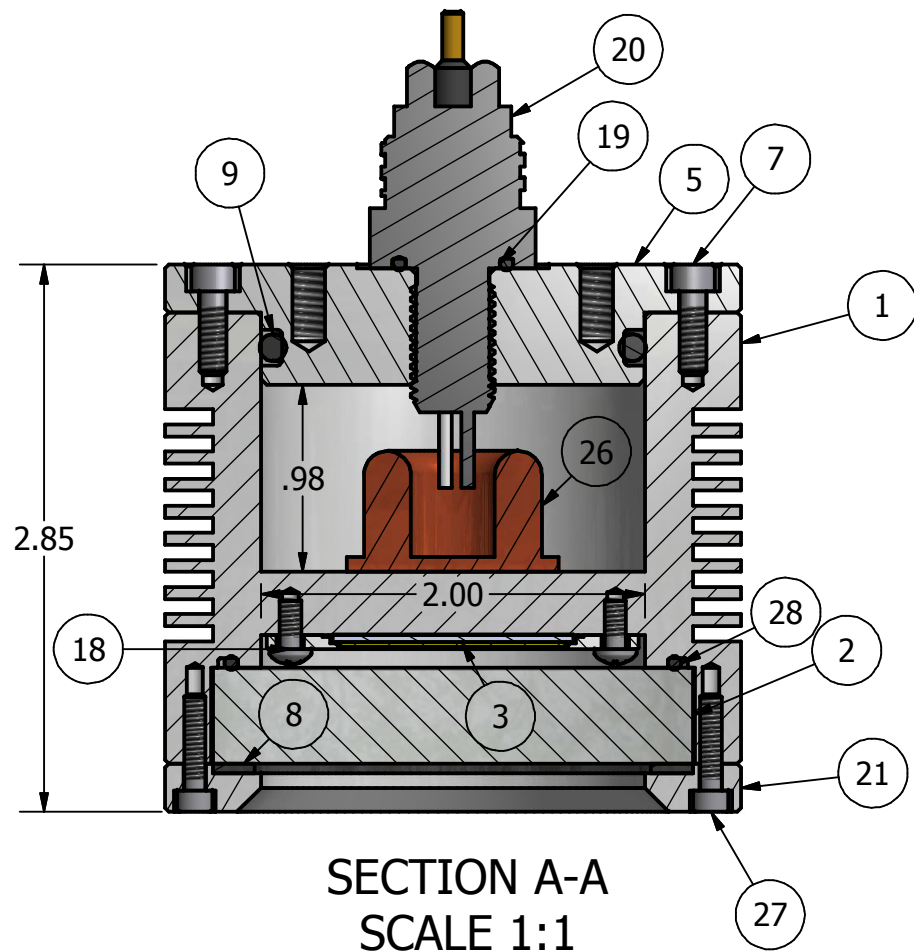
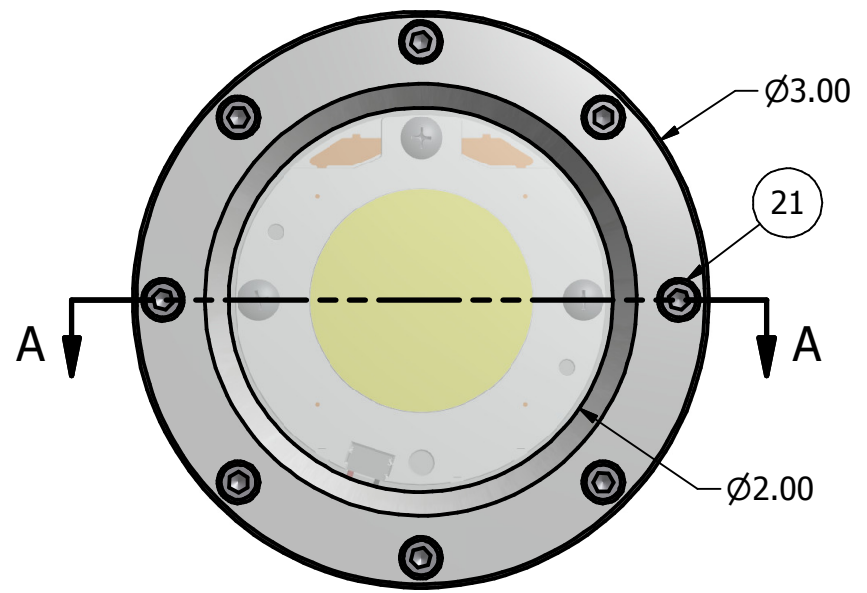
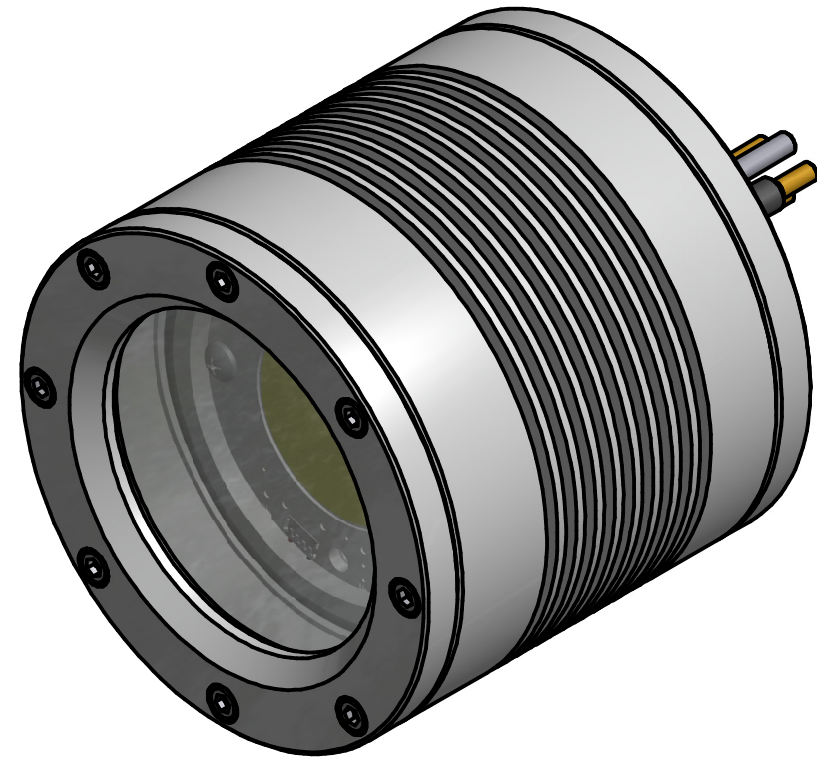


WEIGHT 1.6 lbs



SECTION A-A
SCALE 1:1



NOTES:

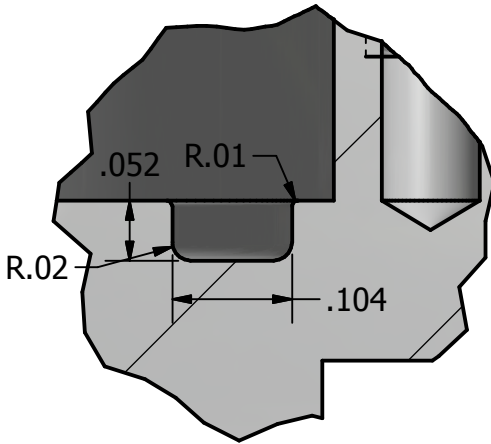
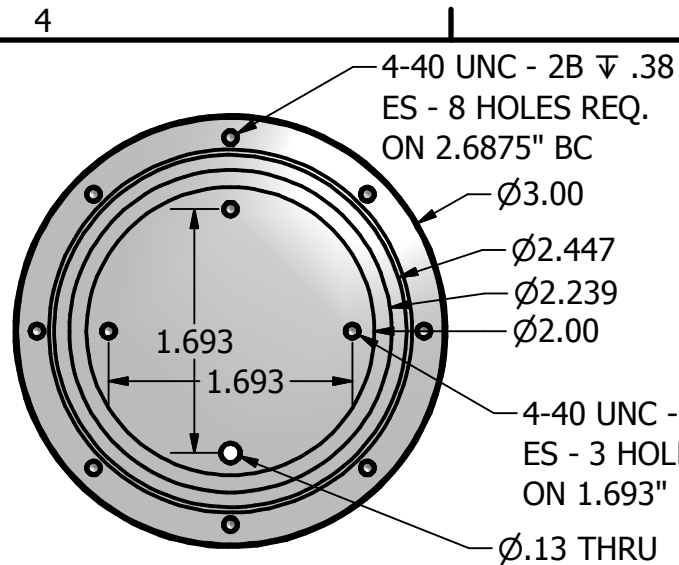
1. Connector Port - Subconn MCBH-3M
2. Supply voltage - 5-40VDC
3. Current - 1,200mA
4. Pulsed Flux - 10,590 lm
5. Power - 82.7 W
6. Housing - Anodized 6061-T6 Aluminum
7. Implodable Volume - 20 cu. in.
8. Depth Rating/Test Pressure - 1,000m, 3,281 ft (1,460 psig)
9. Attach LED driver with thermal epoxy

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	1	INITIAL	8/30/2017	CLR

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	LED-SMALL-01	Main Body Housing
2	1	LED-SMALL-02	Heat-Resistant Borosilicate Glass
3	1	BXRC-50C10K-24	Bridglux Vero 29 LED Array
5	1	LED-SMALL-04	Housing Cap
7	8	LED-SMALL-12	Hexagon Socket Head Cap Screw - No. 6 - 32 UNC - 7/16 HS HCS
8	1	LED-SMALL-05	Lens Gasket
9	1	LED-SMALL-06	O-Ring for Housing Cap - Dash 2-224
18	3	LED-SMALL-14	Cross Rec. Pan Head Machine Screw, No. 4 - 40 - 1/4
19	1	LED-SMALL-10	BulkHead Connector O-ring, Dash 2-014
20	1	MCBH3M	SubConn Micro Male Bulhhead Connector
21	1	LED_SMALL-03	Front Retaining Ring
22	1	MCDLS Ring	Subconn MCDLS Locking Sleeve Ring
23	1	MCDLS F BLACK	Subconn MCDLS Locking Sleeve F BLACK
24	1	MCIL3F	SubConn Micro Inline Circular Connector MCIL3F
25	1	Molex Ezmate Harness	Molex PICO EZmate 2 Pin Wiring Harness
26	1	LED-SMALL-08	PCB Components - Senser Xtreme LED Driver
27	8	LED-SMALL-13	Hexagon Socket Head Cap Screw, No. 4 - 40 UNC - 1/2 HS HCS
28	1	LED-SMALL-07	Front Lens O-Ring - Dash no. 2-035

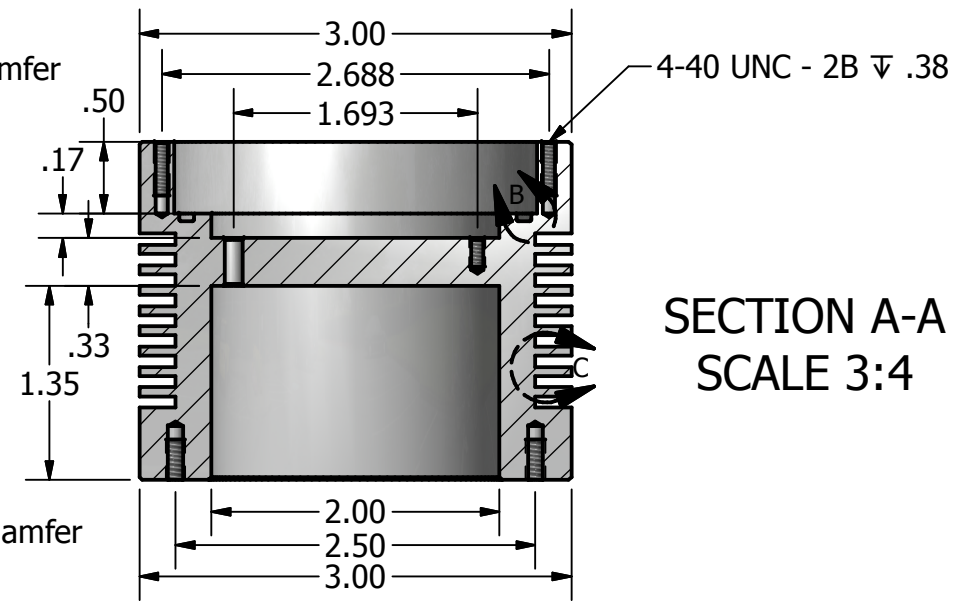
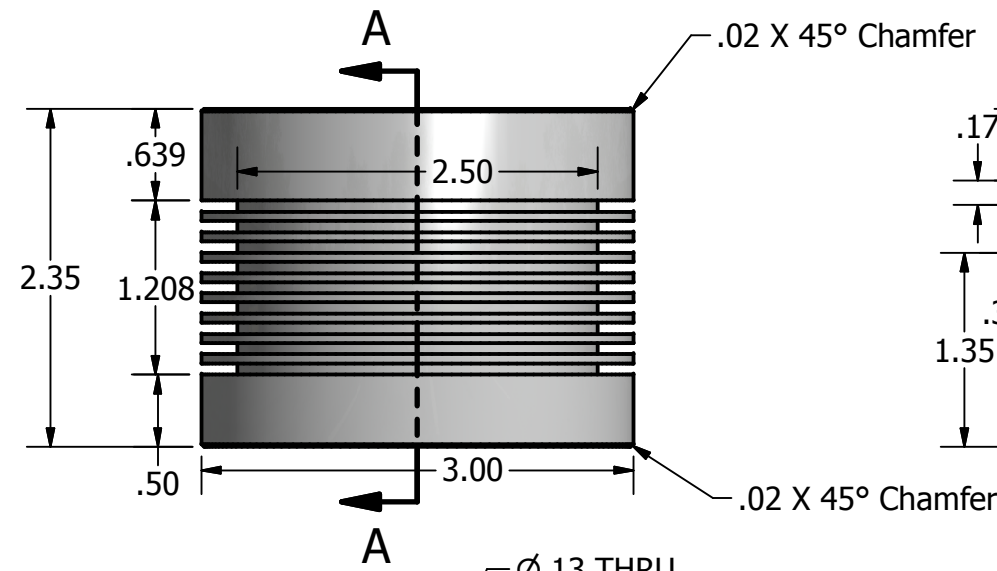
DRAWN CLR	8/30/2017	Redus Engineering		
CHECKED CLR	8/30/2017			
QA		TITLE		
MFG CLR	8/30/2017	10k Lumen LED Light Assembly		
APPROVED CLR	8/30/2017	SIZE	DWG NO	REV
		B	LED Assembly	1
		SCALE	SHEET 1 OF 1	

WEIGHT 0.754 lbm
 MATERIAL 6061-T6
 ALUMINUM

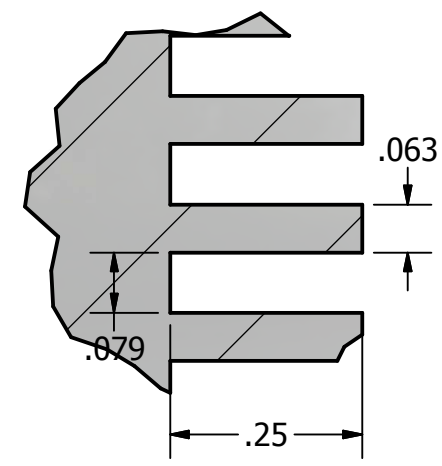
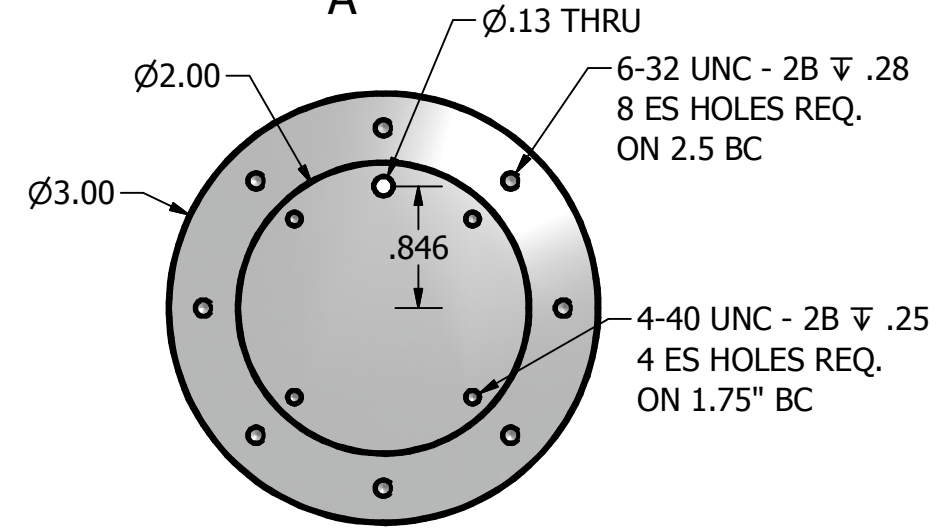
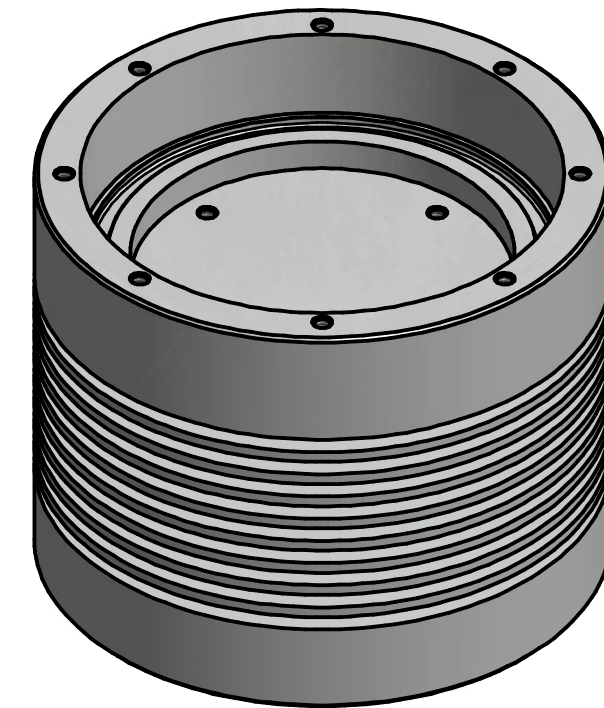


DETAIL B
 SCALE 6:1

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	1	INITIAL	8/30/2017	CLR



SECTION A-A
 SCALE 3:4



DETAIL C
 SCALE 4:1

DRAWN CLR	8/30/2017	Redus Engineering		
CHECKED CLR	8/30/2017			
QA		TITLE		
MFG CLR	8/30/2017	Main Body Housing		
APPROVED CLR	8/30/2017	SIZE B	DWG NO LED-SMALL-01	REV 1
		SCALE	SHEET 1 OF 1	

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	LED-SMALL-01	Main Body Housing

B

B

A

A

4

3

2

1

WEIGHT 0.193 lbm

MATERIAL **Borosilicate Glass Disc**

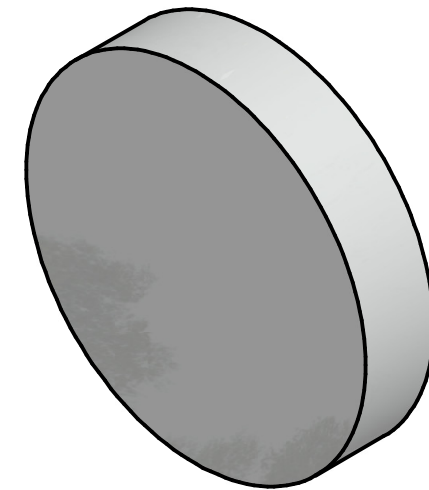
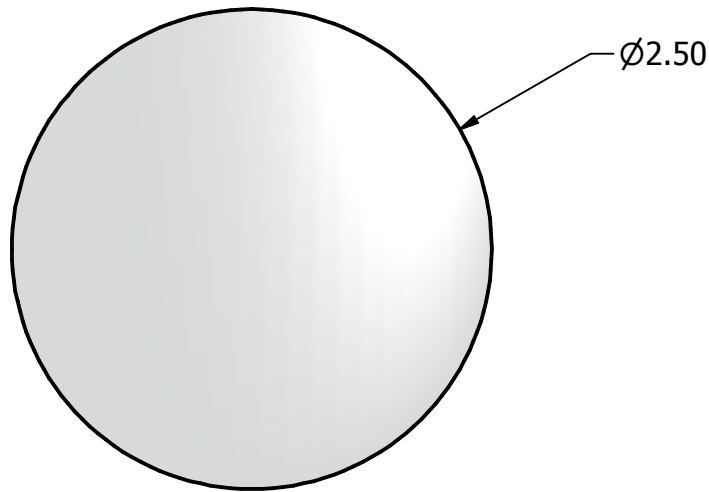
REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	1	INITIAL	8/30/2017	CLR

Borosilicate Glass Rods and Discs
McMaster Carr 8477K78

- Color: Clear
- Max. Temperature: 445° F
- Fabrication: Annealed

Also called Pyrex and Schott glass, this glass resists clouding and pitting and is highly chemical and heat resistant. With a low rate of thermal expansion, it stays dimensionally stable during changes in temperature.

Material Borosilicate Glass
 Color Clear
 Clarity Clear
 Cross Section Shape Round
 Construction Solid
 Diameter 2 1/2"
 Diameter Tolerance -0.015" to 0.015"
 Minimum Temperature Not Rated
 Maximum Temperature 445° F
 Fabrication Annealed
 Edge Fabrication Ground
 Specifications Met MIL-G-47033
 Length Tolerance -0.031" to 0.031"
 Density 0.08 lbs./cu. in.
 Modulus of Elasticity 63 KN/mm2
 Hardness Knoop 418 KHN100
 Thermal Conductivity 1.2 Btu/hr. × in./sq. ft./°F @ 212° F
 Coefficient of Thermal Expansion 18.1 × 10⁻⁷/° F
 Refractive Index 1.47

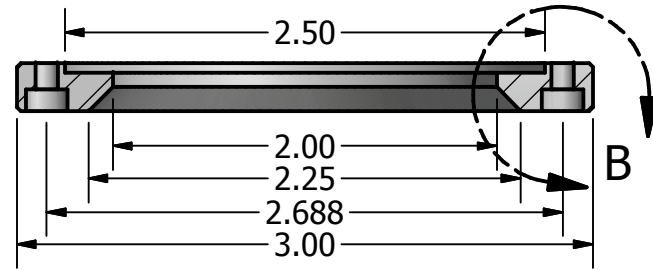


PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	LED-SMALL-02	Heat-Resistant Borosilicate Glass

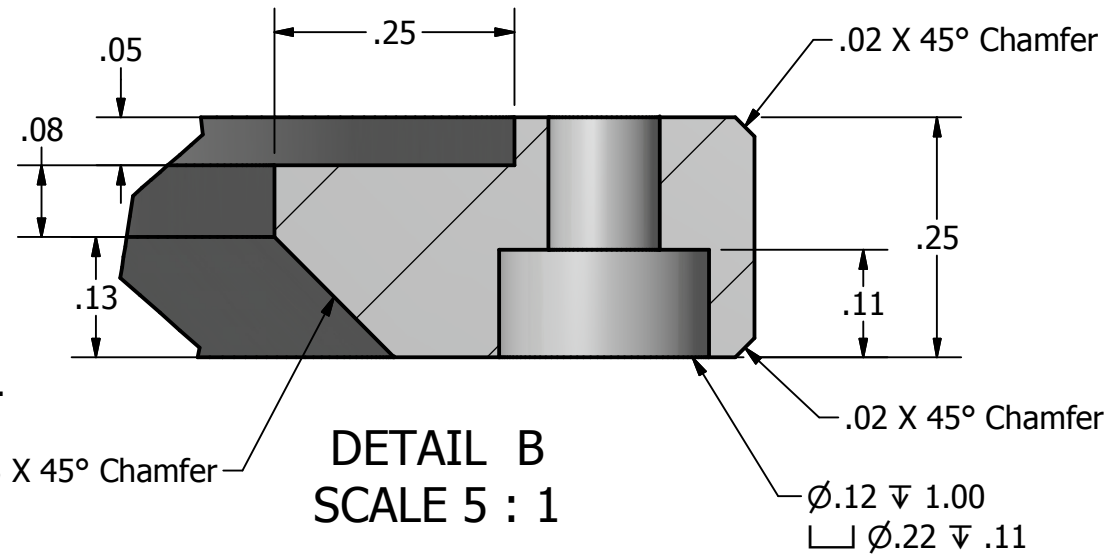
DRAWN CLR	8/30/2017	Redus Engineering		
CHECKED CLR	8/30/2017			
QA		TITLE		
MFG CLR	8/30/2017	Heat-Resistant Borosilicate Glass		
APPROVED CLR	8/30/2017	SIZE B	DWG NO LED-SMALL-02	REV 1
		SCALE	SHEET 1 OF 1	

WEIGHT 0.078 lbm
 MATERIAL 6061-T6 ALUMINUM

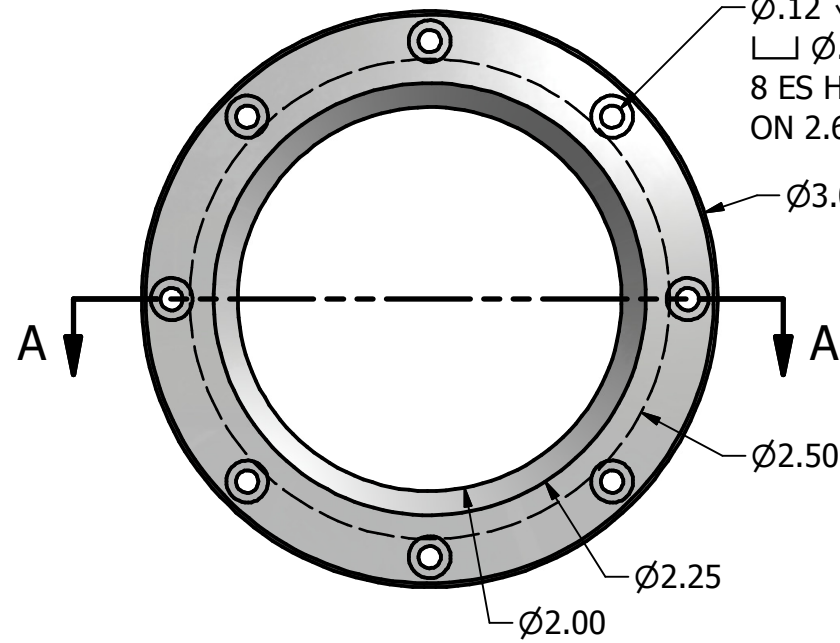
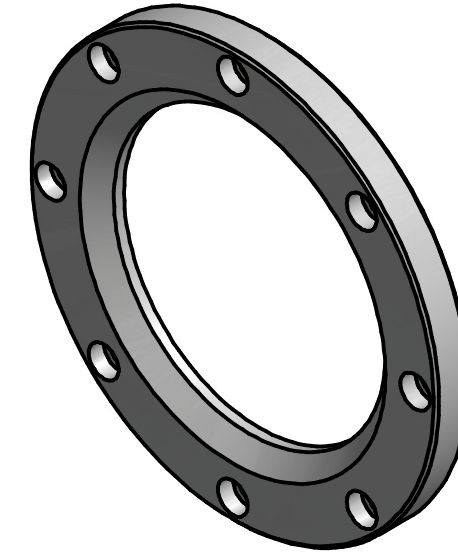
REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	1	INITIAL	8/30/2017	CLR



SECTION A-A
 SCALE 1 : 1



DETAIL B
 SCALE 5 : 1



Ø.12 ± 1.00
 □ Ø.22 ± .11
 8 ES HOLES REQ.
 ON 2.6875" BC

Ø3.00

Ø2.50

Ø2.25

Ø2.00

.13 X 45° Chamfer

Ø.12 ± 1.00

□ Ø.22 ± .11

.02 X 45° Chamfer

.25

.02 X 45° Chamfer

.08

.05

.25

.13

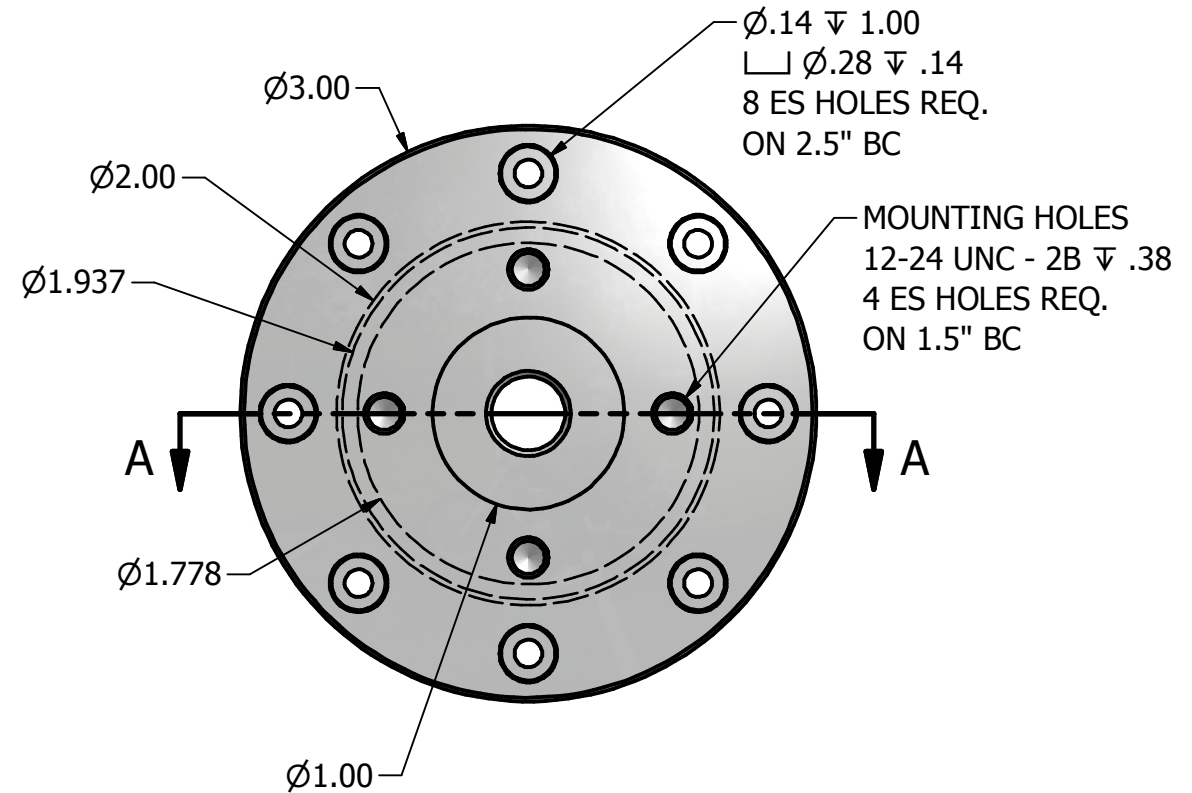
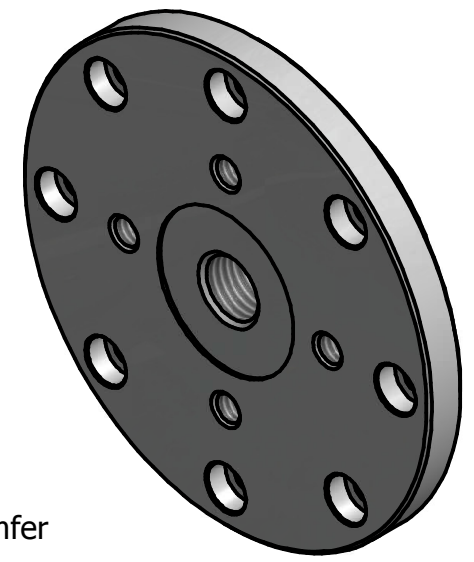
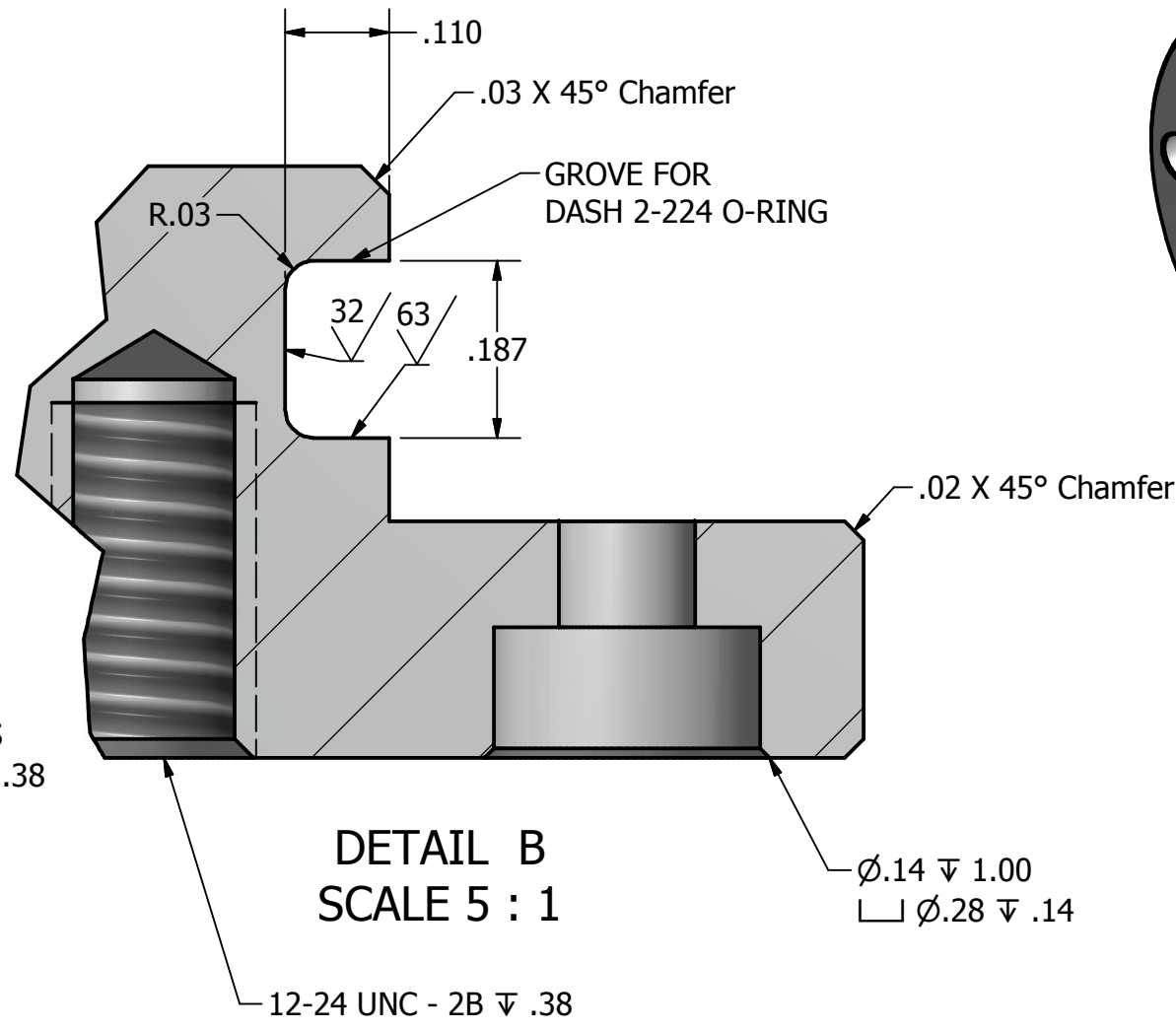
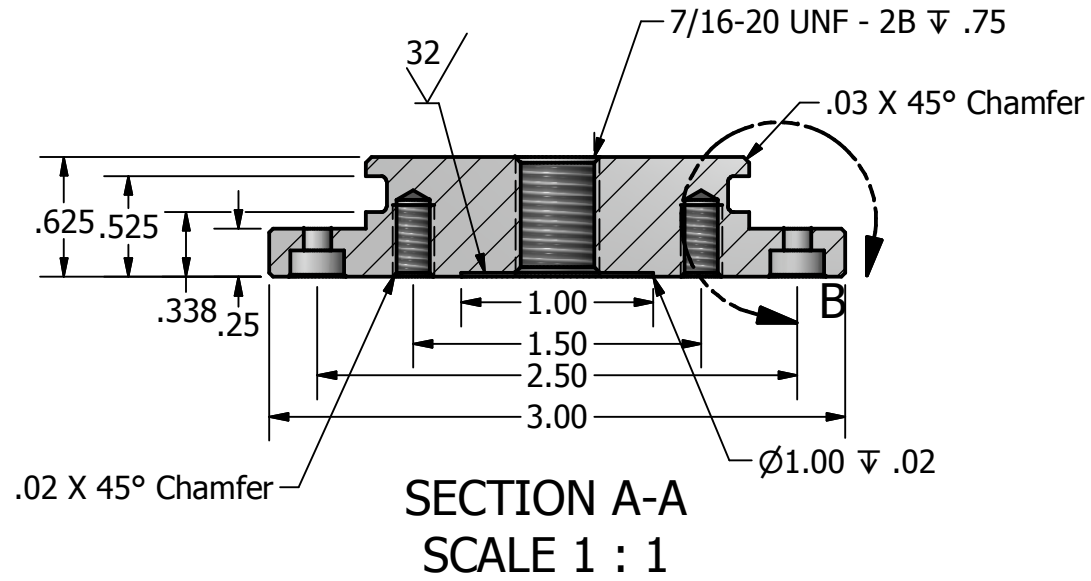
.11

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	LED_SMALL-03	Front Retaining Ring

DRAWN CLR	8/30/2017	Redus Engineering		
CHECKED CLR	8/30/2017			
QA		TITLE		
MFG CLR	8/30/2017	Front Retaining Ring		
APPROVED CLR	8/30/2017	SIZE B	DWG NO LED_SMALL-03	REV 1
		SCALE	SHEET 1 OF 1	

WEIGHT 0.255 lbm
MATERIAL 6061-T6 ALUMINUM

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	1	INITIAL	8/30/2017	CLR



DRAWN CLR	8/30/2017	Redus Engineering		
CHECKED CLR	8/30/2017			
QA		TITLE		
MFG CLR	8/30/2017	Housing Cap		
APPROVED CLR	8/30/2017	SIZE	DWG NO	REV
		B	LED-SMALL-04	1
		SCALE	SHEET 1 OF 1	

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	LED-SMALL-04	Housing Cap

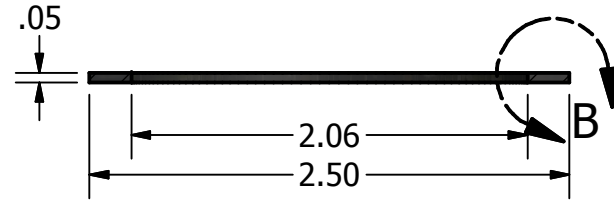
WEIGHT 0.003 lbm
 MATERIAL Neoprene Spring
 Rubber

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	1	INITIAL	8/30/2017	CLR

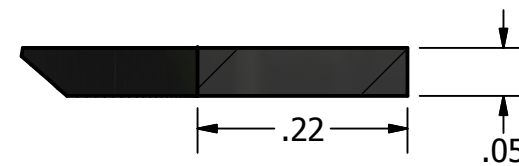
Neoprene Spring Rubber
1/16" Thickness, 4" Wide x 36" Long, 70A
Durometer

McMaster-Carr PN 8630K42

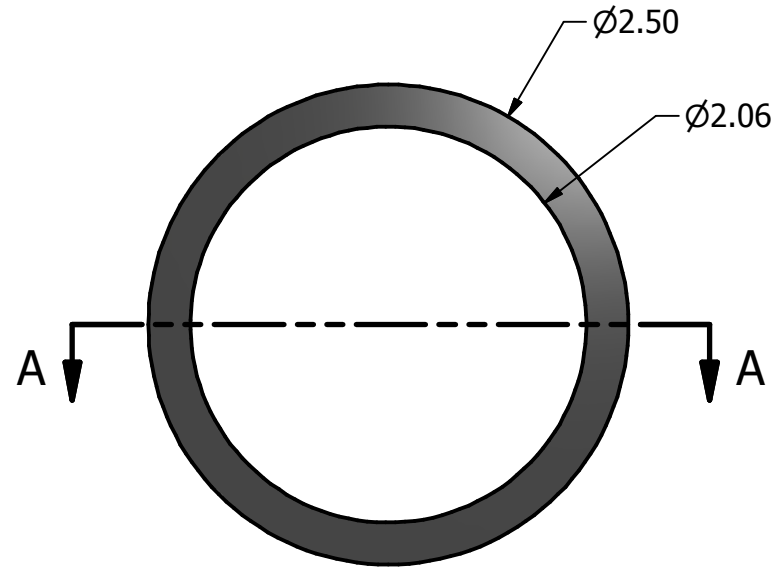
Thickness 1/16"
 Thickness Tolerance $\pm 0.016"$
 Color Black
 Temperature Range -30° to 200°
 FTensile Strength 1700 psi
 Additional Specifications
 Sheets-Smooth Finish 4" Wd. x 36" Lg. Use indoors and outdoors
 RoHS Compliant
 Neoprene blended with elastomeric fillers produces this hard, resilient material that bends yet resists breaking.
 Meet ASTM D2000 BC. Width tolerance is $\pm 3/8"$ for sheets up to 24" wide and +1" for 36" wide sheets. Length tolerance is $\pm 1/8"$ for 6" and 12" lengths and +1" for 36" lengths. Durometer hardness is 70A (hard). Durometer tolerance is ± 5 .



SECTION A-A
 SCALE 1 : 1



DETAIL B
 SCALE 5 : 1



PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	LED-SMALL-05	Lens Gasket

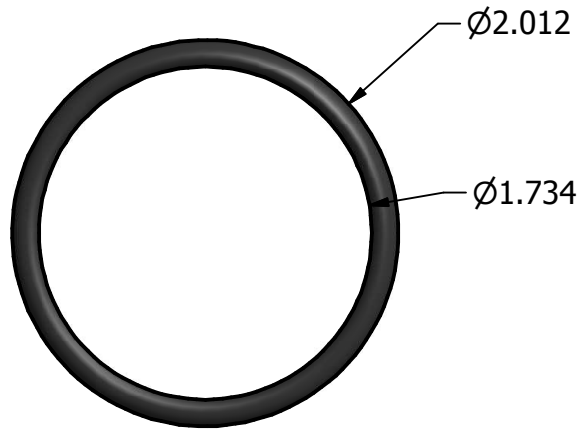
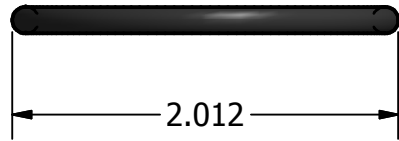
DRAWN CLR	8/30/2017	Redus Engineering		
CHECKED CLR	8/30/2017			
QA		TITLE		
MFG CLR	8/30/2017	Lens Gasket		
APPROVED CLR	8/30/2017	SIZE B	DWG NO LED-SMALL-05	REV 1
		SCALE	SHEET 1 OF 1	

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	1	INITIAL	8/30/2017	CLR

Buna-N Multipurpose O-Ring
1/8 Fractional Width, Dash Number 224
McMaster Carr PN 9452K62

Material: Buna-N
 Durometer A70 (Medium)
 Dash No. 224
 Fractional Width 1/8
 Actual Width 0.139"
 Fractional Size ID 1 3/4 OD 2
 Actual Inch Size ID 1.734" OD 2.012"

Specifications Met:ASTM D2000/SAE J200, SAE AS568
 Temperature Range-20° to 250° F
 Color: Black
 RoHS:Compliant
 All O-rings meet ASTM D2000. Inch O-rings are sized to the SAE standard AS568.



DRAWN CLR	8/30/2017	Redus Engineering		
CHECKED CLR	8/30/2017			
QA		TITLE		
MFG CLR	8/30/2017	O-Ring for Housing Cap - Dash 2-224		
APPROVED CLR	8/30/2017	SIZE B	DWG NO LED-SMALL-06	REV 1
		SCALE	SHEET 1 OF 1	

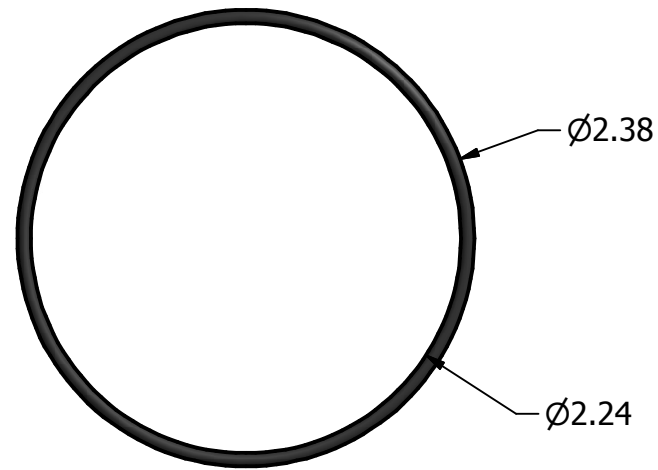
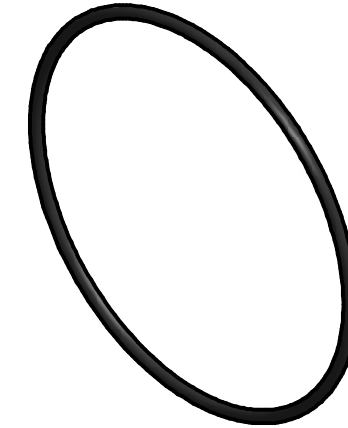
PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	LED-SMALL-06	O-Ring for Housing Cap - Dash 2-224

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	1	initial	8/30/2017	CLR

McMaster Carr pn 9452K123

**Oil-Resistant Buna-N O-Ring
1/16 Fractional Width, Dash Number 035**

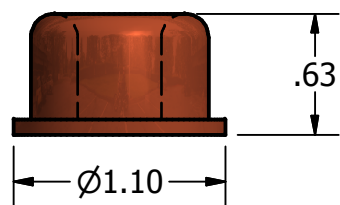
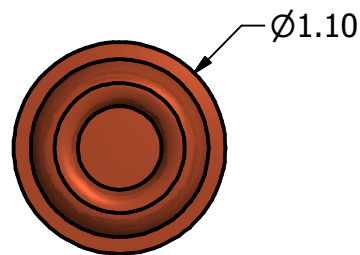
Material Buna-N
 Rubber Cross Section Shape Round
 Dash Number 035 Fractional Width 1/16
 ID 2 1/4
 OD 2 3/8
 Actual Width 0.07"
 ID 2.239"
 OD 2.379"
 Hardness Durometer 70A (Medium)



DRAWN CLR	8/30/2017	Redus Engineering		
CHECKED CLR	8/30/2017			
QA		TITLE		
MFG CLR	8/30/2017	Front Lens O-Ring - Dash no. 2-035		
APPROVED CLr	8/30/2017	SIZE B	DWG NO LED-SMALL-07	REV 1
		SCALE	SHEET 1 OF 1	

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	LED-SMALL-07	Front Lens O-Ring - Dash no. 2-035

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	1	INITIAL	8/30/2017	CLR

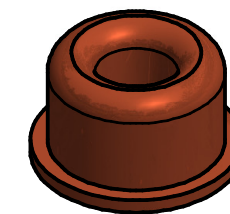


Technical data / features:

PCB Components - Senser Xtreme

<https://pcb-components.de/led-aufwaertswandler-boost-step-up/led-senser-xtreme-200-2050ma-6v-30v-detail.html>

- Clocked High-Power Boost Constant Current Source (StepUp KSQ)
- No longitudinal regulator!
- Input voltage range approx. 6 - 40V / DC / 8 Ampere! Maximum current (input side)
- Output voltage up to 65 V (corresponds to approx. 20 white Highpower Leds, in other colors more)
- Output currents selectable via solder bridge, or other currents (tested up to 3A)
- Output Current: 200/350/500/550/700/850/1000/1050/1200/1350/1500/1550/1700/1850 / 2050mA to 3050mA
- Over 100 Watt Led power
- Softstart function (prevents power-ups when switching on)
- Efficiency depending on input voltage up to 97%
- High-quality components, ceramic chip capacitors instead of tantalum / electrolytic electrolytic capacitors
- Integrated temperature sensor (current reduction at high temperature)
- Qualitative two-sided circuit board, heat management design optimized, copper pad 70µm!
- For lighting projects of any kind, such as lamps, torches, automotive vehicles, advertising signs, lighting technology, exposure technology, etc.
- Extremely small dimensions: 28mm diameter x 16mm height
- External PWM as well as external switch-off and switch-on input (DC)
- Dimmable and controllable with our Led Stripe, Nano Dim or µ-Dim



DRAWN CLR	8/30/2017	Redus Engineering		
CHECKED CLR	8/30/2017			
QA		TITLE		
MFG CLR	8/30/2017	PCB Components - Senser Extreme LED Driver		
APPROVED CLR	8/30/2017	SIZE B	DWG NO LED-SMALL-08	REV 1
		SCALE	SHEET 1 OF 1	

PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	LED-SMALL-08	PCB Components - Senser Xtreme LED Driver

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	1	INITIAL	9/11/2015	CLR

Connector specifications

Mfg: Subconn

Mfg. PN: BH3M

Voltage rating: 600 V AC rms

3 pin connector rating: 10 A per pin (max 30 A per connector)

Insulation resistance: > 200 Mohm

Contact resistance: < 0.01 ohm

Wet matings: > 500

Temperature rating (water) : - 4 to 60°C, 25 to 140°F

Temperature rating (air) : - 40 to 60°C, - 40 to 140°F

Storage temperature rating: - 40 to 60°C, - 40 to 140°F

Depth rating: 1,400 bar, 20,000 psi

Depth rating PEEK: 300 bar, 4,350 psi

Material specifications

Connector body: Chloroprene rubber

Bulkhead body: Brass, stainless steel, titanium, anodised aluminium or PEEK

Contacts: Gold plated brass UNS - C36000

Location pin: Stainless steel AISI 303

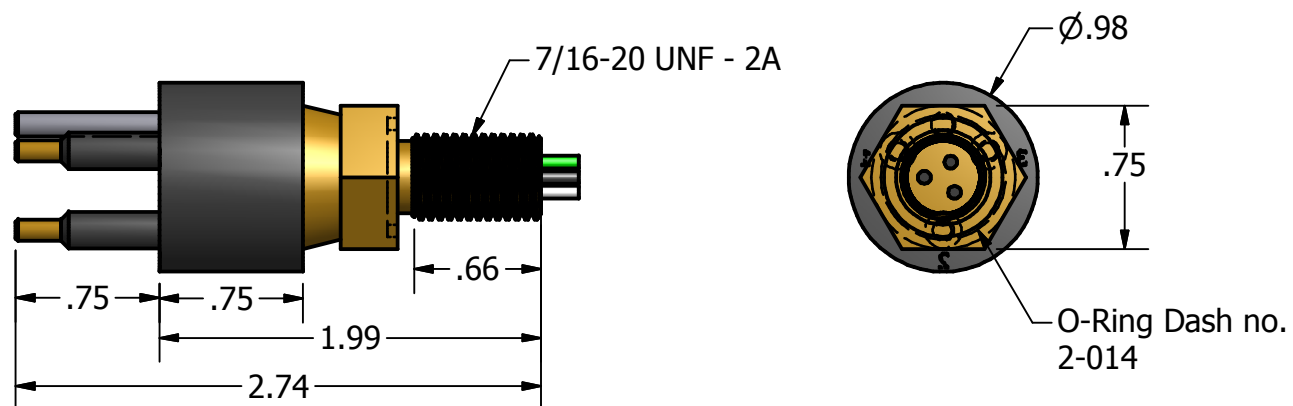
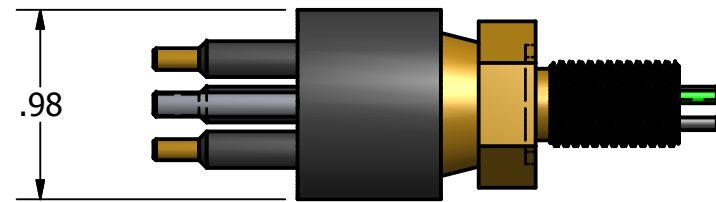
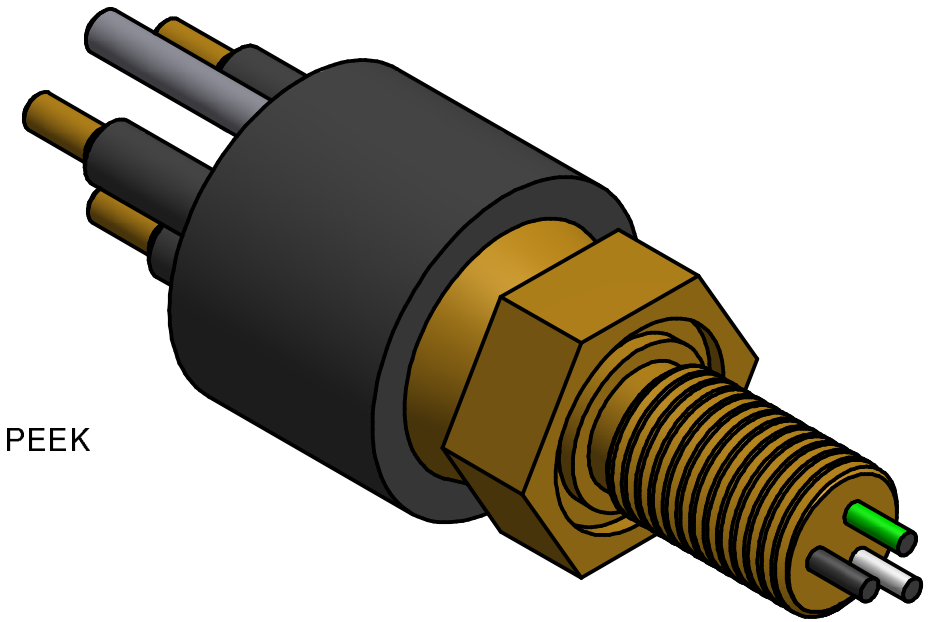
O-rings: Nitrile

Locking sleeves: POM

Snap rings: Stainless steel AISI 302

3 conductor inline cable (60 cm, 2 ft) : 16 AWG 1.34 mm² chloroprene rubber

Bulkhead leads (30 cm, 1 ft) : 18 AWG 1.0 mm² coloured PTFE



DRAWN CLR	9/11/2015	Redus Engineering		
CHECKED CLR	9/11/2015			
QA		TITLE SubConn Circular Bulkhead Connector - BH3M		
MFG		SIZE B	DWG NO LED BH3M	REV 1
APPROVED CLR	9/11/2015	SCALE		SHEET 1 OF 1

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	BH3M	SubConn BH3M circular Bulkhead Connector

SubConn Circular Micro - Female Inline

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	1	INITIAL	9/15/2015	CLR

Part No. MCIL3F

Connector specifications

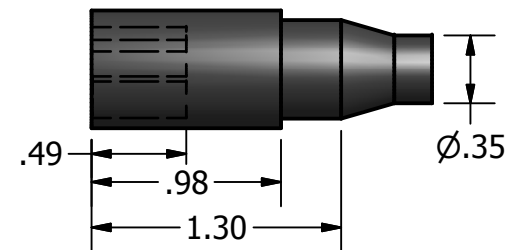
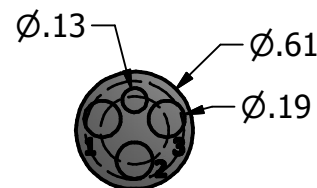
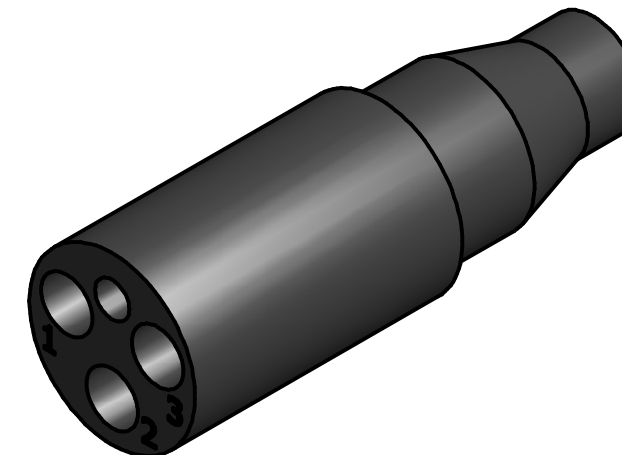
Voltage rating: 300 V AC rms
 2, 3 and 4 pin connector current rating: 10 A per pin (max 20 A per connector)
 Insulation resistance: > 200 Mohm
 Contact resistance: < 0.01 ohm
 Wet matings: > 500
 Temperature rating (water): - 4 to 60°C, 25 to 140°F
 Temperature rating (air): - 40 to 60°C, - 40 to 140°F
 Storage temperature rating: - 40 to 60°C, - 40 to 140°F
 Depth rating: 700 bar, 10,000 psi
 Depth rating PEEK: 300 bar, 4,350 psi

Inline cable colour code

- 1: Black
- 2: White
- 3: Red

Material specifications

Connector body: Chloroprene rubber
 Bulkhead body: Brass, stainless steel, titanium, anodised aluminium or PEEK
 2, 3 and 4 pin contacts: Gold plated brass UNS - C36000
 Location pin: Stainless steel AISI 303
 O-rings: Nitrile
 Locking sleeves: ABS
 Snap rings: Stainless steel AISI 302
 2, 3 and 4 bulkhead leads (30 cm, 1 ft): 20 AWG 0.5 mm² coloured PTFE



Pigtail available in various lengths. Typical is 24".

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	MCIL3F	SubConn Micro Inline Circular Connector MCIL3F

DRAWN Cliff	9/15/2015	Redus Engineering		
CHECKED CLR	9/15/2015			
QA		TITLE SubConn Circular Micro Inline Female connector		
MFG		SIZE B	DWG NO MCIL3F	REV 1
APPROVED CLR		SCALE		SHEET 1 OF 1

SubConn Circular Micro - Locking Sleeve

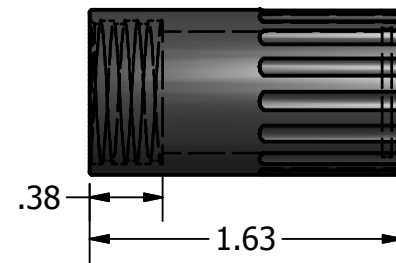
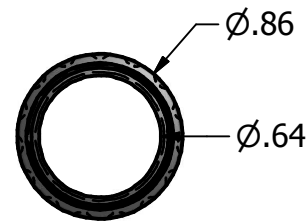
Part No. MCDLSF - BLACK

Material specifications

Locking sleeves: ABS

Snap rings: Stainless steel AISI 302

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	1	Initial	9/15/2015	CLR



DRAWN CLR	9/15/2015	Redus Engineering		
CHECKED CLR	9/15/2015			
QA		TITLE SubConn Micro Circular Locking Sleeve		
MFG				
APPROVED CLR				
		SIZE B	DWG NO MCDLS F BLACK	REV 1
		SCALE		SHEET 1 OF 1

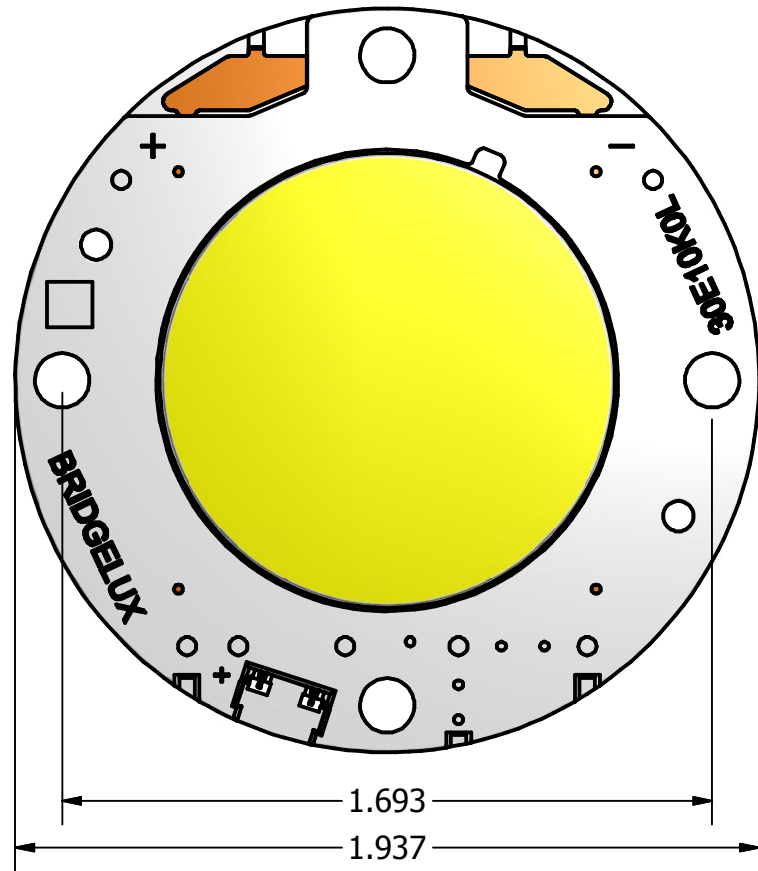
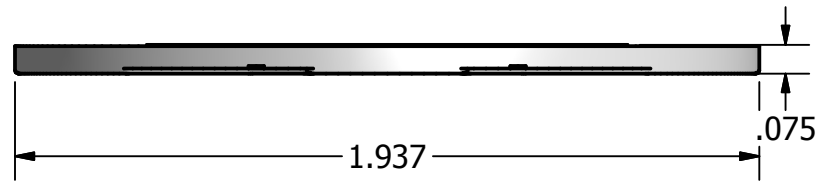
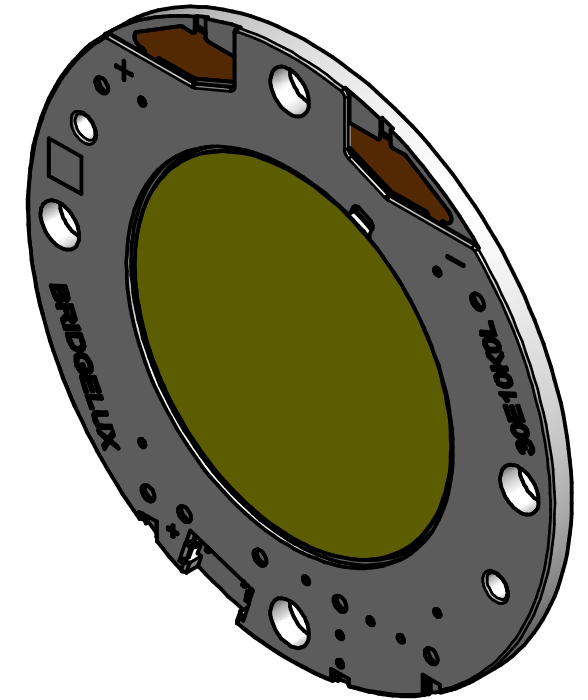
PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	MCDLS F BLACK	Subconn MCDLS Locking Sleeve F BLACK

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	1	INITIAL	9/11/2015	CLR

Digikey PN. 976-1277-ND
Mfg Bridgelux
Mfg PN BXRC-50C10K0-24

Product Family: Vero 29
Standard Package: 10 Category

Typ: Chip On Board (COB)
Color: White, Cool
CCT (K) : 5000K 4-Step MacAdam Ellipse
Configuration: Round
Flux @ Current/Temperature : Test 10032 lm (Typ)
Current: Test 2.1A
Temperature: Test 85°C Voltage: Forward (Vf) (Typ) 36.8V
Lumens/Watt @ Current: Test 130 lm/W
Current Max: 4.2A
CRI (Color Rendering Index) : 70
Viewing Angle: 120°
Features: With Connector
Size / Dimension: 49.20mm Diameter
Height: 1.90mm
Light Emitting Surface (LES) : 29.20mm Diameter
Lens Type: Flat
Online Catalog: Vero 29 Array Series



PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	BXRC-50C10K-24	Vero 29 LED Array

DRAWN CLR	9/11/2015	Redus Engineering		
CHECKED CLR	9/11/2015			
QA		TITLE		
MFG		Vero 29 LED Array		
APPROVED CLR	9/11/2015	SIZE B	DWG NO BXRC-50C10K-24	REV 1
		SCALE	SHEET 1 OF 1	

REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	1	INITIAL	9/15/2015	CLR
	2	ADDED AWG WIRE SIZE	8/30/17	CLR

Digi-Key Part Number WM9591-ND
 Manufacturer Part Number **0688014146**

Description PICO-EZMATE HARNESS FOR VERO 6"
 1st Connector Plug, 4 Position 2nd Connector Wire Leads Color Black, Red Length 6.0"
 (152.4mm)

Specifications

Reference Information

Packaging: Bags inside box
 UL File No.:
 UL1977, UL Wiring Harness Program
 Mates With: Molex Pico-EZmate™
 integral header on Bridgelux* Vero† LED Array
 RoHS: Yes
 Halogen Free: Yes

Electrical

Voltage (max.): 130V
 Current (max.): 2.8A‡
 Wire Size: 28 AWG
 Contact Resistance: 20 milliohms
 Dielectric Withstanding Voltage: 500V AC
 Insulation Resistance: 100 Megohms

Mechanical

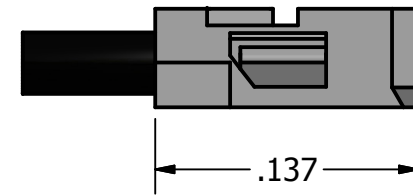
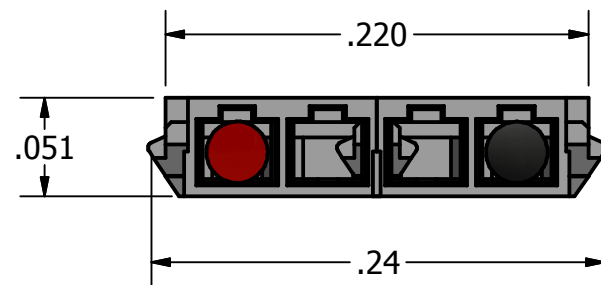
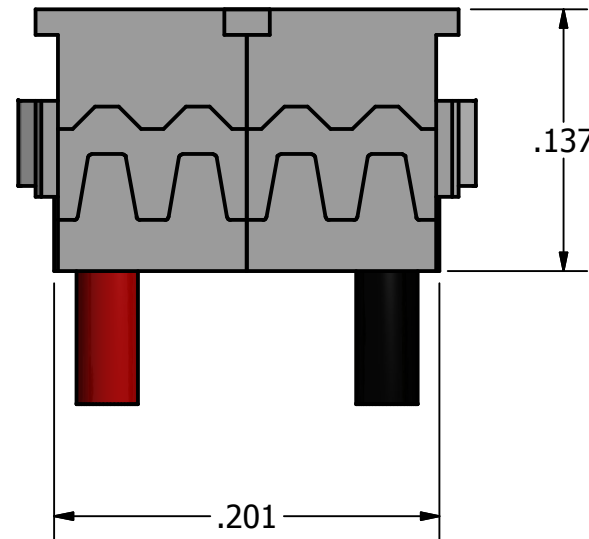
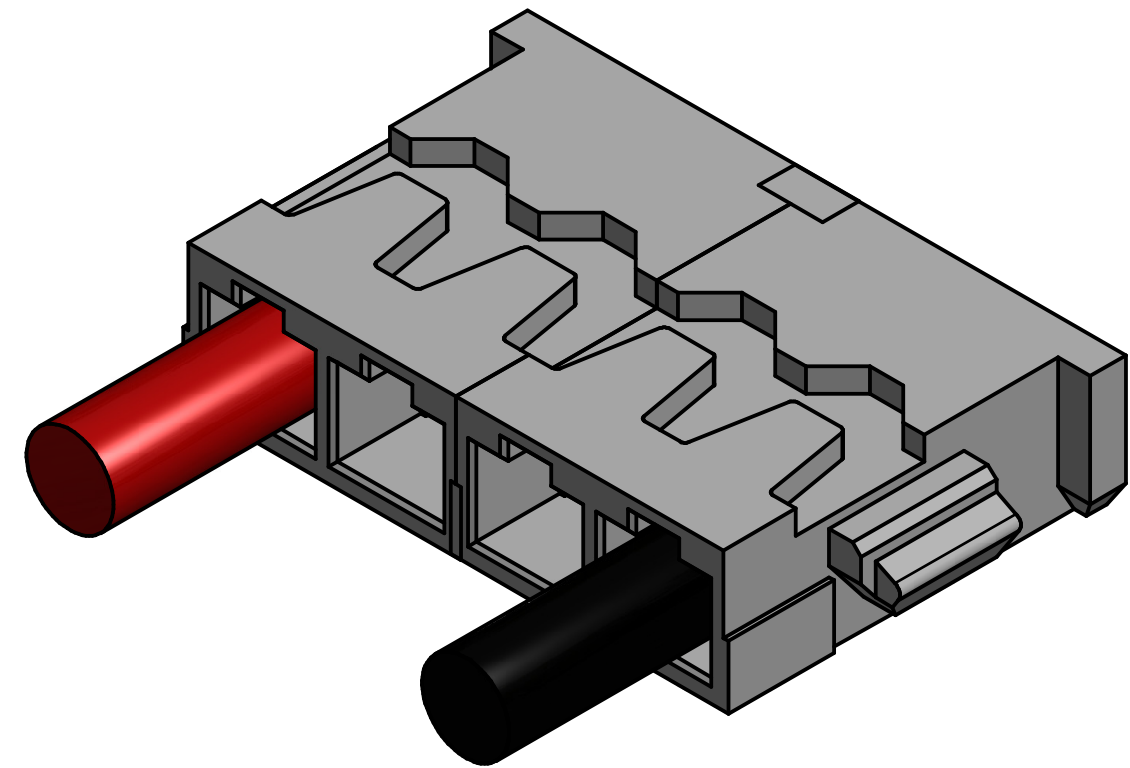
Contact Retention to Housing: 4N
 Mating Force (max.): 18N initial
 Unmating Force (min.): 4N initial
 Durability: 10 unmating cycles
 Not designed for horizontal mating/unmating§

Physical

Housing: High-temperature white Nylon
 Contact: High performance copper alloy
 Plating:
 Contact Area -- Gold
 Underplating -- Nickel
 Operating Temperature: -25 to +105°C

Features

* Bridgelux and †Vero are registered trademarks of Bridgelux Inc.
 ‡ Pending final testing and qualification of harness assembly; improved voltage result expected.
 § See Application Specification published at the part number level on Molex.com

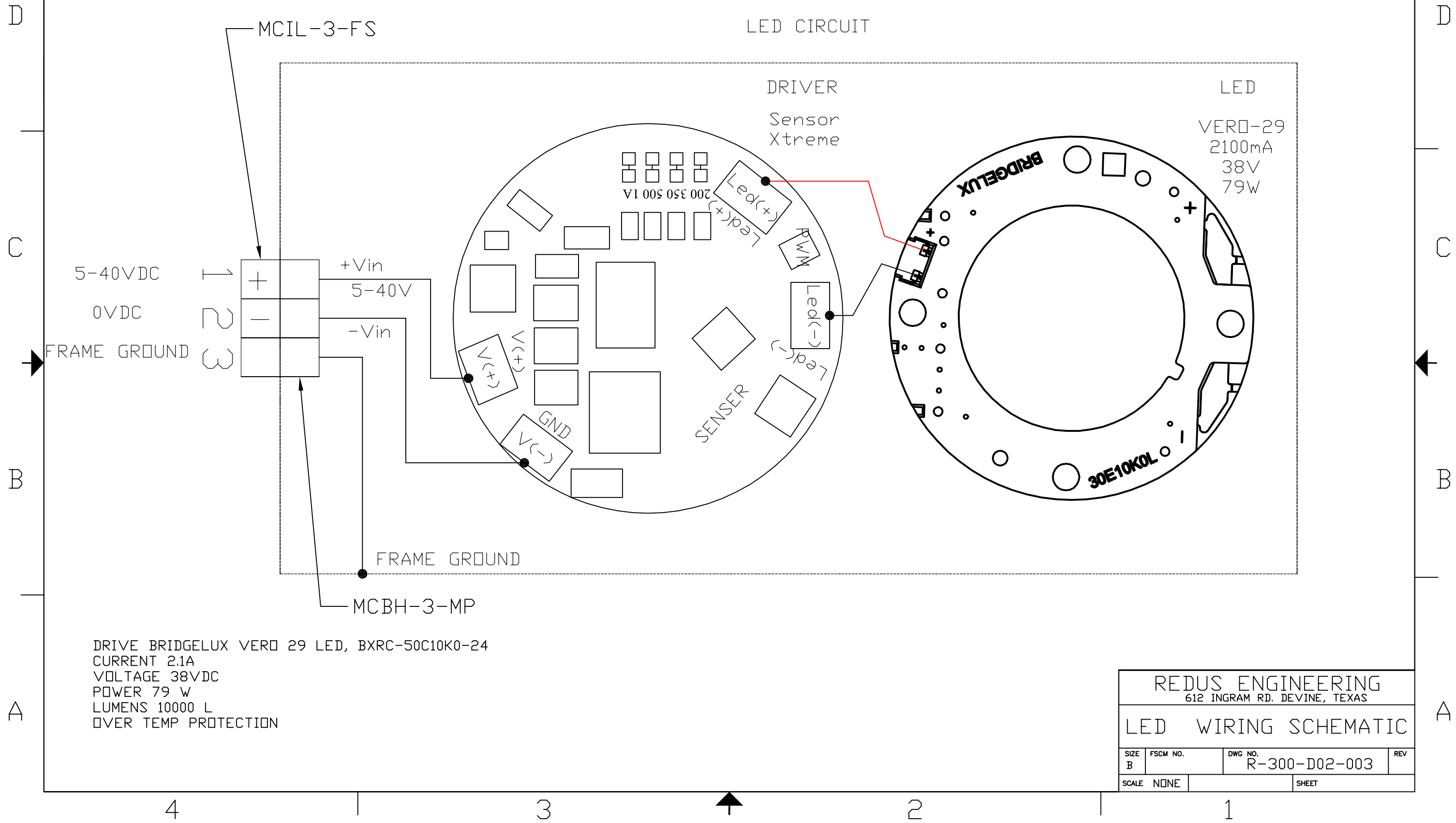


PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	Digi-Key Part Number WM9591-ND	Molex 2 Pin Wiring Pico EZMATE Connector 6" 28 AWG

DRAWN CLR	9/15/2015	Redus Engineering		
CHECKED CLR	9/15/2015			
QA		TITLE		
MFG		Molex EZmate Harness		
APPROVED CLR	9/15/2015	SIZE B	DWG NO Molex Ezmate Harness	REV 1
		SCALE	SHEET 1 OF 1	

AVG 22 AS (→) | AVG 16 AS (→) | AVG 12 AS (→)

ZONE	REV	LAST REVISION	DATE	APPROVED
	A	INITIAL DRAWING	8/30/17	CLR



5-40VDC
0VDC
FRAME GROUND

MCIL-3-FS

MCBH-3-MP

LED CIRCUIT

DRIVER
Sensor
Xtreme

LED
VERD-29
2100mA
38V
79W

SENSER

BRIDGELUX

30E10K0L

DRIVE BRIDGELUX VERD 29 LED, BXRC-50C10K0-24
CURRENT 2.1A
VOLTAGE 38VDC
POWER 79 W
LUMENS 10000 L
OVER TEMP PROTECTION

REDUS ENGINEERING 612 INGRAM RD. DEVINE, TEXAS			
LED WIRING SCHEMATIC			
SIZE B	FSCM NO.	DWG NO. R-300-D02-003	REV
SCALE NONE	SHEET		