-180	10,346	N/A	100%

# 304 Series™ LED Interior Recessed Luminaire

## Photometry

All published luminaire photometric testing performed to IESNA LM-79-08 standards by a NVLAP accredited laboratory. To obtain an IES file specific to your project consult: <http://lighting.cree.com/products/indoor/high-bay-low-bay/304-series>

### PS



INT 304 PS \*\* 06 E UL 525 40K  
Based on ITL Test Report #: 76940  
Initial Delivered Lumens: 13,581

Coefficients Of Utilization - Zonal Cavity Method				
RC %:	80			
RW %:	70	50	30	10
RCR: 0	119	119	119	119
1	111	108	104	101
2	103	96	91	86
3	95	86	79	73
4	87	77	69	63
5	81	69	61	55
6	74	62	54	48
7	69	56	48	42
8	64	51	43	38
9	60	47	39	34
10	56	43	35	30

Effective Floor Cavity Reflectance: 20%

Average Luminance Table (cd/m <sup>2</sup> )				
Vertical Angle	Horizontal Angle			
		0°	45°	90°
	45°	65,750	90,104	66,492
55°	59,591	100,348	59,431	
65°	2,951	6,895	3,106	
75°	1,116	913	1,217	
85°	452	301	452	

Petroleum Symmetric Distribution		
LED Count (x10)	4000K	5700K
	Initial Delivered Lumens*	Initial Delivered Lumens*
350mA IC Rated		
04	4,874	5,062
350mA Non-IC Rated		
04	5,130	5,327
06	7,554	7,844
525mA Non-IC Rated		
04	7,181	7,458
06	10,576	10,982
700mA Non-IC Rated		
04	8,720	9,056

\* Initial delivered lumens at 25°C (77°F)

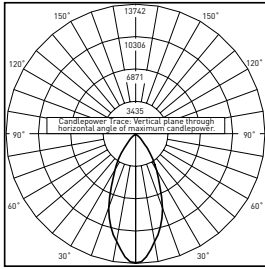
Zonal Lumen Summary			
Zone	Lumens	% Lamp	Luminaire
0-30	3,259	N/A	30.8%
0-40	5,690	N/A	53.8%
0-60	10,293	N/A	97.3%
0-90	10,576	N/A	100%
0-180	10,576	N/A	100%

# 304 Series™ LED Interior Recessed Luminaire

## Photometry

All published luminaire photometric testing performed to IESNA LM-79-08 standards by a NVLAP accredited laboratory. To obtain an IES file specific to your project consult: <http://lighting.cree.com/products/indoor/high-bay-low-bay/304-series>

40°



INT 304 40 \*\* 06 E UL 525 40K  
Based on ITL Test Report #: 78011  
Initial Delivered Lumens: 12,497

Coefficients Of Utilization - Zonal Cavity Method				
RC %:	80			
RW %:	70	50	30	10
RCR: 0	119	119	119	119
1	113	110	108	105
2	107	102	98	94
3	102	95	90	86
4	96	88	83	78
5	91	83	76	72
6	86	77	71	67
7	82	73	66	62
8	78	68	62	58
9	74	64	58	54
10	71	61	55	51

Effective Floor Cavity Reflectance: 20%

Average Luminance Table (cd/m <sup>2</sup> )			
Vertical Angle	Horizontal Angle		
	0°	45°	90°
45°	25,142	31,417	26,642
55°	11,435	11,824	11,726
65°	4,590	4,623	4,325
75°	1,456	1,510	1,564
85°	641	320	480

40° Flood Distribution		
LED Count (x10)	4000K	5000K
	Initial Delivered Lumens*	Initial Delivered Lumens*
350mA IC Rated		
04	4,768	4,952
350mA Non-IC Rated		
04	5,018	5,211
06	7,390	7,674
525mA Non-IC Rated		
04	7,025	7,295
06	10,346	10,744
700mA Non-IC Rated		
04	8,531	8,859

\* Initial delivered lumens at 25°C (77°F)

Zonal Lumen Summary			
Zone	Lumens	% Lamp	Luminaire
0-30	6,882	N/A	66.5%
0-40	8,854	N/A	85.6%
0-60	10,194	N/A	98.5%
0-90	10,346	N/A	100%
0-180	10,346	N/A	100%