DOC.	**DATASHEET STATEMENT**

1. The following icons are absolutely designed by Midas independently in 2007-SEP. They are not in common use in the LCD industry yet but just used for marking out Midasproducts' characteristics quickly and simply without any special meaning. Midas reserves the composing right and copyright.
No one else is allowed to adopt these icons without Midas approval.

2. The ISO9001 logo used in this document is authorized by SGS (www.sgs.com). Midas had already successfully passed the strict and professional ISO9001:2000 Quality Management System Certification and got the certificate (No.: CN07/00404)

3. The technologies/techniques/crafts which denoted by the following icons are not exclusively owned by Midas, but also shared by Midas LCD strategic cooperators, however all these technologies/techniques/crafts have been finally confirmed by Midas professional engineers and QC department.

4. As the difference in test standard and test conditions, also Midas insufficient familiarity with the actual LCD using environment, all the referred information in this DATASHEET (including the icons) only have two functions:
4.1: providing quick reference when you are judging whether or not the product meets your requirements.
4.2: listing out definitely the tolerance.

SAMPLE APPROVAL document rather than consider this DATASHEET as the standard for judging whether or not the LCD meets your requirements. Once you instruct Midas to a mass-production without definite demand for providing sample before, Midas will disclaim all responsibility if the mass-production is proved not meeting with your requirements.

5. The sequence of the icons is random and doesn't indicate the importance grade.

6. Icons explanation

Midas 2006 version logo.Midas is an integrated manufacturer of flat panel display (FPD). Midas supplies TN, HTN, STN, FSTN monochrome LCD panel; COB, COG, TAB LCD module; and all kinds of LED backlight.

FAST RESPONSE TIME
This icon on the cover indicates the product is with high response speed; Otherwise not.

PROTECTION CIRCUIT
This icon on the cover indicates the product is with protection circuit; Otherwise not.

HIGH CONTRAST
This icon on the cover indicates the product is with high contrast; Otherwise not.

LONG LIFE VERSION
This icon on the cover indicates the product is long life version (over 9K hours guaranteed); Otherwise not.

WIDE VIEWING SCOPE
This icon on the cover indicates the product is with wide viewing scope; Otherwise not.

Anti UV VERSION
This icon on the cover indicates the product is against UV line. Otherwise not.

RoHS COMPLIANCE
This icon on the cover indicates the product meets ROHS requirements; Otherwise not.

OPERATION TEMPERATURE RANGE
This icon on the cover indicates the operating temperature range (X-Y).

3TIMEs 100% QC EXAMINATION
This icon on the cover indicates the product has passed Midas thrice 100% QC. Otherwise not.

TWICE SELECTION OF LED MATERIALS
This icon on the cover indicates the LED had passed Midas twice strict selection which promises the product's identical color and brightness; Otherwise not.

VIcm = 3.0V
This icon on the cover indicates the product can work at 3.0V exactly; otherwise not.

N SERIES TECHNOLOGY (2008 developed)
New structure, new craft, new technology and new materials inside both LCD module and LCD panel to improve the "RainBow"

Midas LCD Part Number System

MC	COG	132033	A	*	6	W	*	*	-	S	N	T	L	W	*	*
1	2	3	4	5	6	7	8	9	-	10	11	12	13	14	15	16

1	=	**MC:** Midas Components
2	=	**Blank:** COB (chip on board) **COG:** chip on glass
3	=	**No of dots** (e.g. 240064 = 240 x 64 dots) (e.g. 21605 = 2 x 16 5mm C.H.)
4	=	**Series**
5	=	**Series Variant:** A to Z **– see addendum**
6	=	**3:** 3 o'clock **6:** 6 o'clock **9:** 9 o'clock **12:** 12 o'clock
7	=	**S:** Normal (0 to + 50 deg C) **W:** Wide temp. (-20 to + 70 deg C) **X:** Extended temp (-30 + 80 Deg C)

8	=	**Character Set**

Blank: Standard (English/Japanese)
C: Chinese Simplified (Graphic Displays only)
CB: Chinese Big 5 (Graphic Displays only)
H: Hebrew
K: European (std) (English/German/French/Greek)
L: English/Japanese (special)
M: European (English/Scandinavian)
R: Cyrillic
W: European (English/Greek)
U: European (English/Scandinavian/Icelandic)

9	=	**Bezel Height** (where applicable / available)

	Top of Bezel to Top of PCB	Common (via pins 1 and 2)	Array or Edge Lit
Blank	9.5mm / not applicable	Common	Array
2	8.9 mm	Common	Array
3	7.8 mm	Separate	Array
4	7.8 mm	Common	Array
5	9.5 mm	Separate	Array
6	7 mm	Common	Array
7	7 mm	Separate	Array
8	6.4 mm	Common	Edge
9	6.4 mm	Separate	Edge
A	5.5 mm	Common	Edge
B	5.5 mm	Separate	Edge
D	6.0mm	Separate	Edge
E	5.0mm	Separate	Edge
F	4.7mm	Common	Edge
G	3.7mm	Separate	EL

10	=	**T:** TN **S:** STN **B:** STN Blue **G:** STN Grey **F:** FSTN **F2:** FFSTN
11	=	**P:** Positive **N:** Negative
12	=	**R:** Reflective **M:** Transmissive **T:** Transflective
13	=	**Backlight:** **Blank:** Reflective **L:** LED
14	=	**Backlight Colour:** **Y:** Yellow-Green **W:** White **B:** Blue **R:** Red **A:** Amber **O:** Orange **G:** Green **RGB:** R.G.B.
15	=	**Driver Chip:** **Blank:** Standard **I:** I²C **T:** Toshiba T6963C **A:** Avant SAP1024B **R:** Raio RA8835
16	=	**Voltage Variant:** e.g. **3** = 3v

STANDARD DOC.	REVISION RECORD	PAGE	2/9

NO.	DATE	DESCRIPTION	ITEM	PAGE	APPROVED
1	2012.06	INITIAL ISSUED	ALL	ALL	

1. GENERAL SPECIFICATIONS

ITEM	NOMINAL DIMENSIONS / AVAILABLE OPTIONS
DISPLAY FORMAT	16 Characters by 2 Lines
LCD PANEL OPTIONS	STN (Yellow-green color)
POLARIZER OPTIONS	Positive, Transflective
BACKLIGHT OPTIONS	Edge type LED backlight (Yellow-green color)
VIEWING ANGLE OPTIONS	12:00 (Top)
TEMPERATURE RANGE OPTIONS	Wide temp. range (-20°C ~ 70°C)
CONTROLLER IC	PCF2119
DISPLAY DUTY	1/18
DRIVING BIAS	1/4
OVERALL SIZE (mm)	84.0　44.0　10.0MAX
VIEWING AREA (mm)	61.0W　15.8H
DOT SIZE (mm)	0.578W　0.681H
DOT PITCH (mm)	0.593W　0.696H

2. ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	CONDITION	MIN	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	25°C	-0.3	6.5	V
POWER SUPPLY (LCD)	V0	25°C	———	———	V
INPUT VOLTAGE	Vin	25°C	-0.3	Vdd +0.3	V
OPERATING TEMPERATURE	Vopr	———	-20	70	$^\circ$C
STORAGE TEMPERATURE	Vstg	———	-30	80	$^\circ$C

3. ELECTRONICAL CHARACTERISTIC*

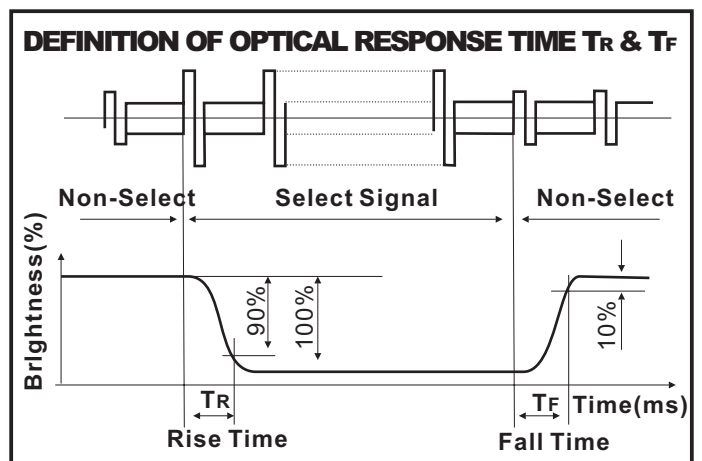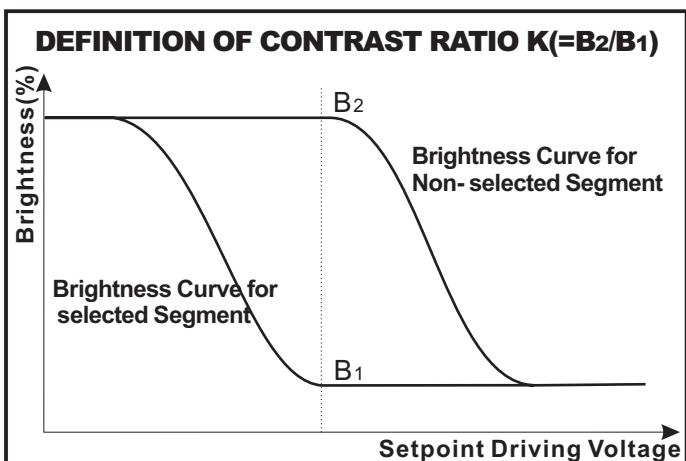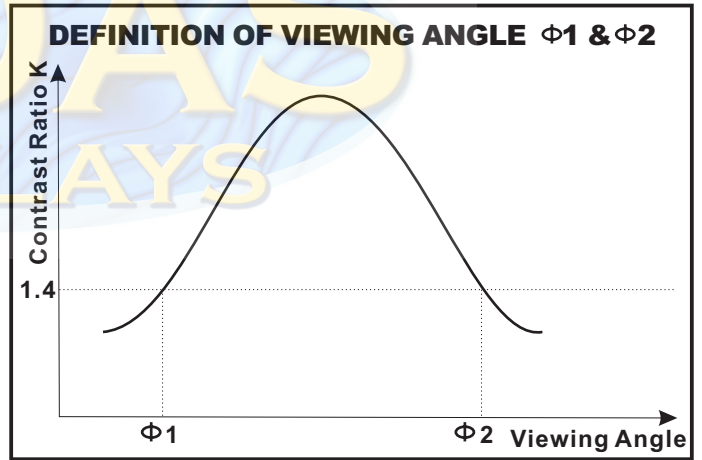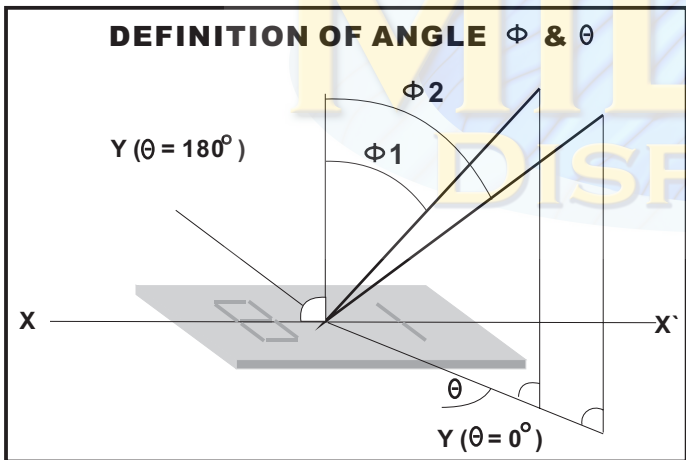| ITEM	SYMBOL	CONDITION	STANDARD			UNIT
			MIN	TYP	MAX	
Input voltage	Vdd	+3V	2.7	3.0	5.5	V
Supply current	Idd	Vdd=3V	———	1.0	———	mA
Recommended LCD driving voltage for normal temp. Version module	Vdd - V0	-20°C	4.15	———	4.75	V
		0°C	4.10	———	4.65	
		25°C	4.00	4.30	4.60	
		50°C	3.95	———	4.50	
		70°C	3.80	———	4.35	
LED forward voltage	Vf	25°C	3.8	———	4.2	V
LED forward current	If	25°C	———	15	———	mA
LED reverse Current	Ir	25°C	———	———	10	μA
LED Peak wave length	λp	25°C If = 15mA	568	———	575	nm
LED illuminance (Without LCD)	Lv	25°C If = 15mA	160	———	———	cd/m^2
LED life time	———	25°C If = 15mA	9K**	———	———	Hours

* The above data are for reference only.

** If you wanted to drive the LED BKL uninterruptedly exceed 12hours/day, you are not suggested this version

4. OPTICAL CHARACTERISTIC

FOR TN TYPE LCD MODULE (T$_A$=25 $^{\circ}$C, Vdd=3.0V ± 0.25V)

ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
VIEWING ANGLE	$\Phi2 - \Phi1$	K=4	30	——	——	deg
	θ		25			
CONTRAST RATIO	K	——	——	2	——	——
RESPONSE TIME(RISE)	T$_R$	——	——	120	150	ms
RESPONSE TIME(FALL)	T$_F$	——	——	120	150	ms

FOR STN TYPE LCD MODULE (T$_A$=25 $^{\circ}$C, Vdd=3.0V ± 0.25V)

ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
VIEWING ANGLE	$\Phi2 - \Phi1$	K=4	40	——	——	deg
	θ		60			
CONTRAST RATIO	K	——	——	6	——	——
RESPONSE TIME(RISE)	T$_R$	——	——	150	250	ms
RESPONSE TIME(FALL)	T$_F$	——	——	150	250	ms

DEFINITION OF ANGLE Φ & θ

$\Phi2$
$\Phi1$
Y (θ = 180°)
X
X`
θ
Y (θ = 0°)

DEFINITION OF VIEWING ANGLE $\Phi1$ & $\Phi2$

Contrast Ratio K
1.4
$\Phi1$
$\Phi2$ Viewing Angle

DEFINITION OF CONTRAST RATIO K(=B$_2$/B$_1$)

Brightness(%)
B$_2$
Brightness Curve for Non- selected Segment
Brightness Curve for selected Segment
B$_1$
Setpoint Driving Voltage

DEFINITION OF OPTICAL RESPONSE TIME T$_R$ & T$_F$

Non-Select
Select Signal
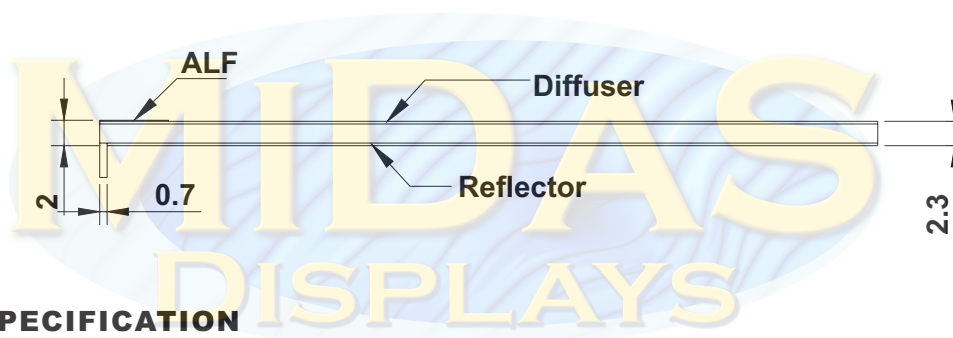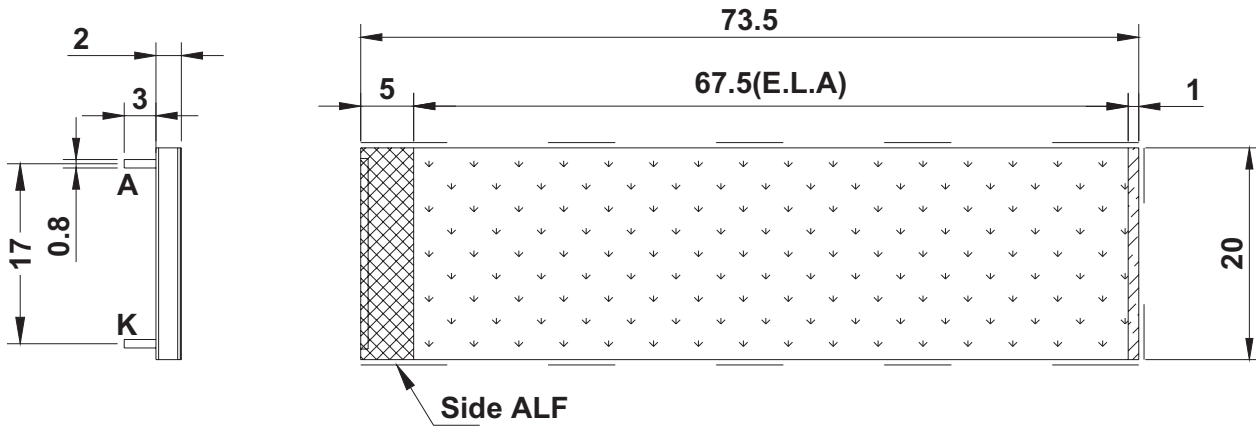Non-Select
Brightness(%)
90%
100%
10%
T$_R$
Rise Time
T$_F$ Time(ms)
Fall Time

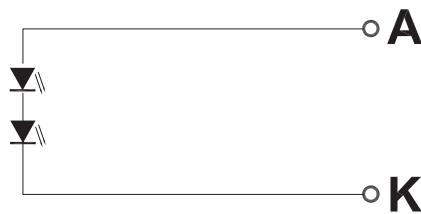# 5. MECHANICAL OUTLINE

结构尺寸MECHANICAL OUTLINE
(未注尺寸公差Unspecified Tolerances is ± 0.3)

COLOR: YELLOW-GREEN
颜　　色：黄绿色

Side ALF

6. BACKLIGHT SPECIFICATION

6.1 CIRCUIT DIAGRAM   (LED 1 X 2 =2 dies)

A

K

6.2 保存和焊接条件 STORAGE & SOLDERING CONDITIONS:

- Store with care. Storing the units in bad conditionwill cause the reflector sheet and decrease its adhesive power. Storage The products under the condition:temperature (25°C $\pm$ 10°C) and humidity (65%RH $\pm$ 20%RH) our recommendation.
- The Soldering Temperature is 260 $\pm$ 5°C and Soldering Time should be less than 3sec, and soldering iron power should be less than 30W.
- The soldering point should be farther than 1.6mm (1/10")from body.

- 注意保存, 保存条件不好时, 会降低反光膜(扩散膜)导光片(反射壳)的粘附力.
  推荐保存条件: 温度 25°C $\pm$ 10°C
  　　　　　　　湿度 65%RH $\pm$ 20%
- 焊接温度260°C $\pm$ 5°C,焊接时间小于3秒, 铬铁功率小于30W
- 焊接点应离焊接实体大于1.6mm.

6.3 极限参数 ABSOLUTE MAXIMUM RATINGS

（除非特别说明,环境温度Ta = 25 C.Unless specified, the Ambient temperature Ta = 25℃）

项目 Item	符号 Symbel	条件 Conditions	值 Rating	单位 Unit
*极限直流正向电流 Absolute maximum forward current	Ifm		15	mA
*脉冲驱动时极限正向电流 Peak forward current	Ifp	1 msec脉冲, 1/10占空比 1 msec Plus 10% Duty Cycle	——	mA
反向电压 Reverse Voltage	Vr		10	V
*极限功耗 Power dissipation	Pd		200	mW
工作温度 Operating Temperature Range	Topr		-20~+70	℃
贮存温度 Storage Temperature Range	Tstg		-30~+80	℃

＊当工作温度高于25℃时, Ifm,Ifp和Pd必须降低;电流降低率是 -1.08mA/℃（直流驱动）,或-2.58 mA/℃（脉冲驱动）,功率降低率是-27.0mW/℃.产品工作电流不能大于对应的工作条件温度Ifm或Ifpr的60%.
For operation above 25℃,The Ifm Ifp & Pd must be derated,the Curent derating is -1.08mA/℃ for DC drive and -2.58 mA/℃ for Pulse drive, the Power dissipation is -27.0 mW/℃ The product working current must not be more than 60% of the Ifm ir Ifp according to the working temperature.

6.4 光电特性 ELECTRICAL-OPTICAL CHARACTERISTICS

（除非特别说明,环境温度Ta=25℃,Unless specified,the Ambient temperature Ta=25℃）

项目 Item	符号 Symbol	最小值 Min.	典型值 Typ.	最大值 Max.	单位 Unit	测定条件 Condition
正向电压 Forward Voltage	Vf	3.8	4.0	4.2	V	If= 60 mA
反向电流 Reverse Current	Ir	——	15	——	μA	Vr= 4 V
峰值波长 Peak wave length	$\lambda\rho$	565	——	575	nm	If= 60 mA
频谱半宽度 Spectral Line Half Width	$\triangle\lambda$	——	——	——	nm	If= 60 mA
**亮度 Luminance	Lv	160	——	——	cd/m^2	If= 60 mA

＊亮度值是5个测量点的平均值, 亮度最大值比最小值一般小于1.5(最大1.7)

∅使用BM-7亮度色仪测量, 测量光圈   10mm.
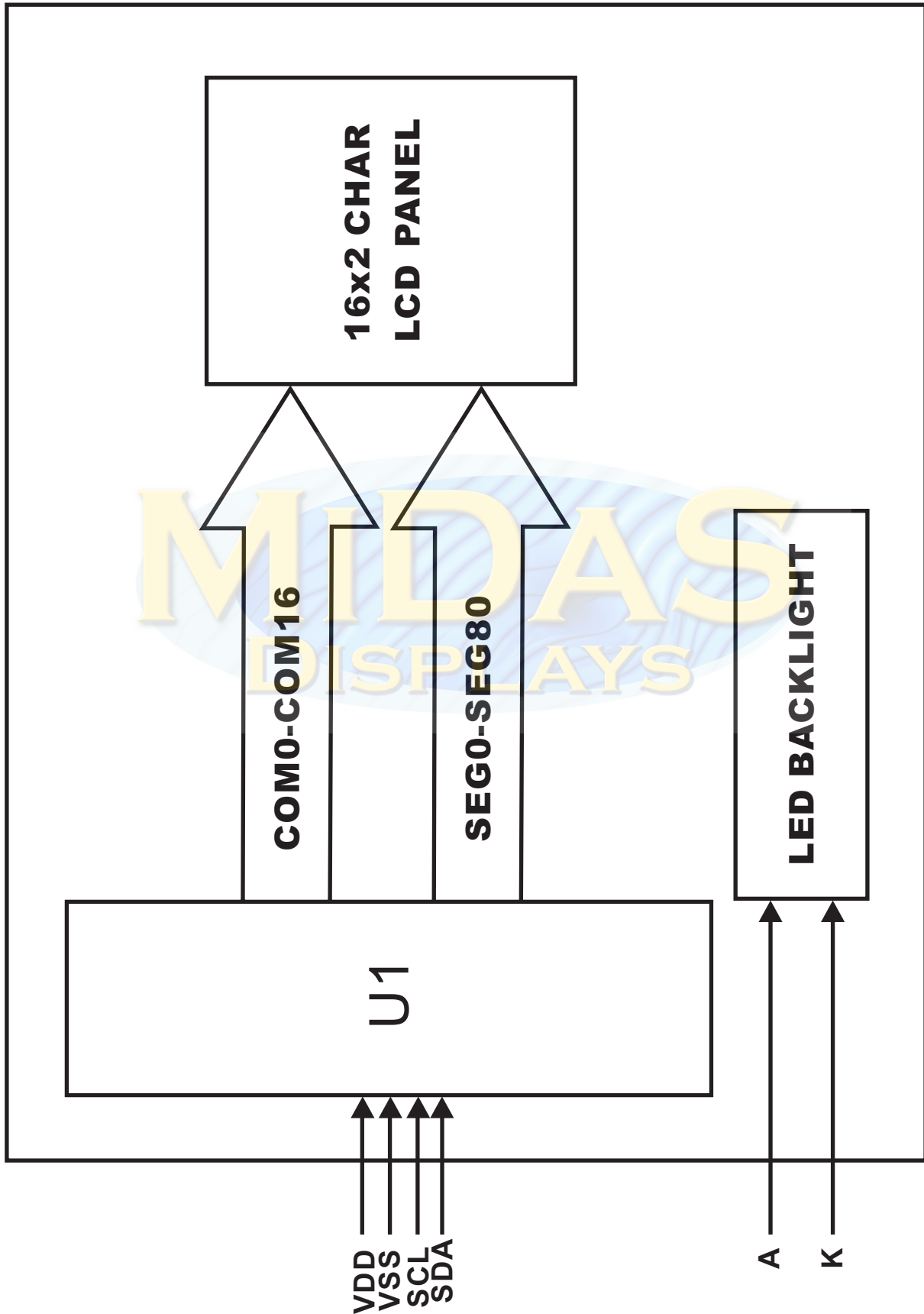
The luminance is the average value of 5 points,and

The Lvmax./Lvmin. is less than 1.5 Typical (max 1.7).

The measurement instrument is BM-7 luminance

∅Colorimeter. The caperture is   10 mm.

7. BLOCK DIAGRAM

16x2 CHAR LCD PANEL

COM0-COM16

SEG0-SEG80

LED BACKLIGHT

U1

VDD
VSS
SCL
SDA

A
K

8. INSTRUCTION

Detailed Information please refer to the other two file, the datasheet for PCF2119.
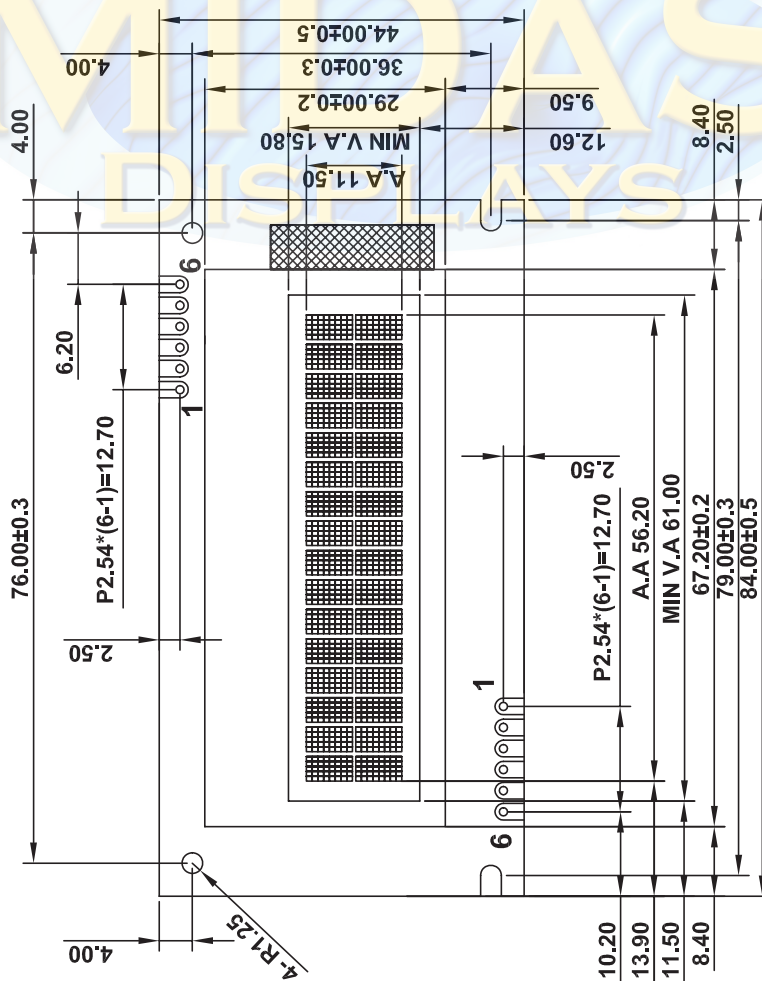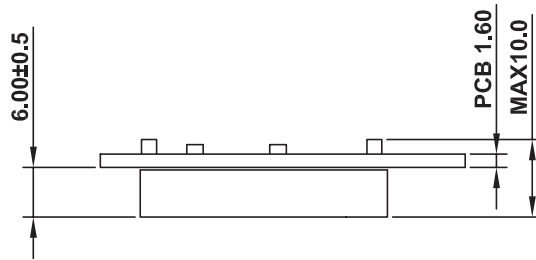
PRODUCT SPEC.	MODE NO.		PAGE	9/9

9. FORMAL DRAWING

DOTS DETAIL SCALE:1.5/1

3.55
0.593
0.578
0.681
0.696
5.947

6.00±0.5

PCB 1.60
MAX10.0
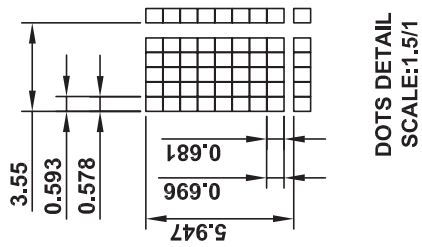
PIN ASSIGNMENT

PIN	SYMBOL	FUNCTION
1	GND	GND
2	Vdd	Power Supply
3	SCL	Serial clock input
4	SDA	Serial data input
5	LED+	Power supply for BKL (-)
6	LED-	Power supply for BKL (+)

44.00±0.5
36.00±0.3
29.00±0.2
MIN V.A 15.80
A.A 11.50
4.00
9.50
12.60
8.40
2.50

76.00±0.3
P2.54*(6-1)=12.70
6.20
2.50
4.00
4-R1.25

P2.54*(6-1)=12.70
A.A 56.20
MIN V.A 61.00
67.20±0.2
79.00±0.3
84.00±0.5
2.50

10.20
13.90
11.50
8.40

6
1

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for midas *manufacturer:*

Other Similar products are found below :

MCT070LA12W1024600LML MCOT128064BY-WM MCOB21609AV-EWP MC42004A6W-SPTLY MC22008B6W-SPR MCT035G12W320240LML MC11605A6WR-SPTLY-V2 MC21605H6W-BNMLW-V2 MCOT048064A1V-YI MCT101E0CW1280800LMLIPS MCT104A0W1024768LML MCT070Z0W800480LML MCT0144C6W128128PML MCIB-16-LVDS-CABLE MC41605A6W-FPTLA-V2 MCOT128064UA1V-WM MCT101E0TW1280800LMLIPS MCT150B0W1024768LML MCT050HDMI-A-RTP MCT050HDMI-A-CTP MCT070Z0TW1W800480LML MCT050ACA0CW800480LML MC42008A6W-SPTLY MC42005A12W-VNMLY MC42005A12W-VNMLG MCT052A6W480128LML MC21605A6WK-BNMLW-V2 MCOT256064A1A-BM MCOT22005A1V-EYM MC20805A12W-VNMLG MC21605B6WD-BNMLW-V2 MC22405A6WK-BNMLW-V2 MC41605A6WK-FPTLW-V2 MCT101HDMI-A-RTP MCT024L6W240320PML MCCOG21605D6W-FPTLWI MC21605A6WD-SPTLY-V2 MC22005A6WK-BNMLW-V2 MC24005AA6W9-BNMLW-V2 MC42004A6WK-SPTLY-V2 MC11609A6W-SPTLY-V2 MCOT064048A1V-YM MCOT128064BY-BM MCCOG128064B12W-FPTLRGB MC11609A6W-SPR-V2 MC21605H6WK-BNMLW-V2 MCOT128064E1V-BM MCT070HDMI-B-RTP MDT5000C MCCOG42005A6W-BNMLWI