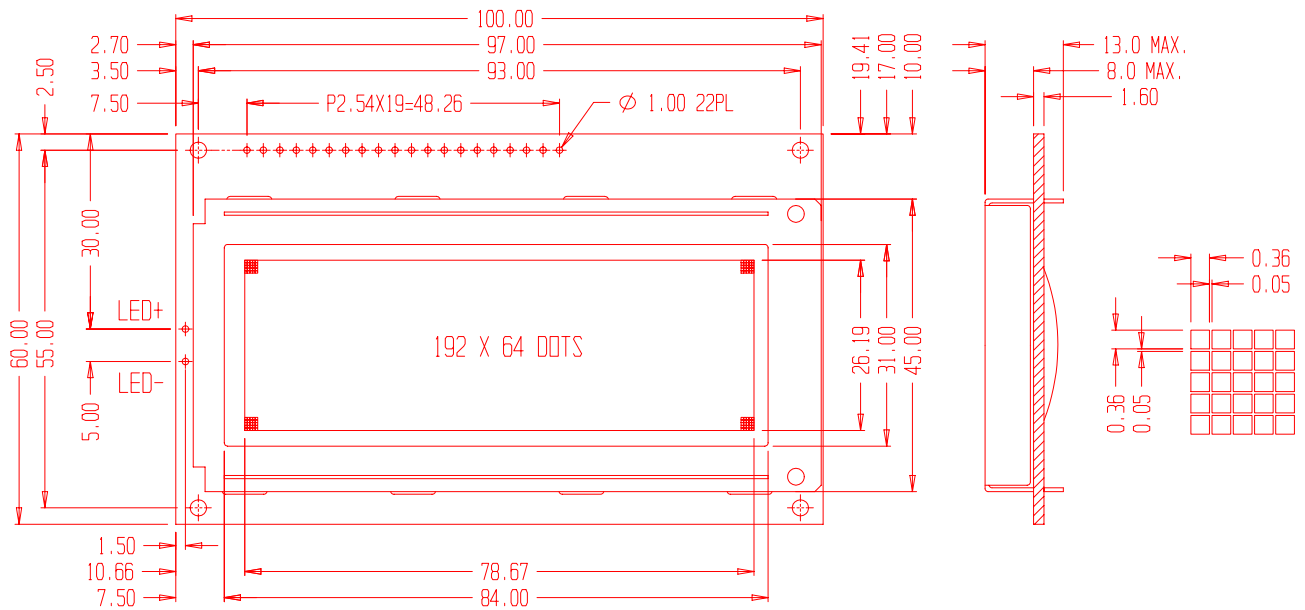


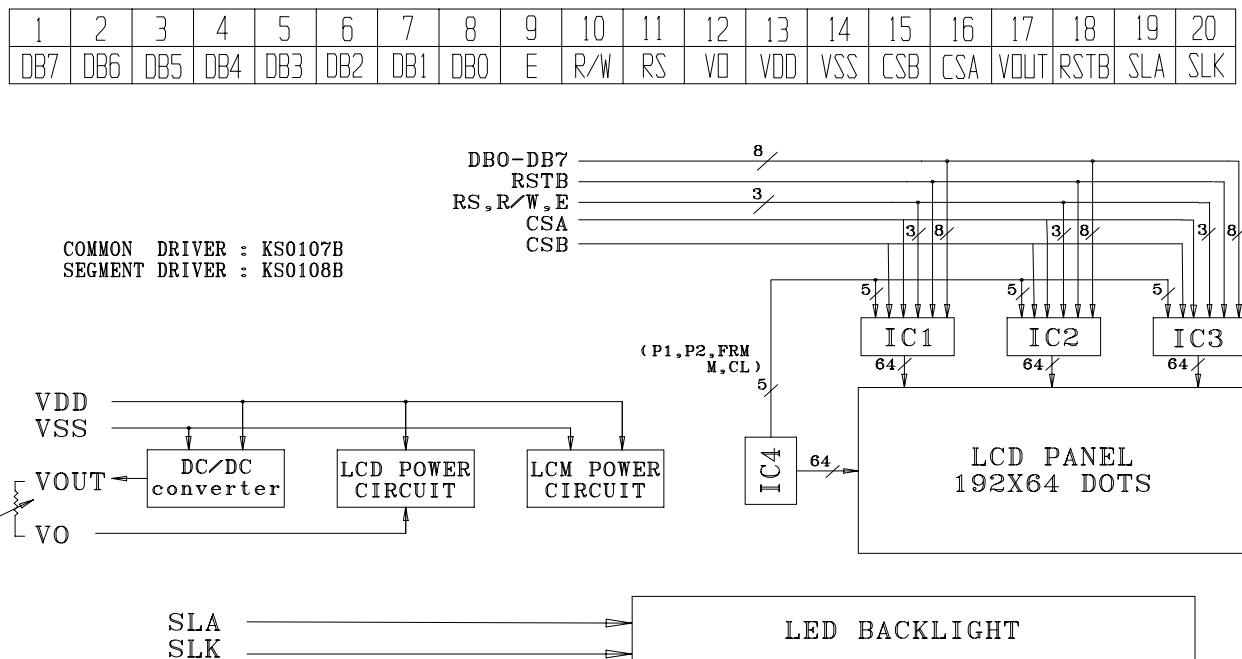
EXTERNAL DIMENSIONS



PHYSICAL DATA

Item	Contents	Unit
LCD type	STN	---
LCD duty	1/64	---
LCD bias	1/9	---
Viewing direction	6	clock
Module size (W×H×T)	100 × 60 × 13MAX (3.94" × 2.36" × 0.51"MAX)	mm
Viewing area (W×H)	84 × 31 (3.31" × 1.22")	mm
Number of dots	192 × 64	dots
Dot size (W×H)	0.36 × 0.36 (0.014" × 0.014")	mm
Dot pitch (W×H)	0.41 × 0.41 (0.016" × 0.016")	mm

BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter	Symbol	Min	Max	Unit
Supply voltage for logic	VDD	-0.3	7.0	V
Supply voltage for LCD	VDD - VO	-0.3	VDD+0.3	V
Input voltage	VI	-0.3	VDD+0.3	V
Operating temperature	TOP	-20	70	°C
Storage temperature	TST	-30	80	°C

■ ELECTRICAL CHARACTERISTICS (VDD = +5V±5% , VSS = 0V, Ta = 25°C)

◆ DC Characteristics

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Supply voltage for logic	VDD	---	4.5	5.0	5.5	V
Supply current for logic	IDD	---	---	5.54	10	mA
Operating voltage for LCD	VDD - VO	-20°C	14.0	14.7	15.4	V
		25°C	12.3	13.0	13.7	V
		70°C	10.7	11.6	12.3	V
Supply voltage for side light	VF	---	---	4.2	4.6	V
Supply current for side light	IF	VF=4.2V	---	200	340	mA
Input voltage ' H ' level	VIH	---	0.7VDD	---	VDD	V
Input voltage ' L ' level	VIL	---	0	---	0.3VDD	V

◆ AC Characteristics

● MPU Interface

Characteristic	Symbol	Min	Typ	Max	Unit
E cycle	tcyc	1000	---	---	ns
E high level width	twhE	450	---	---	ns
E low level width	twlE	450	---	---	ns
E rise time	t _r	---	---	25	ns
E fall time	t _f	---	---	25	ns
Address set-up time	tas	140	---	---	ns
Address hold time	tah	10	---	---	ns
Data set-up time	tdsw	200	---	---	ns
Data delay time	tddr	---	---	320	ns
Data hold time(write)	tdhw	10	---	---	ns
Data hold time(read)	tdhr	20	---	---	ns