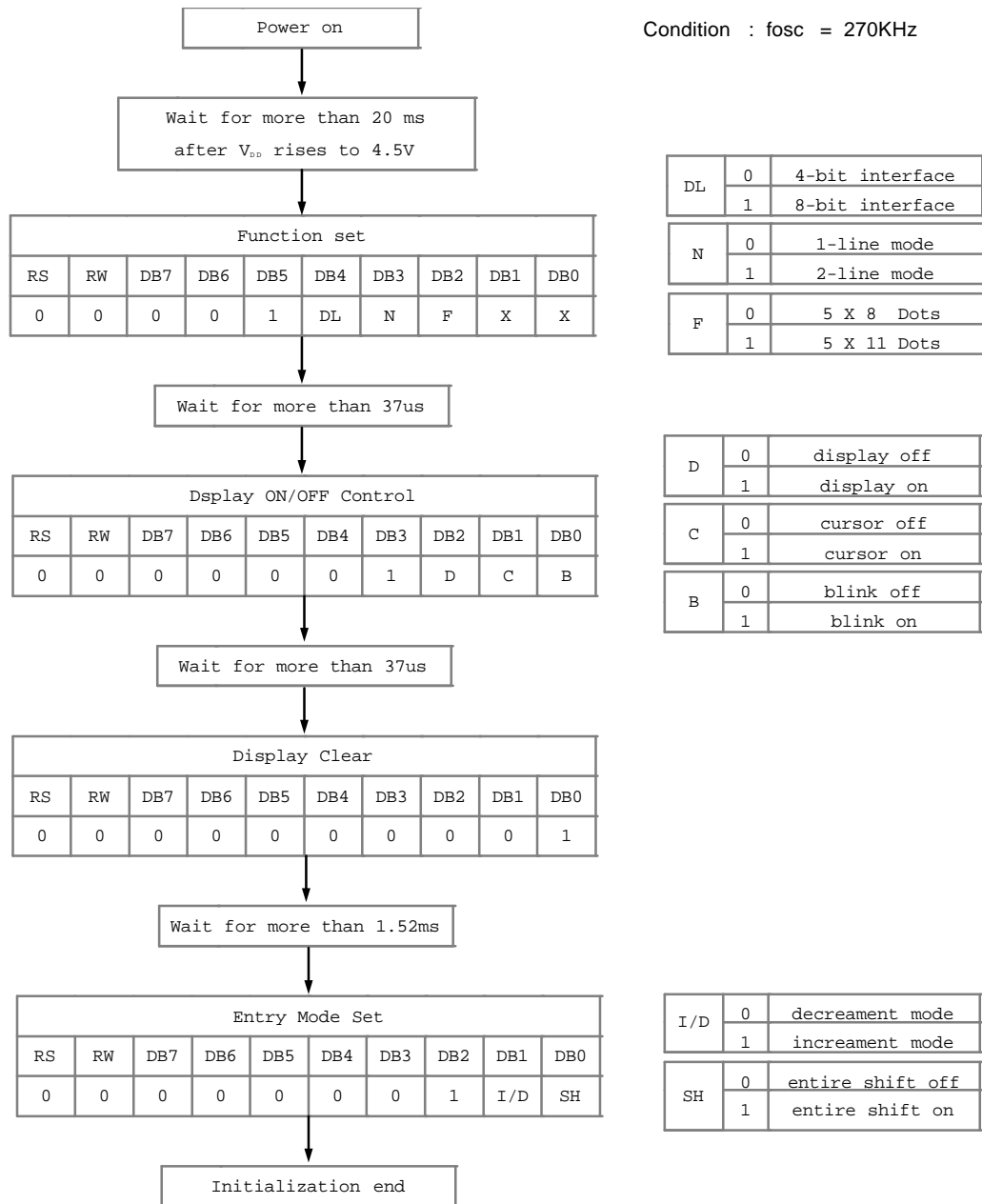


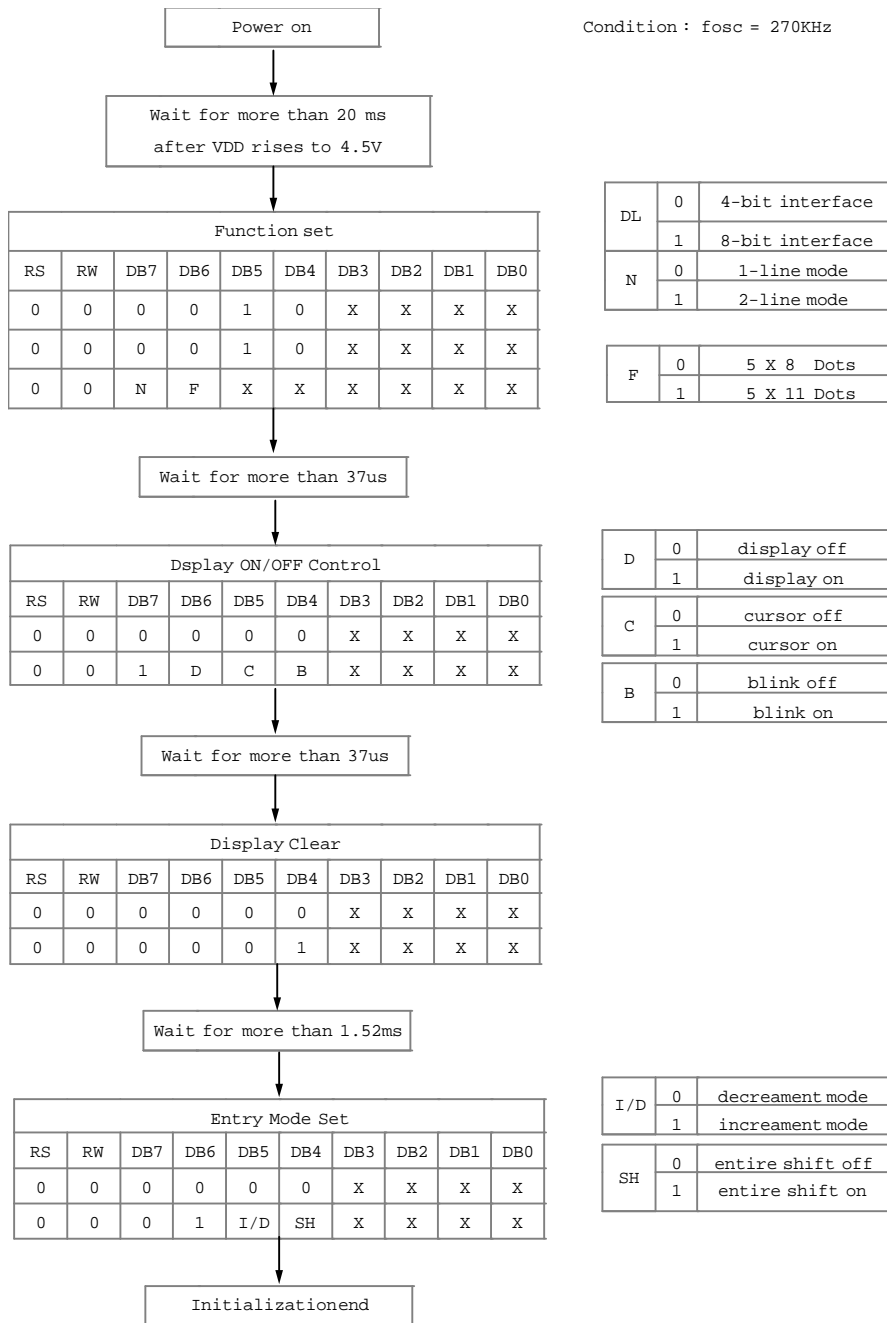
# KS0066U 16COM / 40SEG DRIVER & CONTROLLER FOR DOT MATRIX LCD

## 1) 8-bit interface mode



# KS0066U 16COM / 40SEG DRIVER & CONTROLLER FOR DOT MATRIX LCD

## 2) 4-bit interface mode



**MAXIMUM ABSOLUTE LIMIT**

**Maximum Absolute Power Ratings**

Characteristic	Symbol	Unit	Value
Operating Voltage	V <sub>DD</sub>	V	-0.3~+7.0
Power Supply Voltage	V <sub>LCD</sub>	V	V <sub>DD</sub> -15.0 ~ V <sub>DD</sub> +0.3
Input Voltage	V <sub>IN</sub>	V	-0.3 ~ V <sub>DD</sub> +0.3

- Voltage greater than above may damage the circuit (V<sub>DD>or=V1>or=V2>or=V3>or=V4>or=V5</sub>)

**Temperature Characteristics**

Characteristic	Symbol	Unit	Value
Operating Temperature	T <sub>OPR</sub>	° C	-30 ~ +85
Storage Temperature	T <sub>STG</sub>	° C	-55 ~ +125

## KS0066U 16COM / 40SEG DRIVER & CONTROLLER FOR DOT MATRIX LCD

### ELECTRICAL CHARACTERISTICS

DC Characteristics ( $V_{DD} = 4.5V \sim 5.5V$ ,  $T_a = -30 \sim +85^\circ C$ )

Characteristic	Symbol	Condition	Min	Typ	Max	Unit
Operating Voltage	$V_{DD}$	-	4.5	-	5.5	V
Operating Current	$I_{DD}$	Internal oscillation or external clock ( $V_{DD} = 5.0V, f_{osc} = 270KHz$ )	-	0.35	0.6	mA
Input Voltage (1) (except OSC1)	$V_{IH1}$	-	2.2	-	$V_{DD}$	V
	$V_{IL1}$	-	-0.3	-	0.6	
Input Voltage (2) (OSC1)	$V_{IH2}$	-	$V_{DD}-1.0$	-	$V_{DD}$	V
	$V_{IL2}$	-	-0.2	-	1.0	
Output Voltage (1) (DB0 to DB7)	$V_{OH1}$	$I_{OH} = -0.205mA$	2.4	-	-	V
	$V_{OL1}$	$I_{OL} = 1.2mA$	-	-	0.4	
Output Voltage (2) (except DB0 to DB7)	$V_{OH2}$	$I_O = -40\mu A$	$0.9V_{DD}$	-	-	V
	$V_{OL2}$	$I_O = 40\mu A$	-	-	$0.1V_{DD}$	
Voltage Drop	$V_{dCOM}$	$I_O = +/- 0.1mA$	-	-	1	V
	$V_{dSEG}$		-	-	1	
Input Leakage Current	$I_{LKG}$	$V_{IN} = 0V \sim V_{DD}$	-1	-	1	$\mu A$
Input Low Current	$I_{IL}$	$V_{IN} = 0V, V_{DD} = 5V$ (PULL UP)	-50	-125	-250	
Internal Clock (external $R_f$ )	$f_{OSC1}$	$R_f = 91Kohm +/- 2%$ ( $V_{DD} = 5V$ )	190	270	350	KHz
External Clock	$f_{osc}$	-	125	270	350	KHz
	duty		45	50	55	%
	$t_R, t_F$		-	-	0.2	$\mu s$
LCD Driving Voltage	$V_{LCD}$	$V_{DD}-V_5$ (1/5, 1/4 bias)	3.0	-	13.0	V

## KS0066U 16COM / 40SEG DRIVER & CONTROLLER FOR DOT MATRIX LCD

( $V_{DD} = 2.7V \sim 4.5V$ ,  $T_a = -30 \sim +85;E$ )

Characteristic	Symbol	Condition	Min	Typ	Max	Unit
Operating Voltage	$V_{DD}$	-	2.7	-	4.5	V
Operating Current	$I_{DD}$	Internal oscillation or external clock ( $V_{DD} = 3.0V$ , $f_{osc} = 270KHz$ )	-	0.15	0.3	mA
Input Voltage (1) (except OSC1)	$V_{IH1}$	-	$0.7 V_{DD}$	-	$V_{DD}$	V
	$V_{IL1}$	-	-0.3	-	0.55	
Input Voltage (2) (OSC1)	$V_{IH2}$	-	$0.7V_{DD}$	-	$V_{DD}$	V
	$V_{IL2}$	-	-	-	$0.2 V_{DD}$	
Output Voltage (1) (DB0 to DB7)	$V_{OH1}$	$I_{OH} = -0.1mA$	$0.75 V_{DD}$	-	-	V
	$V_{OL1}$	$I_{OL} = 0.1mA$	-	-	$0.2 V_{DD}$	
Output Voltage (2) (except DB0 to DB7)	$V_{OH2}$	$I_O = -40\mu A$	$0.8V_{DD}$	-	-	V
	$V_{OL2}$	$I_O = 40 \mu A$	-	-	$0.2V_{DD}$	
Voltage Drop	$V_{dCOM}$	$I_O = +/- 0.1mA$	-	-	1	V
	$V_{dSEG}$		-	-	1	
Input Leakage Current	$I_{LKG}$	$V_{IN} = 0V \sim V_{DD}$	-1	-	1	$\mu A$
Input Low Current	$I_{IL}$	$V_{IN} = 0V$ , $V_{DD} = 3V$ (PULL UP)	-10	-50	-120	
Internal Clock (external $R_f$ )	$f_{OSC1}$	$R_f = 75Kohm +/- 2\%$ ( $V_{DD} = 3V$ )	190	270	350	KHz
External Clock	$f_{OSC2}$	-	125	270	350	KHz
	duty		45	50	55	%
	$t_R$ , $t_F$		-	-	0.2	$\mu s$
LCD Driving Voltage	$V_{LCD}$	$V_{DD} - V_5$ (1/5, 1/4 bias)	3.0	-	13.0	V

**AC Characteristics**

( $V_{DD} = 4.5 \sim 5.5V$ ,  $T_a = -30 \sim +85^{\circ}C$ )

Mode	Characteristics	Symbol	Min	Typ	Max	Unit
Write Mode (refer to Fig-6)	E Cycle Time	$t_c$	500	-	-	ns
	E Rise / Fall Time	$t_R, t_F$	-	-	20	
	E Pulse Width (High, Low)	$t_w$	230	-	-	
	R/W and RS Setup Time	$t_{su1}$	40	-	-	
	R/W and RS Hold Time	$t_{H1}$	10	-	-	
	Data Setup Time	$t_{su2}$	60	-	-	
	Data Hold Time	$t_{H2}$	10	-	-	
Read Mode (refer to Fig-7)	E Cycle Time	$t_c$	500	-	-	ns
	E Rise / Fall Time	$t_R, t_F$	-	-	20	
	E Pulse Width (High, Low)	$t_w$	230	-	-	
	R/W and RS Setup Time	$t_{su}$	40	-	-	
	R/W and RS Hold Time	$t_H$	10	-	-	
	Data Output Delay Time	$t_D$	-	-	120	
	Data Hold Time	$t_{DH}$	5	-	-	

( $V_{DD} = 2.7 \sim 4.5V$ ,  $T_a = -30 \sim +85^{\circ}C$ )

Mode	Characteristic	Symbol	Min	Typ	Max	Unit
Write Mode (refer to Fig-6)	E Cycle Time	$t_c$	1000	-	-	ns
	E Rise / Fall Time	$t_R, t_F$	-	-	25	
	E Pulse Width (High, Low)	$t_w$	450	-	-	
	R/W and RS Setup Time	$t_{su1}$	60	-	-	
	R/W and RS Hold Time	$t_{H1}$	20	-	-	
	Data Setup Time	$t_{su2}$	195	-	-	
	Data Hold Time	$t_{H2}$	10	-	-	
Read Mode (refer to Fig-7)	E Cycle Time	$t_c$	1000	-	-	ns
	E Rise / Fall Time	$t_R, t_F$	-	-	25	
	E Pulse Width (High, Low)	$t_w$	450	-	-	
	R/W and RS Setup Time	$t_{su}$	60	-	-	
	R/W and RS Hold Time	$t_H$	20	-	-	
	Data Output Delay Time	$t_D$	-	-	360	
	Data Hold Time	$t_{DH}$	5	-	-	

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( $V_{DD} = 2.7 \sim 4.5V$ ,  $T_a = -30 \sim +85^{\circ}C$ )

Mode	Characteristic	Symbol	Min	Typ	Max	Unit
Interface Mode with	Clock Pulse Width (High, Low)	$t_c$	800	-	-	ns
	Clock Rise / Fall Time	$t_R, t_F$	-	-	25	
Extension Driver (refer to Fig-8)	Clock Setup Time	$t_{su1}$	500	-	-	
	Data Setup Time	$t_{su2}$	300	-	-	
	Data Hold Time	$t_{DH}$	300	-	-	
	M Delay Time	$t_{DM}$	-1000	-	1000	

Fig-6. Write Mode Timing Diagram

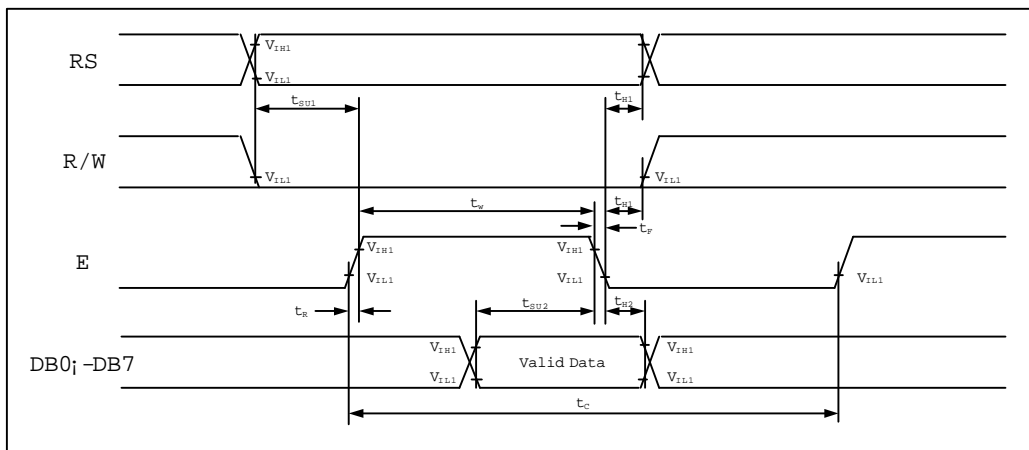


Fig-7. Read Mode Timing Diagram

