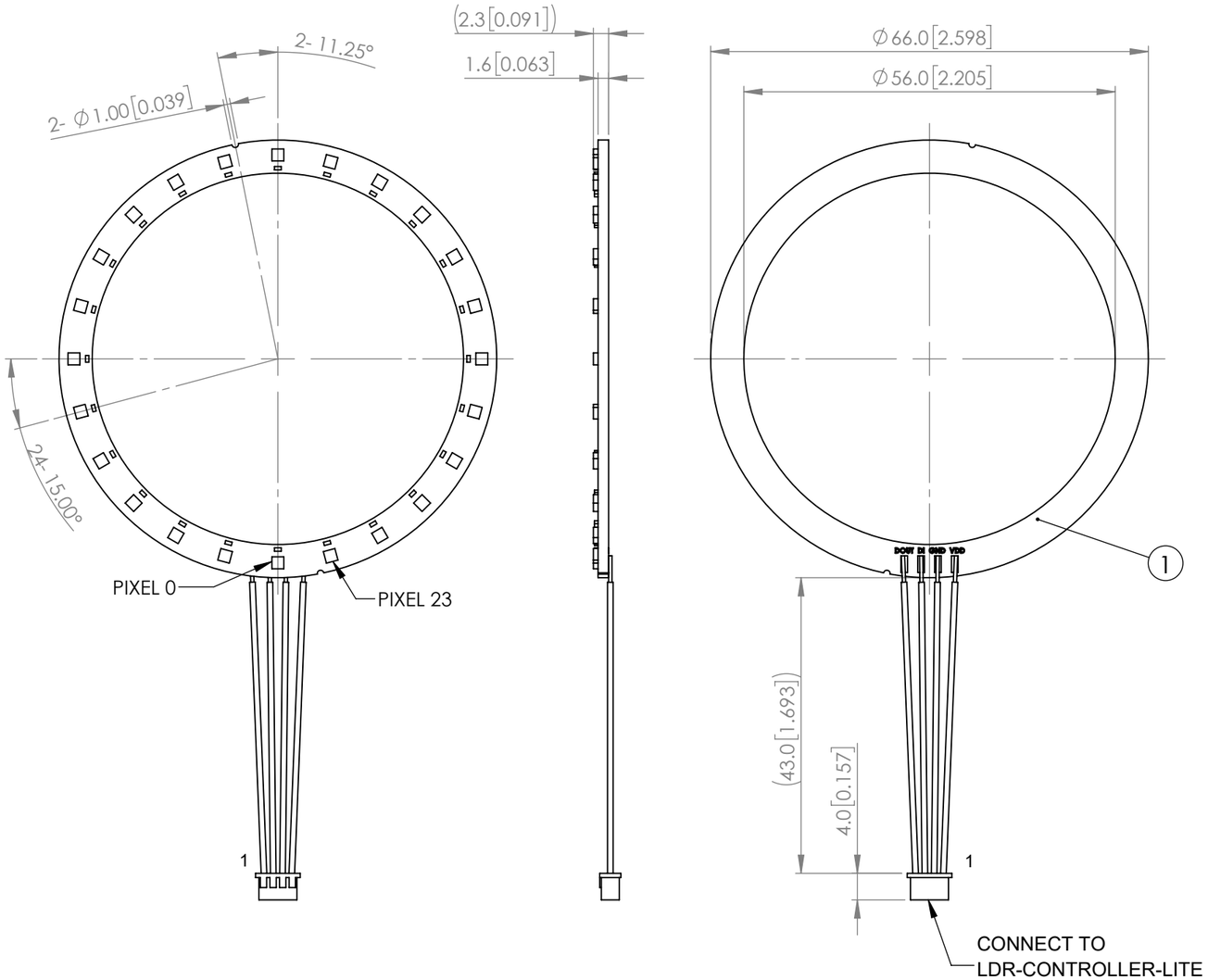
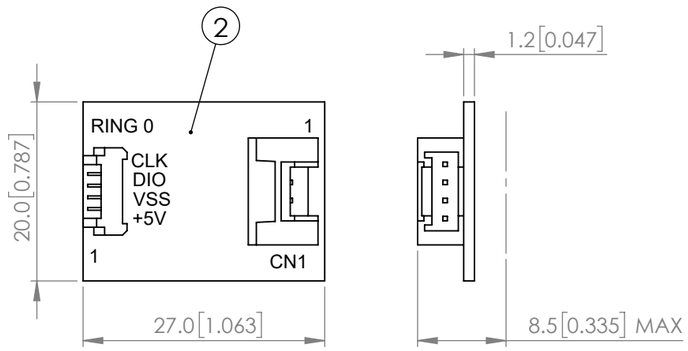
PART NUMBER	SMR-6656-24-RGB-UR	REV	--





ELECTRO-OPTICAL CHARACTERISTIC TA=25℃

PARAMETER		MIN	TYP	MAX	UNITS	TEST COND
SUPPLY VOLTAGE	**VDD**	-	5	-	V	-
PEAK WAVELENGTH (PER DOT)	**R**	-	630	-	nm	If=5mA
	G	-	520	-		
	B	-	470	-		
LUMINOUS INTENSITY (PER DOT)	**R**	72	-	180	mcd	If=5mA
	G	180	-	360		
	B	28.5	-	72		
POWER CONSUMPTION		-	-	1.9	W	-
VIEWING ANGLE (PER DOT)		-	120	-	2x theta1/2	If=5mA
EPOXY LENS FINISH		WATER CLEAR				

COMPONENT

ITEM	P/N	QTY.
1	SMR-6656-24-RGB	1
2	LDR-CONTROLLER-LITE	1

*UNLESS OTHERWISE SPECIFIED TOLERANCES PER DECIMAL PRECISION ARE: X=±1 (±0.039), X.X=±0.5 (±0.020), X.XX=±0.25 (±0.010), X.XXX=±0.127 (±0.005). LEAD SIZE=±0.05 (±0.002), LEAD LENGTH=±0.75 (±0.030). MIN= $^{+\text{DECIMAL PRECISION}}_{-0.00}$ MAX.= $^{+0.00}_{-\text{DECIMAL PRECISION}}$

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ez RING SERIES, ∅66(∅56)*2.3, 24 DOT RGB LEDs, UART INTERFACE, DC 5V.

****THE SPECIFICATIONS MAY CHANGE AT ANY TIME WITHOUT NOTICE.****

DATE : 2018.10.03	DRAWN BY : C.C.
PAGE : 1 OF 5	CHKD BY : E.C.
SCALE : NTF	APRVD BY : G.Y.
UNIT : mm [INCH]	Pb

ezDisplay RGB Ring and Stripe Command List

Code	Function	Driver IC embedded RGB LED Ring and Stripe has 256 grayscale for each primary color (R,G,B)	
		Instruction of AT Command mode	**API for C code**
0xc0	Set the color of desinated pixel	1. atc0=(address of pixel, grayscale of R 0~255, grayscale of G 0~255, grayscale of B 0~255) 2. Wait until receive a device available byte ('E') from Ring or Stripe <example> atc0=(0,255,255,0)	printf("atc0=(%d,%d,%d,%d)",address,R,G,B); while (USART_ReceiveData(UART1)!= 'E') {}
0xc1	Set the color of desinated pixels within a section	1. atc1=(address of the start pixel, address of the end pixel, grayscale of R 0~255, grayscale of G 0~255, grayscale of B 0~255) 2. Wait until receive a device available byte ('E') from Ring or Stripe <example> atc1=(18,25,0,100,0)	printf("atc1=(%d,%d,%d,%d,%d)",address1,address2,R,G,B); while (USART_ReceiveData(UART1)!= 'E') {}
0xc2	Set the color randomly for each pixel of ring	1. atc2=() 2. Wait until receive a device available byte ('E') from Ring or Stripe <example> atc2=()	printf("atc2=()"); while (USART_ReceiveData(UART1)!= 'E') {}
0xc3	Turn the ring pixels clockwise one round	1. atc3=(speed of turning 1~30) 2. Wait until receive a device available byte ('E') from Ring or Stripe <example> atc3=(10)	printf("atc3=(%d)",speed); while (USART_ReceiveData(UART1)!= 'E') {}
0xc4	Turn the ring pixels counter clockwise one round	1. atc4=(speed of turning 1~30) 2. Wait until receive a device available byte ('E') from Ring or Stripe <example> atc4=(10)	printf("atc4=(%d)",speed); while (USART_ReceiveData(UART1)!= 'E') {}
0xc5	Turn one pixels Clockwise	1. atc5=(speed of shifting 1~30) 2. Wait until receive a device available byte ('E') from Ring or Stripe <example> atcb=(10)	printf("atc5=(%d)",speed); while (USART_ReceiveData(UART1)!= 'E') {}
0xc6	Turn one pixels Counter clockwise	1. atc6=(speed of shifting 1~30) 2. Wait until receive a device available byte ('E') from Ring or Stripe <example> atcc=(10)	printf("atc6=(%d)",speed); while (USART_ReceiveData(UART1)!= 'E') {}

Code	Function	Driver IC embedded RGB LED Ring and Stripe has 256 grayscale for each primary color (R,G,B)	
		Instruction of AT Command mode	API for C code
0xc7	Flash one desinated pixle	1. atc7=(address of pixel, speed of flashing 1~100) 2. Wait until receive a device available byte ('E') from Ring or Stripe <example> atc7=(0,50)	printf("atc7=(%d,%d)",address,speed); while (USART_ReceiveData(UART1)!= 'E') {}
0xc8	Flash desinated pixels within a section	1. atc8=(address of the start pixel, address of the end pixel, speed of flashing 1~100) 2. Wait until receive a device available byte ('E') from Ring or Stripe <example> atc8=(2,5,50)	printf("atc8=(%d,%d,%d)",address1,address2,speed); while (USART_ReceiveData(UART1)!= 'E') {}
0xc9	Flash whole ring	1. atc9=(speed of flashing 1~100) 2. Wait until receive a device available byte ('E') from Ring or Stripe <example> atc9=(50)	printf("atc9=(%d)",speed); while (USART_ReceiveData(UART1)!= 'E') {}
0xca	Breath effect of whole ring for 7 major colors	1. atca=(0 or 1 for R, 0 or1 for G, 0 or 1 for B) 2. Wait until receive a device available byte ('E') from Ring or Stripe <example> atca=(0,0,1)	printf("atca=(%d,%d,%d)",R,G,B); while (USART_ReceiveData(UART1)!= 'E') {}
0xcd	Set the dynamic fucntion's color	1. atcd=(grayscale of R 0~255, grayscale of G 0~255, grayscale of B 0~255) 2. Wait until receive a device available byte ('E') from Ring or Stripe <example> atcd=(128,9,18)	printf("atcd=(%d,%d,%d)",R,G,B); while (USART_ReceiveData(UART1)!= 'E') {}
0xce	Set the dynamic fucntion's speed	1. atce=(speed 1~100) 2. Wait until receive a device available byte ('E') from Ring or Stripe <example> atce=(5)	printf("atce=(%d)",speed); while (USART_ReceiveData(UART1)!= 'E') {}
0xcf	Set the pixel number of ring	1. atcf=(number of pixels of ring 1~120) 2. Wait until receive a device available byte ('E') from Ring or Stripe <example> atcf=(48)	printf("atcc=(%d)",Number_of_Pixel); while (USART_ReceiveData(UART1)!= 'E') {}

Code	Function	Driver IC embedded RGB LED Ring and Stripe has 256 grayscale for each primary color (R,G,B)	
		Instruction of AT Command mode	**API for C code**
0xd0	Clear display	1. atd0=() 2. Wait until receive a device available byte ('E') from Ring or Stripe <example> atd0=()	printf("atd0=()"); while (USART_ReceiveData(UART1)!= 'E') {}
0x10	Fill pixel one by one, strat from last pixel	1. at10=(grayscale of R 0~255, grayscale of G 0~255, grayscale of B 0~255, speed of filling 1~30) 2. Wait until receive a device available byte ('E') from Ring or Stripe <example> at10=(0,105,0,5)	printf("at10=(%d,%d,%d,%d)",R,G,B,speed); while (USART_ReceiveData(UART1)!= 'E') {}
0x11	Fill pixel one by one, strat from first pixel	1. at11=(grayscale of R 0~255, grayscale of G 0~255, grayscale of B 0~255, speed of filling 1~30) 2. Wait until receive a device available byte ('E') from Ring or Stripe <example> at11=(0,105,0,2)	printf("at11=(%d,%d,%d,%d)",R,G,B,speed); while (USART_ReceiveData(UART1)!= 'E') {}
0x12	Stack pixel one by one clockwise then turn off pixel counterclockwise	1. at12=(grayscale of R 0~255, grayscale of G 0~255, grayscale of B 0~255, speed of stacking 1~30) 2. Wait until receive a device available byte ('E') from Ring or Stripe <example> at12=(0,10,255,5)	printf("at12=(%d,%d,%d,%d)",R,G,B,speed); while (USART_ReceiveData(UART1)!= 'E') {}
0x13	Stack pixel one by one counterclockwise then turn off pixel clockwise	1. at13=(grayscale of R 0~255, grayscale of G 0~255, grayscale of B 0~255, speed of stacking 1~30) 2. Wait until receive a device available byte ('E') from Ring or Stripe <example> at13=(255,0,0,10)	printf("at13=(%d,%d,%d,%d)",R,G,B,speed); while (USART_ReceiveData(UART1)!= 'E') {}
0x14	Two pixels collision then firework	1. at14=(grayscale of R 0~255, grayscale of G 0~255, grayscale of B 0~255, speed of stacking 1~30) 2. Wait until receive a device available byte ('E') from Ring or Stripe <example> at14=(0,255,0,10)	printf("at14=(%d,%d,%d,%d)",R,G,B,speed); while (USART_ReceiveData(UART1)!= 'E') {}
0x15	Two stack pixels collision then firework	1. at15=(grayscale of R 0~255, grayscale of G 0~255, grayscale of B 0~255, speed of stacking 1~30) 2. Wait until receive a device available byte ('E') from Ring or Stripe <example> at15=(0,255,0,10)	printf("at15=(%d,%d,%d,%d)",R,G,B,speed); while (USART_ReceiveData(UART1)!= 'E') {}

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Code	Function	Driver IC embedded RGB LED Ring and Stripe has 256 grayscale for each primary color (R,G,B)	
		Instruction of AT Command mode	**API for C code**
0x16	Two pixels collision then bounce back	1. at16=(grayscale of R 0~255, grayscale of G 0~255, grayscale of B 0~255, speed of stacking 1~30) 2. Wait until receive a device available byte ('E') from Ring or Stripe <example> at16=(255,255,255,10)	printf("at16=(%d,%d,%d,%d)",R,G,B,speed); while (USART_ReceiveData(UART1)!= 'E') {}
0x17	Two stack pixels collision then fade back	1. at17=(grayscale of R 0~255, grayscale of G 0~255, grayscale of B 0~255, speed of stacking 1~30) 2. Wait until receive a device available byte ('E') from Ring or Stripe <example> at17=(0,255,100,10)	printf("at17=(%d,%d,%d,%d)",R,G,B,speed); while (USART_ReceiveData(UART1)!= 'E') {}
0xf2	Set the Dimming level * Only available for Dimmable LEDs	1. atf2=(Dimming level 0~31) 2. Wait until receive a device available byte ('E') from Ring or Stripe <example> atf2=(7)	printf("atf2=(%d)",Dimming); while (USART_ReceiveData(UART1)!= 'E') {}
0xfd	Set the dynamic function	1. atfd=(Function Code 0~20) 2. Wait until receive a device available byte ('E') from Ring or Stripe <Function code> 0 : Stop the auto run back to static mode 1~20 are auto run mode. The display speed and color can be determinated by atcc and atcd command accordingly 1: Breath (for red, green, blue, yellow, cyan, magenta & white only) 2: Randomly color display for whole ring 3: Turn one pixel clockwise 4: Turn one pixel counter clockwise 5: Turn comet section pixels clockwise (for red, green, blue, yellow, cyan, magenta & white only) 6: Turn comet section pixels counter clockwise (for red, green, blue, yellow, cyan, magenta & white only) 7: Comet section pixels bounce around (for red, green, blue, yellow, cyan, magenta & white only) 8: Turn ring display menory data clockwise (Ring display memory can be determinated by atc0 or atc1command) 9: Turn ring display menory data counter clockwise (Ring display memory can be determinated by atc0 or atc1command) 10: Flash whole ring 11: Fill pixel one by one start from last pixel 12: Fill pixel one by one start from first pixel 13: Fill pixel one by one clockwise then disappear one by one counter clockwise 14: Fill pixel one by one clockwise then disappear one by one clockwise 15: Show the ring display memory data one by one then disappear one by one counter clockwise 16: Show the ring display memory data one by one then disappear one by one clockwise 17: Two pixels collide then firework effect 18: Two section pixels collide then firework effect 19: Two pixels crossing 20: Two pixels collide then bounce back	printf("atfd=(%d)",Function); while (USART_ReceiveData(UART1)!= 'E') {}