EXAMINED BY : Bob Hu	EMERGING DISPLAY	FILE NO . CAS-50913
		ISSUE : JUN.17,2004
APPROVED BY: Eric Lee	TECHNOLOGIES CORPORATION	TOTAL PAGE : 11
		VERSION : 1

CUSTOMER ACCEPTANCE SPECIFICATIONS

MODEL NO. :

E R 0 0 9 5 A 1 N T 6

FOR MESSRS :

CUSTOMER'S APPROVAL

DATE :

BY :

EMERGING DISPLAY TECHNOLOGIES CORPORATION	MODEL NO. ER0095A1NT6	VERSION 1	PAGE 0-1
RECORDS OF REVISION	DOC . FIRST ISSUE JUN.17,2004		

DATE	REVISED PAGE NO.	SUMMARY

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1. GENERAL SPECIFICATIONS

1.1 GENERAL SPECIFICATIONS
PLEASE REFER TO :

CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS :

EU-004A

1.2 APPLICATION NOTES FOR CONTROLLER/DRIVER PLEASE REFER TO :

ULTRACHIP UC1682XHCY

2. MECHANICAL SPECIFICATIONS

(1)	DISPLAY SIZE	0.95 inches
(2)	NUMBER OF DOTS	96W * (RGB) * 64H DOTS
(3)	MODULE SIZE	26.76W * 31.88H * 1.5D mm
(4)	VIEWING AREA	22.96W * 16.48H mm
(5)	ACTIVE AREA	20.15W * 13.43H mm
(6)	DOT PITCH	0.07W * 0.21H mm
(7)	DOT SIZE	0.06W * 0.2H mm
(8)	LCD TYPE	TRANSMISSIVE
(9)	COLOR	4K(12 bit , True)~221K(24 bit , Dithering)
(10)	DRIVING METHOD	1 / 64 DUTY MULTIPLEX DRIVE 1/8 BIAS
(11)	VIEWING DIRECTION	6 O'CLOCK

3. ABSOLUTE MAXIMUM RATINGS

3.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS. (AT Ta = 25 °C)

PARAMETER	SYMBOL	MIN.	MAX.	UNIT	REMARK
SUPPLY VOLTAGE	VDD	-0.3	+4.0	V	NOTE (1)
	VLCD	-0.3	+12.0		
INPUT VOLTAGE	VIN	-0.4	VDD+0.5	V	
STATIC ELECTRICITY	—	—	100	V	NOTE (2)

NOTE (1) : IF SUPPLY VOLTAGE EXCEEDS ITS ABSOLUTE MAXIMUM RANGE, THIS LSI MAY BE DAMAGED PERMANENTLY.
IT IS DESIRABLE TO USE THIS LSI UNDER ELECTRICAL CHARACTERISTIC CONDITION DURING GENERAL OPERATION.
OTHERWISE, THIS LSI MAY MALFUNCTION OR REDUCED LSI RELIABILITY MAY RESULT.

NOTE (2) : TEST METHOD AND CONDITIONS :
AFTER CHARGING UP 200 PF CAPACITOR BY STATED VOLTAGE, THE CAPACITOR IS CONNECTED WITH INTERFACE PINS OF THE MODULE.

3.2 ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS.

ITEM	OPERATING		STORAGE		REMARK
	MIN.	MAX.	MIN.	MAX.	
AMBIENT TEMPERATURE	-20 °C	70 °C	-30 °C	80 °C	NOTE (3), (4)
HUMIDITY	—	75 % RH	—	75 % RH	WITHOUT CONDENSATION
VIBRATION	—	2.45 m/S^2 (0.25 G)	—	11.76 m/S^2 (1.2 G)	10~100 Hz XYZ DIRECTIONS 1 Hr. EACH
SHOCK	—	29.4 m/S^2 (3 G)	—	490 m/S^2 (50 G)	10 m SECONDS XYZ DIRECTIONS 1 TIME EACH
CORROSIVE GAS	NOT ACCEPTABLE		NOT ACCEPTABLE		

NOTE (3) : Ta AT -30°C : 240HR MAX.
80°C : 240HR MAX.

NOTE (4) : BACKGROUND COLOR CHANGES SLIGHTLY DEPENDING ON AMBIENT TEMPERATURE THIS PHENOMENON IS REVERSIBLE.

4. ELECTRICAL CHARACTERISTICS

(Ta=25°C)

ITEM		SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
SUPPLY VOLTAGE (LOGIC)		VDD	—	2.7	3.0	3.3	V	
INPUT VOLTAGE	"H" LEVEL	VIH	—	0.8VDD	—	—	V	
	"L" LEVEL	VIL		—	—	0.2VDD		
OUTPUT VOLTAGE	"H" LEVEL	VOH	—	0.8VDD	—	—	V	
	"L" LEVEL	VOL		—	—	0.2VDD		
I/O LEAKAGE CURRENT		IIL	—	—	—	+1.5	uA	
CURRENT CONSUMPTION (MAIN LCD)		IDD	VDD=3.0V VLCD-VSS=8.4V		0.4	0.6	mA	1
LCD DRIVING VOLTAGE (RECOMMENDED LCD DRIVING VOLTAGE)		VLCD	TA=-20°C	—	—	—	V	2
			Ta=25°C	8.2	8.4	8.6		
			Ta=70°C	—	—	—		

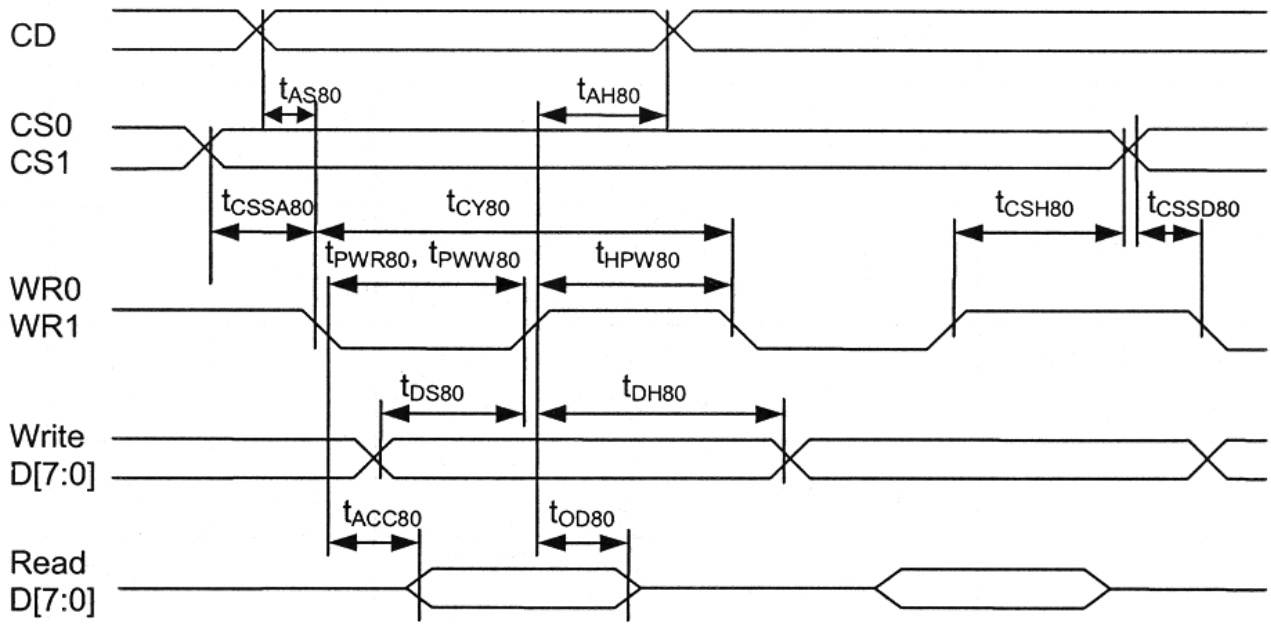
NOTE (1) : OPTIMUM CONTRAST VOLTAGE IS ADDED.(ALL DOTS ON STATE)
DUTY=1/64 , BIAS=1/8

NOTE (2) : RECOMMENDED LCD DRIVE VOLTAGE FLUCTUATE ABOUT ± 1.0V BY LSI'S TOLERANCE AND LCD PANEL'S MANUFACTURING LOTS.

5. TIMING CHARACTERISTICS

($2.5V \leq V_{DD} < 3.3V$, Ta= –30 to +85°C)

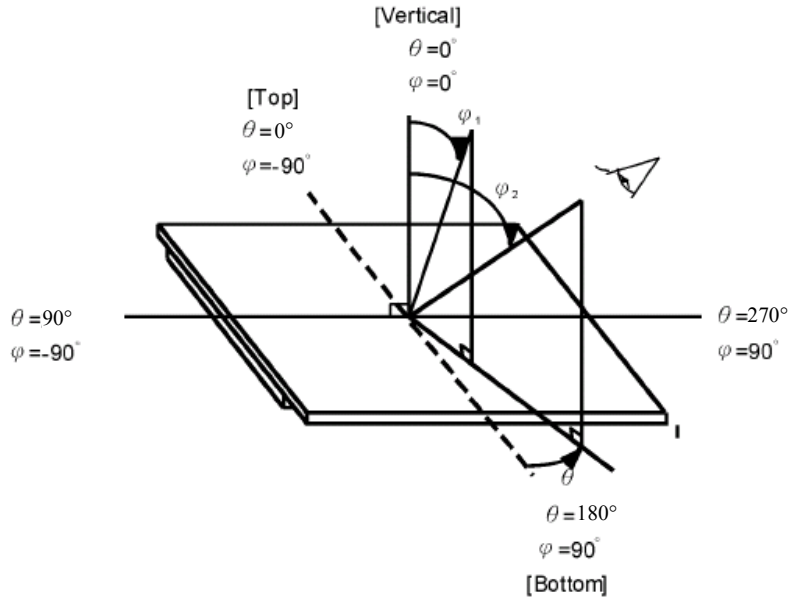
Symbol	Signal	Description	Condition	Min.	Max.	Units
t_{AS80} t_{AH80}	CD	Address setup time Address hold time		0 15	–	nS
t_{CY80}		System cycle time 8 bits bus (read) (write) 4 bits bus (read) (write)		 140 80 140 80	–	nS
t_{PWR80}	WR1	Pulse width 8 bits (read) 4 bits		70 70	–	nS
t_{PWW80}	WR0	Pulse width 8 bits (write) 4 bits		40 40	–	nS
t_{HPW80}	WR0, WR1	High pulse width 8 bits bus (read) (write) 4 bits bus (read) (write)		 70 40 70 40	–	nS
t_{DS80} t_{DH80}	D0~D7	Data setup time Data hold time		30 15	–	nS
t_{ACC80} t_{OD80}		Read access time Output disable time	C_L = 100pF	– 25	80 40	nS
t_{CSSA80} t_{CSSD80} t_{CSH80}	CS1/CS0	Chip select setup time		5 10 5		nS



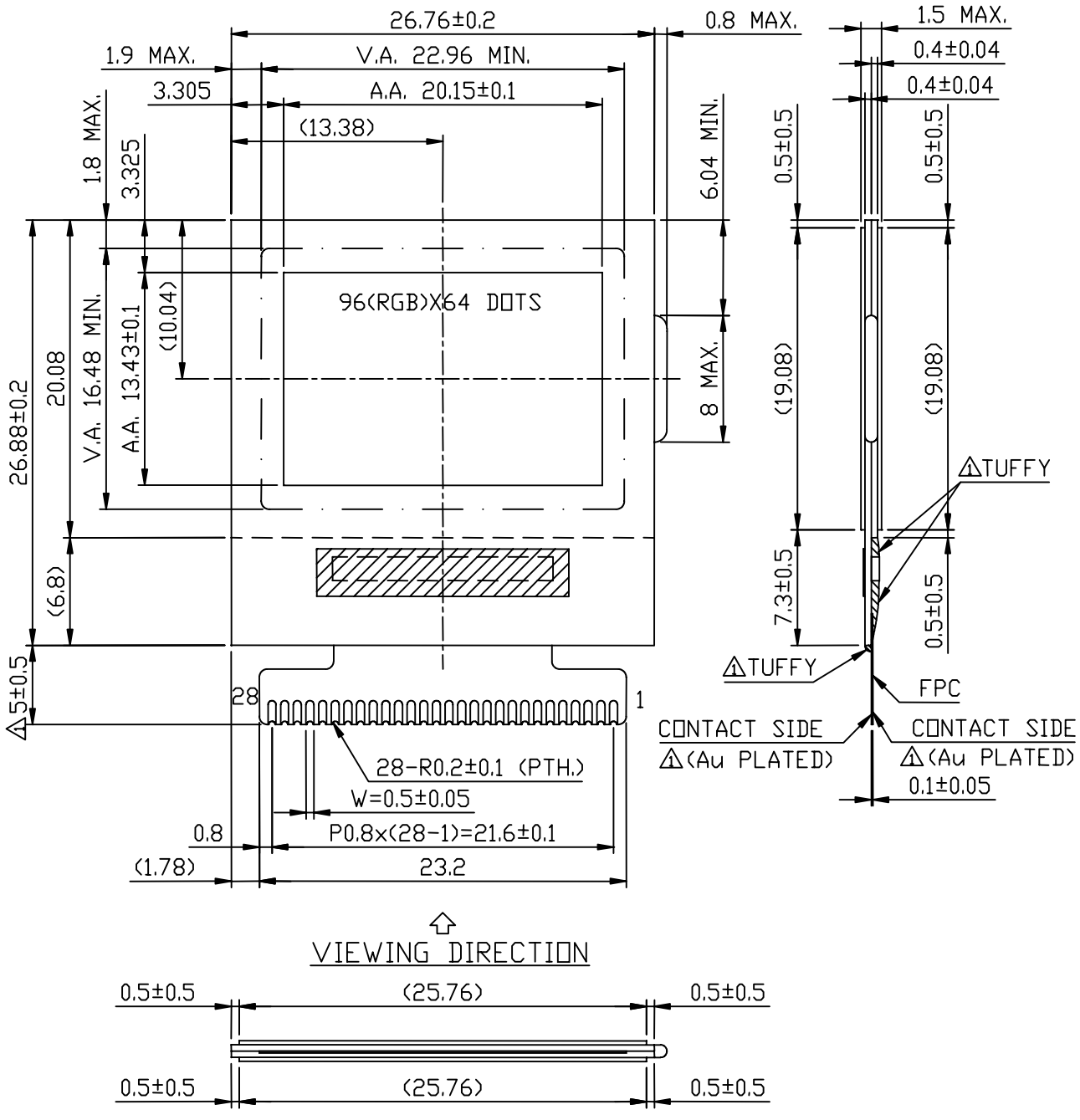
6 . OPTICAL CHARACTERISTICS

I T E M		SYMBOL	TMEP	CONDITION	MIN .	TYP .	MAX.	UNIT	REMARK
RESPONSE TIME	RISE TIME	tr	-20°C	θ = 0° ∅= 10°	—	5800	11600	ms	NOTE (1)
			25°C		—	350	700		
			70°C		—	100	200		
	DECAY TIME	tf	-20°C		—	2700	5400		
			25°C		—	150	300		
			70°C		—	80	160		
VIEWING ANGLE (12:00 H)		F	25°C	θ = 0° ∅= 10°	—	-40	+40	deg.	
CONTRAST RATIO		K	25°C	θ = 0° ∅= 10°	—	8.6	27.0		
COLOR OF CIE COORDINATE	WHITE	X	25°C	θ = 0° ∅= 10°	0.22	0.27	0.32	—	
		Y			0.24	0.29	0.34	—	
	RED	X			0.47	0.52	0.57	—	
		Y			0.28	0.33	0.38	—	
	GREEN	X			0.24	0.29	0.34	—	
		Y			0.42	0.47	0.52	—	
	BLUE	X			0.10	0.15	0.20	—	
		Y			0.07	0.12	0.17	—	

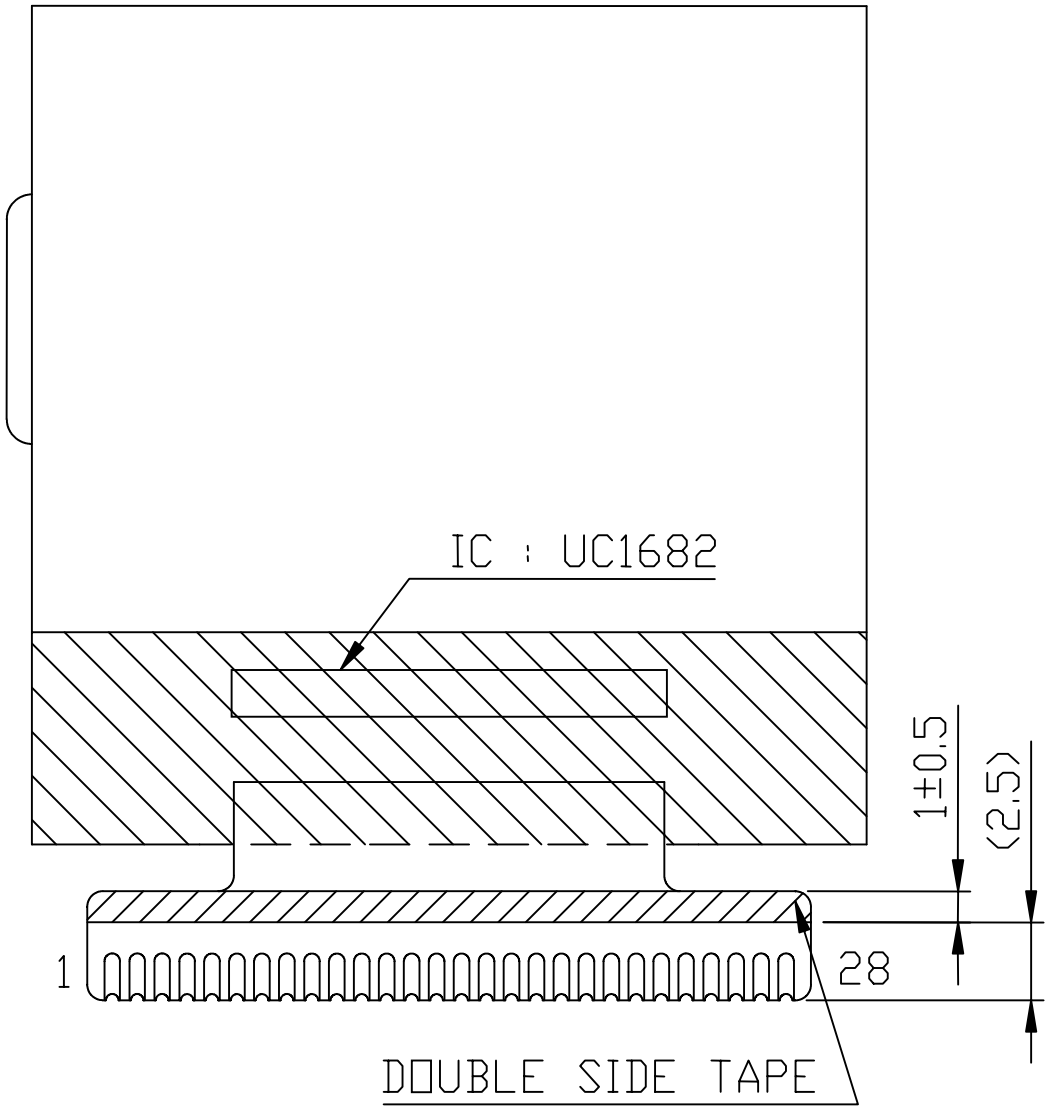
NOTE (1) : DEFINITION OF θ AND ∅



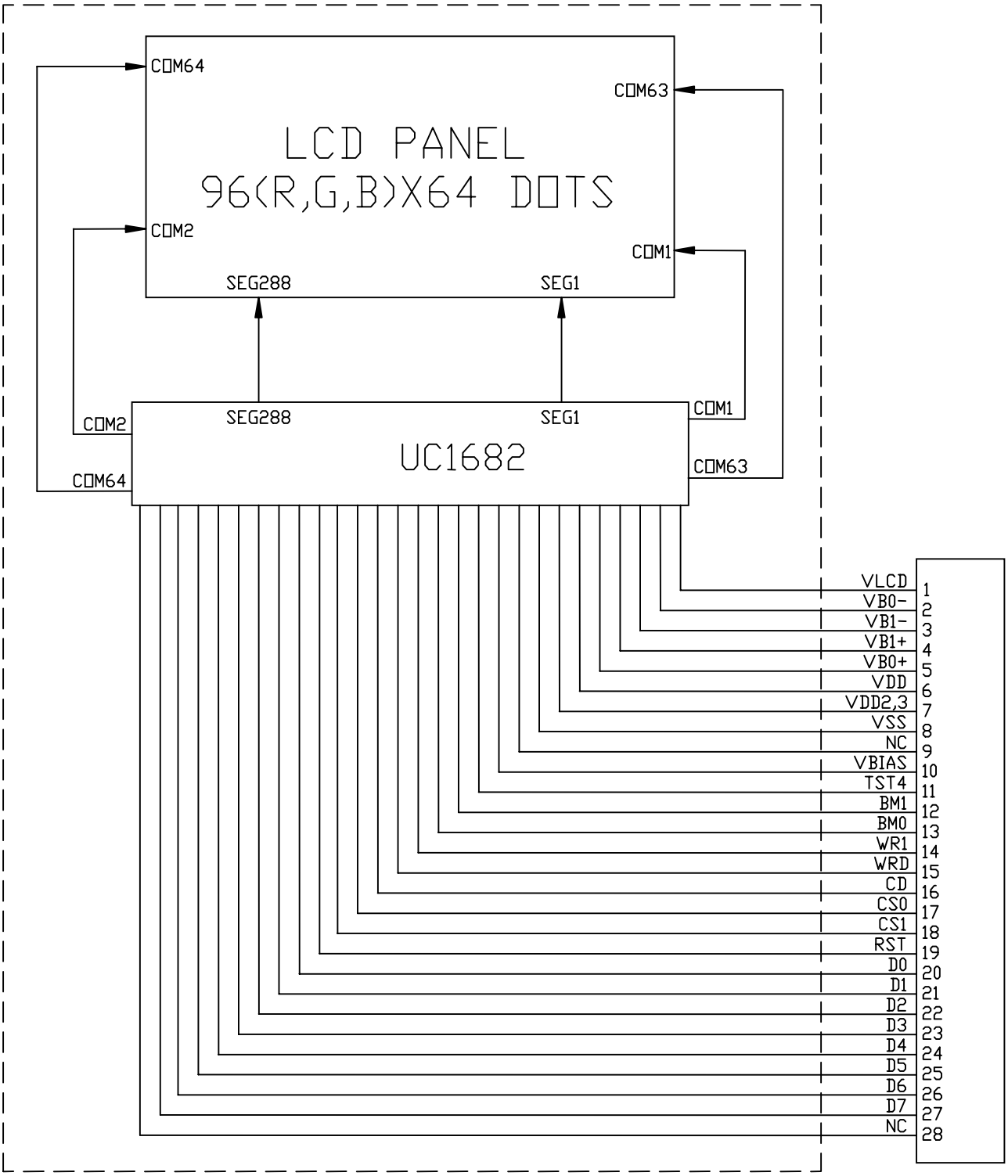
7. OUTLINE DIMENSIONS



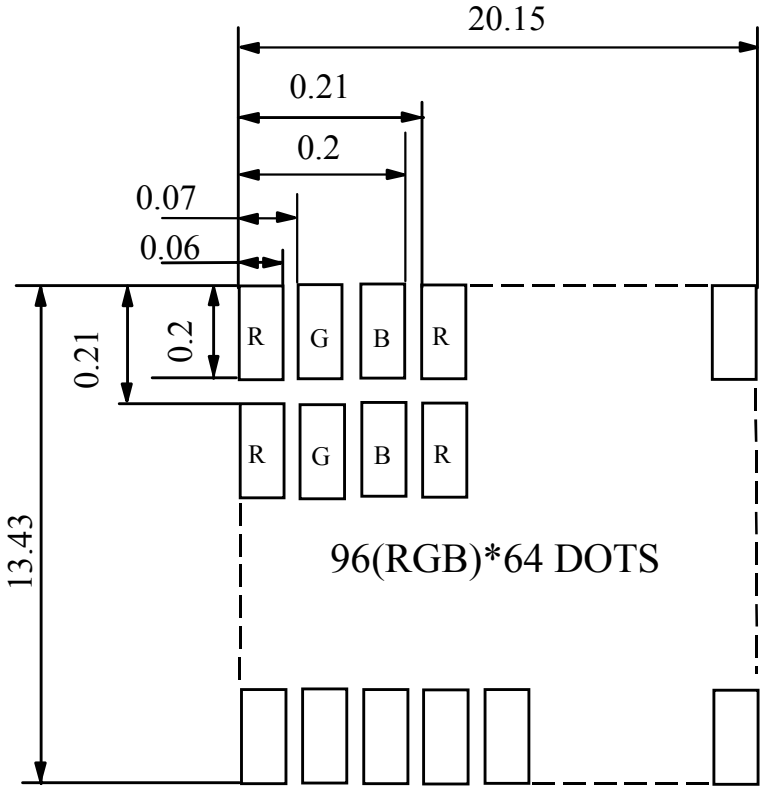
UNIT : mm
SCALE : NTS
NOT SPECIFIED TOLERANCE IS ± 0.2
NOTE : MARK ⚠ MODIFY (NUMBER NOTE MODIFY VERSION)


IC : UC1682
1±0.5
(2.5)
1
28
DOUBLE SIDE TAPE

8 . BLOCK DIAGRAM



9. DETAIL DRAWING OF DOT MATRIX



UNIT : mm
SCALE : NTS

10. INTERFACE SIGNALS

PIN NO	SYMBOL	FUNCTION
1	VLCD	TO VLCD BYPASS CAPACITORS
2	VB0-	CONNECT TO PROPER CAPACITORS
3	VB1-	
4	VB1+	
5	VB0+	
6	VDD	POSITIVE POWER SUPPLY
7	VDD2,3	ANALOG POWER SUPPLY
8	VSS	GROUND
9	NC	DUMMY
10	VBIAS	TUNE VLCD BY EXTERNAL VARIABLE RESISTORS
11	TST4	TEST PIN
12	BM1	SELECT BUS MODE
13	BM0	
14	WR1	$R/\overline{W}$
15	WRD	E
16	CD	REGISTER SELECT INPUT PIN
17	CS0	CHIP SELECT
18	CS1	
19	RST	RESET
20	D0	DATA BUS LINE
21	D1	
22	D2	
23	D3	
24	D4	
25	D5	
26	D6	
27	D7	
28	NC	DUMMY

11. POWER SUPPLY

11.1 POWER SUPPLY FOR LCM(NORMAL APPLICATION)