

## Solar Sensor Tag EFM parts

Ref	Value	Size / Case / Spec	PartNo. / Alternatives	
<b>Core</b>				
IC5	Reg. 3,0V	SOT23-5, nano power LDO regulator	STLQ015M30R SPX3819M5-L-3-0/TR	
IC6	EFM32	QFN-32, MCU AMTEL	EFM32HG210F64-B-QFN32	
D2	BAS40-05	SOT-23, common cathode, low leakage	BAS40-05 BAS70-05 BAT54C	
D4	LED RedGreen	5mm/3mm, THT, 3Pin, common cathode	WP59SURKCGKW	
D5	BAS385	MicroMELF, 0603, 0805, low leakage	CDBU40	
D7	CDBU40	0603		
C1	100n	0603	CL10B104KA8NNWC	
C2	220p	0603		
C4	47uF 6,3V	1206, X5R, poss. tantal 1210 low height	CL31A476MQHNNNE	
C5	100nF	0603		
C6	1nF	0603		
C7	1uF	0805	CL21B105KAFNNNE	
C12	100nF	0603		
R1	100k	0603	(optional)	
<del>R3</del>	<del>10k</del>	0603, bridged by default		
R4	2k2 / 4k7	0603, I2C pullup		
R5	2k2 / 4k7	0603, I2C pullup		
R10	47k	0603		
R11	620	0603		
R12	240	0603		
R13	10k	0603		
R14	10k	0603		
TRX1	CC1101 868MHz	19x17mm module		
ANT	83mm 868MHz	isolated wire antenna		
BT1	LIR2025	Li.Ion/Li.Po/Li.Va battery cell with solder tabs (2025 + 2032 only with high case 0)	LIR2025 BMW LIR2025-LBY2 (1,60 R) (VL2020 see options) (ML2020 see options)	
TA1	PushButton	6x6mm ... see CASE		
SP1	SC-3722-9	SolarPanel 4V, 37x22mm ... see CASE		
LP	HM SST V.10	PCB, 31,2x41,2mm, 4-layer		
CASE		3D-Print or SolarPowerFlashLight		
<b>HF Crystal Resonator (option)</b>				
Y2	24MHz	SMD3215 Resonator 3pin 3.2x1.3mm	CSTNE24M0VH3C000R0 CSTNE24M0VH5T000R0	
C8	(opt)	0603, optional		
C9	(opt)	0603, optional		
<b>LF Crystal (option)</b>				
Y1	32768kHz	SMD3215 2pin 3.2x1.5mm	SC32S-7PF20PPM (0,43 D) (0,34 M)	
<b>EEPROM (option, recommended)</b>				
IC3	M24256	SOIC-8 3,9mm P1.27mm, EEPROM >=256kBit (32kB)	M24256E-FMN6TP M24256-BRMN6TP	

			M24M01-DFMN6TP	
<b>BatteryMonitoring (option, recommended for Lilo battery and 3V reg.)</b>				
IC4	TCK106AF	SOT23-5		
R6	390 / 100	0603		
R7	390 / 220	0603		
<b>PowerOnTRX (option, recommended)</b>				
IC7	TCK106AF	SOT23-5	TCK106AF,LF	
C10	100n	0603		
C11	220p	0603		
<b>PowerOnI2C (option)</b>				
IC2	TCK106AF	SOT23-5		
<b>PowerOnByDevice (option)</b>				
Q1	IRLML6402	SOT-23	IRLML2244 IRLML9301	
D1	BAS385	MicroMELF, 0603, 0805, low leakage		
D3	BAS40-05	SOT-23, common cathode, low leakage	BAS70-05 BAT54C	
C3	220nF	0603		
R8	1M	0603		
R9	1M	0603		
<b>BatProtection (option, may only be needed for outdoor/direct sunlight)</b>				
IC1	LM4040DBZ-4.1	SOT-23	LM4040DIM3-4.1 LM4040DYM3-4.1	
<b>BatteryVanadium (option) (3,0V vanadium rechargeable battery)</b>				
BT1	VL2020	Li.Va. battery cell with solder tabs Charge end 3.4V, Discharge end: 2,5V! max. short load current not spec.!	VL2020/1HF (2,70) VL2020/HFN BL2020	
D7	150	0603, resistor		
R4	6k8	0603, I2C pullup		
R5	6k8	0603, I2C pullup		
<del>IC1</del>	<del>LM4040DBZ-3.3</del>	SOT-23		
<del>IC5</del>	<del>Reg. 3,0V</del>	bridge pin 1-5		
<del>Q1</del>	<del>IRLML6402</del>			
<del>D1</del>	<del>BAS385</del>			
<del>D3</del>	<del>BAS40-05</del>			
<del>D6</del>	<del>BAS385</del>			
<del>C3</del>	<del>220nF</del>			
<del>R8</del>	<del>1M</del>			
<del>R9</del>	<del>1M</del>			
<b>Sensor 0: (no sensor, e.g. 1 channel remote control) NanoPower see PowerOnByDevice</b>				
D6	BAS385	MicroMELF, 0603, 0805, low leakage		
TA2	PushButton	6x6mm, ext. KonfigBtn IN1 GND		
<b>Sensor 1: Temperature</b>				
IC_S1	LM75C	SOIC-8 P1.27mm		
<b>Sensor 2: Temperature + Humidity</b>				
IC_S2	HS3004	6LGA P1.0mm	HS3004 (2,19 M) (2,14 D)	
C_S2	100n	0603		
<b>Sensor 3: Temperature + Humidity</b>				
IC_S3	SHT4x	SHT4x 1.5x1.5mm P0.8mm	SHT40-AD1B-R2 SHT40A	

			SHT41A	
<b>Sensor 4: Temperatur + Barometer</b>				
IC_S4	BME280	Bosch_LGA	BMP280 (6,88 D)	
<b>Sensor 5: Temperatur + Barometer</b>				
IC_S5	BMP581	Bosch_HLGA	BMP581 (5,60 D)	
<b>Sensor 6: Compass (experimental, design rule „no copper under the case“ cannot be implemented)</b>				
IC_S6	HMC5883L	LGA-16 P0.5mm		
C_S61_1	220n	0603		
C_S61_2	4u7	1206		
<b>Sensor 7: Accelerometer (3-Axis)</b>				
IC_S7	LIS2HH12	LGA-12 P0.5mm	LIS2HH12 (1,65 D)	
D_S78	M1MA141WAT 1	SOT-323, SC-70, common anode, low leakage	M1MA141WAT1 DAP202U	
<b>Sensor 8: Accelerometer (6-Axis)</b>				
IC_S8	MPU6050	QFN-24 P0.5mm	MPU-6050 (7,60 M) ICM-20689 TDK (6,66 D)	
D_S78	M1MA141WAT 1	SOT-323, SC-70, common anode	M1MA141WAT1 DAP202U	
C_S8	100n	0603		
<b>Sensor 9: Ext. Input/PushButton/Switch/WindowContact</b>				
R_IN1	1M	0603	or as C 47nF	
<b>Sensor 10: 1/2-channel remote control</b>				
R_IN1	47k	0603		
SW_EXT	SW1	6x6mm external config. switch		
<b>Sensor EXT: staggered sensor PCB with solder connections J3 J4 J6</b>				
<del>R1</del>	<del>100k</del>		not mounted	
<del>R3</del>	<del>10k</del>		not mounted	
<del>R_IN1</del>	<del>1M</del>		not mounted	
<del>IC_S1</del>	<del>LM75C</del>		not mounted	
<del>IC_S2</del>	<del>HS3004</del>		not mounted	
<del>C_S2</del>	<del>100n</del>		not mounted	
<del>IC_S6</del>	<del>HMC5883L</del>		not mounted	
<del>C_S61_1</del>	<del>220n</del>		not mounted	
<del>C_S61_2</del>	<del>4u7</del>		not mounted	
<del>IC_S4</del>	<del>BME280</del>		not mounted	
<del>IC_S8</del>	<del>MPU6050</del>		not mounted	
<del>D_S78</del>	<del>BAS70-06</del>		not mounted	
<del>C_S8</del>	<del>100n</del>		not mounted	