SIEMENS GREEN and YELLOW, GREEN and RED II340GY/GR

3x4 Cells, Bi-Color Intelligent Indicators

Preliminary

FEATURES

- **Colors: GY=Green and Yellow, GR=Green and Red**
- **Each Cell, 4 mm square**
- **Vertical and Horizontal Pitch, 5.8 mm**
- **X-Y Stackable**
- **TTL Compatible**
- **Easily Cascaded for Multiple Displays**
- **Ideal for Graphics Panels**

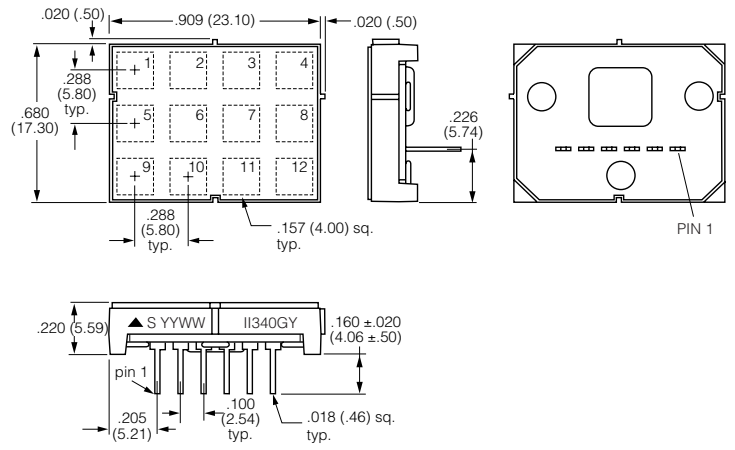
DESCRIPTION

The II340GY/GR bi-color intelligent indicator is a 3x4 cell assembly with a built-in CMOS shift register and LED drivers. Each cell or pixel has a green and yellow LED (GY) or a green and red LED (GR). To turn a LED "ON" a 1 (high) has to be clocked into the respective shift register (see the block diagram). The serial clock has to be provided to pin 4, the "shift register clock." The serial data bit stream is clocked in on the falling edge of the clock pulses.

The blanking pin can be used to blank the indicator while the data is being updated and it can also be pulse width modulated to dim the display and consume less power.

Cascading multiple indicators is possible because of the data out and data in pins. Notice in the block diagram that only 24 LED drivers are used while 28 shift registers are available. So when multiple indicators are cascaded data for the next indicator will only be at the data out pin after the twenty eighth clock pulse.

Dimensions in inches (mm)



TOL: 0.XX (0.XXX)=±0.25 (0.010)

ABSOLUTE MAXIMUM RATINGS, T_A=25°C

DC Supply Voltage ..... –0.5 V to +7.0 V
Input Voltage Levels Relative to GND..... –0.5 V to V_{CC} +0.5 V
Operating/Storage Temperature Range ..... –40°C to +85°C
Maximum solder Temperature 0.063 in (1.59 mm) below Seating Plane t<5.0 sec. ..... 260°C

Table 1. PIN FUNCTION/DESCRIPTION

Pin	Function	Description
1	GND	Ground
2	Data Out	Serial data output for cascading
3	$\overline{\text{Blanking}}$	Blanking control to enable or disable display
4	Serial Clock	Shift register clock
5	$\overline{\text{Data In}}$	Serial data input
6	V_{CC}	+5.0 V supply

Custom overlays are available from:

GM Nameplate
Electronic Input Devices / Injection & Compression Molding / Innovative Graphics

1-800-279-6001

Actual size

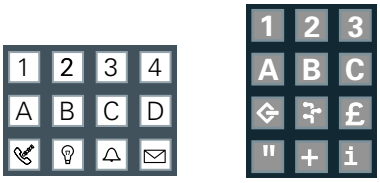


Table 2. Electrical Characteristics, T_A=25°C

Parameters	Min.	Typ.	Max.	Unit	Conditions
I_{CC} (quiescent)	—	5	10	mA	V_{CC}=5.25 V, V_B=0.4 V, V_{CLK}=V_{DATA}=2.4 V (All SR stages=1)
I_{CC} 1		120	—		V_{CC}=5.0 V, V_B=2.4 V, 12 LEDs ON
I_{CC} 2		240			V_{CC}=5.0 V, V_B=2.4 V, 24 LEDs ON
V_{IL} (DATA, V_B, CLK)		—	0.8	V	V_{CC}=4.75 V–5.25 V
V_{IH} (DATA, V_B, CLK)	2.0		—		V_{CC}=4.25 V–5.25 V
V_{OH} (DATA)	2.4				V_{CC}=4.75 V, I_{COL}=0 mA, I_{OH}=–0.5 mA
V_{OL}(DATA)	–		0.4		V_{CC}=4.75 V, I_{COL}=0 mA, I_{OL}=1.6 mA
I_{IL}(V_B only)	–30	–110	–300	µA	V_{CC}=4.75 V–5.25 V, V_{IL}=0.8 V
I_{IL}(DATA, CLK)	–	–1	–10		
Package Dissipation	—	—	1.2	W	—
Thermal Resistance, IC junction to pin	—	55	—	°C/W	—

Table 3. Operating Conditions, T_A=25°C

Parameters	Min.	Typ.	Max.	Unit
V_{CC}	4.75	5.0	5.25	V
I_{OH}	–0.5	—	—	mA
I_{OL}	—	—	1.6	
V_B pulse width modulation frequency	—	—	50	KHz

Table 4. Typical Optical Characteristics, T_A=25°C

Spectral peak wavelength λpk	Red	526 nm
	Green	568 nm
	Yellow	583 nm
Average luminous intensity —Green/Red/Yellow		500 µcd/dot Min.

Table 5. AC Electrical Characteristics, V_{CC}=4.75 to 5.25 V, T_A=25°C

Parameter	Sym.	Min.	Typ.	Max. (Note 1)	Unit	Fig.
Set Up Time	T_{SETUP}	50	10	—	ns	2
Hold Time	T_{HOLD}	25	20			
Clock Width Low	T_{WL}	60	45			
Clock Width High	T_{WH}					
Clock Frequency	F_{CLK}	0	5	7	MHz	
Clock Transition Time	T_{THL}, T_{TLH}	—	75	200	ns	
Propagation Delay Clock to Data Out	T_{PHL}, T_{PLH}		50	125		

Note:
1. Vb pulse width modulation is 50 kHz (max.).

Figure 1. Timing characteristic

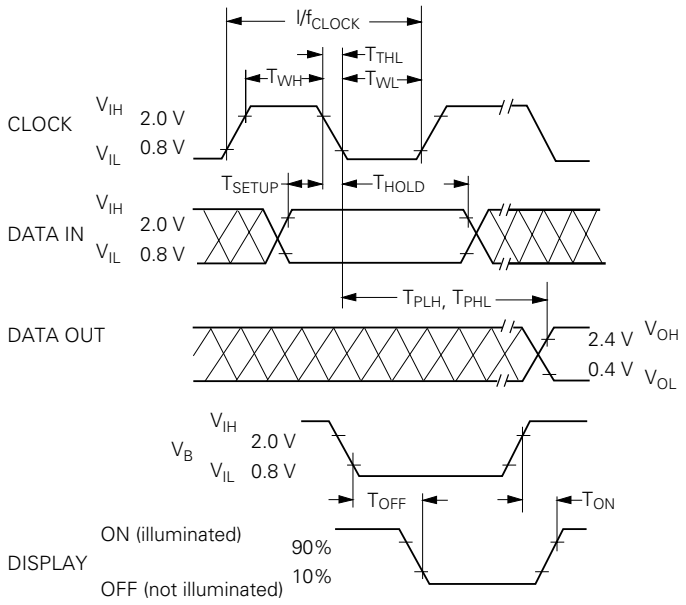
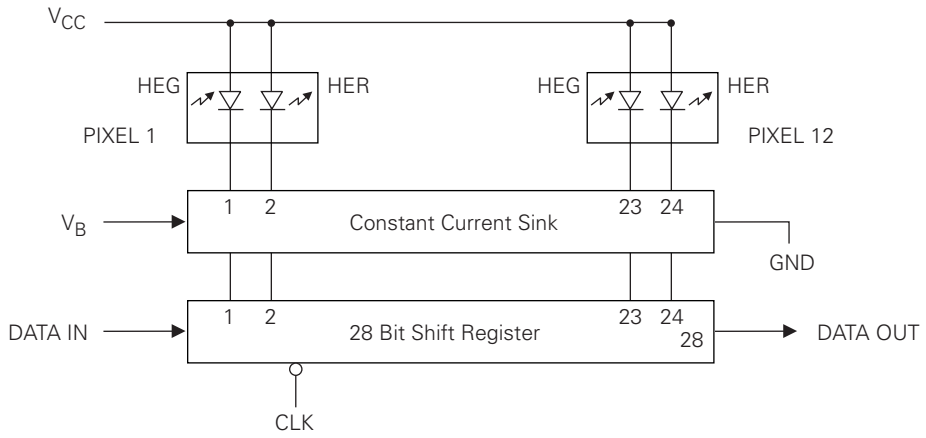


Figure 2. Block Diagram



Note:
HEG=High Efficiency Green LED.
HER=High Efficiency Red LED.

The LEDs are direct current driven.
The pixels are not bit addressable.
A stream of 24 bits must be clocked in.

The first or LSB (the least significant bit) will control LED number 24 in pixel 12.
The last or MSB (the most significant bit) will control LED number 1 in pixel 1.

Table 6. Data Definition

Cell[1]	**1**		**2**		**3**		**4**		**5**		**6**		**7**		**8**		**9**		**10**		**11**		**12**	
BIT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
GY	G	Y	G	Y	G	Y	G	Y	G	Y	G	Y	G	Y	G	Y	G	Y	G	Y	G	Y	G	Y
GR	G	R	G	R	G	R	G	R	G	R	G	R	G	R	G	R	G	R	G	R	G	R	G	R

Note:
1. See "Product Drawing" for cell functions.