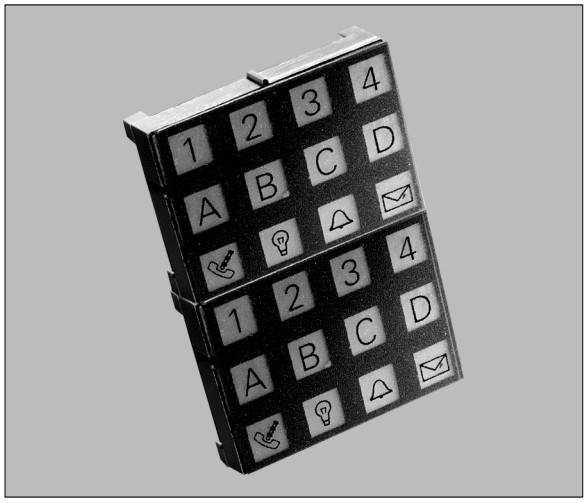
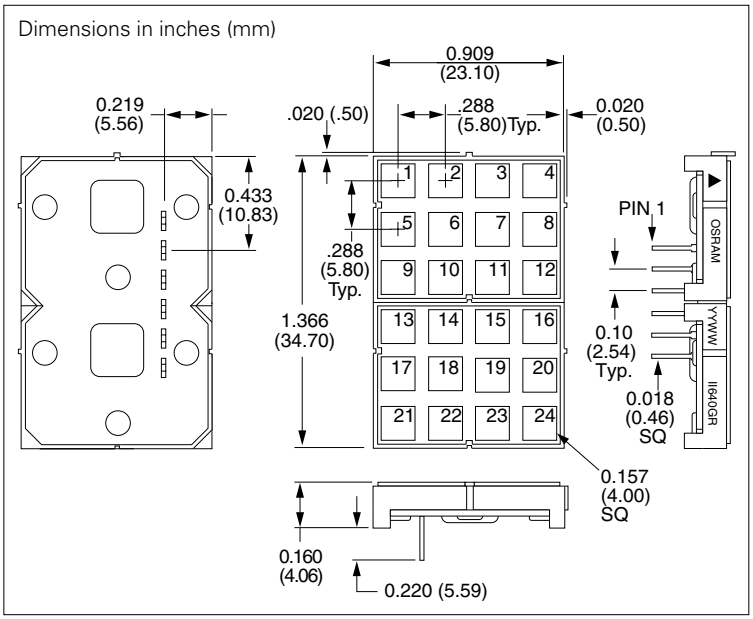
GREEN and YELLOW, GREEN and RED II640GY/GR

6 x 4 Cells, Bi-Color Intelligent Indicators





FEATURES

- **Colors: GY=Green and Yellow, GR=Green and Red**
- **Each Cell, 4.0 mm square**
- **Vertical and Horizontal Pitch, 5.8 mm**
- **X-Y Stackable**
- **TTL Compatible**
- **Easily Cascaded for Multiple Displays**
- **Ideal for Small Footprint Requirements**

DESCRIPTION

The II640GY/GR bi-color Intelligent Indicator is a 6 x 4 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 an 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.

Absolute Maximum Ratings, T_A=25°C

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

Table 1. Pin Function/Description

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

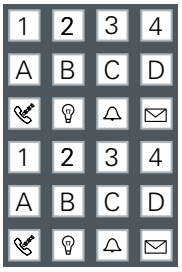
Custom overlays are available from:

GM Nameplate

Electronic Input Devices / Injection & Compression Molding / Innovative Graphics

1-800-279-6001

Actual size



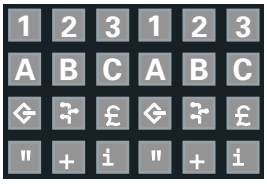


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Table 2. Electrical Characteristics, T_A=25°C

Parameters	Min.	Typ.	Max.	Unit	Conditions
I_{CC} (quiescent)	—	5.0	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	—	240	270	mA	V_{CC}=5.0 V, V_B=2.4 V, 24 LEDs ON
I_{CC} 2	—	480	510	mA	V_{CC}=5.0 V, V_B=2.4 V, 48 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	V_{CC}=4.25 V–5.25 V
V_{OH} (DATA)	2.4	—	—	V	V_{CC}=4.75 V, I_{COL}=0 mA, I_{OH}=–0.5 mA
V_{OL}(DATA)	—	—	0.4	V	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)	—	–1.0	–10	µA	V_{CC}=4.75 V–5.25 V, V_{IL}=0.8 V
Package Dissipation	—	—	2.0	W	—
Thermal Resistance, IC junction to pin	—	45	—	°C/W	—

Figure 1. Power Dissipation (Watts)

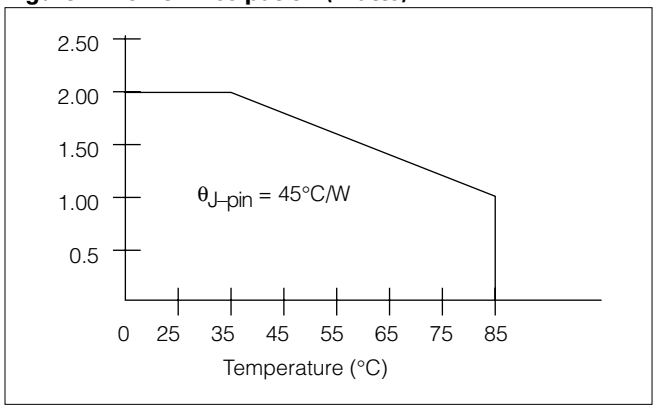


Table 3. Operating Conditions, T_A=25°C

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.(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	5.0	7.0	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. V_B pulse width modulation is 50 kHz (max.).

Figure 2. Timing Characteristic

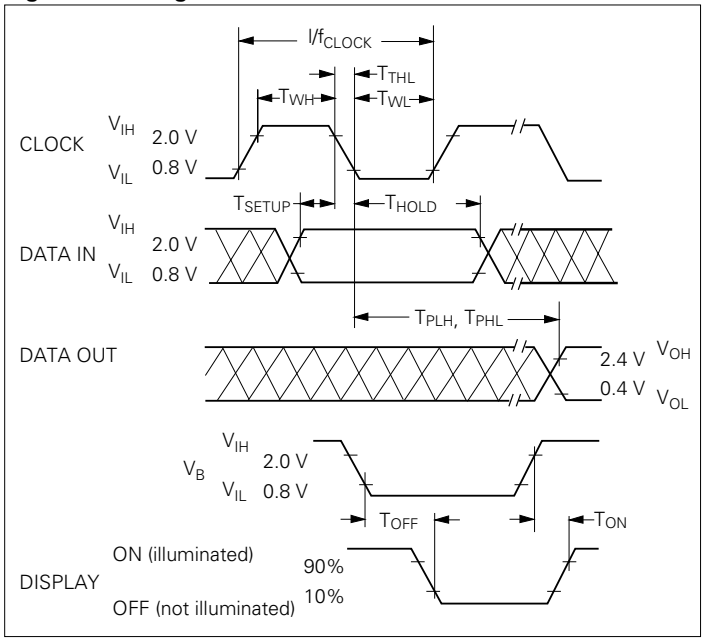
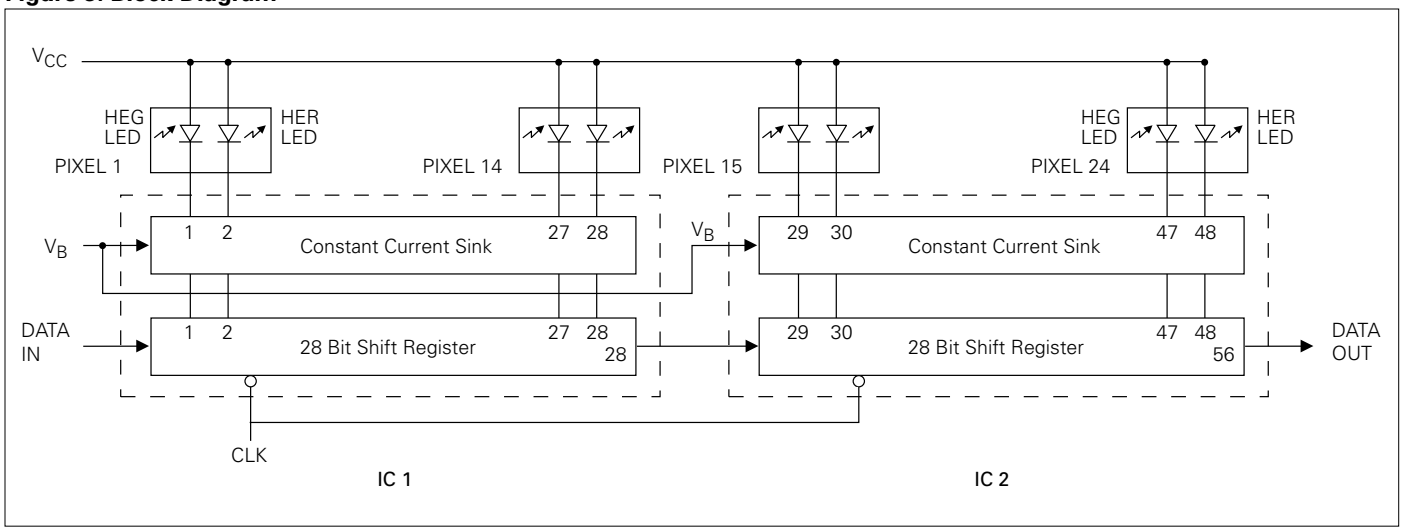


Figure 3. Block Diagram



Note:

HEG=High Efficiency Green LED.

HER=High Efficiency Red LED.

The pixels are not bit addressable.
A stream of 48 bits must be clocked in.
The first or LSB (the least significant bit) will control LED number 48 in pixel 24.

The last or MSB (the most significant bit) will control LED number 1 in pixel 1.

The LEDs are direct current driven. It is not recommended that more than 24 LEDs are kept ON continuously. If more LEDs need to be ON then reduce brightness by modulating the V_B pin.

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

Cell(1)	**13**		**14**		**15**		**16**		**17**		**18**		**19**		**20**		**21**		**22**		**23**		**24**	
BIT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
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