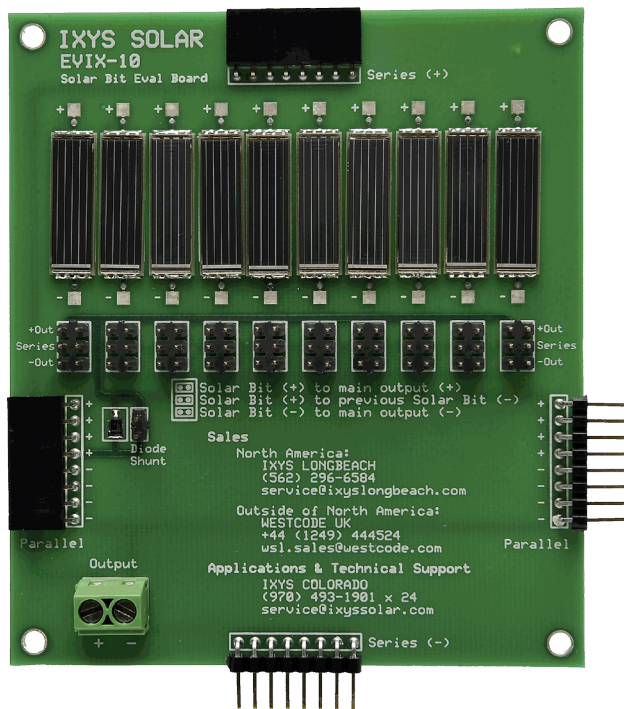


EVIX-10 SolarBIT Evaluation Board

Introduction

The EVIX-10 is a two-layer, 3.5-inch by 4-inch PC board created for easy and flexible evaluation of the IXYS XOB17-12x1 SolarBIT product.



Each SolarBIT is connected to a 6-pin header. Using the included push-on shunts, the user can arrange the ten SolarBITS into various series/parallel combinations. To achieve maximum current, for example, all ten SolarBITS can be connected in parallel to yield 0.5 V at 400 mA. For maximum voltage, all ten SolarBITS can be connected in series to yield 5 V at 40 mA.

A screw terminal block is located near the bottom of the board for easy wire connection to the load.

An 8-pin right-angle header is located at each edge of the board for expansion purposes. The right (male) and left (female) headers connect additional EVIX-10 boards in parallel, and the upper (female) and lower (male) headers connect additional boards in series.

A Schottky diode isolates the Solar Bit array from those on other boards and allows experiments in battery charging. The user can install a push-on shunt to short the diode and eliminate its voltage drop.

A 0.125-inch mounting hole is provided in each corner.

SolarBIT Description

XOB17-12x1 SolarBITS are monocrystalline, high-efficiency solar cells in a surface mount package that can be reflow soldered. They're extremely robust and can be used in harsh environments.

SolarBITS have a very high (17%) power conversion efficiency, which means that 17% of the light energy is converted into electrical energy. They're extremely useful in applications requiring solar power generation in a limited space.

IXYS cells can be used in indoor and outdoor applications because they have a wide spectral sensitivity, 300 to 1100 nm. However, the output power of a solar cell is proportional (over a wide range) to the incoming light energy, and irradiance is generally much higher outdoors. The values in the data sheet are measured at "standard condition" of 1 sun, which is equal to 1000W per square meter sunlight irradiance at a defined light spectrum (air mass of 1.5) and 25°C cell temperature.

The SolarBIT comes in several different voltage and current configurations. Please see the website for further information. www.ixys.com

SolarBIT Description, continued

XOB17 SolarBITs are built using XOD17 solar cell die products. The XOB17 datasheet can be downloaded at http://ixdev.ixys.com/DataSheet/XOB17-Solar-Bit-Datasheet_Mar-2008.pdf, and the XOD17 datasheet can be downloaded at http://ixdev.ixys.com/DataSheet/XOD17-Solar-Cell-Die-Datasheet_Mar-2008.pdf.

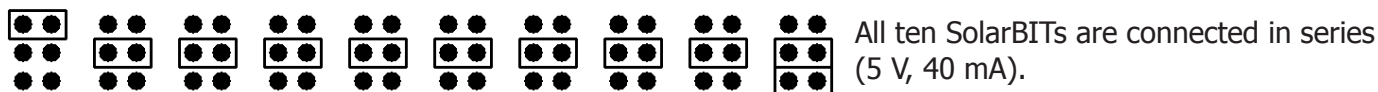
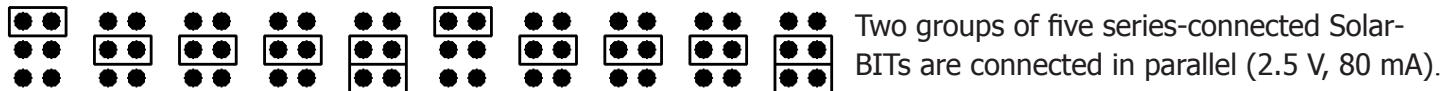
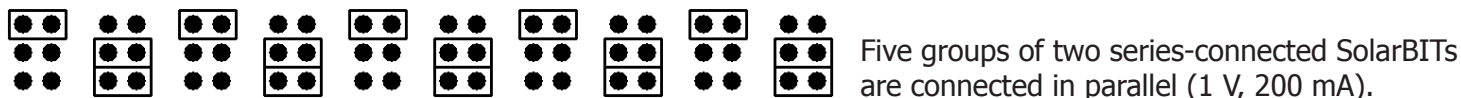
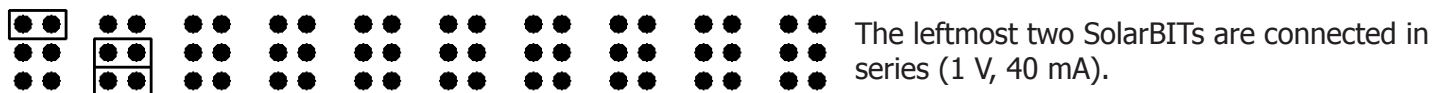
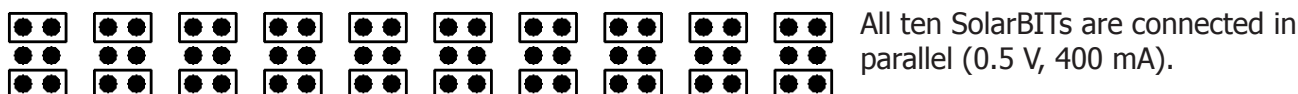
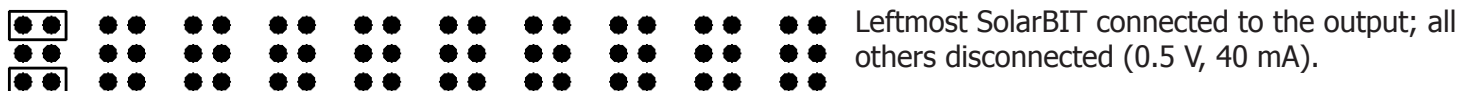
Configuration Jumpers

Placing a shunt across the top two pins connects the (+) terminal of the Solar Bit to the (+) terminal of the output connector.

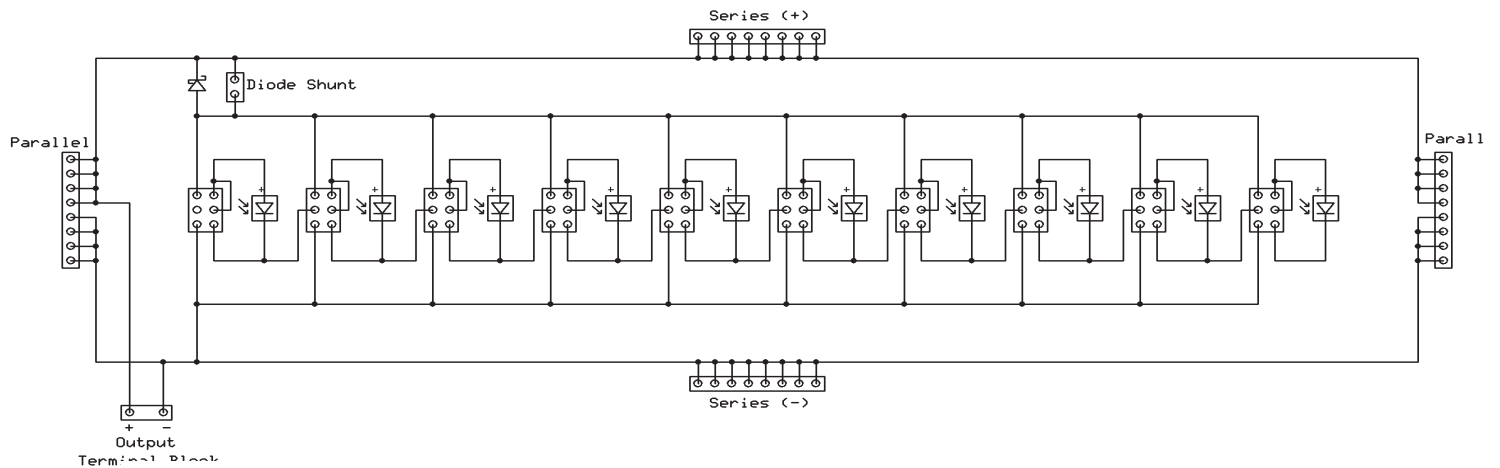
Placing a shunt across the middle two pins connects the (+) terminal of the Solar Bit to the (-) terminal of the previous Solar Bit, connecting them in series.

Placing a shunt across the bottom two pins connects the (-) terminal of the Solar Bit to the (-) terminal of the output connector.

The typical single-cell output voltage at max power is 0.51 V and the short circuit current is 42 mA. Various cell combinations, and the expected output based on these numbers, are shown below. When placing series-connected groups of Solar Bits in parallel, be sure the groups have the same number of cells in series.



Schematic



Configuration Header

- ⊖ ⊕ ← Connects Solar Bit (+) to Main Output (+)
- ⊖ ⊕ ← Connects Solar Bit (+) to previous Solar Bit (-)
- ⊖ ⊕ ← Connects Solar Bit (-) to Main Output (-)

Bill of Materials

Qty	Part Description	Part Number
10	SolarBIT	IXYS XOB17-12x1
1	Schottky Diode	MBRM120LT
1	Terminal block, 2 positions, 5.08mm	On Shore Technology EDZ250/2 (Digi-Key ED1973-ND)
2	Male right-angle header, 8-contact (breakable strip)	Sullins PBC36SBAN (Digi-Key S1111E-36-ND)
2	Female right-angle header, 8-contact	Sullins PPPC081LGBN-RC (Digi-Key S5483-ND)
6	2x3 male header, straight	Sullins PBC36DAAN (Digi-Key S2011E-36-ND) or FCI BergStik 67997-272HLF (Digi-Key 609-2220-ND) (breakable strip)
1	1x2 male header, straight	FCI 68001-236HLF (Digi-Key 609-2223-ND)(breakable strip)
1	PC Board	
21	Shunt	FCI 63429-202LF (Digi-Key 609-2997-ND)

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