

### ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Min.	Max.	Unit
Supply Voltage (Logic)	V <sub>DD</sub> - V <sub>SS</sub>	-0.3	4.0	V
Supply Voltage (OLED)	V <sub>CC</sub> - V <sub>SS</sub>	-0.3	15.0	V
Input Voltage	V <sub>I</sub>	-0.3	V <sub>DD</sub> + 0.3	V
Operating Temp.	T <sub>opr</sub>	-40	70	°C
Storage Temp.	T <sub>stg</sub>	-40	80	°C

### MECHANICAL DATA

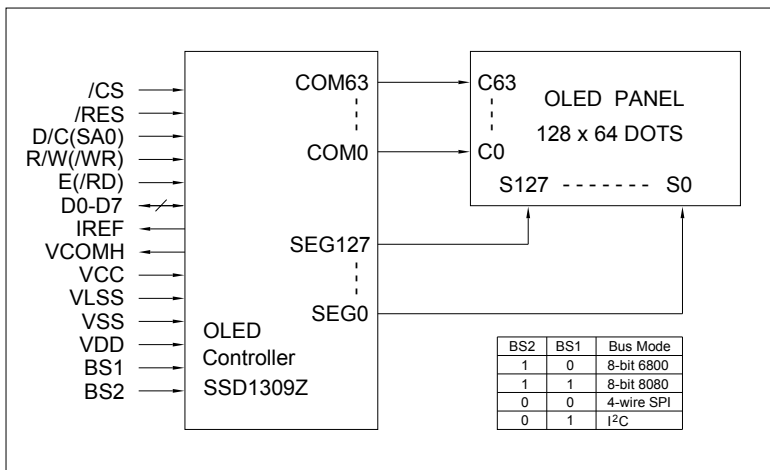
Item	Nominal Dimensions	Unit
Module Size (W x H x T)	86.0 x 44.0 x 3.5	mm
Viewing Area (W x H)	63.4 x 32.7	mm
Dot Pitch (W x H)	0.48 x 0.48	mm
Dot Size (W x H)	0.45 x 0.45	mm
Weight	Approx. 18	g

### ELECTRICAL CHARACTERISTICS (V<sub>DD</sub>=2.8V to 3.3V)

Item	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input High Voltage	V <sub>IH</sub>	--	0.8V <sub>DD</sub>	--	V <sub>DD</sub>	V
Input Low Voltage	V <sub>IL</sub>	--	0	--	0.2V <sub>DD</sub>	V
Output High Voltage	V <sub>OH</sub>	I <sub>OH</sub> = -0.1mA	0.9V <sub>DD</sub>	--	V <sub>DD</sub>	V
Output Low Voltage	V <sub>OL</sub>	I <sub>OL</sub> = 0.1mA	0	--	0.1V <sub>DD</sub>	V
OLED Driving Voltage	V <sub>CC</sub>	--	11.5	12.0	12.5	V
Supply Current	I <sub>DD</sub>	V <sub>DD</sub> = 3.3V	--	--	150	uA
	I <sub>CC</sub> <sup>Note 1</sup>	V <sub>CC</sub> = 12.0V	--	27.0	34.0	mA
	I <sub>CC</sub> <sup>Note 2</sup>	V <sub>CC</sub> = 12.0V	--	37.0	47.0	mA

Note 1: White color, 50% display area turned on, contrast register is set to BFH  
 Note 2: White color, 100% display area turned on, contrast register is set to BFH

### BLOCK DIAGRAM



### PIN CONNECTIONS

Pin	Symbol	Level	Function
1	ESD	0V	ESD protection pin. Connect it to Vss
2	VLSS	0V	Analog ground. Connect it to Vss.
3	Vss	0V	Logic ground
4	NC	-	No connection
5	VDD	2.8V to 3.3V	Power supply for logic
6	BS1	H/L	Bus interface selection
7	BS2	H/L	Bus interface selection
8	/CS	L	Chip selection signal. Active "L".
9	/RES	L	Reset signal. Active "L".
10	D/C (SA0)	H/L	Data/Command selection for parallel or SPI mode "H": Display data; "L": Instruction code Slave address SA0 for I2C mode
11	R/W(/WR)	H/L	R/W for 68 MPU, /WR for 80 MPU
12	E(/RD)	H/L	E for 68 MPU, /RD for 80 MPU
13	D0	H/L	For 6800/8080 parallel mode: D0 to D7 are 8-bit bi-directional data bus
14	D1	H/L	
15	D2	H/L	For 4-wire SPI mode: D0 is serial clock input SCLK D1 is serial data input SDIN
16	D3	H/L	
17	D4	H/L	For I2C mode: D0 is serial clock SCL D1 is serial data input SDA <sub>IN</sub> D2 is serial data output SDA <sub>OUT</sub> Connect D1 and D2 together to serve as SDA
18	D5	H/L	
19	D6	H/L	
20	D7	H/L	
21	IREF	-	Segment current reference pin
22	VCOMH	-	Common signal deselected voltage
23	VCC	12V	Power supply for OLED driving. It must be supplied externally.
24	ESD	0V	ESD protection pin. Connect it to Vss