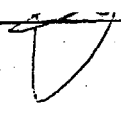







勝華科技股份有限公司  
WINTEK CORPORATION

# SPECIFICATIONS FOR LCD MODULE

CUSTOMER:	
M O D E L :	WD-C2704M-1HNN
ACCEPTED BY:	
D A T E :	11-06-96 

APPROVED BY:	CHECKED BY:	ORGANIZED BY:
		

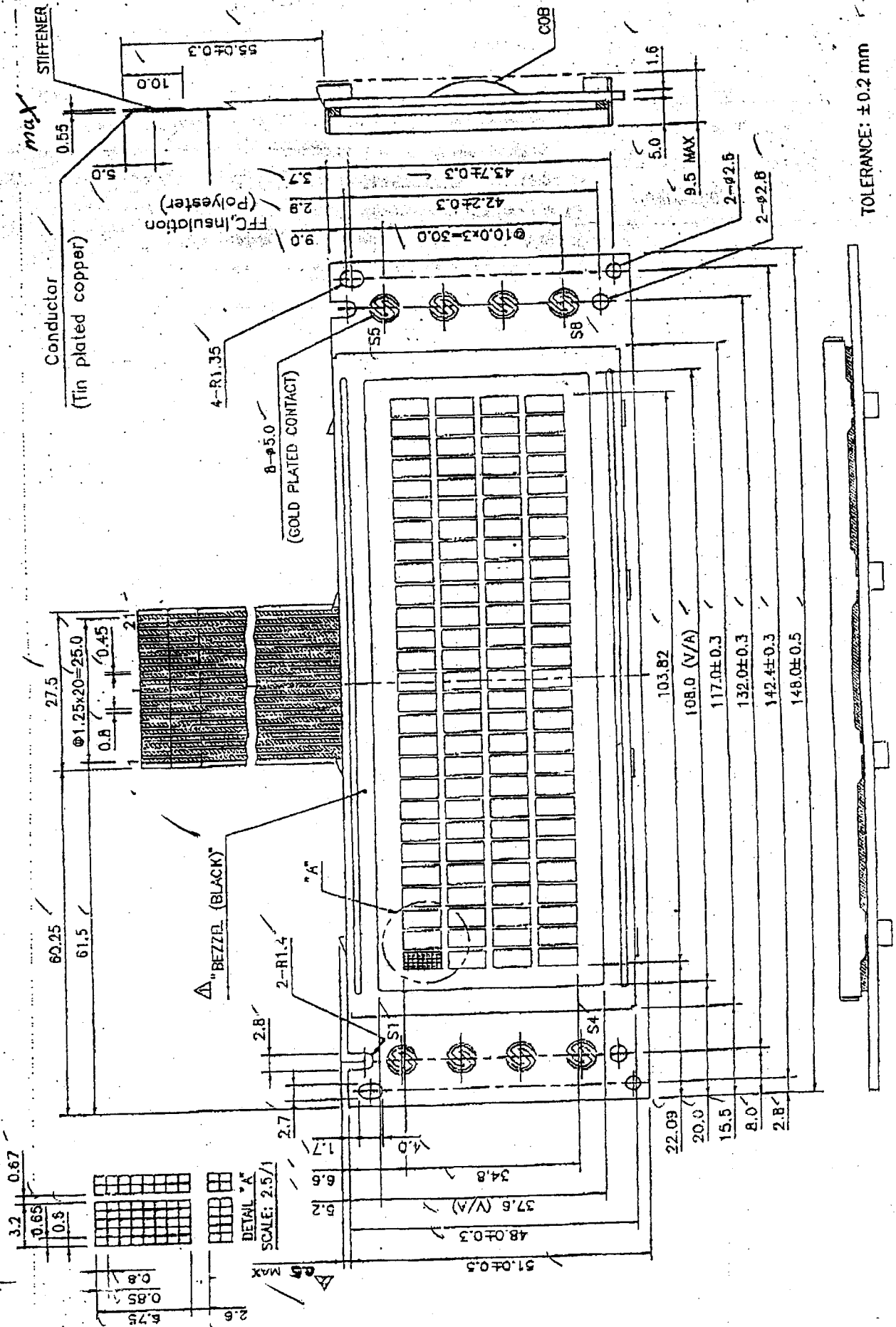
## 1. MECHANICAL SPECIFICATION :

ITEM	STANDARD VALUE	UNIT
NUMBER OF CHARACTERS	27 CHARACTERS × 4 LINE	-
CHARACTER FORMAT	5 × 7 DOTS with CURSOR	-
MODULE DIMENSION	148.0(W) × 51.0(H) × 9.5(T)	mm
EFFECTIVE DISPLAY AREA	108.0(W) × 37.6(H)	mm
CHARACTER SIZE	3.20(W) × 6.75(H)	mm
CHARACTER PITCH	3.87(W) × 9.35(H)	mm
DOT SIZE	0.60(W) × 0.80(H)	mm
DOT PITCH	0.65(W) × 0.85(H)	mm
APPROX. WEIGHT	80	g
LCD TYPE	HTN (positive type)	
DUTY	1/16	
VIEWING DIRECTION	6 O'clock	
BACK LIGHT		

## 2. ABSOLUTE MAXIMUM RATINGS :

ITEM	SYMBOL	MIN.	TYPE	MAX.	UNIT
OPERATING TEMPERATURE	$T_{OP}$	0	-	+50	°C
STORAGE TEMPERATURE	$T_{ST}$	-20	-	+70	°C
INPUT VOLTAGE	$V_I$	$V_{SS}$	-	$V_{DD}$	V
SUPPLY VOLTAGE FOR LOGIC	$V_{DD}-V_{SS}$	-	5.0	6.5	V
SUPPLY VOLTAGE FOR LCD	$V_{DD}-V_0$	-	-	6.5	V
STATIC ELECTRICITY	Be sure that you are grounded when handling LCM.				

### 3. DIMENSIONAL OUTLINE :



#### 4. ELECTRICAL CHARACTERISTICS :

ITEM	SYN	CONDITION	MIN.	TYPE	MAX.	UNIT
SUPPLY VOLTAGE FOR LOGIC	$V_{DD}-V_{SS}$	$T_a=25\text{ }^{\circ}\text{C}$	4.5	5.0	5.5	V
SUPPLY VOLTAGE FOR LCD	$V_{DD}-V_0$	$T_a=25\text{ }^{\circ}\text{C}$	-	4.5	-	V
INPUT HIGH VOL.	$V_{IH}$	-	2.2	-	$V_{DD}$	V
INPUT LOW VOL.	$V_{IL}$	-	0	-	0.6	V
OUTPUT HIGH VOL.	$V_{OH}$	-	2.4	-	-	V
OUTPUT LOW VOL.	$V_{OL}$	-	-	-	0.4	V
SUPPLY CURRENT	$I_{DD}$	$V_{DD}=5V$	-	6.0	8.0	mA

#### 5. OPTICAL CHARACTERISTICS :

ITEM	SYM	CONDITION	MIN.	TYPE	MAX.	UNIT
VIEW ANGLE (V)	$\theta$	$CR \geq 2$	10	-	40	deg.
VIEW ANGLE (H)	$\phi$	$CR \geq 2$	-30	-	30	deg.
CONTRAST RATIO	CR	—	-	3	-	-
RESPONSE TIME	$T_{ON}$	—	-	100	150	mS
RESPONSE TIME	$T_{OFF}$	—	-	100	150	mS

## 6. INTERFACE PIN CONNECTIONS :

NO	SYMBOL	LEVEL	FUNCTION
1	V <sub>SS</sub>	-	GND (0V)
2	V <sub>DD</sub>	-	VCC (+5V ±5%)
3	V <sub>O</sub>	-	CONTRAST ADJUSTMENT
4	RS	H/L	REGISTER SELECT SIGNAL
5	R/W	H/L	READ/WRITE SELECTION
6	E1	H,H→L	ENABLE SIGNAL (FOR UPPER 2 LINES' CHARACTER)
7	E2	H,H→L	ENABLE SIGNAL (FOR LOWER 2 LINES' CHARACTER)
8	DB0	H/L	DATA BIT 0
9	DB1	H/L	DATA BIT 1
10	DB2	H/L	DATA BIT 2
11	DB3	H/L	DATA BIT 3
12	DB4	H/L	DATA BIT 4
13	DB5	H/L	DATA BIT 5
14	DB6	H/L	DATA BIT 6
15	DB7	H/L	DATA BIT 7
16	K1	-	KEY PAD INPUT K1
17	K2	-	KEY PAD INPUT K2
18	K3	-	KEY PAD INPUT K3
19	K4	-	KEY PAD INPUT K4
20	K5	-	KEY PAD INPUT K5
21	K6	-	KEY PAD INPUT K6

KEY PAD NO.	S1	S2	S3	S4	S5	S6	S7	S8
KEY PAD	K1	K1	K1	K1	K6	K6	K6	K6
INPUT PIN.	K2	K3	K4	K5	K2	K3	K4	K5

## 7. DISPLAY CHARACTER ADDRESS CODE :

	1	2	3	4	5	—	21	22	23	24	25	26	27	Display Position
LINE 1	00	01	02	03	04	—	14	15	16	17	18	19	1A	DD RAM Address
LINE 2	40	41	42	43	44	—	54	55	56	57	58	59	5A	

USE E1 TO ENABLE

	1	2	3	4	5	—	21	22	23	24	25	26	27	Display Position
LINE 3	00	01	02	03	04	—	14	15	16	17	18	19	1A	DD RAM Address
LINE 4	40	41	42	43	44	—	54	55	56	57	58	59	5A	