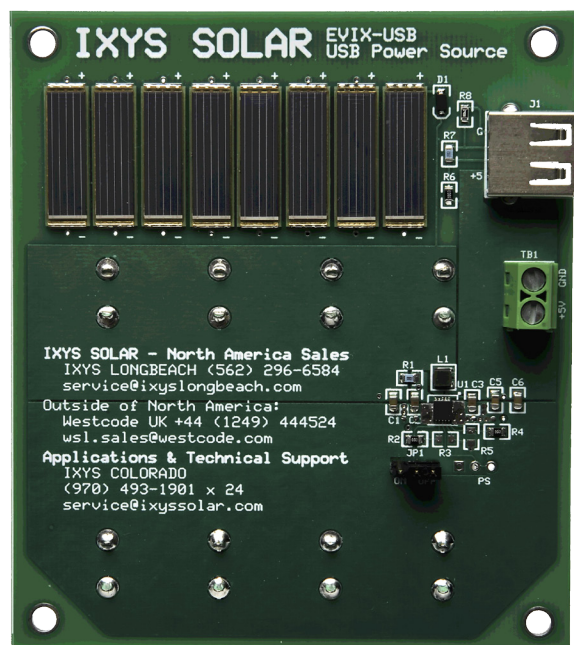


EVIX-USB SolarBIT Evaluation Board

Introduction

The EVIX-USB Evaluation Board uses IXOLAR Bits, rechargeable AA alkaline cells, and a DC/DC converter to generate a regulated +5V output that can operate or charge USB appliances.



Eight series-connected SolarBITs convert sunlight to current and charge four AA cells connected in series/parallel for 3V. The converter IC boosts the battery voltage to +5V, available via a USB Series A receptacle and a screw terminal block. The AA cells will charge any time the Solar Bits are exposed to daylight. Move the push-on jumper from OFF to ON to operate the converter and generate +5V.

SolarBIT Description

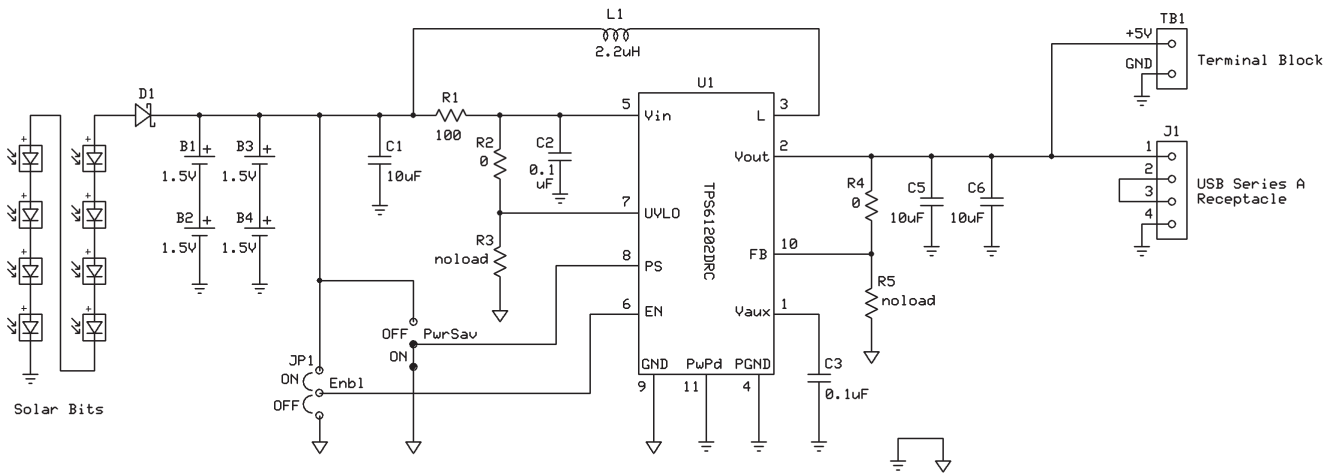
XOB17-12x1 SolarBITs are monocrystalline, high-efficiency solar cells in a surface mount package that can be reflow soldered. They're extremely robust and can be used in harsh environments.

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

Schematic



Bill of Materials

Qty	Designator	Part Description	Part Number
1	D1	Schottky diode	MBR0520LT1
4	B1, B2, B3, B4	Rechargeable alkaline AA cell	
8		Solar Bit	IXYS XOB17-12x1
3	C1, C5, C6	Ceramic capacitor, 10 uF, 10 V, X7R, 0805	Murata GRM-21BR71A106KE51L (Digi-Key 490-3905-1-ND)
2	C2, C3	Ceramic capacitor, 0.1 uF, X7R, 0805	Kemet C0805C104K5RAC (Digi-Key 399-1170-x-ND)
1	R1	Resistor, 100 ohms, 0805	
2	R2, R4	Resistor, 0 ohms, 0805	
0	R3, R5	(NOLOAD)	
1	R6	Resistor, 100K, 0805	
1	R7	Resistor, 20K, 0805	
1	R8	Resistor, 80.6K, 0805	
1	L1	Inductor, 2.2 uH	Taiyo Yuden NR3015T2R2M (Digi-Key 587-1648-1-ND)
1	J1	USB series A receptacle, horizontal	EDAC 690-004-621-013 (Digi-Key 151-1080-ND)
1	U1	Sync boost converter IC	TI TPS61202DRCT (Digi-Key 296-21685-1-ND)
1	JP1	3-pin male header	FCI 68001-236HLF (Digi-Key 609-2223-ND)
1	TB1	Terminal block, 2 position, 5.08mm	On-Shore Technology EDZ250/2 (Digi-Key ED1973-ND)
1		Shunt	FCI 63429-202LF (Digi-Key 609-2997-ND)
8		Battery clip	Keystone 92 (Digi-Key 92K-ND)
1		PC board	

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