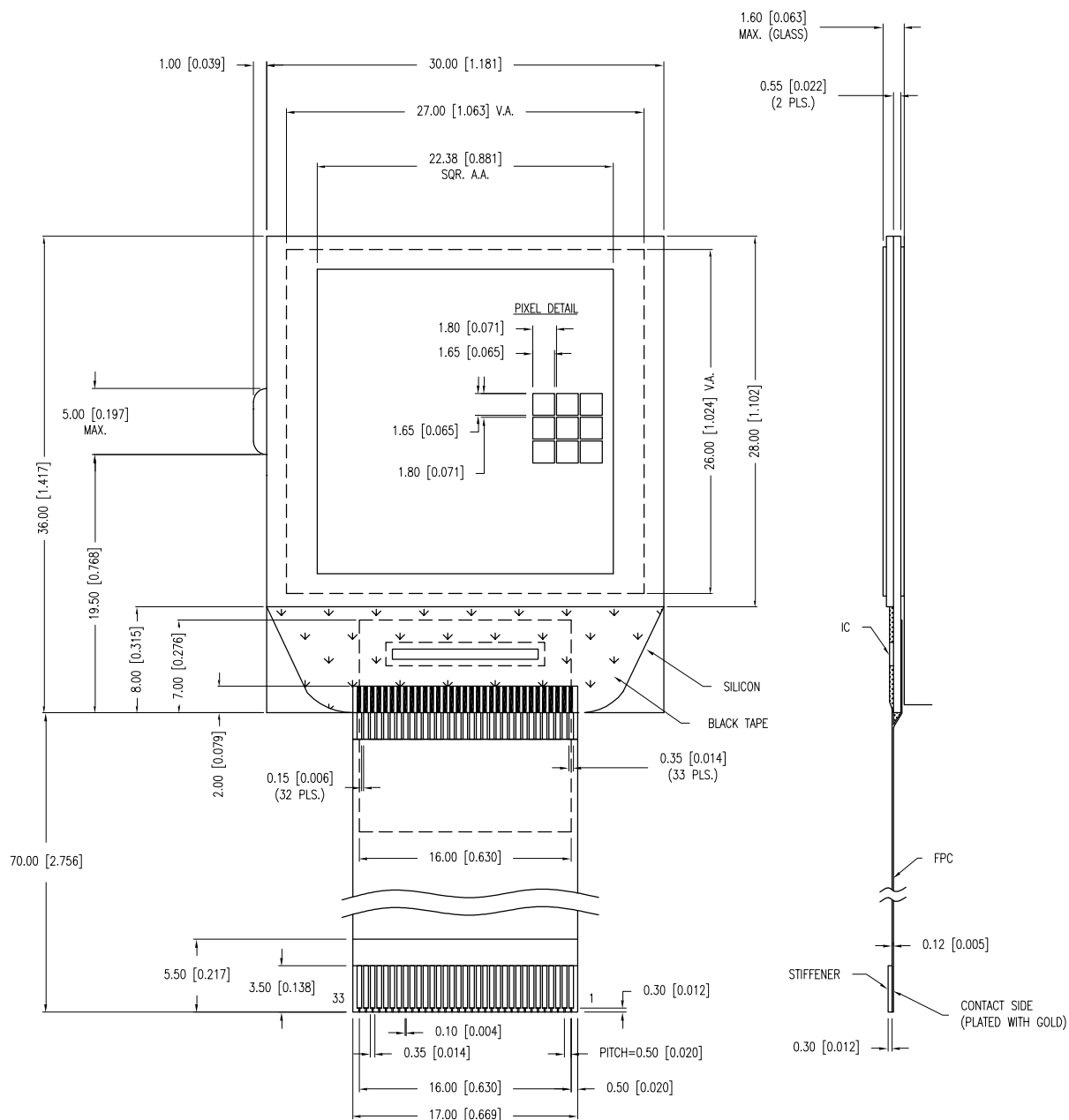




NOTES:

- NOVATEK IC: NT7532.

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290 E. HELEN ROAD
PALATINE, IL 60067-6976
PHONE: +1.847.359.2790
FAX: +1.847.359.6538
WEB: WWW.LUMEX.COM

64 x 64 C.O.G. GRAPHICS LCD MOD, FSTN POSITIVE REFLECTIVE, -30°C TO +85°C OPER. TEMP., FPC CABLE.

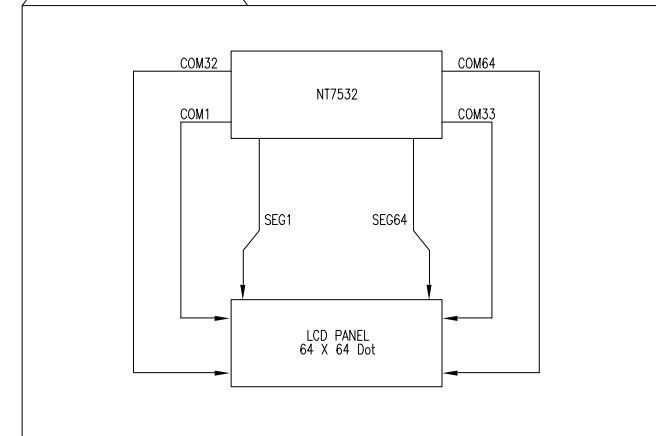
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DATE: 05.18.10	DRAWN BY: JH
PAGE: 1 OF 4	CHKD BY: KF
SCALE: N/A	APRVD BY: SA
UNIT: mm [INCH]	(P)

PIN CONFIGURATION		
PIN NO.	NAME	DESCRIPTION
1	CS1	THIS CHIP IS THE SELECT SIGNAL. WHEN /CS1 = "L" AND CS2 = "H", THEN THE CHIP SELECT BECOMES ACTIVE, AND DATA/ COMMAND I/O IS ENABLED.
2	CS2	
3	/RES	
4	A0	A0= "H": INDICATES THAT D0 TO D7 ARE DISPLAY DATA A0= "L": INDICATES THAT D0 TO D7 ARE CONTROL DATA
5	/WR(R/W)	WHEN CONNECTED TO AN 8080 MPU, THIS ACTIVE IS LOW. THIS TERMINAL CONNECTS TO THE 8080 MPU/WR SIGNAL. THE SIGNALS ON /WR THE DATA BUS ARE LATCHED AT THE RISING EDGE OF THE /WR SIGNAL. WHEN CONNECTED TO A 6800 SERIES MPU: THIS IS THE READ/WRITE (R/W) CONTROL SIGNAL INPUT TERMINAL. WHEN R/W = "H": READ WHEN R/W = "L": WRITE
6	/RD(E)	WHEN CONNECTED TO AN 8080 MPU, IT IS ACTIVE LOW. THIS PAD IS CONNECTED TO THE /RD SIGNAL OF THE 8080MPU. AND /RD THE NT7532 DATA BUS IS IN AN OUTPUT STATUS WHEN THE SIGNAL IS (E) "L". WHEN CONNECTED TO A 6800 SERIES MPU: THIS IS ACTIVE HIGH, THIS IS USED AS AN ENABLE CLOCK INPUT OF THE 6800 SERIES MPU.
7	D0	8-BIT BI-DIRECTIONAL DATA BUS THAT IS CONNECTED TO THE STANDARD 8-BIT MICROPROCESSOR DATA BUS. WHEN THE SERIAL INTERFACE SELECTED (PS="L") DB0 TO DB5 : HIGH IMPEDANCE DB6: SERIAL INPUT COLCK (SCL); DB7: SERIAL INPUT DATA (SID)
8	D1	
9	D2	
10	D3	
11	D4	
12	D5	
13	D6(SCL)	
14	D7(SID)	
15	VDD	POWER SUPPLY
16	VSS	GROUND
17	VOUT	DC/DC VOLTAGE CONVERTER OUTPUT
18	CAP3+	CAPACITOR PAD FOR INTERNAL DC/DC VOLTAGE CONVERTER
19	CAP1-	
20	CAP1+	
21	CAP2+	
22	CAP2-	
23	VEXT	THIS IS THE EXTERNAL INPUT REFERENCE VOLTAGE (VREF) FOR THE INTERNAL VOLTAGE REGULATOR. IT IS VALID ONLY WHEN EXTERNAL VREF IS USED
24	VRS	SELECT THE INTERNAL VOLTAGE REGULATOR OR EXTERNAL VOLTAGE REGULATOR
25	V1	LCD DRIVER SUPPLIES VOLTAGES. THE VOLTAGE DETERMINED BY LCD CELL IS IMPEDANCE-CONVERTED BY A RESISTIVE DRIVER OR AN OPERATION AMPLIFIER FOR APPLICATION
26	V2	
27	V3	
28	V4	
29	V0	
30	VR	VOLTAGE ADJUSTMENT PAD. APPLIES VOLTAGE BETWEEN V0 AND VSS USING A RESISTIVE DIVIDER
31	C86	C86 = "H": 6800 SERIES MPU INTERFACE C86 = "L": 8080 MPU INTERFACE
32	P/S	THIS IS THE PARALLEL DATA INPUT/SERIAL DATA INPUT SWITCH TERMINAL P/S = "H": PARALLEL DATA INPUT P/S = "L": SERIAL DATA INPUT
33	IRS	THE V0 VOLTAGE LEVEL IS REGULATED BY AN EXTERNAL RESISTIVE VOLTAGE DIVIDER THAT IS ATTACHED TO THE VR TERMINAL

BLOCK DIAGRAM



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READ/WRITE CHARACTERISTICS

(VDD=2.7V~3.3V, Ta=25°C)

ITEM	SYMBOL	MIN.	MAX.	UNIT	CONDITION
ADDRESS SETUP TIME	tAS6	0	—	ns	—
ADDRESS HOLD TIME	tAH6	0	—	ns	—
SYSTEM CYCLE TIME	tCYC6	300	—	ns	—
ENABLE PULSE L (WR)	tEWLW	90	—	ns	—
ENABLE PULSE L (RD)	tEWLR	120	—	ns	—
ENABLE PULSE H (WR)	tEWHW	120	—	ns	—
ENABLE PULSE H (RD)	tEWHR	60	—	ns	—
DATA SETUP TIME	tDS6	40	—	ns	—
DATA HOLD TIME	tDH6	15	—	ns	—
OUTPUT DISABLE TIME	tOH6	10	100	ns	CL=100pF
ACCESS TIME	tACC6	—	140	ns	CL=100pF

ABSOLUTE MAXIMUM RATINGS

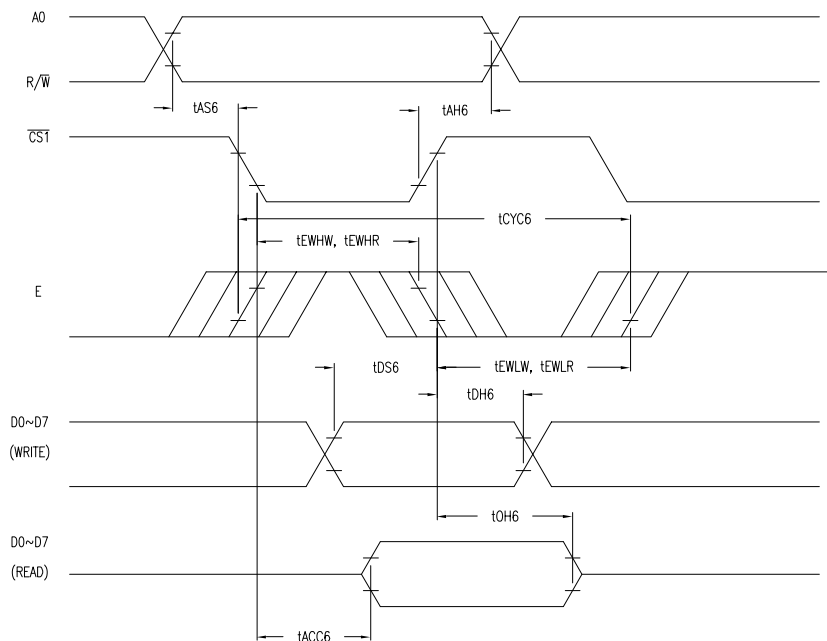
ITEM	SYMBOL	TEST CONDITION	STANDARD VALUE		UNIT
			MIN	MAX	
SUPPLY VOLTAGE RANGE	VDD	—	−0.3	6.0	V
	VLCD		−0.3	12.0	V
INPUT VOLTAGE	VI	Ta=25°C	−0.3	VDD + 0.3	V
OPERATING TEMPERATURE	Topr	—	0	+50	°C
STORAGE TEMPERATURE	Tstg	—	−10	60	°C

DC CHARACTERISTICS

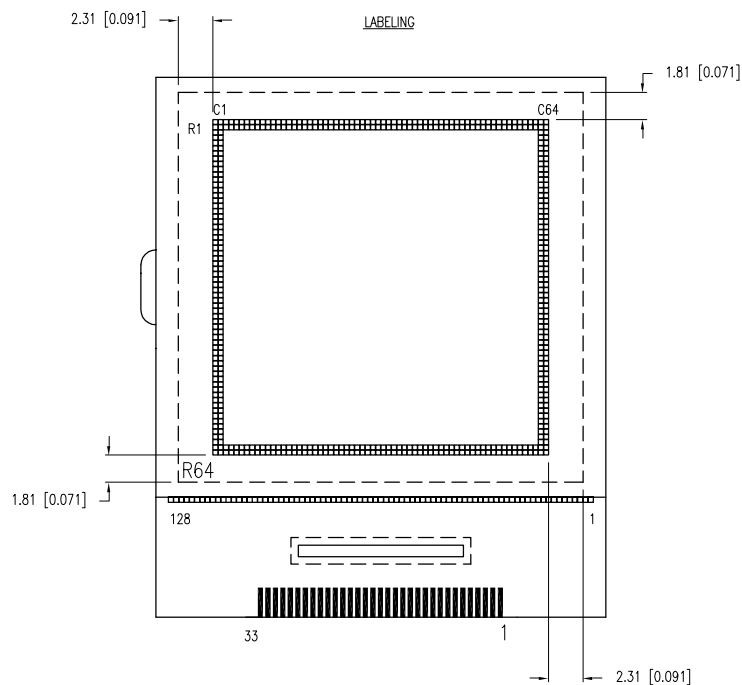
Ta=25°C

ITEM		SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITION
OPERATING VOLTAGE		VDD	2.4	—	3.5	V	—
OPERATING VOLTAGE		VDD2	2.4	—	3.5	V	—
BOOSTER OUTPUT VOLTAGE		VOOUT	6.0	—	12.0	V	—
VOLTAGE REGULATOR OUTPUT VOLTAGE		Vo	4.5	—	11.5	V	—
REFERENCE VOLTAGE		VREF1	2.04	2.10	2.16	V	—
REFERENCE VOLTAGE		VREF2	2.00	2.10	2.20	V	—
DYNAMIC CURRENT 1		IDD1	—	21	35	μA	VDD2=3V, Vo=11V BUILT-IN SUPPLY OFF
DYNAMIC CURRENT 2		IDD2	—	96	160	μA	VDD2=3V, Vo=11V NORMAL MODE
DYNAMIC CURRENT 3		IDD3	—	153	255	μA	VDD2=3V, Vo=11V HIGH POWER MODE
SLEEP MODE CURRENT		ISP	—	0.01	5	μA	—
STANDBY MODE CURRENT		ISB	—	4	8	μA	—
INPUT VOLTAGE	HIGH LEVEL	VIHC	0.8xVDD	—	VDD	V	—
	LOW LEVEL	VILC	VSS	—	0.2xVDD	V	—
OUTPUT VOLTAGE	HIGH LEVEL	VOHC	0.8xVDD	—	VDD	V	IOH=−0.5mA
	LOW LEVEL	VOLC	VSS	—	0.2xVDD	V	IOL=0.5mA
INPUT LEAKAGE CURRENT		ILI	−1.0	—	1.0	μA	—
HZ LEAKAGE CURRENT		IHZ	−3.0	—	3.0	μA	DO~D7, FR, CL, DOF ARE HIGH IMPEDANCE
LCD ON RESISTANCE		RON1	—	2.0	3.5	kΩ	Vo=11.0V
LCD ON RESISTANCE		RON2	—	3.2	5.4	kΩ	Vo=8.0V
INPUT PAD CAPACITY		Cin	—	5.0	8.0	pF	f=1MHz
OSCILLATION FREQUENCY		fOSC	27	33	39	kHz	—

*VDD2=2V, 2.7V, 3V, 4.2V, VSS MUST BE SATISFIED.



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PAD NO.	IC NO.	PAD CONFIGURATION
1	COM63	COM1[R1(C1-C64)]
2	COM62	COM2[R2(C1-C64)]
31	COM33	COM31[R31(C1-C64)]
32	COM32	COM32[R32(C1-C64)]
33	SEG63	SEG64[C64(R1-R64)]
34	SEG62	SEG63[C63(R1-R64)]
95	SEG1	SEG2[C2(R1-R64)]
96	SEG0	SEG1[C1(R1-R64)]
97	COM0	COM64[R64(C1-C64)]
98	COM1	COM63[R63(C1-C64)]
127	COM30	COM34[R34(C1-C64)]
128	COM31	COM33[R33(C1-C64)]

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