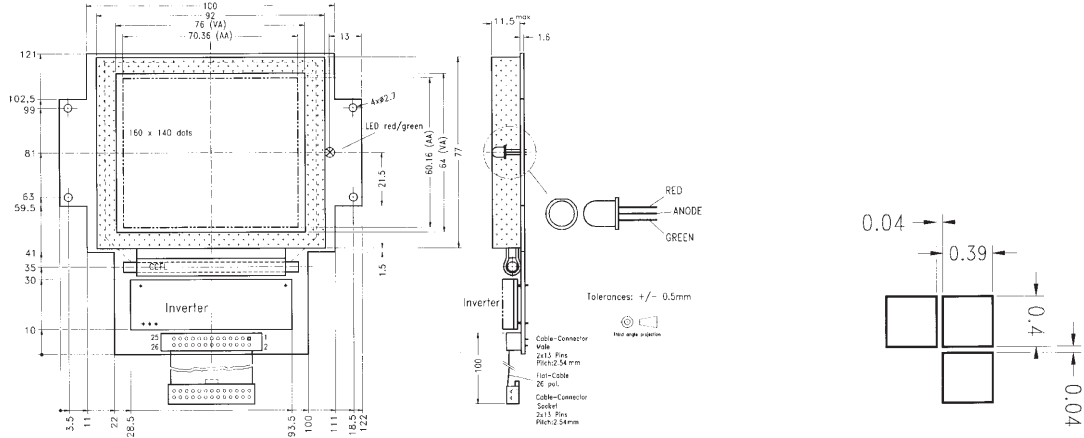


### BT 160140 (CFL)

160 x 140 DOTS



#### Dimensions [mm]

#### DESCRIPTION

The BT 160140 is a supertwist dot matrix LCD module with graphics capability. The module consists of a newly developed 240 degree twist STN type LCD with high contrast, wide viewing angle, CMOS LCD driver, and controller. The control LSI SED 1335 has various graphics and text capabilities and is directly connectable to the MPU bus.

#### MECHANICAL DATA

Parameter	Width x Height x Depth	Unit
Outline Dimensions	122 x 125 x 11.5	mm
Effective viewing area	76 x 164	mm
Dot Size	0.4 x 0.39	mm
Dot Pitch	0.44 x 0.43	mm
Dot Matrix	160 x 140	dots
Weight	Approximate 180 without CFL-Inverter	g

#### ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage (Logic)	$V_{DD} (V_{DD}-V_{SS})$	0	6.5	V
Input Voltage	$V_I$	$V_{SS}$	$V_{DD}$	V
Operating Temperature	$T_{OP}$	See Page 11		°C
Storage Temperature	$T_{ST}$	See Page 11		°C

#### ELECTRICAL CHARACTERISTICS

Condition:  $T_a = 25^\circ\text{C}$ ,  $V_{DD} = 5.0 \pm 0.25\text{ V}$

Parameter	Symbol	Min.	Typ	Max.	Unit
Input Voltage HIGH	$V_{INH}$	2.2	---	---	V
Input Voltage LOW	$V_{INL}$	---	---	0.8	V
Output Voltage HIGH	$V_{OH}$	2.4	----	----	V
Output Voltage LOW	$V_{OL}$	----	----	0.4	V
Supply Current (Logic)	$I_{DD}$	----	43	---	mA
Duty Ratio	---	---	1 / 140	---	---

#### TECHNICAL DATA

Type Number	Input Voltage [V-]	Circuit Voltage [V <sub>eff</sub> ]	Output Voltage [V <sub>eff</sub> ]	Tube Current [mA <sub>eff</sub> ]	Frequency [kHz]	$\eta$ (%)	Figure
PSE 1884	$5 \pm 10\%$	800	235	5.2	$33 \pm 13\%$	82	
		(min)	typ	typ		typ	

#### FEATURES

- ◆ Single 5V power supply
- ◆ High contrast and wide viewing angle
- ◆ Built-in Controller SED 1335 (1) – or compatible
- ◆ Text and graphic screen can be combined
- ◆ Driver HD 66204 (2), HD 66205 (2)
- ◆ Built in RAM: 32 k
- ◆ MPU-BUS: INTEL (DEFAULT)
- ◆ Suitable for case OKW Datec Control
- ◆ Temperature compensated

#### DISPLAY CONNECTOR

Pin	Symbol	Signal Description	
1	$-V_{INV}$	0V Inverter	
2	$+V_{INV}$	5V Inverter	
3	NC	Not connect	
4	$INV_{CTL}$	Controlpin for Inverter	Off: 0V On: 5V
5 to 6	$V_{SS}$	GND (0)	
7 to 8	$V_{DD}$	Power supply (5V)	
9	$\overline{RES}$	Reset	
10	$\overline{CS}$	Chip select (SED 1335)	
11	RS	Register Select R / $\overline{W}$ = LOW: RS = LOW: Data write RS = High: Command write R / $\overline{W}$ = HIGH: RS = LOW: Status flag read RS = HIGH: Data read	
12	$\overline{WR}$	Write: MPU to LCM	
13	$\overline{RD}$	Read: LCM to MPU	
14 to 21	DB0 to DB7	Data bus	
22	LED rd	Status LED rd: (+ 5V)	
23	LED gn	Status LED gn: (+ 5V)	
24/25	NC	Not connect	
26	FG	Frame ground	

#### BLOCK DIAGRAM

