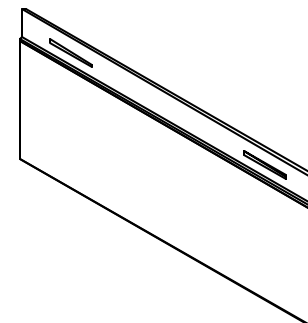
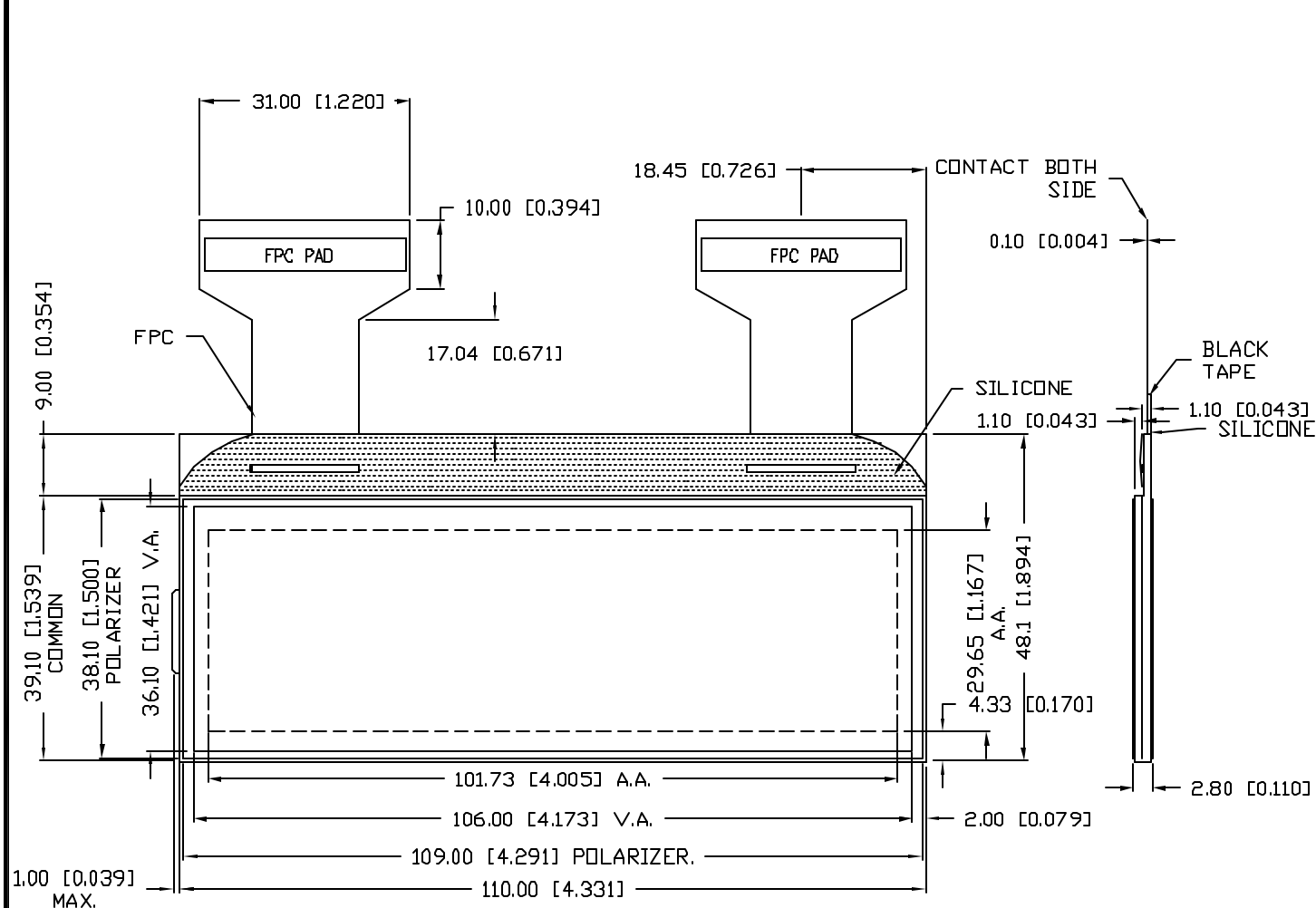
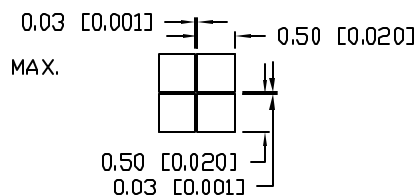


LCD



PIXEL DETAIL



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1/65 DUTY, 1/9 BIAS, VLCD=10V +/-0.3V.

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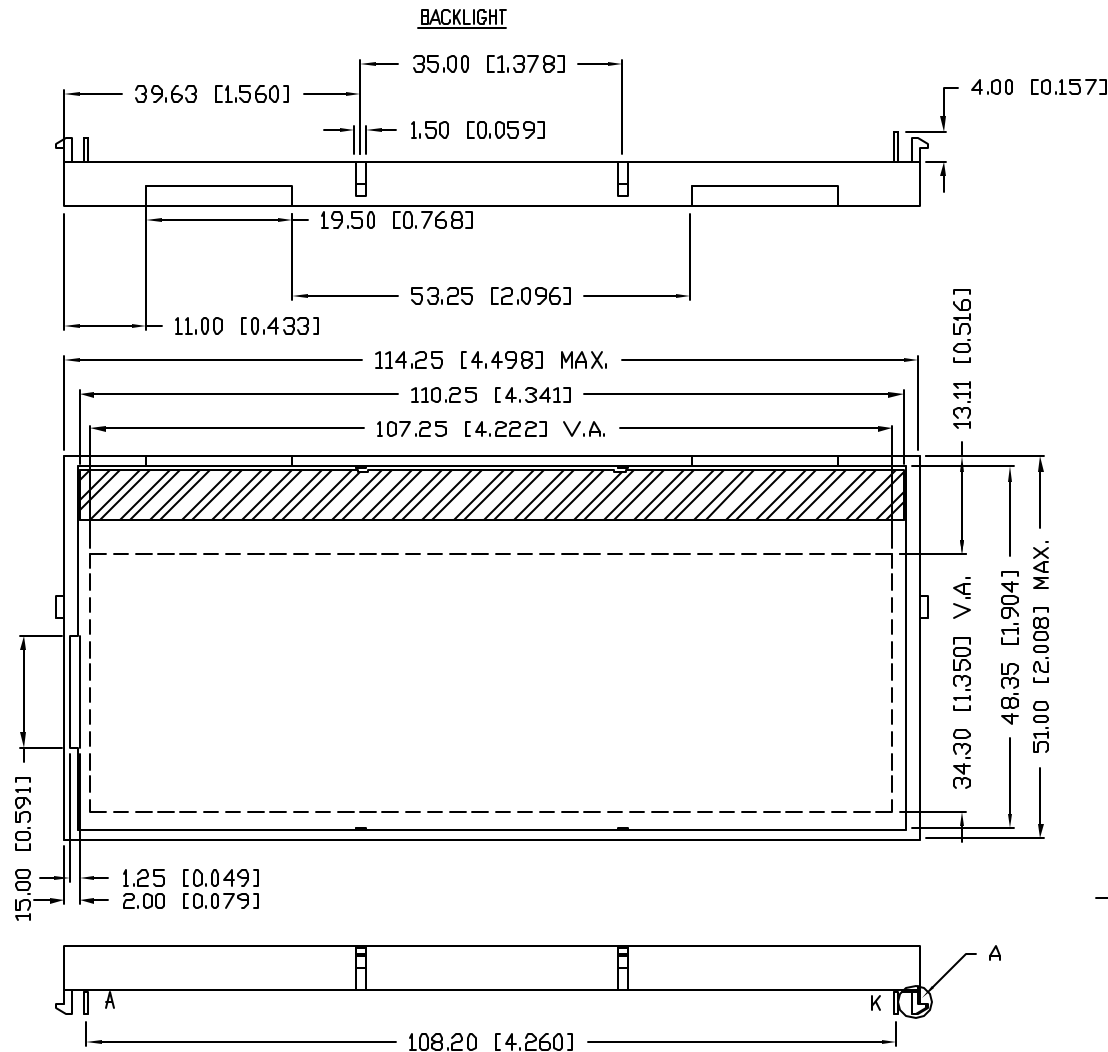
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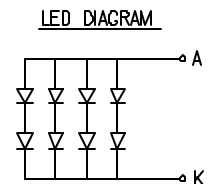
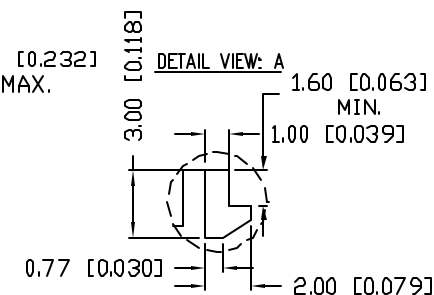
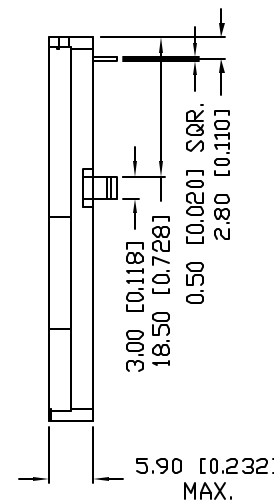
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TRUE BLUE 196
LEE FILTER



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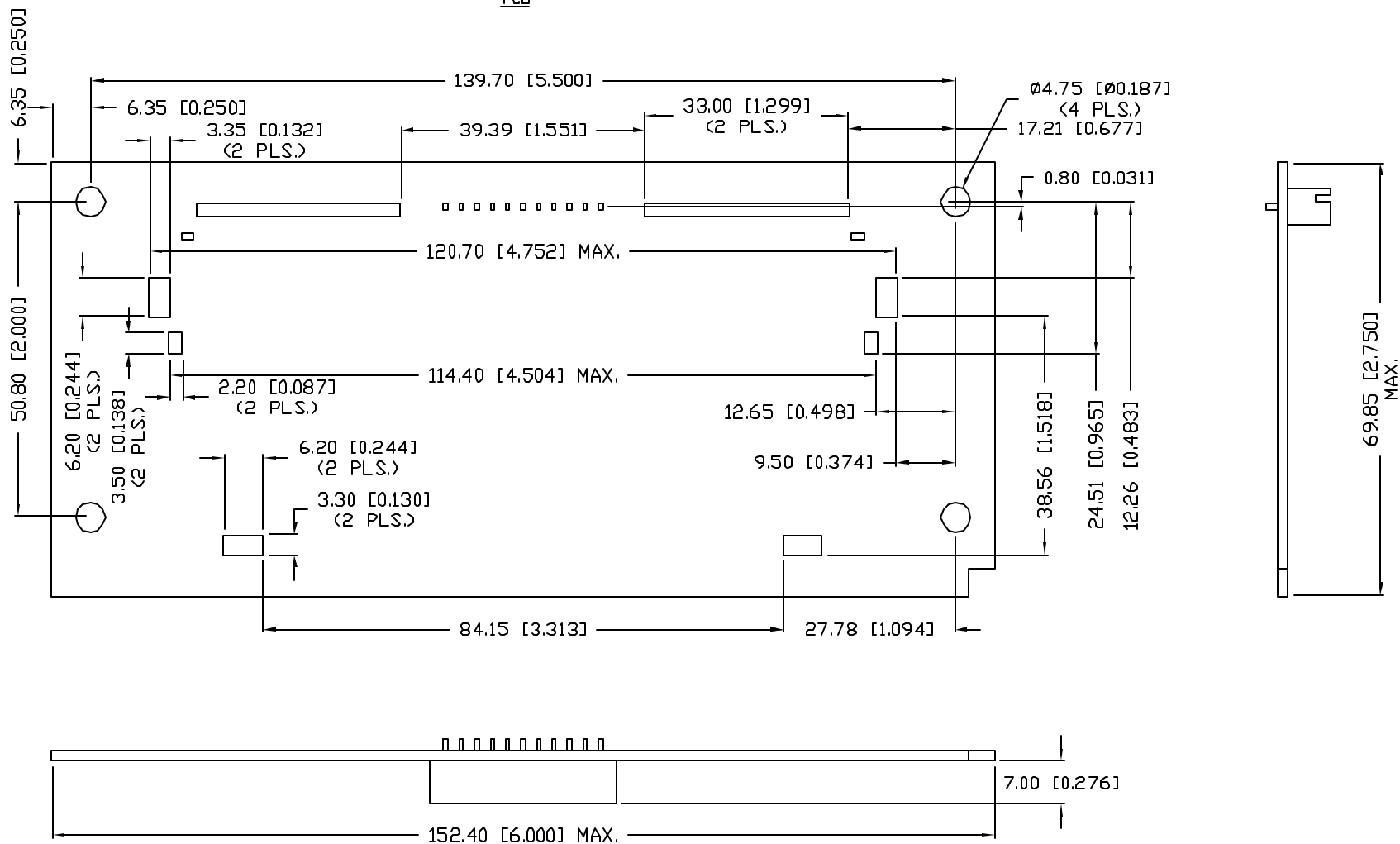
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PCB



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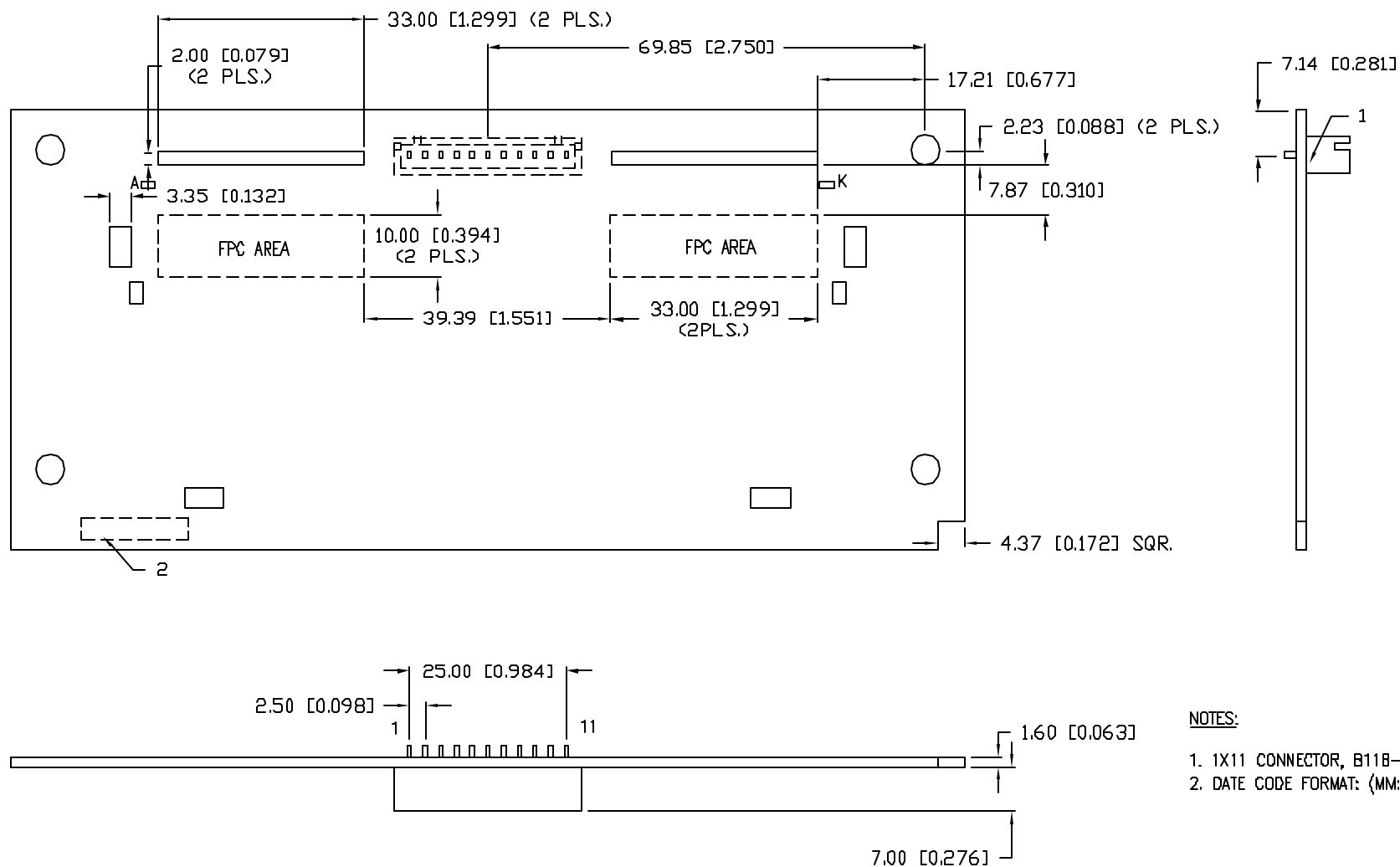
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NOTES:

- 1X11 CONNECTOR, B11B-XH-A
- DATE CODE FORMAT: (MM:MONTH, YY:YEAR).

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PIN CONFIGURATION

PIN NO.	SYMBOL	I/O	FUNCTION
1	/CS1 MASTER	I	THIS IS THE CHIP SELECT SIGNAL. WHEN /CS1 = "L", THEN THE CHIP SELECT BECOMES ACTIVE, AND DATA/COMMAND I/O IS ENABLED.
2	/CS2 SLAVE	I	THIS IS THE CHIP SELECT SIGNAL. WHEN /CS2 = "L", THEN THE CHIP SELECT BECOMES ACTIVE, AND DATA/COMMAND I/O IS ENABLED.
3	/RES	I	WHEN /RES IS SET TO "L" THE SETTINGS ARE INITIALIZED. THE RESET OPERATION IS PERFORMED BY THE /RES SIGNAL LEVEL.
4	A0	I	THIS IS CONNECT TO THE LEAST SIGNIFICANT BIT OF THE NORMAL MPU ADDRESS BUS, AND IT DETERMINES WHETHER THE DATA OR A COMMAND. AO = "H" INDICATES THAT D0-D7 ARE DISPLAY DATA. AO = "L" INDICATES THAT D0-D7 ARE CONTROL DATA.
5	D6(SCL)	I/O	D6: THE SERIAL CLOCK INPUT (SCL)
6	D7(SI)	I/O	D7: SERIAL DATA INPUT (SI);
7	VDD	PWR SUPPLY	SHARED WITH THE MPU POWER SUPPLY TERMINAL VCC
8	VSS	PWR SUPPLY	THIS IS A 0V TERMINAL CONNECTED TO THE SYSTEM GND
9	A	PWR	BACKLIGHT ANODE+
10	K	GND	BACKLIGHT CATHODE-
11	IR	I	CONNECT TO OPEN COLLECTOR PIN 2 OF IR SENSOR

LED BACKLIGHT SPECIFICATIONS

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT
FORWARD VOLTAGE	V_F	5.8	6.4	7.0	V
FORWARD CURRENT	I_F	-	60	-	mA
POWER DISSIPATION	P_d	-	-	0.42	W
REVERSE VOLTAGE	V_R	-	-	10	V
REVERSE CURRENT	I_R	-	-	0.4	mA
LUMINOUS INTENSITY	I_v	240	300	-	cd/m ²
COLOR CHROMATICITY	X	0.26	-	0.33	-
	Y	0.26	-	0.33	-

ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	STANDARD VALUE		UNIT
		MIN	MAX	
POWER SUPPLY VOLTAGE	V_{DD}	-0.3	5.0	V
POWER SUPPLY VOLTAGE	V_{DD2}	0.3	4.0	V
POWER SUPPLY VOLTAGE (VDD STANDARD)	V_O, V_{OUT}	0.3	18.0	V
POWER SUPPLY VOLTAGE (VDD STANDARD)	$V_1 \sim V_4$	V_O	0.3	V
INPUT VOLTAGE	V_{IN}	-0.3	$V_{DD}+0.3$	V
OPERATING TEMPERATURE	T_{opr}	-20	+70	°C
STORAGE TEMPERATURE	T_{str}	-30	+80	°C

(1) $V_{DD} \geq V_1 \geq V_2 \geq V_3 \geq V_4$.

ELECTRICAL CHARACTERISTICS

UNLESS OTHERWISE SPECIFIED, $V_{SS}=0$ $V_{DD}=3.0V \pm 10\%$, $T_a=25^\circ$

ITEM			CONDITIONS	SYMBOL	STANDARD VALUE			UNIT	
					MIN	TYP	MAX		
OPERATING VOLTAGE (1)				V _{DD}	1.8	3.0	3.3	V	
OPERATING VOLTAGE (2)			RELATIVE TO VSS	V _{DD2}	2.4	—	3.3		
INPUT VOLTAGE			HIGH	V _{IHC}	0.8*V _{DD}	—	V _{DD}		
			LOW	V _{ILC}	VSS	—	0.2*V _{DD}		
OUTPUT VOLTAGE			HIGH	V _{OHC}	0.8*V _{DD}	—	V _{DD}		
			LOW	V _{OLC}	VSS	—	0.2*V _{DD}		
OSCILLATOR FREQ.			INTERNAL	1/65, 1/33 DUTY	FOSC	17	20	24	kHz
			EXT. INPUT		FCL	17	20	24	
			INTERNAL	1/49, 1/53, 1/55 DUTY	FOSC	25	30	35	
			EXT. INPUT		FCL	25	30	35	
INTERNAL POWER			INPUT VOLT	RELATIVE TO VSS	V _{DD2}	2.4	—	3.3	V
			STEP UP OUTPT	RELATIVE TO VSS	V _{OUT}	—	—	16.0	
			VOLT REG.	RELATIVE TO VSS	V _{OUT}	6.0	—	16.0	
			V. FOLLOWER	RELATIVE TO VSS	V _O	4.0	10.0	13.0	
			BASE VOLT.	RELATIVE TO VSS	V _R	2.07	2.10	2.13	

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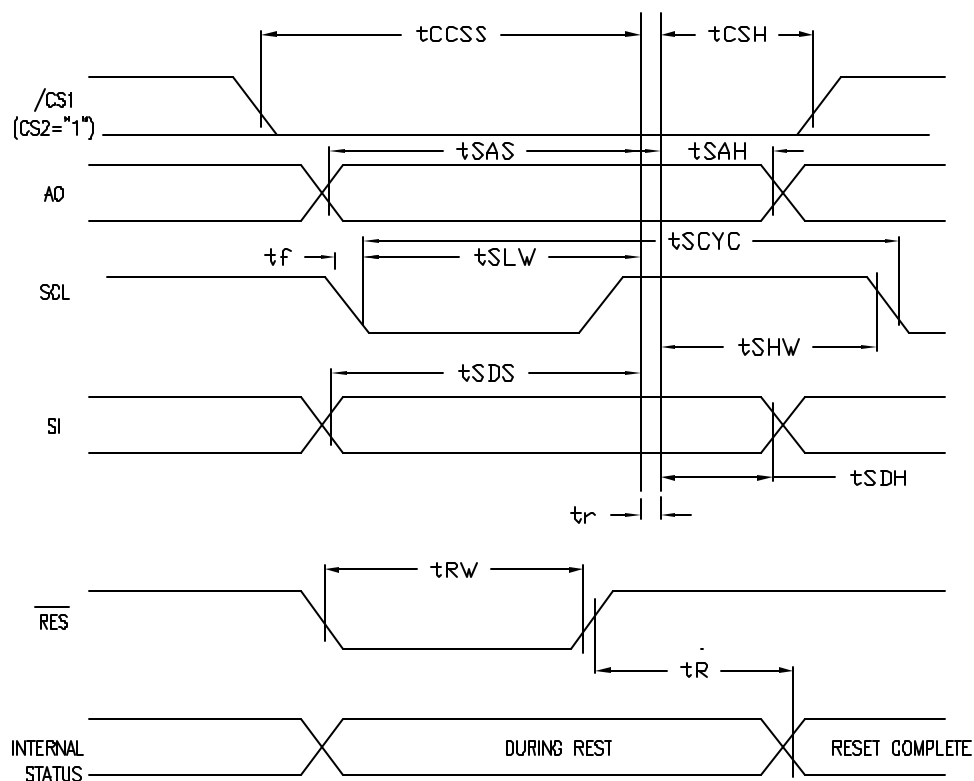
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SCALE: N/A

TIMING DIAGRAM



AC CHARACTERISTICS

ITEM	SIGNAL	SYMBOL	MIN	MAX	UNIT	CONDITION
ADDRESS HOLD TIME	A0	t_{AH6}	0	—	ns	
ADDRESS SETUP TIME		t_{AW6}	0	—	ns	
SYSTEM CYCLE TIME	A0	t_{CYC6}	240	—	ns	
CONTROL L PULSE WIDTH (/WR)	/WR	t_{EWLW}	80	—	ns	
CONTROL L PULSE WIDTH (/RD)	/RD	t_{EWLR}	80	—		
CONTROL H PULSE WIDTH (/WR)	/WR	t_{EWHW}	80	—		
CONTROL H PULSE WIDTH (/RD)	/RD	t_{EWHR}	140	—		
DATA SETUP TIME	D0 ~ D7	t_{DS6}	40	—	ns	
ADDRESS HOLD TIME		t_{DH6}	10	—	ns	
READ ACCESS TIME		t_{ACC6}	—	70	ns	CL=100pF
OUTPUT DISABLE TIME		t_{OH6}	5	50	ns	CL=100pF
SERIAL CLOCK PER.	SCL	t_{SCYC}	50	—	ns	
SCL "H" PULSE WIDTH		t_{SHW}	25	—	ns	
SCL "L" PULSE WIDTH		t_{SLW}	25	—	ns	
ADDRESS SETUP TIME	A0	t_{SAS}	20	—	ns	
ADDRESS HOLD TIME		t_{SAH}	10	—	ns	
DATA SETUP TIME	SI	t_{SDS}	20	—	ns	
DATA HOLD TIME		t_{SDH}	10	—	ns	
CS-SCL TIME	CS	t_{CSS}	20	—	ns	
CS-SCL TIME		t_{CSH}	40	—	ns	
RESET TIME		t_{R}	—	0.5	us	
RESET "L" PULSE WIDTH	/RES	t_{RW}	0.5	—	us	

1. THE INPUT SIGNAL RISE & FALL TIME (t_r , t_f) ARE SPECIFIED @ 15ns OR LESS.
2. ALL TIMING IS SPECIFIED USING 20% AND 80% OF V_{DD} AS STANDARD.

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