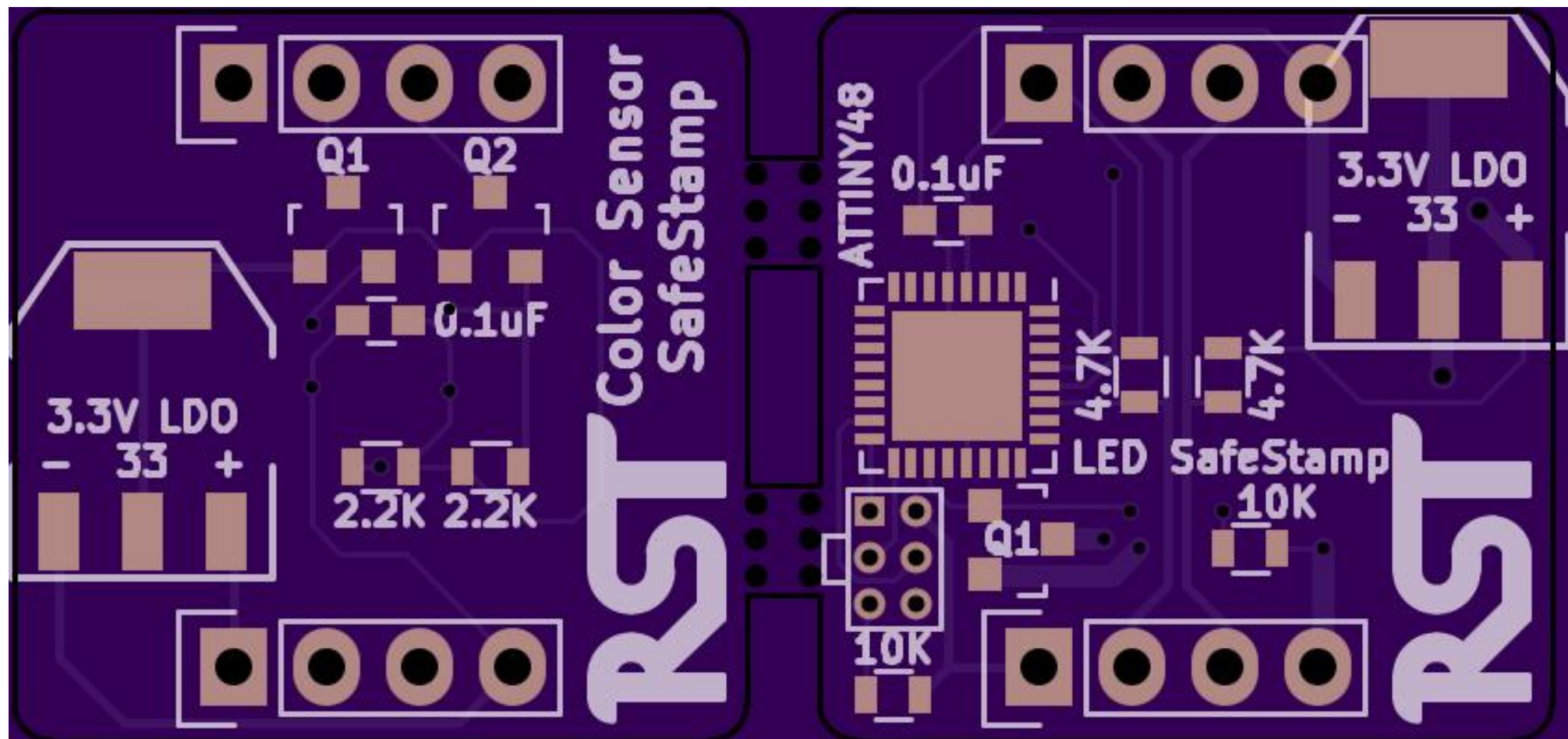


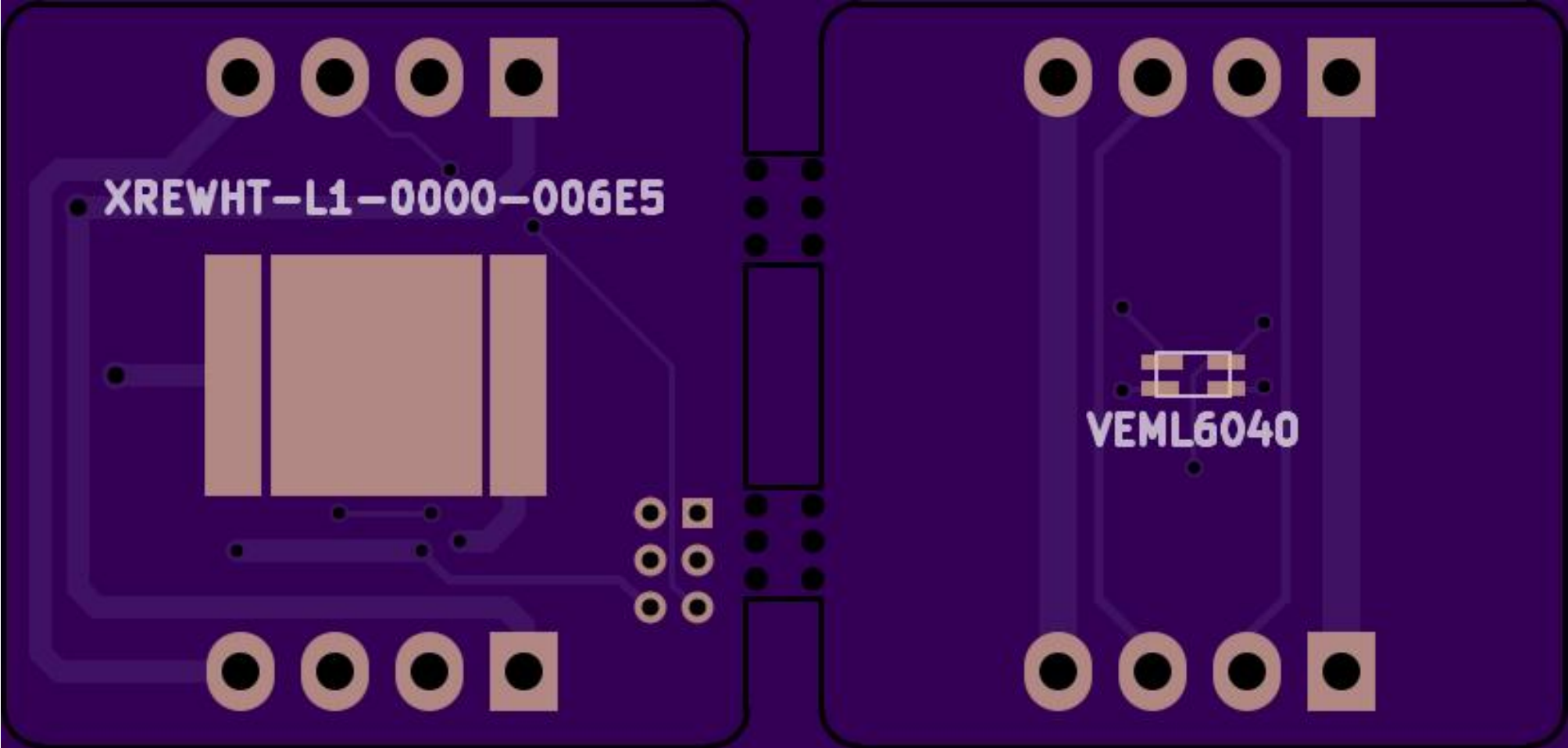


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Las Vegas, Nevada

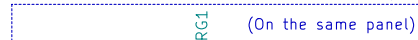
Colorimetry SafeStamps

- SafeStamps - I2C Connected Standardized Modules
- LED SafeStamp to provide light source inside colorimeter
 - Uses CREE XREWHT-L1-0000-006E5
 - Controllable intensity by ATTINY48 and MOSFET
- Color Sensor SafeStamp to measure transmittance of red, green, blue, and total light
 - Uses Vishay VEML6040A3OG
- Dominant wavelength and absorbance spectrum can be approximated from returned RGB data.
 - Color curves of LED and Color Sensor must be accounted for.
 - Accuracy is non-scientific but sufficient for physics demonstration/puzzle

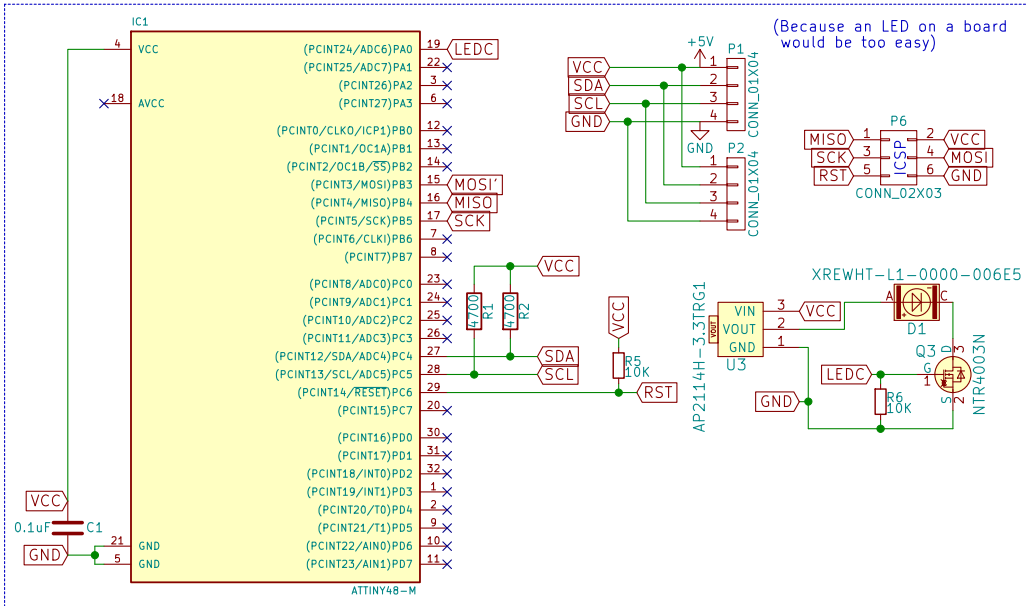




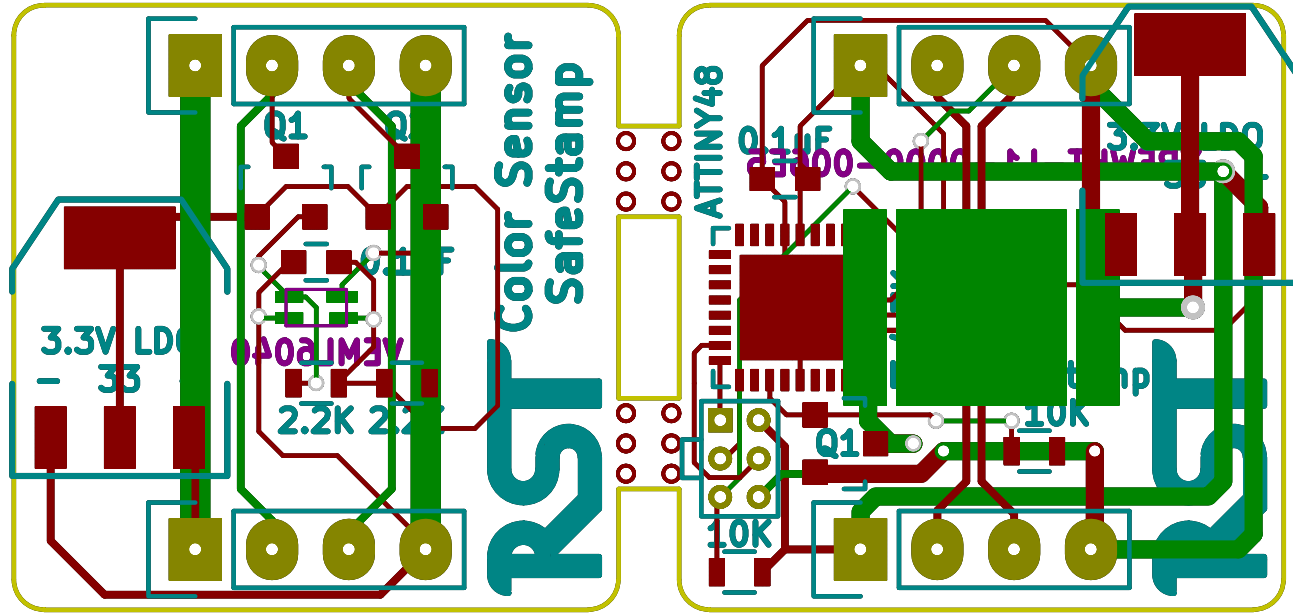
RG1 (On the same panel)

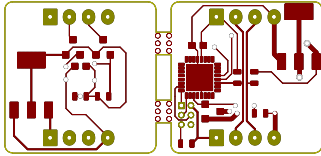


White LED SafeStamp



Id: 1/1





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Sheet:

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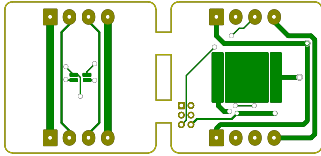
Title: LED and Color Sensor SafeStamps

Size: USLetter Date: 2015-11-10

Rev: 1

KiCad E.D.A. kicad (2015-09-02 BZR 6149, Git 4a56ee4)-product

Id: 1/1



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Sheet:

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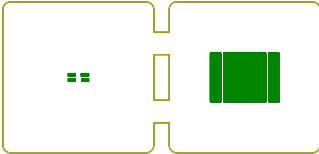
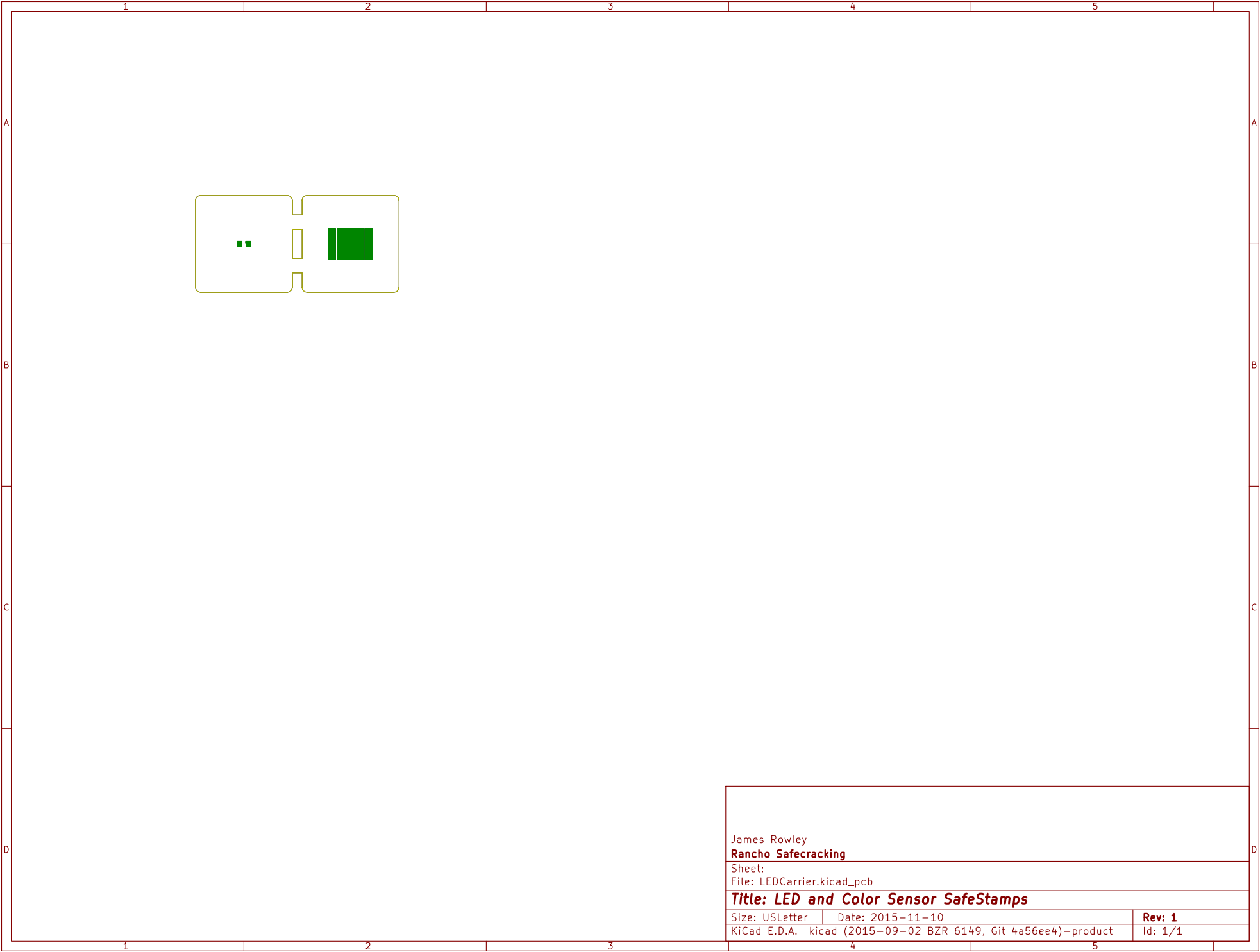
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Size: USLetter Date: 2015-11-10

Rev: 1

KiCad E.D.A. kicad (2015-09-02 BZR 6149, Git 4a56ee4)-product

Id: 1/1



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Rancho Safecracking

Sheet:

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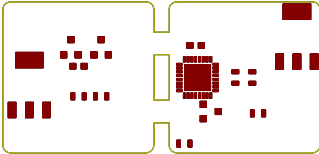
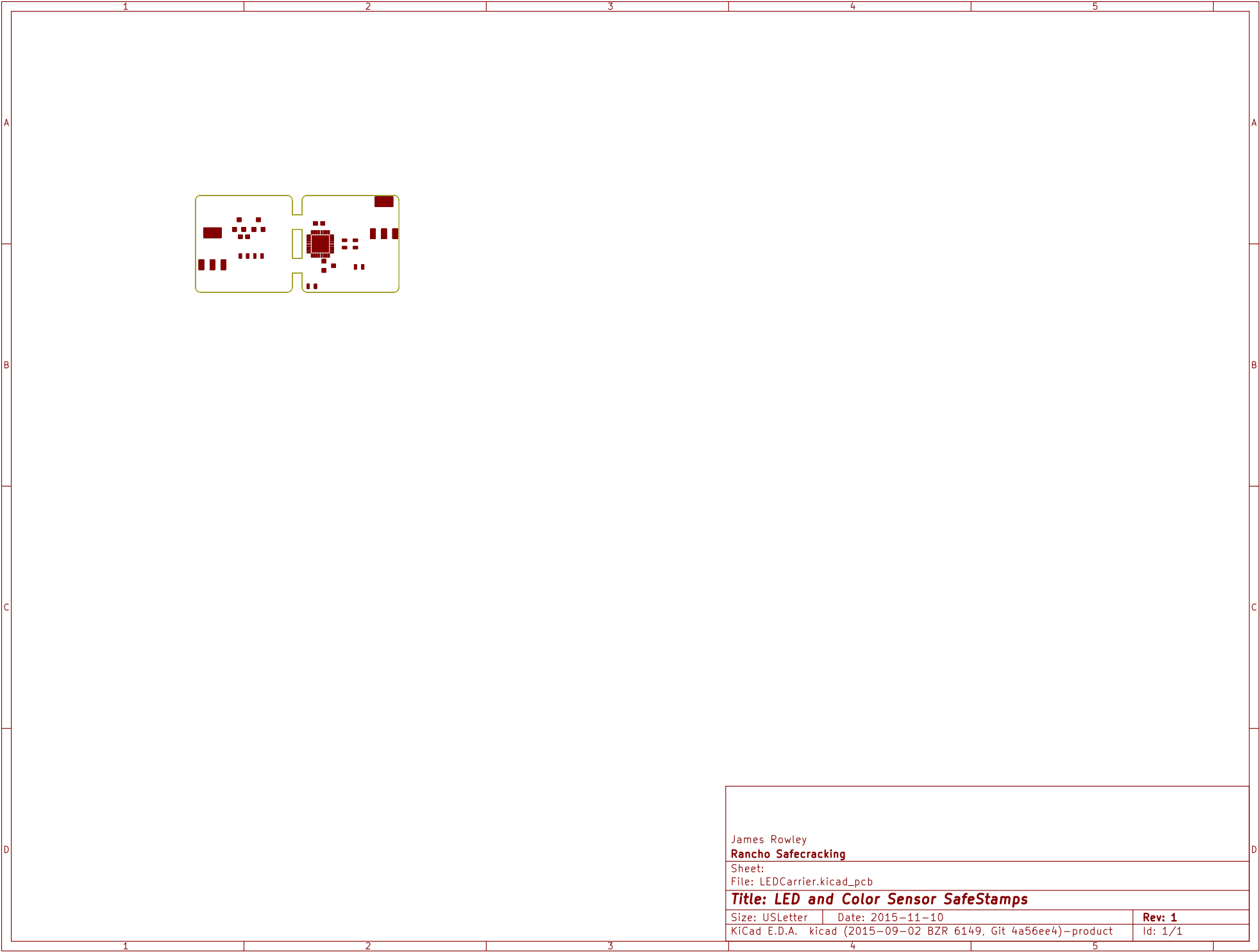
Title: LED and Color Sensor SafeStamps

Size: USLetter | Date: 2015-11-10

Rev: 1

KiCad E.D.A. kicad (2015-09-02 BZR 6149, Git 4a56ee4)-product

Id: 1/1



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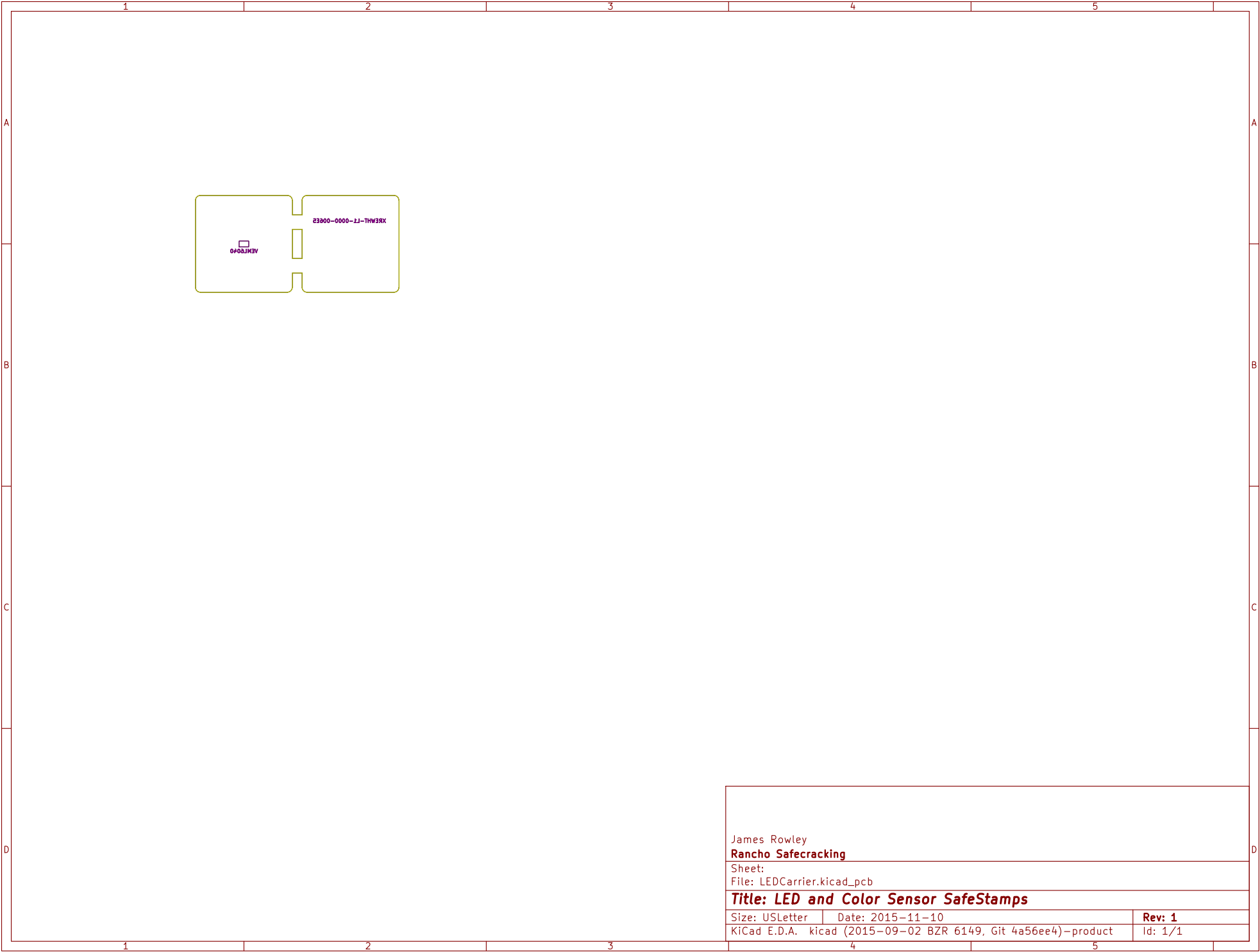
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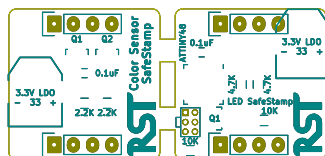
Rev: 1

KiCad E.D.A. kicad (2015-09-02 BZR 6149, Git 4a56ee4)-product

Id: 1/1



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File: LEDCarrier.kicad_pcb		
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Size: USLetter	Date: 2015-11-10	Rev: 1
KiCad E.D.A. kicad (2015-09-02 BZR 6149, Git 4a56ee4)-product		Id: 1/1



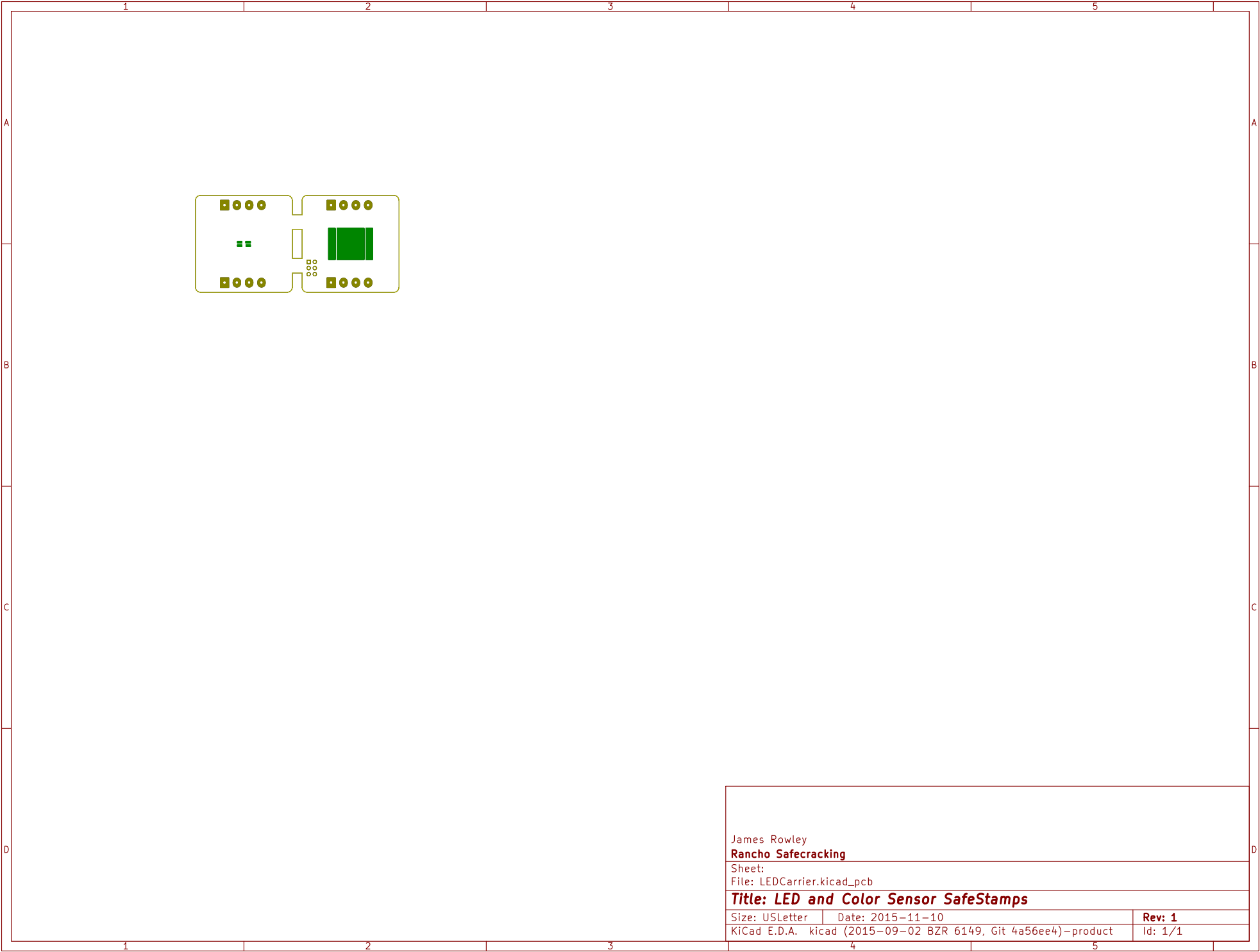
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Rancho Safecracking

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KiCad E.D.A. kicad (2015-09-02 BZR 6149, Git 4a56ee4)-product

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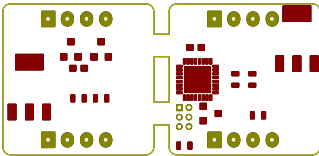
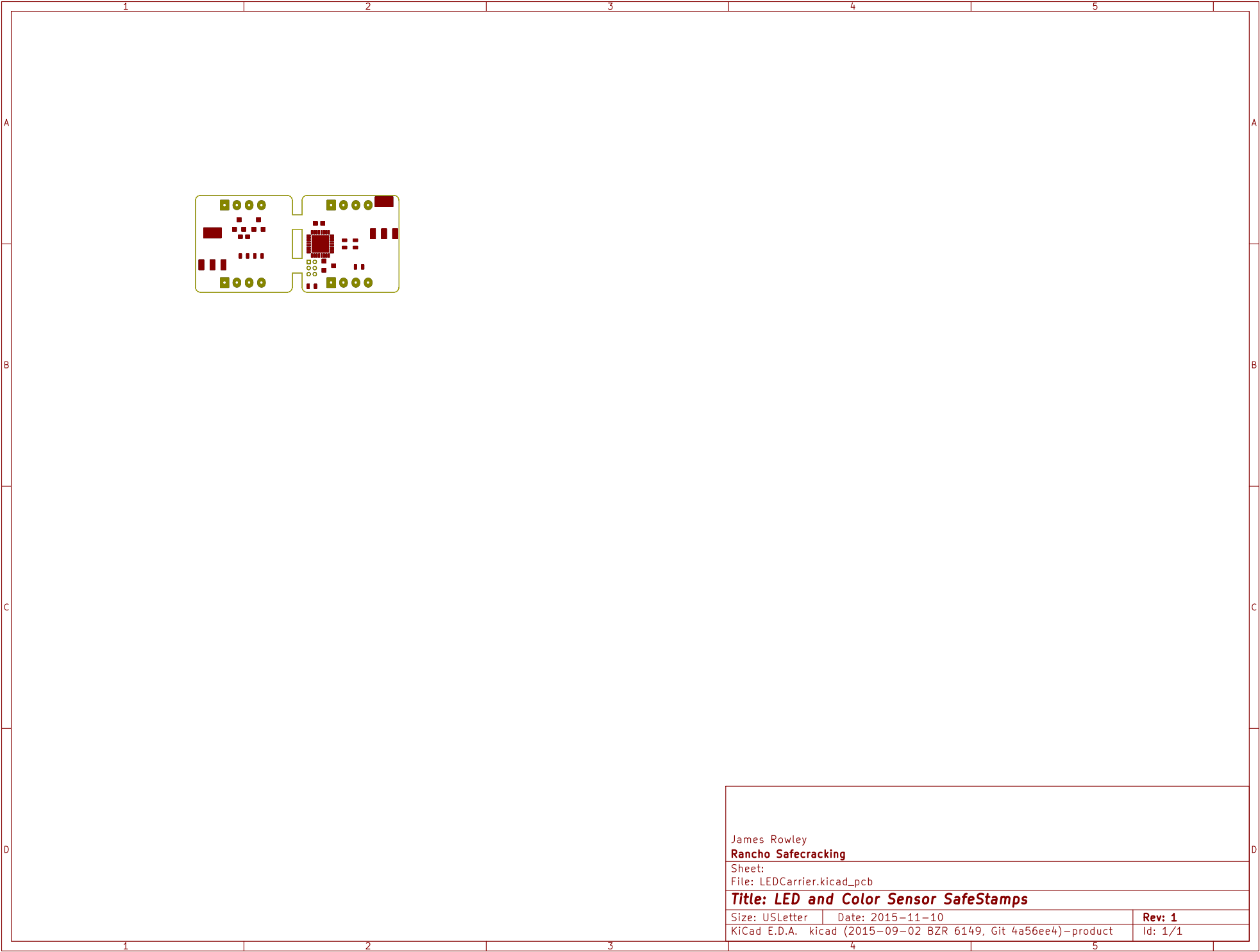
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Size: USLetter | Date: 2015-11-10

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KiCad E.D.A. kicad (2015-09-02 BZR 6149, Git 4a56ee4)-product

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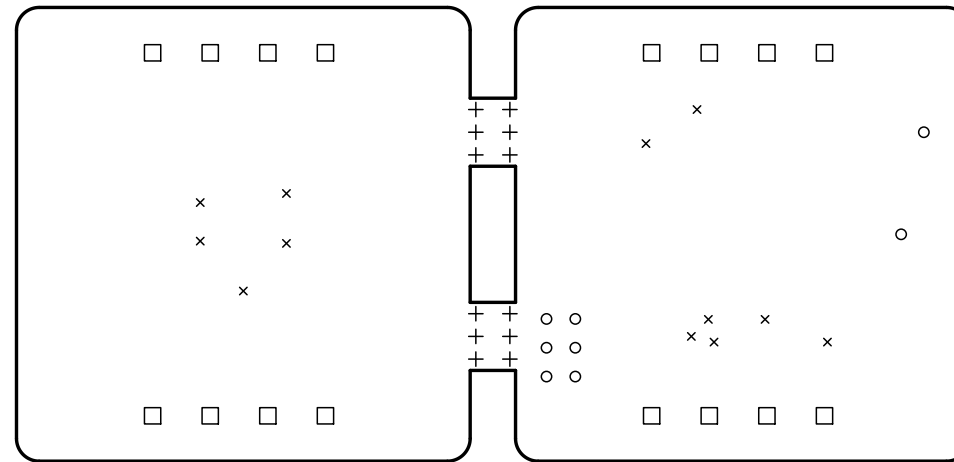
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Rev: 1

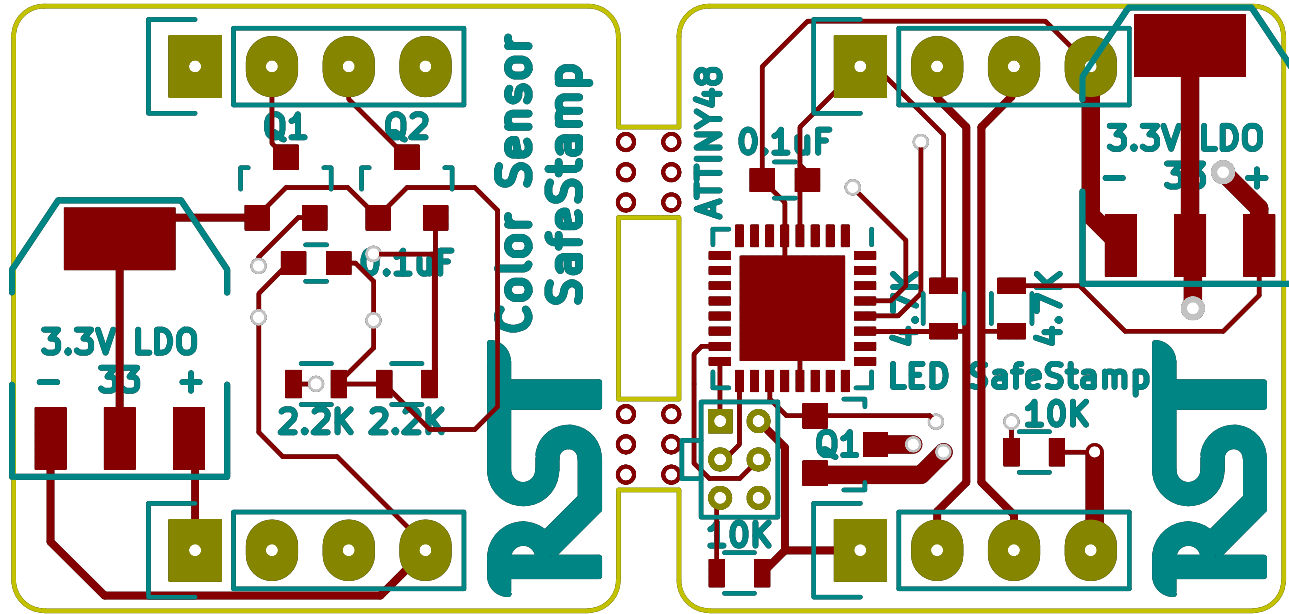
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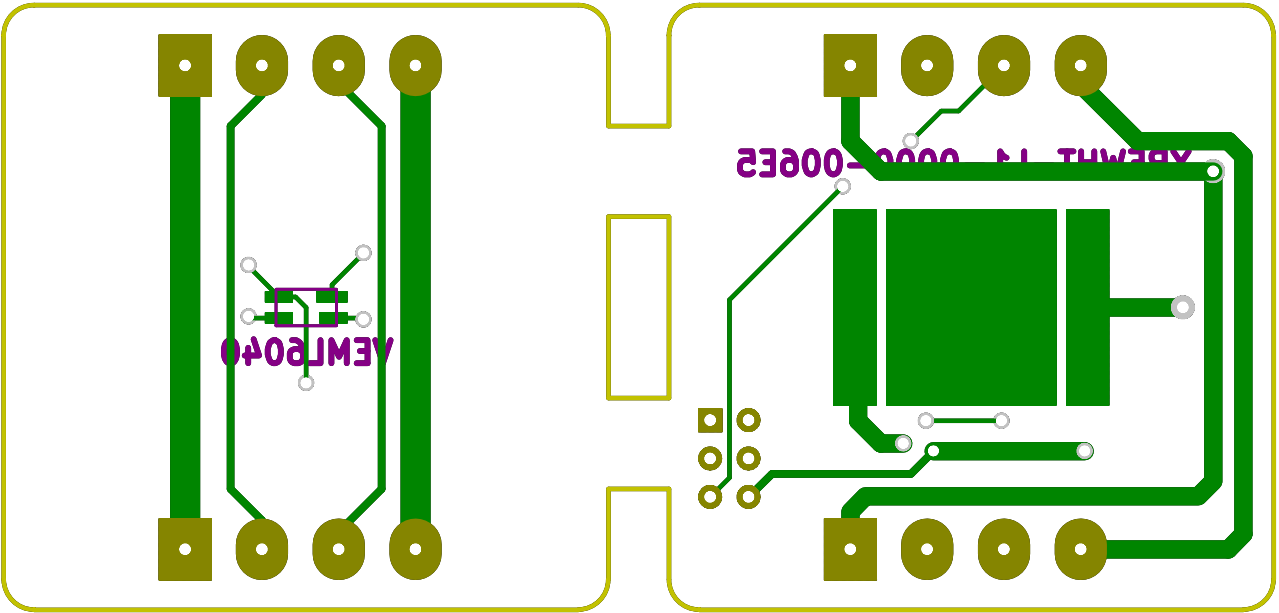
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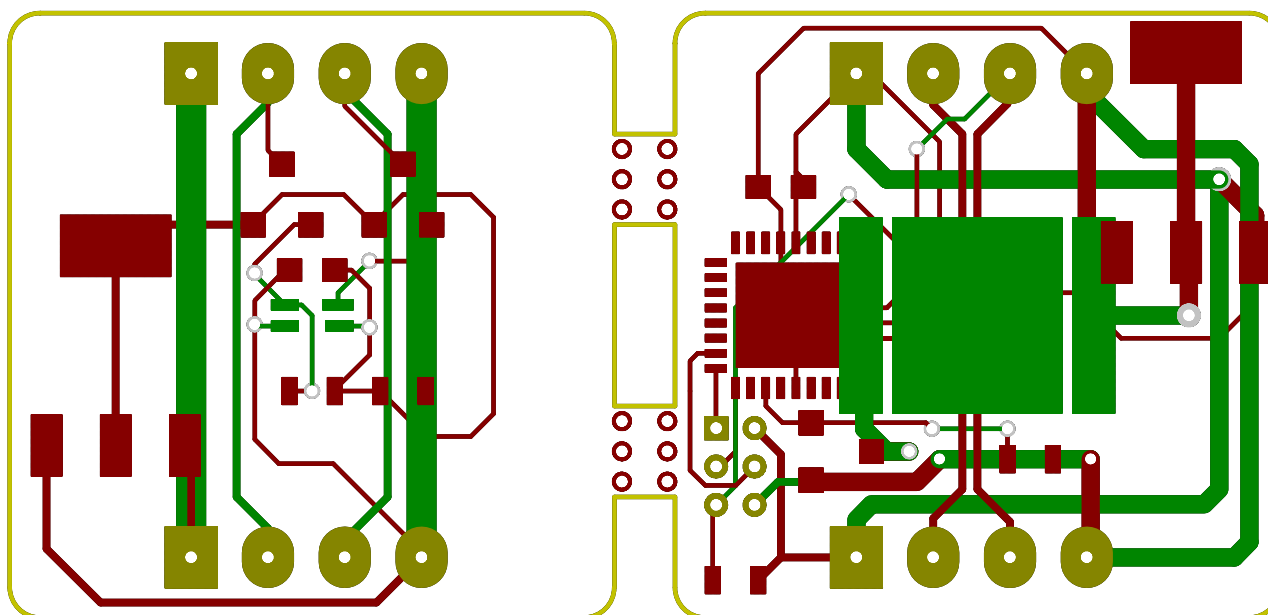


Drill Map:

× 0.33mm / 0.013" (12 holes)
 ○ 0.46mm / 0.018" (8 holes)
 + 0.64mm / 0.025" (12 holes)
 □ 1.02mm / 0.040" (16 holes)







Designator	Digi-Key Part Number	Manufacturer	Manufacturer Part Number	Quantity	1	Mfg Std Lea	Description
U1,U3	AP2114H-3.3TRG1DICT-ND	DIODES INCORPORATED (VA)	AP2114H-3.3TRG1	2	5 Weeks		IC REG LDO 3.3V 1A SOT223
U2	VEML6040A3OGCT-ND	VISHAY SEMICONDUCTOR OPTO DIVIS	VEML6040A3OG	1	6 Weeks		RGBW COLOR SENSOR I2C INTERFACE
Q1,Q2	568-5818-1-ND	NXP SEMICONDUCTORS (VA)	2N7002P,215	2	6 Weeks		MOSFET N-CH 60V 0.36A SOT-23
C1,C2	311-1335-1-ND	YAGEO (VA)	CC0603KPX7R7BB104	2	25 Weeks		CAP CER 0.1UF 16V X7R 0603
IC1	ATTINY48-MU-ND	ATMEL	ATTINY48-MU	1	6 Weeks		IC MCU 8BIT 4KB FLASH 32QFN
D1	XREWHT-L1-0000-006E5CT-ND	CREE INC (VA)	XREWHT-L1-0000-006E5	1	6 Weeks		LED XLAMP NEUTRAL WHT 4000K 2SMD
Q3	NTR4003NT1GOSCT-ND	ON SEMICONDUCTOR (VA)	NTR4003NT1G	1	10 Weeks		MOSFET N-CH 30V 500MA SOT-23
R3,R4	311-2.2KGRCT-ND	YAGEO (VA)	RC0603JR-072K2L	2	22 Weeks		RES SMD 2.2K OHM 5% 1/10W 0603
R1,R2	311-4.7KGRCT-ND	YAGEO (VA)	RC0603JR-074K7L	2	22 Weeks		RES SMD 4.7K OHM 5% 1/10W 0603
R5,R6	311-10KGRCT-ND	YAGEO (VA)	RC0603JR-0710KL	2	22 Weeks		RES SMD 10K OHM 5% 1/10W 0603
P1,P2,P3,P4	A1927-ND	TE CONNECTIVITY AMP	640457-4	4	10 Weeks		CONN HEADER RTANG 4POS .100 TIN
P6	S9015E-03-ND	SULLINS CONNECTOR SOLUTIONS	GRPB032VWVN-RC	1	4 Weeks		CONN HEADER .050" 6POS DL PCB AU

(Digi-Key) Part Number	Description	Quantity	Unit Price	Price
AP2114H-3.3TRG1DICT-ND	IC REG LDO 3.3V 1A SOT223	4	0.36	1.44
VEML6040A3OGCT-ND	RGBW COLOR SENSOR I2C INTERFACE	2	2.52	5.04
568-5818-1-ND	MOSFET N-CH 60V 0.36A SOT-23	4	0.14	0.56
311-1335-1-ND	CAP CER 0.1UF 16V X7R 0603	10	0.02	0.18
ATTINY48-MU-ND	IC MCU 8BIT 4KB FLASH 32QFN	2	1.10	2.20
XREWHT-L1-0000-006E5CT-ND	LED XLAMP NEUTRAL WHT 4000K 2SMD	2	5.62	11.24
NTR4003NT1GOSCT-ND	MOSFET N-CH 30V 500MA SOT-23	2	0.27	0.54
311-2.2KGRCT-ND	RES SMD 2.2K OHM 5% 1/10W 0603	10	0.01	0.11
311-4.7KGRCT-ND	RES SMD 4.7K OHM 5% 1/10W 0603	10	0.01	0.11
311-10KGRCT-ND	RES SMD 10K OHM 5% 1/10W 0603	10	0.01	0.11
A1927-ND	CONN HEADER RTANG 4POS .100 TIN	10	0.15	1.52
S9015E-03-ND	CONN HEADER .050" 6POS DL PCB AU	2	0.63	1.26
A122092-ND	CONN HEADR BRKWY 50POS VERT TIN	1	2.98	2.98
A105203-ND	CONN HEADER BRKWY R/A 50POS TIN	1	3.19	3.19
DigiKey	USPS Priority Mail (Approx)	1	6.40	6.40
OSHPark	Colorimetry Circuit Boards	1	6.55	6.55
OSH Stencils	Colorimetry Paste Stencils	1	9.11	9.11
OSH Stencils	USPS Standard Shipping	1	0.95	0.95
Total Cost	<i>Approximate due to DigiKey shipping</i>		TOTAL:	53.49