Manuals+
Q & A | Deep Search | Upload

SparkFun BOB-08688

SparkFun TEMT6000 Ambient Light Sensor Breakout User Manual

Model: BOB-08688

1. Introduction

The SparkFun TEMT6000 Ambient Light Sensor Breakout is a compact module designed to detect ambient light intensity. This breakout board provides a simple interface to the TEMT6000 sensor, which functions similarly to a transistor. As the intensity of incoming light increases, the analog voltage output on the signal pin also increases. This makes it suitable for applications requiring basic light level detection.

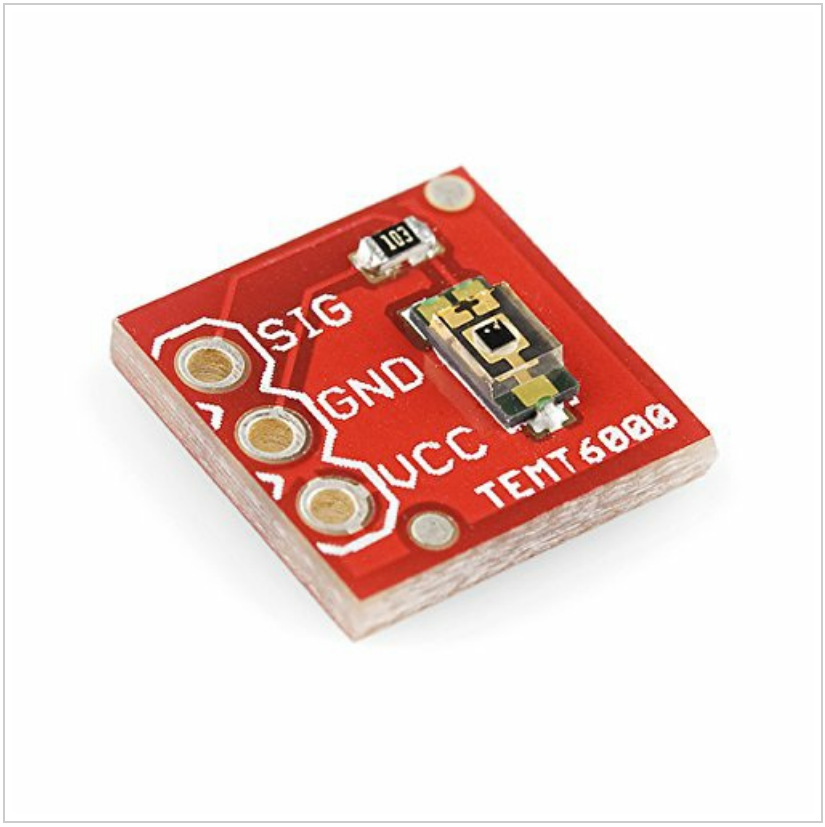


Figure 1: The SparkFun TEMT6000 Ambient Light Sensor Breakout Board. This image shows the small red PCB with three labeled pins (SIG, GND, VCC) on one side and the TEMT6000 sensor component and a resistor on the other side. The sensor is a small, clear component designed to detect light.

2. Setup

To begin using your TEMT6000 Ambient Light Sensor Breakout, follow these connection instructions:

1. **Prepare Connections:** The breakout board does not include header pins. You will need to solder header pins or wires to the three through-hole pads for connection to a breadboard or other circuit.
2. **Connect Power (VCC):** Connect the **VCC** pin on the breakout board to your microcontroller's 3.3V or 5V power supply. Ensure your power supply is stable and within the sensor's operating voltage range.
3. **Connect Ground (GND):** Connect the **GND** pin on the breakout board to the ground (GND) of your microcontroller or power supply.
4. **Connect Signal (SIG):** Connect the **SIG** pin on the breakout board to an analog input pin on your microcontroller (e.g., an Arduino analog pin). This pin will provide the analog voltage output corresponding to the detected light intensity.

Once connected, you can read the analog voltage from the SIG pin using your microcontroller's Analog-to-Digital Converter (ADC) to determine the ambient light level.

3. Operating Principles

The TEMT6000 sensor operates as a phototransistor. Its core principle is that the current flowing through it is proportional to the amount of light incident on its photodiode. The breakout board converts this current into a measurable analog voltage.

- **Light Detection:** The sensor is most sensitive to visible light, mimicking the response of the human eye.
- **Analog Output:** The SIG pin provides an analog voltage output. A higher voltage indicates greater ambient light intensity, while a lower voltage indicates less light.
- **Measurement Range:** The TEMT6000 sensor is designed for general ambient light detection. Based on typical performance, it effectively measures light levels up to approximately 1000 lux. For applications requiring measurement of very bright light sources (e.g., direct sunlight or high-intensity LEDs at close range), the sensor may saturate, providing a maximum voltage output regardless of further increases in light.

To convert the analog voltage reading into a more meaningful unit like lux, calibration may be required, often involving comparing sensor readings to a known light meter under various conditions.

4. Maintenance

The SparkFun TEMT6000 Ambient Light Sensor Breakout is a robust electronic component that requires minimal maintenance. Adhering to these guidelines will help ensure its longevity and accurate performance:

- **Keep Dry:** Avoid exposing the sensor to moisture or liquids, as this can damage the electronic components.
- **Temperature Control:** Operate and store the sensor within its specified temperature range. Extreme temperatures can affect performance and lifespan.
- **Cleanliness:** Keep the sensor's photodiode surface clean. Dust or smudges can interfere with accurate light detection. Use a soft, dry, lint-free cloth to gently wipe the surface if necessary. Avoid abrasive materials or harsh chemicals.
- **Physical Protection:** While durable, avoid dropping or subjecting the board to excessive physical shock.

5. Troubleshooting

If you encounter issues with your TEMT6000 Ambient Light Sensor Breakout, consider the following troubleshooting steps:

- **No Output/Constant Output:**
  - Verify all connections (VCC, GND, SIG) are secure and correctly wired to your microcontroller.
  - Ensure the power supply voltage is within the sensor's operating range (typically 3.3V to 5V).
  - Check for any short circuits or solder bridges on the breakout board.
- **Inaccurate Readings:**
  - **Sensor Saturation:** The TEMT6000 has a limited upper measurement range (around 1000 lux). If exposed to very bright light, it may output its maximum voltage, appearing "stuck." This is normal behavior for the sensor under such conditions. Consider if your application requires a sensor with a higher dynamic range if this is a frequent issue.
  - Ensure the sensor's surface is clean and free from obstructions.
  - Check your microcontroller's analog input reference voltage and ADC resolution, as these affect the accuracy of your readings.
- **Intermittent Readings:**
  - Inspect solder joints for cold joints or poor connections.
  - Ensure the power supply is stable and free from noise.

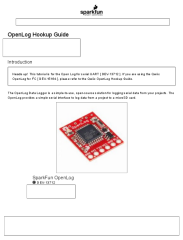
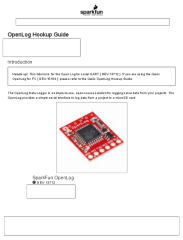
6. Specifications

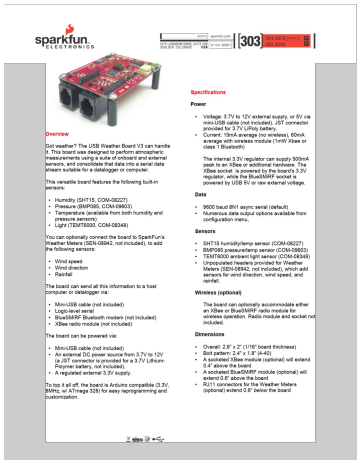
Feature	Detail
Model Number	BOB-08688
Sensor Type	Ambient Light Sensor (Phototransistor)
Output Type	Analog Voltage
Typical Measurement Range	0 - 1000 lux (approximate)
Dimensions	2 x 2 x 0.13 inches (5.08 x 5.08 x 0.33 cm)
Weight	0.35 ounces (9.92 grams)
Manufacturer	Sparkfun
First Available Date	June 24, 2014

7. Warranty and Support

For specific warranty information regarding your SparkFun TEMT6000 Ambient Light Sensor Breakout, please refer to the terms and conditions provided by your point of purchase or contact SparkFun directly. General support and additional resources can often be found on the SparkFun Store or their official website.
For technical assistance or further inquiries, it is recommended to consult the manufacturer's documentation or community forums.

Related Documents - BOB-08688

	SparkFun Inventor's Kit SIK Guide: Your Introduction to Electronics and Physical Computing Explore the world of electronics with the SparkFun Inventor's Kit (SIK) for the SparkFun RedBoard. This comprehensive guide provides step-by-step instructions for 16 circuits, teaching programming, physical computing, and DIY electronics for beginners and educators.
	SparkFun Inventor's Kit SIK Guide: Learn Electronics with RedBoard Explore 16 hands-on circuits with the SparkFun Inventor's Kit for the RedBoard. This guide provides step-by-step instructions for beginners to learn electronics, programming, and physical computing using Arduino.
	SparkFun OpenLog Hookup Guide: Data Logging for Projects A comprehensive guide to setting up and using the SparkFun OpenLog data logger. Learn about hardware connections, firmware, serial commands, and configuration for your electronic projects.
	SparkFun Inventor's Kit SIK Guide: Learn Electronics with RedBoard A comprehensive guide to the SparkFun Inventor's Kit for the SparkFun RedBoard, covering 15 circuits to teach embedded electronics, programming, and physical computing. Ideal for beginners.
	Getting Started with SparkFun Blynk Board and Blynk App A step-by-step guide to setting up the SparkFun Blynk Board with the Blynk mobile application, covering project creation, hardware selection, and Wi-Fi connection.
	SparkFun OpenLog Hookup Guide: Serial Data Logging with Microcontrollers A comprehensive guide to setting up and using the SparkFun OpenLog, an open-source serial data logger. Learn how to connect it to microcontrollers like Arduino, configure firmware, and utilize its command set for data logging projects.

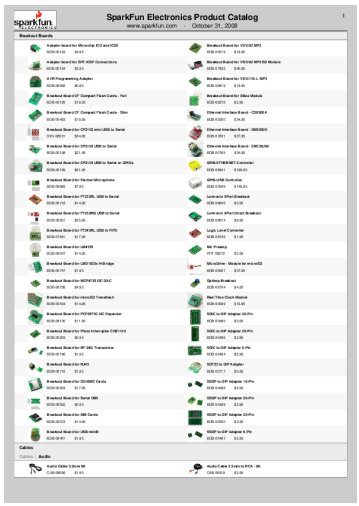


[pdf] Datasheet

Month Boe AnnDrea USB Weather Board V3 SparkFun Electronics but it will require manually wiring the header to your radio inputs and outputs You could solder a BlueSMiRF module directly datasheet 110615 dlnmh9ip6v2uc cloudfront net datasheets Sensors cdn sparkfun 80

Overview Got weather The USB Weather Board V3 can handle it. This board was designed to perform atm ... h if you put your Weather Board in an enclosure You can connect an external TEMT6000 light sensor **BOB-08688** to the board by connecting it to the LIGHT and GND pins on expansion connector JP7, then ...

lang:en score:32 filesize: 351.59 K page_count: 8 document date: 2011-06-30

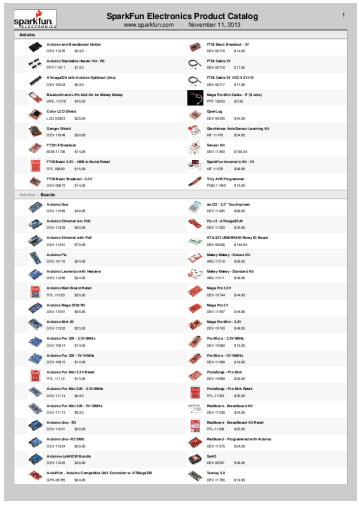


[pdf] Catalog

SparkFun Electronics Product Catalog October 31 2008 catalog sparkfun 80 commerce

SparkFun Electronics Product Catalog 1 www.sparkfun.com October 31, 2008 Breakout Boards Adapte ... Sensor SEN-08924 34.95 CMOS Camera Module - 640x480 SEN-00637 19.95 TEMT6000 Breakout Board **BOB-08688** 4.95 CMOS Camera Module - 640x480 - SMD Connector SEN-00638 0.95 Video Glasses SEN-...

lang:en score:20 filesize: 3.57 M page_count: 25 document date: 2008-10-31



[pdf] Catalog

SparkFun Electronics Product Catalog November 11 2013 catalog sparkfun

SparkFun Electronics Product Catalog 1 www.sparkfun.com November 11, 2013 Arduino Arduino and B ... ber 11, 2013 Color Light Sensor - Avago ADJD-S311-CR999 SEN-10656 4.95 TEMT6000 Breakout Board **BOB-08688** 4.95 Color Light Sensor Evaluation Board SEN-10701 14.95 Webcam - USB SEN-11957 1...

lang:tl score:18 filesize: 42.17 M page_count: 51 document date: 2013-11-11

Elektronikladen | ELMICRO
http://elmicro.com

SparkFun Preisliste
Juni 2012

		EVP EUR netto
BOB-00099	Real Time Clock Module	12,00
BOB-00193	Adapter board for Microchip ICD and ICD2	4,80
BOB-00194	Adapter board for SFE ICSP Connectors	4,00
BOB-00196	Breakout Board for RF-24G Transceiver	0,80
BOB-00198	Breakout Board for CP2102 USB to Serial	17,60
BOB-00199	Breakout Board for CP2103 USB to Serial w/ GPIOs	17,60
BOB-00203	Breakout Board for Photo Interrupter CNZ1120	0,80
BOB-00204	Breakout Board for SD-MMC Cards	8,00
BOB-00464	SOIC to DIP Adapter 8-Pin	2,40
BOB-00465	SOIC to DIP Adapter 20-Pin	3,20
BOB-00466	SOIC to DIP Adapter 28-Pin	3,20
BOB-00467	SSOP to DIP Adapter 8-Pin	2,40
BOB-00468	SSOP to DIP Adapter 18-Pin	2,40
BOB-00469	SSOP to DIP Adapter 28-Pin	3,20
BOB-00500	SSOP to DIP Adapter 28-Pin	3,20
BOB-00544	Breakout Board for microSD Transflash	8,00
BOB-00549	GPIB-USB Controller	177,80
BOB-00573	Breakout Board for SIM Cards	12,00
BOB-00716	Breakout Board for RJ45	1,60
BOB-00717	SOT23 to DIP Adapter	0,80
BOB-00718	Breakout Board for FT232RL USB to Serial	12,00
BOB-00747	Breakout Board for LMD 9620x H-Bridge	1,60
BOB-00765	Ethernet Interface Board - ENC28J60	35,60
BOB-07841	Breakout Board for FT245RL USB to FIFO	14,40
BOB-08130	Breakout Board for PCF8575 I2C Expander	8,60
BOB-08276	Breakout Board for XBee Module	2,40
BOB-08506	AVR Programming Adapter	1,10
BOB-08551	Breakout Board for FT232RQ USB to Serial	27,30
BOB-08552	Breakout Board for Serial 9-99	1,10
BOB-08688	TEMT6000 Breakout Board	4,60
BOB-08736	Breakout Board for MCP4725 I2C DAC	4,80
BOB-08745	Logic Level Converter	1,60
BOB-08819	Breakout Board for VS1011E-LMP3	16,00
BOB-08841	GPIB-ETHERNET Controller	222,20
BOB-08848	Screenkey Breakout Board	0,80
BOB-08849	Breakout Board for VS10009	25,40
BOB-08874	Lumisnic XPort Direct Breakout	8,30
BOB-08882	ACS712 Breakout	8,00
BOB-08891	Gas Sensor Breakout Board	0,80
BOB-08953	Breakout Board for VS1103 MIDI Decoder	19,00
BOB-09970	Serial Multiplexer Breakout - TS3A5017	4,60
BOB-09056	Analog/Digital MUX Breakout	4,80
BOB-09110	Breakout Board for Thumb Joystick	2,00
BOB-09116	SI51077 Programmable Oscillator Breakout - 16.2kHz to 130MHz	4,80

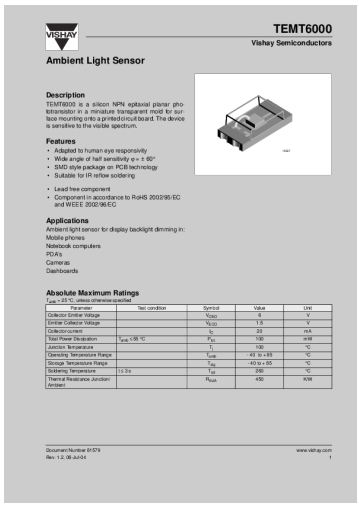
1

[pdf]

sfe1206 preise elmicro 80 files sparkfun

Elektronikladen ELMICRO http://elmicro.com SparkFun Preisliste Juni 2012 BOB-00099 BOB-00193 BOB- ... BOB-00717 BOB-00718 BOB-00747 BOB-00765 BOB-07841 BOB-08130 BOB-08276 BOB-08508 BOB-08551 BOB-08552 **BOB-08688** BOB-08736 BOB-08745 BOB-08819 BOB-08841 BOB-08848 BOB-08849 BOB-08874 BOB-08882 BOB-08891 ...

lang:en score:17 filesize: 144.37 K page_count: 40 document date: 2012-06-15



VISHAY

TEMT6000
Vishay Semiconductors

Ambient Light Sensor

Description
TEMT6000 is a silicon NPN epitaxial planar phototransistor in a miniature transparent mold for surface mounting onto a printed circuit board. The device is sensitive to the visible spectrum.

Features
- Adapted to human eye responsivity
- Wide angle of half sensitivity φ = ± 60°
- SMD style package on PCB technology
- Suitable for IR reflow soldering
- Lead free component
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

Applications
Ambient light sensor for display backlight dimming in:
Mobile phones
Notebook computers
PDA's
Cameras
Dashboards

Absolute Maximum Ratings
T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Collector Emitter Voltage		V_{CEO}	6	V
Emitter Collector Voltage		V_{ECO}	1.5	V
Collector current		I_C	20	mA
Total Power Dissipation	T_{amb} ≤ 85 °C	P_{tot}	100	mW
Junction Temperature		T_j	100	°C
Operating Temperature Range		T_{amb}	-40 to +85	°C
Storage Temperature Range		T_{stg}	-40 to +85	°C
Soldering Temperature	t ≤ 3 s	T_{sd}	260	°C
Thermal Resistance Junction/ Ambient		R_{thJA}	450	K/W

Document Number 81579
Rev. 1.2, 08-Jul-04

www.vishay.com
1

[pdf] Datasheet

Hoja de datos Resultados búsqueda para 8688 Herramientas desarrollo ingeniería Mouser España

TEMT6000 2488203 mouser es datasheet 2 813 |||

VISHAY Ambient Light Sensor TEMT6000 Vishay Semiconductors Description TEMT6000 is a silicon NPN e ... stributor Click to View Pricing, Inventory, Delivery Lifecycle Information: SparkFun Electronics: **BOB-08688** ...

lang:en score:17 filesize: 116.99 K page_count: 7 document date: 2005-06-27

Elektronikladen | ELMICRO
http://elmicro.com

SparkFun Preisliste
November 2011

		EVP EUR netto
BOB-00099	Real Time Clock Module	11,20
BOB-00193	Adapter board for Microchip ICD and ICD2	4,50
BOB-00194	Adapter board for SFE ICSP Connectors	3,50
BOB-00196	Breakout Board for RF-24G Transceiver	0,80
BOB-00198	Breakout Board for CP2102 USB to Serial	16,50
BOB-00199	Breakout Board for CP2103 USB to Serial w/ GPIOs	16,50
BOB-00203	Breakout Board for Photo Interrupter CNZ1120	0,80
BOB-00204	Breakout Board for SD-MMC Cards	7,50
BOB-00463	Breakout Board CF Compact Flash Cards - Slim	7,50
BOB-00464	SOIC to DIP Adapter 8-Pin	2,20
BOB-00465	SOIC to DIP Adapter 20-Pin	3,00
BOB-00466	SOIC to DIP Adapter 28-Pin	3,00
BOB-00467	SSOP to DIP Adapter 8-Pin	2,20
BOB-00468	SSOP to DIP Adapter 18-Pin	2,20
BOB-00469	SSOP to DIP Adapter 28-Pin	3,00
BOB-00500	SSOP to DIP Adapter 28-Pin	3,00
BOB-00544	Breakout Board for microSD Transflash	7,50
BOB-00549	GPIB-USB Controller	166,70
BOB-00573	Breakout Board for SIM Cards	11,20
BOB-00716	Breakout Board for RJ45	1,50
BOB-00717	SOT23 to DIP Adapter	0,70
BOB-00718	Breakout Board for FT232RL USB to Serial	11,20
BOB-00747	Breakout Board for LMD 9620x H-Bridge	1,50
BOB-00765	Ethernet Interface Board - ENC28J60	33,30
BOB-07841	Breakout Board for FT245RL USB to FIFO	13,50
BOB-08130	Breakout Board for PCF8575 I2C Expander	8,00
BOB-08276	Breakout Board for XBee Module	2,20
BOB-08506	AVR Programming Adapter	1,10
BOB-08551	Breakout Board for FT232RQ USB to Serial	25,60
BOB-08552	Breakout Board for Serial 9-99	1,10
BOB-08595	Spartan 3E Breakout Board	59,50
BOB-08688	TEMT6000 Breakout Board	4,50
BOB-08736	Breakout Board for MCP4725 I2C DAC	4,50
BOB-08745	Logic Level Converter	1,50
BOB-08819	Breakout Board for VS1011E-LMP3	15,00
BOB-08841	GPIB-ETHERNET Controller	208,30
BOB-08848	Screenkey Breakout Board	0,80
BOB-08849	Breakout Board for VS10009	23,80
BOB-08882	ACS712 Breakout	7,50
BOB-08891	Gas Sensor Breakout Board	0,80
BOB-08953	Breakout Board for VS1103 MIDI Decoder	17,90
BOB-09970	Serial Multiplexer Breakout - TS3A5017	4,50
BOB-09056	Analog/Digital MUX Breakout	4,50
BOB-09110	Breakout Board for Thumb Joystick	1,90

1

[pdf]

sfe1111 preise elmicro files sparkfun

Elektronikladen ELMICRO http://elmicro.com SparkFun Preisliste November 2011 BOB-00099 BOB-00193 ... BOB-00718 BOB-00747 BOB-00765 BOB-07841 BOB-08130 BOB-08276 BOB-08508 BOB-08551 BOB-08552 BOB-08595 **BOB-08688** BOB-08736 BOB-08745 BOB-08819 BOB-08841 BOB-08848 BOB-08849 BOB-08882 BOB-08891 BOB-08953 ...

lang:en score:17 filesize: 142.06 K page_count: 39 document date: 2011-11-03

Elektronikladen | ELMICRO
http://elmicro.com

SparkFun Preisliste
Oktober 2010

		EVP EUR netto
BOB-00099	Real Time Clock Module	16,00
BOB-00193	Adapter board for Microchip ICD and ICD2	4,50
BOB-00194	Adapter board for SFE ICSP Connections	3,00
BOB-00195	Breakout Board CF Compact Flash Cards - Full	15,00
BOB-00196	Breakout Board for RF-240 Transceiver	1,50
BOB-00198	Breakout Board for CP2102 USB to Serial	16,50
BOB-00199	Breakout Board for CP2103 USB to Serial w/ GPIOs	16,50
BOB-00200	Ethernet Interface Board - CS8900A	33,30
BOB-00203	Breakout Board for Photo Interrupter CNZ1120	1,10
BOB-00204	Breakout Board for SD-MMC Cards	13,50
BOB-00403	Breakout Board CF Compact Flash Cards - Slim	15,00
BOB-00404	SOIC to DIP Adapter 8-Pin	2,20
BOB-00405	SOIC to DIP Adapter 20-Pin	3,00
BOB-00406	SOIC to DIP Adapter 28-Pin	3,00
BOB-00407	SSOP to DIP Adapter 8-Pin	2,20
BOB-00408	SSOP to DIP Adapter 16-Pin	2,20
BOB-00409	SSOP to DIP Adapter 20-Pin	3,00
BOB-00500	SSOP to DIP Adapter 28-Pin	3,00
BOB-00519	Breakout Board for VS1002 MP3	15,00
BOB-00544	Breakout Board for microSD Transflash	11,20
BOB-00549	GPIB-USB Controller	166,70
BOB-00573	Breakout Board for SIM Cards	11,20
BOB-00716	Breakout Board for RJ45	1,50
BOB-00717	SOT23 to DIP Adapter	0,70
BOB-00718	Breakout Board for FT232RL USB to Serial	11,20
BOB-00747	Breakout Board for LMD1820x H-Bridge	1,50
BOB-00765	Ethernet Interface Board - ENC28J60	33,30
BOB-07831	Ethernet Interface Board - DM9000E	36,90
BOB-07832	Breakout Board for VS1002 MP3/SD Module	40,50
BOB-07841	Breakout Board for FT245RL USB to FIFO	13,50
BOB-08130	Breakout Board for PCF8575 I2C Expander	9,00
BOB-08215	Breakout Board for DOSenCHIP FAT16 FAT32 uSD Module	33,70
BOB-08276	Breakout Board for XBee Module	2,20
BOB-08401	Breakout Board for USB mini-B	1,50
BOB-08508	AVR Programming Adapter	1,10
BOB-08551	Breakout Board for FT232RQ USB to Serial	25,50
BOB-08552	Breakout Board for Serial 0-5V	1,10
BOB-08595	Spartan 3E Breakout Board	67,90
BOB-08596	Altera Cyclone II Breakout Board	60,00
BOB-08669	Breakout Board for Electret Microphone	6,00
BOB-08688	TEMT6000 Breakout Board	4,50
BOB-08704	OpAmp Breakout	4,50
BOB-08736	Breakout Board for MCP4725 I2C DAC	4,50
BOB-08745	Logic Level Converter	1,50

1

[pdf]

sfe1010 preise elmicro files sparkfun

Elektronikladen ELMICRO http://elmicro.com SparkFun Preisliste Oktober 2010 BOB-00099 BOB-00193 B ... BOB-08130 BOB-08215 BOB-08276 BOB-08401 BOB-08508 BOB-08551 BOB-08552 BOB-08595 BOB-08596 BOB-08669 **BOB-08688** BOB-08704 BOB-08736 BOB-08745 Real Time Clock Module Adapter board for Microchip ICD and ...

lang:en score:17 filesize: 135.71 K page_count: 37 document date: 2010-10-11

[pdf] Decleration of Conformity Catalog

untitled unspecified anonymous update 2013 10 22 switchscience doc switch science catalog |||

update : 2013. 10/22 3 Arduino 5 Raspberry Pi 11 13 15 XBee 802.15.4ZigBeeWiFi 17 NF ... LU 817 GROVE1M GND : SFE-SEN-10221 : 4,993 PLU 517 Milone Technologies TEMT6000 : SFE-**BOB-08688** : 544 PLU 37 TEMT6000 TTLJPEG NTSC : ADA-397 : 5,590 PLU 1241 JPEG NTSC B...

lang:nl score:15 filesize: 2.9 M page_count: 43 document date: 2013-10-22